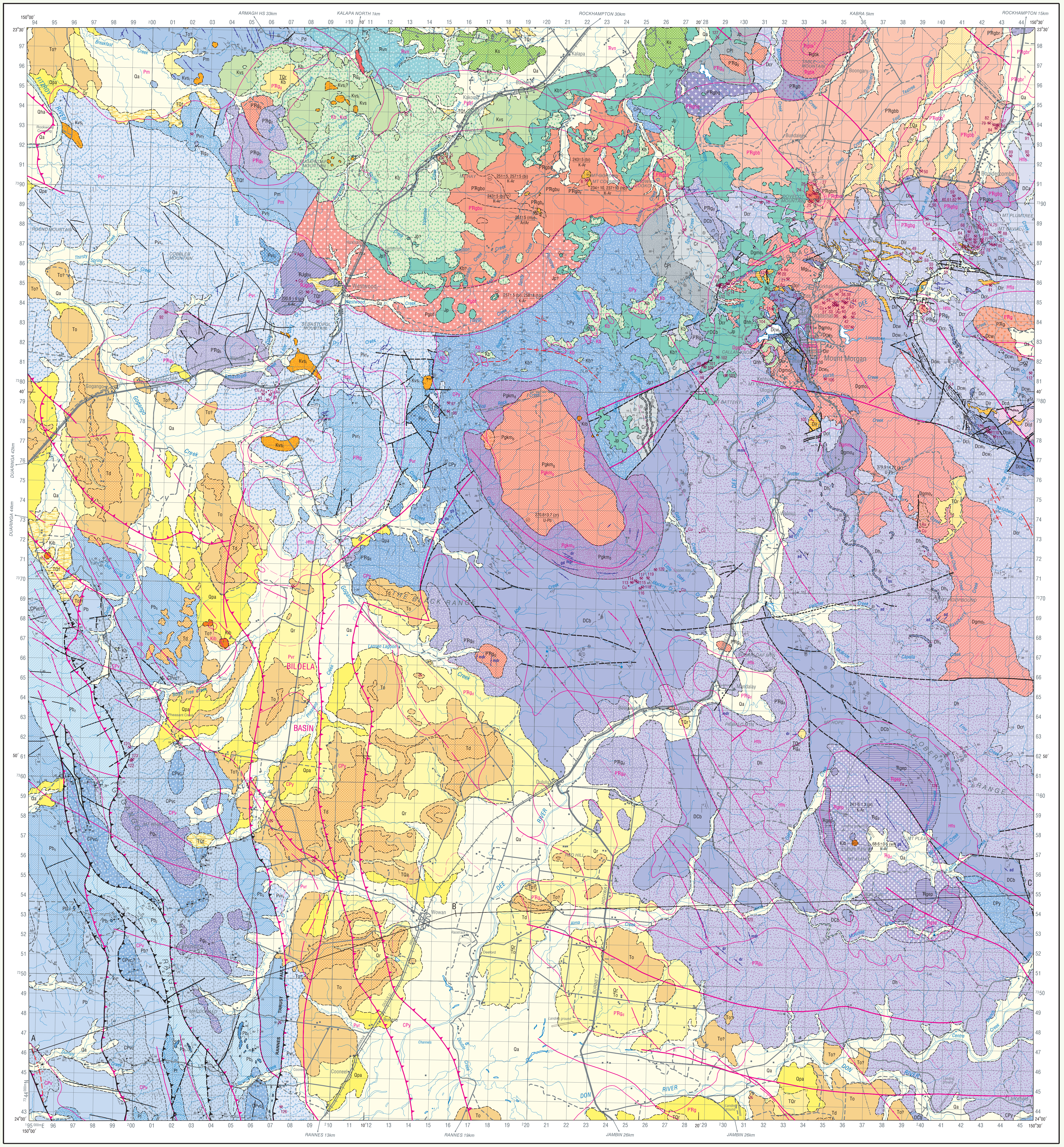
MOUNT MORGAN

QUEENSLAND

AUSTRALIA 1:100 000 GEOLOGICAL SERIES

SHEET 8950



INDEX TO MINES AND PROSPECTS

1	Emu Creek	Au	020927
2	---	Cu	081848
3	Westwood Palladium	Cu,Pd,Au,Ag	086843
4	Eggrock Lease	Gs	129938
5	Mount Hay	Gs	148497
6	Mount Gordon	Au	221907
7	Great Northern Lode	Au	271883
8	---	Au	288855
9	---	Au	289855
10	Crows Nest	Au	290855
11	Midas	Au,Ag,Cu	291854
12	New Clanricarde	Au	292854
13	Clanricarde	Au	293855
14	Clanricarde Extended	Au,Cu	293856
15	---	Au	294857
16	Quarry Creek Gossan	Cu	309897
17	---	Au	313862
18	---	Cy	317844
19	---	Au,Cu	318849
20	---	Au	319860
21	The Morganite	Au	324859
22	Thomas' Gossan	Cu,Zn	326889
23	Baree	Au	329849
24	No. 2	Cu	334901
25	Moonmera Group	Cu,Mo	335898
26	No. 8 Tunnel	Cu	336902
27	---	Cu	337907
28	Quarry	Cu	337902
29	No.7 Tunnel	Cu	338898
30	Peuts	Au	342847
31	South Champion	Au	345845
32	Razorback	Cu	347889
33	---	Au	348846
34	---	Au	347847
35	Welcome	Au,Cu	348847
36	Golden Crown	Au	348846
37	New Retrieve	Au,Ag,Cu	349851
38	Champion	Au,Ag	349846
39	Walterhall Group	Au,Ag,Cu,Mo	349846
40	---	Au	352845
41	Champion North	Au	352848
42	---	Au	353840
43	---	Au	353848
44	---	Au	354847
45	---	Au	357840
46	True Blue	Au	360865
47	Mount Rissen	Au	376856
48	Queen Of The Valley	Au	381872
49	Mountain Maid	Au	387873
50	Hit Or Miss	Au	390915
51	Struck Oil Prospect	Cu,Mo	393844
52	Glen Dee	Au	393846
53	---	Au	391871
54	Victor	Au	394890
55	Struck Oil	Au	396966
56	Block And Pillar	Au	398900
57	Missing Link	Au	401880
58	Dee River Alluvials	Au	404866
59	Imperial	Au	407902
60	Donnybrook	Au	409902
