

THE MOUNT LYELL MINING AND RAILWAY CO. LTD.

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REVIEW OF EXPLORATION TENEMENTS

E.L. 9/66

E.L. 10/69

E.L. 41/71

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REVIEW OF EXPLORATION TENEMENTS1. INTRODUCTION

The Mount Lyell Mining and Railway Co. Ltd. presently holds three exploration licences; namely E.L. 9/66, E.L. 10/69 and E.L. 41/71, totalling 140 square miles (560 square kilometres), over the outcrop of the Mt. Read Volcanics from the King River Gorge Northwards to Mt. Murchison (Map 1).

The following text presents a review of the exploration activities conducted, to date, over these licence areas, together with a summary of the proposed future programmes and an estimate of costs.

2. REGIONAL GEOLOGICAL SETTING

This brief description, of the regional geological setting, of the Mt. Read Volcanics, which comprise the host rocks to numerous base metal sulphide occurrences in Western Tasmania, has been summarized from a paper by M. Solomon, G.R. Green and K.O. Reid "Geological History of Western Tasmania", presented in "Ore Deposits of Western Tasmania" edited by M. Solomon and G.R. Green, 1976, in press.

The Mt. Read Volcanics extend north from Elliot Bay through the Queenstown and Rosebery areas along the eastern margin of the Dundas Trough and flanking the Precambrian Tyennan nucleus. The sequence includes lava flows, plugs, agglomerates, ash-fall and ash-flow tuffs, volcani-clastic sediments and siltstones. The volcanics are of calc-alkaline type, largely dacite and rhyolite, with relatively minor andesite and basalt and having keratophyric or spilitic mineralogy. Mafic and ultra-mafic bodies occur within the flanking trough sequence.

Several types of massive sulphide deposit occur in the volcanics but their relative ages and stratigraphic positions have not been resolved. The principal ore fields are Rosebery-Hercules (Zn-Pb-Cu), Mt. Farrell (Pb-Ag-Zn), Mt. Lyell (Cu) and Que River (Zn-Pb-Cu).

In the Rosebery area the lowest unit of the Mt. Read Volcanics, the Primrose Pyroclastics, consists of ash-flow tuff with minor siltstone-shale-tuff lenses that include the host rocks to the Rosebery and Hercules Zn-Pb-Cu massive sulphide deposits. The Primrose Pyroclastics are overlain to the east by the Mt. Black Volcanics comprised mainly of felsic lavas. The east dipping sequence is flanked to the west by the west-dipping Rosebery Group, consisting of quartz sandstone, volcanoclastic sandstone, poorly sorted conglomerate, shale and lenses of felsic tuff. The Rosebery Group appears to underlie the Crimson Creek Formation and is probably equivalent to the Success Creek Group. The Primrose Pyroclastics between Rosebery and

Hercules contain several small sulphide bodies at the probable northern →

extension of the unit contains massive pyrite and massive Zn-Pb-Cu lenses.

The Mt. Black Volcanics extend east of Rosebery to Tullah or Mt. Farrell area where a dacitic tuff (including andesitic, basaltic and gabbroic rocks) structurally overlies several hundred metres of tuffaceous sandstone, black slate and tuff (Farrell Slates). These beds overlie dacitic and rhyolitic pyroclastic rocks with relatively high K/Na ratios. In the Murchison Gorge these volcanics include a body of granite rock (Murchison Granite, dated as at least 515 ± 15 m.y. B.P.) which is probably a shallow syn-volcanic intrusion.

The Farrell Slates and immediately underlying volcanics contain several small orebodies of pyrite, sphalerite, galena and chalcopyrite over a strike length of about 14 kilometres. It has been suggested that the Rosebery and Farrell successions lie on the flanks of a major synclinorium.

South, potassic rhyolites form a longitudinal belt (central lava belt) along the West Coast Range from the Red Hills to the Mt. Darwin area. This unit consists of rhyolite lava, tuff, breccia and ignimbrite. It is extensively mineralised by haematite-magnetite-barite veins, veins and disseminations of pyrite and chalcopyrite, and minor sphalerite and galena. The host rocks to the Mt. Lyell ores probably also belong to the central lavas.

To the west the central lavas are flanked by a variable group of ash-fall and ash-flow tuffs and breccias, siltstone lenses, rhyolitic flows and andesitic flows, dykes and sheets. This unit (known as the Queenstown Pyroclastics) may be younger than the central lavas, interdigitate with them or be older. Still further west is a greywacke-shale sequence locally contains calc-alkaline basaltic volcanics, and near the Henty River contains Dundas Group fossils. South of Queenstown this unit appears to overlie the Queenstown Pyroclastics, but interfingering of shales and pyroclastics north of Queenstown indicates they may be partly coeval.

