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Soils and land suitability of Selkirk Section Burdekin River Irrigation Area North Queensland

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Land Use and Fisheries

DPI QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

Queensland Government Technical Report

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Department of Primary Industries
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Summary

A high intensity survey (scale: 1:25 000) and land suitability assessment were undertaken in Selkirk Section, the last commandable area in the Burdekin River Irrigation Area. The primary purpose of the survey is to provide design engineers with detailed land resource information and an assessment of land suitability for irrigation farm design.

Selkirk Section covers 5 596 ha and is located around the West Barratta Creek system.

A total of 550 unique map areas (UMAs) with 88 soils, phases and variants were mapped over two landscape units. The soils of landscape unit 2 (Burdekin and Haughton River alluvial plains) occupy 3 414 ha or 60% of the area. The most extensive soils are the cracking clays which are associated with the drainage system of Barratta Creek. Sodic duplex soils of this landscape unit occur along the fringes of the cracking clays. The other 40% of the area is covered by soils of the landscape unit 6 (Miscellaneous alluvial landforms). The complexity of the alluvial deposits in this landscape unit resulted in the occurrence of soils ranging from strongly sodic duplex to non sodic duplex soils.

Soil distribution, distinguishing morphological characteristics and analytical data of the soils mapped are presented in this report. Seventeen representative soil profiles were analysed and the results used to discuss the chemical and physical properties of the major soils of the survey area as well as their effects related to management.

Each unique map area (UMA) was assessed as to its suitability for furrow irrigation of sugar-cane, grain crops, and small crops, low volume irrigation of mangoes, and flood irrigation of rice. The land suitability assessment based on the land resource information collected indicates the total area suitable for sugar-cane is 4 446 ha, for maize 4 291 ha, for rice 3 184 ha, for capsicums 1 973 ha and mangoes 1 155 ha. A total of 730 ha of the area is unsuitable for **all** crops considered because of either extreme sodicity, poor internal drainage, excessive slope, wetness, severe existing erosion or complex soil distribution.

A soils map (scale 1:25 000) and a land suitability map (scale 1:75 000) indicating the extent of land suitability classes for the above crops accompany this report. Soil and land limitations related to the crops or crop groups under appropriate irrigation methods are discussed in detail. Erosion gullies associated with the tributaries of the West Barratta Creek is the major constraint in development. Other potential problems in land development and management of the area are also highlighted in the report.

1. INTRODUCTION

The Queensland Department of Primary Industries (DPI) is undertaking a series of high intensity surveys at a scale of 1:25 000 throughout the Burdekin River Irrigation Area (BRIA) in North Queensland. The present survey area, Selkirk Section, is the last commandable irrigation area on the left bank of the Burdekin River. The survey area comprises part of the northern portion of the broadscale (1:100 000) soil survey of the *Lower Burdekin River - Barratta Creek - Haughton River Area, North Queensland* (Reid and Baker 1984). The purpose of this survey is to provide the design engineers of Water Resources with detailed land resource information and an assessment of land suitability for irrigation farm design. This information is also provided to prospective farm purchasers and subsequent landholders, extension officers of QDPI and Bureau of Sugar Experiment Station (BSES), and other agribusiness groups to assist with farm development planning and crop management.

The Selkirk Section covers 5 596 ha. It is located around the West Barratta Creek system. The northern boundary is the North Coast Railway. The location of the area is shown in Figure 1.

This report contains detailed soils information and a detailed assessment of suitability for irrigated crops. It highlights the unsuitable areas for irrigation farm design and the constraints in the development of the area. A soils map (at 1:25 000 scale) and a land suitability map (at 1:75 000 scale) for five commonly grown crops are in the backpocket of this report.

2. PHYSICAL ENVIRONMENT

2.1 Climate

Selkirk Section is in the dry tropics and has distinct wet and dry seasons. The dry season spans from April to November.

The average annual rainfall at Ayr from 1887 up to 1992 is shown in Table 1. Most of the rain falls between December and March. Rainfall intensity and duration is highly variable.

The rainfall probability at 10%, 50% and 90% of years during the period 1887 to 1992 is also shown in Table 1. Ayr is rainless for 90% of years for the months between April and October.

The mean maximum and minimum temperatures are shown in Table 2. The maximum temperature occurs in December to January at 32-33°C. The minimum temperature occurs in June to July at 13-14°C. Frosts (screen temperatures <2°C) or heat waves (maximum screen temperatures >38°C) are rare. Mean pan evaporation varies from 3-4 mm per day in March to August to 5-6 mm per day in October to January.

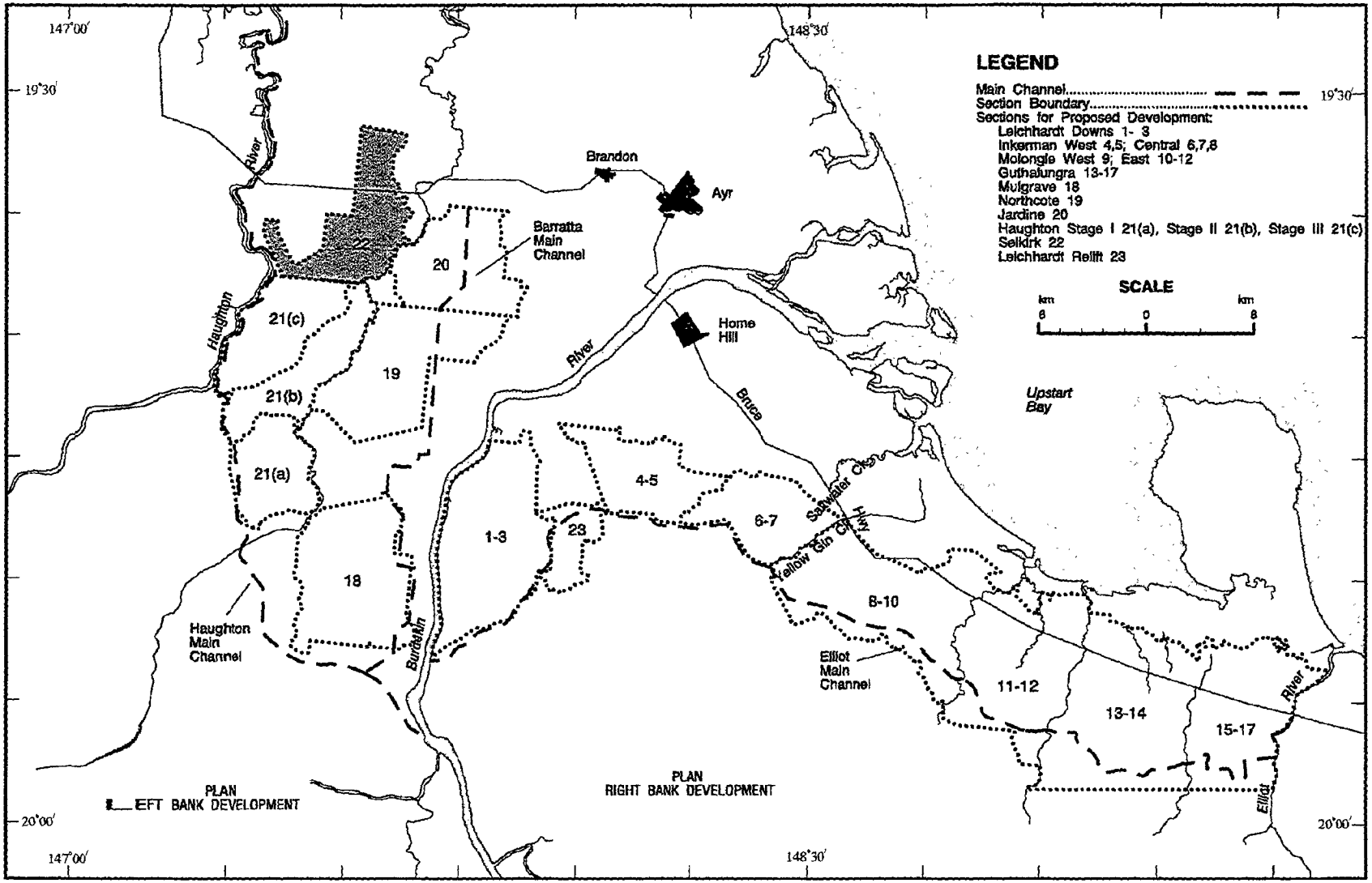

Figure 1. Burdekin River Irrigation Area general layout and location of Selkirk Section (shown by shading).

DPI Ref No 94-SLK-I-A4-3009

Table 1. Summary of rainfall data and rainfall probability at Ayr*, 1887 to 1992

Rainfall	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Mean	266	264	187	64	38	32	19	14	21	23	44	114	1090
Median	205	223	143	33	18	14	6	3	3	8	23	69	1045
Std. dev.	232	223	158	93	57	44	40	23	51	35	55	124	444
Lowest rain	8	3	2	0	0	0	0	0	0	0	0	0	261
Higest rain	954	1681	689	524	422	223	315	104	419	237	317	738	2432
Mean raindays	11	11	9	5	4	3	2	2	2	3	4	7	63
No. of years	106	106	106	106	106	106	105	105	105	105	105	105	105
Probability of rainfall													
90% of yrs>	37	33	15	0	0	0	0	0	0	0	3	11	525
50% of yrs>	205	223	143	33	18	14	6	3	3	8	23	69	1045
10% of yrs>	581	519	425	164	99	93	54	58	60	71	124	270	1709

Table 2. Temperature and Evaporation data at Ayr*, 1887 to 1992

Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Maximum	32.8	32.1	31.5	30.0	27.7	25.8	25.5	26.9	28.5	30.2	32.0	32.5
Mean Minimum	23.0	32.9	21.9	19.4	16.4	13.5	12.5	14.1	16.3	19.0	21.4	22.1
Pan Evaporation (mm/day)	5.3	4.3	3.9	3.8	3.3	3.3	3.6	3.9	4.6	5.1	5.6	5.7

2.2 Geology and landscape units

The alluvial deposits, from which the present soils and landform pattern are derived, were laid down in the Pleistocene/Holocene period, 4 500 to 7 000 years ago (Hopley 1970; Reid and Baker 1984). The detailed surface features have since been altered by fluvial geomorphology.

The terrain in the area is characterised by two landscape units: Landscape Unit 2 (LU2) comprises low-lying, very gently sloping alluvial plains of the Haughton and Burdekin Rivers while Landscape Unit 6 (LU6) consists of miscellaneous alluvial landforms, river levees, relict levees and prior streams. Landscape Unit 6 generally occupies higher landscape positions than LU2.

* Data from Burdekin Shire Council, Ayr

The mainly clayey alluvial sediments of LU2 were deposited in a low energy environment of slow-moving deep waters, which later developed to cracking clays and sodic duplex soils. The lighter texture surface in the sodic duplex soils is the result of a later deposition of coarser material in a high energy environment. The alluvial sediments of LU6 are believed to represent a later alluvial cycle where another sequence of deposition was laid down. The lighter texture surface in the duplex soils is possibly due to deposition in a high energy environment which is probably caused by the lowering of sea water level. Most soils of LU6 are well drained. There are substantially more non sodic soils and less sodic soils as compared to the LU2 soils. However, there are some cracking clays and non-cracking clays in small depressions that are relicts of prior stream deposits untransgressed by later alluvial activities. These soils are probably as old as the clayey soils found in LU2.

2.3 Vegetation

The vegetation was systematically recorded during the field survey. The general relationships between vegetation and soils noted in Reid and Baker (1984) hold true for this area. A substantial area immediately south of the Bruce Highway has been logged and regrowth of corkwood wattle, *Acacia bidwilli* is common. Appendix I gives the common names and scientific names of the species recorded during the soil survey.

A large portion of the area is medium to high woodland or open woodland. Poplar gum *(Eucalyptus platyphylla)* is the most common tree and occurs on both LU2 and LU6. Carbeen *(Eucalyptus tessellaris)* is more common on LU2, particularly on cracking clays. Broad-leaf tea-tree *(Melaleuca viridiflora)* is common in areas subject to seasonal or prolonged waterlogging. Trees are sparse in areas of sodic duplex soils of both LU2 and LU6. In addition, indicator trees of cabbage gum *(Eucalyptus papuana)* and beefwood *(Grevillea striata)* are common on these soils.

Cocky apple *(Planchonia careya)* is common on non-sodic and well drained soils of LU6. Vegetation is tallest and most dense on well-drained soils, medium-textured soils on levees and coarse-textured soils of prior streams of LU6. Grey bloodwood *(Eucalyptus polycarpa)* is generally common on the above soils. In addition, *pandanus spp* is present on coarse-textured soils.

2.4 Hydrology

The landform and drainage pattern in the area are mainly controlled by the fluvial geomorphology of the Pleistocene/Holocene (Hopley 1970). The surface drainage in the area is facilitated by Barratta Creek and its tributaries. Most of the West Baratta Creek is generally dry, however during the wet season, the creek system serves as collecting drainage for the bulk of the area. During heavy rains gully-head erosion is substantial as evidenced by the presence of recent soil material deposited in the gully heads. In the West Barratta Creek water from rainfall is the main agent to accelerate creek wall erosion. Where the soils of the walls along the creeks are sodic, erosion would be accentuated. The tributaries of the Barratta Creek flow in a northeasterly direction. In the southeastern portion of the area, a few elongated depressions, mapped as wet phase (W) flow into the tributaries. These depressions are generally wet except in the prolong dry season. There are also a few natural ponds scattered throughout the area. These are permanently wet depressions which are not connected with the Barratta Creek drainage system, except during flood.

Significant flooding in the Barratta Creek system occurs once every three to five years (Reid and Baker 1984). Water Resources flood modelling suggests that flood once in 2 years with a duration of 12 hours and inundation <1 m occurs in the southern boundary of Selkirk. Inundation would be experienced one in 10 years for 72 hours in the south and northeastern portion below the Bruce Highway. An inundation of >2 m in the south, 1-2 m in the northeastern portion below the Bruce Highway and <1 m in the rest of Selkirk can occur at one in 50 years. The data suggest that the area in the northeastern portion, south of Bruce Highway and the southern portion are prone to flooding. The drainage design in these two areas should take this into consideration.

3. METHODOLOGY

3.1 Soil survey procedure

Rectified 1:10 000 scale colour aerial photographs were interpreted to delineate physical features such as terrain, and density and tone of vegetation. The location of pegged grids of 250 m x 100 m established by Water Resources surveyors, were then marked on the photos to ensure accurate location of field observation sites.

A free survey technique was used to establish soil boundaries. Soils, land surface features and vegetation were recorded in a systematic field survey of the area. The number of observation sites depended on the complexity of soil distribution from aerial photo interpretation and information of soils from the earlier broadscale survey. Site intensity is lowest in areas of cracking clays and most intense in the miscellaneous alluvial landscape (LU6) where soils are most variable. Detailed soil profiles were described on an average of one site per 6 hectares. This is within the maximum intensity recommended for 1:25 000 scale mapping (Reid 1988).

The field survey was conducted with a vehicle mounted with a hydraulic soil-coring rig. The soil profile, vegetation and site characteristics were recorded using the terminology of McDonald *et al.* (1984). The recorded information was later entered onto a computer using the WARIS software program (Rosenthal *et al.* 1988). Boundaries of unique map areas (UMAs) were digitised onto a geographic information system (GIS) using ARC/INFO software. The Australian Map Grid (AMG) coordinates of each observation site were recorded and added to the site description file. Representative soils of the area were sampled from soil pits and their physical and chemical properties analysed to fully characterise the major soils. Figure 2 shows the location of the soil sampling sites.

The soils and land information gathered during the soil survey were used to assess the suitability of each UMA for a range of crops and irrigated land use. Each UMA was given a number and a name, and these were added to the site description file. This links the site description file with the UMA file which contains land suitability data for each UMA. A Land Suitability map for the main crops was published at the scale of 1:75 000.

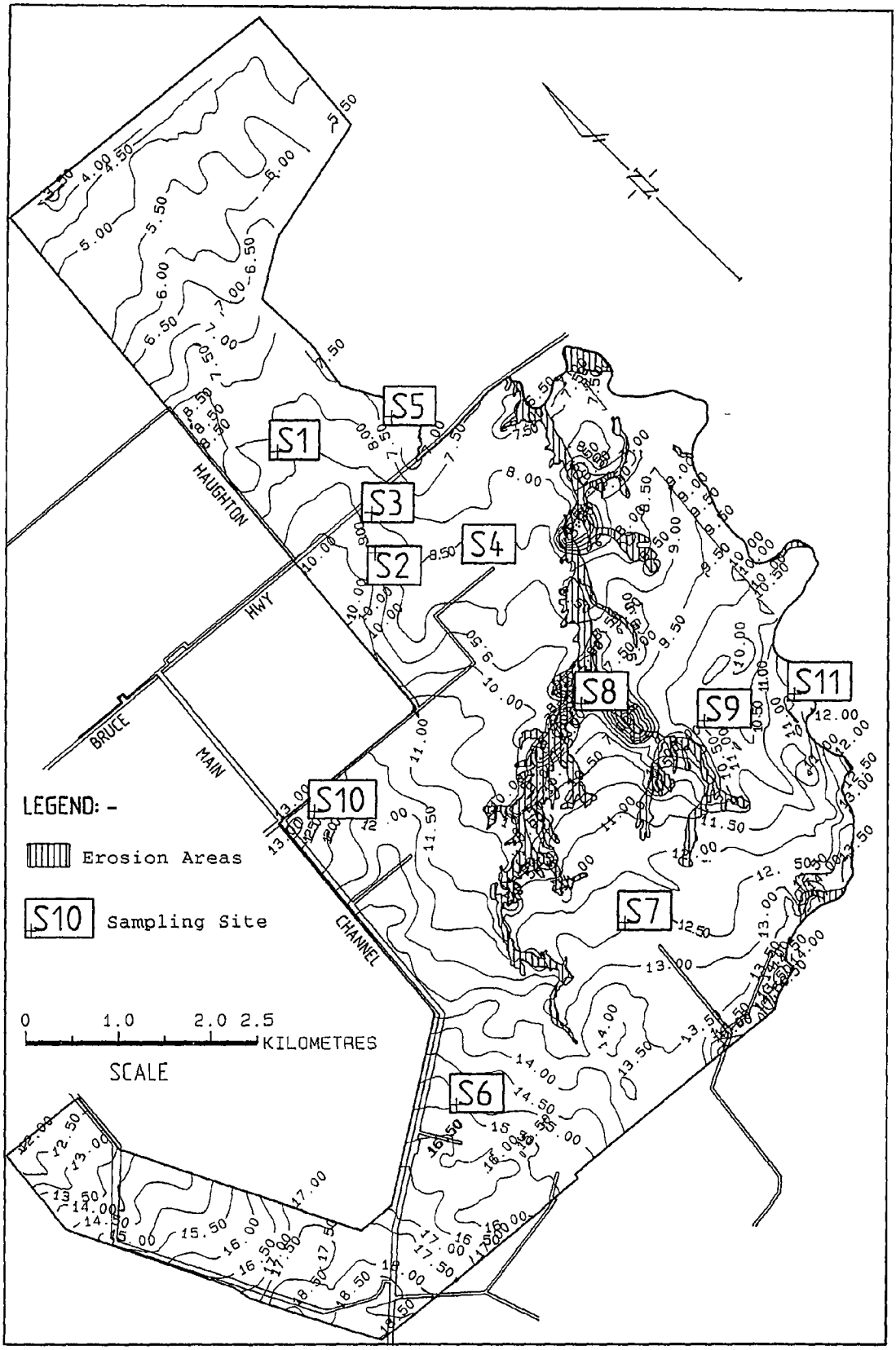

Figure 2. Contours, location of sample sites and areas of erosion in Selkirk Section, BRIA

3.2 Soil classification and mapping units

Soil classification in the BRIA uses an alphanumeric code to identify each soil type (Thompson and Reid 1982). The first number of the code indicates the landscape unit. The two letters following the number represent the appropriate subdivision of the primary profile form (Northcote 1979), and the last letter separates each soil type within the primary profile form. Soil characteristics considered important for irrigated land use and crop production were generally used as criteria for differentiating soil type. For example, code 2Ugd denotes a soil type of landscape unit 2 (Burdekin-Haughton River alluvial plain); "Ug" indicates that the soil type is a uniform-textured cracking clay, a subdivision of the primary profile form (Northcote 1979) and the last letter "d" separates this soil type from other soil types of the same landscape unit and primary profile form. The separation is based on its distinctive morphological and chemical properties. Details of the soil classification is found in Loi *et al* (1994).

This soil classification was used to classify all the soil profiles described in the area. Infrequently, where characteristics of a soil profile differ from the modal soil type it is classified as a variant of that soil type and denoted by a number after the soil code, e.g., 2Uge2. Major distinguishing characteristics of the soil types of Selkirk Section are shown in Table 3. Brief descriptions of the soil types mapped is given in the soil reference of the soils map in the backpocket of this report. Correlation of the soil types with other soil classifications is shown in Table 4.

Each occurrence of a unit within the survey area was termed a unique map area (UMA; Basinski 1978) and each allocated a number. A simple UMA consisted of a single soil type which occupied 70% or more of the UMA and was named after the soil type name, e.g. 2Uge. A complex UMA comprised two or more soil types with none occupied 70% of the mapping unit. A complex UMA was named after the two most common soil types with the dominant soil type named first, e.g. 2Uge-2Ugd. In some areas a phase of the normal soil type was used to identify a terrain feature that affected land use or management. Phases are identified by a capital letter code after the soil type, for example, 6DbcE indicates the mapping unit 6Dbc has an eroded phase(E).

4. SOILS

4.1 Soil distribution

Distribution of the various soils in the Selkirk Section is a result of the geomorphic processes which have acted on the deposits laid down in the Pleistocene/Holocene period. A total of 550 unique map areas (UMAs) with 88 soils, phases and variants were mapped over two landscape units, (LU2 and LU6). The area of mapping units and frequency of occurrence of UMAs in each mapping unit are shown in Table 5.

The soils of LU2 occupy 3 414 ha (60% of the area). The cracking clays (2Ugd, 2Uge, 2Ugc and minor 2Ugg, 2Ugh) are associated with the drainage system of the Barratta Creek, and the eastern and northern parts of the northern portion of the area. The sodic duplex soils (2Dyb, 2Dbb, 2Dbd, 2Dbe) of this landscape unit mainly occur along the fringes of the cracking clays. Some general comments on distribution of the soils of the LU2 are:

- The cracking clays are the most extensive (2 328 ha) and occur on the lowest parts of the low-lying, relatively level alluvial plains.

- The sodic duplex soils fringe the cracking clays and occur on areas that are slightly higher but still lower than areas occupied by soils of LU6.

- In some areas, sodic duplex soil type, 2Dbb occupy minor areas in association with the cracking clays

- Soils of LU2 were derived from alluvial deposits of an earlier alluvial cycle than those of LU6.

The soils of LU6 cover 2 182 ha (40% of the total area). The complexity of the alluvial deposits have caused the development of a variable range of soil types. Sodic duplex soils (6Dyg, 6Dyg2) and weakly sodic duplex soils (6Dyf, 6Dyf2, 6Drc) are the most extensive in this landscape unit. Non sodic duplex soils (6Drb2, 6Drb, 6Dbf, 6Dbc) are less extensive but are still locally important. Cracking clays (6Uga, 6Ugc), coarse textured soils (6Uca, b, c) and strongly sodic duplex soils (6Dyj) are of minor occurrence. Some general comment on the distribution of the soil types are:

- Soil types of LU6 are found in the western portion of the area. The arm-shaped area to the west is exclusively LU6 soils. There is no distinct pattern in the distribution of the LU6 soils.

- Sodic duplex soils (6Dyg, 6Dyg2) occupy 540 ha of the LU6. They are most extensive in the south western portion.

- Weakly sodic duplex soils (6Dyf, 6Dyf2, 6Drc) make up 600 ha of the area. Soil type 6Drc mainly occupies the western portion of the southern half of the area. The 6Dyf is more widespread.

- Non sodic duplex soils (6Drb2, 6Drb, 6Dbf, 6Dbc) comprising 230 ha are distributed randomly throughout the western portion of the area.

- The cracking clays (6Uga, 6Ugc) are found in narrow, closed depressions which are relict streams in LU6. The coarse-textured soil types (6Uca, b, c) occur on slightly elevated, narrow, wavy and often discontinuous ridges which are remnants of prior stream courses.

Table 3. Major distinguishing characteristics of the soils of Selkirk Section, BRIA.

Soil Type	A Horizon			B Horizon		pH at 0.3m	Depth (m) pH ≥ 8.5	D Horizon	
	Depth** (m)	Texture	Mottled= M Bleached= B	Colour**	Texture			Depth (m)	Texture
2Dba	0.1	CL	- -	B	MC	8.6	0.3	-	-
2Dbb	0.13-0.2	CL	(M)+ B	B	MC	7.2 [5.9-8.5]*	0.6,(0.3)	(0.8-1.05)	LC
2Dbb2	0.18-0.2	CL	M,B	B	MC	7.7 (7.5-7.8)	0.6	0.65	SC
2Dbc	0.22-0.32	L-CL	M,B	B	MC	5.8 [5.7-6.0]	0.9	(0.72-1.05)	SCL-FSLC
2Dbc2	0.25	LFSY	M,B	B	LMC	6.0	0.9	0.9	SCL
2Dbd	0.18-0.32	CL	M,B	B	MC	6.4 [5.8-7.3]	0.6	(0.85-1.35)	(LMC)
2Dbe	0.1-0.2	CL	M,B	B	MC	5.9 [5.7-6.0	0.9	-	-
2Dbe4	0.08	CL	M,B	B	LMC	5.9	0.9	0.8	LMC
2DbeW	0.2-0.3	CLFS	-,B	G	MC	5.7 [5.4-5.9]	-	(0.9-1.25)	(FSC)
2Dda	0.1	CLFS	-,B	G	MHC	8.0	0.6	1.35	FSLMC
2Ddb	0.08-0.1	CL	(M),B	G,Bk	MC	8.6 [8.5-8.7]	0.3	(0.65-1.3)	(SC)
2Dyb	0.12-0.2	CL	(M),B	G, (Bk)	MC	7.2 [5.8-8.7]	0.6, (0.3)	(0.65-1.35)	(LMC)
2Dyb2	0.15-0.2	CL	(M),B	G, Bk	MC	7.3 [5.9-8.3]	0.6	(0.75-1.45)	(FSC)
2Dyc	0.2-0.27	CL	(M),B	B	MC	6.6 [6.4-6.7]	0.9,(0.6)	1.05-1.1	LMC
2Ugc	0.08-0.2	LMC	(M,B)	G, (B)	MC	6.0 [5.5-6.5]	1.2, (0.9)	(1.25-1.35)	(SCL, SMC)
2Uge5	0.05-0.2	LC	-,(B)	B	MC	6.0 [5.7-6.6]	0.9, (1.2)	0.95-1.4	FSC-MC
2Ugd	0.08-0.25	LC-LMC	(M), B	G,B	MC-MHC	5.9 [5.5-6.8]	0.9, (1.2)	(1-1.58)	(SCL-MC)
2Ugd5	0.2-0.37	LC	(M), B	B	MC	5.8	0.9, 1.2	1.25-1.35	LMC-MC
2UgdW	0.1-0.2	LC-LMC	(M), B	G	MC	5.8	0.9, (1.2)	-	-
2Uge	0.05-0.25	LC, (LMC)	(M), B	G,B	MC, (LMC)	7.5 [5.6-8.8]	0.6,(0.3)	(0.65-1.4)	(FSC)

Table 3. (Continued)

Soil Type	A Horizon			B Horizon		pH at 0.3m	Depth (m) pH ≥ 8.5	D Horizon	
	Depth** (m)	Texture	Mottled= M Bleached= B	Colour**	Texture			Depth (m)	Texture
2UgeW	0.08-0.15	LMC	-,B	G	MC	7.4 [5.9-8.5]	0.6	-	-
2Ugf	0.05-0.15	MC	(M) -	G	MHC	5.8 [5.6-6.3]	1.2	(1.15)	(FSLC)
2Ugf2	0.1	MC	M,-	G	MC	6.2 [5.9-6.7]	-	0.8-1.0	CS-SL
2UgfW	0.09-0.2	MC	- -	G,Bk	MHC	6.1 [5.6-6.7]	1.2, (1.5)	(1.2)	LMC
2Ugg	0.05-0.2	MC	(M,B)	G, (Bk)	MHC	6.8 [5.8-7.8]	0.6, (0.9)	(0.9-1)	CKS-MC
2Ugh	0.15	MC	M,-	G	MC	8.9	0.3	-	-
2Ugk	0.05-0.12	MC	- -	G	MC-HC	6.9	0.6 (0.3)	(1-1.5)	LC-MC
6Dba2	0.25-0.27	SL	M,B	B	MC	6.4 [5.9-6.8]	0.6	0.85-1.1	SL-SC
6Dbb	0.22-0.32	ZCL	- B	G	MC	5.7	-	1.1	LMC
6Dbc	0.2-0.35	LFSY-CLFS	(M), B	Y,B	MC	6.0 [5.5-6.6]	-	0.75-1.38	S-SCL
6Dbd	0.2-0.28	FSL-CL	(M), B	B	MC	6.0 [5.6-6.7]	1.2, (0.9)	0.5-1.2	CLFS-MC
6Dbd3	0.18	CLFS	-,-	B	LMC	6.3	-	0.9	FSL
6Dbe	0.15-0.25	CLFS-CL	-,B	B	MC	6.6 [6.3-7]	0.6	0.55-1.15	FSL-LMC
6Dbf	0.16-0.35	CLFS	-,-	B	LMC-MHC	5.9 [5.3-6.7]	-	0.5-1.3	SL-LMC
6Dda	0.15-0.21	CL	-,B	Bk	MC-MHC	6.4 [5.8-7.3]	0.9, (0.6)	0.95-1.2	FSC-LMC
6Dda2	0.2	CL	-,B	Bk	MC	5.8	0.6	0.6	CLFS
6Dda3	0.3-0.45	ZCL	-,B	Bk	LMC	5.9	0.9, (1.2)	0.95-1.15	LMC
6Drb	0.25-0.37	LFSY-CLFS	-,B	R	MC	6.2[5.9-6.6]	-	0.6-1.15	FSC
6Drb2	0.2-0.4	L-CL	(M), B	R	MC	6.1 [5.8-6.7]	-	0.55-1.6	CKS-CLS

Table 3. (Continued)

Soil Type	A Horizon			B Horizon		pH at 0.3m	Depth (m) pH ≥ 8.5	D Horizon	
	Depth** (m)	Texture	Mottled= M Bleached= B	Colour**	Texture			Depth (m)	Texture
6Drb4	0.37	KSL	-,B	R	KSC	6.3	-	0.65	ROCK
6Drc	0.19-0.45	CLFS	-,B	R	MC	6.0 [5.3-6.6]	1.2, (0.9)	0.74-1.4	CLS-FSC
6Drc2	0.22-0.38	LFSY-CLFS	(M), B	R	MC	6.0 [5.6-6.6]	0.9	0.8-1.24	LFS-FSLC
6Dya	0.8-1.2	SL	-,B	B	SC	6.3 [6.0-6.9]	-	-	-
6Dya2	0.55-0.6	SL	-,B	Y	KSC-LMC	6.0	-	1.15-1.32	S-KSL
6Dyb	0.3-0.5	SL	-,B	B,G	SC	5.9 [5.8-6.0]	-	(1.3)	(CLKS-SC)
6Dyb2	0.35-0.45	SL-SCL	-,B	G, (B)	SC-MC	6.0 [5.9-6.2]	1.2	(0.7-1.05)	(LS-MC)
6Dyc2	0.6-0.65	CLS	-,B	Y	MC	6.6	-	1.25	KS-SCLKS
6Dyd	0.25-0.35	CLFS	-,B	Y, (B)	LMC-MC	6.2 [5.8-6.6]	-	(0.9)	LFSY-FSC
6Dyd2	0.15-0.38	CLFS-CL	-,B	B,Y	MC	6.2 [5.6-7]	(0.6,0.9)	0.9-1.35	S-LMC
6Dye	0.3-0.5	KSL-SL	(M), B	G,B	MC	5.9	1.2	0.76-0.78	SCLKS-KSC
6Dyf	0.15-0.38	LFSY-CL	(M), B	B, (Y)	MC	6.1 [5.6-7.5]	0.9, (1.2)	0.65-1.35	CLFS-FSC
6Dyf2	0.17-0.4	CLFS-CL	(M), B	B, (Y)	LMC-MHC	6.1 [5.6-6.6]	0.9, (1.2)	0.6-1.45	KS-SC
6Dyf3	0.14-0.32	SL-CL	(M), B	B	MC-MHC	6.0 [5.7-6.7]	0.9	0.85-1.35	FSC-MC
6Dyg	0.12-0.22	L-CLFS	(M), B	B, (G)	MC-MHC	6.6 [5.7-8.1]	0.6	0.5-1.3	KS-MC
6Dyg2	0.12-0.25	L-CLFS	(M), B	B,(G)	MC	6.6 [5.9-8.6]	0.6	0.7-1.2	KS-SC
6Dyg3	0.22-0.3	CLFS	(M), B	B,(G)	MC	6.5 [5.9-7.3]	0.6	(0.95-1.05)	(LS-FSC)
6Dyj	0.1-0.12	CLFS	-,B	G,(B)	MC	8.9 [8.6-9.5]	0.3	0.8-1.1	S-CLS
6Gnb	0.9	SL	-,-	R	KSC	6.0	-	1.25	SCLKS
6Gnd	0.25	L	-,-	B	CL	6.4	-	-	-
6Uca	0.1-0.25	LS-SL	-,-	B,G	LS	6.5 [6.0-6.9]	-	0.8-0.95	FSL-SCL

Table 3. (Continued)

Soil Type	A Horizon			B Horizon		pH at 0.3m	Depth (m) pH ≥ 8.5	D Horizon	
	Depth** (m)	Texture	Mottled= M Bleached= B	Colour**	Texture			Depth (m)	Texture
6Ucb	0.35-0.6	LS-SL	-,B	B,(G)	CS-KSL	6.2 [6.0-6.5]	-	(1.1)	LKS
6Uca	0.25-1.2	KS-SL	-,-	B	S-KSL	6.3 [5.9-6.6]	-	-	-
6Uga	0.08-0.12	ZC-LMC	-,-	G	MC	5.8	1.5	1.2	FSC
6Uga2	0.08	LMC	M,B	G	MHC	5.9	-	1.3	FSC
6UgaW	0.06-0.25	LMC	-,-	Bk,(G)	MC	6.1 [5.9-6.5]	-	(1.1)	(FSC)
6Ugc	0.1-0.25	ZC-LC	-,B	G	MC	6.1 [5.5-6.9]	0.9	(0.9-1.1)	(SCL-MC)
6Ugc2	0.1-0.3	LC	-,B	G	MC	6.3 [5.8-7.3]	(0.9)	1.05-1.3	KS-FSL
6UgcW	0.2-0.25	ZC-LC	-,B	G	LMC-MC	6.1 [5.7-6.6]	(0.6)	0.95-1.25	SCL-LMC
6Uma	0.35	KSL-SL	-,B	B	SCL	6.0	-	0.7-0.85	LS-SCL

\+ ( ) Characteristic not always present

++ Bk=Black, G=Grey, B=Brown, Y=Yellow, R=Red (Isbell, 1993)

* [ ] Range of values

** Refer to depth recorded during the survey

Table 4. Correlation of DPI soil types with other soil classifications and groupings in the Selkirk Section, BRIA.

