



# Tasmanian Geological Survey Record 2000/01



## **A field excursion guide to the Wilmot and Cethana map sheets**

*by M. P. McClenaghan, D. C. Green, R. S. Bottrill and J. Taheri*

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## Introduction

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The Wilmot and Cethana 1:25 000 scale digital geological maps overlap in their western parts with the Mt Read Volcanics Project (MRVP) Map 9 (Pemberton and Vicary, 1989) and the geology from that map has been incorporated into the new maps with only minimal change. The mapping of the Wilmot and Cethana sheets was carried out with the aim of continuing to unravel the stratigraphy and structure of the prospective Cambrian volcanic sequence to the east of the area covered by the Mt Read Volcanics Project mapping. Equal attention was paid to the overlying Cambro-Ordovician siliciclastic sediments, as their stratigraphy and structure provides clues to the subcrop characteristics of the underlying Cambrian volcanic rocks.

Mapping was started in 1993 and, after a pause, was resumed in 1997 and completed in 1998. It was carried out using 1:10 000 scale contoured base maps and aerial photography.

The Fossey Mountains peaks of Mt Claude (1034 m), Mount Vandyke (1084 m) and Mt Roland (1233 m) topographically dominate the southern part of the area. These mountains are composed of siliciclastic Cambro-Ordovician conglomerate. Sub-alpine vegetation grows above 1000 m, giving way to thick eucalypt-tea tree scrub on the slopes and rainforest in the valleys at lower levels.

Extensive plains of Tertiary basalt occur in the north and southwest of the area. The steep gorges incised through Tertiary basalt by the Wilmot River gorge and Forth River valley (now filled by the artificial Lake Cethana and Lake Barrington) expose Cambrian sedimentary and volcanic rocks, Ordovician Moina sandstone and Gordon limestone, and Devonian granite.

Most of the area is well served with sealed and unmetalled roads but access to the southern slopes of the Fossey Mountains is difficult, and that part has received less attention than the rest of the area.

The area is covered by the Sheffield (Jennings *et al.*, 1959) and Middlesex (Jennings and Burns, 1958) 1:63,360 scale Geological Survey maps. Explanatory notes on the sheets are provided in Jennings (1979) and Jennings (1963). Detailed geological investigations in the Round Mount district in the south of the area are described in Jennings (1958). The southwestern part of the area is covered by Mt Read Volcanics Project 1:25 000 scale mapping (Pemberton and Vicary, 1989).

The Cethana area is highly mineralised with about 100 known mines and prospects, mostly for Au, Sn-W-Bi, and/or Pb-Ag, but also fluorite and other commodities. Deposit types are complex, but include Devonian granite-related veins, disseminations, replacement and shear-hosted deposits in skarn, sandstone and greisen, and probable Cambrian mineralisation in the Mt Read Volcanics. The mineralisation is summarised by Collins (1979).

The locations of the specific areas described are shown in Figure 1.

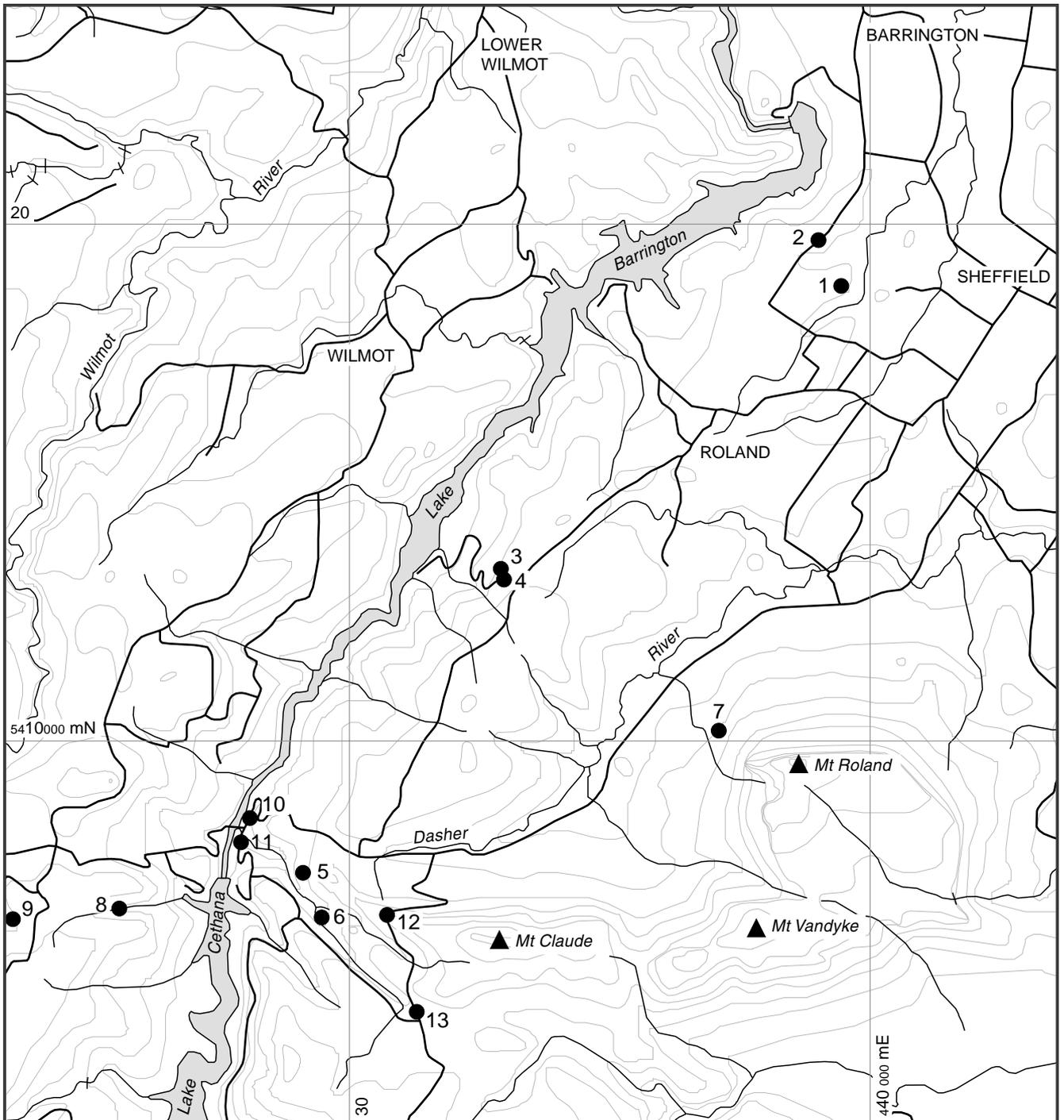
## 1. Barrington Chert

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### *Shackley Hill Quarry* (439 300 mE, 5 418 800 mN)

Pale to dark grey, faintly banded to massive or brecciated chert (Cbcw) is the oldest rock unit exposed in the Wilmot-Cethana area. This unit occurs in the extreme northeast of the area where it is best exposed in the large quarry at Shackley Hill (439 300 mE, 5 418 800 mN).

The Cbcw unit belongs to the Barrington Chert formation, described by Jennings (1979), which has its type locality between 436 900 mE, 5 421 300 mN and 437 500 mE, 5 422 100 mN near the Devils Gate Dam at the northern end of Lake Barrington and a short distance outside the Wilmot map. In that area the formation is about 1000 metres thick, but the base is not exposed. Jennings (1979) reported that the chert grades conformably upwards through argillaceous chert to greywacke and siltstone containing beds of chert pebble conglomerate, which were named by him as the



**Figure 1**  
*Location of areas discussed in text*

Gog Range Greywacke equivalent to siltstone, sandstone and conglomerate of the Cgg unit on the Wilmot sheet.

Saito *et al.* (1988) showed that the chert consists of spicules, fine spines and radiolarian-like remains in a matrix of silica derived from solution of these microfossils. Jennings (1979) reported that radiolaria had been found in a chert boulder in the River Forth downstream from Barrington and presumably derived from the chert unit. Saito *et al.* (1988) assigned a Cambrian age to the chert.

Fresh outcrop of the chert in the quarry at Shackley Hill shows pale and dark grey banding. Disseminated pyrite is widespread, with sparse pyrite-rich nodules up to 20 mm. Minor amounts of chalcantite ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) occurs on joint surfaces in some parts of the quarry. This mineral may have been derived from chalcopyrite, which Paterson (1959) recorded on joints in chert in the area of the Devils Gate Dam. Where weathered, the rock is white and chalky or pale grey. In natural outcrops south of the quarry (at 439 300 mE, 5 418 800 mN) the rock has brecciation textures and consists of rounded pebbles and angular, finely banded fragments cemented by cherty material.

## 2. Gog Range Greywacke

### Roadside outcrops at Nowhere Else (438 550 mE, 5 419 370 mN)

A sequence of greywacke, siltstone and conglomerate occurs in the northern part of the Wilmot map and was named the Gog Range Greywacke by Jennings (1979), who reported that it conformably overlay the Barrington Chert (unit Cbcw). Jennings (1979) considered the sequence to be at least 600 metres thick.

Best exposures on the Wilmot sheet occur on the shores of Lake Barrington north of Kentish Park (434 800 mE, 5 418 800 mN) and in roadside cuttings at Nowhere Else (438 700 mE, 5 419 500 mN). In the field the rock is a pale green/grey or pale brown poorly sorted sandstone with interbeds of finely banded siltstone and mudstone. The sandstone frequently shows grading. Very coarse sandstone with pebble conglomerate horizons occurs in a number of areas, such as west of Roland at 435 300 mE, 5 415 600 mN. Coarse sandstone with pebble conglomerate horizons can also be seen in roadside outcrops at this location.

A number of minor volcanoclastic units containing quartz and feldspar occur near the top of the sequence in the Wilmot Valley and near Nietta (e.g. 426 350 mE, 5 418 800 mN). The volcanic rocks include vitric tuff, quartz and quartz-feldspar phyric rhyolite and rare plagioclase phyric dacite (Cgrd). Clastic sediments in this area vary from shale, through sandstone often containing volcanic clasts, to pebble conglomerate containing angular chips of shale, chert and volcanic clasts.