61	Who'd A Thought It	Au	410901
62	---	Au	410902
63	Peter's Rush	Au	413877
64	The Little Vein	Au	414880
65	D.C. 2079	Au	415893
66	---	Au	416884
67	Anglo Saxon	Au	416880
68	---	Au	418878
69	Elsie	Au	418880
70	---	Au	419879
71	Roxborough	Au	418882
72	Three Muscateers	Au	420877
73	---	Au	420888
74	---	Au	420887
75	---	Au	421887
76	Greenvale	Au	421886
77	Caledonia	Au	422881
78	Busy Bee	Au	422879
79	Windsor	Au	424940
80	New Golden Cave	Au	426878
81	Lucky Dream	Au	426857
82	Union	Au	427939
83	Mount Usher	Au	427878
84	Golden Crown	Au	428937
85	---	Au	428879
86	Nil Desperandum	Au	428938
87	---	Au	429939
88	Crocodile Creek	Au	431884
89	---	Au	436923
90	Bonanza	Au	444924
91	Poverty Gully	Au	444934
92	Cox Creek Prospect	Cu	009836
93	Chinaman's Gully	Au	060796
94	---	Cu,Au	061793
95	---	Cu,Au	064796
96	Westwood Gold Mine	Au	153788
97	---	Au	153793
98	---	Au	281811
99	---	Au	282815
100	---	Au	283814
101	Mount Victoria	Au	282815
102	---	Au	290819
103	---	Au	293808
104	Mount Morgan	Au,Cu,Ag	316834
105	Hamilton Creek Prospect	Au	338787
106	Horse Creek Prospect	Au	344808
107	---	Au	357835
108	---	Au	427785
109	---	Au	427783
110	---	Au	428783
111	Mount Alexander	Au	430781
112	Eureka Creek	Au	448813
113	Tunnel Workings	Cu	247703
114	---	Cu	249704
115	No. 1 Shaft Workings	Cu	250704
116	---	Cu	252700
117	Big Blow	Cu	252706
118	---	Cu	253701
119	Yellow Ore	Cu	253706
120	Little Blow	Cu	259710
121	Bottle Tree Creek Diggings	Au	995615
122	Mount Row	Au	995608
123	---	Au	996609
124	Eulogie Park Prospect	Im,V,Mt	401606
125	Alma Creek Prospect	Im	308536
126	Sweet Caroline	Cu	075434
127	Stanwell Sandstone	Bs	286982

