

3. GENERALISED SOIL DESCRIPTIONS

3.1 Soils of the Plain

The soils have duplex primary profile forms. The surface soils are usually silty loams or fine sandy loams of 25-35 cm depth, with a conspicuously bleached A₂ horizon. These grade clearly to mottled clay subsoils. The varying soil characteristics of the plain are largely determined by drainage conditions.

3.1.1 Soil group # 1

Northcote Notation: Dy 3.21, .22, .32

Occurrence: On the better drained areas of the plain.

Generalised Description:

Surface soil:

The A₁ horizon is a dark brown (10YR 4/3, 7.5YR 4/2 m) friable silty loam or fine sandy loam which is approximately 10 cm deep. There is a sharp change to an A₂ horizon which is not bleached and is light brown (7.5YR 6/4, 7/4 m) when moist. This horizon is approximately 20 cm deep and is silty loam in texture. There is usually some ironstone gravel in these surface horizons. A sporadic bleach may also occur and was noted in Area A.

Subsoil:

At about 25-35 cm there is a clear change to a friable light medium to heavy clay, which is reddish yellow (7.5YR 6/6 m) or brownish yellow (10YR 6/6 m) and has either a red (2.5YR 4/8 m) or yellowish red (5YR 5/8 m) mottle. This horizon is relatively well structured, breaking down into blocky peds.

At approximately 70 cm the dominant colour becomes pale brown (10YR 6/3 m) or light brownish grey (10YR 6/2 m) with a brownish yellow (10YR 6/6 m) mottle. The texture varies from a medium to a heavy clay and the soil has a firm consistence when moist. The structure also becomes coarser. There may be slight amounts of ironstone gravel throughout the subsoil.

3.1.2 Soil group # 2

Northcote Notation: Dy 3.42, .43, .32

Occurrence: Usually associated with the higher level flats which are relatively poorly drained.

Generalised Description:

Surface soil:

The A₁ horizon is usually a dark brown (10YR 4/3 m) friable fine sandy loam or fine sandy clay loam of approximately 10 cm depth. Some rusty root channel mottling is evident and there is usually minimal ironstone gravel present. The subsurface (A₂ horizon) is usually a light brownish grey (10YR 6/2 m) or pale brown (10YR 6/3 m) conspicuously bleached silty loam or silty clay loam of about 15 cm. In Area A, this horizon is more commonly light yellowish brown (10YR 6/4 m). Ironstone gravel occurs in varying amounts in the subsurface horizons. On the more moderately well drained areas, where this soil forms a transition to the Group 1 soils, a sporadically bleached A₂ horizon is present. This transition zone represents a better drained phase of the Group 2 soils but is not mapped separately.

Subsoil:

At approximately 25 cm there is a clear change to a friable light medium to heavy clay. The dominant colour varies from light brownish grey (10YR 6/2 m) to light yellowish brown (10YR 6/4 m) and is

associated with a brownish yellow (10YR 6/6, 6/8 m) mottle. The transition phase soils in both areas have a similar texture range at the top of the subsoil and the dominant colours are either pale brown (10YR 6/3 m) or light yellowish brown (10YR 6/4 m) with a brownish yellow (10YR 6/6, 6/8 m), strong brown (7.5YR 5/6 m) or reddish yellow (7.5YR 6/6 m) mottle.

At around 75 cm there is a sharp change to a light grey (10YR 7/1, 7/2 m) heavy clay with a brownish yellow (10YR 6/6 m) and occasional red (2.5YR 4/8 m) mottle. This horizon has a firm consistence when moist.

At greater depths the soil may become a dense heavy clay with coarser structure. It is usually light brownish grey (2.5YR 6/2 m) with a diffuse brownish yellow (10YR 6/6, 6/8 m) mottle.

Ironstone gravel is usually present in slight amounts at the top of the subsoil and becomes common to moderate at approximately 50 cm. The amount of gravel is only slight in the light grey deeper subsoil. Soft dark inclusions occur in varying amounts in the subsoil and are associated with the firmer soil at depth.