Near Lake Barrington the sequence passes up into a prominent cobble conglomerate unit containing quartzite and chert clasts (Cvtcc), and south of Roland it is overlain by a distinctive (in thin section) volcanoclastic sandstone (Cvtpc) containing plagioclase, quartz, clinopyroxene and magnetite with rare lithic clasts of lava and quartzite.

A single closely-spaced steep cleavage trending slightly east of north is generally evident in the sandstone and siltstone in the area between Roland and Nowhere Else (fig. 2a).

In the Kentish Park area the cleavage is axial planar to an outcrop scale fold at 434 760 mE, 5 418 710 mN. A

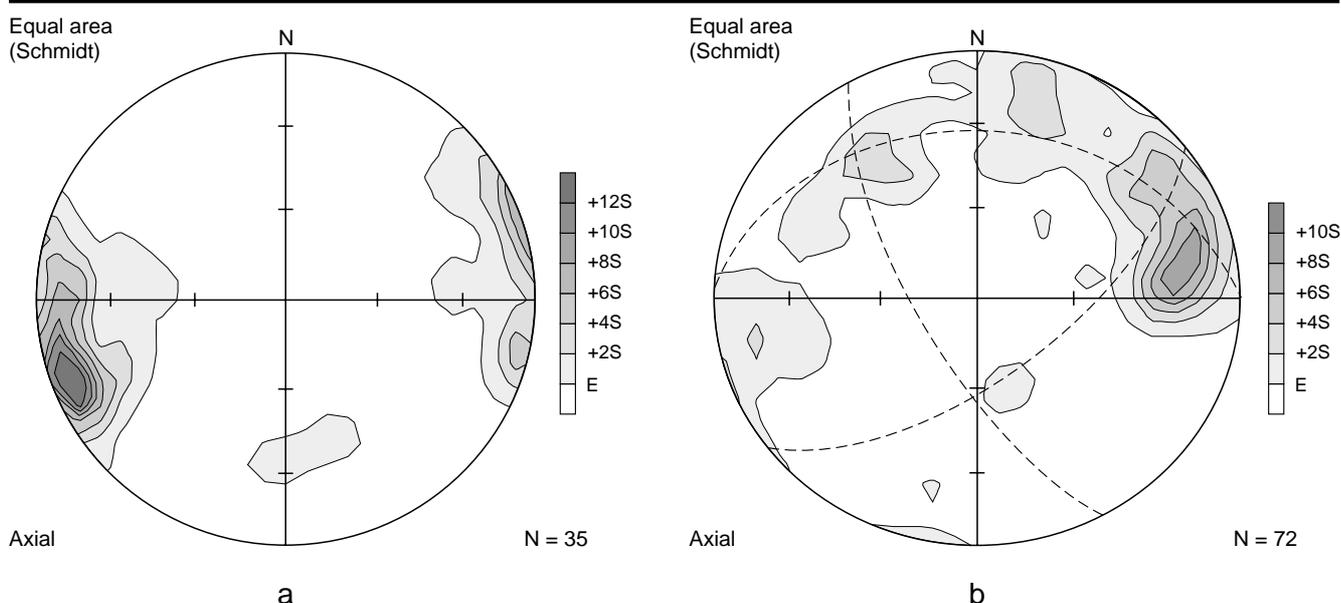


Figure 2

A contoured plot of poles to cleavage (a) in the area between Roland and Nowhere Else and bedding (b) in the area between Kentish Park and Nowhere Else in the Gog Range Greywacke.

polar plot of bedding readings (fig. 2b) from the area between Kentish Park and Nowhere Else shows a poorly defined girdle consistent with folds trending in a similar direction to the cleavage and plunging steeply south.

Further south, in the area between Lake Barrington and Roland, the major rock unit distribution suggests a major WSW-plunging fold. A plot of bedding readings (fig. 3) from this area is consistent with folding with that attitude.

In a quarry near Roland (at 435 900 mE, 5 414 800 mN) a crenulation cleavage is developed with a similar attitude to the cleavage in the area between Roland and Nowhere Else (fig. 2a). This suggests that the dominant cleavage in the latter area is a later cleavage, and that the earlier cleavage is patchily developed and has not been recognised in all areas.

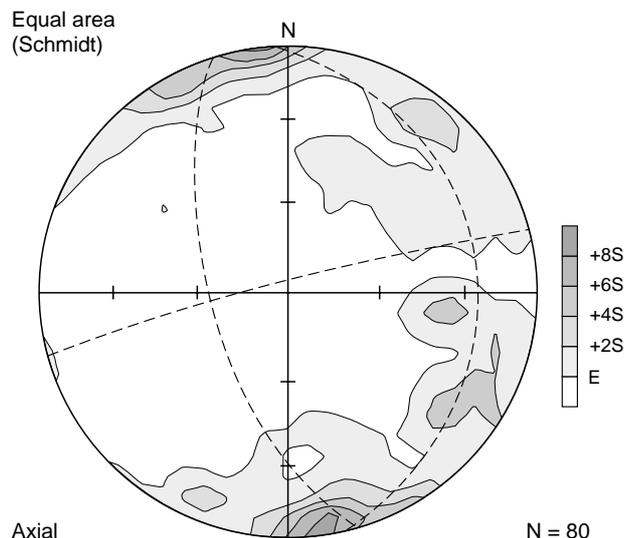
It seems probable that the major early folds in this area trended in a WSW direction and were associated with poor cleavage development. A later folding event, with stronger cleavage development, followed with a trend slightly west of north.

### 3. Andesite (Beulah Formation?)

#### *Billet Creek Nature Walk* (432 370 mE, 5 413 390 mN)

A substantial area of plagioclase and clinopyroxene phyric andesite and andesitic breccia (Cvtab) occurs north of the Dasher River, and extends west to and across Lake Barrington. The Sheffield 1:63,360 scale geological map (Jennings *et al.*, 1959) included this area in the Beulah Formation but did not map its full extent. A knob-like outcrop of this rock type occurs near the nature trail at 432 600 mE, 5 413 400 mE.

In the area south of Roland the andesite unit is separated from the underlying Gog Range Greywacke by a unit of plagioclase, quartz, clinopyroxene and magnetite crystal-rich and minor lithic volcanoclastic



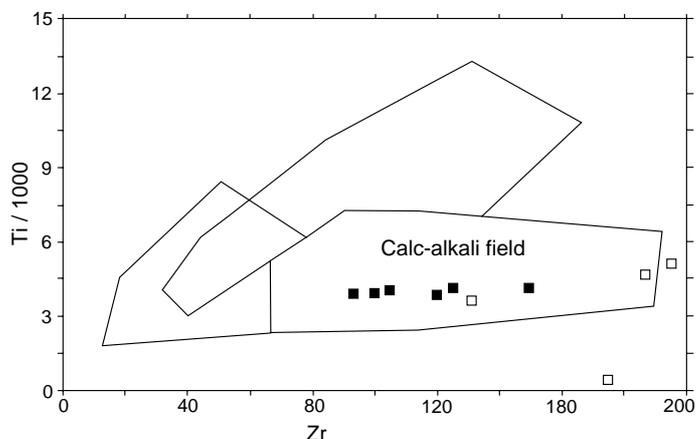
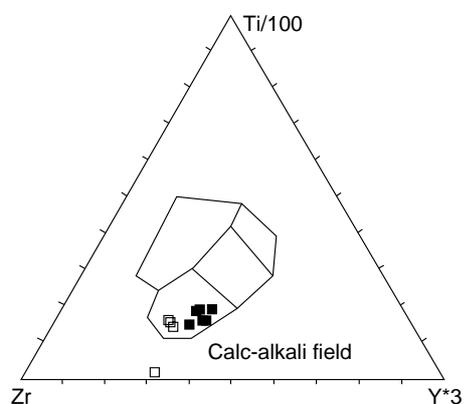
**Figure 3**

*Contoured plot of poles to bedding in the area between Lake Barrington and Roland in the Gog Range Greywacke.*

sandstone containing clasts of lava and quartzite (Cvtpc). Near Lake Barrington it is overlain by generally massive quartz and feldspar crystal-rich and lithic volcanoclastic sandstone, and pebble conglomerate with rhyolite and quartzite clasts.

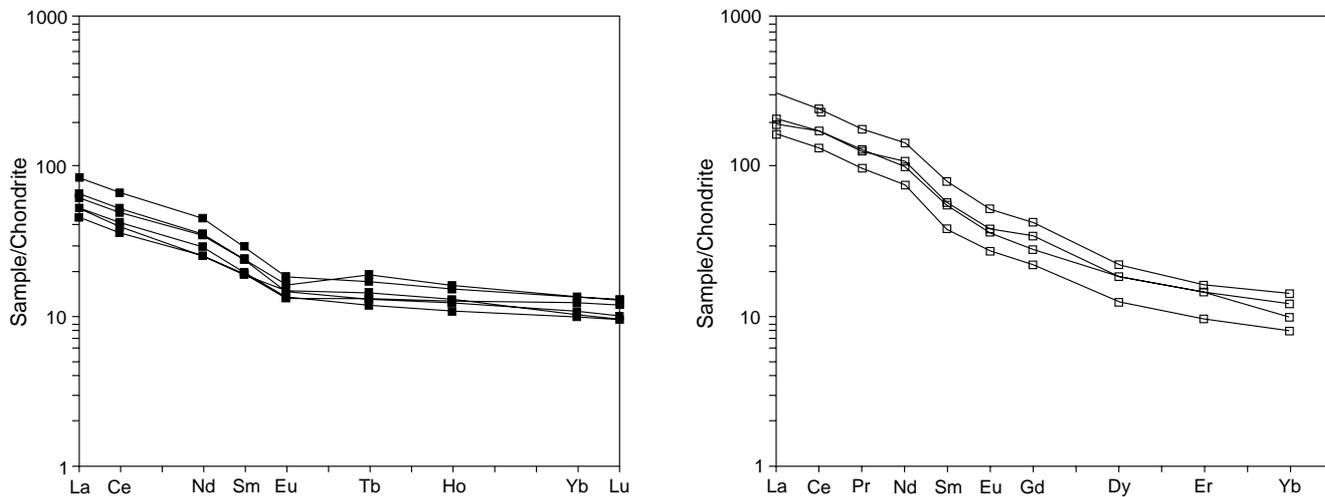
In outcrop the andesite is generally massive with dark grey/red or grey/green colour and has abundant small feldspar and dark mineral phenocrysts. In some areas the rock is a lava breccia. Cleavage and compositional layering were not recorded from this unit.