The grid reference is a six figure abbreviated MGA94 coordinate to the nearest 100 metres

MINING SYMBOLS

- ⚒ Mine
- ⚒ Mine, abandoned
- ⛏ Prospect
- ⛏ Prospect, abandoned
- ✕ Quarry
- • Mineral occurrence

Agg - aggregate, Ag - silver, Au - gold, Bs - building stone, Cu - copper, Cy - clay, Fe - iron, Gs - gems, Im - ilmenite, Ls - limestone, Mo - molybdenum, Mt - magnetite, Pd - palladium, V - vanadium, Zn - zinc

TOPOGRAPHICAL AND CULTURAL FEATURES

- Highway
- Secondary road
- Minor road
- Vehicle track
- Railway with station
- Abandoned railway
- Power transmission line
- ▪ Building
- □ Yard
- △ Trigonometrical station
- ∘ Bore, well, spring
- Windpump

QUATERNARY

	Qha	*Clay, silt, sand, gravel; active stream channel and low terraces*
	Qhh	*Gravel, sand and mud; man-made deposits associated with mining; tailings, dumps and rehabiliated areas*
	Qa	*Clay, silt, sand, gravel; flood plain alluvium*
	Qr	*Clay, silt, sand, gravel and soil; colluvial and residual deposits*
	Qpa	*Sand, mud and gravel; alluvium on higher terraces, commonly with " melon holes "*

TERTIARY QUATERNARY

	TQa	*Sand, mud and gravel; high-level alluvium and colluvium*
	TQf	*Sand, gravel, clay; floodout sheets and small fans*
	TQr	*Clay, silt, sand, gravel and soil; colluvial and residual deposits*

TERTIARY

	Td	*Indurated and ferruginised top of deep weathering profiles, locally including ferricrete*
Biloela Formation	To	*Mudstone, siltstone, oil shale, carbonaceous mudstone and sandstone; minor lignite, coal and limestone*

MESOZOIC

	Mg$_b$	*Porphyritic gabbro, microgabbro*

CRETACEOUS

	Kb	*Basalt ; moderate to high magnetic domain*
	Kib	*Basalt plug ; very low magnetic domain (reversely magnetised)*
Mount Salmon Volcanics	Kvs	*Trachyte, rhyolite, rhyolitic ignimbrite*
	Kvs$_i$	*Trachyte, rhyolite plugs*
Alton Downs Basalt	Kva	*Olivine and feldspar-phyric basalt*
	Kb,Kvs	*Low to moderate magnetic domain*
Stanwell Coal Measures	Ks	*Mudstone, sandstone, siltstone, minor coal*

JURASSIC

Precipice Sandstone	Jp	*Thick-bedded, cross-bedded fine to coarse-grained, pebbly quartzose sandstone, and minor lithic sublabile sandstone, siltstone and mudstone*

TRIASSIC - JURASSIC

Bucknalla Gabbro	ɌJgbu	*Layered olivine gabbro, gabbro, troctolite, ferrigabbro, anorthosite, plagioclase-bearing clinopyroxenite, microdiorite; very high magnetic domain*

TRIASSIC

Native Cat Andesite	Ɍvn	*Andesite, andesitic tuff, trachyandesite, andesitic to rhyolitic breccia, minor rhyolite; high magnetic domain*
	Ɍg$_d$	*Diorite; high magnetic domain*
	Ɍg$_g$	*Granite, granodiorite*
Bouldercombe Igneous Complex: Eulogie Park Gabbro	Ɍgep	*Layered olivine gabbro, augite troctolite, ferrigabbro, leucogabbro, magnetite bands; very low magnetic domain (reversely magnetised)*
Bouldercombe Igneous Complex: Kabra Quartz Monzodiorite	Ɍgbk	*Altered grey medium-grained hornblende quartz monzodiorite, dark grey hornblende-augite quartz gabbro, hornblende-hypersthene-augite-biotite quartz gabbro; Ɍgbk^1 - high magnetic domain; Ɍgbk^2 - very low magnetic domain (reversely magnetised)*

