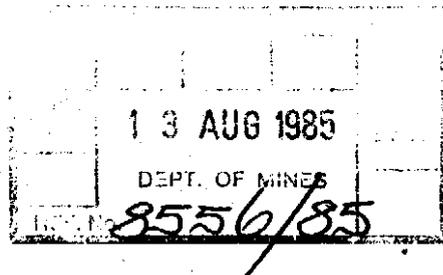


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EXPLORATION FOR GOLD DEPOSITS AT MT. LYELL

WITHIN THE MINE LEASE AND BUFFER ZONE:

REGIONAL AND GENERAL ASPECTS

OPEN FILE

By: W.A. Brook

August, 1984

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This brief study and assessment is made at the request of Lindsay Newnham, and in conjunction with Mel Jones and Mike Bird. This section looks at the more regional and general aspects of the gold potential and is complimentary to a report by Mel Jones. Reader familiarity is assumed regarding the contents of reports prepared in Mt. Lyell in February by Brook and Sillitoe. In this context it should be recorded here that the two holes NL 1101 and 1102 both intersected massive barite-hematite lodes. Intersection lengths were 100m and 30m respectively, the latter assaying 30% Ba SO₄ and 6 ppm Ag. Core from NL 1102 has not been split. These intersections clearly demonstrate the existence of large and significant post-Pioneer mineralization.

In beginning to consider the potential for gold deposits at Lyell there are two fundamental courses to follow: viz.

- (a) the historical records of alluvial gold workings and prospecting together with historical records of hard-rock gold.
- (b) the gold values intersected in mine workings and drill holes; generally Mt. L.M. & R. C. work.

The records for alluvial gold prospecting and production show widespread activity over the Mine Lease and Buffer Zone areas. Those areas which appear to have produced significant alluvial gold, by Lyell standards are:

- (a) Linda Valley
- (b) Streams on the west flank of Philosophers Ridge.
- (c) Conglomerate Creek.
- (d) Tributaries of the Upper East Queen River.

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The known orebodies carry gold ranging from 0.3 ppm at Prince Lyell to 0.6 ppm at Cape Horn and 0.7 ppm at Comstock. Bonanza gold and silver reefs at the Blow Mine occurred with barite and pyrophyllite in steep, east-trending fractures in the Owen. Values of 1000 ozs Ag and 5-25 ozs of Au gave Mt. Lyell its start. These high grade reefs have contributed much to the reputed metal grade of the Blow as recent workers ignored the historical documentation. The Blow certainly contained strongly enriched supergene gold but its average grade in the massive sulphide stopes ____ ppm.

This study of potential "stand-alone - gold deposits" does not significantly alter the proposals made in February as these were predicted on gold considerations. However this new study has provided a strong focus on potential gold mineralization and several interesting ideas have developed. New information on hand since the February reports is Mike Bird's review of the bonanza lodes at the Blow and the barite-hematite lodes in NL 1101 and 1102 below the Blocks.

From the data available there are only three possible 'stand-alone' types of gold deposit at Lyell: these are

- (i) the Blow-type bonanzas.
- (ii) the McDowell reef-type.
- (iii) the Comstock silica stockworks or bulk-tonnage, low grade.

There are some other prospects which will also be discussed, viz. Great Lyell, Glen Lyell.

THE BLOW-TYPE BONANZAS

These types of deposits are best viewed as high Au-Ag poly-metallic sulphide-barite systems. The recent recovery from the

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Blow records of descriptions of the rich Au-Ag reefs gives credit to the concept of drilling the Linda Lodes for this type of mineralization. This area is easily accessible and ore may be amenable to development from the Prince Workings.

The Linda Lodes should be, mapped, sampled and an extensive drilling programme established.

THE McDOWELL PA REEF-TYPE

This prospect lies on the southern slopes of Mt. Lyell (just above the old town of Linda) on the eastern extension of the North Lyell Fault. No further data is available since Sillitoe's description in February 1984. The available evidence indicates that sluicing penetrated to bedrock from which good specimen stone was obtained.

Follow-up work should include data compilation, road access, mapping and sampling along strike and drill planning.

It is important to gain early knowledge of the McDowell deposit as there are numerous major cross structures at Mt. Lyell which could carry similar mineralization.

The major fractures crossing Mt. Owen warrant attention and Solomon shows a gold working at the intersection of the North Owen and Owen faults.

Significantly a large area of the southern portion of the Linda Valley has been extensively loamed for gold. The source is unknown but going up hill to the south the first major structure is the bounding structure of the Linda Graben (a mirror image of the North Lyell Fault). If it is the Tharsis-Owen Spur Fault then much of it lies outside the Buffer Zone. This area warrants exploration by the time honoured methods of panning, loaming and pitting.

