

PRELIMINARY REPORT ON THE SOILS OF THE BOORT IRRIGATION AND WATER SUPPLY DISTRICT AND PART OF THE WEST LODDON WATER SUPPLY DISTRICT

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General Features of Soils, Topography and Vegetation

The soils of the Boort-West Loddon area are mostly grey and brown soils of heavy texture, red-brown earths, and Mallee soils; but there are also transitional types and swamp soils. In all forty-three soil types have been recorded.

Considering each district separately, the distribution of the soil groups is as follows:-

In the Boort Irrigation District, the soils are mainly grey and brown soils of heavy texture derived from Recent fine sediments. These soils occupy treeless plains in the north, except for areas of black box woodland in the lower-lying situations; south of Lake Leaghur the woodland occurrences are more extensive. Red-brown earths forming from similar and slightly coarser materials occur with grey and brown soils of heavy texture in the southern portion of the District. Mallee soils are not extensive and except for transitional types have not been irrigated. These soils occur on relatively elevated, undulating country in the Meering-Koorangie area.

The red-brown earths are probably the most extensive soils in the West Loddon District (considering only that part covered by soil survey). South of the Boort Irrigation District in the Mysia-Fernihurst area, the red-brown earths carry grey box-casuarina woodland and intermingle with grey and brown soils of heavy texture, some of which carry black box. The soils in this part are forming on Recent fine alluvium and the topography is relatively flat. Passing westward of Mysia, the flat topography gives way to a higher and undulating landscape which continues northward to Woolshed Swamp and Boort township. Here the soils are red-brown earths forming on moderately coarse Pleistocene sediments. These soils also fringe the Western Main Channel in its course west of Boort. In the vicinity of Boort, both to the west and to the north, the country is considerably broken by old lake and lunette formations and the soils are mixed swamp types and unclassified soils, but passing further west red-brown earths predominate as the topography becomes generally flat. The uncleared vegetation is mainly grey box, casuarina, and some mallee. The red-brown earths give way to fairly extensive areas of Mallee soils in the extreme west of the surveyed area. Red-brown earths derived from Pleistocene materials occupy the undulating highland in the Barraport-Leaghur region while north of Lake Leaghur are principally grey and brown soils of heavy texture developed on Recent fine sediments.

The Soil Types and their relation to Irrigation

In a general way the red-brown earths are more suited to irrigation of pastures than the Mallee soils and the grey and brown soils of heavy texture. However, in addition to the character of the soil profile, factors such as inherent salinity, liability to flooding, accessibility to water supply and macro and micro-relief are important in the utilisation of the soils to irrigation. These factors assume varying degrees of importance among the individual soil types and are considered hereunder in relation to each type, while for easy reference the information is summarised in an attached table. The assessment of the various factors should be interpreted as follows: **Permeability** is stated to be high, moderate or low and is a rough assessment of the probable infiltration characteristics of the soils under irrigation. None of the soils is highly permeable, although some are indicated as relatively so. Also cracking in some of the heavy soils of low permeability may raise this estimate in practice.

Salinity is assessed tentatively since the data have not been examined critically in relation to the individual soil types. Based on the % salt (NaCl) at 2-3 ft, low = less than 0.15%, moderate = 0.16-0.30%, high = 0.31-0.50%, very high = greater than 0.50%. **Flooding** refers to liability to flooding from the Loddon River or its distributaries. **Commandability** is assessed from general topographic considerations without reference to contour levels. **Macro-relief** describes the topography in general terms. Broad, flat areas, with or without trees are referred to as plain. There may be only slight differences in level between low and high plain.

Mallee Soils

Barraport sandy clay loam. A shallow surface overlies medium clay subsoil. It occurs on high gentle slopes and is sometimes crabholey. Salinity is moderate. The area involved is very small and it is doubtful whether it is commandable.

Coombatook series. These soils are situated on flats, often extensive, between rises, and on flat marginal areas between the rises and the grey soils of heavy texture. They occur principally in the Meering-Koorangie area and have been irrigated to some extent. They are not liable to flooding and both the macro- and micro-relief is favourable for irrigation layout. Soil salinity is low. **Coombatook sandy loam** has about 6 inches of light surface overlaying. Sandy clay subsoil to 16 in. followed by heavier textures. **Coombatook sandy clay loam** is similar but a degree heavier in the surface and immediate soil.