PERMIAN - TRIASSIC

	PɌg	*Granite, granodiorite, diorite; low to moderate magnetic domain*
	PɌg$_b$	*Granite, granodiorite; moderate to high magnetic domain*
	PɌg$_d$	*Diorite; high to very high magnetic domain*
	PɌg$_b$	*Gabbro; very high magnetic domain*
Bouldercombe Igneous Complex	PɌgb	*Grey medium-grained pyroxene-biotite-hornblende quartz diorite cut by microgranite dykes; moderate to low magnetic domain*
	PɌgb$_e$	*Quartz porphyry, breccia, alteration zones*
Moonmera Porphyritic Granodiorite	PɌgbm	*Porphyritic biotite granodiorite, breccia; low magnetic domain*
Bundaleer Tonalite	PɌgbb	*Pale grey medium-grained leucocratic hornblende-biotite tonalite; PɌgbb^1 - moderate to high magnetic domain; PɌgbb^2 - low magnetic domain*
Gavial Gabbro	PɌgbg	*Dark grey medium-grained hornblende-hypersthene-augite gabbro, locally banded; moderate to high magnetic domain*
Gracemere Gabbro	PɌgbr	*Grey medium to coarse-grained foliated quartz-hornblende-hypersthene-biotite-augite gabbro PɌgbr^1 - moderate to high magnetic domain; PɌgbr^2 - very low magnetic domain (reversely magnetised)*
Quarry Gabbro	PɌgbq	*Dark grey to black medium-grained quartz-hornblende-biotite-hypersthene-augite gabbro; very low magnetic domain (reversely magnetised)*
Moonkan Granite	PɌgbo	*Pale pinkish grey medium-grained biotite-hornblende granite*
Umbrella Granodiorite	PɌgbu	*Pale grey medium-grained biotite-hornblende granodiorite; moderate magnetic domain*

PERMIAN

Flaggy Quartz Monzodiorite	Pgbf	*Grey medium to coarse-grained foliated hornblende-biotite-pyroxene quartz monzodiorite; high magnetic domain*
Kyle Mohr Igneous Complex	Pgkm$_p$	*Pale pink to cream sparsely porphyritic leucocratic aplite*
	Pgkm$_g$	*Pale pink medium to coarse-grained leucocratic hornblende granite; low to moderate magnetic domain*
	Pgkm$_d$	*Dark grey to black medium-grained quartz - hornblende - biotite gabbro; moderate to high magnetic domain*
	Pg$_b$	*Gabbro, diorite*
Dinner Creek Conglomerate	Pd	*Conglomerate, lithic sandstone, mudstone*
Back Creek Group: Moah Creek beds	Pm	*Mudstone, lithic sandstone conglomeratic mudstone, conglomerate; low magnetic domain*
Back Creek Group	Pb	*Predominantly massive, cleaved mudstone and siltstone (commonly with concretions) minor sandstone*
	Pb$_s$	*Mudstone, siltstone and lithic sandstone*
	Pb$_z$	*Mudstone, siltstone, volcanilithic sandstone, calcareous siltstone and minor limestone*
	Pb$_l$	*Crinoidal limestone*
Woolein Formation	Pl	*Cleaved siltstone, mudstone and subordinate volcaniclastic sandstone*
Rookwood Volcanics	Pvr$_f$	*Rhyolitic lava and volcaniclastics including pumiceous breccia*
	Pvr$_s$	*Silicified mudstone, siltstone, carbonaceous mudstone, tuffaceous sandstone, conglomerate*
	Pvr$_v$	*Basaltic pillow lava, and breccia, minor chert, sandstone, siltstone; some dolerite sills or dykes*
	Pvr	*Undivided Rookwood volcanics; moderate to high magnetic domain*

LATE CARBONIFEROUS - EARLY PERMIAN

	CPv	*Undivided volcanic units; basaltic to rhyolitic volcanic rocks; mostly moderate magnetic domain*
Camboon Volcanics	CPvc	*Basaltic to andesitic lava and equivalent volcaniclastic rocks; subordinate felsic ignimbrite and other volcaniclastic rocks and minor lava; commonly deformed to schist*
	CPvc$_r$	*Felsic volcaniclastic rocks (including ignimbrite), some lava and probable high-level intrusives; commonly deformed to schist*
Youlambie Conglomerate	CPy	*Granule to boulder polymictic conglomerate commonly with abundant granite and rhyolite clasts, felsic volcaniclastic sandstone, tuffaceous and carbonaceous siltstone, dacitic to rhyolitic ignimbrite, breccia, mudstone and minor coal; low magnetic domain*
Lorray Formation	CPl	*Bryozoan-rich mudstone, fossiliferous siltstone, sandstone, granite-rich, quartz-bearing, polymictic conglomerate, and subordinate crinoid-rich limestone*