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THE COMSTOCK SILICA STOCKWORKS OR BULK TONNAGE LOW GRADE

The early prospectors worked tributaries of the East Queen River and it is believed that these joined the Queen Lyell-Comstock divide area. A field examination of the area showed a zone of silica-barite-hematite stockwork veining in the southern portion of the Comstock silica cap. Hole 48C was drilled along the underwall of the cap and intersected up to 1.6 ppm Au in siliceous zones. Holes C64 and C68 to the west intersected veined silicified rocks but holes were abandoned due to hard ground. Interesting Ag, Pb, Zn, Ba and pyrite occurred in these holes but few gold determinations were made. The silicification to the west of Comstock does not outcrop on surface but has been partially intersected in C64 and C68. The mineralization is widespread (1000m x 200m) and schistosity is westerly showing the influence of the Comstock Fault. On present knowledge this area constitutes the most tangible target at Lyell for a low grade bulk tonnage deposit. Further work would involve:

- compilation of the Comstock review.
- geological mapping.
- relogging and sampling of drill core.
- re-assaying of extant soil pulps.

GREAT LYELL AREA

Alluvial gold has been worked in Conglomerate Creek and assuming that it is derived from the mineralized areas of Copper Estates, Duke Lyell and Great Lyell then the exploration potential of this area is enhanced. Alternatively the gold may be derived from the large structures in the Owen: However the problem of source should be measured by the precept that if the cross-structures are the source of the gold then both the Owen and volcanics where cut by the structures constitute targets.

High gold values were noted early in prospecting at Duke Lyell. Adits were put in at Duke Lyell and Great Lyell. Mt. Lyell

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carried out geophysics, soil sampling and drilling. No evaluation of gold was made. In view of the gold activity in Conglomerate Creek the area should be tested for gold.

It is first suggested that the techniques be panning and -200 mesh sampling, assaying of extant soil pulps (if any), drill hole relogging and assaying coupled with geological mapping and assaying.

GLEN LYELL

Although Mike Bird advises there is no known gold here I include this prospect for the following reasons:

- (i) it is very close and accessible.
- (ii) it is 'high level' with silica-pyrite alteration.
- (iii) there was early prospector activity.

The prospect should be reviewed before considering further action.

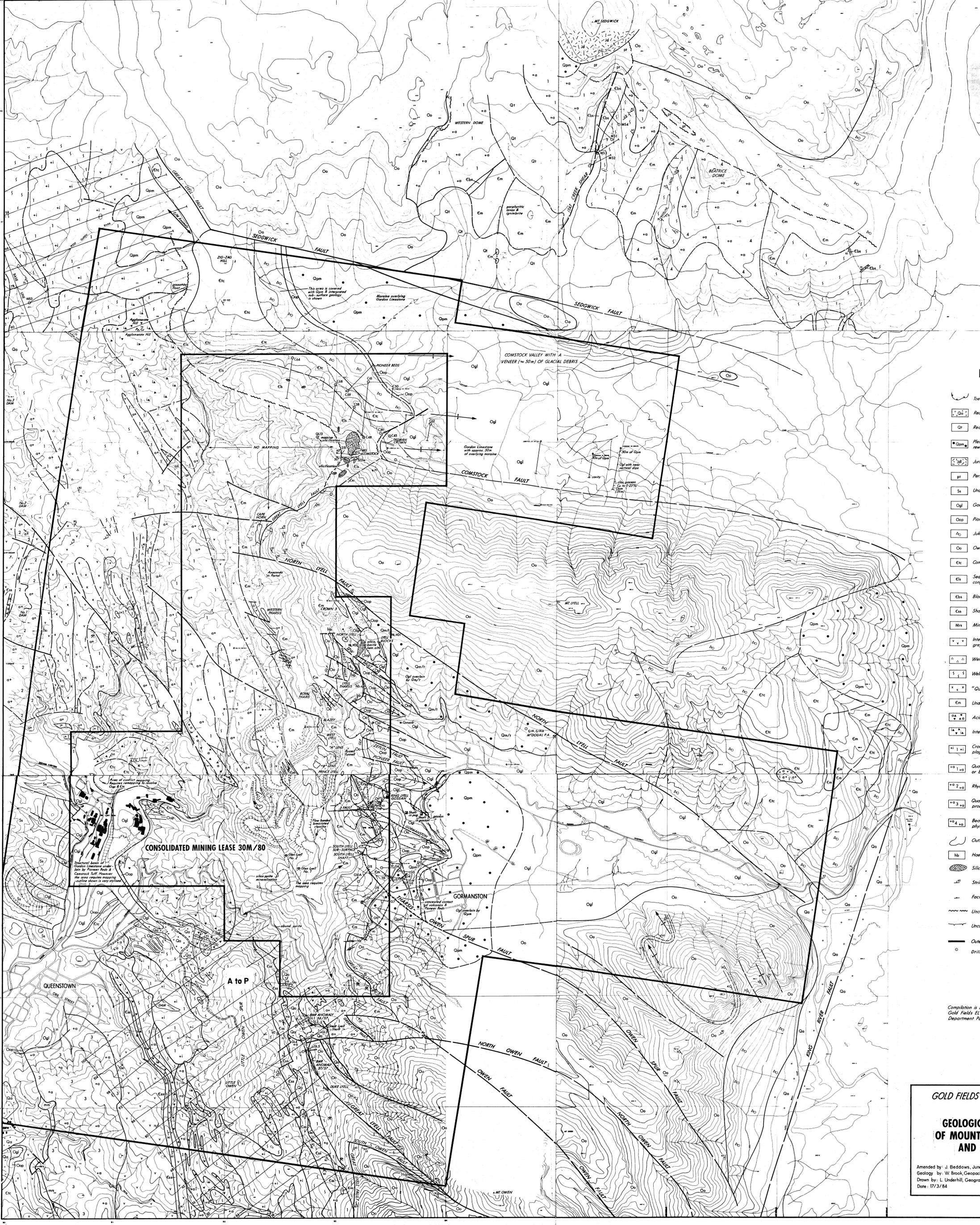
GOLD IN THE E.L.