In thin section most samples have very abundant small plagioclase phenocrysts and slightly less abundant glomerophyric clinopyroxene set in a very fine-grained dark matrix which, in coarser samples, shows plagioclase laths and fine grains of opaque mineral. The plagioclase shows varying amounts of sericite alteration but the clinopyroxene is generally



**Figure 4**

*Zr-Ti and Zr-Ti-Y discriminant diagrams after Pearce and Cann (1973). Basalt and andesite from the Que-Hellyer Volcanics as open squares (data from Crawford *et al.*, 1992 and McNeill, 1989) and Cambrian andesites from the Wilmot area as filled squares (data from McClenaghan and Green, in prep.).*



**Figure 5**

*Chondrite normalised REE patterns for Cambrian andesite from the Wilmot area and basalt and andesite from the Que–Hellyer Volcanics. Symbols as for previous diagrams.*

fresh with minor chlorite alteration. Chlorite patches are common and epidote and calcite occur in some samples.

The geochemical character of the andesite is broadly similar to the andesites of the Que–Hellyer Volcanics. Plots of a few samples (selected as samples with REE data) from both rock units on Zr-Ti and Zr-Ti-Y discriminant diagrams (Pearce and Cann, 1973) (fig. 4) show that they lie in the calc-alkaline field.

REE diagrams (fig. 5) for the same samples show that the andesites from the Hellyer Volcanics are more strongly enriched in light rare earth elements than those from the Wilmot area, and suggest that they may not have come from the same geochemical suite.

#### 4. Felsic volcanoclastic sandstone

##### *Lake Barrington Rowing Course road (432 560 mE, 5 413 170 mN)*

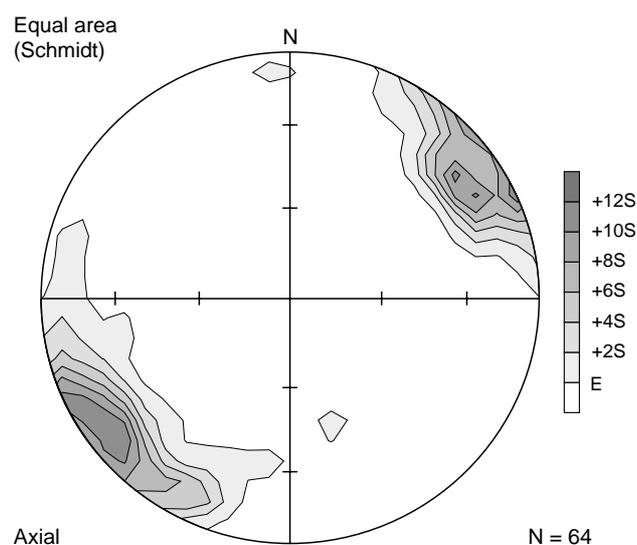
Weathered roadside outcrops of generally massive quartz and feldspar crystal-rich and lithic volcanoclastic sandstone occur along most of the access road to the Lake Barrington rowing course and have been included in unit Cvctq.

The Cvctq unit is part of a felsic volcanic-dominated sequence which overlies the andesite unit (Cvtab). The sequence includes quartz and feldspar-phyric rhyolite and plagioclase-phyric rhyodacite (Cvtrd), quartz-phyric and aphyric rhyolite and tuff with quartz-phyric rhyolite clasts (Cvtrq) and massive, grey/green volcanoclastic siltstone (Cvtrs) and extends southeast to Gowrie Park. South of the felsic volcanic sequence is an east–west zone comprising andesite (Cvtab) and dacite (Cvtd), together with a crystal lithic sandstone (Cvtav) which was substantially derived from andesitic and dacitic volcanic rocks. This andesite/dacite-dominated zone may be a fold repetition of the andesite unit described at the previous location.

Less weathered rock can be seen at 432 560 mE, 5 413 170 mN where it is massive and fine-grained grey/green with visible quartz grains and lithic fragments.

In this section rock from this locality has abundant euhedral and embayed quartz and sparse smaller opaque phenocrysts set in a matrix of quartz and sericitically altered feldspar. Carbonate is present pseudomorphing some of the feldspar.

A steep northwest-trending cleavage is present in most of the felsic volcanic dominated sequence (fig. 6). The attitude of this cleavage is slightly different to that developed in Gog Range Greywacke in the area between Roland and Nowhere Else, although it is possible that the cleavages have been produced by the same tectonic event.



**Figure 6**

*Contoured plot of poles to cleavage in the area between Lake Barrington and Gowrie Park in the felsic volcanic dominated sequence.*

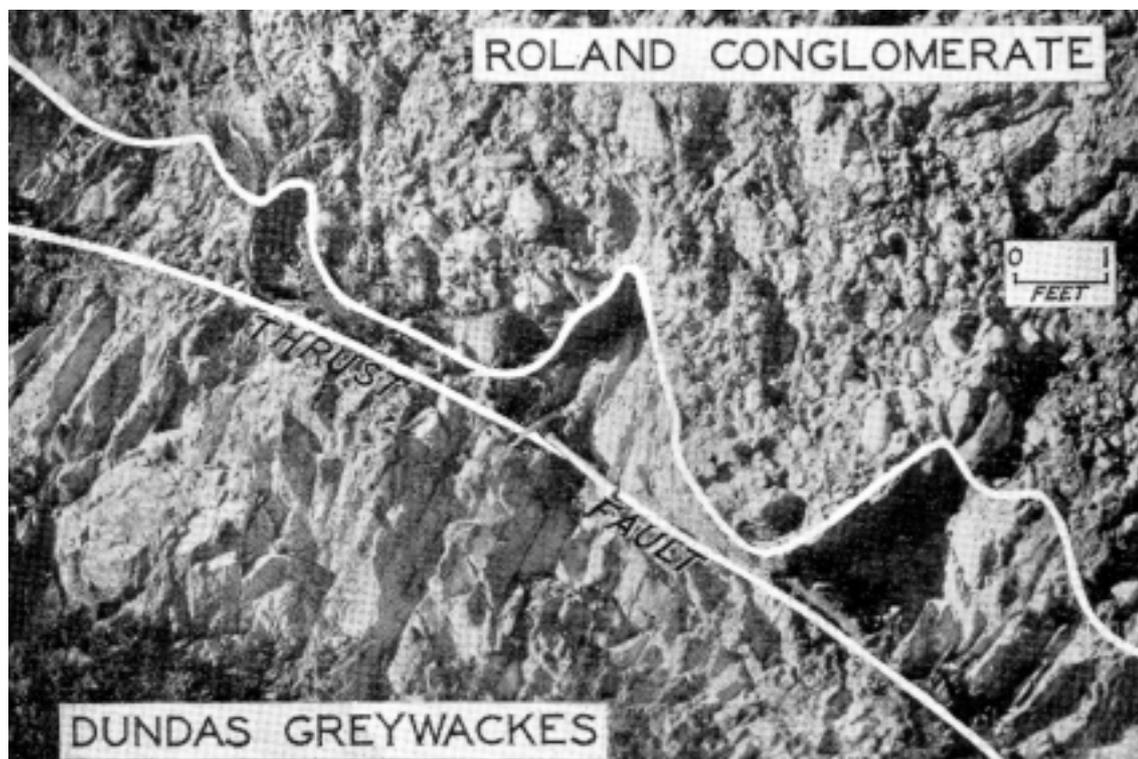


Figure 7

*Cambrian siltstone–Roland Conglomerate contact on the Old Lorinna Road. Photograph from Jennings (1958).*

## 5. Cambrian siltstone–Roland Conglomerate contact

### *Old Lorinna Road (428 960 mE, 5 407 500 mN)*

The contact between the Cambrian medium-grey to dark-grey finely banded siltstone (unit Cggbs) and the Roland Conglomerate (unit Coom) occurs in roadside outcrops at 428 960 mE, 5 407 500 mN. The bedding and cleavage in the siltstone dip steeply northeast at a similar high angle to the irregular contact with the overlying conglomerate (fig. 7). A fault occurs adjacent to the contact but the unconformable nature of the contact is still clear. Cleavage in the siltstone and in the clasts in the overlying conglomerate have almost identical attitude (Williams and Seymour, 1983), suggesting that it is the same and has a post Ordovician age.

## 6. Round Hill mines

### *Vein and shear-hosted Pb–Ag mineralisation (429 200 mE, 5 406 900 mN)*

Lead–silver deposits occur in several parts of the area, but the major producer was the Round Hill district (fig. 8). These deposits were discovered in 1878 and worked intermittently to about 1954, producing about 4.7 kt of Pb, 10 t of Au, 31 kg of Au, and some Cu, from 58 kt of ore (Collins, 1979).

The lodes consist of thin, irregular sulphide veins and irregular sulphide bodies in anticlines, crush zones, joints and bedding planes (fig. 9). These lodes consist mostly of galena with some pyrite, sphalerite,

chalcopryite, bismuthinite, quartz, muscovite and siderite, and are all hosted by the Moina Sandstone. The veins are structurally controlled (along shears, thrust faults and bedding planes) and are mostly small but very rich (e.g. some samples assayed <50 wt.% Pb, 28,000 g/t Ag and 31 g/t Au).