Marmal series. The Marmal series is restricted to the area west of Boort in the West Loddon District. This series appears suitable for development under irrigation. The soils occur on a level or, less frequently, on a gently sloping topography. All, or most of the soils appear to be commandable and should be easily laid out under irrigation. They are not liable to flooding. Soil salinity is low to moderate and should not be a hazard under rational irrigation practices. Permeability of the soil profile should be satisfactory. **Marmal loam** has about 6 in. of surface soil with a light clay subsoil; **Marmal clay loam**, besides being heavier and slightly shallower in the surface than Marmal loam, tends to medium clay textures in the subsoil.

Terrappee clay loam. This type should be suitable generally for irrigation. Terrappee clay loam occurs with the Marmal series in the area to the west of Boort; but is found on broad flat areas at slightly lower levels in the topography; it is not subject to flooding. The micro-relief may be crabholey but not sufficiently to interfere with irrigation lay-outs. Soil salinity is low to moderate and the permeability of the profile is probably moderate or low. About 3 in. of surface soil overlies heavy clay.

Types A to F. These soil types are individually of small extent and are all found on the mallee fringe in the Meering-Koorangie area. They occur on gentle or flat slopes, have a low salt status and high to medium permeability. Some situations may be above supply level, but, where commandable, the soils have been irrigated successfully.

Red-brown Earths

Catumnal series. This series occupies the slightly higher levels of generally flat to gently sloping country to the west of Boort. It is also found on the lower slopes of lunettes in this area. Originally the vegetation was grey box-casuarina woodland. The occurrence is fairly large and should provide some of the best soils for irrigation in the West Loddon District. The soils are almost wholly commandable, are not subject to flooding, have a low to moderate

inherent salinity, while the soil profile should have satisfactory infiltration characteristics. **Catumnal loam** is a brown soil with about 6 in. of surface overlying medium clay. **Catumnal clay loam** is similar except for the heavier surface.

Tumnal Clay Loam. This soil type occurs in slight depressions in association with the Catumnal series. Its extent is now large and it can be considered with Catumnal clay in its relation to irrigation.

Wychitella series. The soils of this series are situated in the west Loddon District to the south-west of Boort. The topography is relatively high and undulating consequently not all occurrences may be commandable and some may have unsuitable slopes for watering; however generally slopes appear to be moderate to gentle. The soils are of low salinity and probably of fairly high permeability. The presence of large amount of ironstone chips in the surface soils is characteristic but this does not appear to hinder cultivation of the soils for dry-farming purposes. However possibly some situations may be too stony for lay-out under irrigation. The soils are underlain by soft sandstone which may restrict downward penetration of water and be conducive to seepage on lower slopes under irrigation, but this hazard cannot be assessed accurately. The soils may have drawbacks from the point of view of chemical fertility because of their high iron content. Dry farming experience should be a guide to this factor. The soils adjoin the western main channel and because of proximity to supply their irrigation would be desirable, but further information on the factors mentioned is desirable first. **Wychitella loam** occupies the crests of rises and upper slopes. It has about 9 in. of red-brown sandy loam containing much angular ironstone fragments, overlying red-brown medium or light clay, with sandstone at about 48 in. A "shallow phase" has sandstone before 36 in. **Wychitella clay loam** occurs on the lower slopes and in the depressions between rises. The surface is slightly shallower and the texture of the profile is heavier than in Wychitella loam.

Woolshed series. This series occurs on the crests and gentle to moderate slopes of relatively high land south, west and north of Boort. All occurrences are in the West Loddon District. Soil characteristics such as salinity and permeability are satisfactory for irrigation but topography sets a limit to the utilisation of the soils, particularly of the Woolshed sandy loam. Some occurrences are above supply level while others may have unsuitable slopes. **Woolshed sandy loam** is the lightest of the extensive soil types. This soil type has approximately 10 in. of surface above a sandy or light clay. **Woolshed loam** occurs on the lower slopes and is a degree heavier in the soil profile.

Woolappee clay loam is situated in broad depressions between rises of Woolshed soils at the base of some slopes of Wychitella loam. The soils should be suitable for irrigation. They are commandable and not subject to flooding. Salinity is low to moderate while permeability should be satisfactory. Surface depth is about 4 in. and texture of the subsoil is heavy clay.

