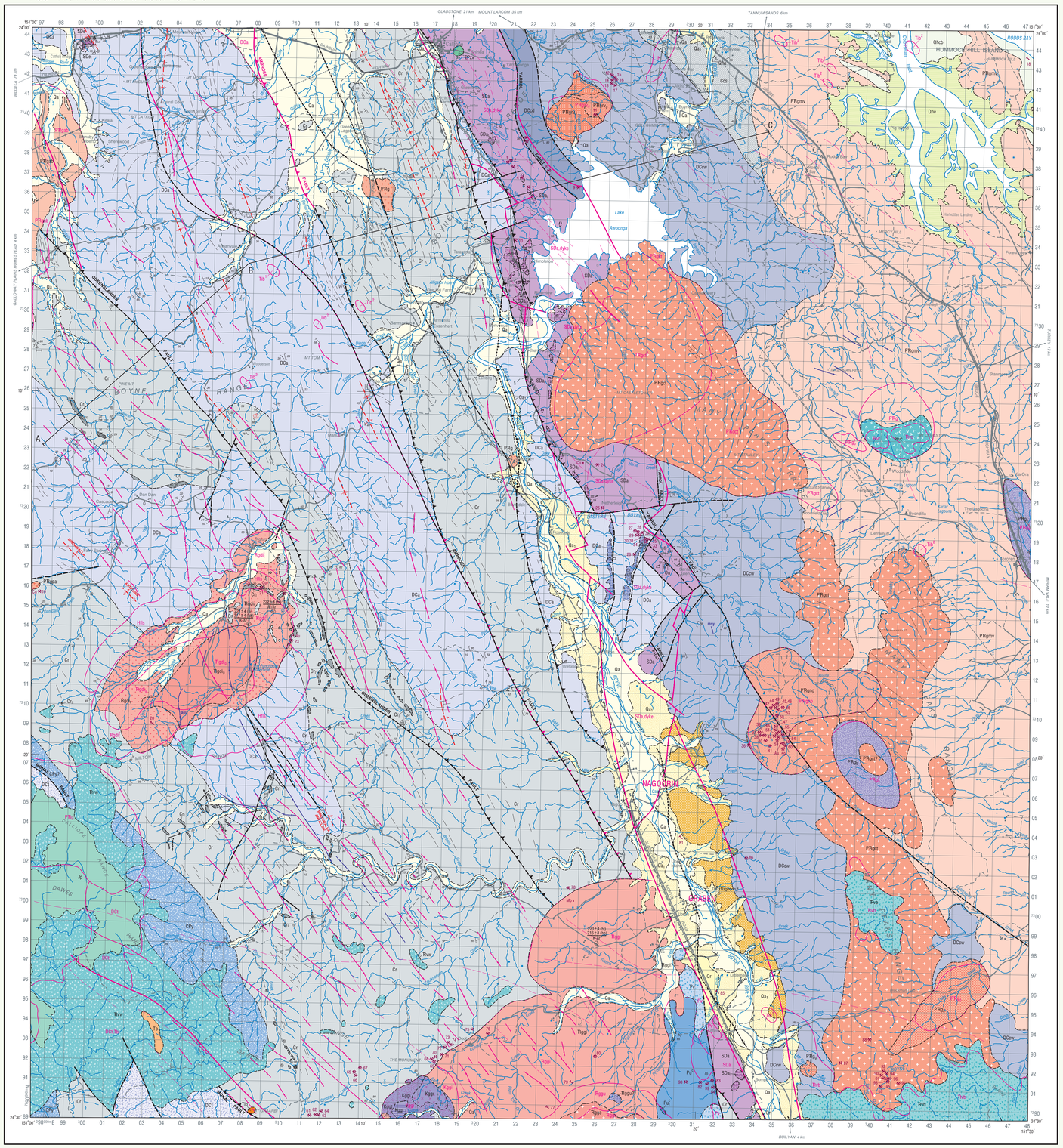
CALLIOPE

QUEENSLAND

AUSTRALIA 1:100 000 GEOLOGICAL SERIES

SHEET 9149



QUATERNARY

- Qha — *Clay, silt, sand, gravel; active stream channel and low terraces*
- Qhe — *Mud, sandy mud, muddy sand and minor gravel; estuarine channels and banks and supratidal flats and coastal grasslands*
- Qhcb — *Sand, some gravel; beach ridges, cheniers*
- Qa$_5$ — *Clay, silt, sand, gravel; intermediate terraces of Boyne River flood plain alluvium*
- Qa — *Clay, silt, sand, gravel; flood plain alluvium*
- Qr — *Clay, silt, sand, gravel and soil; colluvial and residual deposits*