EARLY CARBONIFEROUS

Rockhampton Group	Cr	*Dark grey mudstone and siltstone; felsic volcaniclastic sandstone; ooid-bearing sandstone; ooid-bearing conglomerate with dark grey mudstone rip-up clasts; rounded polymictic conglomerate, oolitic limestone*
	Cr$_l$	*Oolitic limestone, calcareous sandstone*

LATE DEVONIAN - EARLY CARBONIFEROUS

Balaclava Formation	DCb	*Rhyolitic volcaniclastic sandstone and conglomerate, minor ignimbrite, rare rhyolite, siltstone and oolitic limestone*
Mount Alma Formation	DCa	*Thinly interbedded fine-grained sandstone and siltstone and thick beds of conglomerate with andesitic to dacitic volcanic clasts and siltstone rip-up-clasts*

DEVONIAN

Mount Hoopbound Formation	Dh	*Granule to boulder andesitic to dacitic volcaniclastic breccia and conglomerate, locally fossiliferous lithic to feldspatholithic sandstone, porphyritic andesite,lapilli and ash tuff, ignimbrite, rare limestone and hyaloclastite*
	Dh$_l$	*Fossiliferous limestone*
	Dh$_s$	*Fossiliferous calcareous sandstone, minor limestone*
	Dir	*Intrusive rhyolite and dacite*
Mount Morgan Trondhjemite	Dgmo$_x$	*Brecciated trondhjemite*
	Dgmo$_r$	*Altered grey medium-grained locally porphyritic hornblende trondhjemite*
	Dgmo$_t$	*Grey medium-grained leucocratic biotite-hornblende tonalite*
	Dgmo$_d$	*Grey medium-grained hornblende diorite, quartz diorite, gabbro; moderate to high magnetic domain*
Capella Creek Group: Raspberry Creek Formation	Dcr	*Predominantly basaltic to andesitic (rarely dacitic and rhyolitic) volcaniclastic sandstone and conglomerate, minor silicified siltstone and fossiliferous limestone ; rare andesite lava*
	Dcr$_l$	*Fossiliferous limestone*
Capella Creek Group: Mount Warner Volcanics	Dcw	*Predominantly rhyolitic volcaniclastic sandstone and conglomerate, limestone, rhyolite, jasper*
	Dcw$_l$	*Fossiliferous limestone*
	Dcw$_j$	*Jasper*
	Dcw$_q$	*Silicic alteration zone including gold-copper ore body*
Hanging Wall sequence	Dcw$_h$	*Rhyolitic volcaniclastic sandstone and conglomerate*
Banded mineralised sequence	Dcw$_b$	*Bedded jasper, rhyolitic volcaniclastic sandstone*
Crenulated cherty lavas	Dcw$_r$	*Silicified flow-banded rhyolite*
Footwall sequence	Dcw$_f$	*Andesitic volcaniclastic sandstone, conglomerate and breccia*
Capella Creek Group: Mount Dick beds	Dcd	*Siltstone with minor rhyolitic volcaniclastic sandstone*
	Dcd$_j$	*Jasper*

MAGNETIC INTERPRETATION

Magnetic interpretation is shown in magenta using standard geological linestyles. Areas labelled in magenta indicate the extent of mapped units, or anomalies associated with concealed magnetic units, interpreted from aerial magnetic data. Areas labelled 'Hfls' indicate high magnetic domains interpreted as zones of hornfels adjacent to intrusions.

