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ANNUAL REPORT

ON

E.L. 10/69

(MT. LYELL - HUXLEY AREA)

BY: L.A. Newnham

Mt. Lyell Mining & Railway Co. Ltd.

COPIES TO: General Office

Mine Office (2)

C.G.F.A., Sydney

Tas. Mines Dept.

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1. Geological map.
2. Map of previous and proposed exploration.

1. INTRODUCTION

E.L. 10/69 of 40 sq. miles, was issued on 5th June, 1969. The following report discusses work performed by the Mt. Lyell Mining and Railway Co. Ltd. between this date and 5th June, 1970, in addition to previous and proposed company work in this general area. Work was severely restricted during the last year due entirely to manpower difficulties. However, this problem has now been largely overcome, and a constructive and extensive exploration program has been designed in detail for the coming year.

2. PREVIOUS WORK

2.1 Mt. Lyell Mining and Railway Co. Ltd.

This Company has conducted several exploration programs in this general area of the E.L. in the past 50 years. Much of this work merely consisted of reporting on old disused mines or small operations in the area. Some more recent exploration has been too poorly recorded to be of much use.

2.2 By Pickands Mather & Co. International Pty. Ltd.

This Company completed a reconnaissance stream sediment sampling program over the area now covered by E.L. 10/69 several years ago. They analysed their samples for cold extractable Cu., total Cu., Pb, Zn and As. Several anomalous areas were outlined, the largest of which fell within the area drained by Roaring Meg Creek. A grid system, as shown on the appended map, was laid out over this anomaly. They then stream sediment sampled in detail over this grid, following this

up with soil geochemistry, ground E.M. and magnetic surveys and restricted I.P. surveying. On the basis of this work, six diamond drill holes were drilled with very little success.

Several criticisms can be levelled at this survey. Firstly, the geochemical coverage, because it was so close to the Mt. Lyell smelters was rendered largely ineffective. Widespread bogus anomalies were outlined. A means of overcoming this contamination problem is recommended later in this report, which may be applied to future exploration work on the licence by Mt. Lyell. Secondly, past experience in the Mt. Lyell area has shown that low powered portable E.M. units such as that used by Pickands Mather are severely affected by topographic variations. Also these units are not really suitable for locating "Lyell type" ore bodies. Because the area covered by the E.M. survey contained many black shale beds, strong anomalies produced by the shales probably would overshadow weaker anomalies more attributable to economic sulphides.

However, the work conducted by Pickands Mather can be regarded as a significant contribution to an understanding of this area. All their results are currently being transferred onto Mt. Lyell Mining and Railway Co. plans for future use.

2.3 Known Mineralisation

Mineralisation known to occur within E.L. 10/69 may be classified into two groups, viz. copper shows and gold shows. Some of the copper mines grouped within the Duke Lyell area

extend into the licence area. Not a great amount is known about these workings.

The main gold workings within the area are collectively known as the Mt. Ellen Gold Mine, and lie on the Western slopes of Mt. Huxley. Early reports on these workings are brief and scarce. The gold was largely extracted from quartz lodes and fractured, altered sections of volcanics within essentially massive unaltered volcanic sequences. A considerable amount of alluvial gold was won around these mines.

There are numerous other small workings within the area. However, the majority of these appear to have been sub-economic prospect pits, usually dug across quartz ridges, probably in search of gold.

3. WORK COMPLETED 1969-70

3.1 General

As stated previously, work was severely restricted during 1969-70 due mainly to manpower problems. At times there was not even one person available for work on the M.L. This is unfortunately a problem confronting many major companies in recent times. This problem is greatly accentuated in complex areas such as E.L. 10/69. Because several companies have searched this area in the past with very little success, it has become obvious that, whilst still maintaining a high level of prospective confidence, more sophisticated exploration techniques were required, such as new geochemical pathfinders,

better geophysical techniques, and a meaningful structural interpretation of the rock units present. In order to study these techniques fully, a staff buildup was required. This has now largely been achieved and several time consuming but very necessary projects have been embarked upon in the Mt. Lyell mining area with the hope that findings reachedcan be directly applied to E.L. 10/69. Several of these projects are discussed in following sections.

3.2 Manpower and Access

One or two geologists have been employed periodically on the licence, carrying out mapping and rock sampling programs. The rugged terrain made access difficult and movement was largely confined to existing pack tracks.

Construction on an access road, as shown on the accompanying map has commenced and to date two miles of this road have been completed. A total length of from five to six miles is initially planned.

3.3 Drafting and photo preparation

Contoured lease maps on a scale of 1:6000 to cover the E.L. are currently being prepared. All mapping will be conducted on this scale.

