GEOLOGICAL SURVEY OF VICTORIA

1:50 000 Geological Map Series

CAMPBELLTOWN

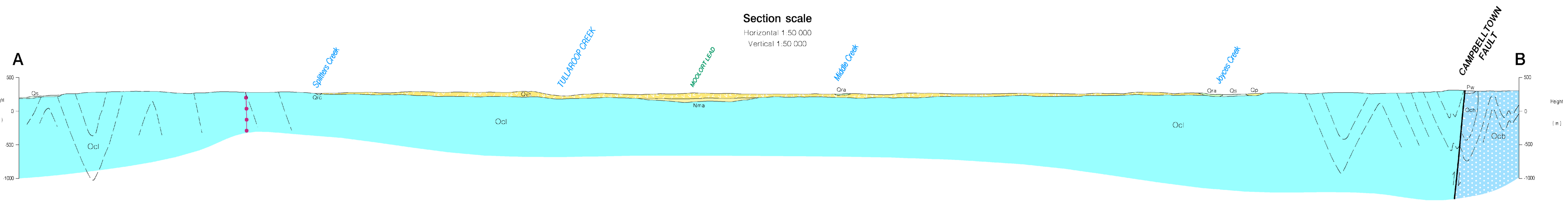
7623 -1 ZONE 54

Edition 1

Section scale

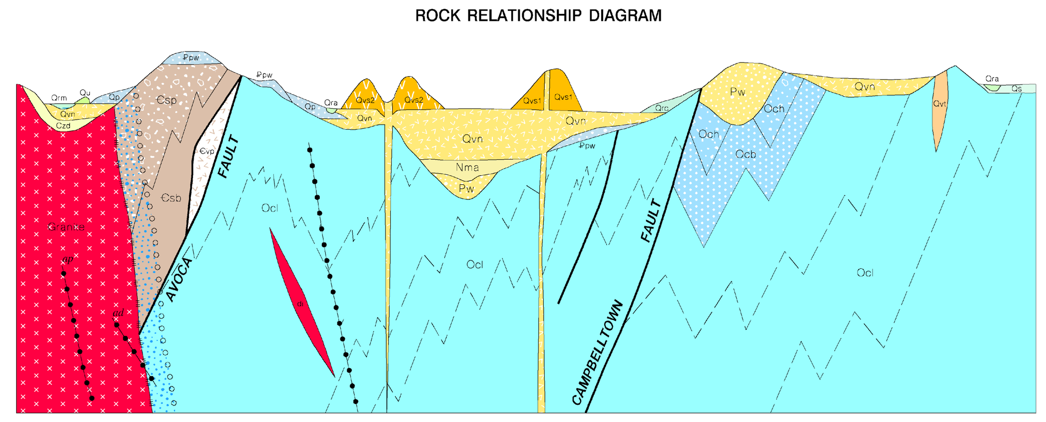
Horizontal 1:50 000

Vertical 1:50 000

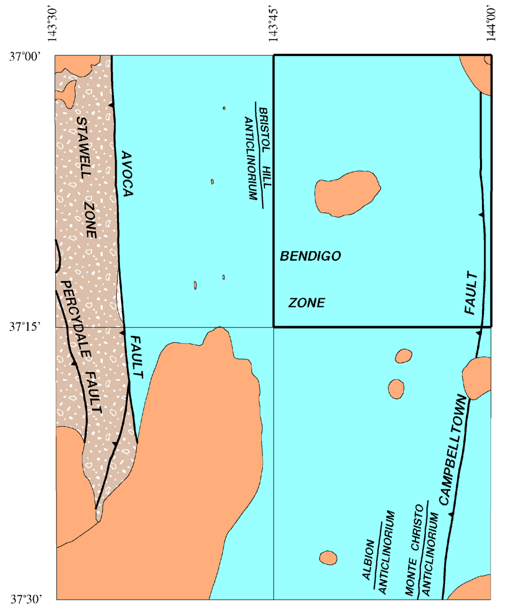


TRAVERSE MAP

ROCK RELATIONSHIP DIAGRAM



MAIN STRUCTURAL FEATURES OF PALAEOZOIC ROCKS



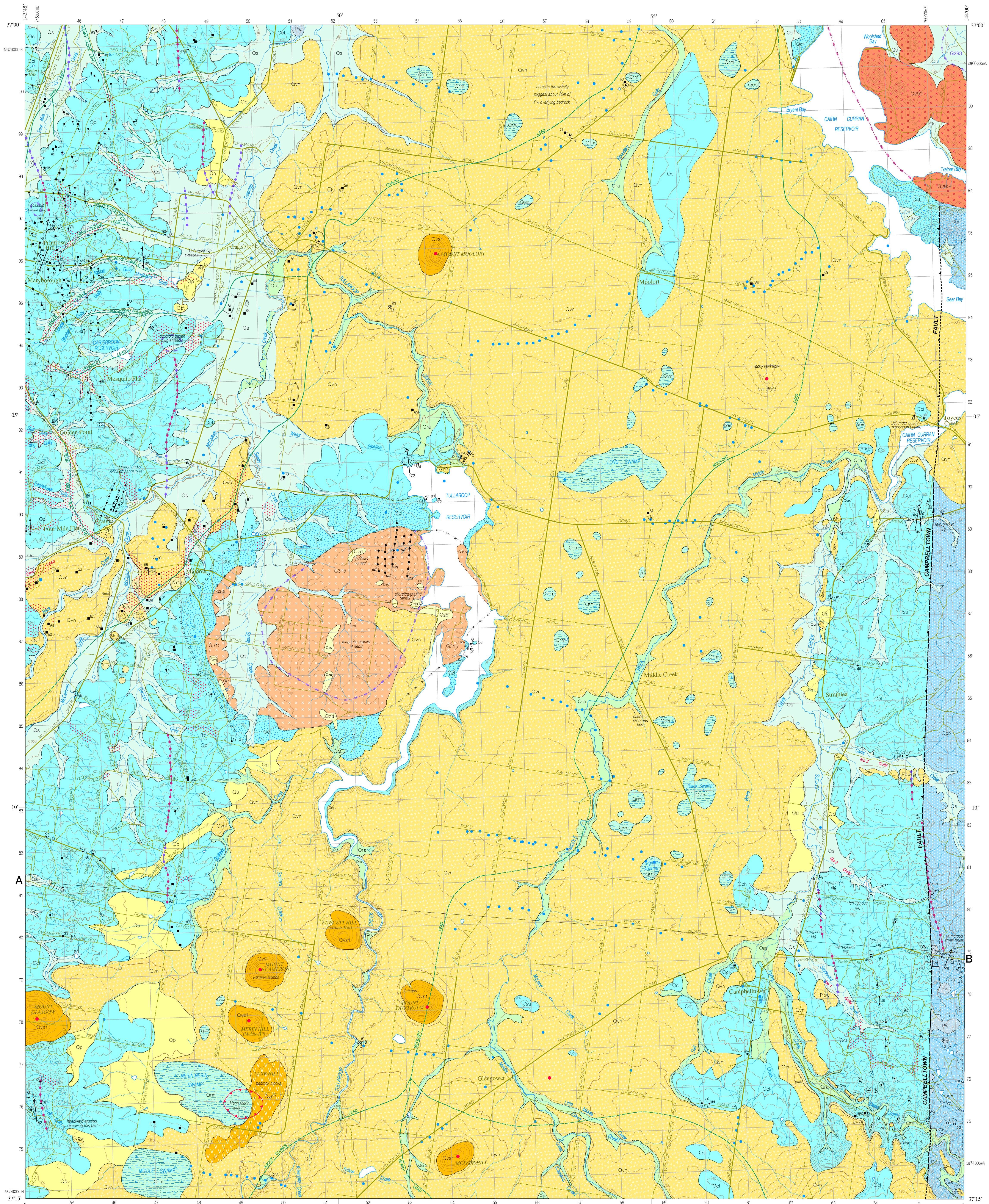
Devonian intrusions | Castlemaine Group | St Arnaud Group | Pitfield Volcanics

SCALE 1:50 000

metres 1000 500 0 1 2 3 4 5 kilometres

Horizontal datum: Australian Geodetic Datum (1966).
Transverse Mercator Projection: Australian Map Grid - Zone 54.
Grid interval: 1000 metres.
Vertical datum: Australian Height Datum (1971).
Contour interval: 10 metres.

Magnetic North is 10° 54′ east of Grid North at the centre of this map.
Magnetic North is correct for 2000 and increases annually at a rate of approximately 0° 1′ east of Grid North.
Grid convergence is 0° 12′ 37″ at the centre of this map.