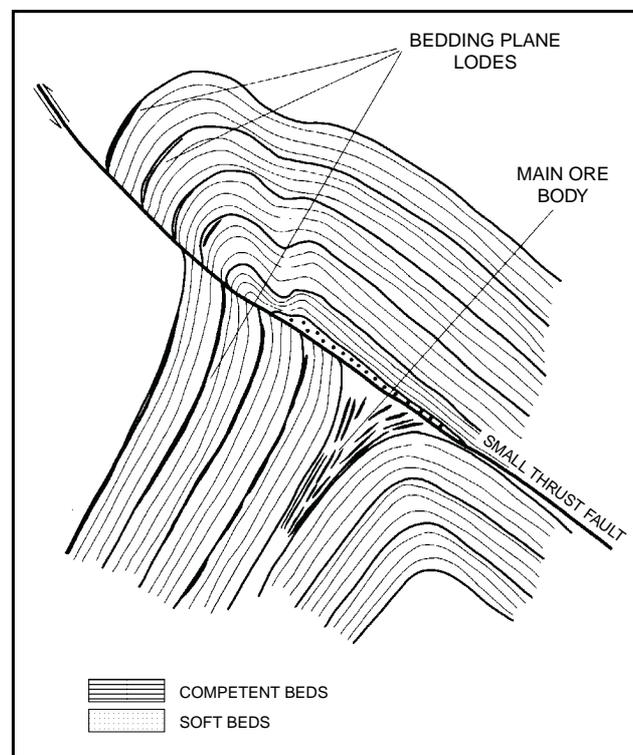


Figure 9

*Sketch section to illustrate the formation of the ore deposits at Round Hill (after Jennings, 1958).*





**Figure 10**

*Downplunge views (to the northwest) of mesoscopic anticlines in the Moina Sandstone, Machinery Creek, Cethana 1:25 000 scale map sheet.*

*Falls Anticline (top left), Sales Anticline (middle left) and Main Anticline (bottom left) in the terminology of Jennings (1958). Note adits accessing saddle reefs in the cores of the Falls and Main anticlines.*

*Photos from Seymour (1975).*



At this site bedding-parallel and axial-planar galena veins can be seen in folded and faulted Ordovician Moina Sandstone in outcrops in the creek bed and in and near the old workings. Mineralised folds are also prominent (fig. 10).

## **7. Mt Roland mine**

### ***Cambrian base metal mineralisation***

**(437 080 mE, 5 410 240 mN)**

Along the flanks of Mt Roland and Mt Claude are a number of small occurrences of base metal sulphides and barite in Cambrian acid-intermediate volcanic rocks (Collins, 1979). One of these is the Mt Roland silver-lead mine, which lies in a carbonate-sericite alteration zone in andesitic breccias. Its history is poorly known, but it was operated prior to 1881, and has been more recently re-explored by drilling and geochemical and geophysical surveys (Hicks and Richardson, 1991; Purvis, 1979; Weber, 1983). The mineralisation is not well understood.

Disseminated, stockwork and vein-style barite, sphalerite, chalcopyrite and galena in sericite-carbonate-altered volcanic rocks can be seen in dumps near the old workings.



## **8. Higgs, Narrawa & Squib mines (north of Dolcoath Hill)**

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### *Vein and shear-hosted Au-Sn-W-Bi-Pb mineralisation (437 080 mE, 5 410 240 mN)*

Gold was first found in the Cethana area in 1893, and was worked intermittently to about 1947. Some small alluvial workings at Bell Mount to the north continue to produce minor gold. The area has produced about 175 kg of gold (Collins, 1979).

The Higgs and Narrawa deposits, north of Dolcoath Hill, are some of the largest and richest gold deposits in the area. They lie in Moina Sandstone, incorporating minor garnet-pyroxene skarns, close to the roof of the Dolcoath Granite (fig. 8). The nature and origin of the mineralisation in these deposits are poorly understood, but appear to be related to shear zones containing disseminated pyrite, arsenopyrite, galena, chalcopyrite, sphalerite and gold. Up to 17 g/t Au occurs in some samples, and gold is anomalous over wide zones. Mineralisation and host rocks (sandstone and skarn) can be seen in outcrop and dump samples.

Near these gold deposits lie several Sn-W deposits, including the Squib mine, worked between 1893 and 1957 (Collins, 1979). These mines worked several vuggy quartz-topaz lodes for cassiterite and wolframite along the contact of the Moina Sandstone and Dolcoath Granite. The lodes are also rich in Bi, Mo, Zn, Pb, As, Cu, REE, Be and Au (<6 g/t). Dump samples show greisen and vuggy quartz lodes with cassiterite, wolframite, bismuthinite and molybdenite.

## **9. Shepherd and Murphy mine**

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### *Au-base metal-Sn-W-Bi skarns and veins (423 200 mE, 5 406 600 mN)*

Mineralised skarn bodies occur at many sites around Cethana. These are associated with limestone in the Gordon Group and the Moina Sandstone (of the Ordovician Denison Group) where these rocks are intruded by the Devonian Dolcoath Granite. These skarns have complex and variable mineralisation, and include deposits that have been worked for tin, tungsten, gold, bismuth and lead. There are presently several sub-economic deposits delineated for these commodities, plus zinc and fluorite, with some potential for economic deposits of magnetite, rare earth elements, beryllium and garnet.

One of the major occurrences of skarn in the district is near the Shepherd and Murphy mine, near the old townsite of Moina (fig. 11). This mine was discovered in 1893 and was worked intermittently to 1957 (Collins, 1979). The main lodes were quartz-fluorite-topaz veins in skarns of the Gordon Group and the underlying Moina Sandstone, and these contain cassiterite, wolframite, scheelite and various Fe-Cu-Bi-As-Pb-Zn-Mo sulphides. The mine produced at least 480 tonnes Sn, 340 tonnes WO<sub>3</sub>, 69 tonnes Bi and some gold. Modern exploration has focussed on

disseminated mineralisation in the associated skarn, which has sub-economic reserves of fluorite, Au and Zn, and is anomalous in most of the other above-mentioned commodities.

Outcrops of skarn, and dumps containing good examples of mineralised lodes (including wolframite, fluorite, topaz and wolframite) and skarns occur at the mine site.

## **10. Quartz and feldspar-phyric rhyolite (unit Cvtqf)**

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### *Cethana Bridge area (427 890 mE, 5 408 400 mN)*

The rocks exposed on the roadside on the eastern side of Lake Barrington are generally extremely weathered and belong to a quartz and feldspar phyric rhyolite and crystal-lithic volcanoclastic sandstone unit (Cvtqf). At this location quartz and feldspar-phyric rhyolite occurs as slightly fresher outcrop. This rock may be continuous with rock of the Cqf unit which occurs a short distance to the west on the eastern slopes of Bell Mount, where it is considered to be part of an intrusive body. Evidence for the intrusive nature of the rock at this location is lacking and it is difficult to distinguish between coherent lava or intrusive rock and the volcanoclastic sandstone of the same composition.

In thin section the rock contains abundant phenocrysts of euhedral and embayed quartz and strongly sericitised feldspar. Also present are less common and smaller patches of chlorite and fine-grained opaque mineral that appear to be pseudomorphs after biotite. The matrix is fine-grained quartz and sericite with common patches rich in carbonate. Sparse carbonate veining is also present.

## **11. Moina Sandstone and Machinery Creek Fault**

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### *Cethana Dam Road (427 730 mE, 5 407 880 mN)*

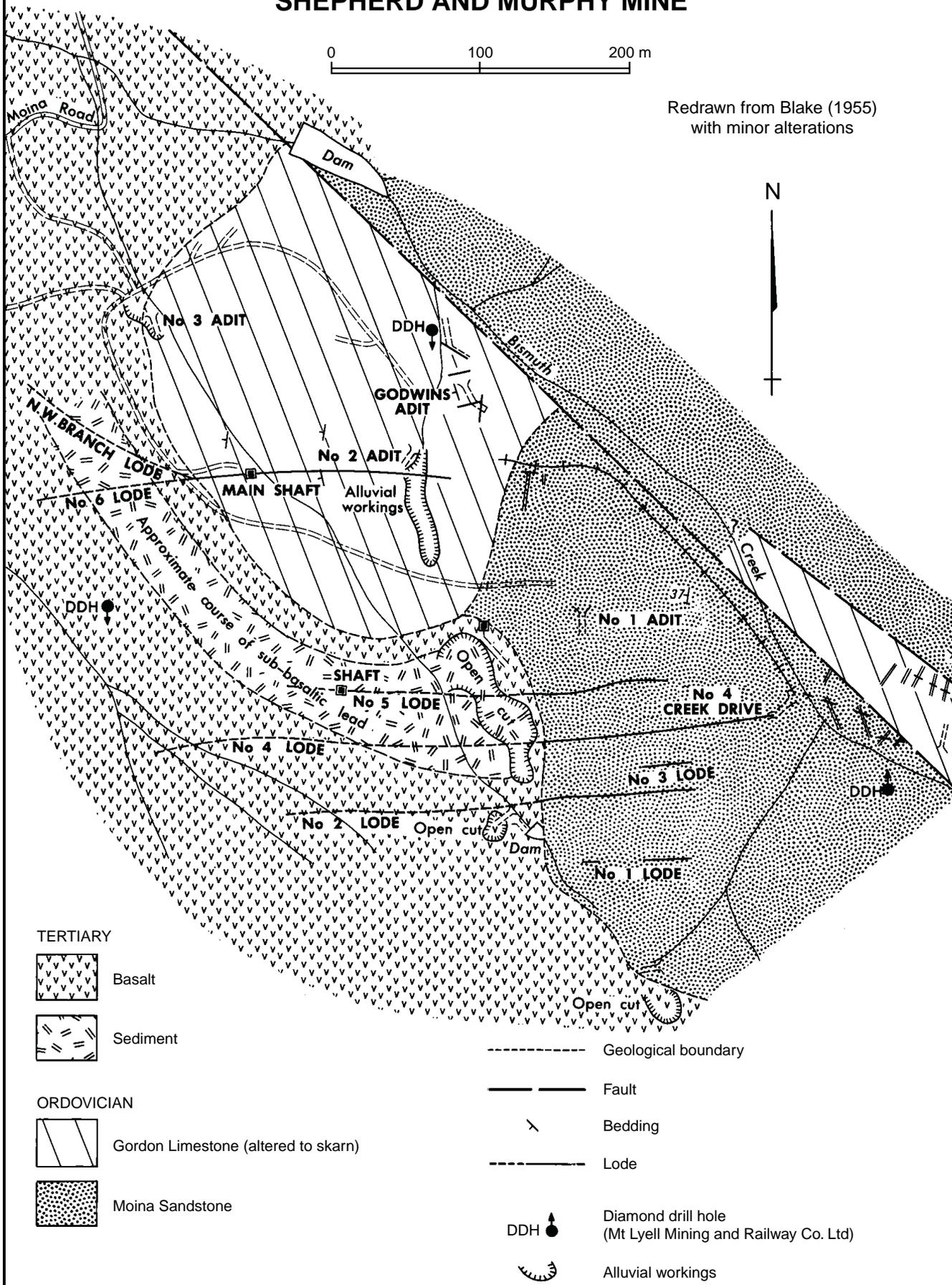
Outcrops of well bedded pale grey, well cemented fine-grained quartz sandstone with thin interbeds of siltstone occur in roadside outcrops near the turn off to the Cethana Power Station. These are part of the Om unit which is correlated with the Ordovician Moina Sandstone. There is a thin grey pebble/cobble conglomerate (unit Omc) at the base of sandstone where it rests unconformably on the Cambrian volcanic sequence. This is exposed on the Lorinna Road at 427 980 mE, 5 406 100 mN. In the Machinery Creek area, a short distance south of Round Mountain, the sandstone is overlain by the Ordovician Gordon Limestone correlate (unit Ol).

