SOILS

REFERENCE

Mapping Unit	Major Attributes of Principal Soils	Australian Soil Classification	Great Soil Group	Main Principal Profile Forms	Area (ha)
SOILS DERIVED FROM BASALTIC ROCKS					
Moderately (10-32%) to steeply (>32%) sloping hills and low hills					
Mn	Maalan: Very deep acid, pedal, uniform fine texture profile - red brown or brown, light to light medium clay A1 (0.10-0.20 m) with 0-10% basalt fragments over red brown, light to light medium clay B2 horizon (0.65-1.20 m) with 2-10% basalt fragments grading to brown, light to light medium clay B3 horizon (1.25-1.60 m) with 10-20% basalt fragments.	Red Ferrosol	Krasnozem	Uf 6.31	36 198
Qn	Quincan: Moderately deep, neutral, pedal, uniform fine texture profile - brown or red brown, fine sandy clay loam A1 horizon (0.05-0.20 m) with 10-20% basalt scoria over red brown, fine sandy clay loam to light clay B2 horizons (0.32-1.10 m) with 5-50% basalt scoria and 10-20% manganese nodules grading to yellow brown, fine sandy clay loam B3 horizons (1.00-1.45m) with 20-50% basalt scoria and 10-20% manganese nodules grading to C horizon 50-90% basalt scoria.	Brown Dermosol	NSG -affinities with Prairie Soil	Uf 6.31 Um 6.32	562
Footslopes					
Hs	Heales: Very deep, neutral, pedal, uniform fine texture profile - red brown or red, light to light medium clay A1 horizon (0.08 - 0.26 m) with 2-10% basalt scoria over red or red brown, light medium clay B2 horizons (0.40-1.20 m) with 2-10% basalt scoria grading to red, red brown or dark, mottled light to medium clay BC horizon (0.90-1.50 m) with 20-50% basalt scoria.	Red Ferrosol	Euchrozem	Uf 6.31	704
Gently (3-10%) sloping rises to moderately (10-32%) sloping low hills					
Pg	Pin Gin: Very deep, acid, pedal, uniform fine texture profile - dark or red, pedal light clay A1 horizon (0.05-0.20 m) over red, light to light medium clay B2 horizons (0.70-1.80 m) grading to (where present) red brown, light medium clay B3 horizons (1.50-1.80 m) with few basalt fragments.	Red Ferrosol	Krasnozem	Uf 6.31	32 621
Bn	Barron: Deep, neutral, pedal, uniform fine texture profile - brown or dark, light to light medium clay A1 horizon (0.05-0.20 m) with 2-10% basalt fragments over brown or dark, light medium clay B2 horizons (0.40-1.30 m) with 2-50% basalt fragments and < 2% manganese nodules grading to brown or dark, light medium to medium clay B3 horizons (0.90-1.30 m) with 50-90% basalt fragments and < 2% manganese nodules grading to C horizons (1.00-1.50m) with 50-90% basalt.	Brown Ferrosol	Prairie Soil	Uf 6.31	3 174
Very gently (1-3%) sloping to gently (3-10%) sloping rises					
To	Tolga: Very deep, neutral, pedal, uniform fine texture profile - dark or red, light clay A1 horizon (0.10-0.30 m) with 2-10% manganese nodules over (where present) red, apedal, light clay B1 (0.46-0.80 m) horizon with 2-10% manganese nodules grading to red light to light medium clay B2 horizons (0.80-1.80 m) with 2-20% manganese nodules.	Red Ferrosol	Euchrozem	Uf 6.31	14 105
Kb	Kaban: Very deep, neutral, pedal, uniform fine texture profile - dark or red clay loam to light clay A1 horizon (0.10-0.15 m) over red, apedal, clay loam to light clay B1 horizon (0.20-0.30 m) with < 2% manganese nodules grading to red light to light medium clay B2 horizons (40-1.80m) with 2-50% manganese nodules.	Red Ferrosol	Euchrozem	Uf 6.31	2 779
Footslopes					
Ms	Milestream: Deep, acid, pedal, gradational texture profile - dark or brown clay loam to light clay A1 horizon (0.11-0.26 m) with 2-50% ferromanganese nodules grading to mottled yellow, brown or yellow brown B2 horizons (0.53-0.90 m) with 2-50% ferromanganese nodules grading to mottled grey medium heavy clay D horizons (>0.90m) with 2-10% manganese nodules.	Yellow Ferrosol	Xanthozem	Gn 3.21 Gn 3.71 Gn 3.74 Uf 6.34 Uf 6.4	197