TERTIARY

- Tb — *Basalt*
- Tlb — *Basalt plug*
- Tlb — *Basalt plug; Tlb^1 - high magnetic domain; Tlb^2 - very low magnetic domain (reversely magnetised)*
- Nagoorlin beds — Tn — *Mudstone, siltstone, oil shale, sandstone, shale, conglomerate*

CRETACEOUS

Glasshouse Igneous Complex:
- Tolibar Breccia — Kggt — *Coarse breccia, clasts dominantly altered granitoid*
- Judas Trachybasalt — Kggl — *Grey, porphyritic biotite-hornblende-augite trachybasalt cut by porphyritic syenite dykes*
- Radley Nepheline Syenite — Kggr^1 — *Grey, melanite-ferrohastingsite-aegirine nepheline syenite, leplocmelane-ferrohastingsite-sodalite nepheline syenite, lepidomelane-nepheline-ferrohastingsite-melanite sodalite syenite*
- Ridler Monzonite — Kggi — *Pale grey, leucocratic biotite-augite-hornblende syenite, biotite-hornblende quartz monzonite, hornblende-biotite-augite gabbro and monzogabbro; high to very high magnetic domain*

JURASSIC

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

TRIASSIC

- Diglum Granodiorite — Rgdq$_1$ — *Pinkish grey, medium-grained, biotite-hornblende granodiorite with granophyric groundmass; moderate magnetic domain*
- Rgdq — *Grey, medium-grained, biotite-hornblende granodiorite, tonalite and quartz diorite; Rgdq^1 - very high magnetic domain; Rgdq^2 - low magnetic domain*

Glasshouse Igneous Complex:
- Robert Granite — Rggo — *Pink, fine to medium-grained, hornblende granite and quartz monzonite with granophyric groundmass and miarolitic cavities; arfvedsonite granite; low to moderate magnetic domain*
- Rule Gabbro — Rggu — *Grey, medium-grained, ophitic biotite-olivine-augite gabbro, augite dolerite; very high magnetic domain*
- Littlemore Granodiorite — Rggl — *Pinkish grey to grey, medium to coarse-grained, biotite-hornblende granodiorite and quartz monzodiorite; moderate magnetic domain*
- Winterbourne Volcanics — Rvb — *Olivine basalt, pyroxene andesite, pebbly volcaniclastic sandstone; moderate magnetic domain*
- Coulston Volcanics — Rvw — *Rhyolite, trachyte, ignimbrite, rhyolitic breccia, tuff, minor basalt*
- Rvc — *Aphyric to porphyritic dacite, locally flow banded and autobrecciated; welded crystal poor ignimbrite; moderate to high magnetic domain*

PERMIAN - TRIASSIC

- PTg — *Granite, granodiorite, diorite*
- PTg — *Granite, granodiorite, diorite; moderate to high magnetic domain*
- PTg$_2$ — *Granite, granodiorite; moderate magnetic domain*
- PTg$_3$ — *Gabbro, diorite; PTg$_3^1$ - moderate magnetic domain; PTg$_3^2$ - very low magnetic domain (reversely magnetised)*

Gulliways Plains Igneous Complex:
- Boccoilma Granodiorite — PTgab — *Deeply weathered, grey, medium-grained, biotite-hornblende granodiorite; moderate magnetic domain*
- Norton Tonalite — PTgno — *Pale grey, medium-grained, leucocratic hornblende-biotite tonalite; low to moderate magnetic domain*
- Castletower Granite — PTgct — *Leucocratic hornblende-biotite granite; PTgct^1 - low to moderate magnetic domain; PTgct^2 - low magnetic domain*
- Miriam Vale Granodiorite — PTgmv — *Hornblende quartz diorite, hornblende-biotite tonalite, biotite-hornblende granodiorite, local olivine-hornblende-augite gabbro, hornblende-biotite granite*
- Pack Granite — PTgpa — *Pink, medium-grained, leucocratic muscovite-biotite granite*
- Riverston Granodiorite — PTgrv$_2$ — *Grey, porphyritic biotite granodiorite to diorite; moderate to high magnetic domain*
- PTgrv$_1$ — *Altered and fractured microgranite and porphyritic rhyolite, breccia*