3.1.3 Soil group # 3

Northcote Notation: Dy 3.42, .43

Occurrence: On the lower level plain which is relatively poorly drained. Occurs only in Area B.

Generalised Description:

Surface soil:

The A₁ horizon is usually a dark brown (10YR 4/3 m) friable silty loam which is approximately 10 cm deep. Some rusty root channel mottling is present and there is usually only slight ironstone gravel present. This horizon changes sharply to a pale brown (10YR 6/3 m) or light yellowish brown (10YR 6/4 m) conspicuously bleached A₂ horizon which is usually 20 to 25 cm deep and silty loam in texture. Ironstone gravel levels vary from slight to moderate. With increasing depth, the texture may become a silty clay loam.

Subsoil:

At approximately 30-35 cm there is usually a clear change to a light brownish grey (10YR 6/2 m) or pale brown (10YR 6/3 m) light medium to heavy clay with a brownish yellow (10YR 6/6-6/8 m) mottle. It has a firm consistence when moist and usually slight amounts of ironstone gravel.

Below a sharp change of approximately 70 cm is a dense light brownish grey (10YR 6/2 m to 2.5YR 6/2 m) or pale brown (10YR 4/3 m) heavy clay which has a brownish yellow (10YR 6/6, 6/8 m) diffuse mottle. Calcium carbonate may be present at depth. Ironstone gravel is usually present in only slight amounts in the deeper subsoil where soft dark inclusions occur in irregular amounts.

3.1.4 Soil group # 4

Northcote Notation: Dg 2.42, .43

Occurrence: In depressions which are associated with drainage lines or gilgai micro-relief. Much of the area where gilgai occur (i.e. the southern part of Area B) has been cultivated, making it difficult to discern the original micro-relief. In most cases, this soil is not mapped separately but forms a minor component of map unit C.

Generalised Description:

Surface soil:

The A₁ horizon is a dark brown (10YR 4/3 m) or brown (10YR 5/3 m) friable silty loam or fine sandy loam of approximately 15 cm depth. Slight amounts of fine ironstone gravel are usually present. There

is usually some fine rusty root channel mottling. This horizon grades sharply into a conspicuously bleached A₂ horizon which varies from light yellowish brown (10YR 6/4 m) to white (10YR 8/2 m) and has a silty loam texture. Amounts of ironstone gravel are variable, ranging from slight to moderate.

Subsoil:

At approximately 30 cm there is a sharp change to a light grey (10YR 7/1, 7/2 m) heavy clay with a brownish yellow (10YR 6/6, 6/8 m) mottle. It has a firm consistence when moist.

The subsoil grades to a moderately to coarsely structured dense heavy clay at approximately 55 cm. It is usually grey (10YR 6/1 m) or light brownish grey (10YR 6/2 m to 2.5YR 6/2 m) in colour with a yellow (10YR 7/6 m) or brownish yellow (10YR 6/6, 6/8 m) mottle. A red mottle may sometimes be present. Ironstone gravel tends to occur in only slight amounts throughout the subsoil. Calcium carbonate may be present at depth.

3.2 Soils of the Hills

These soils have duplex primary forms. Surface soils are usually between 20-30 cm deep and grade either clearly or sharply into a clay subsoil which may or may not be mottled. Unlike the soils of the plain, the nature of and depth to bedrock is an important determinant of soil type. With the presence of quartz reefs throughout a large area of the main hill in Area B, quartz gravel is often present in the soil profile. Areas of significant quartz occurrence are shown on the soil map as a quartz phase.

3.2.1 Soil group # 5

Northcote Notation: Dr 3.21, .22, .12

Occurrence: On the crests and upper and mid slopes of the hill rising above the plain in Area B. Soils on the crest component of the hill are associated with weathering schist near the surface and have a shallower solum than for the soils which have developed on the slopes. Although not mapped separately, the crest component and the upper and mid slope component will be discussed separately below.