Wk	Walkamin: Deep, neutral, pedal, uniform fine texture profile - dark light clay A1 horizon (0.08-0.22 m) with 2-20% ferromanganese nodules grading to mottled brown or yellow brown light to medium clay B horizons (0.50-1.60m) with 2-20% basalt fragments and 2-50% ferromanganese nodules grading to C horizon of 50-90% weathered basalt fragments.	Brown Ferrosol	Xanthozem	Uf 6.4 Uf 6.41 Uf 6.31 Uf 6.33	159
WkOx	Walkamin Grey Variant: As above except for a dominantly grey base colour in the B horizon.	Grey Dermosol	NSG -affinities with Wiesenboden	Uf 6.4, Uf 6.41 Uf 6.31, Uf 6.33	87
Mg	Morgan: Deep, alkaline pedal uniform (cracking) texture profile - brown or dark light to medium heavy clay A1 horizon (0.04-0.15m) over mottled brown to grey light medium to medium heavy clay B2 horizons with 2-10% calcium carbonate nodules (0.30-1.20m) grading to mottled yellow brown or grey light to medium heavy clay B3 horizon (0.83-1.30m) with 2-50% basalt stone.	Grey/Brown Vertosol	NSG -affinities with Grey/Brown Clays	Ug 5.32 Ug 5.3 Uf 6.31 Uf 6.33	87
Sd	Snider: Moderately deep, neutral, pedal, uniform fine texture profile - dark or brown light to light medium clay A1 horizon (0.05-0.15 m) with 2-20% basalt fragments and 2-10% manganese nodules over mottled brown light medium to medium heavy clay B2 horizon (0.12-0.48 m) with 20-50% basalt fragments and 2-20% manganese nodules grading to C horizon (0.60-1.15m) of 50-90% basalt.	Brown Dermosol	Prairie Soil	Uf 6.31	127
SOILS DERIVED FROM GRANITIC ROCKS					
Moderately (10-32%) to steeply (>32%) sloping hills and low hills					
Ut	Utchee: Very deep, acid, pedal, uniform to gradational texture profile - red brown or brown, sandy clay loam to sandy light medium clay A1 horizon (0.10-0.20 m) with 2-20% quartz pebbles over red brown or brown sandy light to sandy light medium clay A2 horizon (0.20-0.30 m) with 2-20% quartz pebbles grading to red or red brown sandy light to sandy light medium clay B2 horizons (0.60-1.50 m) with 10-50% quartz pebbles grading to mottled red or red brown coarse sandy light medium clay B3 horizon (1.20-1.60 m) with 10-50% quartz pebbles.	Red Dermosol	NSG -affinities with Red Podzolic Soil	Uf 4.41 Gn 3.11 Gn 3.14 Gn 3.74 Gn 3.21	21 683
Sn	Severin: Deep, acid, pedal, uniform texture profile - dark or grey sandy light clay A1 horizon (0.10-0.20 m) with 2-20% quartz pebbles over grey or yellow brown, sandy clay loam to light medium clay A2 horizon (0.29-0.40 m) with 2-20% quartz pebbles over mottled yellow brown B2 horizons (0.55-1.00 m) with 2-20% quartz pebbles grading to mottled yellow brown to red brown sandy light medium clay BC horizons with 50-90% decomposing granite.	Yellow Dermosol	NSG -affinities with Xanthozem	Uf 4.42 Uf 4.43 Uf 6.33 Uf 6.4	12 415
Nt	Nettle: Shallow, acid, apedal uniform coarse texture profile - brown or dark coarse sand to coarse sandy loam A1 horizon (0.08-0.12 m) with 10-20% granitic fragments over conspicuously bleached sandy loam A2 horizon (0.10-0.30m) over yellow brown coarse sand to coarse sandy loam AC horizon (0.25-0.60 m) with 50-90% granitic fragments.	Tenosol	Lithosol	Uc 2.12 Uc 1.42 Uc 3.21 Uc 5.11	335
Gw	Gowrie: Very deep, acid, apedal, gradational texture profile - dark or red brown, fine sandy clay loam A1 horizon (0.10-0.21 m) with 2-10% quartz pebbles over red brown or brown sandy clay loam to sandy light clay A2 horizon (0.19-0.50m) with 10-20% quartz pebbles over red or red brown clay loam fine sandy to sandy light medium clay B2 horizons (0.55-1.50 m) with 2-20% quartz pebbles.	Red Kandosol	Red Earth	Gn 2.11 Um 5.52 Uf 4.2 Uf 6.52	801