PERMIAN

- Youlambie Conglomerate — P$_2$ — *Quartzofeldspathic and volcanolithic sandstone, dark fossiliferous mudstone, siltstone, amygdaloidal basalt, limestone*
- P$_1$ — *Limestone, calcsilicates*
- Rockhampton Group — Py — *Porphyritic olivine basalt, altered amygdaloidal basalt and andesite; high magnetic domain*

LATE CARBONIFEROUS - EARLY PERMIAN

- 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, minor coal*

EARLY CARBONIFEROUS

- Curtis Island Group: Cr — *Dark grey mudstone and siltstone; felsic volcaniclastic sandstone; oolid-bearing sandstone; oolid-bearing conglomerate with dark grey mudstone rip-up clasts; rounded polymictic conglomerate, oolitic limestone*
- Cr$_1$ — *Oolitic limestone, calcareous sandstone*
- Ccs — *Quartzose sandstone, mudstone; local quartz-muscovite-biotite-schist*

LATE DEVONIAN - EARLY CARBONIFEROUS

- Wandilla Formation — DCcw — *Mudstone, lithic sandstone, siltstone, jasper, chert, slate and schist*
- Doonside Formation — DCcd — *Chert, jasper, mudstone, siltstone, lithic sandstone, tuff, limestone and altered basalt*
- 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; low to moderate magnetic domain*
- DCa$_1$ — *Fossiliferous limestone*
- Three Moon Conglomerate — DCt — *Green-grey to purple, granule to cobble, andesitic to basaltic polymictic conglomerate, lithofeldspathic to feldspathollithic sandstone, siltstone, mudstone and andesite; minor acid tuff and fossiliferous limestone; rare basaltic pillow lava and hyaloclastite; moderate magnetic domain*

LATE SILURIAN - EARLY DEVONIAN

- Calliope beds — SDs — *Basaltic to andesitic (rarely dacitic and rhyolitic) volcaniclastic sandstone and conglomerate, limestone, siltstone, andesite; moderate to high magnetic domain*
- SDs$_1$ — *Fossiliferous limestone, marble*
- Erebus Beds — SDe — *Dacitic to rhyolitic volcaniclastic sandstone and conglomerate, minor siltstone fossiliferous limestone and marble*
- SDe$_1$ — *Fossiliferous limestone, marble*

ORDOVICIAN

- Ou — *Limestone, some andesitic volcaniclastic granule to pebble conglomerate*

NEOPROTEROZOIC OR PALAEOZOIC

- EPzs — *Serpentinite (tectonically emplaced in Permian - Triassic)*

- H — *Unidentified magnetic high*

GEOLOGICAL SYMBOLS

- Geological boundary
- Fault
- Thrust fault, triangles pointing in direction of fault dip
- spl — Dyke or vein; spl - aplite, msy - microsyenite
- 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
- Small scale folds
- Strike and dip of strata
- Vertical strata
- Strike and dip of overturned strata
- Trend line, showing dip (Airphoto Interpretation)
- Lineament (Airphoto Interpretation)
- Joint pattern (Airphoto Interpretation)
- Strike and dip of cleavage
- Vertical cleavage
- Strike and dip of second generation cleavage and plunge of lineation
- Vertical platy alignment
- Macrofossil locality
- Condonant locality
- Plant fossil locality
- 1914 ± 58 Ar/Ar — Isotopic age in millions of years; K-Ar - potassium-argon method; Ar/Ar - argon/argon method; bt - biotite, hb - hornblende

TOPOGRAPHICAL AND CULTURAL FEATURES

- Highway
- Secondary road
- Minor road
- Vehicle track
- Railway; station
- Transmission line
- Rockfield — Homestead
- Building
- Yard
- Tank or small dam
- Waterhole
- Windpump

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 'Hfs' indicate high magnetic domains interpreted as zones of hornfels adjacent to intrusions.