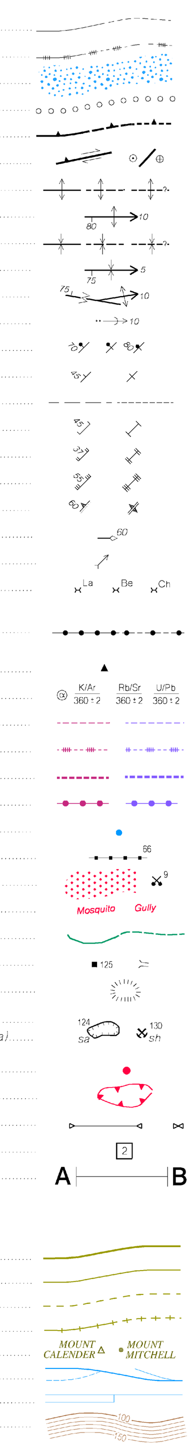
SYMBOL LEGEND

Geology

- Geological boundary, position accurate/approximate
- Intrusive contact, position accurate/approximate/inferred
- Zone of hornfels
- Limit of contact metamorphism
- Thrust fault, position accurate/approximate/concealed, with dip
- Fault, oblique thrust, in plan/ in section, out of page/into page
- Anticline, position accurate/approximate/inferred
- Anticline with plunge of hinge and dip of axial surface
- Syncline, position accurate/approximate/inferred
- Syncline with plunge of hinge and dip of axial surface
- Multiple folds with bedding form surface around steeply inclined hinges
- Minor late overprinting folds with plunge
- Bedding, strike and dip with younging, inclined/vertical/overturned
- Bedding, strike and dip, younging unknown, inclined/vertical
- Trend of strike ridges in bedrock/joints in granite, from aerial photographs
- Cleavage strike and dip, inclined/vertical
- Crenulation cleavage strike and dip, inclined/vertical
- Late crenulation cleavage, inclined/vertical
- Schistosity strike and dip, inclined/vertical
- Quartz slickenside lineation with plunge
- Younging direction (cross-section only)
- Graptolite fossil locality with biostratigraphic zone, Lancefieldian / Bendigonian / Chewtonian
- Dykes, accurate/approximate, lamprophyre(la), mafic(m), andesite-dacite(ad), monzodiorite-diorite(di), quartz feldspar porphyry(qp), feldspar quartz porphyry(qf)
- Mullock of Cambrian greenschist (Ꞓvp) / Permian glacial (Pw)/ granite by G-number (G354)/ monzodiorite-diorite (di) on mine dump
- Radiometric age in millions of years; K/Ar, Rb/Sr, U/Pb
- Geological boundary, interpreted from geophysics, position at surface/concealed
- Intrusive contact, interpreted from geophysics, position at surface/concealed
- Fault, interpreted from geophysics, position at surface/concealed
- Normally magnetised dyke, interpreted from geophysics, position at surface/concealed
- Bore, location from Minerals and Petroleum Victoria borehole database
- Worked auriferous quartz reefs, with reference number
- Shallow gold workings (diggings, sluicing, dredging); extent known/extent unknown
- Names shown in red are taken from old mining plans
- Alluvial deep leads (subsurface), position accurate/approximate
- Mine shaft, with reference number; adit
- Mullock heap
- Quarry, with reference number, and extracted commodity; shale (sh) / diatomite (dt) / basalt (b) / scoria (sc) / sandstone (ss) / granite (gr) / feldspar (fd) / silica (si) / kaolinite (ka) / slate (sl) / sand (sa)
- Eruption point in Newer Volcanics
- Volcanic crater
- Type section
- Excursion site
- Cross-section line