Gi	Gillies: Deep, acid, apedal, uniform coarse texture profile - brown loamy sand to sandy loam A1 horizon (0.10-0.20 m) over brown sandy loam A2 horizon (0.20-0.30 m) with 20-50% quartz pebbles over yellow sandy loam B2 horizons (0.40-0.95m) with 20-50% quartz pebbles grading to brown sandy clay loam B3 horizon (1.00-1.45 m) with 50-90% granite fragments.	Tenosol	NSG -affinities with Siliceous Sand	Uc 4.22 Uc 4.21 Gn 2.21	1 760
Footslopes					
Ep	Expedition Deep, acid, apedal, gradational texture profile - brown red brown or dark, loamy coarse sand to sandy loam A1 horizon (0.10-0.15 m) over (where present) pale brown, loamy coarse sand to sandy loam A2 horizon (0.20-0.40 m) over (where present) red brown coarse sandy loam to sandy clay loam B1 horizon (0.40-0.60 m) grading to red clay loam sandy to coarse sandy light medium clay B2 horizons.	Red Kandosol	Red Earth	Gn 2.15 Gn 2.11 Dr 4.51 Dr 4.82	201
SOILS DERIVED FROM ACID VOLCANIC ROCKS					
Moderately (10-32%) to steeply (>32%) sloping hills and low hills					
Um	Umala: Very deep, acid, pedal gradational texture profile - dark or brown clay loam fine sandy to light clay A1 horizon (0.05-0.20 m) over brown light clay A2 horizon (0.20-0.40 m) over mottled red brown light to medium heavy clay B2 horizons (0.60-1.50m) with 2-10% rhyolite fragments grading to mottled red brown or red fine sandy medium to medium heavy clay B3 horizons (1.20-1.80 m) with 20-50% rhyolite fragments.	Brown Dermosol	NSG -affinities with Red Podzolic Soil	Gn 3.11 Gn 3.14 Gn 3.21 Gn 3.91	10 027
UmRp	Umala Rocky Phase: As above except for the presence of significant amounts of coarse fragments throughout the profile.	Brown Dermosol	NSG -affinities with Red Podzolic Soil	Gn 3.11 Gn 3.14 Gn 3.21 Gn 3.91	2 004
By	Baily: Very deep, acid, pedal, gradational texture profile - dark or reddish brown clay loam A1 horizon (0.10-0.15 m) over (where present) red clay loam A2 horizon (0.12-0.22 m) grading to red to reddish brown light medium to medium clay B2 horizons (0.70-1.52 m) with < 2% rhyolite fragments.	Red Dermosol	NSG -affinities with Red Podzolic Soil	Gn 3.11 Gn 3.14	680
Wh	Whelan: Shallow, acid, apedal, uniform coarse texture profile - grey brown or dark sandy loam A1 horizon (0.08-0.12 m) with 10-20% rhyolite pebbles over grey or brown conspicuously bleached sandy loam horizon (0.10-0.15 m) grading to grey or yellow brown coarse sand to sandy loam BC horizon (0.12-0.30 m) with 50-90% rhyolite fragments over C horizon of decomposing rhyolite.	Tenosol	NSG -affinities with Lithosol	Uc 2.12 Uc 2.21 Um 4.23	4 335
Wr	Worsley: Moderately deep, acid, pedal gradational texture profile - dark or grey brown silty clay loam to fine sandy light clay A1 horizon (0.08-0.15 m) with 10-20% rhyolite fragments over brown or grey (dry) silty clay loam to fine sandy light clay A2 horizon (0.25-0.30 m) over yellow brown or yellow brown fine sandy light clay B2 (1.00-1.30 m) horizons with 20-50% rhyolite fragments grading to yellow sandy light medium clay B3 horizon (1.10-1.50 m) with 50-90% rhyolite fragments.	Yellow Dermosol	NSG -affinities with Yellow Podzolic Soil	Gn 3.24 Gn 2.21 Uf 6.52	351
Footslopes					
Fg	Flaggy: Deep, acid, apedal gradational texture profile - dark or grey sandy clay loam to clay loam sandy A1 horizon (0.10-0.12 m) with 2-10% manganese nodules over (where present) pale (dry) sandy clay loam to clay loam sandy A2 horizon (0.10-0.35 m) over mottled yellow or yellow brown sandy light to sandy light medium clay B2 horizon (0.50-1.00 m) grading to C horizon (0.80-1.30m) of decomposing rhyolite.	Yellow Kandosol	Yellow Earth	Gn 2.31 Gn 2.21 Gn 2.22 Dy 5.81	554