Boundary of main depocentre of Biloela Basin

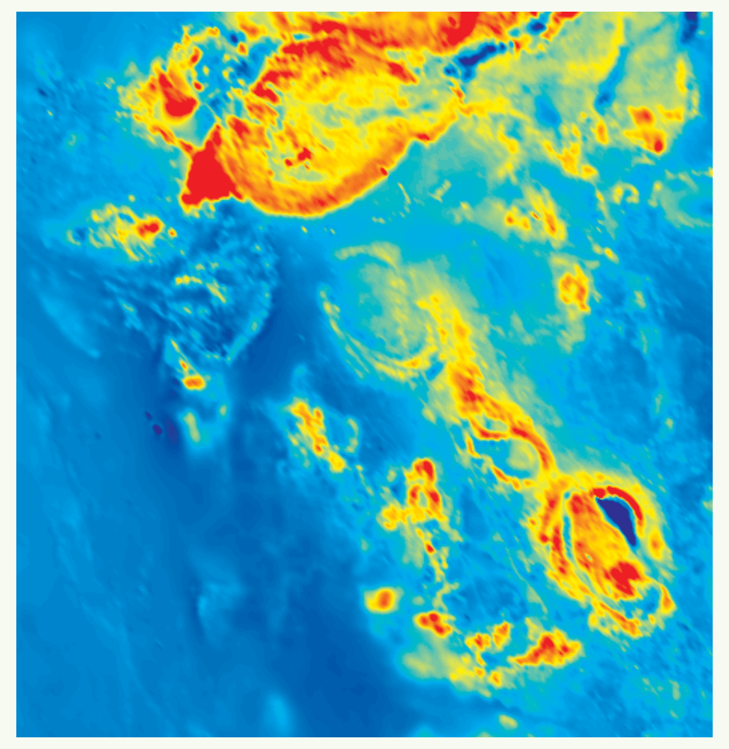
RADIOMETRIC IMAGE

Red-green-blue ternary (potassium-thorium-uranium)

The radiometric image shows the relative concentrations of the radioactive elements potassium, thorium and uranium in the topmost 20-30 cm of the Earth's surface, as measured by an airborne detector that records gamma radiation. The data are displayed as a composite coloured image, with potassium in red, thorium in green and uranium in blue. Rock units with different contents of these elements are clearly outlined by their different colours. Those with relatively high contents of all three elements appear white in the image, like the Back Creek Group in the west; those with low contents (and water bodies) are dark, like the Rookwood Volcanics in the north-west

MAGNETIC IMAGE

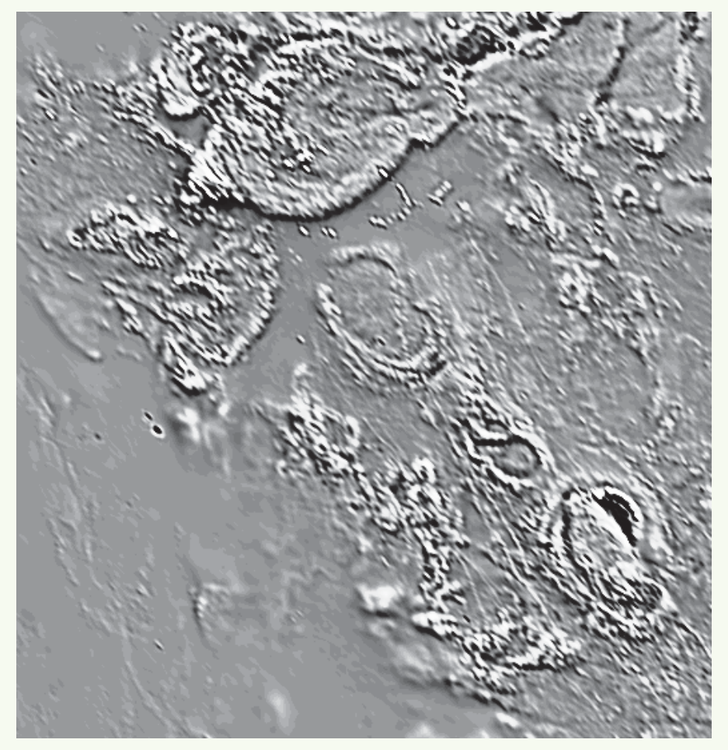
Total magnetic intensity - reduced to pole



The total magnetic intensity image shows variations in the Earth's magnetic field caused by differences in the magnetic properties of rock units in the upper crust. The magnetic response of rocks is directly related to the content of magnetic minerals, and is depicted by means of a rainbow colour scale from red (strongly magnetic like the Bucknalla Gabbro in the north-west), through yellow (moderately magnetic like the Umbrella Granodiorite in the north), to blue (weakly to non-magnetic like the Back Creek Group in the west). Dark blue to black areas represent rocks that have an ancient component of remnant magnetisation produced when the polarity of the Earth's magnetic field was opposite to that at present, like the main outcrop of the Eulogie Park Gabbro in the south-east