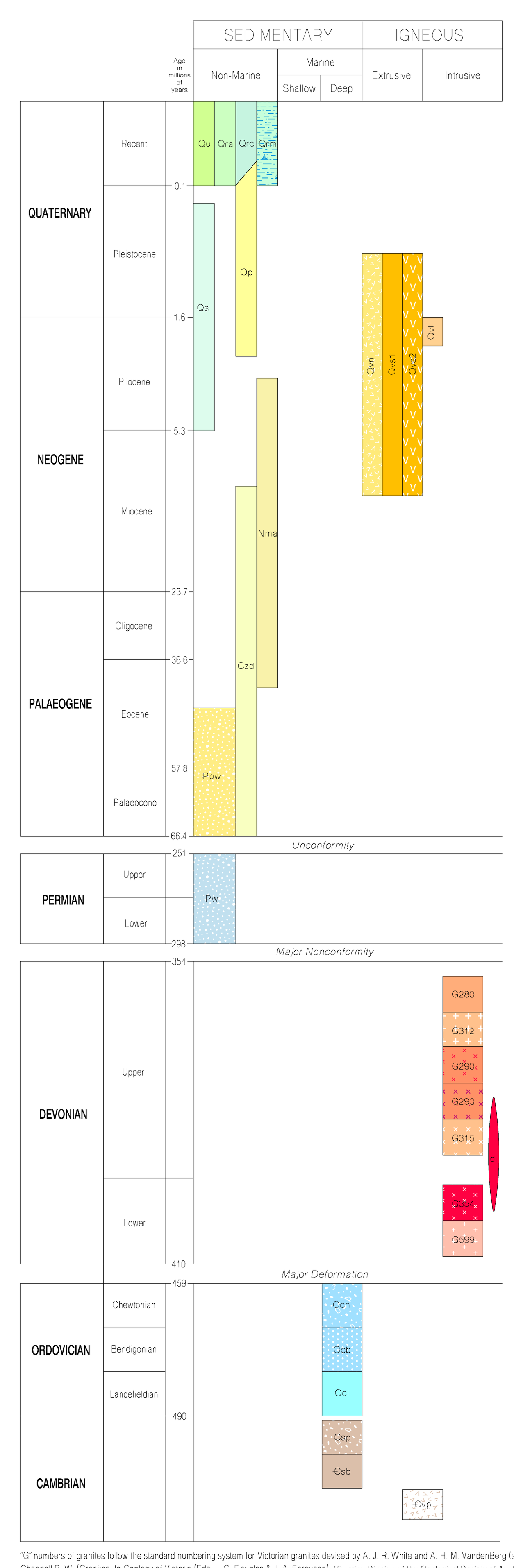
Topography

- Main road
- Other road
- Track
- Railway track; operating, dismantled
- Trig station, peak
- Watercourse
- Channel, drain
- Contours (10 metre interval)