Sy	Sylvia: Deep, acid, pedal, duplex texture profile - grey or grey brown, fine sandy loam to fine sandy clay loam A1 horizon (0.05-0.10 m) over conspicuously bleached (dry) silty loam to silty clay loam A2 horizon (0.08-0.25 m) with 2-10% rhyolite fragments over mottled grey silty light medium to medium heavy clay B2 horizon (0.25 - 1.30 m) grading to mottled grey or yellow grey silty clay loam to silty light medium clay B3 horizon (0.85-1.50 m) with 2-50% rhyolite fragments.	Grey Magnesic Chromosol	Solonth	Dy 2.41 Dy 3.41 Dy 3.44 Dy 6.92	949
Mz	Mazlin: Very deep, acid, pedal gradational texture profile - grey or dark silty clay loam A1 horizon (0.12-0.18 m) over brown silty clay loam A2 horizon (0.18-0.35 m) mottled red brown light clay to silty light clay B2 horizons (0.70-1.00 m) grading to mottled grey medium clay B3 horizons (1.00-1.50m) with 20-50% weathering rhyolite.	Brown Dermosol	NSG -affinities with Red Podzolic Soil	Gn 3.24 Gn 3.74 Dr 5.21	24
SOILS DERIVED FROM METAMORPHIC ROCKS					
Gently (3-10%) sloping rises to steeply (>32%) sloping low hills					
Ga	Gaimara: Deep, acid, pedal gradational texture profile - brown or dark fine sandy clay loam A1 horizon (0.10-0.15 m) with 2-20% quartz fragments over red brown or brown fine sandy clay loam A2 horizon (0.20-0.30 m) with 2-20% quartz fragments over mottled red or red brown silty light clay to fine sandy light clay B2 horizons (0.65-1.30 m) with 2-20% quartz fragments grading to mottled red or red brown clay loam fine sandy B3 horizon (1.00-1.40 m) with 50-90% weathering schist.	Red Dermosol	NSG -affinities with Red Podzolic Soil	Gn 3.14 Gn 3.74 Uf 4.41	8 055
Bt	Bicton: Deep, acid, pedal, gradational texture profile - brown or grey clay loam fine sandy A1 horizon (0.12-0.18 m) over yellow brown or grey silty clay loam to light clay A2 horizon (0.19-0.28 m) with 2-10% quartz fragments over mottled yellow or yellow brown silty light clay to light medium clay B2 horizon (0.60-1.10m) grading to mottled yellow or yellow brown clay loam fine sandy to silty clay loam B3 horizon (0.84-1.20 m) with 50-90% weathering schist fragments grading to C horizon (1.00-1.30m).	Yellow Dermosol	NSG -affinities with Xanthozem	Gn 3.74 Gn 3.71 Gn 3.94	3 967
SOILS FORMED ON ALLUVIUM/COLLUVIUM DERIVED FROM ACID VOLCANIC/GRANITIC ROCKS					
Very gently (1-3%) sloping alluvial / colluvial fans					
Wg	Wongabel: Deep, acid, apedal, gradational texture profile - dark or grey sandy clay loam to clay loam A1 horizon (0.10-0.20 m) with 2-20% quartz pebbles over grey or yellow brown, sandy clay loam A2 horizon (0.30-0.45 m) with 2-20% quartz pebbles over mottled yellow, yellow brown or grey sandy clay loam to sandy light medium clay B2 horizons (0.50-1.20 m) grading to mottled gray or yellow brown loamy sand to light medium clay D horizons (0.90-1.70 m) with 20-90% quartz pebbles.	Yellow Kandosol	NSG -affinities with Yellow Earth	Gn 2.44 Gn 2.45 Um 4.25 Uc 5.11	539
Ch	Carrington: Deep, acid, pedal uniform texture profile - dark or grey light to medium clay A1 horizon (0.12-0.17 m) over mottled grey light to medium clay A2 horizon (0.20-0.38 m) over mottled grey or grey brown fine sandy light to medium clay B2 horizons (0.48-0.80 m) grading to mottled grey sandy clay loam to sandy light clay D horizon (0.90-1.30 m).	Redoxic Hydrosol	Humic Gley	Uf 6.41 Uf 4.2 Uf 6.7 Gn 2.41	567