Lyndger series. These soils occur in the south east of the Boort Irrigation District and extend into the adjoining portion of the West Loddon District. Their situation is on very low rises and they carry grey box and casuarina in uncleared areas. The soils have been irrigated satisfactorily in the Boort Irrigation District and should be suitable for extended irrigation. However, salt contents are moderate to high and care will be necessary. Water penetration should be good. Probably all situations are commandable and none is subject to flooding. **Lyndger fine sandy loam** is a very restricted soil type. **Lyndger loam** has 3 – 4 in. of surface overlying a heavy clay subsoil which passes to light clay below 24 in.

Mysia series. Soils of this series intermingle with the Lyndger series in the south-east of the Boort District. They are more extensive in the West Loddon District, occurring extensively between Woolshed Swamp and Mysia and also between the Kinypanial Creek and the Loddon River. The soils are commandable and not subject to flooding. Salt contents reach moderate, and occasionally high levels. The water properties of the soils appear satisfactory. The potentialities of the soils under irrigation are good and equal those of the Catumnal series apart from their somewhat higher salt level. **Mysia fine sandy loam** is of unimportant extent. Mysia loam is a brown soil of 4-6 in. depth in the surface; the subsoil is heavy clay passing to light clay.

Myella loam is associated with the Mysia series as fairly extensive areas of lower situation and shallow depressions. The vegetation originally was grey box on the broader situations and black box in the depressions. The soils are commandable and not subject to flooding;

the are of moderate salinity while their infiltration characteristics are likely to be moderate to low. The surface is shallow (3 inches) and the subsoil heavy. The micro-relief may be weakly crabholey.

Type G occurs west of Boort as low rises in areas of the Catumnal series. The soils are lighter than Catumnal loam. They can be considered with that soil type in relation to irrigation.

Type H. This is a very restricted soil type occupying low situations in association with the Woolshed series. The soils should be suitable for irrigation.

Grey and Brown Soils of Heavy Texture

Boort clay is found on black box woodland areas between Lake Leaghur and Boort. The topography is flat but sometimes has a slightly crabholey micro-relief. Soil salinity is low to moderate and although the profile is heavy, water penetration is apparently satisfactory, since this soil type has been utilised fairly extensively for irrigation. It appears to be the most attractive of the heavy soils. All situations are commandable. Although low-lying, the type is not generally subject to flooding; however a few situations are within the influence of high floods from the Loddon River. The soil profile shows a well structured light clay overlying a heavy clay subsoil at 6 in.

Minmindie clay is associated with Boort clay as very low rises carrying casuarina. The soils have an attractive structure and can be considered with Boort clay in relation to irrigation. Their extent is small.

Macorna clay. This soil type has been recorded previously in two phases, viz., red-brown and brown in the soil survey of the Kerang mapping of the soils in the present survey, but have been included together in the final soil map. Actually most of the soils belong to the brown phase. They occur on both sides of the Loddon River in the Appin area and further northward. The soils occupy the highest elevations of practically flat and treeless plains. They are very commandable and not subject to flooding. Soil salinity is very high and the soil profile is heavy from the surface down but this is offset by good structural qualities, possibly due to high soluble salt content. In spite of adverse characteristics, the soils have been utilised for an extensive type of irrigation in the Kerang Irrigation District. But the soils require careful management and with intensification of irrigation on these soils their salinity hazards will be increased. Macorna clay must be regarded unfavourably for irrigation and caution should be exercised in increasing water supplies to it.

Kerang clay. This type includes both the grey-brown and grey phase as mapped in the Kerang Irrigation District, but these have not been delineated on the present soil map. Kerang clay occurs with Macorna clay in the northern section of the Boort Irrigation District but is more extensive. It is not generally subject to flooding, but some marginal situations towards the Loddon may be within the influence of flooding from that river. Soil characteristics such as salinity and permeability are similar to those of Macorna clay and the soil type in relation to irrigation.

Tragowel clay. Three phases of Tragowel clay have been described in the earlier survey of the Kerang area but only "self mulching" phase can be compared with Tragowel clay as now mapped. This soil type is widely distributed along the Loddon River in the Boort Irrigation District. It occupies low situations carrying lignum and is very subject to flooding. The micro-relief is strongly crabholey, and may make grading difficult. Although some situations are appreciably saline, the type generally has a low salt status. The soil profile is heavy but has an attractive structure; inherent fertility is good. The type has been irrigated successfully already, and it seems safe to extend irrigation into the less saline occurrences wherever practicable. However, liability to flooding is a serious disadvantage and this will determine largely the future utilisation of the present unirrigated areas.