	Name	Commodity	Easting	Northing	VicMine
	Orogenic gold				
1	Alexandra		745150	5892800	366369
2	Amy Castles		745100	5899700	366280
3	Amy Johnson		747700	5882850	366522
4	Bluchers		746100	5894500	366283
5	Britannia		746000	5892200	366599
6	Cambrian		745950	5892850	366371
7	Cemetery		745400	5894800	366319
8	Cleopatra		746250	5893100	366368
9	Colemans Donkey		746000	5897400	366294
10	Columbian		744700	5880500	366615
11	Earls		744600	5896750	366297
12	Edwards Chance		748640	5885620	367203
13	Eldorado		744700	5897600	366819
14	Elizabeth		745100	5895950	366317
15	Ellis		745600	5895150	366320
16	Finches		747600	5886200	366619
17	Flagstaff		746100	5895850	366298
18	Frederick		745300	5896800	366299
19	Harry Lauder		764350	5877350	367207
20	Imperial		745900	5894300	366302
21	Ironstone		746500	5890000	366594
22	Jackson		764200	5878300	367211
23	Jones		764300	5876900	367208
24	Keilors		744850	5900100	366593
25	Koochadooh		746150	5895520	366328
26	Liberty		746000	5895050	366598
27	Lone Star		745100	5892150	366596
28	Long Gully		744400	5889630	373418
29	Lucky Chance		745100	5892100	366597
30	MacLallans		745600	5896700	366316
31	"McKew P.J. MIN 4856"		747230	5899180	366888
32	Mosquito		745500	5893450	366601
33	Mount Glasgow		745000	5880000	366614
34	Native Youth		744750	5896600	366307
35	New Telegraph		745150	5897550	366334
36	New Years		745000	5881100	366616
37	Pale Brandy		745400	5894900	366323
38	"Pearson S.W. MIN 4572"		746980	5894930	366892
39	Pigeon		746200	5895620	366321
40	Prince Alfred		749100	5884510	367202
41	Princess Royal		745500	5893300	366602
42	Schicer		746000	5895450	366329
43	Specimen		745900	5894301	366315
44	Splitters		745300	5896900	366292
45	Stockyard		764250	5877900	367209
46	Sydenham		745000	5881900	366617
47	Sydney		746800	5891700	366606
48	Telegraph		745400	5897550	366291
49	United Kingdom		745100	5898150	366333
50	White Hills		746400	5901350	366327
51	Whitehorse		745500	5892600	366624
	Placer gold				
52	Black Swan		746800	5887350	366259
53	Britannia		745550	5888600	366211
54	Carisbrook United		749900	5895300	366269
55	Chalks Freehold		750800	5892520	366220
56	Chalks Junction		750780	5895800	366222
57	Chalks No. 1		750850	5894770	366221
58	Chalks No. 3 Consolidated		751400	5896450	366223
59	Chalks No. 3 Consolidated		752100	5897500	366224
60	Charlotte Plains Consolidated		758850	5899800	366226
61	Dan O'Connel		749350	5894550	366266
62	Duke of Edinburgh		745800	5887500	366248
63	East Kong Meng		750520	5890700	366218
64	Forbes Freehold		744850	5887400	366241
65	Fox		746100	5887250	366246
66	Gibralta		747200	5888650	366252
67	Goldbrook		749500	5895000	366263
68	Joint Stock		746780	5888900	366215
69	Keystone		763400	5895100	366228
70	Kong Meng No. 1		749350	5890100	366216
71	Kong Meng No. 2		749550	5891000	366264
72	Maiden Hill		746600	5887650	366247
73	Manchester		747500	5888500	366250
74	Morning Star		748600	5889600	366254
75	Napier Freehold		749650	5891600	366219
76	New Era		748250	5888800	366251
77	New Havilah		757400	5898650	366225
78	Old Era		747820	5889300	366255
79	Peg Legs Lead		746440	5900820	366858
80	Perseverance		744800	5887200	366242
81	Phoenix		749350	5894700	366265
82	Reliance		749650	5890200	366217
83	South Kong Meng		747650	5889600	366253
84	Sunburst		747500	5887900	366245
85	Union Bank		747200	5887900	366249
86	Victorian Gold Estates No. 1		761700	5894950	366227
87	Victorian Gold Estates No. 2		759100	5889600	366229
88	Woolbrook		749700	5894600	366268
89	Young Chalks		753600	5892200	366261
	Residual gold				
90	"Clacher J. MIN 4638"		750800	5892400	366883
	Industrial minerals	**Commodity**			
91	Glengower	di	751900	5877300	366860
92	"Palmer B. WA 379"	sa	747490	5894320	366880
93	Waterfall Quarries WA 485	b	753140	5894640	366878