LEGEND

- Cadastral Boundaries
- Rivers, Streams, Minor Drainage Lines & Channels
- Roads
- 121 UMA Boundaries & Numbers
- Survey Boundary

Cadastral information supplied by the Queensland Department of Lands and is current to 1992.

Topographic information supplied by AUSLIG with a data capture scale of 1:250 000.

MAP REFERENCE DEFINITIONS

The following are definitions of terms used in the map reference soil descriptions.
All other terms not described below, are taken from McDonald et al. (1990).

1. Depth of solum (taken from Isbell, 1993)

Shallow	0.25 - <0.5m
Moderately deep	0.5 - <1.0m
Deep	1.0 - <1.5m
Very deep	1.5 - 5.0m

2. Soil Reaction Trend (taken from Northcote, 1979)
Acid reaction trend -
(A horizon pH <7.0, B horizon pH <6.5)
Neutral reaction trend -
(A horizon pH 5.6-8.0, B horizon pH 6.5-8.0)
Alkaline reaction trend -
(A horizon pH >5.0, B horizon pH >8.0)

3. Soil Structure
:pedal - structured soil i.e. breaks into individual units of uniform size and shape
:apedal - soil structure is not evident or only weakly evident

4. Profile texture trend (taken from Northcote, 1979)

Uniform	:profiles in which there is little, if any change in texture with increasing depth
Gradational	:profiles in which the clay content gradually increases with depth
Duplex	:profiles where clay content increases abruptly from the surface to lower horizons

5. Horizonation (soil layers)

A1	:horizon at or near the soil surface with some accumulation of organic matter
A2	:horizon having, either alone or in combination, less organic matter, sesquioxides or silicate clay than the adjacent horizons. It is usually differentiated by its paler colour
A3	:transitional horizon between A and B, that is dominated by properties characteristic of the overlying A horizon
B1	:transitional horizon between A and B that is dominated by properties characteristic of the underlying B horizon
B2	:horizon showing one or more of the following: maximum colour development, concentration of silicate clay, sesquioxides, or organic matter; structure and/or consistence unlike the A horizon immediately above or below
B3	:transitional horizon between B and C that is dominated by the properties characteristic of the above B horizon
C	:usually consolidated or unconsolidated, partially weathered parent material or sedimentary laminae
D	:material below the A, B or C horizons that cannot be given a reliable horizon designation