In the Comstock area at Mt. Lyell, mineralized felsic volcanics are unconformably overlain by an unmineralized sequence of limestone, siltstone and felsic tuff (Comstock Tuff). Marine fossils in the limestone have been dated as late Middle or early Late Cambrian, thus providing a minimum age for the main sulphide mineralisation at Mt. Lyell. A similar age is indicated by marine faunas in sediments in the Que River (north of Rosebery), but again the bulk of the sequence underlies the fossiliferous horizon. The Comstock Tuff is the basal unit of the Tyndall Group, the upper parts of which are largely volcanoclastic conglomerate and sandstone (Jukes Formation). These are overlain conformably or disconformably by the *siliceous Owen conglomerate, probably late Cambrian to early Ordovician* in

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age. The Tyndall Group appears to overlie the central lavas, Queenstown Pyroclastics and west flanking sediment sequence. Unconformity between the Tyndall Group or the Owen Conglomerate and the central lavas reflects deformation associated with the Jukesian movements. This deformation consisted mainly of gentle folding and vertical faulting adjacent to the Tyennan nucleus.

3. E.L. 9/66, MT. TYNDALL AREA

3.1 Introduction

Exploration Licence 9/66 of 83 square miles, was originally issued in August, 1966. The area was operated as a joint venture between : Renison Ltd., The Mount Lyell Mining and Railway Co. Ltd. and Consolidated Gold Fields Australia Ltd. (The Consolidated Syndicate). The licence area was reduced to 67 square miles in August, 1971 and is presently operated, jointly, by the Mount Lyell Mining and Railway Co. Ltd. and Consolidated Gold Fields Australia Ltd.

3.2 Geology (Map 2)

Two areas of Cambrian volcanics occur within E.L. 9/66, separated by the Ordovician Owen Conglomerate of the West Coast Range. The eastern area of volcanics, the Selina-Dora area, consists of a succession of acid lavas and pyroclastics with a sedimentary sequence at the base, resting unconformably on the Precambrian Quartzites of the Sticht Range. West of the Owen Conglomerate outcrop a series of acid and intermediate lavas, pyroclastics and intrusives (Central Lava Belt) are flanked to the west by a sequence of acid pyroclastic with minor sediments. Further to the west a series of trough sediments, greywackes and shales, with some spilitic intrusions, are believed to be laterally equivalent to the volcanics.

3.3 Work Completed to Date (Map 3)

Expenditure to June, 1976 is estimated at \$872,000. A cost distribution graph is included as Fig. 1.

West Henty Grid 2N. - 18N.

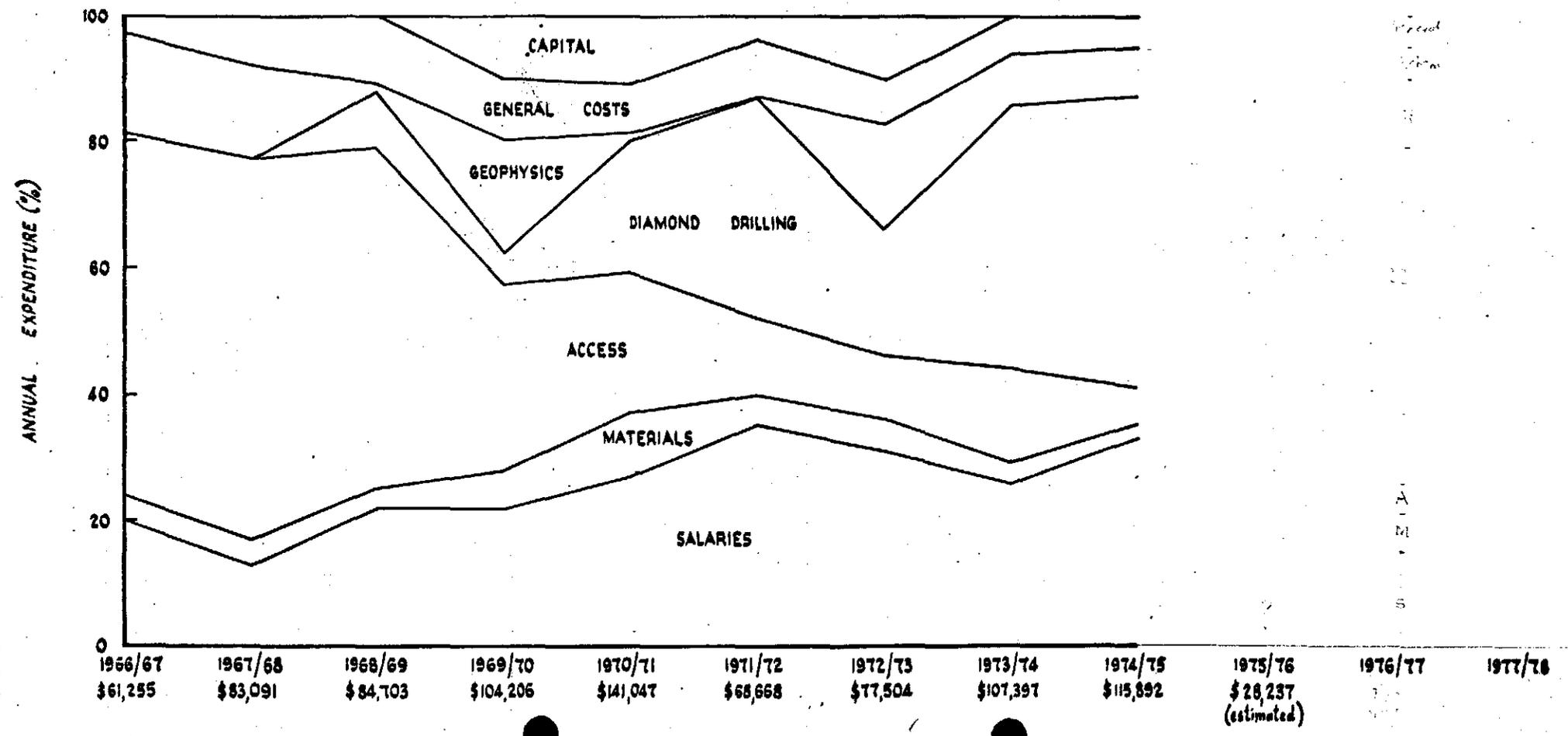
Geology: A thick sequence of greywacke and shales with minor volcanics intruded by large mafic/ultramafic bodies.