STRATIGRAPHIC LEGEND



Unit		Symbol	Description
		Qu*	*Aeolian deposits: lunettes flanking eastern side of swamps; well sorted sand and clay*
		Qrm	*Swamp deposits: associated with disrupted drainage; silt, clay and sand; massive or laminated, moderately sorted*
		Qrc	*Colluvial deposits: common around hill bases and in gullies (only shown where extensive); polymictic gravel, sand, silt and clay; poorly sorted, angular to sub-rounded, stratified; laminated or massive*
		Qra	*Flood plain deposits: overbank, point bar and channel lag sediments; active meandering drainage systems with minor terraces; polymictic gravel, sand silt and clay; variably sorted and rounded, stratified, laminated or massive*
	Shepparton Formation	Qs	*Dissected flood plain alluvium: red to pale cream mottled sandy clay and fine to coarse sand; includes lenticular gravel channel beds; well to poorly sorted, unconsolidated*
		Qp	*Dissected colluvial, alluvial and swamp deposits: occurs in the headwaters of streams disrupted by Newer Volcanics; gravel, sand, silt and clay, containing clasts of sandstone, slate and vein quartz from bedrock or granite sand from granite; generally poorly sorted and subangular; moderately to well consolidated, ferruginised in part*
NEWER VOLCANICS		Qvn	*Localised sheet flow basalts: flows partly confined in palaeovalleys; dominantly tholeiite to mildly alkalic olivine basalt; youngest flows have stony surfaces*
NEWER VOLCANICS		Qvt*	*Volcanic plug: fine grained trachyte, anorthoclase phenocrysts; poorly exposed, mainly creamy white weathered float*
NEWER VOLCANICS		Qvs1	*Fire fountain deposits: near-vent accumulations of basaltic pyroclastic ash, lapilli and bombs forming prominent cones; highly vesicular, partly welded, massive to layered; occasional blocks of country host rock*
NEWER VOLCANICS		Qvs2	*Phreatomagmatic pyroclastics: tuff ring deposits around maars; basaltic ash and blocks, and blocks of the underlying country host rock up to metres in size, poorly to moderately sorted, angular, well developed base surge cross bedding*
		Czd	*Strongly indurated surficial material; includes pisolitic ferricrete, ferricreted sand and gravel and minor silcreted granite sands*
	Calivil Formation	Nma	*Pre-basaltic overbank, point bar and channel lag deposits, also known as deep leads; mostly subsurface, often richly auriferous; predominantly gravels of sub-rounded to rounded vein quartz up to boulder size, minor bedrock clasts, ironstone fragments and White Hills Gravel clasts; stratified, laminated or massive; ferruginised where exposed*
	White Hills Gravel	Ppw	*Alluvial braid-plain, outwash fan and colluvial deposits; well rounded pebbles and cobbles of vein quartz, lesser more angular vein quartz and bedrock clasts; moderately to well sorted, massive to crudely stratified, occasionally channelled; variably ferruginised, silicified or kaolinised, auriferous in parts*
	Wild Duck Formation	Pw	*Glacial deposits: tillite; silty diamictite, diffusely stratified; exotic clasts of pink and grey granite, intermediate volcanics, ignimbrite, chert, pink gneiss, metasediments; pebbles commonly striated; poorly sorted, well rounded, unconsolidated*
MOUNT EGERTON SUITE	Mount Egerton Granodiorite	G280*	*Biotite granodiorite: fine to coarse grained, occasionally feldspar porphyritic, pale grey; mafic microgranular enclaves and mineral clots; subsurface in map area; nonmagnetic reduced I-type*
BECKWORTH SUITE	Ercildoun Granite	G312*	*Biotite granite: medium grained; commonly porphyritic in quartz, plagioclase and K-feldspar; leucocratic; nonmagnetic reduced I-type*
HARCOURT SUITE	Harcourt Granodiorite	G290	*Biotite granodiorite: medium grained; equigranular to weakly porphyritic in plagioclase, quartz and K-feldspar; numerous enclaves; nonmagnetic reduced I-type*
HARCOURT SUITE	Baringhup Granodiorite	G293*	*Biotite granodiorite: fine to medium grained, slightly porphyritic, leucocratic, minor mafic enclaves; subsurface in map area; magnetic oxidised I-type*
HARCOURT SUITE	Tullaroop Granodiorite	G315	*Biotite ± hornblende granodiorite: medium grained, equigranular to weakly porphyritic in plagioclase, quartz and K-feldspar; non magnetic phase at surface intruded by a magnetic phase at depth, nonmagnetic phase is a reduced to oxidised I-type*
		di*	*Altered quartz monzonite to quartz diorite dykes: medium grained, equigranular, some weakly porphyritic in hornblende; variable plagioclase, alkali feldspar, quartz ± biotite, augite; magnetic*
MOUNT COLE SUITE	Natte Yallock Granite	G354*	*Biotite-hornblende tonalite: medium grained; equigranular; magnetic oxidised I-type; includes enclave-rich hornblende biotite orthopyroxene quartz diorite; only in subsurface, described from mullock*
MOUNT COLE SUITE	Black Bottom pluton	G599*	*Subsurface only; highly magnetic, low gravity response*
CASTLEMAINE GROUP		Och, Ocb, Ocl	*Deep marine deposits: metasandstone, grey and black slate: dominantly sand-rich turbidite facies, moderately to well sorted, variably rounded quartz with minor feldspar and lithic grains in quartz silt or clay matrix; medium to very thick bedded; sparsley fossiliferous with graptolites; slightly weathered to partly kaolinised*
ST ARNAUD GROUP	Pyrenees Formation	Ꞓsp*	*Deep marine deposits: metasandstone and slate; dominantly sand-rich turbidite facies; moderately to well sorted, variably rounded quartz with minor feldspar and lithic grains in quartz silt or clay matrix; medium to thick bedded, sporadic development of carbonate spotting in slate, unfossiliferous, kaolinised in part*
ST ARNAUD GROUP	Beaufort Formation	Ꞓsb*	*Deep marine deposits: metasandstone, slate and black slate; sand-poor turbidite facies; kaolinised in part*
PITFIELD VOLCANICS		Ꞓvp*	*Greenschist: regionally metamorphosed basaltic lavas and minor dykes or sills, and mafic volcaniclastic sediments; occurs in fault slices along the Avoca Fault; only in subsurface*