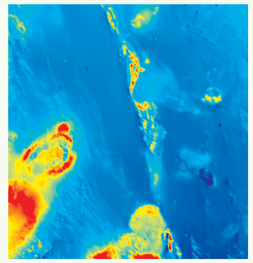
RADIOMETRIC IMAGE

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 Castletower Granite in the east; those with low contents (and water bodies) are dark, like the Calliope beds in the centre.

MAGNETIC IMAGE

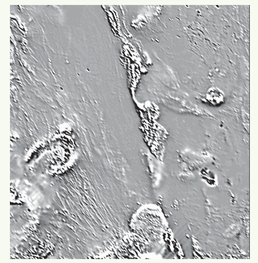
Total magnetic intensity - reduced to pole



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 Ridler Monzonite in the south), through yellow (moderately magnetic like the Littlemore Granodiorite in the south), to blue (weakly to non-magnetic like the Rockhampton Group in the centre). 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 unnamed gabbro east of Nagoorin.

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 unnamed gabbro east of Nagoorin, or a "shadow" effect adjacent to highly magnetic features.

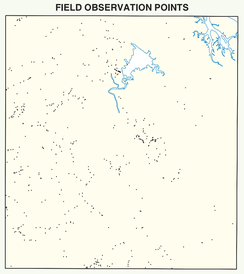
Images generated from airborne geophysical data available from the Department of Natural Resources, Mines and Water, Brisbane

INDEX TO MINES AND PROSPECTS

	CALLIOPE GOLDFIELD GROUP				NORTON GOLDFIELD GROUP		
1	Nuggety Gully	Au	208378	51	Frampton	Au	349090
2	Alexandra	Au	208379	52	Advance	Au	349103
3	---	Au	210376	53	Old	Au	349087
4	New Zealand Gully	Au	215370	54	Hans Big Reef	Au	350088
5	Connemarra	Au	217391	55	Chandler	Au	350091
6	John Bull	Au	217389	56	Spotted Gum	Au	352103
7	---	Au	218366	57	Sailor Boy	Au	352089
8	Mitchell	Au	229374	58	Sulphide	Au	352084
9	Woody	Au	244366	59	Paddock	Au	352083
10	Taragoola	Ls	212339	60	Smarts	Au	353084
11	Riverston	Au	252403		MONAL GOLDFIELD GROUP		
12	---	Au	260423	61	---	Au	115892
13	---	Au	260419	62	United Rise	Au	118893
14	---	Au	260421	63	---	Au	119893
15	---	Au	261422	64	Lady Griffiths	Au	120895
16	---	Au	261421	65	Mount Forrest	Au	137915
17	Blackhellow Gully	Au	261418	66	---	Au	139913
18	Hummock Hill Island	Im,R,Zr	471435	67	Patriot	Au	140917
19	Lightning Ridge	Cu	974157		MOUNT HECTOR GROUP		
20	Boonoo Creek Prospect	Cu,Mo	032090	68	---	Cu,Au	177922
21	Diglum Prospect	Cu,Ag,Au,Wl	086160	69	Monument	Cu,Au	177921
22	Ajax	Cu,Au	098157	70	Goodys P.C.	Cu,Au	178923
23	Springlands Prospect	Wl,Au,Ag,Cu	102133	71	Goodys No. 2, 3, 4	Cu,Au	181924
24	Uncle Sam	Cu,Au	256225	72	Fitzjohn	Cu,Au	183928
25	Netherleigh	Cu	259204	73	---	Cu,Au	185930
	EASTERN BOYNE GOLDFIELD GROUP			74	Welshs	Cu,Au	186929
26	The Federal Block	Au	275180	75	Johnsons	Cu	197938
27	Western True Blue	Au	276191	76	Grave Spur Prospect	Wl	205935
28	---	Au	277191	77	Plumtree Creek Anomaly	Cu	236898
29	---	Au	277190	78	Six Mile Gold Mine	Au	244010
30	The Ada Reef	Au	278190	79	McGraths Anomaly	Cu	248911
31	True Blue	Au	278190	80	Littlemore Scheelite	W,Cu	259925
32	Mountain Maid	Au	278190	81	Nagoorlin	Ol	301037
33	Chandlers Gully	Au	281186		RANDS POTHOLE GROUP		
34	Mount Lee	Au	281188	82	---	Pb,Ag	313912
35	The Golden Spur	Au	282188	83	---	Ag,Au,Pb	319913
	NORTON GOLDFIELD GROUP			84	Rands Pothole	Pb,Au	319910
36	Dents	Au	335084	85	Nagoorlin South	Ol	321958
37	Galena	Au,Ag	340091	86	Ubobo Creek	Sb	335026
38	Brigham Young	Au	342089		MOUNT JACOB GROUP		
39	United Rise	Au	342089	87	Mount Rands	Au	384923
40	New Constitution	Au	343086	88	Jacobs Knob	Au	399935
41	Welcome	Au	346084	89	Sleeping Beauty	Au	405912
42	Carmichaels Gully	Au	346103	90	---	Au	406917
43	All Nations	Au,Ag	348089	91	Gordon	Au	407916
44	The Emu	Au	348104	92	Rogers	Au	407919
45	Marodian	Au	348103	93	Mount Agnes	Au	407916
46	Mahogany	Au	348103	94	---	Au	407919
47	Never Never	Au	348094	95	Standby	Au	408915
48	Little Wonder	Au,Go	348092	96	Mount Fairbrother	Au	409915
49	Calcite	Au	349104	97	Ruhes Claim	Au	414913
50	Bald Hills	Au	349099	98	---	Ag	305911
				99	---	Pb	317912