Cleavage is usually only evident in the siltstone beds. Large folds occur in roadside outcrops in this general area, and a plot of poles to bedding for Ordovician rocks in the Round Mountain to Lake Cethana area is consistent with folding about almost horizontal northwest-trending axes (fig. 12a). The cleavage (fig. 12b) in the same area is steep and trends in the same

# GEOLOGICAL MAP SHEPHERD AND MURPHY MINE

0                      100                      200 m

Redrawn from Blake (1955)  
with minor alterations



**TERTIARY**

Basalt

Sediment

**ORDOVICIAN**

Gordon Limestone (altered to skarn)

Moina Sandstone

Geological boundary

Fault

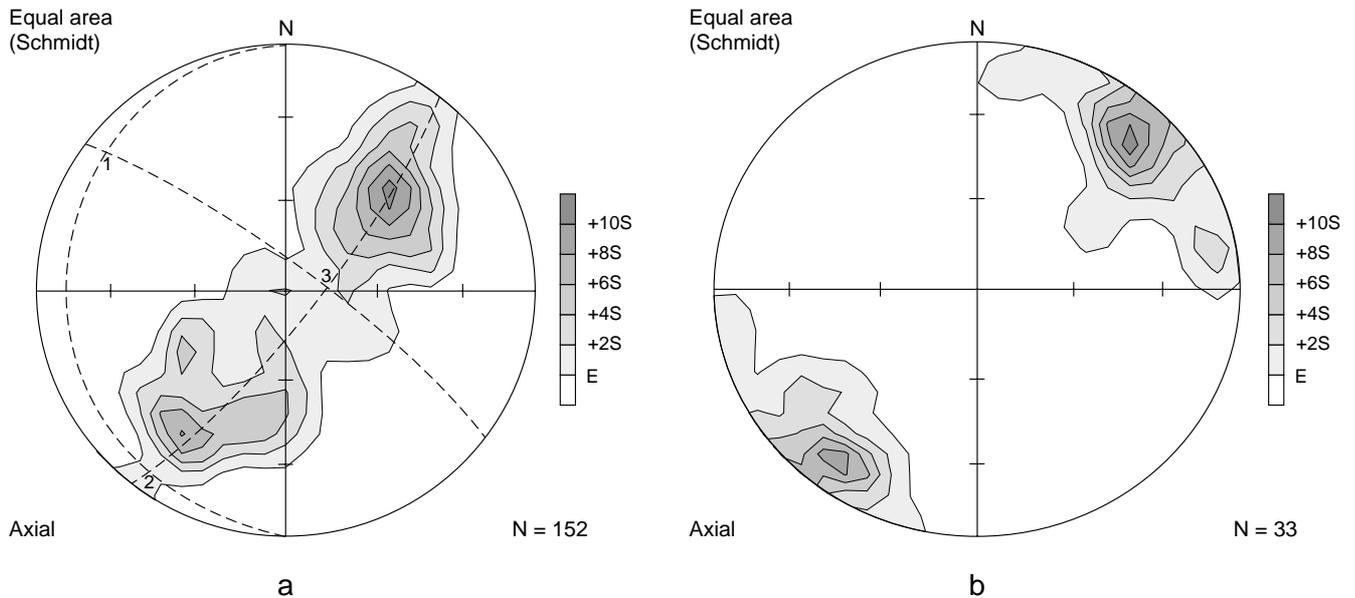
Bedding

Lode

DDH      Diamond drill hole  
(Mt Lyell Mining and Railway Co. Ltd)

Alluvial workings

Figure 11



**Figure 12**

*Contoured poles to bedding (a) and cleavage (b) in Ordovician rocks in the Round Mount to Lake Cethana area.*

direction and appears to be related to the folding. The cleavage attitude is very similar to the cleavage in the underlying Cambrian rocks (compare fig. 6 and 12b), suggesting cleavage generation during a single, likely Devonian, tectonic event.

The Moina Sandstone is in faulted contact with the Cambrian sequence to the north, and the fault is exposed on the roadside at 428 750 mE, 5 407 970 mN where it dips northeast at about 30°. This is one of the major faults on the Cethana map sheet and has been named the Machinery Creek Fault. It extends to at least about 1.5 km west of Bell Mount in the west and to a tributary of the Mersey River two kilometres south of Mount Claude in the east.

A fault crossing the Mersey River near Standard Hill, although not mapped as continuous, may be part of the same fault. The large curve in the trace of the fault where it crosses the Forth River Valley to the north of the Cethana Power Station is consistent with the angle of dip of the fault observed in this outcrop. West of the Cethana Power Station the fault brings Cambrian rocks up against the Ordovician Moina Sandstone whereas to the east it brings Late Cambrian to Ordovician pebble to boulder conglomerate (unit Coom, Roland Conglomerate) against the Moina Sandstone and Gordon Limestone.

There is a considerable contrast in the thickness of the conglomerate unconformably overlying the Cambrian sequence to the north (unit Coom, Roland Conglomerate) and south (unit Omc) of the fault. This suggests that the fault line may have been active at the time of deposition.

## **12. Denison Group (Roland Conglomerate)**

### *Mt Claude Lookout (430 470 mE, 5 406 700 mN)*

The Roland Conglomerate is generally pink and made up of rounded and subrounded quartzite pebbles and boulders set in a fine-grained siliceous matrix. The clasts are mostly quartzite, but some vein quartz and quartz schist may be present. Occasional thin lenses of coarse sandstone occur in the sequence and provide the best evidence of bedding attitude, which is often difficult to establish.

The conglomerate rests unconformably on the Cambrian volcanic sequence and underlies the Moina Sandstone (unit Om). The transition from the conglomerate to the sandstone occurs on the southern slopes of Mt Claude, which was not examined in detail due to difficulty of access.

## **13. Cambrian rhyolite (unit Cbcr) and basaltic or andesitic lava (unit Cbca)**

### *Olivers Road (431 100 mE, 5 405 150 mN)*

Roadside outcrops of very weathered pale green quartz-phyric and feldspar-phyric rhyolite occur at this location. These volcanic rocks are part of the Cambrian sequence and are unconformably overlain by the Roland Conglomerate, which forms the high ground to the north. This area of Cambrian rocks was not recorded on the Sheffield geological map (Jennings *et al.* 1959).

In thin section the rhyolite has euhedral and embayed quartz and sericitically altered feldspar phenocrysts set in a fine-grained cloudy matrix of quartz and

sericite. Opaque minerals and muscovite are present as patches and are assumed to be pseudomorphs after small biotite phenocrysts.

## 14. Dacite (unit Cvtd)

### *Days Road (429 300 mE, 5 409 540 mN)*

Very good exposure of dacite (unit Cvtd) occurs in a small creek draining west into Lake Barrington (429 300 mE, 5 409 540 mN). This unit is part of the east-west zone dominated by andesitic and dacitic volcanic rocks mentioned at location 4 and considered to be a folded repetition of the andesite unit Cvtab.

Outcrops in the creek are of medium-dark grey, fine-grained rock with slightly larger than matrix feldspar, quartz and a dark mineral. In thin section the dominant phenocryst type is plagioclase with less abundant quartz and chlorite pseudomorphs after clinopyroxene. Some of the rock in the creek has a foliation and may be a volcanoclastic sandstone of dacitic composition.

An area of andesite (unit Cvtab) occurs on the hill to the south at 429 120 mE, 5 409 170 mN.