DPI soil type	Principal profile form *	Soil series	Soil group	BRIA soil ** group	Australian soil classification ***	USDA ***
2Dba	Db1.33, Db1.43	Dowie	SC-SDS	2A	Calcic, Hypernatric, Brown Sodosols	Typic Natrustalfs
2Dbb	Db1.33, Db1.43, Db2.43	Oakey	SC-SDS	2B	Calcic, Hypernatric, Brown and Black Sodosols	Typic Natrustalfs
2Dbc	Db1.33, Db2.33, Db2.43, Dy2.33, Dy3.33, Dy3.43	Oakey	SC-SDS	2C	Calcic, Mesonatric, Brown, Grey and Black Sodosols	Aridic Haplustalfs
2Dbd	Db2.33, Dy2.33, Dy2.43, Dd1.33, Dd1.43	Oakey	SC-SDS	2B	Calcic, Mesonatric, Brown, Grey and Black Sodosols	Typic Natrustalfs
2Dbe	Db1.33, Db1.43, Db2.33	Oakey	SC-SDS	2C	Calcic, Mesonatric, Brown, Grey and Black Sodosols	Aridic Paleustalfs
2Dda	Db1.33	Oakey	SC-SDS	2B	Calcic, Subnatric, Black and Brown Sodosols	Aridic Paleustalfs
2Ddb	Dy2.33, Dd1.33	Dowie	SC-SDS	2A	Calcic, Hypernatric, Black and Grey Sodosols	Typic Natrustalfs
2Dyb	Dy2.33, Dy2.43, Dy3.43, Dd 1.33, Dd 1.43	Oakey	SC-SDS	2B	Calcic, Mesonatric, Grey and Black Sodosols	Typic Natrustalfs
2Dyc	Db2.33, Db2.43, Dy3.43	Oakey	SC-SDS	2B	Calcic, subnatric, Grey and Brown Sodosols	Udic, Aquic Paleustalfs
2Ugc	Ug3.2, Ug5.24, Ug5.28	Barratta	GC/BC	1A	Mottled, Epipedal, Grey and Brown Vertosols	Typic Haplusterts
2Ugd	Ug2, Ug3.2, Ug3.3	Barratta	GC/BC	1A	Mottled, Epipedal, Black, Grey and Brown Vertosols	Typic Haplusterts
2Uge	Ug3.2, Ug5.24, Ug5.28	Barratta	GC/BC/BE	1A	Mottled, Epipedal, Black, Grey and Brown Vertosols	Typic Haplusterts
2Ugf	Ug3.1, Ug5.24, Ug5.25	Barratta	GC	1B	Mottled, Epipedal, Grey Vertosols	Aridic Haplusterts
2Ugg	Ug3.2, Ug5.16, Ug5.24, Ug5.25, Ug5.28	Barratta	GC/BC	1B	Epipedal, Black Grey and Brown Vertosols	Aridic Haplusterts

Table 4. (Continued)

DPI soil type	Principal profile form *	Soil series	Soil group	BRIA soil group	Australian soil classification ***	USDA ***
2Ugh	Ug 5.24, Ug 5.28	Barratta	GC/BC/BE	1B	Endohypersodic, Epipedal, Black, Grey and Brown Vertosols	Aridic Haplusterts
2Ugk	Ug5.2, Ug5.29	Barratta	GC	1B	Haplic, Epipedal, Grey Vertosols	Aridic Haplusterts Typic Haplusterts
6Dba2	Db 1.33, Dy 2.43	Embie	SC-SDS	2B	Calcic, Mesonatric, Grey and Brown Sodosols	Mollic Natrustalfs
6Dbb	Db1.33, Dy2.43	Glenalder	SC	2C	Hypocalcic, Subnatric, Brown and Black Sodosols	Mollic Natrustalfs
6Dbc	Db1.32, Dy2.42, Dy3.42	Glenalder	BP	3A	Haplic, Eutrophic, Brown Chromosols	Aridic Paleustalfs
6Dbd	Db1.33, Db1.43, Db2.33, Db2.43	Glenalder	BRE	2C	Bleached-Sodic, Calcic, Brown Chromosols	Udic Paluestalfs Typic Natrustalfs
6Dbe	Db1.33, Db2.33	Glenalder	BRE	2C	Bleached-Motled, Eutrophic, Brown Chromosols	Aridic Paleustalfs Typic Natrustalfs
6Dbf	Db 1.12, Db 1.22	Glenalder	BP	3A	Haplic, Eutrophic, Brown Chromosols	Aridic Paleustalfs
6Dda	Dd1.33, Dd1.43	Wilkey	SC-SDS	2B	Hypocalcic, Mesotrophic, Black Sodosols	Mollic Natrustalfs
6Drb	Dr2.32, Dr3.32, Dr3.42	Lancer	RP	3A	Bleached-Mottled, Eutrophic, Red Chromosols	Aridic Paleustalfs
6Drc	Dr2.33, Dr2.43, Dr3.43	Lanona	SC-SDS	2C	Bleached-Sodic, Calcic, Red Chromosols	Udic Paleustalfs
6Dya	Dy2.41, Dy2.42	Tootra	YP	4C	Bleached-Mottled, Eutrophic, Brown Chromosols	Aridic Paleustalfs
6Dyb	Dy3.41, Dy3.42	Clare	SH-SC	4C	Bleached-Mottled, Eutrophic, Brown and Grey Chromosols	Aridic Paleustalfs
6Dyc2	Dy3.42	Tootra	YP	3A	Bleached-Mottled, Eutrophic, Brown Chromosols	Aridic Paleustalfs
6Dyd	Dy2.42, Dy3.32, Dy3.42	Tootra	YP	3A	Bleached-Mottled, Eutrophic, Brown Chromosols	Ardic Paleustalfs

Table 4. (Continued)

DPI soil type	Principal profile form *	Soil ++ series	Soil + group	BRIA soil ** group	Australian soil classification ***	USDA ***
6Dye	Dy3.33, Dy3.43	Kelona	SC-SDS	2C	Bleached-Mottled, Calcic, Grey and Brown Sodosols	Aridic Paleustalfs
6Dyf	Db2.43, Dy2.43, Dy3.33, Dy3.43	Lanona	SC-SDS	2C	Bleached-Mottled, Calcic, Brown Chromosols	Udic Paleustalfs
6Dyg	Db1.43, Dy2.33, Dy2.43, Dy3.33, Dy3.43	Kelona	SC-SDS	2B	Calcic Mesonatric, Grey and Brown Sodosols	Typic Natrustalfs
6Dyj	Dy2.43, Dd1.33	Jacuna	SC-SDS	2A	Calcic, Hypernatric, Brown and Black Sodosols	Typic Natrustalfs
6Gnb	Gn3.14, Gn3.15	Clare	RP	4C	Haplic, Eutrophic, Red Dermosols	Ardic Ustochrepts
6Gnd	Gn3.72, Gn3.75	Elkin	NSG	4B	Haplic, Eutrophic, Brown and Yellow Dermosols	Aridic Ustochrepts
6Uca	Uc1.11, Uc1.23, Uc5.11	Yallabin	NSG	4C	Basic, Brown, Orthic Tensols	Udic Ustochrepts
6Ucb	Uc2.21, Uc2.22, Uc3.21	Hylo	NSG	4C	Basic, Brown, Bleached Tenosols	Typic Ustipsamments
6Ucc	Uc4.22, Uc5.11	Burdekin Miskin	NSG	4C	Basic, Brown and Yellow, Orthic Tenosols	Aridic Ustochrepts
6Uga	Ug3.1, Ug3.2, Ug5.16, Ug5.2	Wetonga	BE/GC	1A	Endocalcareous-Endohypersodic, Epipedal, Black and Grey Vertosols	Typic Haplusterts
6Ugc	Uf2, Uf3, Ug2, Ug3.2, Ug5.2	-	GC/NSG	1A	Endocalcareous, Massive, Grey Vertosols; Haplic, Eutrophic, Grey Dermosols	Typic Haplusterts

\+ Northcote 1979
++ Hubble and Thompson 1953
+++ SMSS Soil Survey Staff 1992
* Stace *et al* 1968
** Donnollan 1991
*** Isbell 1993

Table 5. Areas of mapping units and frequency of UMAs in each mapping unit, Selkirk Section, BRIA.

Mapping Unit	Area (ha)	UMA frequency	Mapping Unit	Area (ha)	UMA frequency
2E	242.3	6	2Ugh	64.5	4
2SP	5.2	3	2UghW	9.8	1
Total	**247.5**		2Ugk	27.6	2
2Dba	4.8	1	**Total**	**2328.1**	
			Total LU's	**3414.4**	
2Dbb	83.2	13	6E	18.0	3
2Dbb2	4.6	1	6P	5.2	1
2Dbc2	4.0	1	6SP	55.9	13
2Dbd	62.7	8	**Total**	**79.1**	
2Dbd	62.7	8	6Dba2	6.5	2
2Dbe	26.7	8	6Dbb	1.2	1
2Dbe4	1.5	1	6Dbb3	14.8	1
2DbeW	9.4	2	6Dbc	37.6	6
2Dda	2.4	1	6DbcE	5.6	1
2Ddb	16.4	2	6Dbd	32.5	8
2Dyb	586.2	42	6Dbd3	4.3	1
2Dyb2	3.1	2	6Dbe	100.8	6
2DybE	1.1	1	6DbeE	2.2	1
2Dyc	13.2	2	6Dbf	40.4	3
Total	**838.8**		6Dbf2	7.8	1
2Ugc	182.7	15	6DbfE	3.0	1
2Ugc5	7.2	2	6Dda	6.8	2
2UgeE	5.2	1	6Dda2	0.5	1
2Ugd	900.8	26	6Dda3	2.9	2
2Ugd5	22.0	1	6Dda5	0.4	1
2UgdW	34.4	4	6Drb	43.2	8
2Uge	800.0	43	6Drb2	133.0	21
2UgeE	4.0	1	6Drb4	2.9	1
2UgeW	18.3	2	6Drc	147.4	12
2Ugf	71.2	9	6Drc2	19.1	5
2Ugf2	10.1	2	6Dya	10.0	5
2UgfE	2.8	1	6Dya2	1.1	1
2UgfW	49.4	7	6Dyb	22.9	5
2Ugg	97.1	10	6Dyb2	34.9	6
2UggW	21.0	4	6Dyc2	6.7	1

Mapping Unit	Area (ha)	UMA frequency	Mapping Unit	Area (ha)	UMA frequency
6Dyd	88.1	1	6Ucb	27.1	8
6Dyd2	50.8	8	6Ucc	33.1	16
6Dye	9.9	3	**Total**	**73.5**	
6Dyf	203.4	31	6Uga	9.0	2
6Dyf2	266.4	22	6Uga2	1.9	1
6Dyf3	11.8	4	6UgaW	19.7	1
6Dyg	397.0	31	6Ugc	40.5	13
6Dyg2	147.5	26	6Ugc2	19.8	5
6Dyg3	26.5	4	6Uge3	2.0	1
6Dyj	17.0	4	6UgeW	7.1	3
6Dyj2	10.4	3	**Total**	**100.0**	
Total	**1917.4**		6Uma	9.1	1
6Gnb	0.5	1	Dam	2.9	1
6Gnd	0.7	1	**Total LU*6**	**2182.0**	
Total	**1.2**		**Total Area 5596.4**		
6Uca	13.3	2y			

LU* Landscape unit

4.2 Soil morphology

Brief descriptions of the major attributes of the soil types of Selkirk Section are given in the reference to the accompanying soils map. A general discussion of the morphology of the soil types is given below.

4.2.1 Soils of landscape unit 2

The cracking clays, sodic duplex and strongly sodic duplex soils exclusively occupy the LU2. The cracking clays are found in the lower and more gentle part of the LU2. Some features of these soils are:

- The main soil types, 2Ugd, 2Uge and 2Ugc occur in that order of abundance. These soil types have a light to light-medium clay topsoil with a hard setting or weakly self-mulching surface. Soil type 2Uge is strongly alkaline (pH>8.5) at or above 0.6 m whereas 2Ugd is strongly alkaline at or below 0.9 m. Soil type 2Ugc is strongly alkaline at 1.2 m or below.

- Soil types 2Ugf, 2Ugg and 2Ugh are minor in occurrence. They have strongly self-mulching surfaces and medium to medium-heavy clay topsoils. The soil type 2Ugh is strongly alkaline at 0.3 m and below, 2Ugg at 0.6 m and below, and 2Ugf at 0.9 m and below. These cracking clays are often associated with depressions and hence have a wet phase "W" (which indicates excessive wetness).

The sodic duplex soils occupy slightly higher areas on the low-lying alluvial plains. The main characteristics of these soils are shown in Table 3. A summary of the distinguishing features are:

- The upper clayey B horizon(s) of the sodic duplex soils are brown, grey or, less commonly, black. The B horizon of these soils has a strong consistency and coarse prismatic or blocky structure. The thickness of the A horizon and the depth at which field pH becomes strongly alkaline (pH>8.5) are the major criteria used in the field to distinguish these soils.

- Soil types 2Dba and 2Ddb have a thin (≤0.12 m) A horizon and are strongly alkaline at 0.3 m.

- Soil types 2Dyb and 2Dbe have A horizons of 0.1-0.2 m thick and are strongly alkaline by 0.6 m (2Dyb) or by 0.9 m (2Dbe).

- Soil type 2Dyb (which occupies 590 ha) is the most widespread in this area, similar to the Haughton Stage III area to the south.

- Soil Types 2Dbc, 2Dbd and 2Dyc have A horizons 0.2-0.4 m thick. Soil type 2Dbd is strongly alkaline by 0.6 m but the other two soils are strongly alkaline only by 0.9 m. The soil type 2Dyc has normal gilgai of 0.1-0.3 m interval.

- Soil type 2Dbb has A horizon 0.12-0.2 m thick and is strongly alkaline by 0.3 or 0.6 m.

- Soil type 2Dda has A horizon 0.1 m thick and is strongly alkaline by 0.6.

- W(wetness) and E(erosion) are common phases, and 2 is a common variant of the above soil types.

- Occasionally soil types 2Uge and 2Ugc are mapped in complex mapping units with the sodic duplex soils.

4.2.2 Soils of landscape unit 6

Three main groups of soils occur on the landscape unit 6. They are the well drained non sodic duplex soils, sodic duplex soils, and the coarse to medium-textured soils. The sodic duplex (including weakly sodic) is the most extensive. The major distinguishing characteristics of these soils are shown in Table 3. The following is a comparative description of the three main groups of soils in this landscape unit.

The non sodic duplex soil types are 6Dbc, 6Dbf, 6Drb2, 6Drb, 6Dyb and 6Dyd with 6Drb2 and 6Dyd the most extensive (about 200 ha of LU6). Some features of these soils are:

- The thickness of A horizons of the non sodic duplex soils generally ranges from 0.2-0.4 m.

- Soil types 6Dbc and 6Dbf have brown B horizons. Texture of the A horizon of 6Dbf is clay loam fine sandy whereas the texture of 6Dbc is lighter, ranging from loam fine sandy to clay loam fine sandy.

- Soil type 6Drb2 has A horizon of 0.2-0.4 m thick and texture of loam to clay loam. The B horizon is distinctly red with acid to neutral pH throughout.

- Both soil types 6Dbf and 6Dyd have comparable B horizon but the A horizon of 6Dyd is bleached.

- Soil type 6Dyb has A horizon of 0.3-0.5 m thick with sandy loam to sandy clay loam texture.

The sodic duplex soils of LU6 can be differentiated based on thickness of A horizon and on the depth where the sodic horizon occurs. Some features of these soils are:

- Soil types 6Dba and 6Dyg are strongly sodic by 0.6 m. Soil type 6Dyg has 0.1-0.2 m thick A horizon with loam to clay loam texture. Soil type 6Dba has 0.25-0.3 m of sandy loam A horizon.

- Soil types 6Dbd, 6Dbe, 6Drc, 6Dye and 6Dyf are sodic (ESP 6-14) to strongly sodic (ESP>15) and strongly alkaline (pH>8.5) below 0.9 m. Soil type 6Dye has an A horizon of 0.3-0.5 m. The other soils have an A horizon of 0.15-0.4 m. Soil type 6Drc has a distinctly red B horizon.

The coarse to medium-textured soils include soil types 6Dya, 6Uca, 6Ucb, 6Ucc and 6Uma. Soil type 6Dya is included in this list because of the thick (0.6-1.2 m) A horizon and its non sodic profile.

- Soil types 6Uca, 6Ucb and 6Ucc are uniform coarse-textured sandy soils. Soil type 6Uca has a comparatively thin A horizon of 0.1-0.3 m whereas 6Ucb and 6Ucc have A horizons commonly thicker than 0.5 m. Soil type 6Ucb has a bleached A horizon.

- Soil type 6Uma is uniform medium-textured. The soil profile is acid to neutral throughout. It is mainly single grain or has a weak blocky structure.

4.3 Chemical and Physical Characteristics

Seventeen representative soil profiles were sampled for laboratory analysis. The morphological and analytical data for the soil profiles are given in Appendix II.

The soil profiles were sampled at 0-0.1, 0.2-0.3, 0.5-0.6, 0.8-0.9, 1.1-1.2, and 1.4-1.5 depths unless a soil horizon boundary occurred within any particular sampling interval. Eight surface soil samples (at 0-0.1 m) were taken from each site and bulked for surface nutrient analyses. Analytical methods used and guidelines in data interpretation are those of Bruce and Rayment (1982) and Baker and Eldershaw (1993) respectively.

The reader is referred to the publication by Donnollan (1991) for an overview of chemical and physical characteristics of the soil groups in the BRIA. The following discussion on the results of soil analyses is specific to Selkirk Section. The soils discussed in relation to the groupings of Donnollan (1991) are:

Subgroup	Soils	Site Number
1A (cracking clays with hard setting surfaces)	2Ugc, 2Ugd, 2Uge,	S7, S4, S5
1B (cracking clays with self-mulching surfaces)	2Ugg, 2Ugh	S8, S9
2B (sodic duplex soils)	2 Dbd, 2Dyb, 6Dyg2	S3, S10
2C (weakly sodic duplex soils)	2Dbc, 6Dbb3, 6Dyf, 6Dyf2	S2, S11, S1, S6

4.3.1 Surface fertility

The fertility of surface soils is a measure of the amount of nutrients that is immediately available to a crop. Table 6 gives the rating for some of the more important nutrients for the surface soils. A summary of the more important chemical properties are:

- Bicarbonate extractable phosphorus levels range from very low to medium (2-31 meq/kg). These levels differ from those of Haughton Section, Stage III to the immediate south which has medium to high levels (21-67 meq/kg).

- Extractable potassium levels range from medium to high (0.4-1.0 mg/100 g). This would generally be expected in these soils of alluvial origin.

- Organic carbon measurements range from low to medium (0.6-2.4%). The total N in all soils is low (0.06-0.11%) and in 6Dyf2 and 6Dyg2, very low (0.01-0.04%). The low total N combined with high C:N ratio suggest that sufficient N is not available to crops. It should be noted that for soils where the total N is very low, the C:N ratio should not be taken beyond its comparative notion.

- The levels of the trace elements copper and zinc are mainly medium (0.31-4 mg/kg) while for manganese, the levels are high (51-112 mg/kg).

- Electrical conductivity (EC) of the surface soils in all profiles sampled is very low (0.03-0.06 mS/cm).

4.3.2 Cation exchange capacity (CEC), exchangeable cations and clay activity ratio

The cation exchange capacity (CEC) is dependent on clay content, type of clay minerals and the amount of organic matter. The level of exchangeable cations and CEC indicates the nutrient status and the ability of the soil to provide nutrients to a crop.

The exchangeable cations and CEC for selected depths (0.2-0.3, 0.5-0.6, 1.1-1.2 m) of the soils of both landscape unit 2 and landscape unit 6 are shown in Table 7.

Table 6. Levels and ratings+for nutrients in the bulk surface samples (0-0.1m) for the sampled soil types of Selkirk Section, BRIA.

Soil Type	Bicarb. P (meq/kg)	Extra K (mg/100g)	EC mS/cm	DTPA - extra (mg/kg)			Org. C (%)	Tot. N (%)	C:N
				Manganese	Copper	Zinc			
2Dbc	2 (VL)	0.6 (H)	0.06 (VL)	51 (H)	0.31 (M)	0.43 (L)	1.1 (L)	0.04 (VL)	27
2Dyb	11 (L)	0.4 (M)	0.07 (VL)	76 (H)	0.89 (M)	1.5 (M)	1.3 (L)	0.08 (L)	16
2Ugc	31 (M)	0.97 (H)	0.04 (VL)	90 (H)	2.7 (M)	1.7 (M)	2.4 (M)	0.1 (L)	24
2Ugd	19 (L)	0.66 (H)	0.04 (VL)	105 (H)	1.6 (M)	1.5 (M)	2.2 (M)	0.11 (L)	20
2Uge	4 (VL)	0.45 (M)	0.04 (VL)	84 (H)	1.5 (M)	0.7 (M)	1.7 (M)	0.06 (L)	28
2Ugg	14 (L)	0.81 (H)	0.04 (VL)	112 (H)	3.1 (M)	1.6 (M)	2.3 (M)	0.1 (L)	23
2Ugh	6 (VL)	0.87 (H)	0.06 (VL)	79 (H)	2.4 (M)	0.97 (M)	1.8 (M)	0.06 (L)	30
6Dyf	5 (VL)	0.49 (M)	0.05 (VL)	98 (H)	1.3 (M)	1.3 (M)	1.8 (M)	0.1 (L)	18
6Dyf2	10 (L)	0.47 (M)	0.06 (VL)	30 (M)	0.24 (L)	1.1 (M)	1 (L)	0.01 (VL)	100
6Dyg2	3 (VL)	0.54 (H)	0.03 (VL)	48 (M)	0.32 (M)	0.79 (M)	0.6 (L)	0.01 (VL)	60
6Dbb3	28 (M)	0.6 (H)	0.04 (VL)	91 (H)	1.1 (M)	4 (M)	2.3 (M)	0.07 (L)	33

+ Rating of H=High, M=Medium, L=Low, and VL=Very low, are from Bruce and Rayment (1982)

In the Selkirk Section, CEC is generally related to the clay content of the soils. Variation in CEC within some soil profiles is due to the stratification of the alluvial parent material from which these soils have developed. This is indicated by the particle size distribution data. A summary of CEC values in the soils are given below. The levels low, medium and high are those of Landon (1984).

- Cracking clays 2Ugc, 2Ugd, 2Uge, 2Ugf, 2Ugg and 2Ugh have a high level (25-40 m.eq. $100g^{-1}$) of CEC.

- The sodic duplex soils, 2Dbd, 2Dyb and 6Dyg2 have low to high level (11-38 m.eq. $100g^{-1}$) of CEC. The variation of CEC in 6Dyg2 is due to stratification where the amount of clay varies with depth. Different clay mineralogy between the strata has to be taken into account to explain the differences in the CEC values and varying clay activity ratios.

- The weakly sodic duplex soils, 2Dbc, 6Dbb3, 6Dyf and 6Dyf2 have low to high level (6-31 m.eq. $100g^{-1}$) of CEC. The variation is mainly due to the amount of clay in the soil profile. Differences in clay mineralogy should also be taken into account, particularly for 6Dyf2.

- The ratio of CEC to clay or clay activity ratio is closely linked to clay mineralogy (Baker and Eldershaw 1993). For 1:1 clay (eg., kaolinite) CEC/clay is <0.2. In 2:1 non-expanding clays (eg., illites) the ratio is 0.3-0.5 and expanding clays (eg., montmorillonite) is >0.8. In the area, the ratio is 0.5-0.7 in cracking clays 2Ugc, 2Ugd, 2Uge, 2Ugf, 2Ugg and 2Ugh. A uniform ratio of 0.5 is found in sodic duplex soil 2Dyb. Similarly sodic duplex soil 2Dbd has a uniform ratio of 0.7, suggesting it has more expanding 2:1 clays than 2Dyb. In the weakly sodic duplex soils, 2Dbc, 6Dbb3, 6Dyf, 6Dyf2 and 6Dyg2 the ratio is more variable, ranging from 0.3 to 0.7. The variation of the ratio is mainly due to stratification and differences in clay mineralogy as mentioned above.

- In the <2um fraction of a Barratta clay (2Ug) with a clay activity ratio of 0.62, Coughlan (1979) found a mixture of poorly crystalline montmorillonite, kaolinite, quartz, illite and interstratified kaolin-montmorillonite. Another Barratta clay (2Uge) from Selkirk area at the Bruce Highway was analysed for The 9th International Working Meeting on Micromorphology in 1992. The clay mineralogy consists of about 50% smectite, and subordinate amount of kaolinite and illite. A small amount of quartz was also present. Clay mineralogy of Barratta clays in the whole of Selkirk area is considered comparable to the above.

- The uniform clay activity ratio in the sodic duplex soils, 2Dyb and 2Dbd suggest that the clay mineralogy is similar within the profile depth. The stratified 6Dyg2 has an increasing ratio with depth suggesting that there is an increase in 2:1 expanding clays with depth.

- In the weakly sodic duplex soils, 2Dbc, 6Dyf and 6Dyf2, the clay activity ratio is similar to 6Dyg2. The trend could be due to differential weathering of the soil profile and/or different sources of parent alluvial deposits.

Relative abundance of exchangeable cations can also influence soil physical properties such as plant available water capacity (PAWC), uptake of soil water, permeability and dispersion.

- In all the soil types sampled, Calcium is the main exchangeable cation throughout the profile except 2Uge and a 2Ugd north of the Bruce Highway (see Appendix II).

- Exchangeable Ca and Mg of all soils except surface soils of 2Dbc and 6Dyf2, are above the "sufficiency" level of >2.0 m.eq. $100g^{-1}$ (Baker and Eldershaw, 1993). Exchangeable K is below "sufficiency" level in 2Dbc, 6Dyg2 and 6Dbb3. In 6Dyf the K levels are below "sufficiency" level in the topsoil and deep subsoil.

- The Ca:Mg ratio of sampled soil profiles, except 2Uge, is higher than 1.0. The high exchangeable Mg in 2Uge and comparatively high ESP levels make this soil type very dispersible which is further indicated by the high dispersion ratio (0.7). This is quite exceptional for a cracking clay. In practice, dispersibility is possibly dependent on the management method used. The natural lenticular structure is maintained if the soil is allowed periodic drying. However, if the structure is destroyed, dispersibility of the soil may become a problem.

- The dispersive effects in the soils caused the blockage of water-conducting pores which in turn created adverse physical conditions of low PAWC, low permeability, surface waterlogging and crusting.

- Exchangeable K is below the "sufficiency" level of 0.2 meq/100g in 2Dbc, 6Dyf, 6Dyf2, 6Dyg2 and 6Dbb3, although the surface soils have medium to high levels extractable K. Crops should respond to K fertiliser in these soils although the total K levels are high (see below). For perennial crops, the capacity of the soils to supply K may be acceptable, but maintenance of this level is critical.

- Levels of total P of all soils sampled, range from low to medium(0.15-0.29%). The values are more uniform in the cracking clays. Variation of total P of other soils is mainly due to the variable clay content and clay mineralogy differences in the stratified profiles.

- The total K levels (1.11-2.11%) of all soils are within the high range of Bruce and Rayment (1982). This is possibly due to the alluvial origin of the soil parent material of these soils. The K-bearing minerals of layer silicates (mainly muscovite and illite) and potash feldspars are comparatively stable in the sedimentary environment. Illite is likely to be an important clay mineral in the clay fraction of most of the soils. In the case of medium-textured soil, 6Uma, muscovite has been observed to occur in significant amounts in the soil profile. Reserve K is therefore expected to be comparatively high in the soils of the Selkirk Section.

Table 7. Exchangeable cations, ESP, Ca:Mg ratios, cation exchange capacity (CEC) and clay content for selected depths of the sampled soil types in Selkirk Section, BRIA.

Soil type and depth (m)	Exchangeable Cations (meq/100g)				ESP	Exch Ca:Mg	CEC (meq/100g)	Clay (%)	CEC: Clay
	Ca	Mg	Na	K					
Landscape unit 2									
2Dbc									
0.2-0.3	1.7	1.5	0.2	0.11	3	1.13	6	19	0.3
0.5-0.6	7.4	5.7	2.3	0.1	12	1.3	19	38	0.5
1.1-1.2	11	7.4	4.8	0.12	22	1.49	22	32	0.7
2Dbd[+]									
0.3-0.4	13	10	4.3	0.19	15	1.3	29	-	-
0.5-0.6	14	14	7.0	0.2	18	1	38	56	0.7
1.1-1.2	9.5	9.7	7.0	0.19	26	1	27	37	0.7
2Dyb									
0.2-0.3	10	8.3	1.5	0.34	5	1.2	27	57	0.5
0.5-0.6	13	10	2.6	0.26	10	1.3	27	55	0.5
1.1-1.2	11	11	4.0	0.28	15	1	27	50	0.5
2Ugc									
0.2-0.3	18	11	0.72	0.39	2	1.64	35	66	0.5
0.5-0.6	19	13	1.4	0.31	4	1.46	36	68	0.5
1.1-1.2	19	16	3	0.22	8	1.19	37	63	0.6
2Ugd									
0.2-0.3	13	10	1	0.58	3	1.3	34	66	0.5
0.5-0.6	14	12	1.8	0.4	5	1.17	36	63	0.6
1.1-1.2	17	16	3.7	0.31	10	1.06	36	59	0.6
2Uge									
0.2-0.3	13	14	4.1	0.31	12	0.93	34	61	0.6
0.5-0.6	10	14	7	0.26	23	0.71	30	57	0.5
1.1-1.2	7.6	10	7.7	0.33	31	0.76	25	50	0.5
2Ugf[+]									
0.2-0.3	8	6.9	1.8	0.39	7	1.2	26	54	0.5
0.5-0.6	10	10	3.3	0.3	11	1	30	61	0.5
1.1-1.2	9.6	12	6.6	0.23	23	0.8	29	50	0.6
2Ugg									
0.2-0.3	18	12	1.3	0.39	4	1.5	37	69	0.5
0.5-0.6	17	12	3.3	0.27	9	1.42	37	69	0.5
1.1-1.2	18	14	6.1	0.29	16	1.29	39	63	0.6

Table 7. (Continued)

Soil type and depth (m)	Exchangeable Cations (meq/100g)				ESP	Exch Ca:Mg	CEC (meq./100g)	Clay (%)	CEC: Clay
	Ca	Mg	Na	K					
2Ugh									
0.2-0.3	21	15	1.5	0.46	4	1.4	37	55	0.7
0.5-0.6	17	18	3.6	0.4	10	0.94	35	56	0.6
1.1-1.2	14	18	5.6	0.39	15	0.78	36	61	0.6
Landscape unit 6									
6Dyf									
0.2-0.3	3.6	2	0.25	0.13	3	1.8	8	23	0.3
0.4-0.5	10	6	1.4	0.33	5	1.67	26	53	0.5
1.1-1.2	18	10	4.1	0.17	13	1.8	31	48	0.6
6Dyf2									
0.2-0.3	1.5	0.5	0.09	0.16	4	3	2	9	0.2
0.5-0.6	10	6.8	0.92	0.54	4	1.47	23	49	0.5
1.1-1.2	6.5	3.9	0.86	0.22	9	1.67	10	15	0.7
6Dyg2									
0.2-0.3	5.8	4.2	1.5	0.12	11	1.38	14	38	0.4
0.5-0.6	4	4	2.3	0.06	21	1	11	23	0.5
1.1-1.2	13	12	9.8	0.16	32	1.08	31	44	0.7
6Dbb3									
0.2-0.3	17	9	1	0.25	3	1.89	29	45	0.6
0.5-0.6	17	8.7	1.5	0.16	6	1.95	23	37	0.6
1.1-1.2	18	8.6	1.9	0.19	8	2.09	23	33	0.7

+ Soils sampled from north of Bruce Highway

. Total S in the soils sampled ranges from low to medium (0.002-0.036%). Crops are likely to respond to addition of sulphur, particularly in 6Dyf, 6Dyf2 and 6Dyg2 where the levels are low throughout the profile.

4.3.4 Soil pH, sodicity, dispersion ratio and salinity

The pH of the surface soils range from 5.8 to 6.6 and is lowest in 2Ugc (pH = 5.8). In all soil profiles there is a general increase in pH with depth. Some interesting aspects of the relationship between these attributes are summarized below:

. Soil pH is strongly correlated with sodicity. Baker *et al.* (1983) demonstrated that soil ESP** can be predicted from pH values within the range of 6 to 10. They showed that pH-ESP relationship was better in sodic duplex soils than the cracking clays with r^2=0.85 in the relationship for sodic soils

. In the sodic duplex soils (2Dyb, 6Dyg2) the field pH is 8.5 or more at 0.5-0.6 m and below. The ESP at the equivalent depths ranges from 10 percent in 2Dyb and 21 percent in 6Dyg2.

. The cracking clays 2Ugc and 2Ugd have pH of 8.3 to 8.4 at 0.8-0.9 m. The corresponding ESP are 6 and 9 percent. In 2Ugg ESP is 9 at 0.5-0.6 m where pH is 6.3. In 2Ugh where pH is 8.9 at 0.3 m, the ESP is only 4.

. In the weakly sodic duplex soils 6Dyf, 6Dyf2 and 6Dbb3 the lower subsoils have high pH and correspondingly ESP is between 6-14. The supposedly weakly sodic soil 2Dbc has an ESP of 19-22 at 0.6-1.2 m. The pH at 0.6 m is only 7.3.

. From pH and ESP values in the Selkirk Section absolute values of ESP cannot be determined by soil pH. The prediction of ESP by pH values is not always reliable, although high pH does generally reflect high ESP.

. Based on the dispersion ratio index, R1 (Appendix II), the sodic duplex soils (2Dyb, 6Dyg2) have a high tendency to disperse at 0.6 m and below. The 6Dyg2 is also highly dispersive at 0.3 m. These results are consistent with high ESP values.

. In the weakly sodic duplex soils dispersion ratio is more variable. The 6Dbb3 and subsoil of 6Dyf2 have moderate dispersion tendency. However, 2Dbc and 6Dyf soils have high tendency to disperse in the subsoil.

. Electrical conductivity (EC) are very low to low (0.01-0.43 dSm^{-1}) throughout the profile in 6Dbb3, 6Dyf and 6Dyf2. In 2Dbc, 2Dyb and 6Dyg2 EC is very low to low in the bulk of the profile, but moderate (0.5-0.65 dSm^{-1}) at 1.1-1.2 m. In the cracking clays only 2Ugc has very low to low EC throughout the profile. 2Ugd and 2Ugh has moderate (0.48-0.9 dSm^{-1}) EC by 1.1-1.2 m. In 2Ugg, EC is moderate (0.49 dSm^{-1}) by

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** Exchangeable sodium percentage (ESP) = $\frac{\text{Exchangeable sodium} \times 100}{\text{cation exchange capacity}}$

0.5-0.6 m but high (0.92 dSm^{-1}) by 1.1-1.2 m. Soil type 2Uge has the highest EC of all the soils sampled. It has high (1.1 dSm^{-1}) EC at 0.5-0.6 m and below. The chloride levels are correspondingly high where the EC are high indicating that the soluble salts are mainly in the form of NaCl.

5. LAND EVALUATION

5.1 Land Suitability Classification

A five-class land suitability classification, with suitability decreasing progressively from class 1 to class 5, was used in assessing Selkirk Section. The land is assessed on the basis of a specified land use which allows optimum production with minimal degradation to the land resource in the long term (LRB staff, 1990). This assessment of land provides an estimate of the potential of any parcel of land for a particular land use. The five classes are briefly defined below:

Class 1 Suitable land with negligible limitations;
Class 2 Suitable land with minor limitations;
Class 3 Suitable land with moderate limitations;
Class 4 Marginal land, presently unsuitable due to severe limitations; and
Class 5 Unsuitable land with extreme limitations that preclude its use.

Detailed definitions of the suitability classes are given in Appendix III. Each mapping unit or unique map area (UMA) was assessed on its suitability for:

. **furrow irrigation** of sugar-cane, soybeans, sorghum, maize, kenaf, sunflower, cotton, legume seeds (include mungbean, chickpeas, pidgeon peas and dolichos), beans, capsicums, eggfruit, tomatoes, cucumbers, rockmelons, squash and zucchini;

. **flood irrigation** of rice; and

. **low volume irrigation** of mangoes and avocados.

A different land suitability classification system (Donnollan *et al.*, in preparation) is used for each of the irrigation methods. Soil and land attributes considered important for crop growth and irrigation method are used in suitability assessment. The criteria used for each suitability classification system are based on the requirements of the crops under the apppropriate irrigation method in terms of the soil and land characteristics. Soil and land characteristics which caused land to have less than optimum conditions for a particular crop under the specific irrigation method were recognised as limitaions. The limitations were grouped into four categories depending on their effects on crops as follows:

. **Crop productivity limitations** - nutrients, salinity, sodicity, and for tree crops, soil depth;

. **Water management limitations** - water availability, excessive permeability, soil complexity, internal drainage and for rice, deep drainage;

. **Land surface management limitations** - rockiness, slope, microrelief, surface condition and wetness; and

. **Degradation limitations** - erosion and outflow potential.

The overall framework of the land suitability classification systems and details of each limitation (subclass) are given in Appendices IV, V and VI. In assessing the suitability of each UMA, the most severe limitation (subclass) usually determined the overall land suitability class. The suitability class may be downgraded if interactions between two or more limitations cause detrimental effects than if these limitations are present alone.

5.2 Land Suitability Assessment

A total of 730 ha of Selkirk Section is unsuitable for **all** crops considered because of either extreme sodicity, poor internal drainage, excessive slope, wetness, severe existing erosion or complex soil distribution. A list of the soils and UMAs unsuitable for all crops is shown in Table 8. Only severe limitations (subclasses 4, 5) are shown. This allows land users to determine if any marginal mapping unit can be ameliorated and the estimated costs involved.

Erosion hazard (e), and excessive wetness (w) associated with relict streams, drainage gullies and drainage depressions are the major land limitations.

Land suitability data for the 19 crops assessed may be accessed through the Ayr office of the Department of Primary Industries. For immediate farm design and planning purposes, the assessment for the most commonly grown crops, sugar-cane, maize, rice, capsicums and mangoes is discussed here. The area of land suitable for these five crops is given in Table 9. A list of the mapping units, their extent and their suitability for various crops are shown in Table 10. The limitations and land suitability classes of each UMA for sugar-cane, maize and rice are given in Appendix VII and capsicums and mangoes in Appendix VIII.