The writer is not sufficiently familiar with the E.L. to make meaningful specific recommendations. In general terms it is always most useful to compile all the historical data of gold prospecting as this gives the best geochemistry. Secondly the history of the old mining camps is relevant.

As the gold at Lyell appears to relate very strongly to the east-west or north-west structures then it would seem reasonable to expect the same in the E.L. Direction of structure may not be so important as evidenced by the HFZ gold zone but it would be interesting to study associated structures.

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The historical alluvial gold pattern coupled with the known or re-interpreted structure of the area should provide some interesting first pass targets for consideration.



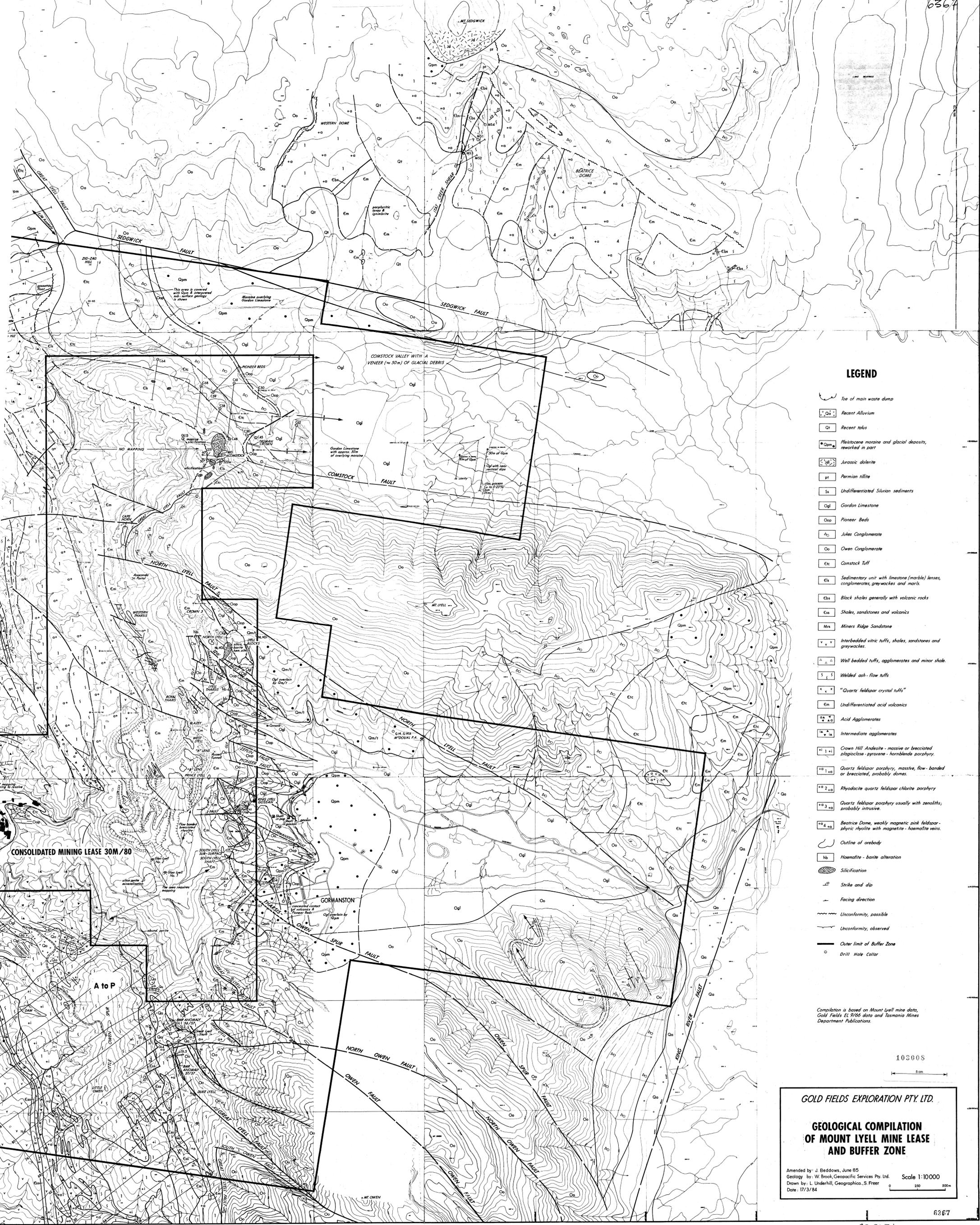
- LE**
- Toe of
 - Recent
 - Recent
 - Pleistoc. reworks
 - Jurassi
 - Permian
 - Undrift
 - Gordon
 - Pioneer
 - Jukes
 - Owen
 - Comst.
 - Sedim. congl.
 - Black
 - Shales
 - Miner.
 - Interb. greyw.
 - Well b.
 - Welds
 - "Over
 - Undrift
 - Acid
 - Interm.
 - Crown plagi.
 - Quartz. or brs
 - Rhyol.
 - Quartz. proba
 - Beatri. phytic
 - Oolith.
 - Hoam.
 - Silicif.
 - Strike
 - Facing
 - Uncon.
 - Uncon.
 - Outer
 - Drill