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[20 March 2000]

# Pre-Permian Geology

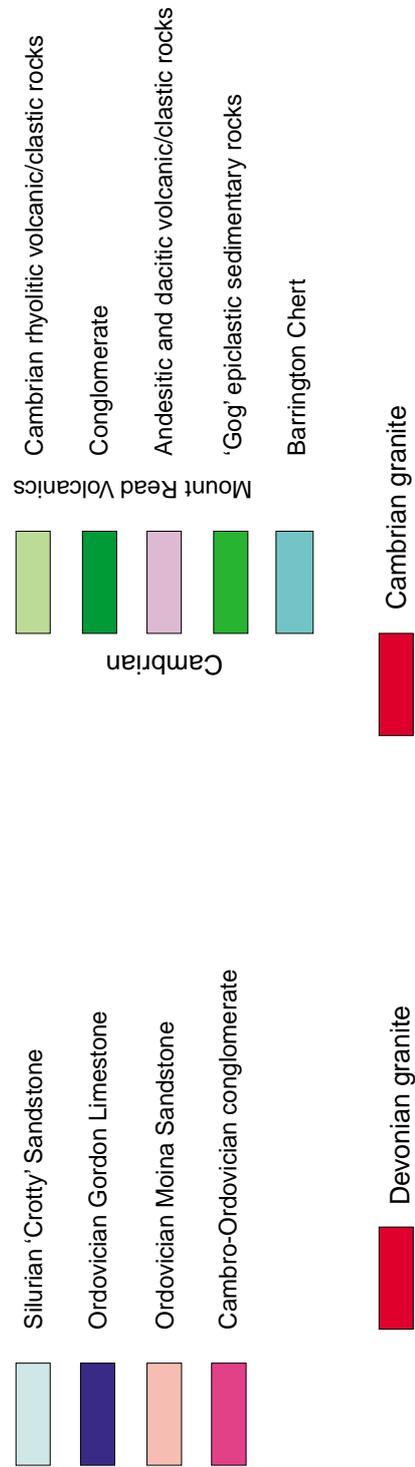
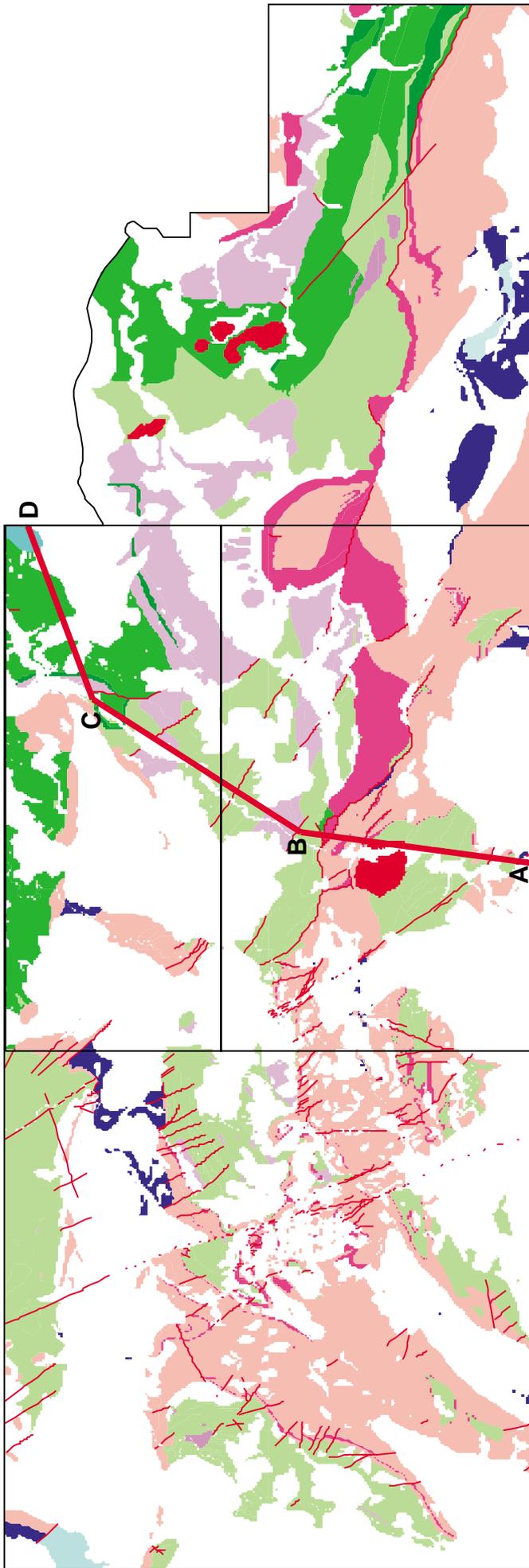