5.2.1 Furrow-irrigated crops

. Sugar-cane can be grown on a wide range of soils (Table 10). A total of 4 446 ha is suitable for the crop in this area. The main limitations for the use of the land for sugar-cane are high levels of sodicity (so), rapid internal drainage (id), excessive wetness (w) and low plant water availability (m). Sodicity at shallow depths which restricts water entry occurs in the strongly sodic duplex soils 2Dba, 2Ddb and 6Dyj. Rapid internal drainage and poor plant water availability occur in the coarse-textured 6Uc soils. Complex soil distribution (pd) which causes problems with efficient irrigation management is also a major limitation which affects many UMAs.

. The area suitable for maize is 4 291 ha, comparable to that for sugar-cane. The land use requirements for maize is similar to that for sugar-cane. However, the greater sensitivity of this crop to high sodicity levels and adverse surface conditions reduce the total area suitable to the crop.

Table 8.
Major limitations and areas of UMAs unsuitable for ALL crops of sugar cane, maize, rice, capsicums and mangoes in Selkirk Section, BRIA

ST1	ST2	C	UMA	m	pd	id	g	w	e	p	t	so	C	ps	t	p	so	Mz	so	t	g	dd	pd	R	pd	ps	p	so	Cap	so	sa	d	id	w	Mg	AREA
2 E		N	173						5		5		5		5			5		5				5					5						5	221.2
2 E		N	373						5		5		5		5			5		5				5					5						5	1.0
2 E		N	471						5				5					5						5					5						5	0.6
2 E		N	473						5				5					5						5					5						5	5.4
2 E		N	475						5				5					5						5					5						5	1.8
2 E		N	546						5				5					5						5					5						5	12.3
2 SP		N	90					4					4					4						4					4					5	5	1.3
2 SP		N	383					4					4					4						4					4					5	5	0.7
2 SP		N	408					4					4					4						4					4					5	5	3.2
2Dba	2Uge	N	501									4	4	4			4	4	4					4		4		4	4	4	4	4	4		4	4.8
2Dbb		N	239									4	4				4	4	4					4				4	4	4	4		4		4	5.6
2Dbe4	2Uge	Y	402		4								4	4				4				4		4	4	4	4		4	4			4		4	1.5
2DbeW		N	80		4			4					4					4					4	4	4				4	4			4	5	5	3.0
2DbeW		N	94		4			4					4					4					4	4	4				4	4			4	5	5	6.4
2Dda		N	200		4								4	4				4					4	4	4	4		4	4	4	4		4		4	2.4
2Ddb		N	147									4	4				4	4	4					4				4	4	4	4	4	4		4	4.9
2Ddb	2Dya	N	529									4	4				4	4	4					4				4	4	4	4	4	4		4	11.5
2Dyb	2Ugg	N	86		4								4					4					4	4	4			4	4	4	4		4		4	2.9
2Dyb		N	118									4	4				4	4	4					4				4	4	4	4		4		4	3.5
2Dyb		N	127		4								4					4					4	4				4	4	4	4		4		4	2.5
2Dyb		N	202		4								4					4					4	4				4	4	4	4		4		4	3.5
2Dyb2		N	125		4								4					4				4	4	4				4	4	4	4		4		4	0.6
2Dyb2		N	257		4								4					4				4		4				4	4	4	4		4	5	5	2.5
2DybE		N	379						5				5					5		5				5				4	5	4	4		4		5	1.1
2UgcE		N	534						5				5					5		5				5					5	4			4	4	5	5.2
2Ugd		N	124		4								4					4					4	4			4		4	4			4	4	4	1.3
2Ugd		N	329		4								4					4					4	4			4		4	4			4	4	4	2.4
2Ugd		N	458		4								4					4					4	4			4		4	4			4	4	4	3.1
2UgdW		N	126		4			4					4					4					4	4			4		4	4			4	5	5	3.1
2Uge		N	333		4								4					4					4	4			4		4	4			4	4	4	2.7
2Uge		N	439		4								4					4					4	4	4		4		4	4			4	4	4	2.2
2UgeE		N	392						5				5					5		5				5				4	5	4			4	4	5	4.0
2UgeW		N	211					4					4					4						4				4	4	4			4	5	5	4.6
2UgeW		N	372					4					4					4						4				4	4	4			4	5	5	13.7
2Ugf		N	75		4								4					4					4	4	4		4		4				4	5	5	2.7
2Ugf		N	87					4					4					4					4	4			4		4				4	5	5	0.9
2Ugf2		N	69		4								4					4				4		4			4		4				4	5	5	7.9

Table 8 (continued)

ST1	ST2	C	UMA	m	pd	id	g	w	e	p	t	so	C	ps	t	p	so	Mz	so	t	g	dd	pd	R	pd	ps	p	so	Cap	so	sa	d	id	w	Mg	AREA
2Ugf2		N	76		4								4					4				4		4	4		4		4				4	5	5	2.2
2UgfE		N	135						5				5					5		5				5			4		5				4	4	5	2.8
2UgfW		N	110					4					4					4						4			4		4				4	5	5	3.6
2UgfW		N	113					4					4					4						4			4		4				4	5	5	5.5
2UgfW		N	250		4			4					4					4					4	4	4		4		4				4	5	5	1.9
2UgfW		N	315					4			4		4		4			4		4				4			4		4				4	5	5	30.1
2UgfW		N	356					4					4					4					4	4			4		4				4	5	5	2.4
2UgfW		N	381					4					4					4						4			4		4				4	5	5	0.3
2UgfW	2UgcW	N	382					4					4					4						4			4		4				4	5	5	5.6
2Ugg	2Ugc	N	93		4			4					4					4					4	4	4		4		4				4	5	5	3.3
2UggW		N	214					4					4					4						4			4		4				4	5	5	0.5
2UggW		N	225					4					4					4						4			4		4				4	5	5	17.3
2UggW		N	313					4			4		4		4			4		4				4			4		4				4	5	5	2.3
2UggW		N	316					4			4		4		4			4		4				4			4		4				4	5	5	0.9
6 E		N	158						5		5		5		5			5		5				5					5						5	5.5
6 E		N	219						5		5		5		5			5		5				5					5						5	2.2
6 E		N	393						5		5		5		5			5		5				5					5						5	10.3
6 P		N	77					5					5		5			5		5				5					5					5	5	5.2
6 SP	6UgcW	N	527					4					4					4		4				4					4					5	5	5.7
6 SP		N	161					5					5					5		5				5					5					5	5	0.2
6 SP		N	163					5					5					5		5				5					5					5	5	0.2
6 SP		N	165					5					5					5		5				5					5					5	5	0.4
6 SP		N	183					5					5					5		5				5					5					5	5	2.5
6 SP		N	188					5					5					5		5				5					5					5	5	5.3
6 SP		N	190					5					5					5		5				5					5					5	5	2.2
6 SP		N	194					5					5					5		5				5					5					5	5	27.7
6 SP		N	215					5					5					5		5				5					5					5	5	0.7
6 SP		N	216					5					5					5		5				5					5					5	5	1.3
6 SP		N	348					5					5					5		5				5					5					5	5	3.8
6 SP		N	432					5					5					5		5				5					5					5	5	5.5
6 SP		N	440					5					5					5		5				5					5					5	5	0.4
6Dba2		N	331		4								4					4				4		4				4	4	4	4		4		4	2.4
6Dbb		N	350		4								4					4				5		5	4				4	4			4		4	1.2
6Dbb3		N	185		4								4					4		4		5		5				4	4	4			4		4	14.8
6Dbc		N			4								4					4				5		5	4				4				5		5	2.8
6DbcE	6UfdW	Y	150		4			4	4		5		5		5			5		5		5		5	4				5				4	5	5	5.6
6DbeE		N	217						5				5		4			5		5		5		5					5						5	2.2
6Dbf	6Dda	Y	375		4								4					4		5		5		5				4	4	4	4		4		4	23.0

Table 8 (continued)

ST1	ST2	C	UMA	m	pd	id	g	w	e	p	t	so	C	ps	t	p	so	Mz	so	t	g	dd	pd	R	pd	ps	p	so	Cap	so	sa	d	id	w	Mg	AREA
6DbfE		N	159						5		4		5		4			5		5		5		5					5						5	3.0
6Dda		N	167		4								4					4					4	4			4	4	4	4		4		4	2.7
6Dda3		N	191		4								4					4		5			4	5	4			4	4	4		4		4	0.8
6Dda5		N	541		4						4		4		4			4					4	4	4			4	4	4		4	5	5	0.4
6Dyb2		N	536		4								4					4				5		5	4			4				4		4	0.6
6Dyd2		N	517		4								4					4				5		5	4			4				4		4	1.7
6Dyd2		N	528		4								4					4				5		5	4			4				4	5	5	1.5
6Dyf		N	309		4								4					4				5		5	4			4					5	5	0.8
6Dyf	6Ugc	Y	416		4								4					4				5		5	4		4		4			4	5	5	2.6
6Dyf3		N	442		4								4					4				5		5	3				4				5	5	1.2
6Dyg		N	272		4								4					4					4	4				4	4	4	4	4		4	3.1
6Dyg		N	287		4								4					4					4	4				4	4	4	4	4		4	4.5
6Dyg		N	292		4								4					4					4	4				4	4	4	4	4		4	2.4
6Dyg2		N	330		4								4					4				4		4				4	4	4	4	4		4	2.2
6Dyg2		N	342		4								4					4				4		4				4	4	4	4	4		4	3.3
6Dyg2	6Drc2	Y	345		4								4					4				5		5	4				4	4	4	4		4	8.9
6Dyg2	6Uca4	Y	332		4	5				4			5			4		5				5		5			4		5	4	4		4		4	3.3
6Dyj		N	16		4							4	4				4	4	4			4		4	4			4	4	4	4	4	4	4		4	1.8
6Dyj		N	23									4	4				4	4	4					4				4	4	4	4	4	4	4		4	5.8
6Dyj		N	83		4							4	4				4	4	4			4		4	4			4	4	4	4	4	4	4		4	1.6
6Dyj	6Ugc	N	89									4	4				4	4	4					4				4	4	4	4	4	4	4		4	7.8
6Dyj2		N	338									4	4				4	4	4			4		4				4	4	4	4	4	4	4		4	1.3
6Dyj2		N	304									4	4				4	4	4			4		4				4	4	4	4	4	4	4	5	5	5.9
6Dyj2		N	328									4	4				4	4	4			4		4				4	4	4	4	4	4	4	5	5	3.2
6Gnd		N	358		4								4					4				5		5	4				4					4	4	0.7
6Uga		N	278		4								4					4					4	4			4		4				4	4	4	2.7
6Uga2		N	281		4								4					4					4	4			4		4		4		4	4	4	1.9
6UgaW		N	288					4					4					4						4			4		4				4	5	5	19.7
6Ugc		N	95		4								4					4					4	4	4		4		4				4	4	4	1.0
6Ugc		N	116		4								4					4		4			4	4	4		4		4				4	4	4	1.0
6Ugc		N	324		4								4					4					4	4	4		4		4				4	4	4	1.5
6Ugc		N	363		4								4					4					4	4	4		4		4				4	4	4	0.8
6Ugc		N	456		4								4					4					4	4	4		4		4				4	4	4	1.1
6Ugc		N						4					4					4					4	4			4		4				4	5	5	1.8
6Ugc		N	38					4			4		4		4			4		4				4			4		4				4	5	5	6.5
6Ugc		N	55		4								4					4					4	4			4		4				4	5	5	2.4
6Ugc		N	71		4								4					4					4	4	4		4		4				4	5	5	1.4
6Ugc	6Ugc2	N	548								4		4		4			4						4	4		4		4				4	5	5	10.5

Table 8 (continued)

ST1	ST2	C	UMA	m	pd	id	g	w	e	p	t	so	C	ps	t	p	so	Mz	so	t	g	dd	pd	R	pd	ps	p	so	Cap	so	sa	d	id	w	Mg	AREA
6Ugc	6Dda5	N	549								4		4		4			4					4	4			4		4				4	5	5	4.1
6Ugc		N	6					4					4					4		5				5			4		4				5	5	5	4.0
6Ugc2		N	349		4						4		4		4			4				4		4	4		4		4	4			4	4	4	0.2
6Ugc2		N	364		4								4					4					4	4	4		4		4				4	4	4	0.6
6Ugc2	6Ugc	N	15		4								4					4				4		4	4		4		4				4	5	5	2.4
6Ugc2	6Ugc	N	42		4						4		4		4			4		4		4		4	4		4		4				4	5	5	13.4
6Ugc2		N	4		4								4					4		5		4		5	4		4		4				4	5	5	3.2
6UgcW		N	136					4			4		4		4			4						4				4					4	4	4	3.2
6UgcW		N	160					4					4					4					4	4				4					4	4	4	1.0
6UgcW	6Dda	Y	179					4					4					4		4				4				4			4		4	4	4	2.9

. Non-sodic duplex soils (6Dbc, 6Dbf, 6Drb, 6Dyd etc.), weakly sodic duplex soils (6Drc and 6Dyf) and medium-textured soils (6Uma) are the most suitable soils for furrow irrigation of capsicums. Capsicums, like most horticultural crops, are susceptible to waterlogging and therefore are grown more successfully on well drained soils. Some cracking clays and sodic duplex soils where high sodicity occurs below 0.6 m are also suitable for capsicums. A total of 1 973 ha is suitable for the furrow irrigation of this crop.

5.2.2 Flood-irrigated rice

. Rice can be grown on cracking clays (2Ug) and sodic duplex soils (2Db, 2Dy, 6Dyg). A total of 3 184 ha in the Selkirk area is suitable for this crop. The major limitation for rice production is excessive deep drainage losses (dd) caused by a high proportion of sand either in the subsoil or throughout the soil profile. Weakly sodic duplex (6Drc, 6Dyf), non-sodic duplex (6Dbc, 6Dbf, 6Drb), medium-textured (6Um) and coarse-textured (6Uc) soils are unsuitable for rice due to excessive deep drainage losses (dd). The slope gradient requirement in rice is more rigid than for other crops because of the precise irrigation management required for rice.

Table 9. Area of land suitability classes for furrow irrigation of sugar-cane, maize and capsicums, flood irrigation of rice and low volume irrigation of mangoes, in Selkirk Section, BRIA.

Land suitability class	Area of land (ha) within each suitability class				
	Sugar-cane	Maize	Rice	Capsicums	Mangoes
1	-	-	-	-	-
2	1104	-	1530	-	111
3	3342	4291	1654	1973	1044
Total Suitable	**4446**	**4291**	**3184**	**1973**	**1155**
4	723	878	669	3196	3434
5	428	428	1745	428	1008

Total Area = 5 596 ha

5.2.3 Low volume irrigated crops

. Mangoes can only be grown on a limited number of soils. Medium-textured soil types (6Uma), coarse-textured soils (6Uc) and non sodic or weakly sodic duplex soils (6Dbc, 6Dbf, 6Drb and 6Dyf) are suitable for this crop.

Imperfect to poor internal drainage of sodic duplex soils (2D, some 6D) and most of the cracking clays (2Ug and 6Ug) is the major limitation for mango production. Subsoil impediments such as buried clay layers, sodicity and salinity would render any of the generally suitable soils unsuitable for mangoes because of the deeper rooting system of this crop, eg., some areas mapped north of the Bruce Highway.

5.3 Land Development and Management Considerations

In the Selkirk Section, particular concerns for farm design, subdivision and subsequent management of the land are:

* **Land degradation hazards** - flooding and erosion;

* **land management problems** - landform pattern, groundwater, complex soil distribution, likely presence of nematodes in certain soils and unsuitable mapping units.

5.3.1 Flooding

The southern and northeastern portion south of the Bruce Highway are prone to flooding (see section 2.4). This can be exacerbated if the designed drainage in the area is inefficient. Selkirk Section is topographically lower than the other sections in BRIA and it is close to the sea. **It is crucial that the drainage design in the upper, southern areas of Haughton and Mulgrave sections do not allow an increased volume of water to the Selkirk area during the wet season.**

The only drainage channel in the Selkirk Section is the Barratta and West Barratta Creek. The creek is rather small within the area and would fill to capacity during the wet season.

5.3.2 Erosion

The West Barratta Creek and its tributaries are delineated on the soils map as an eroded phase (E). Where there are dispersive clays (sodic and strongly sodic soils) in the subsoils, the material would be very prone to erosion. The gully heads of the tributaries are also potential areas of erosion. These gullies should be stabilised and a buffer zone maintained for the long term sustainable development of this area. Continuous monitoring of the gullies in the long term is essential to conserve the invaluable land resource for continuous use. Although natural erosion is difficult to curb, it is important that accelerated erosion caused by human activities be kept to the minimum.

Table 10. **Area and land suitability* for sugar-cane, maize, rice, capsicums and mangoes for mapping units in Selkirk Section, BRIA.**

Mapping unit	Sugar cane	Maize	Rice	Capsicum	Mangoes	Area (ha)
2E	5	5	5	5	5	242.3
2SP	4	4	4	4	5	5.2
2Dba	4	4	4	4	4	4.8
2Dbb	3	3 (4)	2-3	4	4-5	83.2
2Dbb2	3	4	4	4	5	4.6
2Dbc	3	3	3 (5)	3	4	19.5
2Dbc2	3	3	4	3	4	4.0
2Dbd	3	3	3 (4)	3 (4)	4-5	62.7
2Dbe	3	3	3	3 (4)	4-5	26.7
2Dbe 4	4	4	4	4	4	1.5
2DbeW	4	4	4	4	5	9.4
2Dda	4	4	4	4	4	2.4
2Ddb	4	4	4	4	4	16.4
2Dyb	3	3 (4)	2-3 (4)	4 (3)	4-5	586.2
2Dyb2	4	4	4	4	4-5	3.1
2DybE	5	5	5	5	5	1.1
2Dyc	3	3	2-3	3-4	4	13.2
2Ugc	3	3	2 (3)	4 (3)	4 (5)	182.7
2Ugc5	2	3	2-3	4 (3)	4	7.2
2UgcE	5	5	5	5	5	5.2
2Ugd	3 (2)	3	3 (2)	4	4	900.0
2Ugd5	3	3	2	4	4	22.0
2UgdW	4	4	4 (2)	4	5	34.4
2Uge	3 (2)	3	3 (2)	3-4	4 (5)	800.0
2UgeE	5	5	5	5	5	4.0
2UgeW	4	4	4	4	5	18.3
2Ugf	3 (2)	3	2-3	4	4-5	71.2
2Ugf2	4	4	4	4	5	10.1
2UgfE	5	5	5	5	5	2.8
2UgfW	4	4	4	4	5	49.4
2Ugg	3	3	3 (4)	4	4-5	97.1
2UggW	4	4	4	4	5	21.0
2Ugh	3	3	3	4	4	64.5
2UghW	4	4	3	4	5	9.8

Table 10. (Continued) 36

Mapping unit	Sugar cane	Maize	Rice	Capsicum	Mangoes	Area (ha)
2Ugk	3	3	3	4	4	27.6
6E	5	5	5	5	5	18.0
6P	5	5	5	5	5	5.2
6SP	5	5	5	5	5	55.9
6Dba2	4	4	4	3-4	4	6.5
6Dbb	4	4	5	4	4	1.2
6Dbb3	4	4	5	4	4	14.8
6Dbc	4 (2)	4 (3)	5	3-4	5 (3)	37.6
6DbcE	5	5	5	5	5	5.6
6Dbd	4 (3)	4 (3)	5	3 (4)	3 (5)	32.5
6Dbd3	4	4	5	3	3	4.3
6Dbe	4 (3)	4 (3)	5	3 (4)	3	100.8
6DbeE	5	5	5	5	5	2.2
6Dbf	4 (3)	4 (3)	5	3 (4)	2 (4)	40.4
6Dbf2	3	3	5	3	3	7.8
6DbfE	5	5	5	5	5	3.0
6Dda	4	4	4-5	3-4	4	6.8
6Dda2	4	4	4	3	4	0.5
6Dda3	4	4	5	3-4	4	2.9
6Dda5	4	4	4	4	5	0.4
6Drb	3-4	3-4	5	3-4	3 (5)	43.2
6Drb2	4 (3)	4 (3)	5	3 (4)	3 (5)	133.0
6Drb4	4	4	5	3	3	2.9
6Drc	3-4	3-4	5	3 (4)	3	147.4
6Drc2	4 (3)	4 (3)	5	3 (4)	3	19.1
6Dya	4	4	5	4	3	10.0
6Dya2	4	4	5	4	3	1.1
6Dyb	3-4	3-4	5	3-4	3	22.9
6Dyb2	3 (4)	3 (4)	5	3 (4)	3 (5)	34.9
6Dyc2	4	4	5	3	3	6.7
6Dyd	2 (4)	3-4	5	3-4	3	88.1
6Dyd2	3-4	3-4	5	3 (4)	3 (5)	50.8
6Dye	3 (4)	3 (4)	5	3 (4)	4	9.9
6Dyf	3-4	3-4	5	3 (4)	3 (5)	203.4
6Dyf2	3 (4)	3 (4)	5	3 (4)	3-4	266.5
6Dyf3	3-4	3-4	5	3-4	3 (5)	11.8

Table 10. (Continued)

Mapping unit	Sugar cane	Maize	Rice	Capsicum	Mangoes	Area (ha)
6Dyg	3 (4)	3 (4)	3-4	3-4	4 (5)	397.0
6Dyg2	3 (4)	3 (4)	4	3-4	4 (5)	147.5
6Dyg3	3	3	4 (3)	3 (4)	4 (5)	26.5
6Dyj	4	4	4	4	4	17.0
6Dyj2	4	4	4	4	4-5	10.4
6Gnb	4	4	5	4	3	0.5
6Gnd	4	4	5	4	4	0.7
6Uca	5	5	5	5	2	13.3
6Ucb	5	5	5	5	2	27.1
6Ucc	5	5	5	5	2	33.1
6Uga	2 (4)	3-4	3-4	4	4	9.0
6Uga2	4	4	4	4	4	1.9
6UgaW	4	4	4	4	5	19.7
6Ugc	4 (2)	4 (3)	4 (5)	4	4-5	40.5
6Ugc2	4	4	4	4	4-5	19.8
6Ugc3	2	3	3	4	4	2.0
6UgcW	4	4	4	4	4	7.1
6Uma	5	5	5	5	2	9.1

( ) indicates minor occurrences
Mapping units 2SP, 2E, 6E, 6P, 6SP and dam totalled 329.5 ha are unsuitable for all crops
* General suitability only - refer UMA data file for individual areas

5.3.3 Landform pattern

Farm design in this area will be constrained by topography. The shape, as well as the size and direction of the drainage system of Barratta Creek and its tributaries will influence farm subdivision. Because of the necessity to subdivide viable farms, a minimum as well as a maximum size and shape is a prerequisite during subdivision. The Barratta Creek, its tributaries and depresssional wet areas are the major landform limitations in subdivision. In designing new farms restricted by such limitations the designers should manipulate the shape and size of farms to take full advantage of the suitable cropping land. If possible, drainage depressions could be used for drainage channels.

5.3.4. Groundwater

Groundwater investigations by Water Resources suggest that it is the water quality rather than the levels which constitute a problem in the Selkirk Section. The problem is exacerbated by the proximity of the northern portion of this section (north of Bruce Highway) to the sea. Area to the immediate south of the North Coast Railway has been recommended not to be served by surface waters. Groundwater investigations and modelling by Water Resources show that saline groundwater is close to the surface in this area.

It is recommended that continuous periodic groundwater investigation be carried out in the long term to ensure the viability of cropping in this section, especially areas north of the Bruce Highway.

5.3.5 Complex soil distribution

Areas with a complex pattern of soils with widely different management requirements often prevent optimum production being achieved. Such a complex pattern occurs in the southern central portion, west of the uppermost part of the Barratta Creek Systems. Uniform sandy soils (6Ucb, 6Ucc), sodic and strongly sodic soils (2Dyb, 6Dyg2, 6Dyg, 6Dyj) and cracking clays (2Uge, 2Ugd, 2Ugc) occur in close proximity. This extreme soil variability within a small area must be considered in farm subdivision.

5.3.6 Needle nematodes

Monitoring of needle nematode populations on the cracking clays of landscape unit 2 is desirable if rice production is attempted in this area. Areas with excessive populations which may cause economic damage or crop failure should be avoided.

5.3.7 Unsuitable UMAs

Any large contiguous UMAs which are unsuitable for **all** crops should be excluded from within farms. However, if the areas are small and impracticable to exclude, the unsuitable UMAs should be located at the boundaries rather than in the centre of the farm if possible.

For ease of farm management, individual farms should be positioned to consist of majority of soil types with similar irrigation management requirements wherever possible. Ameliorative measures, when required, would be easier to implement on such farms.

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APPENDIX I

VEGETATION OF SELKIRK SECTION, BRIA

COMMON NAMES	SCIENTIFIC NAMES
Trees:	
Beefwood	*Grevillea striata*
Cabbage gum	*Eucalyptus papuana*
Carbeen	*Eucalyptus tessellaris*
Cocky apple	*Planchonia careya*
Grey bloodwood	*Eucalyptus polycarpa*
Pandanus	*Pandanus spp.*
Poplar gum	*Eucalyptus Platyphylla*
Tea-tree	*Melaleuca nervosa*
Shrubs:	
Broad leaf tea-tree	*Melaleuca viridiflora*
Chinee apple	*Zizaphus mauritiana*
Corkwood wattle	*Acacia bidwillii*
False sandalwood	*Eremophila mitchellii*
Mimosa bush	*Acacia farnesiana*
Rubber vine	*Cryptostegia grandiflora*
Grasses:	
Black spear grass	*Heteropogon contortus*
Blady grass	*Imperata cylindrica*
Blue grasses	*Bothriochloa and Dicanthium spp.*
Brown sorghum	*Sorghum nitidum*
Giant spear grass	*Heteropogon triticeus*
Golden beard grass	*Chrysopogon fallax*
Love grass	*Eragrostis spp.*
Purple top Rhodes grass	*Chloris barbata*
Sedges	*Cyperus spp.*
Wire grass	*Aristida spp.*

APPENDIX II

MORPHOLOGICAL AND ANALYTICAL DATA

FOR REPRESENTATIVE SOIL PROFILES,

SELKIRK SECTION, BRIA

SOIL TYPE: 6Dyf
SITE NO: S1
A.M.G. REFERENCE: 519 188 mE 7 837 372 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy2.43
SOIL TAXONOMY UNIT: Udic Paleustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Bleached-Vertic, Calcic, Grey Chromosols. (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Very tall open woodland
DOMINANT SPECIES: Eucalyptus platyphylla Cryptostegia grandiflora

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting, poached

HORIZON	DEPTH	DESCRIPTION
A1	0 to .15 m	Brownish black (10YR3/2); clay loam; weak; dry; moderately weak. clear to-
A2e	.15 to .30 m	Greyish yellow-brown (10YR5/2), light grey (10YR8/1) dry; clay loam; weak. clear to-
B21t	.30 to .55 m	Greyish yellow-brown (10YR5/2); common fine distinct orange mottles; medium clay; strong lenticular.
B22t	.55 to .90 m	Greyish yellow-brown (10YR5/2); few fine distinct orange mottles; medium clay; few small pebbles, subangular gravel; strong lenticular.
B23t	.90 to 1.25 m	Brownish grey (10YR4/1); medium clay; few small pebbles, subangular gravel; strong lenticular.
2B24	1.25 to 1.55 m	Greyish yellow-brown (10YR4/2); light medium clay; common medium pebbles, subangular gravel; moderate angular blocky; few medium calcareous nodules.

Depth	1:5 Soil/Water pH	EC	Cl	Particle Size CS	FS	S	C	Exch. Cations CEC	Ca	Mg	Na	K	Total Elements P	K	S	Moistures ADM 33*	1500*	Disp.Ratio R1	R2	Exch Al	Exch Acid	ECEC	pH CaCl2
metres	@ 40C	dS/m	% @105C	% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C		@ 40C		m.eq/100g @ 105C			@ 40C
B 0.10	6	.06	.005																				4.5
0.10	5.6	.05	.004	10	41	27	26	16	4.0	2.6	.13	0.5	.029	1.42	.034	2.6	9	.72			8		4.5
0.30	6.4	.02	.001	12	37	28	23	8	3.6	2	.25	.13	.016	1.5	.017	1.8	7	.93			7		4.7
0.50	6	.05	.005					26	10	6	1.4	.33									22		4.4
0.90	6.3	.28	.037	12	20	13	53	30	14	8.9	2.9	.24	.016	1.24	.017	4.5	19	.99			28		5.3
1.20	7.8	.43	.055	11	22	18	48	31	18	10	4.1	.17	.021	1.46	.018	4.4					32		6.9
1.50	9	.62	.069																				7.8

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe	Mn	Cu	Zn	B mg/kg @ 105C	Extractable SO4S mg/kg @ 105C	NO3N	NH4N	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C
metres																						
B 0.10	1.8	0.1	5		.49			177	98	1.3	1.3											
0.10																		5	2.8	.24	.52	
0.30																		4.0	2.2	.35	.14	
0.50																		12	7.7	1.7	.42	
0.90																		15	9.5	3.7	.41	
1.20																		17	10	5.1	.35	
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Dbc
SITE NO: S2
A.M.G. REFERENCE: 519 160 mE 7 835 855 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy3.33
SOIL TAXONOMY UNIT: Aridic Haplustalfs (?)
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Calcic, Mottled-Subnatric, Brown Sodosols. (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Low isolated clump of trees
DOMINANT SPECIES: Melaleuca species, Acacia bidwillii, Acacia leiocalyx

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .10 m	Dark brown (10YR3/4); loam, fine sandy; weak; dry; moderately weak. clear to-
A2j	.10 to .30 m	Dull yellowish brown (10YR4/3), light grey (10YR8/1) dry; loam, fine sandy; weak. clear to-
B21t	.30 to .60 m	Yellowish brown (10YR5/6); common medium distinct grey mottles; light medium clay; strong lenticular.
B22t	.60 to .95 m	Olive brown (2.5Y4/3); light medium clay; strong lenticular.
B23t	.95 to 1.30 m	Yellowish brown (2.5Y5/3); light medium clay; strong angular blocky; few coarse calcareous nodules.
2B24	1.30 to 1.50 m	Yellowish brown (2.5Y5/3); fine sandy light clay; moderate angular blocky.

Depth	1:5 Soil/Water pH	EC	Cl	Particle Size CS	FS	S	C	Exch. Cations CEC	Ca	Mg	Na	K	Total Elements P	K	S	Moistures ADM 33*	1500*	Disp.Ratio R1	R2	Exch Al	Exch Acid	ECEC	pH CaCl2
metres	@ 40C	dS/m	@105C	% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C		@ 40C		m.eq/100g @ 105C			@ 40C
B 0.10	6.3	.07	.006																				5.4
0.10	6	.02	.001	40	35	13	10	7	1.9	.92	.09	.32	.019	1.62	.024	1	4	.89					4.8
0.30	6.1	.01	.001	38	33	7	19	6	1.7	1.5	0.2	.11	.017	1.59	.024	1.2	5	.98					4.5
0.60	7.3	.18	.023	27	22	9	38	19	7.4	5.7	2.3	0.1	.018	1.48	.017	3.4	13	.99					6.2
0.90	8.6	.46	.057	17	29	17	34	22	11	8.1	4.9	.14	.021	1.71	.022	3.9	14	.99					7.5
1.20	8.6	.5	.066	21	29	16	32	22	11	7.4	4.8	.12	.028	1.78	.016	3.8							7.6
1.50	9	.47	.056																				7.7

Depth	Org.C (W&B)	Tot.N	Extr. P Acid	Bicarb.	HCl K	CaCl2 Extr K	P	DTPA-extr. Fe	Mn	Cu	Zn	B	Extractable SO4S	NO3N	NH4N	P Buff Cap	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K
metres	% @ 105C	% @ 105C	mg/kg @ 105C		meq% @105C	mg/kg @ 105C		mg/kg @ 105C					mg/kg @ 105C			@ 40C		m.eq/100g @ 105C				
B 0.10	1.1	.04	2		.60			42	51	.31	.43											
0.10																						
0.30																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Dyb
SITE NO: S3
A.M.G. REFERENCE: 519 442 mE 7 836 183 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils

PRINCIPAL PROFILE FORM: Dy2.33
SOIL TAXONOMY UNIT: Typic Natrustalfs
PAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Vertic, Subnatric, Brown Sodosols (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat

LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .05 m	Brownish black (10YR3/2); clay loam; weak; dry; moderately weak. clear to-
A2j	.05 to .18 m	Greyish yellow-brown (10YR6/2), light grey (10YR8/1) dry; clay loam; weak. clear to-
B21t	.18 to .45 m	Dull yellowish brown (10YR5/4); few fine distinct orange mottles; medium clay; strong lenticular.
B22t	.45 to .80 m	Brown (10YR4/4); medium clay; strong lenticular.
2B23	.80 to 1.00 m	Brown (10YR4/6); medium clay; strong lenticular; few coarse calcareous nodules.
2B24	1.00 to 1.52 m	Brown (7.5YR4/6); medium clay; strong lenticular; few coarse calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS S C % @ 105C	Exch. Cations CEC Ca Mg Na K m.eq/100g @ 105C	Total Elements P K S % @ 80C	Moistures ADM 33* 1500* % @ 105C	Disp.Ratio R1 R2 @ 40C	Exch Al m.eq/100g @ 105C	Exch Acid m.eq/100g @ 105C	ECEC m.eq/100g @ 105C	pH CaCl2 @ 40C
B 0.10	6.3	.04	.003									5.1
0.05	6	.07	.004	5 47 35 19	13 4.5 2.3 .15 .42	.035 1.26 .03	1.8 8	.76				5
0.18	6.3	.03	.002		9 4.6 2.8 .27 .14							4.9
0.30	6.4	.05	.005	2 21 18 57	27 10 8.3 1.5 .34	.023 1.18 .022	4.9 21	.62				4.8
0.60	7.8	.12	.015	3 23 19 55	27 13 10 2.6 .26	.021 1.24 .023	4.9 21	.84				6.5
0.90	8.9	.4	.036	3 23 20 54	28 14 12 3.8 .24	.02 1.32 .021	4.7 21	.87				7.8
1.20	9	.51	.049	4 26 24 50	27 11 11 4.0 .28	.027 1.51 .018	4.5					8
1.50	9.1	.48	.040									8

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe Mn Cu Zn mg/kg @ 105C	B	Extractable SO4S NO3N NH4N mg/kg @ 105C	P Buff Cap	Equil ug/L @ 40C	Alternative Cations CEC Ca Mg Na K m.eq/100g @ 105C
B 0.10	1.3	.08	11		.40			112 76 .89 1.5					
0.05													
0.18													
0.30													
0.60													
0.90													
1.20													
1.50													

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Ugd
SITE NO: S4
A.M.G. REFERENCE: 519 863 mE 7 835 107 mN ZONE 55

GREAT SOIL GROUP: Grey Clays
PRINCIPAL PROFILE FORM: Ug3.2
SOIL TAXONOMY UNIT: Typic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Endocalcareous,
Epipedal,Brown Vertosols. (Confidence level 1).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: 0.30 m
HORIZONTAL INTERVAL: 8 m
COMPONENT OF MICRORELIEF SAMPLED: mound

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Alluvium
LANDFORM PATTERN TYPE: alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: periodic cracking, poached

HORIZON	DEPTH	DESCRIPTION
A1	0 to .05 m	Greyish yellow-brown (10YR4/2); light clay; moderate angular blocky. clear to-
A2j	.05 to .17 m	Greyish yellow-brown (10YR6/2), light grey (10YR8/1) dry; light clay; moderate angular blocky. clear to-
B21	.17 to .60 m	Dull yellowish brown (10YR5/3); medium heavy clay; strong lenticular.
B22	.60 to 1.18 m	Brownish grey (10YR4/1); medium heavy clay; strong lenticular.
B23	1.18 to 1.35 m	Brownish grey (10YR4/1); medium heavy clay; strong lenticular; few coarse calcareous nodules.
B24	1.35 to 1.56 m	Dull yellowish brown (10YR4/3); medium clay; strong lenticular; few coarse calcareous nodules.

