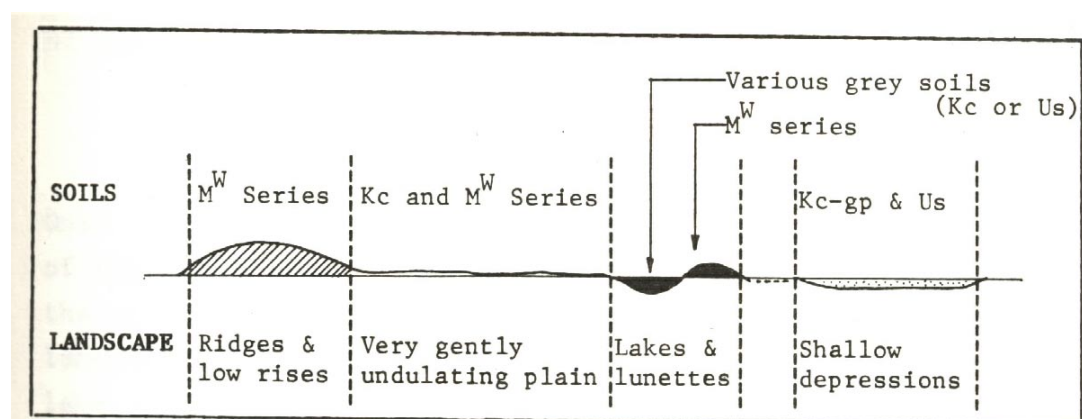


## SECTION 6 - LANDSCAPE UNITS AND SOIL ASSOCIATIONS

### 6.1 Landscape Units

The overall landscape of the area may be described in broad terms as a gently undulating high plain. There are, however, four recognisable landscape units: very gently undulating plain, ridges and low rises, shallow depressions and lakes and lunettes. The distribution of these units is shown in Figure 3.

With the exception of the first landscape unit, each of the remaining three has its own array of soil types. The diagram presented in Figure 4 shows idealised arrangements. Each member of the array is not necessarily present and a soil type as found in the field may not occur next to the soil type adjacent to it as shown in the diagram.



**Figure 4 - Idealised arrangements of the soils in relation to landscape units**

Recurring soil patterns are evident in most of the landscape units. These are the soil associations described later in this section (6.2) and shown on the Soil Association Map. The main distinguishing features of the four landscape units are as follows:

#### 6.1.1 Very Gently Undulating Plain

This is the most extensive landscape unit, occupying about 58% of the total surveyed area, and is an almost level plain. The soils are mainly Kalkee clay microscale complex with its variants in different degrees of complexity. Although Murra Warra clay is usually a sub-dominant soil component, it is co-dominant in some areas.

#### 6.1.2 Ridges and Low Rises

Apart from two ridges in the west of the area this unit defines rises of relatively small areas scattered throughout, but mainly, in the northern part. However, about 40% of the total surveyed area was mapped as this landscape unit. The main soils are members of the Murra Warra series, occupying, in particular, the crests, upper and mid slopes of the ridges and rises, while Kalkee clay is co-dominant with Murra Warra clay on the lower slopes.

#### 6.1.3 Shallow Depressions

The unit is distinguishable from the gently undulating plain landscape unit only in terms of a slight difference in topography. It represents about 1.5% of the survey area. The dominant soil component in the landscape pattern is Kalkee clay (particularly the grey profile) and the sub-dominant soil component is a group of unclassified grey soils which differ in consistency in the upper portions of the profile.

#### 6.1.4 Lakes and Lunettes

This is the minor landscape unit in the survey. Only four occurrences were recorded, occupying about 0.5% of the total area. Where shown on the plan in Figure 3, the unit represents a single lake with its associated lunette. Soils on the lunette differ from those on the lake bed. On the lunette, the soils belong mainly to the Murra Warra series, whereas the lake bed is occupied by Kalkee clay and/or unclassified grey clay soils.

## 6.2 Soil Associations

A soil association is a grouping of adjoining soil types which occur in a pattern that is repeated in different parts of the area. The pattern is dominated by one, and sometimes two, of the component soil types. Generally the soils grouped in this way occupy a particular and usually distinctive part of the landscape. However, this rule is not systemically applicable in the area of the present survey.

Two soil associations have been recognised and each has been named after its dominant soil type. These are the Kalkee and Murra Warra associations. Both associations may be present in one landscape unit. The relationship of soil associations to landscape features is shown in Figure 5. Areas of the soil associations and of the landscape units are also shown.

The distribution of the two soil associations is shown on the Soil Association Map which enables the overall soil pattern of the area to be seen readily. It also suggests the potential land use in different parts of the area. The two soil associations, which together contain all the soil types, although in different proportions, are described below, in alphabetical order, in terms of their dominant, sub-dominant and minor soil components. General comments are made about suspected related agronomic problems.

### 6.2.1 *Kalkee Association*

The Kalkee association is the dominant association in the very *gently undulating plain* and the shallow *depressions landscape units*. It occupies half the total survey area.