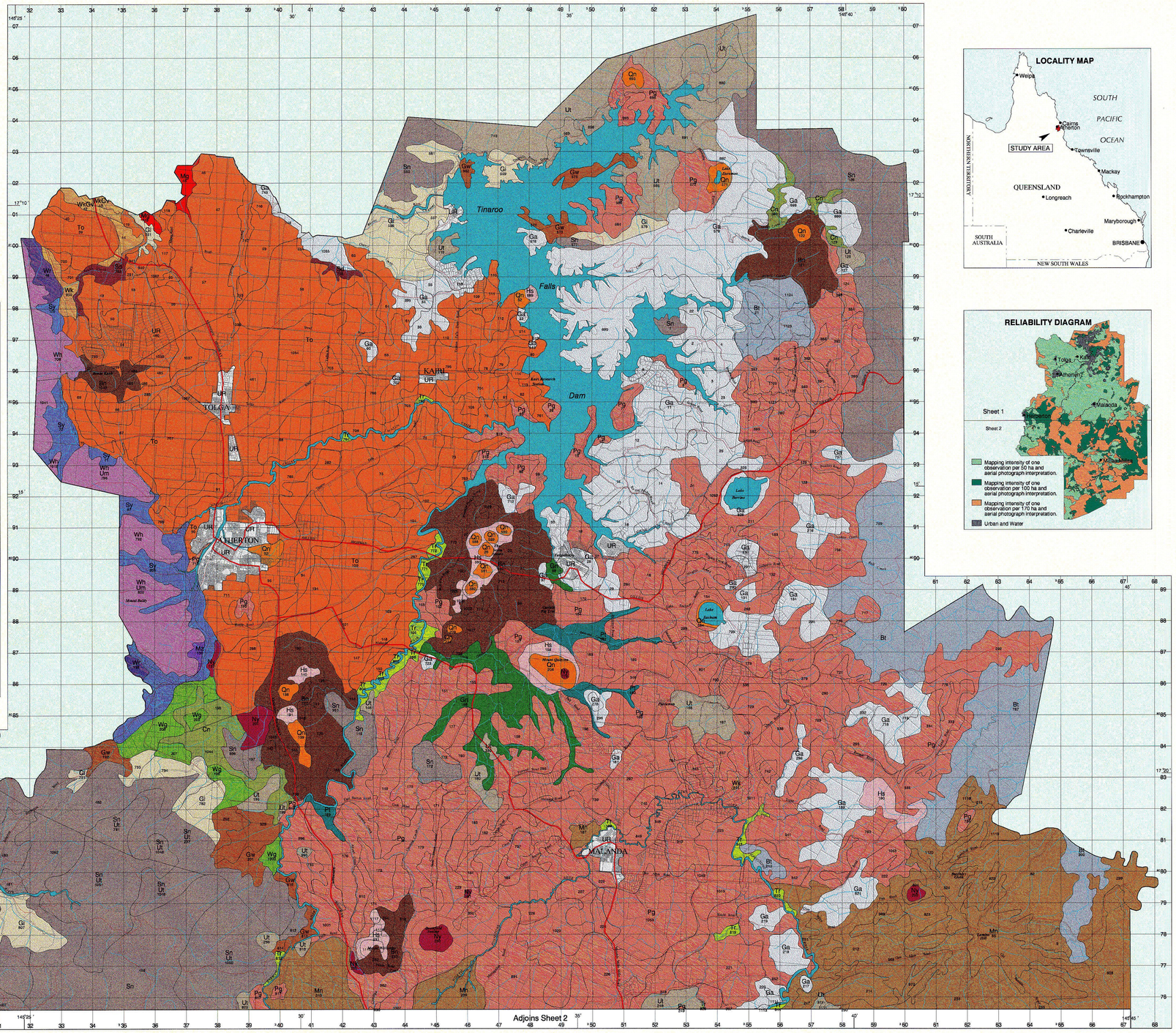
6. Horizon boundary
"over" :sharp, abrupt or clear boundary (<50 mm)
"grading" :gradual or diffuse boundary (>50 mm)