Depth (metres)	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS S % @ 105C	C	Exch. Cations CEC Ca Mg Na K m.eq/100g @ 105C	Total Elements P K S % @ 80C	Moistures ADM 33* 1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Exch ECEC Al Acid m.eq/100g @ 105C	pH CaCl2 @ 40C
B 0.10	6.1	.04	.003									5
0.05	5.7	.06	.006	3 36 34 30		17 5.4 3.6 .22 .63	.037 1.31 .03	2.9 12	.69			4.7
0.17	6.2	.03	.002			20 8.8 5 .39 .47						4.9
0.30	6.6	.02	.001	2 14 18 66		34 13 10 1 .58	.026 1.19 .021	6.3 25	.57			4.9
0.60	7.1	.07	.007	2 15 17 63		36 14 12 1.8 .40	.02 1.21 .018	6 23	.7			5.8
0.90	8.4	.26	.028	2 17 18 62		35 17 15 3.0 .35	.018 1.22 .022	6.6 23	.78			7.5
1.20	8.8	.48	.048	2 18 21 59		36 17 16 3.7 .31	.017 1.2 .018	6.5				7.9
1.50	8.7	.63	.071									7.9

Depth (metres)	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe Mn Cu Zn B mg/kg @ 105C	Extractable SO4S NO3N NH4N mg/kg @ 105C	P Buff Equil Cap ug/L @ 40C	Alternative Cations CEC Ca Mg Na K m.eq/100g @ 105C
B 0.10	2.2	.11	19	.66			148 105 1.6 1.5			
0.05										
0.17										
0.30										
0.60										
0.90										
1.20										
1.50										

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Uge
SITE NO: S5
A.M.G. REFERENCE: 520 321 mE 7 836 750 mN ZONE 55

GREAT SOIL GROUP: Grey Clays

PRINCIPAL PROFILE FORM: Ug3.2
SOIL TAXONOMY UNIT: Typic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION:
Endocalcareous-Endohypersodic, Epipedal, Grey Vertosols. (Confidence level 1).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: 0.15 m
HORIZONTAL INTERVAL: 8 m
COMPONENT OF MICRORELIEF SAMPLED: mound

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat

LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Low open woodland
DOMINANT SPECIES: Eucalyptus tessellaris, Acacia leiocalyx, Cryptostegia grandiflora

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: periodic cracking

HORIZON	DEPTH	DESCRIPTION
Aj	0 to .07 m	Dark brown (10YR3/3), light grey (10YR7/1) dry; light clay; moderate angular blocky. clear to-
B21	.07 to .32 m	Dark greyish yellow (2.5Y4/2); medium clay; strong lenticular.
B22	.32 to .80 m	Brown (10YR4/4); medium clay; strong lenticular; common medium calcareous nodules.
B23	.80 to 1.20 m	Brown (7.5YR4/4); medium clay; strong lenticular; few coarse calcareous nodules.
2B24	1.20 to 1.50 m	Bright brown (7.5YR5/6); fine sandy, clay; few coarse calcareous nodules.

Depth (metres)	1:5 Soil/Water pH @ 40C	EC dS/m @105C	Cl % @105C	Particle Size CS	FS	S	C (%) @ 105C	Exch. Cations CEC	Ca	Mg	Na	K (m.eq/100g @ 105C)	Total Elements P	K	S (% @ 80C)	Moistures ADM 33* (%) @ 105C	1500* (%) @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Al (m.eq/100g @ 105C)	Exch Acid (m.eq/100g @ 105C)	ECEC (m.eq/100g @ 105C)	pH CaCl2 @ 40C
B 0.10	6.3	.04	.003					19	4.3	5	.47	.49											4.9
0.07	6.4	.05	.003	5	41	25	33	21	4.6	5.9	.78	.56	.041	1.21	.036	2.9	13	.6					5
0.30	7.9	.28	.033	2	19	19	61	34	13	14	4.1	.31	.026	1.16	.028	5.3	23	.77					7
0.60	9	1.1	0.14	4	22	18	57	30	10	14	7	.26	.023	1.29	.023	5.6	21	.92					8.2
0.90	8.9	1.4	.172	3	26	17	54	28	8.8	13	8.5	0.3	.023	1.38	.023	4.8	21	.99					8.2
1.20	9	1.2	.145	3	32	14	50	25	7.6	10	7.7	.33	.03	1.53	.021	4.1							8.1
1.50	8.7	.71	.092																				7.8

Depth (metres)	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe	Mn	Cu	Zn	B (mg/kg @ 105C)	Extractable SO4S NO3N NH4N (mg/kg @ 105C)	P Buff Cap	Equil ug/L @ 40C	Alternative Cations CEC	Ca	Mg	Na	K (m.eq/100g @ 105C)
B 0.10	1.7	.06	4	.45			85	84	1.5	.70									
0.07																			
0.30																			
0.60																			
0.90																			
1.20																			
1.50																			

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dyf2
SITE NO: S6
A.M.G. REFERENCE: 515 504 mE 7 831 008 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy2.43
SOIL TAXONOMY UNIT: Udic Paleustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Bleached-Vertic, Calcic, Brown Chromosols (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Dwarf woodland
DOMINANT SPECIES: Melaleuca species, Eucalyptus platyphylla

ANNUAL RAINFALL: 1090 mm

SURFACE COARSE FRAGMENTS: No coarse fragments

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .12 m	Brownish black (10YR2/3); loam, fine sandy; weak; dry; moderately weak. clear to-
A2e	.12 to .36 m	Greyish yellow-brown (10YR6/2), light grey (10YR8/1) dry; loam, fine sandy; weak. clear to-
B21t	.36 to .62 m	Brown (10YR4/6); medium clay; strong lenticular.
2B22	.62 to 1.00 m	Brown (10YR4/4); medium clay; strong prismatic.
3D	1.00 to 1.20 m	Brown (10YR4/4); light clay; strong angular blocky; common medium calcareous nodules.
4D	1.20 to 1.35 m	Brown (10YR4/6); fine sandy, clay; moderate.
5D	1.35 to 1.50 m	Brown (10YR4/6); sand; single grain.

Depth	1:5 Soil/Water			Particle Size				Exch. Cations					Total Elements			Moistures		Disp.Ratio		Exch Exch ECEC	pH
	pH	EC	Cl	CS	FS	S	C	CEC	Ca	Mg	Na	K	P	K	S	ADM 33*	1500*	R1	R2	Al Acid	CaCl2
metres		dS/m	%		%				m.eq/100g					%			%			m.eq/100g	
	@ 40C		@105C		@ 105C				@ 105C					@ 80C			@ 105C	@ 40C		@ 105C	@ 40C
B 0.10	6.6	.04	.003																		5.6
0.10	6.4	.02	.001	24	56	13	7	6	2.9	.99	.09	.29	.032	2.07	.023	1	4	.79			5.5
0.30	6.9	.01	.001	22	60	13	9	2	1.5	0.5	.09	.16	.017	2.17	.016	.8	2	.85			6
0.60	7	.05	.004	6	30	12	49	23	10	6.8	.92	.54	.028	1.81	.018	4.3	17	.62			5.7
0.90	8.7	.21	.006	6	33	21	40	25	16	9	1.7	.38	.042	1.8	.02	4.3	15	.7			7.7
1.20	9	.09	.002	49	27	6	15	10	6.5	3.9	.86	.22	.03	2.07	.019	2					7.8
1.50	8.5	.02	.001																		7.3

Depth	Org.C	Tot.N	Extr. P	HCl	CaCl2 Extr	DTPA-extr.				Extractable		P	Alternative Cations			
	(W&B)		Acid Bicarb.	K	K P	Fe	Mn	Cu	Zn	B	SO4S	NO3N NH4N	Buff Equil	CEC	Ca	Mg	Na	K
metres	%	%	mg/kg	meq%	mg/kg		mg/kg				mg/kg		Cap ug/L	m.eq/100g				
	@ 105C	@ 105C	@ 105C	@105C	@ 105C		@ 105C				@ 105C		@ 40C	@ 105C				
B 0.10	1	.01	10	.47		51	30	.24	1.1									
0.10																		
0.30																		
0.60																		
0.90																		
1.20																		
1.50																		

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Ugc
SITE NO: S7
A.M.G. REFERENCE: 518 200 mE 7 831 099 mN ZONE 55

GREAT SOIL GROUP: Grey Clays
PRINCIPAL PROFILE FORM: Ug5.24
SOIL TAXONOMY UNIT: Typic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Endocalcareous,
Epipedal, Grey Vertosols. (Confidence level 1).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: 0.25 m
HORIZONTAL INTERVAL: 6 m
COMPONENT OF MICRORELIEF SAMPLED: mound

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Low woodland
DOMINANT SPECIES: Eucalyptus platyphylla, Eucalyptus tessellaris,
Heteropogon contortus, Cyperus species

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: periodic cracking, poached

HORIZON	DEPTH	DESCRIPTION
A	0 to .08 m	Greyish yellow-brown (10YR4/2); light medium clay; moderate angular blocky. clear to-
B21	.08 to .30 m	Dark greyish yellow (2.5Y4/2); medium clay; moderate lenticular.
B22	.30 to .80 m	Dark greyish yellow (2.5Y4/2); medium clay; strong lenticular.
B23	.80 to 1.50 m	Yellowish grey (2.5Y4/1); medium clay; strong lenticular; few medium calcareous nodules.

Depth metres	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS S C % @ 105C	Exch. Cations CEC Ca Mg Na K m.eq/100g @ 105C	Total Elements P K S % @ 80C	Moistures ADM 33* 1500* % @ 105C	Disp.Ratio R1 R2 @ 40C	Exch Exch ECEC Al Acid m.eq/100g @ 105C	pH CaCl2 @ 40C
B 0.10	5.8	.06	.004							4.8
0.08	5.8	.09	.008	5 16 20 59	35 15 9.1 .33 .71	.05 1.27 .031	5.7 19	.41		4.9
0.30	6.9	.02	.001	4 12 17 66	35 18 11 .72 .39	.026 1.17 .021	5.5 22	.48		5.4
0.60	7.8	.05	.003	4 12 14 68	36 19 13 1.4 .31	.02 1.16 .018	5.7 22	.66		6.5
0.90	8.3	.19	.019	3 13 17 65	38 19 15 2.2 .25	.02 1.15 .018	5.3 22	.69		7.3
1.20	8.6	.43	.039	5 14 16 63	37 19 16 3.0 .22	.018 1.15 .019	5.8			7.7
1.50	8.6	.51	.050							7.8

Depth metres	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe Mn Cu Zn B mg/kg @ 105C	Extractable SO4S NO3N NH4N mg/kg @ 105C	P Buff Equil Cap @ 40C ug/L	Alternative Cations CEC Ca Mg Na K m.eq/100g @ 105C
B 0.10	2.4	.10	31	.97		192	90 2.7 1.7			
0.08										
0.30										
0.60										
0.90										
1.20										
1.50										

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Ugg
SITE NO: S8
A.M.G. REFERENCE: 519 563 mE 7 833 102 mN ZONE 55

GREAT SOIL GROUP: Grey Clays
PRINCIPAL PROFILE FORM: Ug5.24
SOIL TAXONOMY UNIT: Aridic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Endohypersodic, Epipedal, Grey Vertosols (Confidence level 1).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: 0.25 m
HORIZONTAL INTERVAL: 6 m
COMPONENT OF MICRORELIEF SAMPLED: mound

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Very tall open forest
DOMINANT SPECIES: Eucalyptus tessellaris, Eucalyptus platyphylla, Melaleuca species, Cryptostegia grandiflora

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: periodic cracking, poached

HORIZON	DEPTH	DESCRIPTION
A	0 to .15 m	Dull yellowish brown (10YR4/3); common fine distinct orange mottles; medium clay; moderate angular blocky. clear to-
B21	.15 to .60 m	Dark greyish yellow (2.5Y4/2); few fine distinct orange mottles; medium heavy clay; strong lenticular.
B22	.60 to 1.30 m	Dark greyish yellow (2.5Y4/2); medium heavy clay; strong lenticular.
B23	1.30 to 1.50 m	Yellowish grey (2.5Y4/1); medium heavy clay; strong lenticular; few coarse calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS % S % C % @ 105C	Exch. Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C	Total Elements P % @ 80C	K % @ 80C	S % @ 80C	Moistures ADM 33* % @ 105C	1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Al m.eq/100g @ 105C	Exch Acid m.eq/100g @ 105C	ECEC m.eq/100g @ 105C	pH CaCl2 @ 40C
metres																				
B 0.10																				
0.10	5.9	.05	.004																	4.6
0.30	5.9	.04	.003	2 13 17 63	37	14	10	.44	.90	.035	1.1	.027	6.3	20	.47				27	4.6
0.60	6.3	.06	.006	2 13 13 69	37	18	12	1.3	.39	.023	.988	.02	5.9	22	.52				32	5
0.90	6.3	.49	.065	3 13 14 69	37	17	12	3.3	.27	.021	.981	.02	6.7	23	.7				36	5.5
1.20	7.2	.87	.120	2 12 14 69	37	17	13	5.2	.27	.018	.961	.02	6.1	24	.85				41	6.6
1.50	7.6	.92	.123	2 14 18 63	39	18	14	6.1	.29	.016	1.02	.018	6						42	7
	8.1	.89	.116																	7.4

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	CaCl2 Extr P mg/kg @ 105C	DTPA-extr. Fe	Mn	Cu	Zn	B mg/kg @ 105C	Extractable SO4S mg/kg @ 105C	NO3N	NH4N	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C
metres																					
B 0.10	2.3	.10	14	.81			168	112	3.1	1.6											
0.10																	14	12	.45	.90	
0.30																	17	13	1.4	.55	
0.60																	17	14	4.5	0.4	
0.90																	19	15	7	0.4	
1.20																	19	15	8.4	.43	
1.50																					

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Ugh
SITE NO: S9
A.M.G. REFERENCE: 520 364 mE 7 832 015 mN ZONE 55

GREAT SOIL GROUP: Grey Clays
PRINCIPAL PROFILE FORM: Ug5.28
SOIL TAXONOMY UNIT: Aridic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION:
Endocalcareous-Endohypersodic, Self-mulching, Grey Vertosols. (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Tall woodland
DOMINANT SPECIES: Eucalyptus platyphylla, Eucalyptus tessellaris, Eucalyptus papuana, Cryptostegia grandiflora, Heteropogon contortus

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: self-mulching

HORIZON	DEPTH	DESCRIPTION
A	0 to .15 m	Dark olive (2.5Y3/3); few fine distinct orange mottles; medium clay; moderate angular blocky; few medium calcareous nodules. clear to-
B21	.15 to .40 m	Yellowish grey (2.5Y4/1); medium clay; strong angular blocky; common medium calcareous nodules.
B22	.40 to .80 m	Greyish yellow-brown (10YR4/2); medium clay; strong lenticular; few medium calcareous nodules.
B23	.80 to 1.60 m	Greyish yellow-brown (10YR4/2); medium clay; strong lenticular; very few coarse calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS % S % C % @ 105C	Exch. Cations CEC m.eq/100g @ 105C	Ca m.eq/100g @ 105C	Mg m.eq/100g @ 105C	Na m.eq/100g @ 105C	K m.eq/100g @ 105C	Total Elements P % @ 80C	K % @ 80C	S % @ 80C	Moistures ADM 33* % @ 105C	1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Acid Al m.eq/100g @ 105C	Exch Acid H m.eq/100g @ 105C	ECEC	pH CaCl2 @ 40C
metres																				
B 0.10	6.4	.06	.004		34	13	12	.52	.91											
0.10	7.9	.09	.002	3 21 20 54	35	22	12	0.4	.93	.03	1.34	.029	6.2	18	.52					5.2
0.30	8.9	.17	.003	4 18 20 55	37	21	15	1.5	.46	.024	1.29	.022	6.6	19	.55					7
0.60	9	.44	.037	3 18 21 56	35	17	18	3.6	.40	.022	1.28	.019	6	22	.74					7.9
0.90	8.8	.77	0.08	3 19 21 55	35	16	18	5.0	.37	.023	1.31	.019	6.1	22	.75					8
1.20	8.7	.9	.104	3 18 16 61	36	14	18	5.6	.39	.023	1.28	.017	6							8.1
1.50	8.5	.8	.100																	8
																				7.8

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P mg/kg @ 105C	DTPA-extr. Fe mg/kg @ 105C	Mn mg/kg @ 105C	Cu mg/kg @ 105C	Zn mg/kg @ 105C	B mg/kg @ 105C	Extractable SO4S mg/kg @ 105C	NO3N mg/kg @ 105C	NH4N mg/kg @ 105C	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC m.eq/100g @ 105C	Ca m.eq/100g @ 105C	Mg m.eq/100g @ 105C	Na m.eq/100g @ 105C	K m.eq/100g @ 105C
metres																						
B 0.10	1.8	.06	6		.87			68	79	2.4	.97											
0.10																						
0.30																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dyg2
SITE NO: S10
A.M.G. REFERENCE: 516 699 mE 7 831 345 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy3.43
SOIL TAXONOMY UNIT: Typic Natrustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Calcic, Mottled-Subnatric, Grey Sodosols. (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Very tall open woodland
DOMINANT SPECIES: Eucalyptus platyphylla, Eucalyptus papuana, Eucalyptus tessellaris, Planchonia careya

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .10 m	Brownish black (10YR3/2); sandy clay loam; weak; dry; very weak. clear to-
A2e	.10 to .20 m	Greyish yellow-brown (10YR5/2), light grey (10YR8/1) dry; common fine distinct brown mottles; sandy clay loam; common medium pebbles, angular gravel; weak. clear to-
B21t	.20 to .50 m	Greyish yellow-brown (10YR5/2); many medium distinct orange mottles; sandy light medium clay; common small pebbles, subangular gravel; strong angular blocky.
2B22	.50 to .70 m	Dull yellowish brown (10YR5/4); few fine distinct orange mottles; fine sandy light medium clay; few small pebbles, subangular gravel; moderate angular blocky; few medium calcareous nodules.
3B23	.70 to 1.20 m	Dull yellowish brown (10YR4/3), black (10YR2/1); sandy light medium clay; moderate angular blocky; very few coarse calcareous nodules.
4B24	1.20 to 1.50 m	Brownish black (10YR3/1); light medium clay; moderate angular blocky.

Depth	1:5 Soil/Water pH	EC	Cl	Particle Size CS	FS	S	C	Exch. Cations CEC	Ca	Mg	Na	K	Total Elements P	K	S	Moistures ADM 33*	1500*	Disp.Ratio R1	R2	Exch Al	Exch Acid	ECEC	pH CaCl2
metres	@ 40C	dS/m	@105C	% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C		@ 40C		m.eq/100g @ 105C			@ 40C
B 0.10	6	.03	.002																				
0.10	5.9	.02	.001	49	25	13	12	8	2.4	1.1	.09	.28	.026	1.96	.023	1.2	5	.81					4.8
0.30	6.8	.04	.003	32	20	10	38	14	5.8	4.2	1.5	.12	.018	1.65	.019	3	13	.89					4.6
0.60	8.2	.17	.017	48	22	6	23	11	4	4.0	2.3	.06	.015	1.75	.016	2.4	9	.99					5
0.90	9.2	.54	.053	29	22	11	36	22	9.0	8.5	6	.12	.017	1.71	.016	3.5	14	.99					6.8
1.20	8.9	.65	0.07	8	25	25	44	31	13	12	9.8	.16	.027	1.56	.015	5.3							8
1.50	9.1	.76	.077																				8
1.50	9.1	.76	.077																				8.1

Depth	Org.C (W&B)	Tot.N	Extr. P Acid	Bicarb.	HCl K	CaCl2 Extr K	P	DTPA-extr. Fe	Mn	Cu	Zn	B	Extractable SO4S	NO3N	NH4N	P Buff Cap	Equil	Alternative Cations CEC	Ca	Mg	Na	K
metres	% @ 105C	% @ 105C	mg/kg @ 105C		meq% @105C	mg/kg @ 105C		mg/kg @ 105C					mg/kg @ 105C			@ 40C	ug/L	m.eq/100g @ 105C				
B 0.10	0.6	.01	3		.54			65	48	.32	.79											
0.10																						
0.30																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dbb3
SITE NO: S11
A.M.G. REFERENCE: 521 258 mE 7 831 534 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Db2.43
SOIL TAXONOMY UNIT: Mollic Natrustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Hypocalcic, Subnatric, Brown Sodosols. (Confidence level 1).

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM: Very tall open forest
DOMINANT SPECIES: Eucalyptus polycarpa, Eucalyptus platyphylla, Eucalyptus tessellaris, Planchonia careya

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .10 m	Brownish black (10YR2/2); clay loam; weak; dry; moderately weak. clear to-
A2e	.10 to .25 m	Greyish yellow-brown (10YR4/2), light grey (10YR7/1) dry; clay loam; weak. clear to-
B21t	.25 to .32 m	Brownish black (10YR3/2); light medium clay; strong prismatic.
B22t	.32 to .50 m	Dull yellowish brown (10YR4/3); light medium clay; strong prismatic.
2B23	.50 to .90 m	Brown (10YR4/4); fine sandy, clay; strong prismatic; very few medium calcareous nodules. clear to-
3B24	.90 to 1.58 m	Dull yellowish brown (10YR4/3); light clay; strong prismatic; very few medium calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @105C	Cl % @105C	Particle Size CS	FS	S	C	Exch. Cations CEC	Ca	Mg	Na	K	Total Elements P	K	S	Moistures ADM 33*	1500*	Disp.Ratio R1	R2	Exch Al	Exch Acid	ECEC	pH CaCl2 @ 40C
metres				% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C		@ 40C		m.eq/100g @ 105C			
B 0.10	6.2	.04	.001																				5.2
0.10	6.2	.03	.001	6	39	32	24	22	8.4	3.9	.23	.29	.054	1.58	.026	3	12	.73					5
0.32	6.7	.04	.002	2	33	21	45	29	17	9.0	1.0	.25	.04	1.57	.021	5.3	19	.67					5.3
0.60	7.9	.16	.018	4	43	19	37	23	17	8.7	1.5	.16	.03	1.77	.021	3.9	15	.68					6.9
0.90	8.7	.26	.022	9	49	15	26	19	13	7.0	1.4	.14	.032	1.96	.018	3.3	12	.77					7.7
1.20	8.5	.24	.023	.1	42	26	33	23	18	8.6	1.9	.19	.037	1.8	.017	4.3							7.6
1.50	8.4	.23	.024																				7.4

Depth	Org.C (W&B)	Tot.N	Extr. P Acid	Bicarb.	HCl K	CaCl2 Extr K	P	DTPA-extr. Fe	Mn	Cu	Zn	B	Extractable SO4S	NO3N	NH4N	P Buff Cap	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K
metres	% @ 105C	% @ 105C	mg/kg @ 105C		meq% @105C	mg/kg @ 105C		mg/kg @ 105C					mg/kg @ 105C			@ 40C		m.eq/100g @ 105C				
B 0.10	2.3	.07	28		.60			100	91	1.1	4.0											
0.10																						
0.32																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dyf2**
SITE NO: 994
A.M.G. REFERENCE: 520 464 mE 7 839 680 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy3.43
SOIL TAXONOMY UNIT: Udic Paleustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Bleached-Sodic, Eutrophic, Grey Chromosols (confidence level 1).

TYPE OF MICRORELIEF: zero or none
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .10 m	Clay loam, fine sandy.
A2e	.10 to .27 m	Clay loam, fine sandy.
B21	.27 to .70 m	Greyish yellow-brown (10YR6/2); common distinct yellow mottles; medium clay.
B22	.70 to .92 m	Dull yellowish orange (10YR6/3); few faint yellow mottles; sandy clay.
2Db	.92 to 1.50 m	Greyish yellow-brown (10YR5/2); light medium clay.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS FS S C % @ 105C	Exch. Cations CEC Ca Mg Na K m.eq/100g @ 105C	Total Elements P % @ 80C	K % @ 80C	S % @ 80C	Moistures ADM 33* % @ 105C	1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Acid Al m.eq/100g @ 105C	Exch ECEC	pH CaCl2 @ 40C
metres															
0.10	6	.03	.001	27 42 14 13	7 1.9 1.3 .11 .24	.026	1.7	.033	1.3	6	.88			4	4.8
0.40	6.4	.02	.001		21 7.9 5.1 .97 .38									16	4.5
0.60	6.6	.02	.001	23 23 6 44	19 7.0 5.1 1.3 .32	.022	1.48	.019	4.2	15	.71			16	4.6
0.90	6.9	.06	.005	46 23 4 23	10 4.8 3.4 1.2 .11	.017	1.88	.017	2.4	9	.99			10	5.2
1.20	8.1	.28	.032	10 36 17 37	22 10 7.6 4.5 .13	.02	1.64	.016	3.7					23	6.9
1.50	8.2	.48	.061		27 12 9.4 5.4 .22										7.2

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb. mg/kg @ 105C	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P mg/kg @ 105C	DTPA-extr. Fe mg/kg @ 105C	Mn mg/kg @ 105C	Cu mg/kg @ 105C	Zn mg/kg @ 105C	B mg/kg @ 105C	Extractable SO4S mg/kg @ 105C	NO3N mg/kg @ 105C	NH4N mg/kg @ 105C	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC m.eq/100g @ 105C	Ca	Mg	Na	K
metres																						
0.10	1.9	.04	6		.21			78	62	.59	2.5							2.3	1.2	.17	.23
0.40																		7.7	6.6	1.0	.39
0.60																		7	6.5	1.3	.36
0.90																		4.5	3.9	1.4	.19
1.20																		9.4	8.0	5.4	.27
1.50																					

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.
** Sampled north of Bruce Highway

SOIL TYPE: 2Ugd**
SITE NO: 1006
A.M.G. REFERENCE: 519 961 mE 7 840 336 mN ZONE 55

GREAT SOIL GROUP: No suitable group
PRINCIPAL PROFILE FORM: Ug3.2
SOIL TAXONOMY UNIT: Typic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Endohypersodic, Epipedal, Brown Vertosols. (Confidence level 2).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: .15 m
COMPONENT OF MICRORELIEF SAMPLED: mound
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
Aj	0 to .12 m	Light clay.
B21	.12 to .35 m	Dull yellowish brown (10YR5/3); medium clay.
B22	.35 to 1.15 m	Dark greyish yellow (2.5Y4/2); medium clay.
2D	1.15 to 1.55 m	Bright brown (7.5YR5/6); medium clay; common distinct clay skin; few calcareous nodules.

Depth	1:5 Soil/Water			Particle Size				Exch. Cations					Total Elements			Moistures			Disp.Ratio		Exch Al	Exch Acid	ECEC	pH
	pH	EC	Cl	CS	FS	S	C	CEC	Ca	Mg	Na	K	P	K	S	ADM	33*	1500*	R1	R2				CaCl2
metres		dS/m	%			%			m.eq/100g					%			%					m.eq/100g		
	@ 40C		@105C			@ 105C			@ 105C					@ 80C			@ 105C		@ 40C			@ 105C		@ 40C
0.10	6.2	.04	.002	13	36	13	36	21	6.0	4.8	.42	0.4	.033	.833	.033	2.8		14	.55					4.8
0.30	6.4	.03	.002	8	14	8	66	36	10	12	1.7	.45	.021	.839	.022	6.5		24	.42					4.6
0.60	7.3	.26	.035	8	17	14	59	37	13	16	3.7	.27	.018	.859	.023	5.2		22	.91					6.4
0.90	8.3	.59	.076	8	20	15	56	36	12	17	5.4	.34	.016	.882	.027	5.4		21	.99					7.4
1.20	8.7	.91	0.09	8	19	16	55	36	12	18	6.6	.34	.016	.923	.026	4.8								7.9
1.50	8.5	.72	.087					26	8.6	13	5.3	.20												7.8

Depth	Org.C (W&B)	Tot.N	Extr. P	HCl	CaCl2 Extr		DTPA-extr.					Extractable			P		Alternative Cations				
			Acid Bicarb.	K	K	P	Fe	Mn	Cu	Zn	B	SO4S	NO3N	NH4N	Buff	Equil	CEC	Ca	Mg	Na	K
metres	%	%	mg/kg	meq%	mg/kg		mg/kg					mg/kg			Cap	ug/L	m.eq/100g				
	@ 105C	@ 105C	@ 105C	@105C	@ 105C		@ 105C					@ 105C			@ 40C		@ 105C				
0.10	1.4	.05	4	.35			65	69	1.7	.74											
0.30																					
0.60																					
0.90																					
1.20																					
1.50																					

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dyf**
SITE NO: 1016
A.M.G. REFERENCE: 520 709 mE 7 840 481 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy3.33
SOIL TAXONOMY UNIT: Udic Paleustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Eutrophic, Mottled-subnatric, Brown Sodosols (Confidence level 1).

TYPE OF MICRORELIEF: zero or none
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .15 m	Clay loam, fine sandy; dry; moderately firm.
A2j	.15 to .28 m	Clay loam, fine sandy.
B2	.28 to .55 m	Dull yellowish brown (10YR5/3); common distinct brown mottles; medium clay.
2D1b	.55 to .90 m	Dark greyish yellow (2.5Y4/2); medium clay; common calcareous nodules.
2D2b	.90 to 1.10 m	Yellowish grey (2.5Y4/1); medium clay; few calcareous nodules.
2D3b	1.10 to 1.55 m	Dark greyish yellow (2.5Y5/2); light medium clay.

Depth	1:5 Soil/Water pH	EC	Cl	Particle Size CS	FS	S	C	Exch. Cations CEC	Ca	Mg	Na	K	Total Elements P	K	S	Moistures ADM 33*	1500*	Disp.Ratio R1	R2	Exch Al	Exch Acid	ECEC	pH CaCl2
metres	@ 40C	dS/m @105C	%	% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C		@ 40C		m.eq/100g @ 105C			@ 40C
0.10	5.9	.03	.003	15	48	24	12	8	2.2	1.1	.09	.36	.024	.987	.032	1.3	5	.87					4.7
0.30	6.4	.04	.003	9	21	14	54	26	8.0	6.9	1.8	.39	.023	.89	.02	5.3	19	.65					4.6
0.60	7.2	.19	.026	8	19	11	61	30	10	10	3.3	.30	.023	.927	.019	5.4	21	.93					6.1
0.90	9	.66	.065	12	24	14	50	28	14	12	5.3	.28	.016	1.07	.021	4.7	17	.98					7.9
1.20	8.9	.94	.104	9	24	15	50	29	9.6	12	6.6	.23	.017	1.19	.019	5.1							8
1.50	8.5	.88	.112					25	8.1	11	6.4	.19											7.8

Depth	Org.C (W&B) % @105C	Tot.N % @105C	Extr. P Acid mg/kg @105C	Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @105C	P	DTPA-extr. Fe	Mn	Cu	Zn	B mg/kg @105C	Extractable SO4S	NO3N	NH4N mg/kg @105C	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K m.eq/100g @105C
metres																						
0.10	1.9	.05	6		.29		100	41	0.7	.72												
0.30																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (~0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Uge**
SITE NO: 1050
A.M.G. REFERENCE: 521 696 mE 7 840 016 mN ZONE 55

GREAT SOIL GROUP: Grey Clays
PRINCIPAL PROFILE FORM: Ug5.24
SOIL TAXONOMY UNIT: Typic Haplusterts
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION:
Epicalcareous-Endohypersodic, Epipedal, Grey

Vertosols (Confidence level 2).

TYPE OF MICRORELIEF: normal gilgai
VERTICAL INTERVAL: .15 m
COMPONENT OF MICRORELIEF SAMPLED: mound
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting, periodic cracking

HORIZON	DEPTH	DESCRIPTION
A1	0 to .12 m	Greyish yellow-brown (10YR4/2); faint brown mottles; light medium clay.
B21	.12 to 1.15 m	Greyish yellow-brown (10YR4/2); common calcareous nodules.
B22	1.15 to 1.55 m	Dull yellowish brown (10YR5/4); medium clay; very few calcareous nodules.

Depth	1:5 Soil/Water pH	1:5 Soil/Water EC	1:5 Soil/Water Cl	Particle Size CS	Particle Size FS	Particle Size S	Particle Size C	Exch. Cations CEC	Exch. Cations Ca	Exch. Cations Mg	Exch. Cations Na	Exch. Cations K	Total Elements P	Total Elements K	Total Elements S	Moistures ADM	Moistures 33*	Moistures 1500*	Disp.Ratio R1	Disp.Ratio R2	Exch Al	Exch Acid	ECEC	pH CaCl2
metres	@ 40C	dS/m	% @105C	% @ 105C				m.eq/100g @ 105C					% @ 80C			% @ 105C			@ 40C		m.eq/100g @ 105C			@ 40C
0.10	6.6	.05	.004	4	32	17	44	30	9.7	9	.72	.36	.023	.739	.03	4.7		16	.66					5.4
0.30	7.6	.08	.006	3	25	15	54	36	15	13	2.0	.18	.016	.718	.023	5.8		18	.76					6.3
0.60	8.7	.35	.036	5	24	16	52	35	15	13	3.4	.19	.016	.756	.021	5.1		19	.76					7.8
0.90	8.9	.73	.079	7	27	17	49	31	14	14	4.6	0.2	.018	.871	.021	4.1		18	.84					8
1.20	8.9	.93	.103	11	28	18	43	27	10	10	4.3	.24	.017	1.03	.026	3.8								8.1
1.50	8.8	.9	.103					28	9.9	11	5.0	.22												7.9

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Extr. P Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	CaCl2 Extr P	DTPA-extr. Fe mg/kg @ 105C	DTPA-extr. Mn	DTPA-extr. Cu	DTPA-extr. Zn	DTPA-extr. B	Extractable SO4S mg/kg @ 105C	Extractable NO3N	Extractable NH4N	P Buff Cap @ 40C	P Equil ug/L	Alternative Cations CEC m.eq/100g @ 105C	Alternative Cations Ca	Alternative Cations Mg	Alternative Cations Na	Alternative Cations K
metres																						
0.10	1.3	.05	3		.38			46	71	2.2	.50											
0.30																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 2Dbd**
SITE NO: 1076
A.M.G. REFERENCE: 520 853 mE 7 839 065 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy2.43
SOIL TAXONOMY UNIT: Typic Natrustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Calcic, Mesonatric, Grey Sodosols. (Confidence level 1).

TYPE OF MICRORELIEF: zero or none
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .15 m	Clay loam.
A2e	.15 to .25 m	Clay loam.
B21	.25 to .65 m	Yellowish grey (2.5Y4/1); medium clay.
B22b	.65 to .85 m	Greyish brown (7.5YR4/2); medium clay; few calcareous nodules.
2Db	.85 to 1.55 m	Brown (7.5YR4/4); light medium clay; common distinct clay skin; few calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS	FS	S	C % @ 105C	Exch. Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C	Total Elements P % @ 80C	K % @ 80C	S % @ 80C	Moistures ADM	33*	1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Al m.eq/100g @ 105C	Exch Acid m.eq/100g @ 105C	ECEC	pH CaCl2 @ 40C
metres																								
0.10	6	.07	.005	8	34	34	21	17	4.9	3.6	.22	.42	.036	1.35	.047	2.5		10	.71					5.1
0.40	7.6	.24	.029					29	13	10	4.3	.19												6.5
0.60	8.5	.61	.081	3	18	22	56	38	14	14	7.0	0.2	.023	1.23	.027	4.8		21	.96					7.7
0.90	9.1	.85	.092	5	33	23	40	30	12	12	8.1	.19	.045	1.5	.028	4.8		18	.97					8.1
1.20	9.2	.67	.068	4	32	25	37	27	9.5	9.7	7	.19	.045	1.59	.019	4.1								8
1.50	9	.52	.056					27	10	10	7.4	.23												7.9

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe	Mn	Cu	Zn	B mg/kg @ 105C	Extractable SO4S mg/kg @ 105C	NO3N	NH4N	P Buff Cap @ 40C	Equil ug/L	Alternative Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C
metres																						
0.10	3.4	.09		10	.42			122	167	1.7	1.4											
0.40																						
0.60																						
0.90																						
1.20																						
1.50																						

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

SOIL TYPE: 6Dyf2**
SITE NO: 1089
A.M.G. REFERENCE: 519 942 mE 7 837 794 mN ZONE 55

GREAT SOIL GROUP: Solodic Soils
PRINCIPAL PROFILE FORM: Dy3.43
SOIL TAXONOMY UNIT: Udic Paleustalfs
FAO UNESCO UNIT:
AUSTRALIAN SOIL CLASSIFICATION: Eutrophic, Subnatric, Brown Sodosols. (Confidence level 1).

TYPE OF MICRORELIEF: zero or none
SURFACE COARSE FRAGMENTS: No coarse fragments

SUBSTRATE MATERIAL: Alluvium
CONFIDENCE SUBSTRATE IS PARENT MATERIAL:

SLOPE:
LANDFORM ELEMENT TYPE: Flat
LANDFORM PATTERN TYPE: Alluvial plain

VEGETATION
STRUCTURAL FORM:
DOMINANT SPECIES

ANNUAL RAINFALL: 1090 mm

PROFILE MORPHOLOGY:

CONDITION OF SURFACE SOIL WHEN DRY: hard setting

HORIZON	DEPTH	DESCRIPTION
A1	0 to .15 m	Clay loam, fine sandy.
A2j	.15 to .22 m	Clay loam, fine sandy.
B21	.22 to .60 m	Yellowish brown (10YR5/6); medium clay.
B22	.60 to 1.00 m	Medium clay.
2Db	1.00 to 1.60 m	Greyish yellow-brown (10YR5/2); light medium clay; very few calcareous nodules.