3.2.1.1 Crest component

Surface soil:

The topsoil is a dark reddish brown (5YR3/2, 3/3 m) or reddish yellow (5YR 6/6 m) friable loam or fine sandy loam to approximately 15 cm. It usually includes an abundant amount of quartz gravel and grades clearly into a reddish yellow (5YR 6/6 m) fine sandy loam of approximately 15 cm in depth which also contains abundant gravel.

Subsoil:

At approximately 30 cm there is a sharp change to the top of the subsoil which is usually a red (2.5YR 4/8 m) friable heavy clay, with a reddish yellow (5YR 5/8 m) mottle. This horizon is strongly structured, breaking down into fine blocky peds. With increasing depth, the soil remains friable but becomes lighter in texture and is yellow (10YR 7/6 m) or brownish yellow (10YR 6/8, 7/8 m) with a red (10YR 4/8 m) mottle. The subsoil merges into weathering schist bedrock at depths of between 60-100 cm. Throughout the subsoil, there is negligible to slight amounts of quartz gravel and increasing amounts of weathered schist gravel.

3.2.1.2 Slope component

Surface soil:

The A₁ horizon is a dark brown (7.5YR 4/4 m) to dark reddish brown (5YR 3/3 m) friable fine sandy loam to a depth of approximately 15 cm. A subsurface horizon is not always present but if so is a reddish yellow (5YR 6/6 m) clay loam. Both surface horizons contain abundant quartz gravel.

Subsoil:

The subsoil begins sharply at approximately 20 cm and is a red (2.5YR 4/8, 5/8 m) friable strongly structured heavy clay which breaks down to fine blocky peds.

At approximately 45 cm there is a gradual change to a friable mottled medium to heavy clay which is red (2.5YR 4/8 m) and mottled yellow or brown.

At the top of the subsoil, there is usually a moderate amount of quartz gravel. Deeper in the subsoil the amount of quartz decreases. There is a slight to common amount of ironstone gravel.

3.2.2 Soil group # 6

Northcote Notation: Dy 3.12, .22, .32

Occurrence: On the lower slopes of the hills in both areas.

Generalised Description:***Surface soil:***

The topsoil is a brown (7.5YR 4/2, 4/4 to 10YR 4/3 m) friable fine sandy loam to clay loam of approximately 15 cm depth. This grades sharply into a subsurface horizon which is either yellowish red (5YR 5/6 m) or sporadically bleached with light yellowish brown (10YR 6/4 m) or very pale brown (10YR 7/4 m). This horizon is fine sandy loam to fine sandy clay loam in texture and is approximately 15 cm deep. There are usually trace amounts of ironstone gravel in the topsoil and slight amounts of fine gravel in the subsurface horizon. In Area A a subsurface horizon may not be present, in which case the surface horizon is approximately 20 cm deep and grades clearly to the subsoil.

Subsoil:

At approximately 30 cm there is usually a clear change to a friable medium to heavy clay. It is yellowish red (5YR 5/8 m) with a pale brown (10YR 6/3 m) or yellowish brown (10YR 6/6, 6/8 m) mottle and in Area A may be whole coloured brown (7.5YR 5/6 m) or brownish yellow (10YR 6/6 m).

At approximately 50 cm the subsoil becomes a yellow (10YR 7/6, 7/8 m), with a red (2.5YR 4/8 m) mottle, medium to heavy clay which is friable when moist and strongly structured, breaking down to fine blocky peds. The deeper subsoil may become firmer in consistence at approximately 80 cm, and is light brownish grey (10YR 6/2 m) to light yellowish brown (10YR 6/4 m) with a yellow (10YR 7/6, 7/8 m) and red (2.5YR 4/8 m) mottle.

In some parts of Area B the top of the subsoil contains common to moderate amounts of quartz gravel or usually trace to slight amounts of ironstone gravel which may become common to moderate at approximately 60 cm.