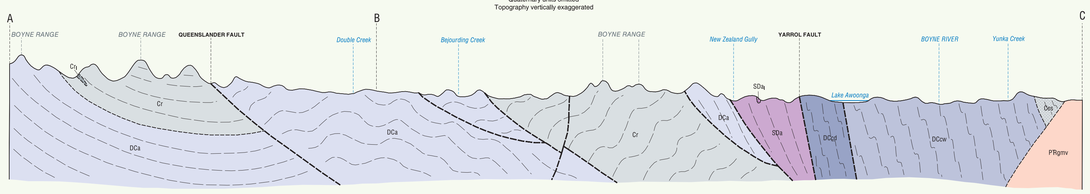
The grid reference is a six figure abbreviated MGA94 coordinate to the nearest 100 metres

FIELD OBSERVATION POINTS



SCHEMATIC SECTION

Quaternary units omitted
Topography vertically exaggerated



MINING SYMBOLS

- Mine
- Mine, abandoned
- Prospect
- Prospect, abandoned
- Au — Mineral occurrence
- GRE Nagoorlin 1 — Petroleum exploration well

Ag - silver, Au - gold, Cu - copper, Fe - iron, Gp - gypsum, Im - ilmenite, Ls - limestone, Mo - molybdenum, Ol - oil shale, Pb - lead, R - rutile, Sb - antimony, W - tungsten, Wl - wollastonite, Zr - zircon

INDEX TO 1:100 000 MAPS

1:250 000 maps shown in blue

	ROSEDALE 8951	CAPE CLIFFORD 9051	HERON ISLAND 9151	HERON ISLAND
	MOUNT MORGAN 8952	BALNAGOWAN 9052	CALLIOPE 9152	SF 56-14 HERON ISLAND 9050
	BANANA 8943	BILOELA 9044	CALLIOPE 9144	MONTO 9240
	THEODORE 8946	COOROY 9046	MONTO 9146	ROSEDALE 9246

SG 56-03 COOROY 9047 | SG 56-02 MONTO 9247

Published by the Department of Natural Resources, Mines and Water, Queensland
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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: 1962-64 by J.F.Dear, R.G.McKellar and R.M.Tucker
: 1995-97 by P.R.Blake, G.A.Simpson, C.G.Murray and A.D,Robertson
: 2000 by R.L.Buthtuthe
Mineral occurrence mapping: 1997 by D.A.Morwood
Compiled by P.R.Blake, G.A.Simpson, C.G.Murray, A.D.Robertson, M.A.Hayward, S.B.S.Crouch and R.K.J.Bight
Cartography by Graphic Services Unit, GSQ, Natural Resource Sciences, Department of Natural Resources, Mines and Water

GDA

CALLIOPE

SHEET 9149
FIRST EDITION 2001
REVISED MARCH 2006

9 311662 146397

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