Depth	1:5 Soil/Water pH @ 40C	EC dS/m @ 40C	Cl % @105C	Particle Size CS	FS	S	C % @ 105C	Exch. Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C	Total Elements P % @ 80C	K % @ 80C	S % @ 80C	Moistures ADM	33*	1500* % @ 105C	Disp.Ratio R1 @ 40C	R2	Exch Al m.eq/100g @ 105C	Exch Acid m.eq/100g @ 105C	ECEC m.eq/100g @ 105C	pH CaCl2 @ 40C
metres																								
0.10	6	.03	.002	18	49	24	12	7	1.9	1.2	0.1	.35	.022	1.49	.029	1.1		5	.78					4.8
0.30	6.1	.22	.026	14	25	13	46	22	6.1	5.6	2.4	.19	.019	1.25	.027	3.9		16	.94					4.9
0.60	7.1	.72	0.09	4	26	14	56	26	15	8.0	5.3	.17	.02	1.27	.023	4.7		20	.93					6.3
0.90	8.3	.62	.085	8	43	18	32	21	7.0	6.9	5.7	.16	.02	1.59	.024	3.4		15	.98					7.4
1.20	9.4	.62	.059	18	37	17	27	20	6.8	6.4	5.7	.13	.023	1.7	.019	2.8								8
1.50	9	.55	.061					28	9.8	9	7.8	.20												7.9

Depth	Org.C (W&B) % @ 105C	Tot.N % @ 105C	Extr. P Acid mg/kg @ 105C	Bicarb.	HCl K meq% @105C	CaCl2 Extr K mg/kg @ 105C	P	DTPA-extr. Fe	Mn	Cu	Zn	B mg/kg @ 105C	Extractable SO4S NO3N NH4N mg/kg @ 105C	P Buff Cap	Equil ug/L @ 40C	Alternative Cations CEC	Ca	Mg	Na	K m.eq/100g @ 105C
metres																				
0.10	1.5	.05		6	.37			107	45	.56	.44									
0.30																				
0.60																				
0.90																				
1.20																				
1.50																				

* -33kPa (-0.33bar) and -1500kPa (-15 bar) using pressure plate apparatus.

APPENDIX III
IRRIGATED LAND SUITABILITY CLASSES, BURDEKIN RIVER IRRIGATION AREA

Five land suitability classes have been defined for use in Queensland, with land suitability decreasing progressively from Class 1 to Class 5. Land is classified on the basis of a specified land use which allows optimum production with minimal degradation to the land resource in the long-term.

Class 1 **Suitable land with negligible limitations.** This is highly productive land requiring only simple management practices to maintain economic production.

Class 2 **Suitable land with minor limitations** which either reduce production or require more than the simple management practices*** of class 1 land to maintain economic production.

Class 3 **Suitable land with moderate limitations** which either further lower production or require more than those management practices of class 2 land to maintain economic production.

Class 4 **Marginal land which is presently considered unsuitable due to severe limitations.** The long term significance of these limitations on the proposed land use is unknown. The use of this land is dependent upon undertaking additional studies to determine whether the effects of the limitation(s) can be reduced to achieve sustained economic production.

Class 5 **Unsuitable land with extreme limitations** that preclude its use.

Land is considered less suitable as the severity of limitations for a land use increase, reflecting either (a) reduced potential for production, and/or (b) increased inputs to achieve an acceptable level of production and/or (c) increased inputs required to prevent land degradation. The first three classes are considered suitable for the specified land use as the benefits from using the land for that land use in the long term should outweigh the inputs required to initiate and maintain production. Decreasing land suitability within a region often reflects the need for increased inputs rather than decreased potential production.

Class 4 is considered presently unsuitable or is used for marginal land where it is doubtful that the inputs required to achieve and maintain production outweigh the benefits in the long term. Additional studies are needed to determine whether the effect of the limitation(s) can be reduced to achieve sustained production.

Class 5 is considered unsuitable having limitations that in aggregate are so severe that the benefits would not justify the inputs required to initiate and maintain production in the long term. It would require a major change in economics, technology or management expertise before the land could be considered suitable for that land use. Some class 5 lands however, such as escarpments, will always remain unsuitable for agriculture.

*** Where more than simple management practices are required, this may involve changes in land preparation, irrigation management, the addition of soil ameliorants and the use of additional measures to prevent land degradation.

APPENDIX IV

LAND SUITABILITY CLASSIFICATION FOR FURROW IRRIGATION OF SUGAR-CANE, GRAIN CROPS AND SMALL CROPS, BURDEKIN RIVER IRRIGATION AREA.

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes	Subclass for various crop groups
PRODUCTIVITY FACTORS			
Nutrients - n	All soils will require some fertiliser input. N assumed to be always low. Minor elements can be added at low cost. S may be required in the future if P not supplied as superphosphate. Soil test interpretations are those of Bruce and Rayment (1982).	P alone very low.	All crops n2
		P and K very low or 2 to 3 times higher P plus Zn required following exposure of high pH (> 7.5 at 0.2 - 0.3 m) subsoils.	n3

Salinity - sa

Based on the relative salt tolerance of a range of plants expressed in terms of yield reduction (Shaw 1986). Subclass limits taken as 10 to 25% yield reduction for subclass 2; 25 to 50% for subclass 3 and > 50% for subclass 4.

	Field/Grain crops				Sugar-cane	Small crops				
	Moderately tolerant	Tolerant		Very tolerant	Moderately tolerant	Moderately sensitive	Moderately tolerant			Tolerant
	Maize Kenaf*	Soybeans Sunflower Legume Seeds*	Sorghum	Cotton		Beans	Tomato Capsicum* Eggfruit*	Cucumber Pumpkin*	Rockmelon	Squash Zucchini
ECse(dSm^{-1})	Weighted profile mean to 0.9 m					Weighted profile mean to 0.6 m				
1.5 - 2.5						sa2				
2.6 - 3.5	sa2					sa3	sa2			
3.6 - 4.5	sa3				sa2	sa4	sa3	sa2	sa2	
4.6 - 5.5	sa3				sa2	↓	sa3	sa3	sa2	
5.6 - 6.5	sa3	sa2			sa2		sa4	sa3	sa3	sa2
6.6 - 7.5	sa4	sa3			sa3		↓	sa4	sa3	sa2
7.6 - 9.0	↓	sa4	sa2		sa3			↓	sa3	sa3
9.1 - 10.0		↓	sa3		sa3				sa4	sa3
10.1 - 12.5			sa4		sa4				↓	sa4
12.6 - 17.0			↓	sa2	↓					↓
> 17.0				sa3						
				sa4						

* Salt tolerance limits specific to these crops not available.
Legume seeds include mungbean, chickpea, pidgeon pea and dolichos.

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes			Subclass for various crop groups					
Sodicity - so		ESP	or	Field pH	Field/Grain crops		Sugar-cane	Small crops		
				Clay soils	Sodic duplex soils	Sorghum, Cotton Legume seeds**	Maize, Sunflower, Kenaf, Soybean		Tomato	Eggfruit Capsicum Beans**	Cucurbits
	Assessed on 0.2 to 0.3 m depth. ESP related to pH only for sodic duplex and cracking clay soils (Baker et al. 1983).										
	Sodicity classes as per Northcote and Skene (1972) and Landon (1984).	< 6		< 8.0	< 6.5		so2			so3	so2
	Subclass limits taken as 10 to 25% yield reduction for subclass 2; 25 to 50% for subclass 3 and > 50% for subclass 4. Subclasses so2 and so3 not differentiated for less tolerant crops.	6 - 14		8.0 - 9.5	6.5 - 8.0	so2	so3	so2	so2	so4 ↓	so3
		14.1 - 25		> 9.5	8.1 - 8.5	so3	so4 ↓	so3	so3		so4 ↓
		> 25			> 8.5	so4		so4	so4		

** Sodium tolerance limits unavailable for beans and legume seeds.

WATER MANAGEMENT FACTORS (Govern water distribution efficiency and trafficability)

Water availability - m	PAWC* based on measured or predicted values for major soils (Gardner and Coughlan, 1982). All cracking clays known to have PAWC > 100 mm.	Effective soil depth (m) (depth to rock or salt bulge)	and/or	PAWC (mm)	All crops
		0.7 - 1.0		75 - 100 mm Non cracking clays; non sodic and weakly sodic duplex soils with medium textured** A horizons < 0.5 m deep; gradational and uniform medium textured soils.	m2
	PAWC subclass limits relate to irrigation frequency as follows:	0.45 - 0.6			
	75 - 100 mm = 8 - 10 days, 50 - 75 mm = 5 - 8 days, < 50 mm = < 5 days	< 0.45		50 - 75 mm Sodic duplex soils; duplex soils with sandy loam to loamy sand A horizons deeper than 0.5 m.	m3
				< 50 mm Uniform sands.	m4

* PAWC = Plant Available Water Capacity
** Texture terms are as defined in Northcote (1979).

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes					Subclass for various crop groups			
Permeability-p	Refers to the permeability of the upper root zone of the soil profile. Affects trafficability and irrigation efficiency and also considers tolerance of crops to short periods of water-logging.	(a) Soils with texture of sands or sandy loams to depths of:		or	All duplex soils with A horizons finer than sandy loam with dry very firm or stronger B horizons at depths of:		All crops			
		0.3 - 0.5 m			0.2 - 0.4 m		p2			
		0.6 - 0.9 m			< 0.2 m		p3			
		> 0.9 m					p4			
		(b) Black earths and clays (Uf and Ug profiles) with A horizon textures of light medium clay and lighter and without mottling and/or bleaching (Northcote 1979).					Maize, Cotton, Kenaf Sunflower, Legume seeds p2	Soybean, Sugar-cane, Sorghum p2	Cucurbits, Tomato Capsicum, Eggfruit p3	Beans p4
		A horizon textures of medium to heavy clay and/or A horizons that are mottled and/or bleached.					p3	p2	p4	p4
Soil complexity - pd	Refers to (i) a complex UMA where no component soil exceeds 70% of the area and (ii) any UMA less than 250 m width for grain crops and sugar cane and 100 m for small crops and a surrounding or adjacent UMA, depending on slope magnitude and direction. Based on a minimum irrigation run length of 250 m for sugar cane and grain crops and 100 m for small crops. * Depth difference determined by multiplication. ** Texture groups as defined by Northcote (1979).	B horizon permeability between soils similar:					All crops			
		A horizon features								
		Depth		Texture differences		Depth difference factor				
		depth of A of both soils < 0.2 m		1.5 - 2.0 texture** groups			pd2			
		depth of A of one soil > 0.2 m		1.5 - 2.0 texture groups	or	1.5 - 2.0	pd3			
				> 2.0 texture groups	and/or	> 2.0	pd4			
		B horizon permeability markedly different between soils:					pd4			

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes	Subclass for various crop groups
			All crops
Internal Drainage - id	Considers drainage of the whole profile and the affects on crop growth and also losses to groundwater. Terms used are those of (McDonald et al. 1984).	Moderately well to imperfectly drained soils: clay soils, some non-sodic and weakly sodic duplex soils eg., 6Dyd, 6Drc.	id2
		Imperfectly to poorly drained soils: sodic duplex soils and better drained soils underlain by pans or prone to the development of high non-saline water tables due to their position in the landscape and in relation to adjacent soils eg. 5Dyb.	id3
	Soils considered as well drained include 6Dra, 6Drb, 6Gnd and 6Uma.	Well drained soils acting as intake areas: red and yellow non-sodic duplex soils eg. 5Dra, 5Dya. Usually higher in the landscape, drainage losses may cause secondary salinisation downslope. Special irrigation management and design required eg. use of overhead sprinklers or modified furrow irrigation techniques.	id4
		Very poorly or rapidly drained soils: gleyed duplex or coarse textured soils eg. 4Dga or 6Ucc respectively. Irrigation technique restricted to trickle and drip methods.	id5

LAND SURFACE MANAGEMENT FACTORS

Rockiness - r	Based on field observation and influence on machinery use (FAO, 1983) and moisture availability.	% Rock Outcrop (outcrop and boulders > 600 mm).	and/or	% Pebble, cobble and stone on surface or within the upper 0.45 m. 6 - 60 mm	or 60 - 600 mm	All crops with outcrop, cobble or stone on surface only.	Soybeans, Sugar-cane and Beans where stone and/or cobble within upper 0.45 m.
	Sizes relate to the class intervals in McDonald et al. (1984). Soybeans, sugar-cane and beans need to be harvested closer to the soil surface than in the case of other crops.			2 - 10	< 2		r2
		< 2		10 - 20	2 - 10	r2	r3
		2 - 10		20 - 50	10 - 20	r3	r4
	This incidence of rock and stone is considered more limiting when it occurs within the upper 0.45 m as repeated stone picking may be required.	10 - 20		> 50	20 - 50	r4	r5
		> 20			> 50	r5	

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes	Subclass for various crop groups
			All crops
Internal Drainage - id	Considers drainage of the whole profile and the affects on crop growth and also losses to groundwater. Terms used are those of (McDonald et al. 1984).	Moderately well to imperfectly drained soils: clay soils, some non-sodic and weakly sodic duplex soils eg., 6Dyd, 6Drc.	id2
	Soils considered as well drained include 6Dra, 6Drb, 6Gnd and 6Uma.	Imperfectly to poorly drained soils: sodic duplex soils and better drained soils underlain by pans or prone to the development of high non-saline water tables due to their position in the landscape and in relation to adjacent soils eg. 5Dyb.	id3
		Well drained soils acting as intake areas: red and yellow non-sodic duplex soils eg. 5Dra, 5Dya. Usually higher in the landscape, drainage losses may cause secondary salinisation downslope. Special irrigation management and design required eg. use of overhead sprinklers or modified furrow irrigation techniques.	id4
		Very poorly or rapidly drained soils: gleyed duplex or coarse textured soils eg. 4Dga or 6Ucc respectively. Irrigation technique restricted to trickle and drip methods.	id5

LAND SURFACE MANAGEMENT FACTORS

Rockiness - r	Based on field observation and influence on machinery use (FAO, 1983) and moisture availability.	% Rock Outcrop (outcrop and boulders > 600 mm).	and/or	% Pebble, cobble and stone on surface or within the upper 0.45 m. 6 - 60 mm	or 60 - 600 mm	All crops with outcrop, cobble or stone on surface only.	Soybeans, Sugar-cane and Beans where stone and/or cobble within upper 0.45 m.
	Sizes relate to the class intervals in McDonald et al. (1984). Soybeans, sugar-cane and beans need to be harvested closer to the soil surface than in the case of other crops.			2 - 10	< 2		r2
		< 2		10 - 20	2 - 10	r2	r3
		2 - 10		20 - 50	10 - 20	r3	r4
	This incidence of rock and stone is considered more limiting when it occurs within the upper 0.45 m as repeated stone picking may be required.	10 - 20		> 50	20 - 50	r4	r5
		> 20			> 50	r5	

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes									Subclass for various crop group
Surface condition - ps	Applies to soils with properties known to influence seed bed preparation and plant establishment eg. depth to hard, slowly permeable sodic B horizon, surface consistency and potential to surface seal due to particle size distribution.	(a) Cracking clay soils Percentage of dry aggregates of surface horizon > 5 mm in diameter:									All crops except Sugar-Cane
		24 - 45%									ps2
		> 45%									ps3
	Cracking clay properties based on Coughlan and Loch (1984), and Gardner and Coughlan (1982).	(b) Other Soils Depth to slowly permeable sodic B horizon	And/or	Condition of surface soil when dry	And/or	Texture* of surface horizon	And/or	Grade of pedality	And/or	Consistency of surface soil when dry	
	Adaptation of various crops not accounted for, although it is recognised that some crops may be more difficult to establish e.g. soybeans, or have specific seed bed requirements.	0.21 - 0.4 m		Firm or hardsetting		Sandy loams to clays		Moderate or strong pedality		Moderately firm to very firm (3-4)	ps2
		0.1 - 0.2 m		Hardsetting		Sandy loams to clays		Massive or weak pedality		Moderately firm to very firm (3-4)	ps3
		< 0.1 m		Hardsetting		Sandy clay loams to clay loams		Massive or weak pedality		Moderately strong to very strong (5-6)	ps4
	* Textures as defined by Northcote (1979). Other terminology for surface properties are as defined by McDonald et al. (1984).										
Wetness - w		Areas remaining wet for several months, water remains on the surface for long periods and requires filling, special drainage or reclamation eg. small closed depressions.									All crops
											w3
		Areas which are wet for most of the year or pond water for considerable periods and require major drainage and reclamation works eg. swamps.									
											w4

APPENDIX IV (CONT.)

Limiting factor	Assumptions/ comments	Degree of limitation in terms of soil/land attributes		Subclass for various crop groups
DEGRADATION FACTORS				
Erosion - e	Refers to slope limits on cleared fallow land or land irrigated during the wet season in terms of erosion risk only. Slope limits require substantiating with either measured or calculated soil losses for the soils of the area. **Note that any UMA with an eroded soil phase (E) is class 5.**	(a) Sodic duplex soils Land slope %		All crops
		0.5 - 1.0	Shorter furrow lengths required and simple conservation practices eg. use of cover crops, contour cultivation.	e2
		1.1 - 2.0	Shorter furrow lengths required and simple conservation practices as above as well as graded banks to reduce slope length.	e3
		> 2.0	Not recommended for furrow irrigated crops.	e4
			Gully or stream bank erosion severe.	e5
		(b) Other soils Land slope %		
		1.0 - 2.0	Shorter furrow lengths required and simple conservation practices e.g. use of cover crops, contour cultivation.	e2
		2.1 - 4.0	Shorter furrow lengths required and simple conservation practices as above as well as graded banks to reduce slope length.	e3
		> 4.0	Not recommended for furrow irrigated crops.	e4
			Gully or stream bank erosion severe.	e5
Outflow potential - ss		Areas susceptible to the development of saline seeps, usually located downslope of permeable soils and confined by either dykes or soils of heavy texture and very low hydraulic conductivity.		All crops ss4

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APPENDIX V LAND SUITABILITY CLASSIFICATION FOR FLOOD IRRIGATION OF RICE, BURDEKIN RIVER IRRIGATION AREA.

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass
PRODUCTIVITY FACTORS			
Nutrients - n	N always low and applications of 180 kg N/ha for winter crops and 140 kg N/ha for summer crops required	P very low (Bruce and Rayment 1982) and applications of 5 to 10 kg/ha required.	n2
		Applications of Zn as well as higher applications of P than above (up to 30 kg/ha) required when subsoils exposed after levelling have a pH greater than 7.5.	n3
Salinity - sa	Subclass limits taken as 10 to 25% yield reduction for subclass 2; 25 to 50% for subclass 3 and > 50% for subclass 4 (Shaw et al 1986).	ECse (dSm^{-1}) Weighted profile mean to 0.6 m 4.0 -5.0	sa2
		5.1 -7.0	sa3
		> 7.0	sa4
		and/or	
	EC 1:5 > 0.6 dSm^{-1} in 0 - 0.2 m depth zone regarded as toxic for rice seedlings. Subclass limits taken as ECse (dSm^{-1}) values with the corresponding range of clay percentages.	ECse (dSm^{-1}) (0 - 0.2 m) > 7 (20 - 40%) > 4.9 (40 - 60%) > 2.8 (60 - 80%) Clay	sa4
Sodicity - so	Assessed on 0.2 to 0.3 m depth. ESP related to pH only for sodic duplex and cracking clay soils (Baker et al. 1983).	ESP or Field pH: Clay soils / Sodic duplex soils	
	Sodicity classes as per Northcote and Skene (1972) and Landon (1984).	6 - 14: 8.0 - 9.5 / 6.5 - 8.0	so2
		14.1 - 25: > 9.5 / 8.1 - 8.5	so3
		>25: / > 8.5	so4

APPENDIX V (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass
WATER MANAGEMENT FACTORS			
Deep drainage - dd	Duplex soils with A horizons of < 0.2 m, moderately strong upper B horizons, textures in the clay range from the base of the A horizon to 1.5 m with alkaline soil reaction trends and with ESP > 14 are considered the least permeable.	Clay soils (Ug and Uf profiles) with clay textures extending to 1.5 m, neutral or alkaline soil reaction trend and/or ESP > 14 within the profile.	dd2
		Duplex soils with A horizons of 0.2 to 0.4 m, moderately strong upper B horizons, textures in the clay range from the base of the A horizon to 1.5 m, alkaline soil reaction trend and ESP > 14 within the profile.	dd3
		As for dd3 but upper B horizons not moderately strong or all soils with alkaline soil reaction trend and textures coarser than sandy clay between 0.4 and 1.5 m.	dd4
		All gradational, uniform (excluding Ug and Uf soils) and other duplex soils with acid and neutral soil reaction trends or an alkaline soil reaction trend with ESP < 14 throughout or A horizons > 0.4 m.	
		or	
		Land with rock outcrop and/or soils with stone or cobble in the profile and/or BC or C horizon before 1.5 m.	dd5

APPENDIX V (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass
Soil complexity - pd	Affects water use efficiency and applies only to (i) a complex UMA where no component soil exceeds 70% of the area;	Adjacent UMA's and soil types within a complex UMA are suitable and within subclass 2 for all limiting factors.	pd2
	(ii) a UMA less than < 10 ha with a minimum width of 250 m and adjacent UMA's*;	As above but with subclasses of 3 for one or more limiting factors **or** Any suitable UMA < 10 ha and any one adjacent UMA is suitable.	pd3
	(iii) the characteristics of individual soil profiles within a simple UMA * Acceptable minimum size of a rice field is 10 ha with a minimum width of 250 m. If a small UMA (below these criteria) is unsuitable due to other limiting factors, a pd rating is not provided.	Any suitable UMA < 10 ha and the surrounding UMA is unsuitable **or** Any suitable UMA which contains some soil profiles with a dd rating of 4 or 5.	pd4
LAND SURFACE MANAGEMENT FACTORS			
Rockiness - r	Based on field observation and influence on machinery use (FAO 1983). Sizes relate to the class intervals in McDonald et al. (1984).	Cover % of stone and cobble 60 - 600 mm **and/or** Cover % of pebble on surface 6 - 60 mm	
		2 - 10 / 10 - 20	r2
		10 - 20 / 20 - 50	r3
		20 - 50 / >50	r4
		>50	r5

APPENDIX V (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass
Slope - t	The upper slope limit is based on a ponding depth range of 0.05 to 0.2 m with a minimum bay width of 30 m requiring only minor levelling. Slopes of 0.05 to 0.1% regarded as optimum. Major levelling required on land with slopes between 0.5 and 0.75%. Land with a slope <0.03% is considered too flat for flushing of bays.	Land slope %	
		0.1 - 0.25	t2
		0.03 - 0.05 or 0.26 - 0.5	t3
		0.51 - 0.75 or < 0.03	t4
		> 0.75	t5
Microrelief - g	Gilgai vertical and horizontal interval related to the amount of levelling required.	(a) Cracking clay soils and sodic duplex soils with gilgai e.g. 2Dyc Normal gilgai - vertical interval 0.1 to 0.3 m, area of mound > depression or area of mound and shelf > depression. **or** Linear gilgai	g2
		Normal gilgai - vertical interval 0.3 to 0.6 m or 0.1 to 0.3 m if area of mound < depression	g3
		(b) Sodic duplex soils Vertical interval 0.05 to 0.1 m, A horizon depth < 0.15 m.	g3
	Elongated mounds and depressions due to overbank flooding and deposition and other microrelief eg. debil debil.	(c) All soils Vertical interval 0.1 - 0.3 m	g2
		0.4 - 0.6 m	g3
		> 0.6 m	g4

APPENDIX V (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass
DEGRADATION FACTORS			
Erosion - e	**Note that any UMA with an eroded soil phase (E) is class 5.**	Gully and streambank erosion severe.	e5
Outflow potential - ss		Areas susceptible to the development of saline seeps, usually located downslope of permeable soils and confined by either dykes or soils of heavy texture and very low hydraulic conductivity.	ss4

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APPENDIX VI
LAND SUITABILITY CLASSIFICATION FOR LOW VOLUME IRRIGATION OF MANGOES AND AVOCADOES, BURDEKIN RIVER IRRIGATION AREA.

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes			Subclass	
PRODUCTIVITY FACTORS						
Salinity - sa	Subclass limits taken as 10 to 25% yield reduction for subclass 2, 25 to 50% for subclass 3 and > 50% for subclass 4. Subclass limits for mangoes and avocados from Shaw et al. (1986).	ECse (dSm^{-1}) Weighted profile mean to 1.2 m			Mangoes	Avocados
		1.0 - 1.2			sa2	
		1.3 - 1.7			sa3	
		1.8 - 2.5			sa4	sa2
		2.6 - 3.7				sa3
		> 3.7				sa4
Sodicity - so	ESP levels refer to any depth in the profile - ESP related to pH only for sodic duplex soils and cracking clays (Baker et al. 1983). Sodicity classes as per Northcote and Skene (1972) and Landon (1984).	ESP	or	Field pH		
				Clay soils	Sodic duplex soils	Both crops
		< 6		< 8.0		so2
		6 - 14		8.0 - 9.5	6.5 - 8.0	so3
		> 14		> 9.5	> 8.0	so4
Soil depth - d	Assessed on depth of soil for root proliferation and anchorage. Derived from Hackett and Carolane (1982), Nel (1983) and Capelin (1987).	Effective soil depth (depth to decomposing rock, pan or salt bulge).			Mangoes	Avocados
		1.51 - 2.0 m				d2
		1.1 - 1.5 m				d3
		0.61 - 1.0 m			d2	d4
		0.45 - 0.6 m			d3	
		< 0.45 m			d4	

APPENDIX VI (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass	
Internal drainage - id	Duplex soils with red to red-brown B horizons and acid to neutral soil reaction trends are considered the most suitable eg. 5Dra, 6Dra.	Rapidly drained soils:	Mangoes	Avocados
		Uniform coarse textured soils with no pan or seasonal water table by 1.5 m.	id2	id2
		Well to moderately well drained soils:		
		(i) uniform medium, gradational and duplex soils with brown to yellow-brown B horizons with acid to neutral soil reaction trends and ESP < 14 throughout eg. 6Dyd, 6Gnd, 5Dya.	id2	id3
		(ii) duplex soils with alkaline soil reaction trend with red to red-brown or brown to yellow-brown B horizons with less than 2% calcareous segregations above 0.75m and ESP < 14 throughout eg. 6Dyf, 6Drc.	id3	id4
		Imperfectly to poorly drained soils:		
		Clay soils and other sodic duplex soils together with better drained soils prone to the development of high non-saline water tables due to their position in the landscape in relation to adjacent soils eg. 5Dyb.	id4	id5
		Very poorly drained soils:		
		Gleyed duplex soils eg. 4Dga and rapidly drained soils with a pan or seasonal water table above 1.5 m.	id5	id5

LAND SURFACE MANAGEMENT FACTORS

Rockiness - r	Based on field observation and influence on machinery use (FAO 1983). Sizes relate to the class intervals in McDonald et al. (1984).	% Rock outcrop or boulders (> 600 mm) and/or cobble and stone (60-600 mm) on surface or within profile.		Both crops
		Outcrop or boulders > 600 mm	Cobble and stone 60 - 600 mm	
		2 - 10	10 - 20	r2
		10 - 20	20 - 50	r3
		20 - 50	50 - 90	r4
		> 50	> 90	r5

APPENDIX VI (CONT.)

Limiting factor	Assumptions/comments	Degree of limitation in terms of soil/land attributes	Subclass	
Wetness - w		Areas with slopes of:	Mangoes	Avocados
		> 2%		w2
		1.1 - 2%	w2	w3
		0.6 - 1%	w2	w4
		0.1 - 0.5%	w3	w4
		Areas with water remaining on the surface for several weeks and may require successive levelling eg. gilgaied cracking clays.	w4	w5
		Areas < 0.1% slope and/or areas remaining wet for several months which require major drainage and reclamation works eg. closed depressions and swamps.	w5	w5
DEGRADATION FACTORS				
Erosion - e	**Note that any UMA with an eroded soil phase (E) is class 5.**	Gully or streambank erosion severe.	Both crops e5	
Outflow potential - ss		Areas susceptible to the development of saline seeps, usually located downslope of permeable soils and confined by either dykes or soils of heavy texture and very low hydraulic conductivity.	ss4	

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Appendix VII. Suitability of each UMA for sugar-cane, maize and rice, Selkirk Section, Burdekin River Irrigation Area.

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
1	N	6Dyg	6Ugc	10		2	3		3					3	2	2			3	3	2		3	3		3	2			4		2			4	4	14.7
2	N	6Ugc				2			2		4			2					4	3			3	2		4	2					2			4	4	1.8
3	N	6Dbc				2	2	4	2					2					4	3			2			4	2					2			5	5	2.8
4	N	6Ugc2				2		4	2		3			2	3				4	3	3		3	2		4	2					5			4	5	3.2
5	N	6Dbc				2	2	4	3					2					4	3			2			4	2					2			5	5	3.4
6	N	6Ugc				2			3		4			2	3				4	3	3		3	2		4	2					5			2	5	4.0
7	N	6Dyf2				2	2	4	2					2	3				4	3	3		2	2		4	2					4			5	5	6.6
8	N	6Dyg	6Dyg2	10	6Dyf	2	3		3			2		3	3	2			3	3	3		3	3		3	2			2		4			4	4	34.9
9	N	6Dyf				2	2	4	2					2	2				4	3	2		2	2		4	2					3			5	5	5.5
10	N	6Dyf				2	2		2					2	2				2	3	2		2	2		3	2					3			5	5	4.4
11	N	6Ucc				2	4	4	5					4					5				4			5	2					2			5	5	0.4
12	N	6Dbc	6Dyd	15	6Dbf	2	2		2					2	2				2	3	2		2			3	2					3			5	5	16.3
13	N	6Ucb				2	4	4	5					4	2				5		2		4			5	2					3			5	5	1.1
14	N	6Dbc				2	2	4	2					2	3				4	3	3		2			4	2					4			5	5	4.1
15	N	6Ugc2	6Ugc	20	6Ufd	2		4	2	3	3			2	3				4	3	3		3	2		4	2						3		4	4	2.4
16	N	6Dyj				3	3	4	3					3	2	4	2		4	3	2		3	4	3	4	3	2	4			3			4	4	1.8
17	N	6Dyf	6Dyd	10	6Dbc	2	2		2					2	2				2	3	2		2	2		3	2					3			5	5	12.7
18	N	6Dyd				2	2	4	2					2	2				4	3	2		2			4	2					3			5	5	1.0
19	N	6Dyf	6Dyf3	10		2	2		2					2					2	3			2	2		3	2					2			5	5	4.8
20	N	6Dyg	6Dyg3	25	6Dda	2	3		3					3		2			3	3			3	3		3	2		2			2			2	2	98.9
21	N	6Dyd	6Dyf	10	6Dbc	2	2		2					2	2				2	3	2		2			3	2					3			5	5	9.9
22	N	6Dbc				2	2		2					2	2				2	3	2		2			3	2					3			5	5	8.7
23	N	6Dyj				3	3		3					3		4	2		4	3			3	4	3	4	3	2	4			2				4	5.8
24	N	6Dbc				2	2		2					2					2	3			2			3	2					2			5	5	2.3
25	N	6Dyg2				2	3		3					3	2				3	3	2		3	2		3	2					2			4	4	11.9
26	N	6Drc				2	2		2					2					2	3			2	2		3	2					2			5	5	12.3

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Land Resource Data Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
27	N	2Ugk				3		2	2	2				2		2			3	3			3	3		3	3					2	2	2	2	3	0.9
28	N	6Dyf				2	2		2					2					2	3			2	2		3	2					2		5		5	9.4
29	N	6Drc				2	2	4	2					2					4	3			2	2		4	2					2		5		5	1.7
30	N	6Uga				2			2	2				2		2			2	3			2	3		3	2	2				2	2	2	3	3	6.3
31	N	6Drb				2	2							2					2	3			2			3	2					2		5		5	9.5
32	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	0.7
33	N	6Dyf2				2	2		2					2					2	3			2	2		3	2					2		5		5	2.0
34	N	6Drc	6Drb	08		2	2		2					2					2	3			2	2		3	2					2		5		5	37.3
35	N	6Dyf				2	2		2					2					2	3			2	2		3	2					2		5		5	4.4
36	N	6Dyg3				2	3		3					2		2			3	3			2	3	2	3	2					2		3	4	4	8.8
37	N	6Drc	6Drc2	20		2	2		2					2					2	3			2	2		3	2					2		5		5	5.9
38	N	6Ugc				2			2	2	4			2	4				4	3	4		3	2		4	2					4	2	2		4	6.5
39	N	6Dyf				2	2		2					2					2	3			2	2		3	2					2		5		5	3.6
40	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	0.9
41	N	6Dyd				2	2		2					2					2	3			2			3	2					2		5		5	4.5
42	N	6Ugc2	6Ugc	20	6Ufd	2		4	2		3			2	4				4	3	4		3	2		4	2					4		4		4	13.4
43	N	6Dyg3				2	3		3					2	3				3	3	3		2	2	2	3	2							3	4	4	4.6
44	N	6Drb				2	2	4	2					2	3				4	3	3		2			4	2					4		5		5	1.0
45	N	6Ucc				2	4	4	5					4	3				5		3		4			5	2							5		5	0.6
46	N	6Dyf				2	2		2					2	3				3	3	3		2	2		3	2							5		5	6.0
47	N	6Drb2	6Uma	10	6Ucc	2	2		2					2					2	3			2			3	2					2		5		5	5.0
48	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	0.3
49	N	6Drb	6Drb2	10		2	2							2					2	3			2			3	2					2		5		5	14.8
50	N	6Dyd	6Drb	10	6Umb	2	2		2					2					2	3			2			3	2					2		5		5	43.3
51	N	6Dyg2				2	3		3					2					3	3			2	2		3	2					2		4		4	5.7
52	N	6Drc				2	2		2					2					2	3			2	2		3	2					2		5		5	9.1

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Land Resource Data Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
53	N	6Drb2	6Ucc	05	6Dyd	2	2							2					2	3			2			3	2					2		5		5	7.3
54	N	6Dyf2				2	2		2					2					2	3			2	2		3	2					2		5		5	2.0
55	N	6Ugc				2		4	2		3			2	3				4	3	3		3	2		4	2						2	4	4	2.4
56	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	2.2
57	N	6Dyf2	6Dyd	10		2	2		2					2					2	3			2	2		3	2					2		5		5	12.6
58	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	2.0
59	N	6Dyd	6Dyd2	20		2	2		2					2					2	3			2			3	2					2		5		5	12.0
60	N	6Ucc				2	4	4	5					4	3				5		3		4			5	2							5		5	1.8
61	N	6Dya	6Dyb	25	6Ucc	2	3	4	2					4					4				4			4	2					2		5		5	1.6
62	N	6Dyg2				2	3	4	3					2					4	3			2	2		4	2					2		4		4	0.3
63	N	6Dyd2				2	2		2					2	2				2	3	2		2			3	2					3		5		5	3.0
64	N	6Dyg2				2	3		3					3					3	3			3	2		3	2					2		4		4	5.6
65	N	6Dyd	6Dyd2	25		2	2		2					2	2				2	3	2		2			3	2					3		5		5	10.3
66	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	0.6
67	N	6Dyg				2	3		3					3					3	3			3	2		3	2							3	4	4	0.1
68	N	6Dyd2				2	2		3					2					3	3			2			3	2					2		5		5	17.9
69	N	2Ugf2				2		4	2	2	3			2	3				4	3	3		3	2		4	2						2	4		4	7.9
70	N	6Dyf2				2	2		2					2					2	3			2	2		3	2					2		5		5	4.8
71	N	6Ugc				2		4	2		3			2	3				4	3	3		3	2		4	2							2	4	4	1.4
72	N	6Dya	6Ucc	20	6Dyb	2	3	4	2					3					4	3			3			4	2					2		5		5	3.9
73	N	6Dyf	6Dyd	10		2	2		2					2					2	3			2	2		3	2					2		5		5	11.6
74	N	6Drb2				2	2		2					2					2	3			2			3	2					2		5		5	18.4
75	N	2Ugf				2		4	2	2	3			2	3				4	3	3		3	2		4	2						2	2	4	4	2.7
76	N	2Ugf2				2		4	2	2	3			2	3				4	3	3		3	2		4	2						2	4		4	2.2
77	N	6 P									5								5		5					5	5									5	5.2