Two sets of aerial photos, flown in April 1970 for the Government have been ordered. Drainage maps to enable a detailed stream sediment and colluvial sampling program to commence, will be prepared from these photos when they are received.

3.4 Geological Mapping and Geochemical Sampling

Mapping and sampling was confined to that area immediately to theSouth of the Mt. Lyell Mining and Railway Co. Ltd. Consolidated Mining Lease, and also to the Whipspur area South of Mt. Owen.

The mapping program was designed to confirm previous mapping in the area and also to develop a degree of familiarity with the complexity of rock units present.

The rock sampling, whilst of a random nature, did result in the delineation of some very interesting gossanous zones on the Whipspur.

4. RECOMMENDATIONS

4.1 Manpower and Access

During the summer, it is recommended that two geologists and three field assistants, working with the aid of two bushmen be assigned to this area. It is anticipated that some work will be possible in winter because of the improved access provided by the road currently under construction.

This access road should be extended North-East along the Whipspur to the lease of Mt. Owen and then South-East towards Mt. Huxley.

The bushmen mentioned above, could be gainfully employed clearing tracks and laying out grid lines as required.

Because of the high and sometimes unjustifiable cost of road construction in these areas, it is anticipated that much of the work planned will be conducted from mobile tent camps.

4.2 Mapping

Because of the large amount of mapping previously conducted within the E.L. area, it is recommended that mapping this coming season be conducted in conjunction with the planned geochemical survey and that it be used essentially to confirm and modify, where necessary, existing maps. Detailed mapping should be confined to developed areas of interest and around former mining areas.

4.3 Geochemical Coverage

A combined detailed stream sediment and base of slope sampling program is recommended for a reconnaissance coverage. A far greater density of sampling than that used by Pickands Mather is suggested, paying particular attention to the small streams rather than the larger rivers.

Regions which appear anomalous on the basis of this search should be gridded within the year and followed up by soil and rock geochemical and magnetometric surveys.

Currently, research is in progress at Mt. Lyell on several problems relevent to the geochemical coverage proposed on E.L. 10/69. These problems include: the suitability of As and Se as trace element pathfinders for copper ore bodies, the size fraction to be analysed in the reconnaissance program, and the method of analysis to be used.

The use of Se and As as trace element pathfinders is interesting as they would assist in differentiating between 'true' anomalies and 'bogus' anomalies produced by such factors as smelter fumes.

The problems of what portion of a sample to analyse and to analyse by what methods are very real. Research in other parts of Autralia is showing that the -80 mesh fraction conventionally analysed may not be the most useful one to analyse. It is interesting to note that Pickands Mather did not detect the Cape Horn orebody in their stream dediment samples when they tested for cold extractable copper but did locate it when they tested for total extractable copper.

It is also recommended that a geochemical grid be laid out over the Duke Lyell area (which lies within the Consolidated Mining Lease) and that this grid be extended South into E.L. 10/69 along the conglomerate contact for as yet an undetermined distance. Detailed geochemical and geophysical surveys could be implemented here, particularly when the structural location of this area is appreciated.

4.4 Geophysics

It is not recommended that expensive electrical geophysical methods be employed this coming season on this licence. It would be sufficient to delineate, with a high confidence level, anomalous areas based on geochemistry and mapping, in preparation for detailed geophysical surveys in the 1971-72 season. However, it is anticipated that some ground magnetometric surveys will probably be undertaken in areas of interest.

4.5 Infrared Coverage

Currently, the feasibility of an infrared coverage of part of this licence is being studied in Perth, and it is hoped that a decision on this study will be favourable.

4.6 Proposed Budget

The following budget to cover the above recommended program is proposed:

4.6.1	Salaries (geologists, field assistants, supervisors)	$10,000
2.	Vehicles	$ 1,500
3.	Camp costs	$ 1,600
4.	Track cutting	$ 4,000
5.	Geochemical analyses	$ 3,000
6.	Equipment	$ 1,000
7.	Road improvement	$ 1,000
8.	Contingencies	$ 600
	TOTAL	$22,700