MAGNETIC IMAGE

First vertical derivative - reduced to pole



The first vertical derivative of the total magnetic intensity data enhances short-wavelength magnetic features relative to those with long wavelengths. This image emphasises the high gradients around the edges of magnetic bodies, and in particular highlights narrow linear magnetic features such as dykes. Variations in magnetic response are indicated by shades of grey, with the strongest magnetic units shown in white. Black areas are either reversely magnetised rock units like the main outcrop of the Eulogie Park Gabbro in the south-east, or a "shadow" effect adjacent to highly magnetic features.

Images generated from airborne geophysical data available from the Department of Natural Resources, Mines and Water, Brisbane

FIELD OBSERVATION POINTS

GEOLOGICAL SYMBOLS

- *Geological boundary*
- *Fault*
- *Thrust fault, triangle towards hanging wall*
- *Dyke or vein*
  - ad - *andesite,* bs - *basalt,* da - *dacite,* dr - *diorite,* gb - *gabbro,* gd - *granodiorite,* mdr - *microdiorite,* mgr - *microgranite,* mmz - *micromonzonite,*
- *Anticline*
- *Syncline*

Where location of boundaries, faults and folds is approximate, line is broken; where inferred queried; where concealed, boundaries and folds are dotted, faults are shown by short dashes

- *Strike and dip of strata*
- *Strike and dip of overturned strata*
- *Strike and dip of strata, younging unknown*
- *Strike and dip of strata, dip 5° to 15°*
- *Trend line*
- *Trend line showing dip*
- *Trend line showing angle of dip 5°-15°*
- *Lineament*

Airphoto interpretation

- *Strike and dip of foliation*
- *Strike and dip of foliation and plunge of mineral elongation*
- *Strike and dip of foliation, first deformation episode*
- *Strike and dip of foliation, first deformation episode and plunge of mineral elongation*
- *Strike and dip of foliation, second deformation episode*
- *Strike and dip of foliation, second deformation episode and plunge of mineral elongation*
- *Strike and dip of cleavage*
- *Strike and dip of cleavage and plunge of mineral elongation*
- *Strike and dip of platy alignment*
- *Macrofossil locality*
- *Conodont locality*
- *Plant fossil locality*

ISOTOPIC AGES

$\frac{364 \pm 7\ (\text{hb})}{\text{K-Ar}}$

Isotopic age in millions of years

U-Pb - *uranium-lead method*
K-Ar - *potassium-argon method*
Ar/Ar - *argon/argon method*
bi - *biotite,* hb *-hornblende,* mu - *muscovite,*
pl - *plagioclase,* wr - *whole rock,* zr - *zircon*

Results of age determinations are shown on the map face except for the following closely spaced sites which are shown only by number:

1	$\frac{264 \pm 5\ (\text{bi})}{\text{K-Ar}}$
2	$\frac{251 \pm 5\ (\text{bi}),\ 250 \pm 8\ (\text{hb})}{\text{K-Ar}}$
3	$\frac{257 \pm 5,\ 258 \pm 5\ (\text{bi})}{\text{K-Ar}}$
4	$\frac{242 \pm 5\ (\text{bi})}{\text{K-Ar}}$
5	$\frac{364 \pm 7\ (\text{hb})}{\text{K-Ar}}$
6	$\frac{372 \pm 7\ (\text{hb})}{\text{K-Ar}}$
7	$\frac{367 \pm 7\ (\text{hb})}{\text{K-Ar}}$
8	$\frac{377 \pm 7\ (\text{hb})}{\text{K-Ar}}$, $\frac{372 \cdot 1 \pm 1\ (\text{hb})}{\text{Ar/Ar}}$
9	$\frac{375 \pm 22,\ 369 \pm 20\ (\text{hb})}{\text{Ar/Ar}}$
10	$\frac{365 \pm 7\ (\text{hb})}{\text{K-Ar}}$

Published by the Department of Natural Resources, Mines and Water, Queensland
Issued under the authority of the Minister for Natural Resources, Mines and Water, Queensland