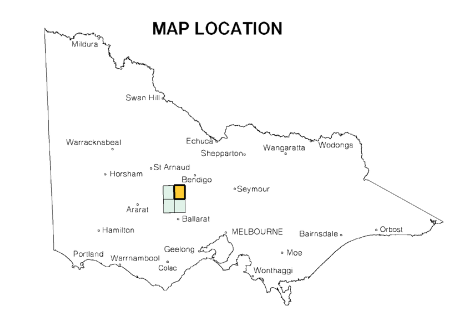
"G" numbers of granites follow the standard numbering system for Victorian granites devised by A. J. R. White and A. H. M. VandenBerg (see White A. J. R. & Chappell B. W. (Granites, In:Geology of Victoria (Eds. J. G. Douglas & J. A. Ferguson), Victorian Division of the Geological Society of Australia Inc., pp 438-439), 1988). Ages of Period and Epoch boundaries are from G. C. Young and J. R. Laurie (1996): *An Australian Phanerozoic Timescale*, Oxford University Press, Melbourne, and A. H. M. VandenBerg (1999): *Geological Survey of Victoria Palaeozoic Timescale*, The Australian Geologist, No. 110, p. 44-45.

* Units not shown on this map

INDEX TO ADJOINING MAPS

REDBANK 7523-2	DUNOLLY 7623-2	LAANECOORIE 7723-3
MARYBOROUGH 7623-4	CAMPBELLTOWN 7623-1	CASTLEMAINE 7723-4
WAUBRA 7623-3	CRESWICK 7623-2	DAYLESFORD 7723-3

MAP LOCATION



WARNING! - DATUM

Incorrect description or usage of datums can cause errors. This affects the use of maps, map co-ordinates and spatial data.

What you should do:

- Always check carefully and specify explicitly the datums of all data, maps and map references that you use, supply and/or receive.
- If you are unsure or unaware about datums then immediately seek and use expert assistance.
- Note in particular that wrong use of GDA94 and AGD66 datums can in Victoria displace positions by about 200m to the NE or SW, or both.

Further information:
http://anzlic.org.au/geodesy/datums/datums.htm

EXCURSION SITES

No.	Description	AMG
20	Majorca. Majorca deep lead workings and Gibraltar mine poppet head. (Qvn, Nma)	747200 5888700
21	Road cutting, Creswick-Newstead Road. Campbelltown Fault with glacial sediments in footwall. (Ocl, Pw)	765380 5879900

1:50 000 Geological Map Series

CAMPBELLTOWN

7623-1 ZONE 54

Edition 1
October 2000

RESPONSIBILITIES AND ACKNOWLEDGEMENTS

Geological mapping (1997-1998): K.E. Wohlt & B.A. Simons
Geological compilation: K.E. Wohlt, D.H. Taylor & A.P.M. Magart
Geophysical interpretation: B.A. Simons
Mine site verification: S. Maher & P. Sapurmas

Published mapping: Brown (1870); Dunn (1907); Gregory (1903a,b); Howitt (1913a); Hunter (1899a); Murray (1885); Brown (1868); Taylor and Murray (1883)

Thesis mapping: Egan (1981); Carmichael (1986);

Manager Geological Mapping: P.J. O'Shea
Manager Geological Survey: P. S. Roberts

Cartography:
Project cartography, data capture, GIS processing and publishing process: K. Dodd and T .M. Beer, LICS Pty Ltd

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WOHLT, K.E. & SIMONS, B.A., 2000. *Campbelltown 1:50 000 geological map.* Geological Survey of Victoria.

Associated products:

TAYLOR, D.H., WOHLT, K.E., SIMONS, B.A., MAHER, S., MORAND, V.J. & SAPURMAS, P., 2000. Creswick 1:100 000 map area geological report. *Geological Survey of Victoria Report* **117**

TAYLOR, D.H. & SIMONS, B.A., 2000. *Waubra 1:50 000 geological map.* Geological Survey of Victoria.

TAYLOR, D.H., 2000. *Creswick 1:50 000 geological map.* Geological Survey of Victoria.

WOHLT, K.E., TAYLOR, D.H., SIMONS, B.A. & MAGART, A.P.M., 2000 *Maryborough 1:50 000 geological map.* Geological Survey of Victoria.

SIMONS, B.A., 2000. *Creswick 1:100 000 map geological interpretation of geophysical features.* Geological Survey of Victoria.