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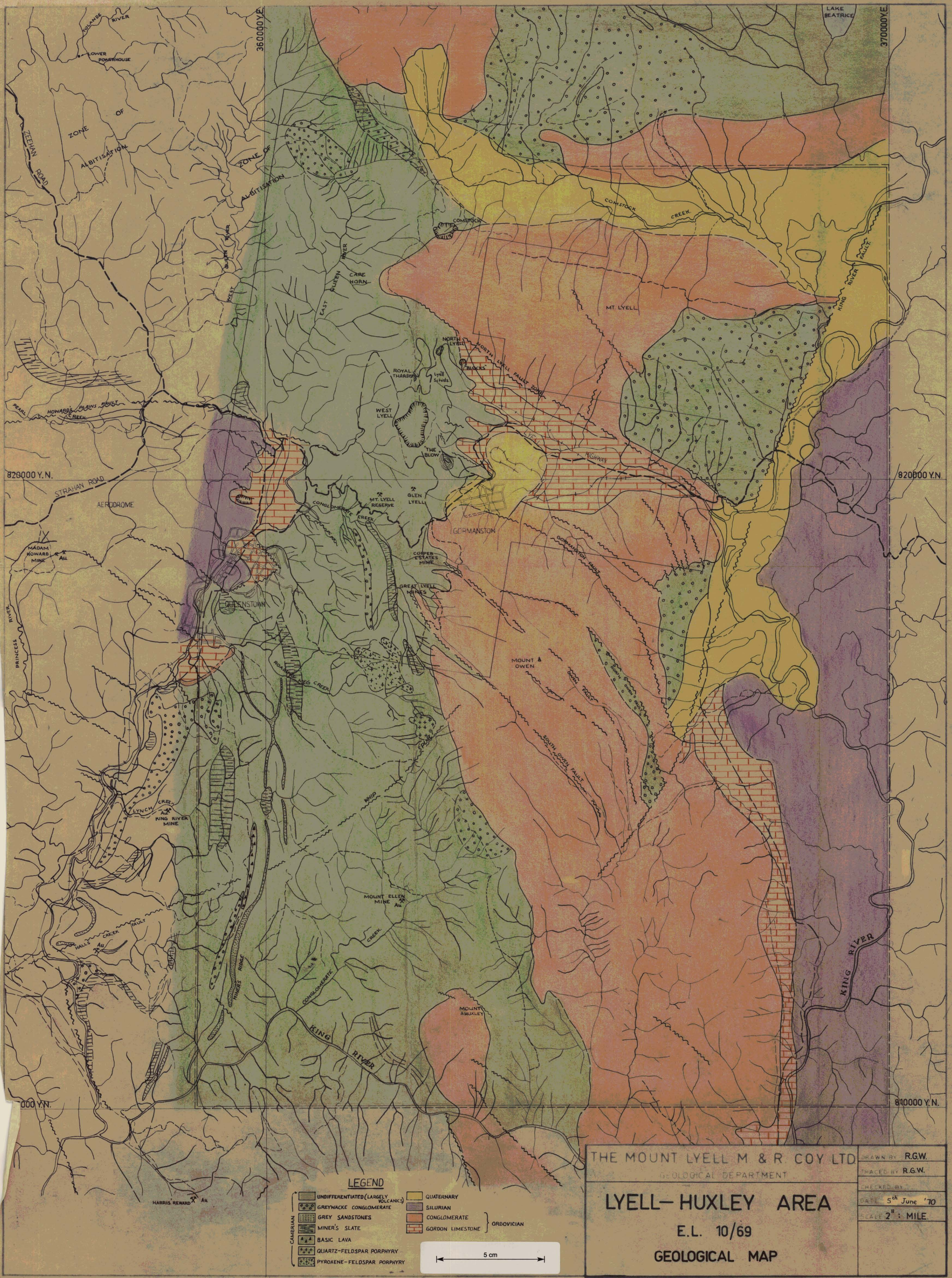

THE MOUNT LYELL M & R COY LTD

GEOLOGICAL DEPARTMENT

LYELL— HUXLEY AREA

E.L. 10/69

GEOLOGICAL MAP

DRAWN BY	R.G.W.
TRACED BY	R.G.W.
CHECKED BY	
DATE	5th June '70
SCALE	2" : MILE.

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360000Y.E.

370000Y.E.

ZEEHAN ROAD

MT. LYELL CONSOLIDATED

MINING LEASE.

820000 Y.N.

820000 Y.N.

STRAHAN ROAD

AERODROME

LYELL HIGHWAY

GORMANSTON

QUEENSTOWN

GREAT LYELL AREA

MT. OWEN

MOUNT ELLEN MINE Au

MOUNT HUXLEY

KING RIVER

KING RIVER

810000 Y.N.

810000 Y.N.

5 cm

LEGEND

PICKANDS MATHER GRID

CONSOLIDATED MINING LEASE BOUNDARY

E.L. 10/69 BOUNDARY

PROPOSED ACCESS ROAD

AREA PROPOSED FOR DETAILED EXPLORATION

THE MOUNT LYELL M & R COY LTD

GEOLOGICAL DEPARTMENT

LYELL–HUXLEY AREA

E.L. 10/69

PREVIOUS & PROPOSED EXPLORATION WORK

DRAWN: R.G.W.

TRACED: R.G.W.

DATE: 5th June '70

SCALE: 2" : MILE.

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