Figure 13

# Cross section: Lake Cethana–Lake Barrington area

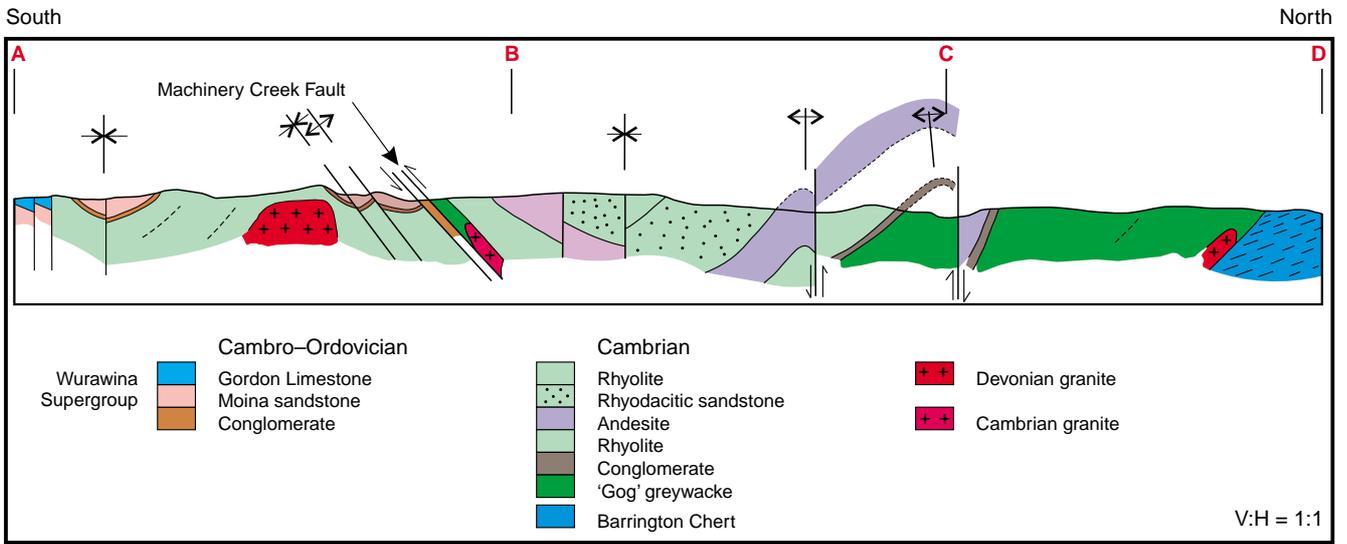


Figure 14

## Regional Correlation

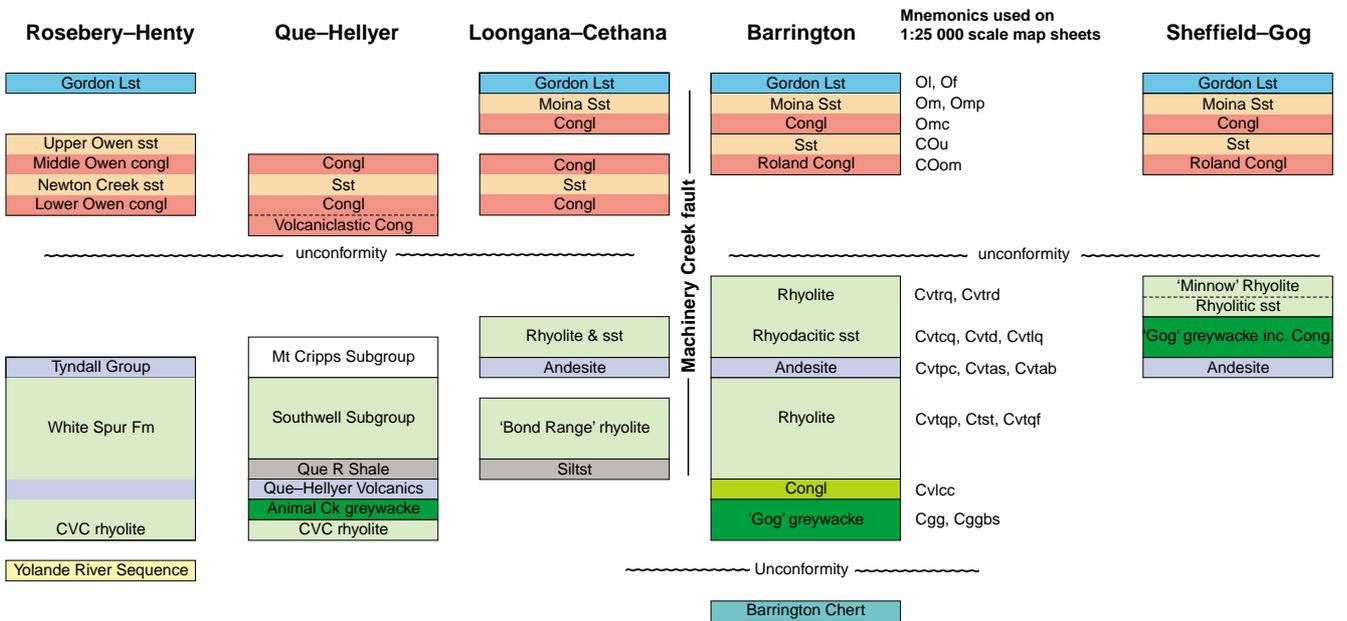


Figure 15

## MRV Geology

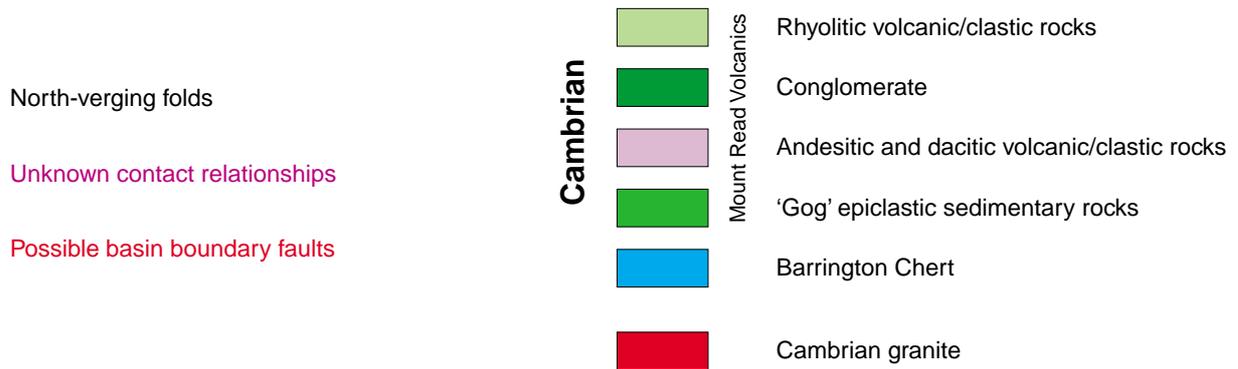
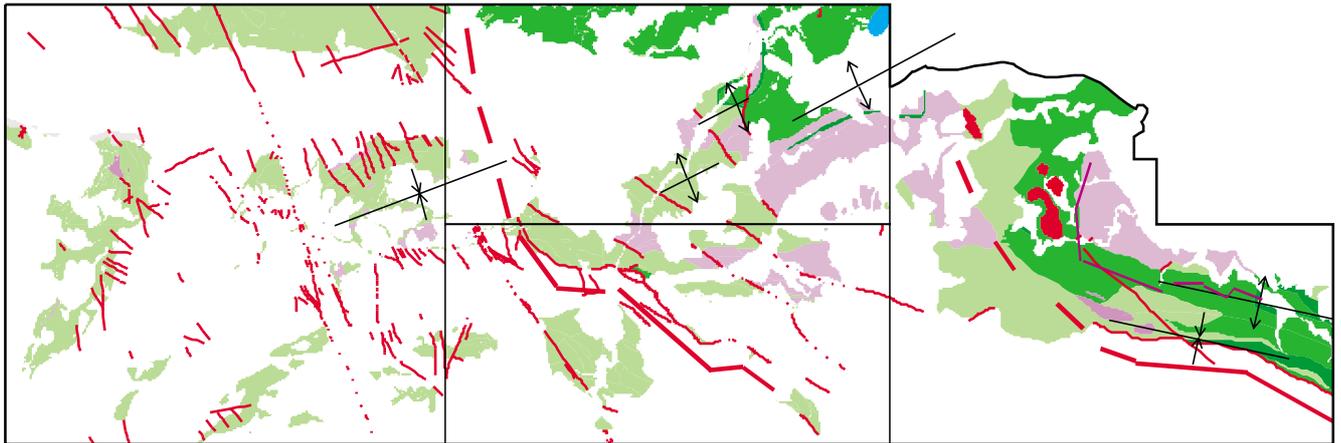


Figure 16

## Wurawina Supergroup Geology

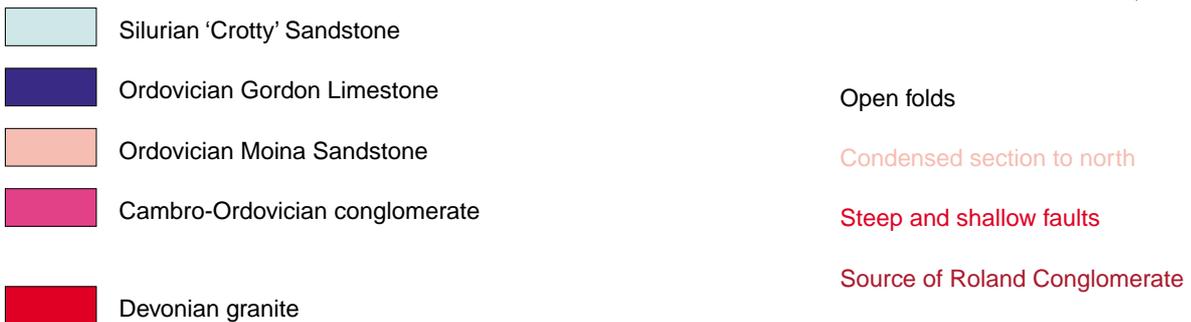
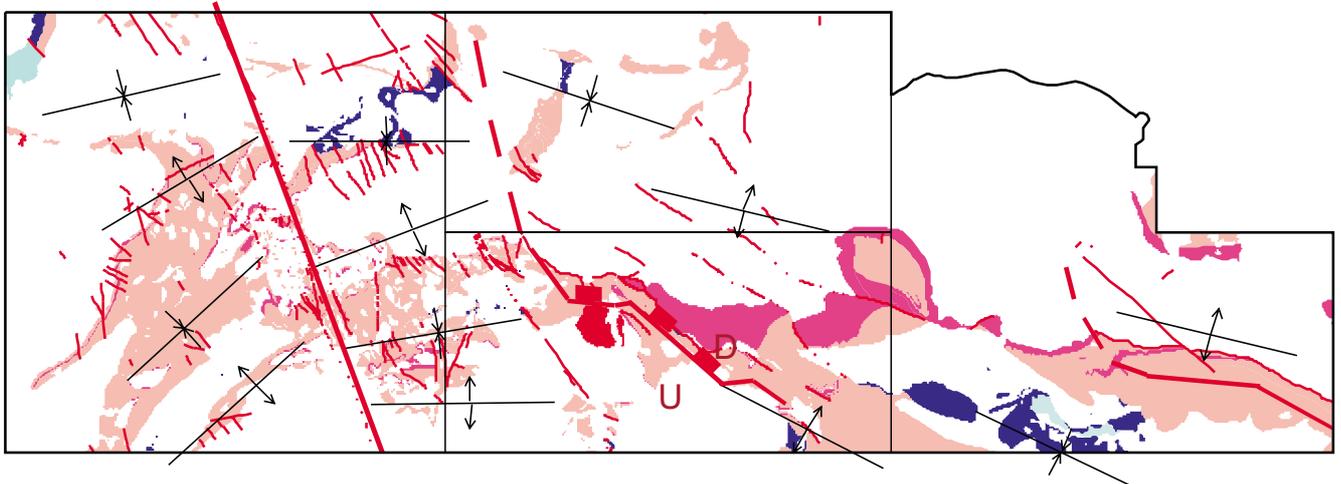


Figure 17

# Mineral deposits and recent exploration activity

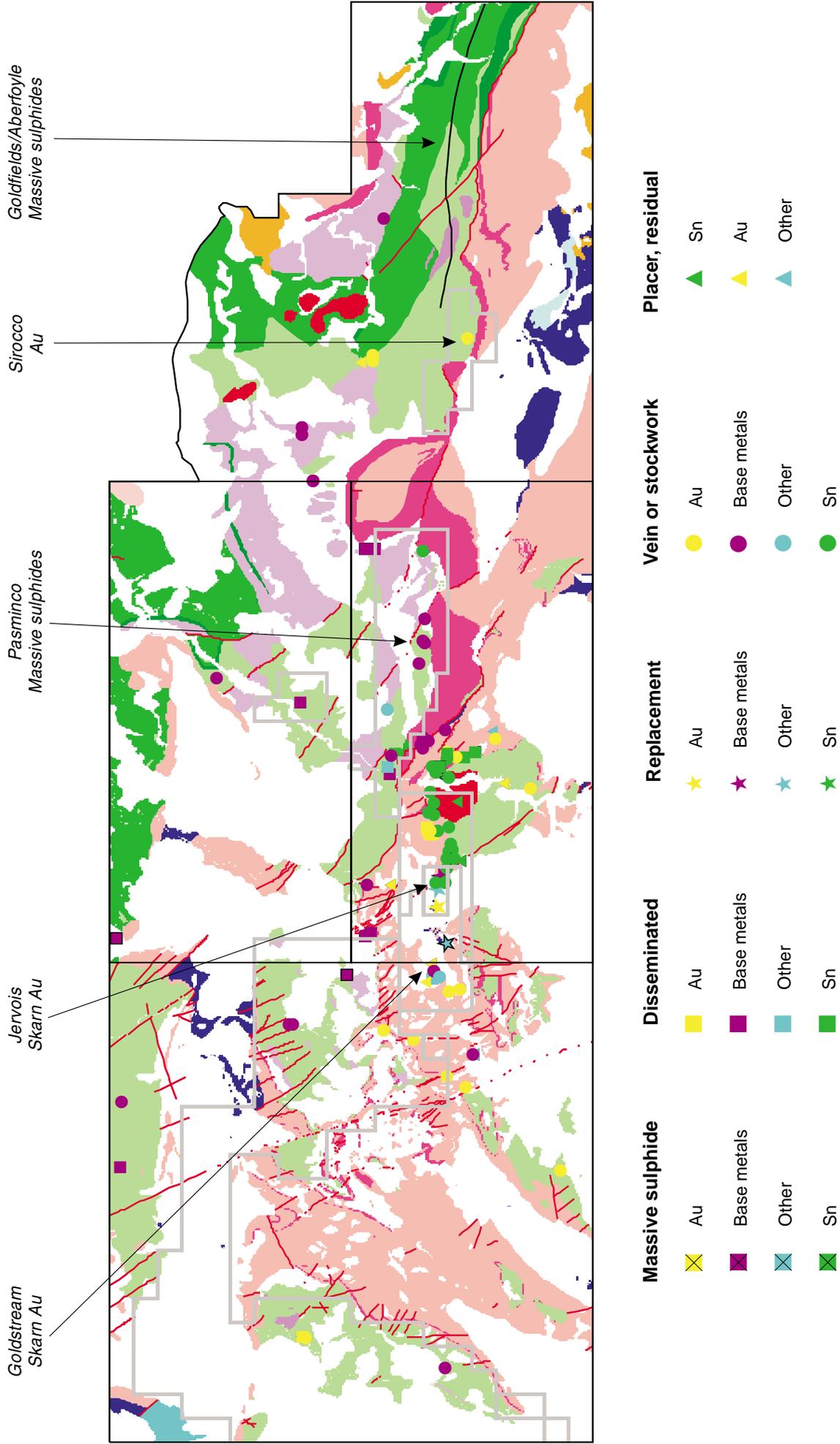
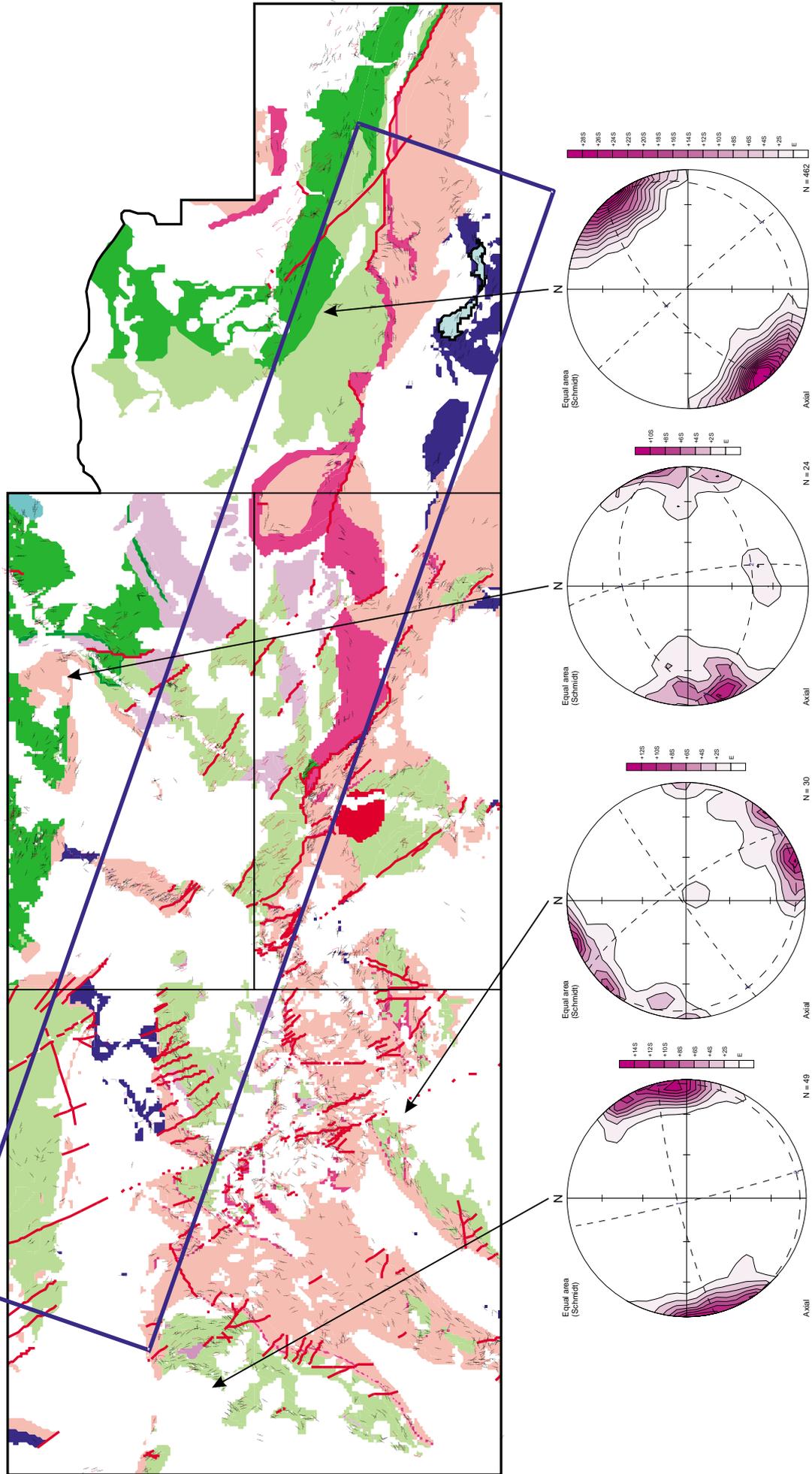