CONSOLIDATED MINING LEASE 30M/80

A to P

GORMANSTON

GOLD FIELDS
GEOLOGIC OF MOUNT AND I
 Amended by J. Beddows, June
 Geology by W. Brock, Geopap
 Drawn by L. Underhill, Geopap
 Date: 17/3/84



LEGEND

- Toe of main waste dump
- Recent Alluvium
- Recent talus
- Pleistocene moraine and glacial deposits, reworked in part
- Jurassic dolerite
- Permian tillite
- Undifferentiated Silurian sediments
- Gordon Limestone
- Pioneer Beds
- Jules Conglomerate
- Owen Conglomerate
- Comstock Tuff
- Sedimentary unit with limestone (marble) lenses, conglomerates, greywackes and marls
- Black shales generally with volcanic rocks
- Shales, sandstones and volcanics
- Miners Ridge Sandstone
- Interbedded vitric tuffs, shales, sandstones and greywackes
- Well bedded tuffs, agglomerates and minor shale
- Welded ash-flow tuffs
- Quartz feldspar crystal tuffs
- Undifferentiated acid volcanics
- Acid Agglomerates
- Intermediate agglomerates
- Crown Hill Andesite - massive or brecciated plagioclase-pyroxene-hornblende porphyry
- Quartz feldspar porphyry, massive, flow-banded or brecciated, probably domes
- Rhyodacite quartz feldspar chert porphyry
- Quartz feldspar porphyry usually with zirconites, probably intrusive
- Beatrice Dome, weakly magnetic pink feldspar-phyric rhyolite with magnetite-haematite veins
- Outline of orebody
- Haematite-barite alteration
- Silicification
- Strike and dip
- Facing direction
- Unconformity, possible
- Unconformity, observed
- Outer limit of Buffer Zone
- Drill Hole Collar

Compilation is based on Mount Lyell mine data, Gold Fields EL 9/66 data and Tasmania Mines Department Publications.

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GOLD FIELDS EXPLORATION PTY. LTD.

**GEOLOGICAL COMPILATION
OF MOUNT LYELL MINE LEASE
AND BUFFER ZONE**

Amended by: J. Beddows, June 85
 Geology by: W. Brook, Geopacific Services Pty. Ltd. Scale 1:10000
 Drawn by: L. Underhill, Geographica, S. Freer
 Date: 17/3/84