7. Great Soil Group is derived from Stace et al. (1968)

8. NSG - indicates "No Suitable Group"

9. Australian Soil Classification is derived from Isbell (1993). Only Suborder and Order are indicated

10. Landform element terminology is derived from McDonald et al. (1990)



Mapping Unit	Major Attributes of Principal Soils	Australian Soil Classification	Great Soil Group	Main Principal Profile Forms	Area (ha)
SOILS FORMED ON ALLUVIUM DERIVED FROM BASALT					
Very gently (1-3%) sloping terraces					
Tr	Tranters: Very deep, acid, pedal uniform fine texture profile - dark or brown clay loam fine sandy to light clay A1 horizon (0.07-0.28 m) over brown or red brown clay loam fine sandy to light medium clay B2 horizons (0.80-1.30 m) over (where present) mottled brown or grey loamy sand to medium heavy clay D horizons (1.40-1.80 m).	Brown Dermosol	NSG	Uf 6.31 Uf 6.4	787
Level (0-1%) to very gently (1-3%) sloping floodplains					
Gw	Gwynne: Very deep, acid, pedal uniform fine texture profile - dark light to light medium clay A1 horizon (0.10-0.25 m) with 2-10% manganese nodules over mottled brown light to medium clay B2 horizons (0.25-1.20 m) with 2-10% manganese nodules grading to mottled grey or yellow brown light medium clay B3 horizons (1.04-1.50 m).	Brown Dermosol	NSG -affinities with Xanthozem	Uf 6.31 Uf 6.4	768
Pt	Peterson: Very deep, acid, pedal uniform texture profile - grey brown, brown or dark light to medium clay A1 horizon (0.05-0.25 m) over mottled brown or grey medium heavy clay B2 horizons (0.35-1.20 m) grading to mottled grey or gleyed medium heavy clay B3 horizons (1.40-1.60 m).	Grey Vertosol	NSG -affinities with Wiesenboden	Ug 5.16 Uf 6.31 Uf 6.41 Uf 6.33 Uf 6.2	290
ORGANIC SOILS					
Ny	Nyleta: Moderately deep, acid peat over clay - dark clayey peat P1 and P2 horizons (0-0.55 m) grading to mottled dark light to light medium clay B1 horizons (0.50-0.70 m) grading to mottled dark light medium to medium heavy clay B2 horizons.	Organosol	Acid Peat	O	249
MISCELLANEOUS UNITS					
	Dam, Lake, Swamp, Stream Channel				
UR	Urban				

This map accompanies the report: Soils and Land Suitability of the Atherton Tablelands
(D.T. Malcolm, B.K.A. Nagel, I.S. Webb and I.G. Sinclair 1996)

This map is compiled from a medium intensity survey involving air photo interpretation and ground observations of the order of one observation per 50 ha. Linework depicts unique mapping areas (UMA's) which usually contain more than one soil type, but are coloured according to the dominant soil only. The occurrence of more than one UMA within a single soil type indicates differences in land slope or other land attributes as explained in the report.

The codes indicate the dominant or codominant soils occuring in particular unique map areas. Multiple codes are shown for map areas where the dominant soil is less than 50%.

SOURCE:
The information shown on this map has been supplied by the Queensland Department of Natural Resources, Resource Management.

Initial enquiries regarding the information should be directed to the Resource Assessment and Planning Unit, Mareeba.

CURRENCY:
Soils information shown on this map is current to June 1996.

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Metres SCALE 1 : 50,000 Kilometres
1 0 1 2 3 4 5

FULL LATITUDE AND LONGITUDE VALUES ARE SHOWN AT THE SHEET CORNERS, WITH LABELLED 5 MINUTE TICKS INSIDE THE NEAT LINE

BLACK NUMBERED GRID LINES ARE 1000 METRE INTERVALS OF THE UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 55 (AUSTRALIAN MAP GRID). AUSTRALIAN NATIONAL SPHEROID

SOILS OF THE ATHERTON TABLELANDS

(Sheet 1)

Survey by D.T. Malcolm and B.K.A. Nagel 1991-1994
Queensland Department of Natural Resources
Resource Management

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