Figure 18

# MRV cleavage domains



Loongana-Gog Range area

Nowhere Else area

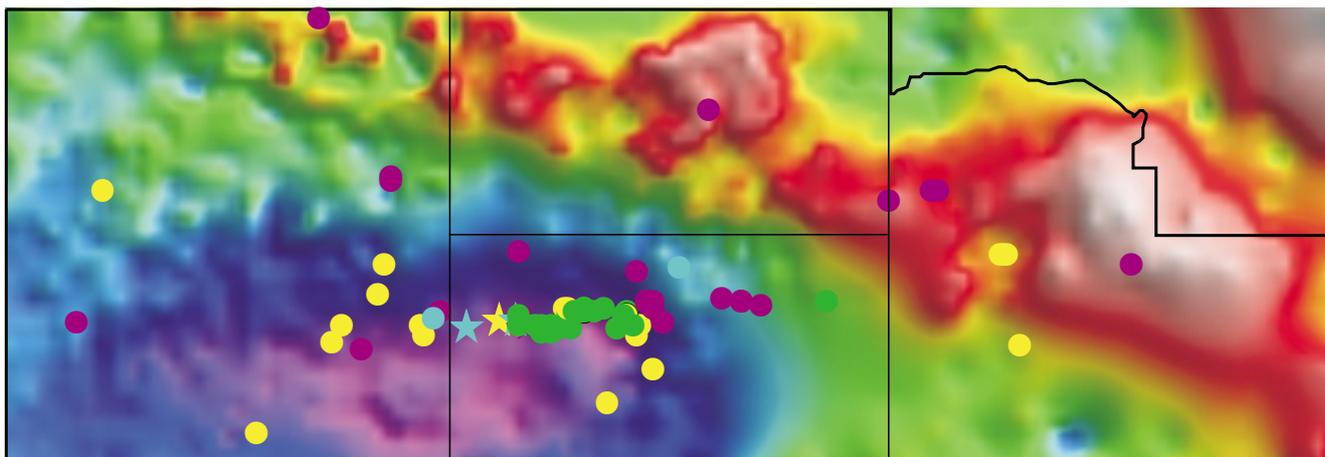
Bonds Range area

Cattleby area

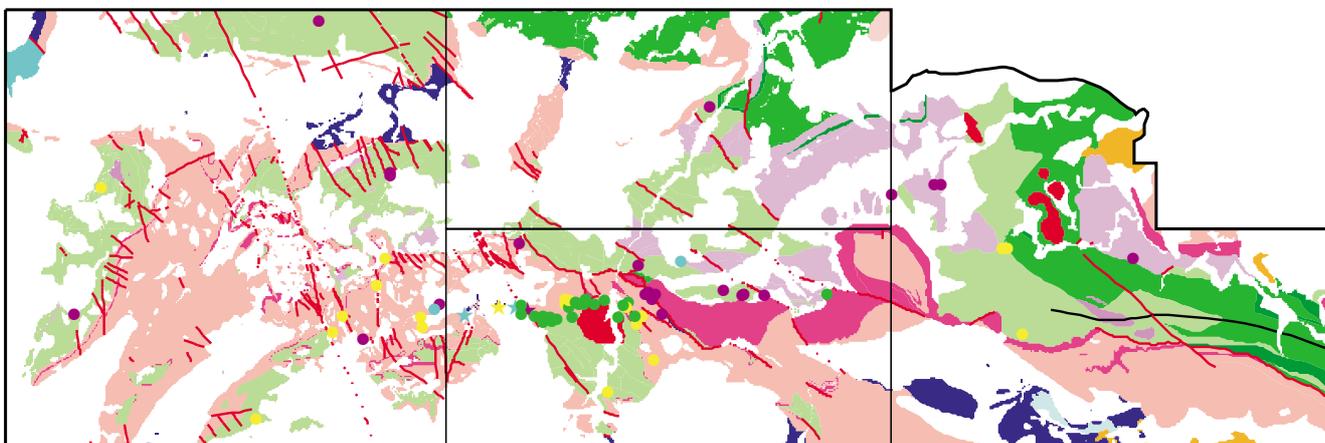
Figure 19

# Geophysics

## Vein and replacement-style mineral deposits on gravity



## Granite-associated mineral deposits



### Replacement

- ★ Au
- ★ Base metals
- ★ Other
- ★ Sn

### Vein or stockwork

- Au
- Base metals
- Other
- Sn

## Magnetics

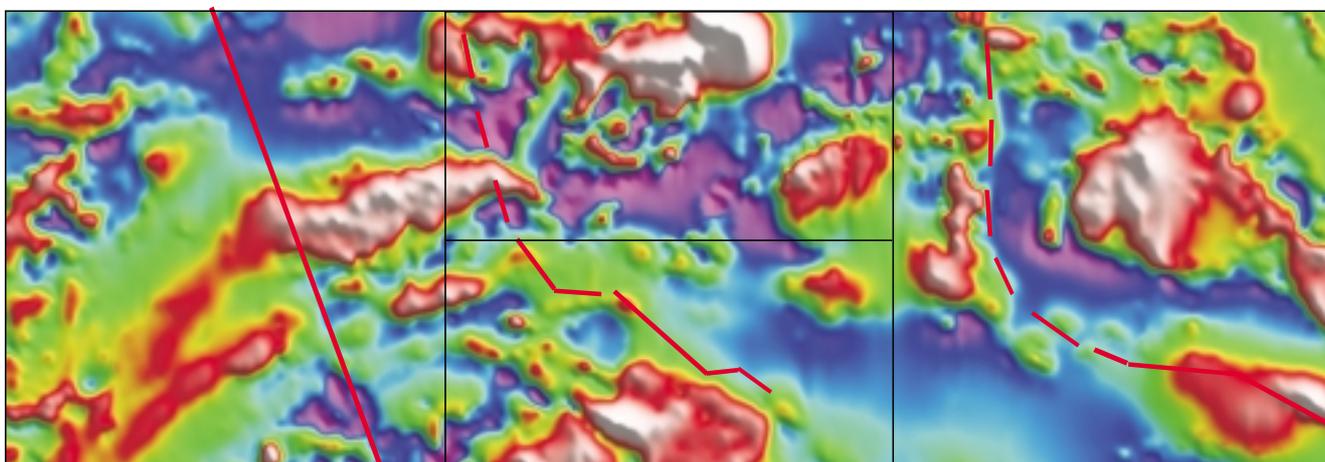


Figure 20