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
78	N	6Dyg	6Dyf2	25	6Ugc	2	3		3					3		2			3	3			3	3		3	2		2			2		4		4	2.3
79	N	6Ugc				2			2	2				2					2	3			3	2		3	2					2	2	2	4	4	4.4
80	N	2DbeW				2	3	4	3		4			2	3				4	2	3		2	2		4	2							3	4	4	3.0
81	N	6Dyd	6Dbc	20	6Drb	2	2		2					2					2	3			2			3	2					2		5		5	7.1
82	N	6Dyc2	6Ucc	05		2	2	4	2										4	3						4	2					2		5		5	6.7
83	N	6Dyj				3	3	4	3					3		4	2		4	3			3	4	3	4	3	2	4			2		4		4	1.6
84	N	6Dya	6Ucc	10		2	3	4	2					4					4				4			4	2					2		5		5	0.8
85	N	6Drc	6Dyg	15		2	2		2					2					2	3			2	2		3	2					2		5		5	15.1
86	N	2Dyb	2Ugg	10		2	3	4	3					3		2			4	3			3	3	2	4	2		2			2			4	4	2.9
87	N	2Ugf				2			2	2	4			2	3				4	3	3		3	2		4	2						2	2	4	4	0.9
88	N	6Dyd2	6Dbc	10		2	2		2					2					2	3			2			3	2					2		5		5	8.7
89	N	6Dyj	6Ugc	15		3	3		3					3		4	2		4	3			3	4	3	4	3	2	4			2				4	7.8
90	N	2 SP									4								4							4										4	1.3
91	N	6Dya	6Ucc	20		2	3	4	2					4					4				4			4	2					2		5		5	0.9
92	N	6Drb2				2	2		2					2	3				3	3	4		2			4	2					5		5		5	12.0
93	N	2Ugg	2Ugc	20		2		4	2	2	4			2	3				4	3	3		3	2		4	2						2	2	4	4	3.3
94	N	2DbeW				2	3	4	3		4			2	3				4	2	3		2	2		4	2							3	4	4	6.4
95	N	6Ugc				2		4	2	2				2	3				4	3	3		3	2		4	2						2	2	4	4	1.0
96	N	6Dyf2	6Dyf	25		2	2		2					2	2				2	3	2		2	2		3	2					3		5		5	3.8
97	N	6Dyg2				2	3		3					2					3	3			2	2		3	2					2		4		4	1.2
98	N	6Dyf2	6Drc	20		2	2		2					2					2	3			2	2		3	2					2		5		5	46.9
99	N	6Drb2	6Uma	10	6Ucc	2	2		2					2					2	3			2			3	2					2		5		5	0.1
100	N	6Dyg2	6Ucc	05		2	3		3					2					3	3			2	3		3	2					2		4		4	0.4
101	N	6Dyg2				2	3		3					3		2			3	3			3	3	2	3	2		2			2		4		4	18.2
102	N	2Ugf				2			2	2				2	2				2	3	2		3	2		3	2					3	3	2		3	13.2
103	N	2Ugd5				2			2					2	3				3	3	3		3	2		3	2					2		2		2	22.0

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
104	N	2Ugk				3			2	3	3			2	3				3	3	3			3	2		3	3					3	2		3	26.7
105	N	2Dyb				2	3		3					3			2		3	3			3	3	2	3	2		2		2					2	2.6
106	N	2Uge				2			2	2				2					2	3			2	2		3	2					2	2	2		2	10.8
107	N	2Ugf				2			2	2				2	3				3	3	3			3	2		3	2					2	2		2	26.9
108	N	2Uge				2			2					2	3				3	3	3			3	2		3	2						2	3	3	1.7
109	N	6Dyf2				2	2	3	2					2	2				3	3	2			2	2		3	2				3		5		5	22.4
110	N	2UgfW				2			2	2	4			2	3				4	3	3			3	2		4	2					2	2	3	4	3.6
111	N	2Dbb				2	3		3			2		3	2	2			3	3	2			3	3	2	3	2		2		3				3	3.5
112	N	2Dyb				2	3		3					3		2			3	3				3	3	2	3	2		2		2			3	3	2.4
113	N	2UgfW				2			2		4			2	3				4	3	3			3	2		4	2						2		4	5.5
114	N	2Ugc				2			2					2					2	3				3	2		3	2				2		2	3	3	4.8
115	N	6Drc2				2	2	4	2			2		2	3				4	3	3		2	2		4	2					4		5		5	6.7
116	N	6Ugc				2		4	2					2	3				4	3	3		3	2		4	2					4		2	4	4	1.0
117	N	6Drb2				2	2	4						2	3				4	3	3		2			4	2					4		5		5	5.9
118	N	2Dyb				2	3	3	3					3	2	4			4	3	2		3	4	2	4	2		4		2				3	4	3.5
119	N	2Uge				2		4	2					2	3				4	3	3		2	2		4	2							2	4	4	1.4
120	N	2Ugg				2			2					2	3				3	3	3		3	2		3	2							2	4	4	1.7
121	N	6Dyg				2	3		3					3	3				3	3	3		3	2		3	2								4	4	8.5
122	N	6Ucc				2	4	4	5					4	3				5		3		4			5	2					4		5		5	6.6
123	N	6Dba2				2	3	4	3					2	2				4	3	2		2	2		4	2					2		4	4	4	4.1
124	N	2Ugd				2		4	2					2	3				4	3	3		3	2		4	2							2	4	4	1.3
125	N	2Dyb2				2	3	4	3					3	2	2			4	3	2		3	3	2	4	2		2		2		4	4	4	4	0.6
126	N	2UgdW				2		4	2	2	4			2	3				4	3	3		3	2		4	2						2	2	4	4	3.1
127	N	2Dyb				2	3	4	3					3	2	2			4	3	2		3	3	2	4	2		2		2			4	4	4	2.5
128	N	6Dya2				2	3	4	2					3					4	3			3			4	2					2		5		5	1.1

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
129	N	6Dyf				2	2	4	2					2	2				4	3	2		2	2		4	2					3		5		5	0.7
130	N	6Dyb2				2	2	4	2					2					4	3			2			4	2					2		5		5	3.1
131	N	2Uge				2		3	2	2				2	3				3	3	3		2	2		3	2						2	2	4	4	3.4
132	N	6Dyg3				2	3	3	3					2	2	2			3	3	2		2	3	2	3	2	2				3		3	4	4	2.1
133	N	2Ugc				2		3	2	2				2	3				3	3	3		2	2		3	2						2	2	4	4	3.9
134	N	6Dyg2				2	3	3	3					2					3	3			2	2		3	2					2		4		4	1.4
135	N	2UgfE				2			2	2		5		2	3				5	3	3		3	2		5	2					5	2	2		5	2.8
136	N	6UgcW				2			2		4			2	4				4	3	4		3	2		4	2					3		2		4	3.2
137	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2		2	9.1
138	N	6Dyf2				2	2	4	2					2					4	3			2	2		4	2					2		5		5	0.9
139	N	6Dyf2				2	2	4	2					2					4	3			2	2		4	2					2		5		5	3.9
140	N	2Ugf				2			2	2	3			2	3				3	3	3		3	2		3	2						2	2		2	5.1
141	N	2Ugd				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	2.4
142	N	2UgdW				2			2		4			2	3				4	3	4		3	2		4	2							2		2	5.6
143	N	2Ugd				2			2	2	3			2					3	3			3	2		3	2					2	2	2		2	35.4
144	N	2Uge				2			2	2				2	3				3	3	3		2	2		3	2						2	2		2	37.1
145	N	2Ugg				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	1.2
146	N	6Dbd				2	2	4	2			2		2	3				4	3	3		2	2		4	2					4		5		5	8.1
147	N	2Ddb				3	3		3					3		4	2		4	3			3	4	3	4	3	4				2				4	4.9
148	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	0.9
149	N	6Dya				2	2	4	2					4	2				4	3	2		4			4	2					2		5		5	2.8
150	Y	6DbcE	6UfdW	35		2	2	4	2		4	4		2	5				5	3	5		2			5	2					5		5		5	5.6
151	N	6Dbd				2	2	4	2			2		2	3				4	3	3		2	2		4	2					4		5		5	1.9
152	N	6Dbe				2	2	3	2					3					3	3			3	2		3	2					2		5		5	57.5
153	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2		2	2.5
154	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2		2	0.6

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
155	N	2Dyb				2	3		3			2		3	3	3			3	3	3		3	4	2	4	2				4				4	1.1
156	N	2Dyb				2	3		3					3		3			3				3	4	2	4	2				2				3	113.1
157	N	2Ugc				2			2	2				2	3				3	3		2	2		3	2					2	2		2	2.0
158	N	6 E										5			5				5		5				5						5				5	5.5
159	N	6DbfE				2	2		2			5		2	4				5	3	4		2			5	2				5		5			5	3.0
160	N	6UgcW				2			2		4			2					4	3			3	2		4	2				2		2	4	4	1.0
161	N	6 SP									5								5							5					5				5	0.2
162	N	6Dbf				2	2		2					2	3				3	3	3		2			3	2				4		5			5	12.4
163	N	6 SP									5								5							5					5				5	0.2
164	N	6Dbd				2	2		2			2		2	3				3	3	3		2	2		3	2				4		5			5	4.8
165	N	6 SP									5								5							5					5				5	0.4
166	N	6Dbf				2	2	4	2					2	3				4	3	3		2			4	2				4		5			5	5.0
167	N	6Dda				2	3	4	3					3	3	2			4	3	3		3	3		4	2	2							4	4	2.7
168	N	2Uge				2			2	2				2					2	3			2	2		3	2				2	2	2			2	37.9
169	N	2Dyc				2	3		3					3					3	3			3	2		3	2				2					2	10.3
170	N	2Ugg				2			2	3				2	3				3	3	3		3	2		3	2					3	2			3	9.5
171	N	2Dbd				2	3		3					2					3	3			2	2		3	2				2		3			3	14.6
172	N	2Ugd				2			2	3				2	3				3	3	3		3	2		3	2					3	2			3	162.6
173	N	2 E										5			5				5		5				5	5				5					5	221.2
174	N	2Ugc5				2			2	2				2					2	3			3	2		3	2				2	2	2			2	2.9
175	N	6Dyf				2	2	4	2					2					4	3			2	2		4	2				3		5			5	4.7
176	N	2Ugc5				2			2	2				2					2	3			2	2		3	2				2	2	2	3		3	4.3
177	N	2Dbd				2	3		3			2		2	3				3	3	3		2	2		3	2				4		3			4	2.5
178	N	2Uge				2			2	2				2	2				2	3	2		2	2		3	2				3	2	2			3	11.1
179	Y	6UgcW	6Dda		40	2			2		4			2	3				4	3	3		3	2		4	2				4		2			4	2.9

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
180	N	6Dbe				2	2	4	2					3	2				4	3	2		3	2		4	2					3		5		5	2.0
181	N	2Ugg				2			2	2				2	3				3	3	3		3	2		3	2						2	2	3	3	0.9
182	N	6Dbe				2	2	4	2					3	3				4	3	3		3	2		4	2							5		5	1.4
183	N	6 SP									5								5							5					5				5	2.5
184	N	6Dda3				2	3	4	3			2		2	3				4	3	3		2	2		4	2					5		3		5	2.1
185	N	6Dbb3				2	3	4	3			2		2	3				4	3	3		2	2		4	2					4		5		5	14.8
186	N	6Dbd3				2	3	4	3			2		3	3				4	3	3		3	2		4	2					5		5		5	4.3
187	N	6Dda2				2	3	4	3					3	3				4	3	3		3	2		4	2							4		4	0.5
188	N	6 SP									5								5							5					5				5	5.3
189	N	6Dbd				2	2	4	2		3	3		2	3				4	3	4		2	2		4	2					5		5		5	1.9
190	N	6 SP									5								5							5					5				5	2.2
191	N	6Dda3				2	3	4	3		3	2		2	3				4	3	3		2	2		4	2					5			4	5	0.8
192	N	2Dyb				2	3		3			2		3	3	2			3	3	3		3	3	2	3	2		2							2	54.4
193	N	2Ugd				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	10.7
194	N	6 SP									5								5							5					5				5	27.7
195	N	2Ugh				3			2	2				2		2			3	3			3	3		3	3	2				2	2	2	3	3	5.9
196	Y	2Uge	2Ugh		30	3			2	2				2		2			3	3			3	2		3	3	2				2	2	2		3	55.7
197	N	6Drb2				2	2	4						2					4	3			2			4	2					2		5		5	1.1
198	N	6Dyg2				2	3		3					3					3	3			3	2		3	2					2		4		4	2.0
199	N	2Dyb				2	3		3					3	2				3	3	2		3	2	2	3	2					3			3	3	5.3
200	N	2Dda				3	3	4	3					3	2	2			4	4	2		3	3	2	4	3	2		3				4		4	2.4
201	N	2Uge				2			2	2				2					2	3			3	2		3	2					2	2	2		2	10.2
202	N	2Dyb				2	3	4	3					3	2	2			4	3	2		3	3	2	4	2	2		3				4		4	3.5
203	N	2Dyb				2	3	3	3					3	2	2			3	3	2		3	3	2	3	2	2		3				3		3	2.1
204	N	2Ugg				2			2	3				2	3				3	3	3		3	2		3	2					4	3	2		4	20.2
205	N	6Dyf3				2	3	4	3			3		3	3				4	4	4		3	2		4	2					5		5		5	1.2

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
206	N	2Ugf				2			2					2	2				2	3	2		3	2		3					3		2		3	
207	N	2Ugd				2			2	2				2					2	3			3	2		3					2	2	2		2	
208	N	2Uge				3			2	2				2		2			3	3			2	3		3					2	2	2		3	
209	N	2Ugh				3			2	3				2	3	2			3	3	3		3	3		3						3	2		3	
210	N	2Uge				2			2	2				2					2	3			3	2		3					2	2	2		2	
211	N	2UgeW				3			2	3	4			2	3				4	3	3		3	2		4						3	2		4	
212	N	2UgdW				2			2	2	4			2					4	3			3	2		4					2	2	2		2	
213	N	2Dyb				2	3		3					3	2	2			3	3	2		3	3	2	3					3				3	
214	N	2UggW				2			2	3	4			2	3				4	3	3		3	2		4						3	2	3	4	
215	N	6 SP									5								5							5					5				5	
216	N	6 SP									5								5							5					5				5	
217	N	6DbeE				2	2		2			5		3	3	2			5	3	4		3	2		5					5		5		5	
218	N	6Dbe				2	2	4	2					3	2				4	3	2		3	2		4					3		5		5	
219	N	6 E										5			5				5		5					5					5				5	
220	N	6Dyg				2	3		3					3	2	2			3	3	2		3	3		3					3			3	3	
221	N	2Ugc				2			2	2				2	3				3	3	3		3	2		3						2	2		2	
222	N	6Dyg				2	3		3					3		2			3	3			3	3		3					2				2	
223	N	2Uge				2			2	2				2	3				3	3	3		3	2		3						2	2		2	
224	N	2Uge				2			2	2				2	3				3	3	3		3	2		3						2	2	3	3	
225	N	2UggW				2			2	3	4			2					4	3			3	2		4					2	3	2		4	
226	N	6Dyg				2	3		3			2			3	3			3	3	3			4		4					4				4	
227	N	2Uge				2			2	2				2					2	3		2	2		3					2	2	2		2	
228	N	6Dyg				2	3		3					3		2			3	3			3	3		3					2				2	
229	N	2Dyb				2	3		3					3	2				3	3	2		3	2	2	3					3				3	
230	N	2Dbc				2	3		3			2		2	3				3	3	3		2	2		3					5		3		5	

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion *ss-secondary salinisation* r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
231	N	2Dbd				2	3		3					2			2		3	3			2	3		3	2					2		3	3	3	4.1
232	N	2Dbd				2	3		3					2			2		3	3			2	3		3	2					2		3		3	2.1
233	Y	2Uge	2Dbb	35		3	3		3	2				3	3				3	3	3		3	2		3	3						2	2		3	9.9
234	Y	2Dyb	2Uge	35		2	3		3					3			2		3	3			3	3	2	3	2					2				2	8.3
235	N	6Drc				2	3	4	3					2					4	3			2	2		4	2					2		5		5	1.2
236	N	2Uge	2Ugg	10		2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	8.5
237	N	2Dyb	2Dbb	25		2	3		3					3	2	2			3	3	2		3	3	2	3	2					2				3	11.1
238	N	6Dyf				2	3	4	3					2					4	3			2	2		4	2					2		5		5	12.3
239	N	2Dbb				2	3	3	3					3		4			4	3			3	4	2	4	2					4				4	5.6
240	N	6Dyf2				2	3	4	3			2		2	3				4	3	3		2	2		4	2					5		5		5	5.1
241	N	2Ugd	2Ugc	15		2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	144.6
242	N	2Dbd				2	3		3					2	3				3	3	3		2	2		3	2							3		3	3.3
243	N	2Dbb				2	3		3					3			2		3	3			3	3		3	2					2				2	12.9
244	N	6Uca				2	4	4	5					4					5	3			4			5	2					2		5		5	3.8
245	N	6Drc				2	3	3	3					2					3	3			2	2		3	2					2		5		5	4.8
246	N	6Dyf	6Dyg	20		2	3		3					2	2				3	3	2		2	2		3	2					3		5		5	6.1
247	N	2Dyb				2	3		3					3		3			3	3			3	4	2	4	2					2				3	5.8
248	N	2Dyb	2Dba	15		2	3		3					3		2			3	3			3	3	2	3	2					2				2	9.7
249	N	6Dyf2	6Dyf	10		2	3		3					2					3	3			2	2		3	2					2		5		5	23.8
250	N	2UgfW				2		4	2	2	4			2					4	3			3	2		4	2					2	2	2	4	4	1.9
251	N	2Dbe				2	3		3					3	2				3	3	2		3	2		3	2					3				3	4.3
252	N	2Dbe	2Dbc	25		2	3		3					2					3	3			2	2		3	2					2		3		3	8.9
253	Y	6Drc	6Dyf2	40		2	3	4	3					2					4	3			2	2		4	2					2		5		5	9.8
254	N	6Dbd				2	2	4	2					2					4	3			2	2		4	2					2		5		5	6.1
255	Y	2Ugd	2Ugc2	30		2			2	2				2	3				3	3	3		2	2		3	2						2	2		2	10.5
256	N	6Drc2				2	2	4	2					2	3				4	3	3		2	2		4	2							5		5	1.2

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Land Resource Data Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
257	N	2Dyb2				2	3	4	3					3	3	2			4	3	3		3	3	2	4	2						4		4	2.5
258	N	6Drb2				2	2		2					2					2	3			2			3	2				2		5		5	2.6
259	N	2Dyb	2Dbc	15		2	3		3					3	2	2			3	3	2		3	3	2	3	2					3			3	20.8
260	N	6Drb2				2	2		2					2					2	3			2			3	2				2		5		5	3.5
261	N	6Drc2				2	2	3	2					2					3	3			2	2		3	2				2		5		5	6.7
262	N	6Drb2	6Dbc3	15		2	2	3	2					2					3	3			2			3	2				2		5		5	5.9
263	N	6Dyg2				2	3	3	3					3					3	3			3	2		3	2				2		4		4	5.4
264	N	6Drc				2	2	4	2					3	3				4	3	3		3	2		4	2						5		5	2.5
265	N	2Uge				2			2	2				2					2	3			3	2		3	2				2	2	2		2	17.6
266	N	2Dbb				2	3		3					3		3			3	3			3	4		4	2	3		2					3	1.1
267	N	6Dbd				2	2	3	2					2					3	3			2	2		3	2				2		5		5	3.9
268	N	6Dyf2				2	2	3	2					2					3	3			2	2		3	2				2		5		5	1.7
269	N	6Dyg2				2	2	3	2					3		2			3	3			3	3		3	2	2		2	4			4	2.8
270	N	2Dyb				2	3	3	3					3	2	3			3	3	2		3	4	2	4	2	3		2		4		4	1.9
271	N	6Drc	6Drc2	20		2	2		2					2					2	3			2	2		3	2				2		5		5	14.9
272	N	6Dyg				2	3	4	3					3	2				4	3	2		3	2		4	2				3			4	4	3.1
273	N	6Drb				2	2	4	2					2					4	3			2			4	2				2		5		5	2.0
274	N	6Drb2				2	2		2					2	2				2	3	2		2			3	2				3		5		5	8.8
275	N	6Dyf				2	2		2					2					2	3			2	2		3	2				2		5		5	7.6
276	N	2Dyb				2	3	3	3					3	2	3			3	3	2		3	4	2	4	2	3		2		4		4	7.7
277	N	6Drb2				2	2	3	2					2					2	3			2			3	2				2		5		5	7.0
278	N	6Uga				2		4	2					2	3				4	3	3		3	2		4	2						2	4	4	2.7
279	Y	6Dyf2	6Drc2	40		2	2	3	2					2	2				3	3	2		2	2		3	2				2		5		5	9.1
280	Y	6Dyg2	6Dyf3	35		2	3	3	3					3					3	3			3	2		3	2				2		4		4	11.3
281	N	6Uga2				2		4	2					2					4	3			3	2		4	2				2		2	4	4	1.9

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
282	N	6Dyb				2	2	3	2						2	2			3	3	2		2		3	2		3					3		5		5	4.8
283	N	6Drb2				2	2		2						2	2			2	3	2		2		3	2		3					3		5		5	17.5
284	N	6Dyg				2	3	4	3						3	2			4	3	2		3	2	4	2		4					2			4	4	3.0
285	N	6Dyf2				2	2	3	2						2	2			3	3	2		2	2	3	2		3					2		5		5	5.2
286	N	6Dyb2				2	2	3	2						2	3			3	3	3		2		3	2		3							5		5	3.6
287	N	6Dyg				2	3	4	3						3	2	2		4	3	2		3	3	4	2		4		2			2			4	4	4.5
288	N	6UgaW				2			2	4					2	3			4	3	3		3	2	4	2		4							2		4	19.7
289	N	6Drc2				2	2	3	2						2	2			3	3	2		2	2	3	2		3					3		5		5	3.1
290	N	6Dyf				2	2	3	2						2	2			3	3	2		2	2	3	2		3					3		5		5	5.0
291	N	6Drb				2	2		2						2	2			2	3	2		2		3	2		3					3		5		5	3.9
292	N	6Dyg				2	3	4	3						3	2	2		4	3	2		3	3	4	2		4		2			3			4	4	2.4
293	Y	6Drb2	6Dyd	35		2	2	3	2						2	2			3	3	2		2		3	2		3					3		5		5	7.2
294	N	6Dyf3				2	3	3	3						3	3			3	3	3		3	2	3	2		3							5		5	5.7
295	N	6Drb2				2	2								2				2	3			2		3	2		3					2		5		5	2.7
296	Y	6Uma	6Ucb	30		2	4		5						4				5	3			4		5	2		3					2		5		5	9.1
297	N	6Drb2				2	2		2						2	2			2	3	2		2		3	2		3					3		5		5	4.2
298	N	2Dbd	2Dbc3	20		2	3	4	3						2				4	3			2	2	4	2		4					2		3	3	3	6.8
299	N	6Dyf				2	2	4	2						2	2			4	3	2		2	2	4	2		4					3		5		5	2.8
300	N	6Dye	6Dbc2	20		2	3	3	3						2	2			3	3	2		2	2	3	2		3					3		5		5	7.2
301	N	6Ucb				2	4	4	5						4	2			5		2		4		5	2		3					3		5		5	3.2
302	N	6Dyf				2	2	3	2						2	2			3	3	2		2	2	3	2		3					3		5		5	3.6
303	N	6Dyg2				2	3		3						3	2	2		3	3	2		3	3	4	2		4		2			3		4		4	7.2
304	N	6Dyj2				3	3		3						3	3	4	2	4	3	3		3	4	4	3		4	2	4					4		4	5.9
305	N	2Ugd				2		3	2	2					2	3			3	3	3		3	2	3	2		3				2	2	3		3	3	13.5
306	N	6Dye				2	3	4	3						2				4	3			2	2	4	2		4					2		5		5	1.9
307	N	6Dyg				2	3		3						3	3	2		3	3	3		3	3	3	2		3		2						3	3	4.2

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Land Resource Data Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
308	N	6Ucb	6Ucb2	15		2	4		5					4	2				5		2		4			5	2				3		5		5	9.8
309	N	6Dyf				2	2	4	2					2	3				4	3	3		2	2		4	2				3		5		5	0.8
310	N	2Ugd	2Ugg	10		2			2	2				2	3				3	3	3		3	2		3	2					2	2		2	91.0
311	Y	2Dbb2	2Ugh	35		2	3		3					3	3	3			3	3	3		3	4		4	2	3					4		4	4.6
312	N	6Dyg2				2	3		3					3					3	3			3	2		3	2				2		4		4	3.5
313	N	2UggW				2			2	2	4			2	4				4	3	4		3	2		4	2				4	2	2		4	2.3
314	N	2Ugc				2			2	2				2	3				3	3	3		3	2		3	2					2	2		2	30.1
315	N	2UgfW				2			2	2	4			2	4				4	3	4		3	2		4	2				4	2	2		4	30.1
316	N	2UggW				2			2		4			2	4				4	3	4		3	2		4	2				4		2		4	0.9
317	N	2Ugc				2			2	2	3			2	3				3	3	3		2	2		3	2					2	2		2	43.1
318	N	6Drb2				2	2	4						2	2				4	3	2		2			4	2				3		5		5	0.7
319	N	2Dyb				2	3		3					3		2			3	3			3	3	2	3	2	2			2				2	27.4
320	Y	2Ugh	2Uge	40		3			2	2				2	3	2			3	3	3		3	2		3	3	2				2	2		3	6.4
321	N	2Ugc				2			2	2	3			2	3				3	3	3		2	2		3	2					2	2		2	2.2
322	N	6Dyg	6Dyg3	15		2	3		3					3		2			3	3	3		3	3		3	2	2			2				2	10.1
323	N	2Ugc				2			2	2				2					2	3	3		3	2		3	2				2	2	2		2	4.7
324	N	6Ugc				2		4	2					2	2				4	3	2		3	2		4	2				3		2	4	4	1.5
325	N	6Ucb				2	4		5					4	2				5		2		4			5	2				3		5		5	1.2
326	N	2Uge	2Ugg	10		2			2	2				2					2	3			3	2		3	2				2	2	2	3	3	11.6
327	N	2Ugh				3			2	2				2		2			3	3			3	3		3	3	2			2	2	2		3	5.1
328	N	6Dyj2				3	3	3	3					3	3	4	2		4	3	3		3	4	3	4	3	4			4				4	3.2
329	N	2Ugd				2		4	2	2				2	3				4	3	3		3	2		4	2					2	2	4	4	2.4
330	N	6Dyg2				2	3	4	3					3		2			4	3			3	3		4	2	2			2		4		4	2.2
331	N	6Dba2				2	3	4	3					2	2	2			4	3	2		2	3		4	2	2			3		4		4	2.4
332	Y	6Dyg2	6Uca4	35		2	3	4	5					4	2				5	3	2		4	2		5	2				3		5		5	3.3

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
333	N	2Uge				2		4	2	2				2	2				4	3	2		3	2		4	2				3	2	2	4	4	2.7
334	Y	6Drb2	6Dyb4	35		2	2	4	2					2					4	3			2			4	2				2		5		5	4.9
335	N	6Dyg2				2	3		3					3	2				3	3	2		3	2		3	2				3		4		4	12.8
336	N	6Dyg	6Dyg3	10		2	3		3					3		2			3	3			3	3		3	2	2			2				2	20.1
337	Y	2Dyb	2Uge	30		2	3		3					3		2			3	3			3	3	2	3	2	2			2			3	3	6.2
338	N	6Dyj2				3	3		3					3		4	2		4	3			3	4	3	4	3				2		4		4	1.3
339	N	2Uge				2			2	2				2	3				3	3	3		3	2		3	2					2	2		2	2.6
340	N	2Uge				2		3	2	2				2	3				3	3	3		3	2		3	2					2	2	4	4	6.6
341	N	6Ucb				2	4		5					4	2				5		2		4			5	2				3		5		5	7.1
342	N	6Dyg2				2	3	4	3					2	2	2			4	3	2		2	3		4	2	2			3		4		4	3.3
343	N	6Drb2				2	2	4						2					4	3			2			4	2				2		5		5	1.5
344	N	6Gnb				2	3	4	3					3					4	3			3			4	2				2		5		5	0.5
345	Y	6Dyg2	6Drc2	40		2	3	4	3					2	2				4	3	2		2	2		4	2				3		5		5	8.9
346	N	2Uge				2			2	2				2	3				3	3	3		3	2		3	2					2	2		2	5.4
347	N	6Dyg2				2	3		3					3	2	2			3	3	2		3	3		3	2	2			3		4		4	2.2
348	N	6 SP									5								5							5					5				5	3.8
349	N	6Ugc2				2		4	2					2	4				4	3	4		3	2		4	2				3		4		4	0.2
350	N	6Dbb				2	3	4	3					2					4	3			2	2		4	2				2		5		5	1.2
351	Y	6Drb2	6Drc	30		2	2		2					2					2	3			2	2		3	2				2		5		5	11.2
352	N	6Dyf				2	2	4	2					2	2				4	3	2		2	2		4	2				3		5		5	1.7
353	N	6Dyg				2	3		3					3	2	2			3	3	2		3	3		3	2	2			3			3	3	3.6
354	N	6Drb				2	2	4	2					2					4	3			2			4	2				2		5		5	1.2
355	Y	2Dyb	2Uge	30		2	3		3					3		2			3	3			3	3	2	3	2	2			2			3	3	7.3
356	N	2UgfW				2			2		4			2	2				4	3	2		3	2		4	2				3		2	4	4	2.4
357	N	6Ucc				2	4		5					4					5	3			4			5	2				2		5		5	0.9
358	N	6Gnd				2	2	4						3	3				4	3	3		3			4	2						5		5	0.7

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
359	N	6Drb2				2	2		2					2	2				2	3	2		2			3	2					3		5		5	5.5
360	N	6Dyb2				2	2		2					2	2				2	3	2		2			3	2					3		5		5	10.0
361	N	6Dyg2				2	3	3	3					3	3	2			3	3	3		3	3		3	2							4		4	6.0
362	N	6Drb4				2	2	4	2					2					4	3			2			4	2					2		5		5	2.9
363	N	6Ugc				2		4	2					2	3				4	3	3		3	2		4	2							2	4	4	0.8
364	N	6Ugc2				2		4	2					2					4	3			3	2		4	2					2		2	4	4	0.6
365	Y	2Uge	2Dbb	35		3	3		3					3		3			3	3			3	2		3	3					2		2		3	6.1
366	N	2Uge				3			2	2				2		2			3	3			3	3		3	3					2	2	2		3	12.3
367	N	2Uge				3			2	2				2		2			3	3			2	3		3	3					2	2	2		3	15.1
368	N	2Ugd				2			2	3				2					3	3			3	2		3	2					2	3	2		3	229.4
369	N	2Uge				3			2	2				2					3	3			3	2		3	3					2	2	2		3	12.6
370	N	2Dbb	2Uge	20		2	3		3					3	3	2			3	3	3		3	3		3	2								2	2	4.5
371	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2	2	2	9.7
372	N	2UgeW				2			2	2	4			2	3				4	3	3		3	2		4	2						2	2		4	13.7
373	N	2 E										5			5				5		5					5					5				5	1.0
374	N	6Dyg2				2	3	4	3					3	2				4	3	2		3	2		4	2					2		4		4	10.2
375	Y	6Dbf	6Dda	30		2	3	4	3					2	3	2			4	3	3		2	3		4	2					5		5		5	23.0
376	N	6Dbe	6UgcW	15		2	2	4	2			2		3	3				4	3	3		3	2		4	2					5		5		5	8.1
377	N	6Dbe				2	2	4	2			2		3	3				4	3	3		3	2		4	2					5		5		5	3.2
378	N	6Dda				2	3	4	3			2		3	3				4	3	3		3	2		4	2					5				5	4.1
379	N	2DybE				2	3		3			5		3	3	2			5	3	3		3	3	2	5	2					5				5	1.1
380	N	2Dyb	2Dbd	20		2	3		3					3	2	2			3	3	2		3	3	2	3	2					3			3	3	8.0
381	N	2UgfW				2			2		4			2					4	3			3	2		4	2					2		2		4	0.3
382	N	2UgfW	2UgcW	25		2			2	2	4			2	2				4	3	2		3	2		4	2					3	2	2		4	5.6
383	N	2 SP									4								4							4									4	0.7

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
384	N	2Dyb	2Dyb2	20		2	3	3	3					3					3	3			3	2	2	3	2					2			3	3	7.0
385	N	2Uge				3		3	2	2				2	3				3	3	3		2	2		3	3						2	2		3	2.3
386	N	2UghW				3			2	2	4			2		2			4	3			3	3		4	3	2			2	2	2		3	9.8
387	N	2Dyb	2Dyb5	15		2	3	3	3					3	2	2			3	3	2		3	3	2	3	2					2				2	7.8
388	N	6Drb				2	2	4	2					2	2				4	3	2		2			4	2					3		5		5	1.1
389	N	2Uge				2		3	2	2				2					3	3			3	2		3	2					2	2	2		2	1.8
390	Y	2Dyb	2Ugh	35		3	3		3					3	2	3			3	3	2		3	4	2	4	3					3			3	3	3.1
391	N	2Uge	2Ugg	20		2			2	2				2					2	3			2	2		3	2					2	2	2		2	45.7
392	N	2UgeE				3			2			5		2	3				5	3	3		3	2		5	3					5		2		5	4.0
393	N	6 E										5			5				5		5					5						5				5	10.3
394	N	2Uge				3			2	3				2					3	3			2	2		3	3					2	3	2		3	144.3
395	N	2Ugd	2Ugd3	10		2			2	2				2	2				2	3	2		3	2		3	2					3	2	2		3	5.5
396	Y	2Dbb	2Uge	40		2	3		3					3		2			3	3			3	3		3	2					2				2	27.1
397	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2		2	2.8
398	N	2Dbb	2Dbb2	20		2	3		3					3	3	2			3	3	3		3	3		3	2									2	4.5
399	N	2Uge				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	2.6
400	Y	2Dbb	2Dbd	30		2	3		3					3					3	3			3	2		3	2					2		3		3	4.9
401	Y	2Uge	2Dbb	30		3	3		3	2				3		2			3	3			3	3		3	3					2	2	2		3	3.1
402	Y	2Dbe4	2Uge	30		2	3	4	3					3					4	4			3	2		4	2					2		4		4	1.5
403	N	2Uge				3			2	3				2		2			3	3			3	3		3	3					2	3	2		3	10.0
404	N	2Dyb				2	3		3					3	3				3	3	3		3	2	2	3	2									2	1.5
405	N	2Ugc				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	3.8
406	N	2Uge				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	9.9
407	N	2Dyb				2	3		3					3	3	2			3	3	3		3	3	2	3	2								3	3	2.0
408	N	2 SP									4								4							4										4	3.2
409	Y	2Dbb	2Uge	40		2	3		3					3	2	2			3	3	2		3	3		3	2					3				3	5.7

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
411	N	2Dbc2				2	3	3	3					2	2				3	3	2	2	2			3	2				3		4		4	4.0
413	N	2Dyb				2	3		3					3	2	2			3	3	2	3	3	2		3	2	2		3				3		3	3.0
414	N	2Dbc	2Dbd	15		2	3		3					2					3	3		2	2			3	2			2		3			3	4.6
415	N	2Uge				2			2	2				2					2	3		3	2			3	2			2	2	2			2	20.1
416	Y	6Dyf	6Ugc	30		2	2	4	2					2	3				4	3	3	3	2			4	2					5			5	2.6
417	N	6Dyf				2	2	4	2					3					4	3		3	2			4	2			2		5			5	3.2
418	N	6Dyf				2	2	4	2					2	2				4	3	2	2	2			4	2			3		5			5	8.5
419	N	6Dyg				2	3	3	3					3	2	2			3	3	2	3	3			3	2		2	3			3		3	3	3.5
420	N	6Ucc				2	4		5					4					5			4				5	2		2		5			5	4.7
421	Y	6Dyg2	6Dyg	35		2	3	4	3						2				4	3	2	3	2			4	2			3		4	4		4	5.3
422	Y	6Dyb	6Dyf	35		3	2	3	2					2	2				3	3	2	2	2			3	3			3		5			5	5.9
423	Y	2Dbe	2Dbc	40		2	3		3					3	3				3	3	3	3	2			3	2					3			3	11.7
424	N	6Dbd	6Dbc3	20		2	2	4	2					2					4	3		2	2			4	2			2		5			5	3.5
425	Y	2Dbb	2Uge	30		2	3		3					3	3	2			3	3	3	3	3			3	2		2				3		3	3.1
426	N	2Uge				2			2	2				2					2	3		3	2			3	2			2	2	2			2	7.4
427	Y	2Dbe	2Ugd	30		2	3		3					3	3				3	3	3	3	2			3	2								2	1.8
428	N	2Dbc				2	3		3					2					3	3		2	2			3	2			2		3			3	4.8
429	N	2Dyb				2	3		3					3					3	3		3	2	2		3	2			2					2	16.2
430	N	2Uge				3			2					2	3				3	3	3	2	2			3	3					2	3		3	2.5
431	N	6Dyf				2	2	4	2					2	2				4	3	2	2	2			4	2			2		5			5	3.6
432	N	6 SP									5								5							5				5					5	5.5
433	N	6Dyd2				2	2	4	2					2					4	3		2				4	2			2		5			5	1.6
434	N	2Dyb	2Dyb2	15		2	3	3	3					3		2			3	3		3	3	2		3	2		2				3		3	8.8
435	N	6Dyf				2	2	3	2					2					3	3		2	2			3	2			2		5			5	2.4
436	Y	6Dbf2	6Dbf	40		2	2	3	2					2	2				3	3	2	2				3	2			3		5			5	7.8