Wandella clay is an extensive soil type and includes most of the lowest situations in the topography in the Boort Irrigation District; occurrences are relatively few in the West Loddon District. The soils are liable to flooding, but were probably flooded much more in the past than at the present time. The type occurs in drainage ways, terminal drainage basins, and on extensive areas of low-lying black box woodland, in fact it may well be included with the swamp soils, although only subject to inundation intermittently. The micro-relief is crabholey and the profile heavy; the type frequently resembling Tragowel clay in these characteristics;

however the structure of the profile is much inferior. Some, but not all, occurrences of the flooded phase of Tragowel clay as mapped at Kerang previously are similar to Wandella clay. Soil salinity is low. Situation precludes much of the Wandella clay from irrigation, but intermittent irrigation has been practised in some areas; there appears to be no reason why it should not extend into these.

Yando clay occurs in the area extending from Lake Yando to Fernihurst, but the areal extent is small. The soil is heavy, but with a friable profile similar to that of Tragowel clay. It is also crabholey and has a low salt status. Probably most of the type is not subject to flooding and could be irrigated.

Fernihurst clay loam is found as large areas of treeless plain in the Mysia-Fernihurst portion of the West Loddon District. In the uncultivated state, large flat mounds of crabholey complex may be apparent, but these are not closely spaced and should not complicate grading for irrigation. All situations are commandable and none is subject to flooding. The surface soil is 3 or 4 in. deep and overlies a moderately structured clay. The profile has some resemblances to Macorna clay but is less saline; however the level is in the moderate to high range. The potentialities of Fernihurst clay loam under irrigation appear to be better than those of Macorna clay, but are not as good as those of the red-brown earths.

Kinypinial clay loam. This soil type is associated with Fernihurst clay loam, and, in the nature of the soil profile and degree of salinity, has the same relationship to Kerang class as Fernihurst clay loam has to Macorna clay. Most areas are treeless, but some of the lower situations carry black box. The soils are all commandable and generally not subject to flooding; some are crabholey. The type should be considered with Fernihurst clay loam in relation to irrigation. Its salinity level appears to be generally lower (moderate range) but its infiltration characteristics should be similar.

Type J. This is a very minor type which need not be considered separately from accompanying soil types.

Swamp soils

Loddon silty clay loam is found in areas carrying red gum and black box adjacent to the Loddon River and is very susceptible to flooding. The soil profile is heavy with low infiltration characteristics. Soil salinity is low. It is unlikely that any occurrences would be considered for irrigation because of its topographic situation.

Swamp Soils. Types 1-5. These soil types occupy drainage lines, depressions and old lake-beds. Most of the soils carry black box or red gum; cleared areas are few. Very few situations need to be considered for irrigation. **Type 1** is not extensive and is found principally in the Fernihurst area. It is characterised by light textures in the deep subsoil. **Type 2** and **Type 3** also occur in the south-eastern portion of the West Loddon District. Superficially these types resemble Wandella clay, although Type 2 has a lighter surface. Liability to flooding will place a limit on the extent to which these soils can be considered for irrigation. **Type 4** is a heavy soil frequently inundated and not suitable for irrigation. **Type 5** includes the lake-bed soils not classified as Wandella clay. Some have been cultivated and a few have been irrigated. Soil salinity is usually moderate, but is high in a few of the soils. This factor and accessibility should determine whether the soils can be considered for irrigation.

The relation of the soil types to irrigation is summarised as follows:-

A. Inaccessible Soil Types

Barraport sandy clay loam	?
Woolshed sandy loam and loam	- part
Wychitella loam	- part
Types A – F	- part
Swamp soil, Type 5	- part
Unclassified high areas.	

B. Accessible Soil Types

1. **Soils without specific problems.** It should be possible to manage these soils satisfactorily under irrigation although all factors may not be ideal.

Boort clay
Catumnal loam and clay loam
Coombatook sandy loam and sandy clay loam
Marmal loam and clay loam
Minmindie clay
Myella clay
Mysia fine sandy loam and loam
Terrappee clay loam
Tragowel clay - part
Tumnal clay loam
Woolappee clay loam
Woolshed sandy loam and loam - part
Wychitella loam
Wychitella clay loam
Yando clay - part
Types A – F - part
Types G – H - part

2. **Soils with specific problems.** The underlying soil types need not be excluded from irrigation entirely but the specified factors may react against their satisfactory irrigation making a special approach necessary.