INDEX TO 1:100 000 MAPS

1:250 000 maps shown in blue

COOROORAH 8651	STRATH-CONAN 8751	ROOKWOOD 8851	RIDGELANDS 8951	ROCK-HAMPTON 9051	CAPE CAPRICORN 9151
COMET 8650	DINGO 8750	DUARINGA 8850	MOUNT MORGAN 8950	BAJOOL 9050	GLADSTONE 9150
ROLLESTON 8649	WOORA-BINDA 8749	BARALABA 8849	BANANA 8949	BILOELA 9049	CALLIOPE 9149
WARRINILLA 8648	BAUHINIA 8748	MOURA 8848	THEODORE 8948	SCORIA 9048	MONTO 9148

DUARINGA SF 55-16; ROCKHAMPTON SF 56-13; BARALABA SG 55-4; MONTO SG 56-1

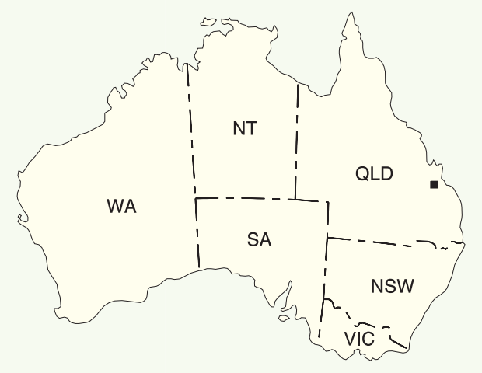
148°30′ 23°00′ – 151°30′ 23°00′; 148°30′ 25°00′ – 151°30′ 25°00′

Queensland Government
Natural Resources, Mines and Water

SCALE 1:100 000

1 0 1 2 3 4 5 6 7 8 9 10
KILOMETRES

GREY NUMBERED LINES ARE 1 000 METRE INTERVALS OF THE MAP GRID OF AUSTRALIA 1994, ZONE 56
TRANSVERSE MERCATOR PROJECTION
HORIZONTAL DATUM: GEOCENTRIC DATUM OF AUSTRALIA 1994 (GDA94)

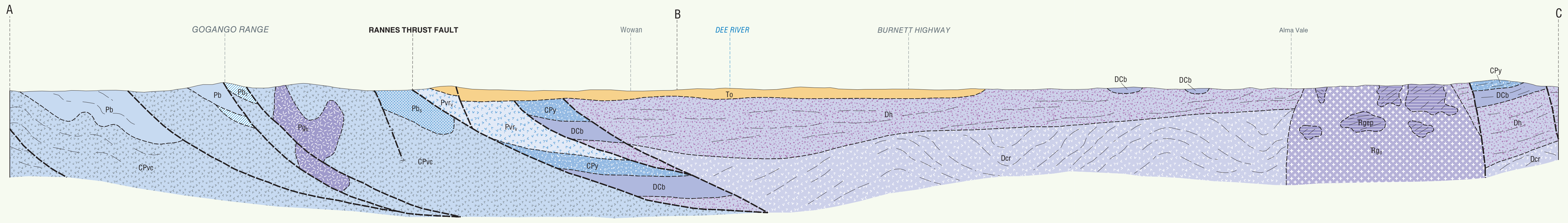


Geology : 1962 by B.W.Hawkins and I.G.Whitcher (Consolidated Zinc Pty. Ltd.)
: 1965-66 by A.G.Kirkegaard, C.G.Murray (GSQ), R.D.Shaw (BMR)
: 1971-91 by Geopeko (A.Taube and others)
: 1977 by N.J.Krosch and J.R.Kay
: 1994-97 by P.R.Blake, M.A.Hayward, R.E. Randall, I.W.Withnall, C.G.Murray, R.M.Barker, J.Domagala, A.D.Robertson and B.G.Fordham
Mineral occurrence mapping: 1997 by D.A.Morwood
Compiled by P.R.Blake, M.A.Hayward, C.G.Murray and I.W.Withnall
Cartography by Graphic Services Unit, GSQ, Natural Resource Sciences, Department of Natural Resources, Mines and Water

GDA

SCHEMATIC SECTION

Quaternary units omitted



MOUNT MORGAN
SHEET 8950
FIRST EDITION 2001
REVISED MARCH 2006

Copies of this map may be obtained from the Department of Natural Resources, Mines and Water, Brisbane