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
437	Y	2Ugd	2Dyc	30		2	3	4	3	2				2	2				4	3	2		3	2		4	2					3	2	2	3	3	8.9
438	N	6Ucb				2	4	4	5					4	2				5		2		4			5	2					3		5		5	2.6
439	N	2Uge				2		4	2	3				2	3				4	3	3		3	2		4	2						3	2	4	4	2.2
440	N	6 SP									5								5							5					5				5	0.4
441	N	6Dyg	6Dyg2	15		2	3	3	3					3			2		3	3			3	3		3	2		2			2			4	4	19.6
442	N	6Dyf3				2	3	4	3					3	3				4	3	3		3	2		4	2		2				5			5	1.2
443	N	6Dbd				2	2	4	2					2	3				4	3	3		2	2		4	2						5			5	2.3
444	N	6Dyf				2	2	4	2					2	3				4	3	3		2	2		4	2						5			5	6.3
445	N	2Ugg				2			2	2				2					2	3			3	2		3	2					2	2	2	3	3	4.1
446	N	6Dyg				2	3		3					3	2		2		3	3	2		3	3		3	2		2			2			3	3	3.5
447	N	6Ucc				2	4		5					4	2				5		2		4			5	2					3		5		5	6.1
448	N	6Dyg2				2	3	4	3					3					4	3			3	2		4	2					2		4		4	6.6
449	N	6Dyg	6Dyg3	10		2	3		3					3			2		3	3			3	3		3	2		2			2			2	2	16.9
450	N	6Dyf				2	2	3	2					2					3	3			2	2		3	2					2		5		5	2.8
451	N	6Dyf2				2	2	4	2					2					4	3			2	2		4	2					2		5		5	5.6
452	N	6Uca				2	4		5					4					5				4			5	2					2		5		5	9.5
453	N	2Ugd				2		4	2					2	3				4	3	3		3	2		4	2							2	3	3	1.2
454	N	6Dyg				2	3	3	3					3			2		3	3			3	3		3	2		2			2			3	3	4.6
455	N	6Dyf2				2	2	3	2					2					3	3			2	2		3	2					2		5		5	13.4
456	N	6Ugc				2		4	2					2	3				4	3	3		3	2		4	2							2	4	4	1.1
457	N	6Dyf	6Drb2	20		2	2	3	2					2					3	3			2	2		3	2		2			2		5		5	14.4
458	N	2Ugd				2		4	2	2				2	3				4	3	3		3	2		4	2						2	2	4	4	3.1
459	N	6Dyg	6Dyf2			2	3		3					3	2				3	3	2		3	2	2	3	2		2			4				4	22.8
460	N	6Dyg				2	3	3	3					3	2				3	3	2		3	2		3	2		3						3	3	8.1
461	N	2UgdW				2			2	2	4			2					4	3			3	2		4	2		2	2		2				2	12.6
462	N	2Dyb				2	3	4	3					3	3	2			4	3	3		3	3	2	4	2		2							2	5.4

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
463	N	6Drc2				2	2	4	2					2					4	3			2	2		4	2					2		5		5	1.4
464	N	2Dbd	2Dbc	15		2	3		3					2	3				3	3	3		2	2		3	2							3		3	5.3
465	N	2Ugd	2Uge			2			2	2				2					2	3			3	2		3	2					2	2	2		2	20.7
466	N	2Uge				3			2	2				2					3	3			2	2		3	3					2	2	2		3	17.0
467	N	2Dyb	2Dbb			2	3		3					3			2		3	3			3	3	2	3	2	2							2	33.6
468	N	2Dbb				2	3		3					3	2	3			3	3	2		3	4		4	2	3						3		3	2.7
469	N	6Dyg	2Dbb	10		2	3		3					3	2	2			3	3	2		3	3		3	2	2								3	11.5
470	N	2Dyb				2	3		3					3	2	2			3	3	2		3	3	2	3	2	2								3	13.5
471	N	2	E									5							5							5										5	0.6
472	N	2Uge				3			2					2	3				3	3	3		3	2		3	3							2		3	12.7
473	N	2	E									5							5							5										5	5.4
474	N	2Dyb				2	3	4	3					3	2	2			4	3	2		3	3	2	4	2	2								2	2.6
475	N	2	E									5							5							5										5	1.8
476	N	6Dyf2	6Dyg		6Dbb	2	2		2					2	3				3	3	3		2	2		3	2							5		5	29.7
477	N	6Dyf3				2	2		2					3	3				3	3	3		3	2		3	2							5		5	3.7
478	N	2Dyb				2	3		3					3		2			3	3	3		3	3	2	3	2	2								2	24.1
479	N	6Ucb				2	4	4	5					4					5				4			5	2					2		5		5	0.6
480	N	2Ugd				2			2	2				2					2	3			3	2		3	2					2	2	2		2	9.6
481	N	2Ugc				2			2	3	3			2					3	3			3	2		3	2					2	3	2		3	8.3
482	N	6Dyg2				2	3		3					3					3	3			3	2	2	3	2							4		4	6.8
483	N	2Dbb				2	3		3					3		2			3	3	3		3	3	2	3	2	2							3	3	4.9
484	N	2Dyb	2Dbb		2Dbd	2	3		3					3		2			3	3	3		3	3	2	3	2	2							3	3	63.4
485	N	6Drc	6Drc2		6Drb	2	2		2					2					2	3			2	2		3	2							5		5	32.8
486	N	6Ugc3	6Dda5			2			2					2					2	3			3	2		3	2							2	3	3	2.0
487	N	6Dyf2				2	2		2					2					2	3			2	2		3	2							5		5	0.3

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
488	N	6Ucc				2	4	4	5					4					5				4			5	2					2		5		5	1.7
489	N	6Dyf2	6Dya			2	2		2					2	3				3	3	3		2	2		3	2							5		5	8.9
490	N	6Dye				2	3		3					2	3				3	3	3		2	2		3	2							5		5	0.8
491	N	6Dyd2				2	2	4	2					2					4	3			2			4	2					2		5		5	4.8
492	N	6Dyg				2	3		3					3		2			3	3			3	3	2	3	2		2			2			2	2	4.7
493	N	6Dyf2	6Dyd2		6Dyg	2	2		2					2	2				2	3	2		2	2		3	2					2		5		5	21.1
494	N	2Uge	2Ugc			3			2					2	3	2			3	3	3		2	3		3	3		2					2		3	43.3
495	N	2Ugf				2			2					2	3				3	3	3		3	2		3	2							2		2	3.8
496	N	2Dyb	2Ddb		2Dbd	2	3		3					3		2			3	3			3	3	2	3	2		2			2				2	18.7
497	N	2Uge	2Ugc			2			2	2				2					2	3			2	2		3	2					2	2	2		2	72.6
498	N	2Ugg				2			2	3				2					3	3			3	2		3	2					2	3	2	3	3	7.0
499	N	6Dyb				2	3		2					3					3	3			3	2		3	2					2		5		5	6.9
500	N	2Ugc				2			2	2				2	3				3	3	3		3	2		3	2						2	2		2	19.2
501	N	2Dba	2Uge			3	3		3					3		4	2		4	4			3	4	3	4	3		4			2				4	4.8
502	N	2Ugg	2UgfW		2Ugc	2			2		3			2	3				3	3	3		3	2		3	2							2		2	23.2
503	N	6Dyf	6Dyf2		6Dyb	2	2		2					2	3				3	3	3		2	2		3	2							5		5	10.1
504	N	2Dbc				2	3		3					2					3	3			2	2		3	2					2		3		3	9.0
505	N	6Dyf				2	2	4	2					2					4	3			2	2		4	2					2		5		5	0.7
506	N	2Dyc				2	3		3	2	3			2					3	3			2	2		3	2					2	2	3		3	2.9
507	N	2Uge	2Dyc			2			2	2				2					2	3			3	2		3	2					2	2	2		2	7.7
508	N	6Dyf				2	2		2					2					2	3			2	2		3	2					2		5		5	4.8
509	N	6Dyb				2	3	4	2					2					4	3			2	2		4	2					2		5		5	1.9
510	N	2Ugc				2			2					2	3				3	3	3		2	2		3	2							2		2	15.2
511	N	6Dyg	6Dyf			2	3		3					3					3	3			3	2	2	3	2					2				2	33.2
512	N	6Dyg				2	3		3	2	3			3	3				3	3	3		3	2	2	3	2						2			2	2.2
513	N	2Ugf				2			2	3				2	3				3	3	3		3	2		3	2						3	2	3	3	3.9

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
514	N	6Ucb				2	4	4	5					4	3				5		3		4			5	2						5			5	1.5
515	N	6Dyb	6Dyb3			2	3		2					2	3				3	3	3	2	2			3	2						5			5	3.4
516	N	2Dbb				2	3		3					3	3	2			3	3	3	3	3	2		3	2	2						3		3	2.7
517	N	6Dyd2				2	2	4	3					2	3				4	3	3	2				4	2						5			5	1.7
518	N	2Ugd				2			2	2				2	3				3	3	3	3	2			3	2					2	2	4		4	5.3
519	N	6Dyd2	6Dyf2			2	2		3					2					3	3		2				3	2				2		5			5	11.6
520	N	2Ugc	2Ugc2			2			2	2	3			2	3				3	3	3	3	2			3	2					2	2	4		4	15.3
521	N	6Dyf	6Dyd2		6Dyg	2	2		2					2					2	3		2	2			3	2				2		5			5	36.3
522	N	2Dbd	2Dbe			2	3		3					2	3	2			3	3	3	2	3			3	2						3			3	24.0
523	N	2Ugc				2			2	2				2	3				3	3	3	3	2			3	2					2	2			2	1.5
524	N	6Drb	6Drb2			2	2							2	3				3	3	3	2				3	2						5			5	9.7
525	N	2Dyb				2	3		3					3		2			3	3		3	3	2		3	2							4		4	3.6
526	N	6Dyb2				2	3		2					2	3	2			3	3	3	2	3			3	2						5			5	9.3
527	N	6 SP	6UgcW								4								4							4						4			4	5.7
528	N	6Dyd2				2	2	4	3					2	3				4	3	3	2				4	2						5			5	1.5
529	N	2Ddb	2Dya			3	3		3					3	2	4	2		4	3	2	3	4	3		4	3		4		3					4	11.5
530	N	2Ugd	2Uge		2Dyc	2			2	2				2	2				2	3	2	3	2			3	2				3	2	2			3	94.4
531	Y	2Ugc	2Ugf	30	2Ugd	2			2	2	3			2	3				3	3	3	3	2			3	2						2	2			2	19.3
532	N	2Ugg	2Ugf		2Ugc	2			2	3	3			2	3				3	3	3	3	2			3	2						3	2			3	26.0
533	Y	2Ugf	2Ugd	35	2Ugh	2			2	3	3			2	3				3	3	3	3	2			3	2						3	2			3	13.9
534	N	2UgcE				2			2	2		5		2	3				5	3	3	2	2			5	2				5	2	2			5	5.2
535	N	2Ugd				2			2	3				2	3				3	3	3	3	2			3	2						3	2			3	11.3
536	N	6Dyb2				2	3	4	3					2	3				4	3	3	2	2			4	2						5			5	0.6
537	N	6Dyg	6Dyg2		6Dyf	2	3		3					3					3	3		3	2	2		3	2				2					2	28.1
538	N	2Dyb	2Dbd			2	3		3					3		2			3	3		3	3	2		3	2				2			2		2	4.8

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Common Limitations n	m	pd	id	g	w	e	ss	Cane(C) r	p	t	so	sa	Suit. C	Maize(Mz) ps	t	r	p	so	sa	Suit Mz	Rice(R) Limitations n	sa	so	ss	r	t	g	dd	pd	Suit. R	Area
539	N	2Dyb	2Dbc			2	3		3					3	3				3	3	3		3	2	2	3	2							4	4	5.6
540	N	6Ucc				2	4	4	5					4	3				5		3		4			5	2						5		5	2.7
541	N	6Dda5				2	3	4	3					3	4				4	3	4		3	2		4	2							4	4	0.4
542	N	6Dyf2	6Dyd2			2	2		3					2	3				3	3	3		2	2		3	2						5		5	36.7
543	N	6Dyg3	6Dyf			2	3		3					2					3	3			2	2	2	3	2					2	3	3	3	11.0
544	N	6Dyg	6Dyg3			2	3		3					3					3	3			3	2	2	3	2					2		4	4	5.7
545	N	6Dyb2	6Dye2			2	3		3					2					3	3			2	2		3	2					2	5		5	8.3
546	N	2	E									5							5							5									5	12.3
547	N	6Dyg2				2	3		3					3			2		3	3			3	3	2	3	2	2		2		2		3	3	3.0
548	N	6Ugc	6Ugc2			2			2	3				2	4				4	3	4		3	2		4	2						2	4	4	10.5
549	N	6Ugc	6Dda5			2			2	3				2	4				4	3	4		3	2		4	2						2	4	4	4.1
550	N	Dam								5									5							5									5	2.9

C-Complex ST-Soil Type n-fertility m-plant water availability pd-soil distribution complexity id-internal drainage
g-microrelief w-wetness e-erosion ss-secondary salinisation r-rockiness/stoniness p-permeability t-gradient so-sodicity
sa-salinity ps-soil surface conditions dd-deep drainage

Appendix VIII. Suitability of each UMA for capsicums and mangoes, Selkirk Section, Burdekin River Irrigation Area.

	Land Resource Data					Capsicum (Cap)									Limitations						!	Mango (Mg)	Limitations							
UMA	C	Dom.ST	ST2	%ST2	ST3	n	m	id	ps	t	g	w	e	ss	pd	r	p	so	sa	Suit.	!Cap!	so	ss	r	sa	d	id	w	Suit!	! Mg!	Area
1	N	6Dyg	6Ugc	10		2	3	3	3	2							3	4		! 4	!	4			4	3	4	3	! 4	!	14.7
2	N	6Ugc				2		2	3		4						4	3		! 4	!	3					4	5	! 5	!	1.8
3	N	6Dbc				2	2	2	3						4		2			! 4	!						5	3	! 5	!	2.8
4	N	6Ugc2				2		2	3	3	3				4		4	3		! 4	!	3					4	5	! 5	!	3.2
5	N	6Dbc				2	2	3	3								2			! 3	!						5	3	! 5	!	3.4
6	N	6Ugc				2		3	3	3	4						4	3		! 4	!	3					5	5	! 5	!	4.0
7	N	6Dyf2				2	2	2	3	3							2	3		! 3	!	3					3	2	! 3	!	6.6
8	N	6Dyg	6Dyg2	10	6Dyf	2	3	3	3	3		2					3	4		! 4	!	4			4	3	4	2	! 4	!	34.9
9	N	6Dyf				2	2	2	3	2							2	3		! 3	!	3					3	3	! 3	!	5.5
10	N	6Dyf				2	2	2	3	2							2	3		! 3	!	3					3	3	! 3	!	4.4
11	N	6Ucc				2	4	5							4		4			! 5	!						2		! 2	!	0.4
12	N	6Dbc	6Dyd	15	6Dbf	2	2	2	3	2							2			! 3	!						2	3	! 3	!	16.3
13	N	6Ucb				2	4	5		2					4		4			! 5	!						2		! 2	!	1.1
14	N	6Dbc				2	2	2	3	3					4		2			! 4	!						2	2	! 2	!	4.1
15	N	6Ugc2	6Ugc	20	6Ufd	2		2	3	3	3	3			4		4	3		! 4	!	3					4	5	! 5	!	2.4
16	N	6Dyj				3	3	3	3	2					4		3	4	3	! 4	!	4			4	4	4	3	! 4	!	1.8
17	N	6Dyf	6Dyd	10	6Dbc	2	2	2	3	2							2	3		! 3	!	3					3	3	! 3	!	12.7
18	N	6Dyd				2	2	2	3	2					4		2			! 4	!						2	3	! 3	!	1.0
19	N	6Dyf	6Dyf3	10		2	2	2	3								2	3		! 3	!	3					3	3	! 3	!	4.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	Suit! Mg!	Area
20	N	6Dyg	6Dyg3	25	6Dda	2	3	3	3								3	4		4	4	3	4	3	4	98.9
21	N	6Dyd	6Dyf	10	6Dbc	2	2	2	3	2							2			3					2	3	3		9.9
22	N	6Dbc				2	2	2	3	2							2			3					2	3	3		8.7
23	N	6Dyj				3	3	3	3								3	4	3	4		4	4	4	4	3	4		5.8
24	N	6Dbc				2	2	2	3								2			3					2	3	3		2.3
25	N	6Dyg2				2	3	3	3	2							3	4		4		4	3	4	3	4	11.9
26	N	6Drc				2	2	2	3								2	3		3					3	3	3		12.3
27	N	2Ugk				3		2	3		2						4	4		4		3		3	4	4	4		0.9
28	N	6Dyf				2	2	2	3								2	3		3					3	3	3		9.4
29	N	6Drc				2	2	2	3						4		2	3		4		3			3	3	3		1.7
30	N	6Uga				2		2	3		2				2		3	4		4		3			4	4	4		6.3
31	N	6Drb				2	2		3								2			3						3	3		9.5
32	N	6Ucc				2	4	5							4		4			5					2		2		0.7
33	N	6Dyf2				2	2	2	3								2	3		3		3			3	3	3		2.0
34	N	6Drc	6Drb	08		2	2	2	3								2	3		3		3			3	3	3		37.3
35	N	6Dyf				2	2	2	3								2	3		3		3			3	3	3		4.4
36	N	6Dyg3				2	3	3	3								2	4	2	4		4	4	3	4	3	4		8.8
37	N	6Drc	6Drc2	20		2	2	2	3								2	3		3		3			3	3	3		5.9

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	Suit! Mg!	Area
38	N	6Ugc				2		2	3	4	2	4					4	3		4	3						4	5	5	6.5
39	N	6Dyf				2	2	2	3								2	3		3	3						3	3	3	3.6
40	N	6Ucc				2	4	5							4		4			5							2		2	0.9
41	N	6Dyd				2	2	2	3								2			3							2	3	3	4.5
42	N	6Ugc2	6Ugc	20	6Ufd	2		2	3	4		3			4		4	3		4	3						4	5	5	13.4
43	N	6Dyg3				2	3	3	3	3							2	3	2	3	4			4	3		4	5	5	4.6
44	N	6Drb				2	2	2	3	3					4		2			4							2	2	1.0
45	N	6Ucc				2	4	5		3					4		4			5							2	2	0.6
46	N	6Dyf				2	2	2	3	3							2	3		3	3						3	5	5	6.0
47	N	6Drb2	6Uma	10	6Ucc	2	2	2	3								2			3							3	3	5.0
48	N	6Ucc				2	4	5							4		4			5							2	2	0.3
49	N	6Drb	6Drb2	10		2	2		3								2			3							3	3	14.8
50	N	6Dyd	6Drb	10	6Umb	2	2	2	3								2			3							2	3	3	43.3
51	N	6Dyg2				2	3	3	3								2	3		3	3			4	3		5	3	5	5.7
52	N	6Drc				2	2	2	3								2	3		3	3						3	3	3	9.1
53	N	6Drb2	6Ucc	05	6Dyd	2	2		3								2			3							3	3	7.3
54	N	6Dyf2				2	2	2	3								2	3		3	3			3			3	3	3	2.0
55	N	6Ugc				2		2	3	3		3					4	3		4	3						4	5	5	2.4
56	N	6Ucc				2	4	5							4		4			5							2	2	2.2

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	Suit! Mg!	Area
57	N	6Dyf2	6Dyd	10		2	2	2	3								2	3		3						3	3	3	12.6
58	N	6Ucc				2	4	5							4		4			5						2		2	2.0
59	N	6Dyd	6Dyd2	20		2	2	2	3								2			3						2	3	3	12.0
60	N	6Ucc				2	4	5		3					4		4			5						2		2	1.8
61	N	6Dya	6Dyb	25	6Ucc	2	3	2							4		4			4						2	3	3	1.6
62	N	6Dyg2				2	3	3	3								2	3		3	4		4	3		4	3	4	0.3
63	N	6Dyd2				2	2	2	3	2							2			3						2	3	3	3.0
64	N	6Dyg2				2	3	3	3								3	3		3	4		4	3		4	3	4	5.6
65	N	6Dyd	6Dyd2	25		2	2	2	3	2							2			3						2	3	3	10.3
66	N	6Ucc				2	4	5							4		4			5						2		2	0.6
67	N	6Dyg				2	3	3	3								3	3		3	4		4	3		4	3	4	0.1
68	N	6Dyd2				2	2	3	3								2			3	4					5	3	5	17.9
69	N	2Ugf2				2		2	3	3	2	3					4	3		4	3					4	5	5	7.9
70	N	6Dyf2				2	2	2	3								2	3		3	3					3	3	3	4.8
71	N	6Ugc				2		2	3	3		3			4		4	3		4	2					4	5	5	1.4
72	N	6Dya	6Ucc	20	6Dyb	2	3	2							4		3			4						2	3	3	3.9
73	N	6Dyf	6Dyd	10		2	2	2	3								2	3		3	3					3	3	3	11.6
74	N	6Drb2				2	2	2	3								2			3							3	3	18.4

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	Suit! Mg!	Area
75	N	2Ugf				2		2	3	3	2	3			4		4	3		4	3						4	5	5	2.7
76	N	2Ugf2				2		2	3	3	2	3			4		4	3		4	3						4	5	5	2.2
77	N	6 P								5		5								5								5	5	5.2
78	N	6Dyg	6Dyf2	25	6Ugc	2	3	3	3								3	4		4	4			4	3	4	3	4	2.3
79	N	6Ugc				2		2	3		2						4	3		4	3						4	4	4	4.4
80	N	2DbeW				2	3	3	2	3		4			4		2	3		4	4			3			4	5	5	3.0
81	N	6Dyd	6Dbc	20	6Drb	2	2	2	3								2			3	3						2	3	3	7.1
82	N	6Dyc2	6Ucc	05		2	2	2	3											3	3						2	3	3	6.7
83	N	6Dyj				3	3	3	3						4		3	4	3	4	4			4	4	4	3	4	4	1.6
84	N	6Dya	6Ucc	10		2	3	2							4		4			4	3						2	3	3	0.8
85	N	6Drc	6Dyg	15		2	2	2	3								2	3		3	3						3	3	3	15.1
86	N	2Dyb	2Ugg	10		2	3	3	3						4		2	4		4	4			4	3	4	3	4	2.9
87	N	2Ugf				2		2	3	3	2	4					4	3		4	3						4	5	5	0.9
88	N	6Dyd2	6Dbc	10		2	2	2	3								2			3	3						2	3	3	8.7
89	N	6Dyj	6Ugc	15		3	3	3	3								3	4	3	4	4			4	4	4	3	4	4	7.8
90	N	2 SP										4								4	3							5	5	1.3
91	N	6Dya	6Ucc	20		2	3	2									4			4	3						2	3	3	0.9
92	N	6Drb2				2	2	2	3	4							2			4	3			3			5	2	5	12.0
93	N	2Ugg	2Ugc	20		2		2	3	3	2	4			4		4	3		4	3						4	5	5	3.3

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	! Suit! Mg!	Area
94	N	2DbeW				2	3	3	2	3		4			4		2	3		! 4 !	4		3			4	5	! 5 !	6.4
95	N	6Ugc				2		2	3	3	2				4		4	3		! 4 !	3					4	4	! 4 !	1.0
96	N	6Dyf2	6Dyf	25		2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	3.8
97	N	6Dyg2				2	3	3	3								2	3		! 3 !	4		4	3		4	3	! 4 !	1.2
98	N	6Dyf2	6Drc	20		2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	46.9
99	N	6Drb2	6Uma	10	6Ucc	2	2	2	3								2			! 3 !							3	! 3 !	0.1
100	N	6Dyg2	6Ucc	05		2	3	3	3								2	4		! 4 !	4		4	3		4	3	! 4 !	0.4
101	N	6Dyg2				2	3	3	3								3	4		! 4 !	4		4	3		4	3	! 4 !	18.2
102	N	2Ugf				2		2	3	2	2						4	3		! 4 !	3					4	4	! 4 !	13.2
103	N	2Ugd5				2		2	3	3							4	3		! 4 !	4		2			4	4	! 4 !	22.0
104	N	2Ugk				3		2	3	3	3	3					4	3		! 4 !	3		3			4	4	! 4 !	26.7
105	N	2Dyb				2	3	3	3								3	4		! 4 !	4		4	3		4	3	! 4 !	2.6
106	N	2Uge				2		2	3		2						3	3		! 3 !	4		3			4	3	! 4 !	10.8
107	N	2Ugf				2		2	3	3	2						4	3		! 4 !	3					4	4	! 4 !	26.9
108	N	2Uge				2		2	3	3							4	3		! 4 !	4		3			4	5	! 5 !	1.7
109	N	6Dyf2				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	22.4
110	N	2UgfW				2		2	3	3	2	4					4	3		! 4 !	3					4	5	! 5 !	3.6
111	N	2Dbb				2	3	3	3	2			2		3		3	4		! 4 !	4		4	3		4	3	! 4 !	3.5

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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	id	w	Suit! ! Mg!	Area
112	N	2Dyb				2	3	3	3								3	4		! 4 !	4			4	3	4	3	! 4 !	2.4
113	N	2UgfW				2		2	3	3	4						4	3		! 4 !	3					4	5	! 5 !	5.5
114	N	2Ugc				2		2	3								4	3		! 4 !	4			2		4	4	! 4 !	4.8
115	N	6Drc2				2	2	2	3	3			2				2	3		! 3 !	3					3	2	! 3 !	6.7
116	N	6Ugc				2		2	3	3					4		4	3		! 4 !	3			3		4	4	! 4 !	1.0
117	N	6Drb2				2	2		3	3							2			! 3 !							2	! 2 !	5.9
118	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.5
119	N	2Uge				2		2	3	3							3	3		! 3 !	4			3		4	4	! 4 !	1.4
120	N	2Ugg				2		2	3	3							4	3		! 4 !	3					4	4	! 4 !	1.7
121	N	6Dyg				2	3	3	3	3							3	3		! 3 !	4			4	3	4	3	! 4 !	8.5
122	N	6Ucc				2	4	5		3					4		4			! 5 !						2		! 2 !	6.6
123	N	6Dba2				2	3	3	3	2							2	3		! 3 !	4			4	2	4	3	! 4 !	4.1
124	N	2Ugd				2		2	3	3							4	3		! 4 !	4			2		4	4	! 4 !	1.3
125	N	2Dyb2				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	0.6
126	N	2UgdW				2		2	3	3	2	4					4	3		! 4 !	4			2		4	5	! 5 !	3.1
127	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	2.5
128	N	6Dya2				2	3	2	3						4		3			! 4 !						2	3	! 3 !	1.1
129	N	6Dyf				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	0.7
130	N	6Dyb2				2	2	2	3								2			! 3 !	3					3	3	! 3 !	3.1

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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	Limitations sa	d	id	w	! Suit! Mg!	Area
131	N	2Uge				2		2	3	3	2						3	3		! 3 !	4		3		4	4	! 4 !		3.4
132	N	6Dyg3				2	3	3	3	2							2	4	2	! 4 !	4		4	3	4	3	! 4 !		2.1
133	N	2Ugc				2		2	3	3	2						3	3		! 3 !	4		2		4	4	! 4 !		3.9
134	N	6Dyg2				2	3	3	3								2	3		! 3 !	4		4	3	4	3	! 4 !		1.4
135	N	2UgfE				2		2	3	3	2		5				4	3		! 5 !	3				4	4	! 5 !		2.8
136	N	6UgcW				2		2	3	4		4					4	3		! 4 !	3		3		4	4	! 4 !		3.2
137	N	2Ugd				2		2	3		2						4	3		! 4 !	4		2		4	4	! 4 !		9.1
138	N	6Dyf2				2	2	2	3						4		2	3		! 4 !	3				3	3	! 3 !		0.9
139	N	6Dyf2				2	2	2	3								2	3		! 3 !	3				3	3	! 3 !		3.9
140	N	2Ugf				2		2	3	3	2	3					4	3		! 4 !	3				4	4	! 4 !		5.1
141	N	2Ugd				2		2	3	3	2						4	3		! 4 !	4		2		4	4	! 4 !		2.4
142	N	2UgdW				2		2	3	4		4					4	3		! 4 !	4		2		4	5	! 5 !		5.6
143	N	2Ugd				2		2	3		2	3					4	3		! 4 !	4		2		4	4	! 4 !		35.4
144	N	2Uge				2		2	3	3	2						3	3		! 3 !	4		3		4	4	! 4 !		37.1
145	N	2Ugg				2		2	3	3	2						4	3		! 4 !	3				4	4	! 4 !		1.2
146	N	6Dbd				2	2	2	3	3			2				2	3		! 3 !	3				3	2	! 3 !		8.1
147	N	2Ddb				3	3	3	3								3	4	3	! 4 !	4		4	4	4	3	! 4 !		4.9
148	N	6Ucc				2	4	5							4		4			! 5 !					2		! 2 !		0.9

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	Suit! Mg!	Area
149	N	6Dya				2	2	2	3	2					4		4			4							2	3	3	2.8
150	Y	6DbcE	6UfdW	35		2	2	2	3	5		4	4		4		3			5							4	5	5	5.6
151	N	6Dbd				2	2	2	3	3			2		4		2	3		4	3						3	2	3	1.9
152	N	6Dbe				2	2	2	3								3	3		3	3						3	3	3	57.5
153	N	2Ugd				2		2	3		2						4	3		4	4		2				4	4	4	2.5
154	N	2Ugd				2		2	3		2						4	3		4	4		2				4	4	4	0.6
155	N	2Dyb				2	3	3	3	3			2				3	4		4	4			4	3		4	2	4	1.1
156	N	2Dyb				2	3	3	3								3	4		4	4			4	3		4	3	4	113.1
157	N	2Ugc				2		2	3	3	2						3	3		4	4		2				4	4	4	2.0
158	N	6 E								5			5							5								5	5	5.5
159	N	6DbfE				2	2	2	3	4			5				2			5							2	2	5	3.0
160	N	6UgcW				2		2	3			4					4	3		4	4		3		3		4	4	4	1.0
161	N	6 SP										5								5								5	5	0.2
162	N	6Dbf				2	2	2	3	3							2			3							2	2	2	12.4
163	N	6 SP										5								5								5	5	0.2
164	N	6Dbd				2	2	2	3	3			2				2	3		3			3				3	2	3	4.8
165	N	6 SP										5								5								5	5	0.4
166	N	6Dbf				2	2	2	3	3							2			3							2	2	2	5.0
167	N	6Dda				2	3	3	3	3							3	4		4			4	3		4	3	4	2.7

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	! Suit! Mg!	Area
168	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	37.9
169	N	2Dyc				2	3	3	3								3	4		! 4 !	4			3		4	3	! 4 !	10.3
170	N	2Ugg				2		2	3	3	3						4	3		! 4 !	3					4	4	! 4 !	9.5
171	N	2Dbd				2	3	3	3								2	4		! 4 !	4			3	3	4	3	! 4 !	14.6
172	N	2Ugd				2		2	3	3	3						4	3		! 4 !	4			2		4	4	! 4 !	162.6
173	N	2 E								5			5							! 5 !								! 5 !	221.2
174	N	2Ugc5				2		2	3		2						4	3		! 4 !	4			2		4	4	! 4 !	2.9
175	N	6Dyf				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	4.7
176	N	2Ugc5				2		2	3		2						3	3		! 3 !	4			2		4	4	! 4 !	4.3
177	N	2Dbd				2	3	3	3	3			2				2	3		! 3 !	4			3	3	4	2	! 4 !	2.5
178	N	2Uge				2		2	3	2	2						4	3		! 4 !	4			3		4	4	! 4 !	11.1
179	Y	6UgcW	6Dda	40		2		2	3	3		4					4	3		! 4 !	3			4	3	4	4	! 4 !	2.9
180	N	6Dbe				2	2	2	3	2					4		3	3		! 4 !	3					3	3	! 3 !	2.0
181	N	2Ugg				2		2	3	3	2						4	3		! 4 !	3					4	4	! 4 !	0.9
182	N	6Dbe				2	2	2	3	3					4		3	3		! 4 !	3					3	3	! 3 !	1.4
183	N	6 SP										5								! 5 !							5	! 5 !	2.5
184	N	6Dda3				2	3	3	3	3			2				2	3		! 3 !	4			4	3	4	2	! 4 !	2.1
185	N	6Dbb3				2	3	3	3	3			2				2	4		! 4 !	4			3		4	2	! 4 !	14.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	id	w	Suit! Mg!	Area
186	N	6Dbd3				2	3	3	3	3		2					3	3		! 3 !	3					3	2	! 3 !	4.3
187	N	6Dda2				2	3	3	3	3					3		3	3		! 3 !	4			4	3	4	3	! 4 !	0.5
188	N	6 SP										5								! 5 !							5	! 5 !	5.3
189	N	6Dbd				2	2	2	3	4		3	3		4		2	3		! 4 !	3					3	2	! 3 !	1.9
190	N	6 SP										5								! 5 !							5	! 5 !	2.2
191	N	6Dda3				2	3	3	3	3		3	2		4		2	3		! 4 !	4			4	3	4	2	! 4 !	0.8
192	N	2Dyb				2	3	3	3	3			2				3	4		! 4 !	4			4	3	4	5	! 5 !	54.4
193	N	2Ugd				2		2	3	3	2						4	3		! 4 !	4			2		4	4	! 4 !	10.7
194	N	6 SP										5								! 5 !							5	! 5 !	27.7
195	N	2Ugh				3		2	3		2						4	4		! 4 !	4			3		4	4	! 4 !	5.9
196	Y	2Uge	2Ugh	30		3		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	55.7
197	N	6Drb2				2	2		3								2			! 3 !							3	! 3 !	1.1
198	N	6Dyg2				2	3	3	3								3	3		! 3 !	4			4	3	4	3	! 4 !	2.0
199	N	2Dyb				2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !	5.3
200	N	2Dda				3	3	3	4	2					4		3	4		! 4 !	4			4	3	4	3	! 4 !	2.4
201	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	10.2
202	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.5
203	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	2.1
204	N	2Ugg				2		2	3	3	3						4	3		! 4 !	3					4	4	! 4 !	20.2

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	Limitations ss	pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	! Suit! Mg!	Area
205	N	6Dyf3				2	3	3	4	4		3			4		3	3		! 4 !	3					3	2	! 3 !	1.2
206	N	2Ugf				2		2	3	2							4	3		! 4 !	3					4	4	! 4 !	0.8
207	N	2Ugd				2		2	3		2						4	3		! 4 !	4		2			4	4	! 4 !	12.3
208	N	2Uge				3		2	3		2						3	4		! 4 !	4		3			4	4	! 4 !	15.2
209	N	2Ugh				3		2	3	3	3						4	4		! 4 !	4		3			4	4	! 4 !	47.1
210	N	2Uge				2		2	3		2						4	3		! 4 !	4		3			4	4	! 4 !	30.5
211	N	2UgeW				3		2	3	3	3	4					4	3		! 4 !	4		3			4	5	! 5 !	4.6
212	N	2UgdW				2		2	3		2	4					4	3		! 4 !	4		2			4	5	! 5 !	13.1
213	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4		4	3		4	3	! 4 !	35.2
214	N	2UggW				2		2	3	3	3	4					4	3		! 4 !	3					4	5	! 5 !	0.5
215	N	6 SP										5								! 5 !							5	! 5 !	0.7
216	N	6 SP										5								! 5 !							5	! 5 !	1.3
217	N	6DbeE				2	2	2	3	4			5				3	3		! 5 !	3					3	2	! 5 !	2.2
218	N	6Dbe				2	2	2	3	2							3	3		! 3 !	3					3	3	! 3 !	28.6
219	N	6 E								5			5							! 5 !								! 5 !	2.2
220	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4		4	3		4	3	! 4 !	4.0
221	N	2Ugc				2		2	3	3	2						4	3		! 4 !	4		2			4	4	! 4 !	9.3
222	N	6Dyg				2	3	3	3								3	4		! 4 !	4		4	3		4	3	! 4 !	7.0