(i) **High salinity**

Fernihurst clay loam
Kerang clay
Kinypinial clay loam ?
Lyndger fine sandy loam and loam
Macorna clay
Swamp Soil Type 5 - part
Type J

(ii) **Low permeability**

Fernihurst clay loam ?
Kerang clay
Kinypinial clay loam ?
Loddon silty clay loam
Macorna clay
Wandella clay
Swamp Soils Types 2-5
Type J

(iii) **Liability to flooding**

Loddon silty clay loam
Tragowel clay - part
Wandella clay - part
Yando clay - part
Swamp Soils Types 1-4

Soil Salinity

A tentative assessment of the salinity level of the individual soil types has been indicated previously. An accompanying salt map on a scale of 1 inch to the mile shows the distribution of salt over the surveyed area. The locations of soil samples taken from the 2 – 3 ft. zone in the soil profile which have been analysed for salt content are shown also. The analytical data are grouped in four levels, viz., less than 0.15%, 0.16% - 0.30%, 0.31% to 0.50% and over 0.51% NaCl. Areas of the lowest category are reasonably free from salt hazard and probably those of the second group will not give trouble with attention to irrigation practices. But the risk is greater with soils of the third group and more so in the last category; probably these areas should not receive more than limited water supplies.

Summary of major characteristics of the Soil Types

	Profile				Macro-relief	Micro-relief	Flooding	Commandability	Locality
	Surface	Subsoil Texture	Permeability	Salinity					
Barraport sandy clay loam	3 in	Medium or light	Moderate	Moderate	High gentle slopes	Flat or crabholey	Not liable	Doubtful	Barraport area
Boort clay	6 in light clay	Heavy clay	Moderate to low	Low to moderate	Low plain	Slightly crabholey	Not liable	Commandable	Central Boort I.D.
Catumnal loam	6 in	Medium clay	Moderate	Moderate	High plain	Flat	Not liable	Commandable	Central West Loddon D
Catumnal clay loam	6 in	Medium clay	Moderate	Moderate	High plain	Flat	Not liable	Commandable	Central West Loddon D
Coombatook sandy loam	6 in	Sandy or clay	Moderate	Low	Broad hollows	Flat	Not liable	Commandable	Northern Boort I.D.
Coombatook sandy clay loam	8 in	Light or medium clay	Moderate	Low	Broad hollows	Flat	Not liable	Commandable	Northern Boort I.D.
Fernihurst clay loam	4 in	Heavy clay	Low	Moderate to high	Plain	Flat or mod. crabholey	Not liable	Commandable	S-E West Loddon D.
Kerang clay	0-1 in clay loam	Heavy clay	Low	High to very high	Low plain	Flat or weakly crabholey	Not liable	Commandable	Northern and Central Boort I.D.
Kinypinial clay loam	3 in	Heavy clay	Low	Moderate	Low plain	Flat or mod. crabholey	Not liable	Commandable	S-E West Loddon D.
Loddon silty clay loam			Low	Low	Depression	Flat	Liable	Commandable	Eastern Boort I.D.

	Profile				Macro-relief	Micro-relief	Flooding	Commandability	Locality
	Surface	Subsoil Texture	Permeability	Salinity					
Lyndger fine sandy loam	6 in	Medium clay	Moderate	Moderate to high	Very low rises	Flat	Not liable	Commandable	E and S-E Boort I.D.
Lyndger loam	4 in	Medium clay	Moderate	Moderate to high	Very low rises	Flat	Not liable	Commandable	E and S-E Boort I.D.
Macorna clay	0-2 in clay loam	Heavy clay	Low	Very high	Plain	Flat	Not liable	Commandable	Northern Boort I.D.
Marmal loam	6 in	Light clay	Moderate	Low to moderate	Low rises	Flat	Not liable	Commandable	Western West Loddon D.
Marmal clay loam	4 in	Medium clay	Moderate	Low to moderate	Plain	Flat or weakly crabholey	Not liable	Commandable	Western West Loddon D.
Minmindie clay	4 in light clay	Medium clay	Moderate	Low to moderate	Low plain	Flat or slightly crabholey	Not liable	Commandable	Central Boort I.D.
Myella loam	3 in	Heavy clay	Moderate	Moderate	Low plain	Flat or slightly crabholey	Not liable	Commandable	S-E Boort I.D. S and SE West Loddon
Mysia fine sandy loam	6 in	Heavy clay	Moderate	Moderate	High plain	Weak crabholey	Not liable	Commandable	S-E Boort I.D. S and SE West Loddon
Mysia loam	5 in	Heavy clay	Moderate	Moderate	High plain	Weak crabholey	Not liable	Commandable	S-E Boort I.D. S and SE West Loddon
Terrappee clay loam	3 in	Heavy clay	Low to moderate	Moderate	Low plain	Mod. crabholey	Not liable	Commandable	W West Loddon D.