#### ***Dominant soil type***

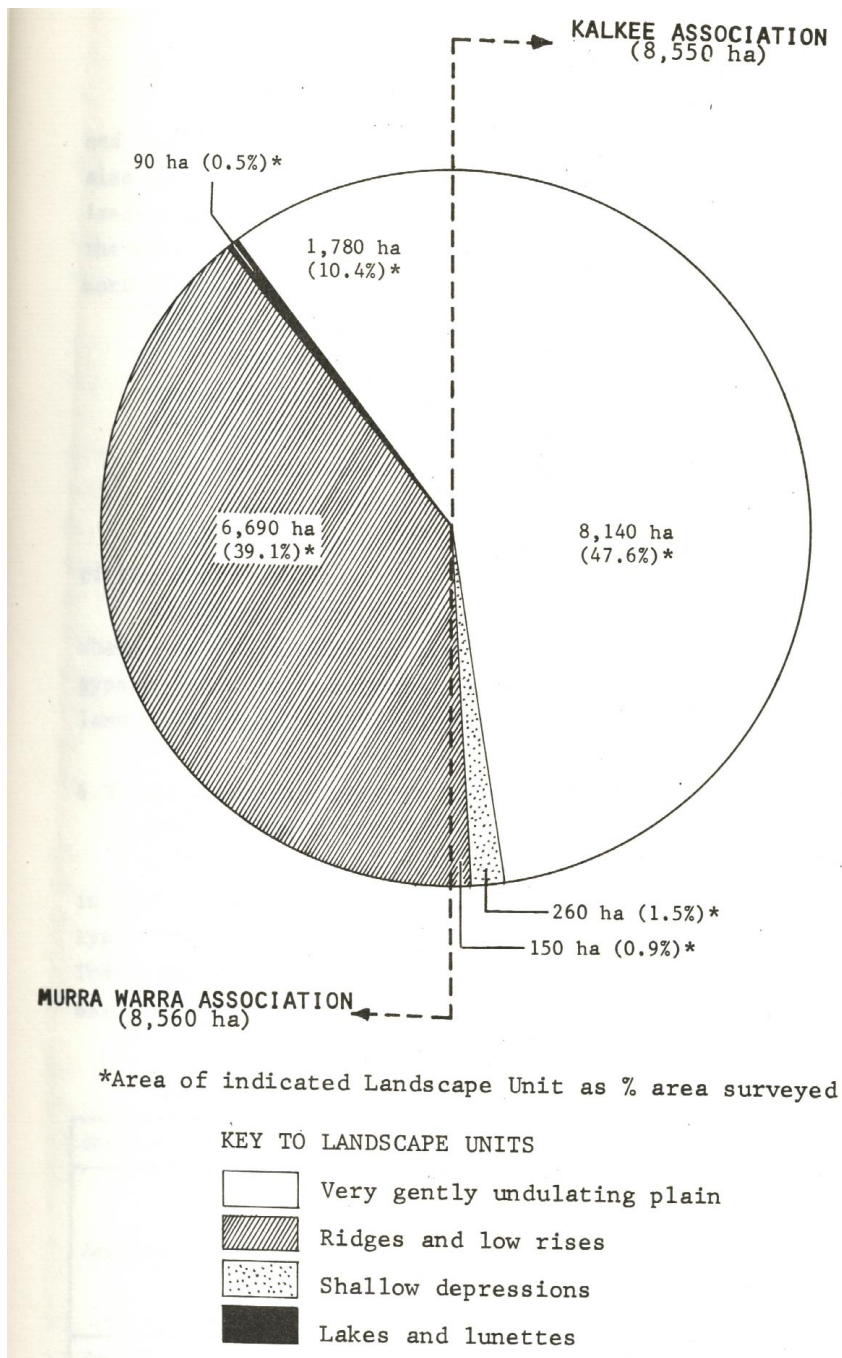
Kalkee clay microscale complex

#### ***Sub-dominant soil types***

Murra Warra clay

Minor components of the association are Murra Warra sand loam, Murra Warra sandy clay loam and Minor soil Type 1.

Although there are relatively few agricultural problems, setting up experimental sites for agronomic research is particularly difficult. This difficulty is due to the highly variable nature of the Kalkee clay subsoils.



**Figure 5. Relative areas of component Landscape Units in the Soil Associations.**

### 6.2.2 Murra Warra Association

This soil association corresponds to the ridges and low rises and lakes and lunettes landscape units. It also comprises about 18% of the very gently undulating plain landscape unit. The Murra Warra soil association occupies the other half of the survey area and occurs mainly in the northern part of the area.

#### Dominant soil type

Murra Warra clay complex

#### Sub-dominant soil types

Kalkee clay microscale complex

Murra Warra sandy loam

Murra Warra sandy clay loam

Minor soil Types 1, 2, and 3 are the minor components of the association. The Murra Warra soil association delineates areas where soil structure is a problem and where the use of gypsum could be considered for ensuring successful uniform land management and higher yields.

### 6.3 Relationship Between Soil Types, Soil Associations and Landscape Units

All the soil types are included in different proportions in each of the two soil associations. Most of the soil types were also recorded in each of the four landscape units. The relationships between the main soil types, soil associations Most of the soil types were also recorded in each of the four landscape units. The relationships between the main soil types, soil associations and landscape units are show in table 3.

**Table 3 - Soil types, soil associations and landscape units**

Soil Associations		Kalkee			Murra Warra			
Landscape Units		Very gently undulating plain	Ridges and low rises	Shallow depressions	Very gently undulating plain	Ridges and low rises	Lakes and Lunettes	
							Lake	Lunette
Soil Types	Kc	△△△	△	△△	△△	△	△△	-
	Kc-gp	△△	-	△△△	△	△	△△△	-
	M <sup>w</sup> c	△	△△	-	△△	△△△	-	△△△
	M <sup>w</sup> sl	-	△	-	△	△△	-	△△
	M <sup>w</sup> scl	-	△	-	△	△△	-	△△
Number of △ represent the frequency of the soil type in the corresponding landscape unit in each soil association.								
△△△	Dominant component				△△	Sub-dominant component		
△	Minor component				-	Soil type is absent		