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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	id	w	! Suit ! Mg!	Area
223	N	2Uge				2		2	3	3	2						4	3		! 4 !	4		3		4	4	! 4 !	29.5
224	N	2Uge				2		2	3	3	2						4	3		! 4 !	4		3		4	4	! 4 !	4.7
225	N	2UggW				2		2	3		3	4					4	3		! 4 !	3				4	5	! 5 !	17.3
226	N	6Dyg				2	3	3	3	3			2					4		! 4 !	4		4	3	4	2	! 4 !	1.5
227	N	2Uge				2		2	3		2						3	3		! 3 !	4		3		4	4	! 4 !	34.6
228	N	6Dyg				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	9.7
229	N	2Dyb				2	3	3	3	2							3	3		! 3 !	4		4	3	4	3	! 4 !	18.7
230	N	2Dbc				2	3	3	3	3			2				2	3		! 3 !	4		3	2	4	2	! 4 !	1.1
231	N	2Dbd				2	3	3	3								2	4		! 4 !	4		3	3	4	3	! 4 !	4.1
232	N	2Dbd				2	3	3	3								2	4		! 4 !	4		3	3	4	3	! 4 !	2.1
233	Y	2Uge	2Dbb	35		3	3	3	3	3	2						4	3		! 4 !	4		3	3	4	4	! 4 !	9.9
234	Y	2Dyb	2Uge	35		2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	8.3
235	N	6Drc				2	3	3	3						4		2	3		! 4 !	3				3	3	! 3 !	1.2
236	N	2Uge	2Ugg	10		2		2	3	3	2						4	3		! 4 !	4		3		4	4	! 4 !	8.5
237	N	2Dyb	2Dbb	25		2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	11.1
238	N	6Dyf				2	3	3	3								2	3		! 3 !	3				3	3	! 3 !	12.3
239	N	2Dbb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	5.6
240	N	6Dyf2				2	3	3	3	3			2				2	3		! 3 !	3				3	2	! 3 !	5.1
241	N	2Ugd	2Ugc	15		2		2	3	3	2						4	3		! 4 !	4		2		4	4	! 4 !	144.6

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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	C	Land Resource Data Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit! Mg!	Area
242	N	2Dbd				2	3	3	3	3							2	3		! 3 !	4		3	3	4	5	! 5 !	3.3
243	N	2Dbb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	12.9
244	N	6Uca				2	4	5	3								4			! 5 !						2	! 2 !	3.8
245	N	6Drc				2	3	3	3								2	3		! 3 !	3					3	3 ! 3 !	4.8
246	N	6Dyf	6Dyg	20		2	3	3	3	2							2	3		! 3 !	3					3	3 ! 3 !	6.1
247	N	2Dyb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	5.8
248	N	2Dyb	2Dba	15		2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	9.7
249	N	6Dyf2	6Dyf	10		2	3	3	3								2	3		! 3 !	3					3	3 ! 3 !	23.8
250	N	2UgfW				2		2	3		2	4			4		4	3		! 4 !	3					4	5 ! 5 !	1.9
251	N	2Dbe				2	3	3	3	2							3	3		! 3 !	4		3	2	4	3	! 4 !	4.3
252	N	2Dbe	2Dbc	25		2	3	3	3								2	3		! 3 !	4		3	2	4	3	! 4 !	8.9
253	Y	6Drc	6Dyf2	40		2	3	3	3								2	3		! 3 !	3					3	3 ! 3 !	9.8
254	N	6Dbd				2	2	2	3								2	3		! 3 !	3					3	3 ! 3 !	6.1
255	Y	2Ugd	2Ugc2	30		2		2	3	3	2						4	3		! 4 !	4		2			4	4 ! 4 !	10.5
256	N	6Drc2				2	2	2	3	3					4		2	3		! 4 !	3					3	3 ! 3 !	1.2
257	N	2Dyb2				2	3	3	3	3							3	4		! 4 !	4		4	3	4	5	! 5 !	2.5
258	N	6Drb2				2	2	2	3								2			! 3 !						3	! 3 !	2.6
259	N	2Dyb	2Dbc	15		2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	20.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage ps-soil surface conditions t-gradient g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity r-rockiness/stoniness so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) Limitations n	m	id	ps	t	g	w	e	ss	pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) Limitations so	ss	r	sa	d	id	w	Suit! Mg!	Area
260	N	6Drb2				2	2	2	3								2			! 3 !							3	! 3 !	3.5
261	N	6Drc2				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	6.7
262	N	6Drb2	6Dbc3	15		2	2	2	3								2			! 3 !							3	! 3 !	5.9
263	N	6Dyg2				2	3	3	3								3	3		! 3 !	4			4	3	4	3	! 4 !	5.4
264	N	6Drc				2	2	2	3	3							3	3		! 3 !	3					3	3	! 3 !	2.5
265	N	2Uge				2		2	3		2						4	3		! 4 !	4		3			4	4	! 4 !	17.6
266	N	2Dbb				2	3	3	3								3	4		! 4 !	4			4	3	4	3	! 4 !	1.1
267	N	6Dbd				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	3.9
268	N	6Dyf2				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	1.7
269	N	6Dyg2				2	2	2	3								3	4		! 4 !	4			4	3	4	3	! 4 !	2.8
270	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	1.9
271	N	6Drc	6Drc2	20		2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	14.9
272	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.1
273	N	6Drb				2	2	2	3								2			! 3 !							3	! 3 !	2.0
274	N	6Drb2				2	2	2	3	2							2			! 3 !							3	! 3 !	8.8
275	N	6Dyf				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	7.6
276	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	7.7
277	N	6Drb2				2	2	2	3								2			! 3 !							3	! 3 !	7.0
278	N	6Uga				2		2	3	3							4	3		! 4 !	3		3			4	4	! 4 !	2.7

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Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit! Mg!	Area
279	Y	6Dyf2	6Drc2	40		2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	9.1
280	Y	6Dyg2	6Dyf3	35		2	3	3	3								3	3		! 3 !	4			4	3	4	3	! 4 !	11.3
281	N	6Uga2				2		2	3								4	3		! 4 !	2			4	3	4	4	! 4 !	1.9
282	N	6Dyb				2	2	2	3	2							2			! 3 !	3					3	3	! 3 !	4.8
283	N	6Drb2				2	2	2	3	2							2			! 3 !							3	! 3 !	17.5
284	N	6Dyg				2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !	3.0
285	N	6Dyf2				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	5.2
286	N	6Dyb2				2	2	2	3	3							2			! 3 !	3					3	4	! 4 !	3.6
287	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	4.5
288	N	6UgaW				2		2	3	3	4						4	3		! 4 !	2			3		4	5	! 5 !	19.7
289	N	6Drc2				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	3.1
290	N	6Dyf				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	5.0
291	N	6Drb				2	2	2	3	2							2			! 3 !							3	! 3 !	3.9
292	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	2.4
293	Y	6Drb2	6Dyd	35		2	2	2	3	2							2			! 3 !							3	! 3 !	7.2
294	N	6Dyf3				2	3	3	3	3							3	3		! 3 !	3					3	4	! 4 !	5.7
295	N	6Drb2				2	2		3								2			! 3 !							3	! 3 !	2.7
296	Y	6Uma	6Ucb	30		2	4	5	3								4			! 5 !						2		! 2 !	9.1

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	Suit! Mg!	Area
297	N	6Drb2				2	2	2	3	2							2			3							3	3	4.2
298	N	2Dbd	2Dbc3	20		2	3	3	3								2	3		3	4		3	3	4	3	4	4	6.8
299	N	6Dyf				2	2	2	3	2							2	3		3					3	3	3	3	2.8
300	N	6Dye	6Dbc2	20		2	3	3	3	2							2	3		3	3				4	3	4	4	7.2
301	N	6Ucb				2	4	5		2							4			5					2		2	2	3.2
302	N	6Dyf				2	2	2	3	2							2	3		3	3				3	3	3	3	3.6
303	N	6Dyg2				2	3	3	3	2							3	4		4	4		4	3	4	3	4	4	7.2
304	N	6Dyj2				3	3	3	3	3							3	4	3	4	4		4	4	4	5	5	5	5.9
305	N	2Ugd				2		2	3	3	2						4	3		4	2				4	4	4	4	13.5
306	N	6Dye				2	3	3	3								2	3		3	3				4	3	4	4	1.9
307	N	6Dyg				2	3	3	3	3							3	4		4	4		4	3	4	3	4	4	4.2
308	N	6Ucb	6Ucb2	15		2	4	5		2							4			5					2		2	2	9.8
309	N	6Dyf				2	2	2	3	3					4		2	3		4	3				3	5	5	5	0.8
310	N	2Ugd	2Ugg	10		2		2	3	3	2						4	3		4	2		4		4	4	4	4	91.0
311	Y	2Dbb2	2Ugh	35		2	3	3	3	3							3	4		4	4		4	3	4	5	5	5	4.6
312	N	6Dyg2				2	3	3	3								3	3		3	4		4	3	4	3	4	4	3.5
313	N	2UggW				2		2	3	4	2	4					4	3		4	3				4	5	5	5	2.3
314	N	2Ugc				2		2	3	3	2						4	3		4	2		4		4	4	4	4	30.1
315	N	2UgfW				2		2	3	4	2	4					4	3		4	3				4	5	5	5	30.1

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	Suit! ! Mg!	Area
316	N	2UggW				2		2	3	4		4					4	3		! 4 !	3				4	5	! 5 !		0.9
317	N	2Ugc				2		2	3	3	2	3					3	3		! 3 !	4		2		4	4	! 4 !		43.1
318	N	6Drb2				2	2		3	2					4		2			! 4 !						3	! 3 !		0.7
319	N	2Dyb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !		27.4
320	Y	2Ugh	2Uge	40		3		2	3	3	2						4	4		! 4 !	4		3		4	4	! 4 !		6.4
321	N	2Ugc				2		2	3	3	2	3					3	3		! 3 !	4		2		4	4	! 4 !		2.2
322	N	6Dyg	6Dyg3	15		2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !		10.1
323	N	2Ugc				2		2	3		2						4	3		! 4 !	4		2		4	4	! 4 !		4.7
324	N	6Ugc				2		2	3	2					4		4	3		! 4 !	3		3		4	4	! 4 !		1.5
325	N	6Ucb				2	4	5		2							4			! 5 !					2		! 2 !		1.2
326	N	2Uge	2Ugg	10		2		2	3		2						4	3		! 4 !	4		3		4	4	! 4 !		11.6
327	N	2Ugh				3		2	3		2						4	4		! 4 !	4		3		4	4	! 4 !		5.1
328	N	6Dyj2				3	3	3	3	3							3	4	3	! 4 !	4		4	4	4	5	! 5 !		3.2
329	N	2Ugd				2		2	3	3	2						4	3		! 4 !	4		2		4	4	! 4 !		2.4
330	N	6Dyg2				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !		2.2
331	N	6Dba2				2	3	3	3	2							2	4		! 4 !	4		4	2	4	3	! 4 !		2.4
332	Y	6Dyg2	6Uca4	35		2	3	5	3	2							4	3		! 5 !	4	3	4	3	4	3	! 4 !		3.3
333	N	2Uge				2		2	3	2	2						4	3		! 4 !	4		3		4	4	! 4 !		2.7

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	! Suit! Mg!	Area
334	Y	6Drb2	6Dyb4	35		2	2	2	3								2			! 3 !	3	4			3	3	! 4 !		4.9
335	N	6Dyg2				2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !		12.8
336	N	6Dyg	6Dyg3	10		2	3	3	3								3	4		! 4 !	4			4	3	4	3	! 4 !		20.1
337	Y	2Dyb	2Uge	30		2	3	3	3								3	4		! 4 !	4			4	3	4	3	! 4 !		6.2
338	N	6Dyj2				3	3	3	3								3	4	3	! 4 !	4			4	4	4	3	! 4 !		1.3
339	N	2Uge				2		2	3	3	2						4	3		! 4 !	4			3		4	4	! 4 !		2.6
340	N	2Uge				2		2	3	3	2						4	3		! 4 !	4			3		4	4	! 4 !		6.6
341	N	6Ucb				2	4	5		2							4			! 5 !						2		! 2 !		7.1
342	N	6Dyg2				2	3	3	3	2							2	4		! 4 !	4			4	3	4	3	! 4 !		3.3
343	N	6Drb2				2	2		3						4		2			! 4 !						3		! 3 !		1.5
344	N	6Gnb				2	3	3	3						4		3			! 4 !						3		! 3 !		0.5
345	Y	6Dyg2	6Drc2	40		2	3	3	3	2					4		2	3		! 4 !	4			4	3	4	3	! 4 !		8.9
346	N	2Uge				2		2	3	3	2						4	3		! 4 !	4			3		4	4	! 4 !		5.4
347	N	6Dyg2				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !		2.2
348	N	6 SP										5								! 5 !						5		! 5 !		3.8
349	N	6Ugc2				2		2	3	4					4		4	3		! 4 !	4			2		4	4	! 4 !		0.2
350	N	6Dbb				2	3	3	3						4		2	3		! 4 !	4			3		4	3	! 4 !		1.2
351	Y	6Drb2	6Drc	30		2	2	2	3								2	3		! 3 !	3					3	3	! 3 !		11.2
352	N	6Dyf				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !		1.7

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit! Mg!	Area
353	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.6
354	N	6Drb				2	2	2	3						4		2			! 4 !							3	! 3 !	1.2
355	Y	2Dyb	2Uge	30		2	3	3	3								4	4		! 4 !	4			4	3	4	3	! 4 !	7.3
356	N	2UgfW				2		2	3	2		4					4	3		! 4 !	3					4	5	! 5 !	2.4
357	N	6Ucc				2	4	5	3								4			! 5 !						2		! 2 !	0.9
358	N	6Gnd				2	2		3	3					4		3			! 4 !						2	4	! 4 !	0.7
359	N	6Drb2				2	2	2	3	2							2			! 3 !							3	! 3 !	5.5
360	N	6Dyb2				2	2	2	3	2							2			! 3 !	3					3	3	! 3 !	10.0
361	N	6Dyg2				2	3	3	3	3							3	4		! 4 !	4			4	3	4	4	! 4 !	6.0
362	N	6Drb4				2	2	2	3								2			! 3 !							3	! 3 !	2.9
363	N	6Ugc				2		2	3	3					4		4	3		! 4 !	3			3		4	4	! 4 !	0.8
364	N	6Ugc2				2		2	3						4		4	3		! 4 !	3			3		4	4	! 4 !	0.6
365	Y	2Uge	2Dbb	35		3	3	3	3								4	4		! 4 !	4			4	3	4	4	! 4 !	6.1
366	N	2Uge				3		2	3		2						4	4		! 4 !	4			3		4	4	! 4 !	12.3
367	N	2Uge				3		2	3		2						3	4		! 4 !	4			3		4	4	! 4 !	15.1
368	N	2Ugd				2		2	3		3						4	3		! 4 !	4			2		4	4	! 4 !	229.4
369	N	2Uge				3		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	12.6
370	N	2Dbb	2Uge	20		2	3	3	3	3							3	4		! 4 !	4			4	3	4	5	! 5 !	4.5

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	id	w	Limitations Suit! Mg!	Area
371	N	2Ugd				2		2	3		2						4	3		! 4 !	4			2		4	4	! 4 !	9.7
372	N	2UgeW				2		2	3	3	2	4					4	3		! 4 !	4			3		4	5	! 5 !	13.7
373	N	2 E								5			5							! 5 !								! 5 !	1.0
374	N	6Dyg2				2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !	10.2
375	Y	6Dbf	6Dda	30		2	3	3	3	3					4		2	4		! 4 !	4			4	3	4	2	! 4 !	23.0
376	N	6Dbe	6UgcW	15		2	2	2	3	3			2				3	3		! 3 !	3					3	2	! 3 !	8.1
377	N	6Dbe				2	2	2	3	3			2				3	3		! 3 !	3					3	2	! 3 !	3.2
378	N	6Dda				2	3	3	3	3			2				3	3		! 3 !	4			4	3	4	2	! 4 !	4.1
379	N	2DybE				2	3	3	3	3			5				3	4		! 5 !	4			4	3	4	2	! 5 !	1.1
380	N	2Dyb	2Dbd	20		2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	8.0
381	N	2UgfW				2		2	3			4					4	3		! 4 !	3					4	5	! 5 !	0.3
382	N	2UgfW	2UgcW	25		2		2	3	2	2	4					4	3		! 4 !	3					4	5	! 5 !	5.6
383	N	2 SP										4								! 4 !							5	! 5 !	0.7
384	N	2Dyb	2Dyb2	20		2	3	3	3								3	3		! 3 !	4			4	3	4	3	! 4 !	7.0
385	N	2Uge				3		2	3	3	2						3	3		! 3 !	4			3		4	4	! 4 !	2.3
386	N	2UghW				3		2	3		2	4					4	4		! 4 !	3			3		4	5	! 5 !	9.8
387	N	2Dyb	2Dyb5	15		2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	7.8
388	N	6Drb				2	2	2	3	2					4		2			! 4 !							3	! 3 !	1.1
389	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	1.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	Suit! Mg!	Area
390	Y	2Dyb	2Ugh	35		3	3	3	3	2							3	4		4		4		4	3	4	3	4	3.1
391	N	2Uge	2Ugg	20		2		2	3		2						3	3		3		4		3		4	4	4	45.7
392	N	2UgeE				3		2	3	3			5				4	3		4		5		4		4	4	5	4.0
393	N	6 E								5			5									5						5	10.3
394	N	2Uge				3		2	3		3						3	3		3		4		3		4	4	4	144.3
395	N	2Ugd	2Ugd3	10		2		2	3	2	2						4	3		4		4		2		4	4	4	5.5
396	Y	2Dbb	2Uge	40		2	3	3	3								3	4		4		4		4	3	4	3	4	27.1
397	N	2Ugd				2		2	3		2						4	3		4		4		2		4	4	4	2.8
398	N	2Dbb	2Dbb2	20		2	3	3	3	3							3	4		4		4		4	3	4	5	5	4.5
399	N	2Uge				2		2	3	3	2						4	3		4		4		3		4	4	4	2.6
400	Y	2Dbb	2Dbd	30		2	3	3	3								3	4		4		4		4	3	4	3	4	4.9
401	Y	2Uge	2Dbb	30		3	3	3	3		2						3	4		4		4		4	3	4	4	4	3.1
402	Y	2Dbe4	2Uge	30		2	3	3	4						4		4	3		4		4		3	2	4	3	4	1.5
403	N	2Uge				3		2	3		3						4	4		4		4		3		4	4	4	10.0
404	N	2Dyb				2	3	3	3	3							3	3		3		4		4	3	4	5	5	1.5
405	N	2Ugc				2		2	3	3	2						4	3		4		4		2		4	4	4	3.8
406	N	2Uge				2		2	3	3	2						4	3		4		4		3		4	4	4	9.9
407	N	2Dyb				2	3	3	3	3							3	4		4		4		4	3	4	5	5	2.0

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit! Mg!	Area
408	N	2 SP										4								! 4 !							5	! 5 !	3.2
409	Y	2Dbb	2Uge	40		2	3	3	3	2							4	4		! 4 !	4			4	3	4	3	! 4 !	5.7
411	N	2Dbc2				2	3	3	3	2							2	3		! 3 !	4			3	2	2	3	! 4 !	4.0
413	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.0
414	N	2Dbc	2Dbd	15		2	3	3	3								2	3		! 3 !	4			3	2	4	3	! 4 !	4.6
415	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	20.1
416	Y	6Dyf	6Ugc	30		2	2	2	3	3					4		4	3		! 4 !	3			3		4	5	! 5 !	2.6
417	N	6Dyf				2	2	2	3								3	3		! 3 !	3					3	3	! 3 !	3.2
418	N	6Dyf				2	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	8.5
419	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	3.5
420	N	6Ucc				2	4	5									4			! 5 !						2		! 2 !	4.7
421	Y	6Dyg2	6Dyg	35		2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !	5.3
422	Y	6Dyb	6Dyf	35		3	2	2	3	2							2	3		! 3 !	3					3	3	! 3 !	5.9
423	Y	2Dbe	2Dbc	40		2	3	3	3	3							3	3		! 3 !	4			3	2	4	5	! 5 !	11.7
424	N	6Dbd	6Dbc3	20		2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	3.5
425	Y	2Dbb	2Uge	30		2	3	3	3	3							4	4		! 4 !	4			4	3	4	5	! 5 !	3.1
426	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	7.4
427	Y	2Dbe	2Ugd	30		2	3	3	3	3							4	3		! 4 !	4			3	2	4	5	! 5 !	1.8
428	N	2Dbc				2	3	3	3								2	3		! 3 !	4			3	2	4	3	! 4 !	4.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit ! Mg!	Area
429	N	2Dyb				2	3	3	3								3	3		! 3 !	4		4	3	4	3	! 4 !	16.2
430	N	2Uge				3		2	3	3							4	3		! 4 !	4		3		4	4	! 4 !	2.5
431	N	6Dyf				2	2	2	3	2							2	3		! 3 !	3				3	3	! 3 !	3.6
432	N	6 SP									5									! 5 !						5	! 5 !	5.5
433	N	6Dyd2				2	2	2	3								2			! 3 !						2	3 ! 3 !	1.6
434	N	2Dyb	2Dyb2	15		2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	8.8
435	N	6Dyf				2	2	2	3								2	3		! 3 !	3				3	3	! 3 !	2.4
436	Y	6Dbf2	6Dbf	40		2	2	2	3	2							2			! 3 !						2	3 ! 3 !	7.8
437	Y	2Ugd	2Dyc	30		2	3	3	3	2	2						4	3		! 4 !	4		3		4	4	! 4 !	8.9
438	N	6Ucb				2	4	5		2							4			! 5 !						2	! 2 !	2.6
439	N	2Uge				2		2	3	3	3				4		4	3		! 4 !	4		3		4	4	! 4 !	2.2
440	N	6 SP									5									! 5 !						5	! 5 !	0.4
441	N	6Dyg	6Dyg2	15		2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	19.6
442	N	6Dyf3				2	3	3	3	3					3		3	3		! 4 !	3				3	5	! 5 !	1.2
443	N	6Dbd				2	2	2	3	3							2	3		! 3 !	3				3	5	! 5 !	2.3
444	N	6Dyf				2	2	2	3	3							2	3		! 3 !	3				3	5	! 5 !	6.3
445	N	2Ugg				2		2	3		2						4	3		! 4 !	3				4	4	! 4 !	4.1
446	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	3.5

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit! ! Mg!	Area
447	N	6Ucc				2	4	5		2							4			! 5 !						2	! 2 !	6.1
448	N	6Dyg2				2	3	3	3								3	3		! 3 !	4			4	3	4 3	! 4 !	6.6
449	N	6Dyg	6Dyg3	10		2	3	3	3								3	4		! 4 !	4			4	3	4 3	! 4 !	16.9
450	N	6Dyf				2	2	2	3								2	3		! 3 !	3					3 3	! 3 !	2.8
451	N	6Dyf2				2	2	2	3								2	3		! 3 !	3					3 3	! 3 !	5.6
452	N	6Uca				2	4	5									4			! 5 !						2	! 2 !	9.5
453	N	2Ugd				2		2	3	3							4	3		! 4 !	4			2		4 4	! 4 !	1.2
454	N	6Dyg				2	3	3	3								3	4		! 4 !	4			4	3	4 3	! 4 !	4.6
455	N	6Dyf2				2	2	2	3								2	3		! 3 !	3					3 3	! 3 !	13.4
456	N	6Ugc				2		2	3	3					4		4	3		! 4 !	3			3		4 4	! 4 !	1.1
457	N	6Dyf	6Drb2	20		2	2	2	3								2	3		! 3 !	3					3 3	! 3 !	14.4
458	N	2Ugd				2		2	3	3	2						4	3		! 4 !	4			2		4 4	! 4 !	3.1
459	N	6Dyg	6Dyf2			2	3	3	3	2							3	4	2	! 4 !	4			4	3	4 3	! 4 !	22.8
460	N	6Dyg				2	3	3	3	2							3	4		! 4 !	4			4	3	4 3	! 4 !	8.1
461	N	2UgdW				2		2	3		2	4					4	3		! 4 !	4			2		4 5	! 5 !	12.6
462	N	2Dyb				2	3	3	3	3							3	4		! 4 !	4			4	3	4 5	! 5 !	5.4
463	N	6Drc2				2	2	2	3						3		2	3		! 3 !	3					3 3	! 3 !	1.4
464	N	2Dbd	2Dbc	15		2	3	3	3	3							2	3		! 3 !	4			3	3	4 5	! 5 !	5.3
465	N	2Ugd	2Uge			2		2	3		2						4	3		! 4 !	4			2		4 4	! 4 !	20.7

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	! Suit! Mg!	Area
466	N	2Uge				3		2	3		2						3	3		! 3 !	4		3		4	4	! 4 !	17.0
467	N	2Dyb	2Dbb			2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	33.6
468	N	2Dbb				2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	2.7
469	N	6Dyg	2Dbb	10		2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	11.5
470	N	2Dyb				2	3	3	3	2							3	4		! 4 !	4		4	3	4	3	! 4 !	13.5
471	N	2 E											5							! 5 !							! 5 !	0.6
472	N	2Uge				3		2	3	3							4	3		! 4 !	4		3		4	5	! 5 !	12.7
473	N	2 E											5							! 5 !							! 5 !	5.4
474	N	2Dyb				2	3	3	3	2					4		3	4		! 4 !	4		4	3	4	3	! 4 !	2.6
475	N	2 E											5							! 5 !							! 5 !	1.8
476	N	6Dyf2	6Dyg		6Dbb	2	2	2	3	3							2	3		! 3 !	3				3	3	! 3 !	29.7
477	N	6Dyf3				2	2	2	3	3							3	3		! 3 !	3				3	3	! 3 !	3.7
478	N	2Dyb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	24.1
479	N	6Ucb				2	4	5							4		4			! 5 !					2		! 2 !	0.6
480	N	2Ugd				2		2	3		2						4	3		! 4 !	4		2		4	4	! 4 !	9.6
481	N	2Ugc				2		2	3		3	3					4	3		! 4 !	4		2		4	4	! 4 !	8.3
482	N	6Dyg2				2	3	3	3								3	3	2	! 3 !	4		4	3	4	3	! 4 !	6.8
483	N	2Dbb				2	3	3	3								3	4		! 4 !	4		4	3	4	3	! 4 !	4.9

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

Land Resource Data						Capsicum (Cap)									Limitations						!	Mango (Mg)		Limitations							
UMA	C	Dom.ST	ST2	%ST2	ST3	n	m	id	ps	t	g	w	e	ss	pd	r	p	so	sa	Suit.		so	ss	r	sa	d	id	w		Suit!	Area
																				!Cap!										! Mg!	
484	N	2Dyb	2Dbb		2Dbd	2	3	3	3								3	4		! 4 !		4		4	3	4	3		! 4 !		63.4
485	N	6Drc	6Drc2		6Drb	2	2	2	3								2	3		! 3 !		3				3	3		! 3 !		32.8
486	N	6Ugc3	6Dda5			2		2	3								4	3		! 4 !		3		3		4	4		! 4 !		2.0
487	N	6Dyf2				2	2	2	3								2	3		! 3 !		3				3	3		! 3 !		0.3
488	N	6Ucc				2	4	5									4			! 5 !						2			! 2 !		1.7
489	N	6Dyf2	6Dya			2	2	2	3	3							2	3		! 3 !		3				3	3		! 3 !		8.9
490	N	6Dye				2	3	3	3	3							2	4		! 4 !		3				4	3		! 4 !		0.8
491	N	6Dyd2				2	2	2	3								2			! 3 !						2	3		! 3 !		4.8
492	N	6Dyg				2	3	3	3								3	4	2	! 4 !		4		4	3	4	3		! 4 !		4.7
493	N	6Dyf2	6Dyd2		6Dyg	2	2	2	3	2							2	3		! 3 !		4				3	3		! 4 !		21.1
494	N	2Uge	2Ugc			3		2	3	3							3	4		! 3 !		4		3		4	5		! 5 !		43.3
495	N	2Ugf				2		2	3	3							4	3		! 4 !		3				4	5		! 5 !		3.8
496	N	2Dyb	2Ddb		2Dbd	2	3	3	3								3	4		! 4 !		4		4	3	4	3		! 4 !		18.7
497	N	2Uge	2Ugc			2		2	3		2						3	3		! 3 !		4		3		4	4		! 4 !		72.6
498	N	2Ugg				2		2	3		3						4	3		! 4 !		3				4	4		! 4 !		7.0
499	N	6Dyb				2	3	2	3								3	3		! 3 !		3				3	3		! 3 !		6.9
500	N	2Ugc				2		2	3	3	2						4	3		! 4 !		4		2		4	4		! 4 !		19.2
501	N	2Dba	2Uge			3	3	3	4								3	4	3	! 4 !		4		4	4	4	3		! 4 !		4.8
502	N	2Ugg	2UgfW		2Ugc	2		2	3	3		3					4	3		! 4 !		3				4	5		! 5 !		23.2

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	Suit! Mg!	Area
503	N	6Dyf	6Dyf2		6Dyb	2	2	2	3	3							2	3		! 3 !	3					3	3	! 3 !	10.1
504	N	2Dbc				2	3	3	3								2	3		! 3 !	4			3	2	4	3	! 4 !	9.0
505	N	6Dyf				2	2	2	3						4		2	3		! 4 !	3					3	3	! 3 !	0.7
506	N	2Dyc				2	3	3	3		2	3					2	3		! 3 !	4		3			4	3	! 4 !	2.9
507	N	2Uge	2Dyc			2		2	3		2						4	3		! 4 !	4		3			4	4	! 4 !	7.7
508	N	6Dyf				2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	4.8
509	N	6Dyb				2	3	2	3						4		2	3		! 4 !	3					3	3	! 3 !	1.9
510	N	2Ugc				2		2	3	3							3	3		! 3 !	4		2			4	5	! 5 !	15.2
511	N	6Dyg	6Dyf			2	3	3	3								3	3	2	! 3 !	4		4	3		4	3	! 4 !	33.2
512	N	6Dyg				2	3	3	3	3	2	3					3	3	2	! 3 !	4		4	3		4	5	! 5 !	2.2
513	N	2Ugf				2		2	3	3	3						4	3		! 4 !	3					4	5	! 5 !	3.9
514	N	6Ucb				2	4	5		3					4		4			! 5 !						2		! 2 !	1.5
515	N	6Dyb	6Dyb3			2	3	2	3	3							2	3		! 3 !	3					3	3	! 3 !	3.4
516	N	2Dbb				2	3	3	3	3							3	4		! 4 !	4		4	3		4	5	! 5 !	2.7
517	N	6Dyd2				2	2	3	3	3					4		2			! 4 !						4	3	! 4 !	1.7
518	N	2Ugd				2		2	3	3	2						4	3		! 4 !	4		2			4	4	! 4 !	5.3
519	N	6Dyd2	6Dyf2			2	2	3	3								2			! 3 !						4	3	! 4 !	11.6
520	N	2Ugc	2Ugc2			2		2	3	3	2	3					4	3		! 4 !	4		2			4	5	! 5 !	15.3

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	Limitations r	sa	d	id	w	! Suit ! Mg!	Area
521	N	6Dyf	6Dyd2		6Dyg	2	2	2	3								2	3		! 3 !	3					3	3	! 3 !	36.3
522	N	2Dbd	2Dbe			2	3	3	3	3							2	4		! 4 !	4		3	3		4	5	! 5 !	24.0
523	N	2Ugc				2		2	3	3	2						4	3		! 4 !	4		2			4	5	! 5 !	1.5
524	N	6Drb	6Drb2			2	2		3	3							2			! 3 !							5	! 5 !	9.7
525	N	2Dyb				2	3	3	3								3	4		! 4 !	4		4	3		4	3	! 4 !	3.6
526	N	6Dyb2				2	3	2	3	3							2	4		! 4 !	3					3	5	! 5 !	9.3
527	N	6 SP	6UgcW									4								! 4 !							5	! 5 !	5.7
528	N	6Dyd2				2	2	3	3	3					4		2			! 4 !						4	5	! 5 !	1.5
529	N	2Ddb	2Dya			3	3	3	3	2							3	4	3	! 4 !	4		4	4		4	3	! 4 !	11.5
530	N	2Ugd	2Uge		2Dyc	2		2	3	2	2						4	3		! 4 !	4		2			4	4	! 4 !	94.4
531	Y	2Ugc	2Ugf	30	2Ugd	2		2	3	3	2	3					4	3		! 4 !	4		2			4	5	! 5 !	19.3
532	N	2Ugg	2Ugf		2Ugc	2		2	3	3	3	3					4	3		! 4 !	3					4	5	! 5 !	26.0
533	Y	2Ugf	2Ugd	35	2Ugh	2		2	3	3	3	3					4	3		! 4 !	3					4	5	! 5 !	13.9
534	N	2UgcE				2		2	3	3	2		5				3	3		! 5 !	4		2			4	4	! 5 !	5.2
535	N	2Ugd				2		2	3	3	3						4	3		! 4 !	4		2			4	5	! 5 !	11.3
536	N	6Dyb2				2	3	3	3	3					4		2	3		! 4 !	3					4	3	! 4 !	0.6
537	N	6Dyg	6Dyg2		6Dyf	2	3	3	3								3	3	2	! 3 !	4		4	3		4	3	! 4 !	28.1
538	N	2Dyb	2Dbd			2	3	3	3								3	4		! 4 !	4		4	3		4	3	! 4 !	4.8
539	N	2Dyb	2Dbc			2	3	3	3	3							3	3		! 3 !	4		4	3		4	5	! 5 !	5.6

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
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Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	Limitations d	id	w	! Suit! Mg!	Area
540	N	6Ucc				2	4	5		3					4		4			! 5 !							2	! 2 !	2.7
541	N	6Dda5				2	3	3	3	4					4		3	3		! 4 !	4				4	3	4 5	! 5 !	0.4
542	N	6Dyf2	6Dyd2			2	2	3	3	3							2	3		! 3 !	4						4 3	! 4 !	36.7
543	N	6Dyg3	6Dyf			2	3	3	3								2	3	2	! 3 !	4				4	3	4 3	! 4 !	11.0
544	N	6Dyg	6Dyg3			2	3	3	3								3	3	2	! 3 !	4				4	3	4 3	! 4 !	5.7
545	N	6Dyb2	6Dye2			2	3	3	3								2	3		! 3 !	3						4 3	! 4 !	8.3
546	N	2	E										5							! 5 !								! 5 !	12.3
547	N	6Dyg2				2	3	3	3								3	4	2	! 4 !	4				4	3	4 3	! 4 !	3.0
548	N	6Ugc	6Ugc2			2		2	3	4		3					4	3		! 4 !	3				3		4 5	! 5 !	10.5
549	N	6Ugc	6Dda5			2		2	3	4		3					4	3		! 4 !	3				3		4 5	! 5 !	4.1
550	N	Dam										5								! 5 !								! 5 !	2.9

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so-sodicity sa-salinity d-soil depth p-permeability

Appendix VIII (continued)

UMA	Land Resource Data C	Dom.ST	ST2	%ST2	ST3	Capsicum (Cap) n	m	id	ps	t	g	w	e	ss	Limitations pd	r	p	so	sa	! Suit. !Cap!	Mango (Mg) so	ss	r	sa	d	Limitations id	w	! Suit ! Mg!	Area
371	N	2Ugd				2		2	3		2						4	3		! 4 !	4			2		4	4	! 4 !	9.7
372	N	2UgeW				2		2	3	3	2	4					4	3		! 4 !	4			3		4	5	! 5 !	13.7
373	N	2 E								5			5							! 5 !								! 5 !	1.0
374	N	6Dyg2				2	3	3	3	2							3	3		! 3 !	4			4	3	4	3	! 4 !	10.2
375	Y	6Dbf	6Dda	30		2	3	3	3	3					4		2	4		! 4 !	4			4	3	4	2	! 4 !	23.0
376	N	6Dbe	6UgcW	15		2	2	2	3	3			2				3	3		! 3 !	3					3	2	! 3 !	8.1
377	N	6Dbe				2	2	2	3	3			2				3	3		! 3 !	3					3	2	! 3 !	3.2
378	N	6Dda				2	3	3	3	3			2				3	3		! 3 !	4			4	3	4	2	! 4 !	4.1
379	N	2DybE				2	3	3	3	3			5				3	4		! 5 !	4			4	3	4	2	! 5 !	1.1
380	N	2Dyb	2Dbd	20		2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	8.0
381	N	2UgfW				2		2	3			4					4	3		! 4 !	3					4	5	! 5 !	0.3
382	N	2UgfW	2UgcW	25		2		2	3	2	2	4					4	3		! 4 !	3					4	5	! 5 !	5.6
383	N	2 SP										4								! 4 !							5	! 5 !	0.7
384	N	2Dyb	2Dyb2	20		2	3	3	3								3	3		! 3 !	4			4	3	4	3	! 4 !	7.0
385	N	2Uge				3		2	3	3	2						3	3		! 3 !	4			3		4	4	! 4 !	2.3
386	N	2UghW				3		2	3		2	4					4	4		! 4 !	3			3		4	5	! 5 !	9.8
387	N	2Dyb	2Dyb5	15		2	3	3	3	2							3	4		! 4 !	4			4	3	4	3	! 4 !	7.8
388	N	6Drb				2	2	2	3	2					4		2			! 4 !							3	! 3 !	1.1
389	N	2Uge				2		2	3		2						4	3		! 4 !	4			3		4	4	! 4 !	1.8

C-Complex ST-Soil n-fertility m-plant water availability id-internal drainage
ps-soil surface conditions t-gradient
g-microrelief w-wetness e-erosion ss-secondary salinisation pd-soil distribution complexity
r-rockiness/stoniness
so-sodicity sa-salinity d-soil depth p-permeability