	Profile				Macro-relief	Micro-relief	Flooding	Commandability	Locality
	Surface	Subsoil Texture	Permeability	Salinity					
Tragowel clay	Friable heavy clay	Friable heavy clay	Mod to high	Low to moderate	Low plain	Mod to very crabholey	Liable	Commandable	N-E, E, S-E Boort I.D.
Tumnal clay loam	6 in	Heavy clay	Moderate	Moderate	Slight depression	Slightly crabholey	Not liable	Commandable	Central West Loddon D.
Wandella clay	4 in heavy clay	Heavy clay	Low	Low	Low plain and depression	Mod to very crabholey	Liable	Commandable	All Boort I.D.
Woolappee clay loam	4 in	Heavy clay	Mod to low	Moderate	Broad depressions	Flat	Not liable	Commandable	S-W, N-W, West Loddon D
Woolshed sandy loam	10 in	Sandy or light clay	High to moderate	Low	Undulating highland	Flat	Not liable	Partly not commandable	S-W, N-W, West Loddon D
Woolshed loam	7 in	Sandy or light clay	Moderate	Low	Lower slopes of highland	Flat	Not liable	Partly not commandable	S-W, N-W, West Loddon D
Wychitella loam	9 in	Friable light clay	High	Low	Undulating highland	Flat	Not liable	Commandable	S-W West Loddon D.
Wychitella clay loam	6 in	Friable medium clay	Moderate	Low	Lower slopes and depressions	Flat	Not liable	Commandable	S-W West Loddon D.
Yando clay	Friable heavy clay	Friable heavy clay	Mod to high	Low	Low plain	Crabholey	Partly liable	Commandable	Central and S-E Boort I.D. S-E West Loddon D.
Types A-F	6-12 in Various textures	Various	High to mod	Low	Gentle slopes	Flat	Not liable	Partly not commandable	N. Boort I.D.

	Profile				Macro-relief	Micro-relief	Flooding	Commandability	Locality
	Surface	Subsoil Texture	Permeability	Salinity					
Type G	6 in sandy loam	Medium clay	High to mod.	Low	Low rises	Flat	Not liable	Commandable	Central West Loddon D.
Type H	10 in sandy clay loam	Medium clay	Moderate	Low	Broad depressions	Flat	Not liable	Commandable	S-E West Loddon D.
Type J	1 in clay loam	Heavy clay	Low	High	Plain	Flat	Not liable	Commandable	Central Boort I.D.
Swamp Soils Type 1	6 in clay loam	Heavy clay	Moderate	Low	Depressions	Flat	Liable?	Commandable	S-E West Loddon D.
Type 2	6 in loam or clay loam	Heavy clay	Low	Low	Depressions	Flat or crabholey	Liable?	Commandable	S-E West Loddon D.
Type 3	6 in clay	Heavy clay	Low	Low	Depressions	Flat or crabholey	Liable?	Commandable	S-E West Loddon D.
Type 4	Heavy clay	Heavy clay	Very low	Low	Depressions	Flat	Liable	Commandable	N-E Boort I.D.
Type 5	Clay loam or clay	Heavy clay	Low	Low to high	Old lake beds	Flat or crabholey	Not liable	Commandable	Central and Northern Boort I.D. Central West

Notes:

Permeability – This is a rough assessment of the probable infiltration characteristics of the soils under irrigated pasture. None of the soils is highly permeable although some are indicated as relatively so. Also, cracking in some of the heavy soils of low permeability may raise this estimate.

Salinity – The assessments are tentative since the data have not been examined critically in relation to the individual soil types. Based on the % salt (NaCl) at 2-3 ft, low = less than 0.15%, moderate = 0.16 – 0.30%, high = 0.31 – 0.50%, very high = greater than 0.50%

Micro-relief – Broad flat areas, with or without trees are referred to as plain. There may be only slight differences in level between low and high plain.

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