Geophysics: Dipole-dipole I.P. and magnetics have revealed an I.P. zone probably related to a serpentinized, magnetite rich part of the main gabbroic body.

Geochemistry: Regional soil survey for Cu Pb Zn on a 200 x 1200 ft. grid has indicated an anomalous zone of Pb, Cu Zn in the Henty Gorge on lines 4N. and 6N.

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MT. TYNDALL E.L. 9/66 COST DISTRIBUTION



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FIG. 1

White Spur Grid 20N. - 40N.

- Geology:** Predominantly a sequence of acid pyroclastics which dips and faces west. Pyritic black shales are present together with ash-flow tuffs, crystal tuffs, lahars and an agglomerate containing blocks of massive sulphide up to 2 ft. in diameter.
- Geophysics:** Partial I.P. coverage, gradient array and dipole-dipole, up to line 28N. has identified large chargeable zones related to the more sedimentary part of the sequence. A more discriminative approach, possibly an E.M. system, is necessary in this area.
- Geochemistry:** Detailed geochemical sampling on 50 x 1200 ft. grids using -80 and -10+80 mesh fractions of 'C' horizon materials has been undertaken from 30N. to 40N. The occurrence of lodgement tills of unknown extent makes the interpretation of anomalous results difficult.
- Drilling:** Diamond drill hole, WS1, was drilled by Rio Tinto Australasian Exploration in 1958. The hole drilled on an E.M. target intersected silicified pyritic black shales. No other mineralization was apparent but the hole was not assayed.

East Henty Grid South 2N. - 25N.

- Geology:** A sequence considered to be equivalent to the central lavas of the Queenstown area is dominated by intermediate lavas, pyroclastics and intrusives. It dips and faces east and is overlain by the Tyndall Group to the east.
- Geophysics:** Regional dipole-dipole I.P. surveys with detailed gradient array has been undertaken. Several important anomalous zones are present. These occur mainly at the top and the base of the main intermediate sequence in mixed acid and intermediate environments.
- Geochemistry:** Regional 200 x 1200 ft. soil sampling and detailed sampling of I.P. anomalies has been carried out. Approximately 40% of the samples are from non-residual till and swamp, and the soil sampling only provides a partial screen.
- Drilling:** Tyn 1, Tyn 2 and Tyn 3 all intersected pyritic black shales which adequately explain the I.P. anomalies drilled.

HA1 and HA2 intersected altered acid agglomerates with heavily disseminated pyrite, the best intersection *assayed*
 5 foot. of 0.35% Cu, 0.66 Pb, 0.22% Zn
 and 19% FeS₂.

HA3 - No apparent cause of the I.P. anomaly and coincident geochemical anomaly was intersected in the drill hole. Heavy Mn oxides and barite are partly coincident with the I.P. anomaly which requires further evaluation.

East Henty Grid North

- Geology:** Predominantly acid pyroclastics underlain to the west by sediments and overlain to the east by Tyndall Group.
- Geophysics:** Dipole-dipole and detailed gradient array I.P. surveys have been carried out. A strongly anomalous zone has been drilled on lines 38N. and 40N. A second zone is conductive and weakly polarizable.
- Geochemistry:** Regional 200 x 1200 ft. soil surveys plus detailed sampling of the I.P. anomalies has been undertaken and outlined an anomalous zone coincident with the strong I.P. anomaly.
- Drilling:** HFZ7 - A broad double peaked I.P. anomaly was explained by a zone of pyritic acid pyroclastics, the best section being 8 ft. of 0.31% Cu, 0.53% Zn, 0.25% Pb and 8.1% FeS₂, adjacent to a pyritic black shale.
- HFZ8 intersected similar lithologies with disseminate pyrite in volcanics.

Henty Fault Zone & Mt. Read 42N. - 66N.

Geology: The Henty Fault separates two sequences. To the west acid lavas and welded tuffs, intermediate volcanics and small basic intrusives are probably equivalent to the Mt. Black volcanics of the Rosebery area. To the east acid pyroclastics overlain to the east by volcanoclastic sediments are probably all Tyndall Group rocks, but possibly Queenstown Pyroclastics overlain by Tyndall Group. A costean on 49N. exposed massive sulphides in silicified acid tuffs assaying 1.8% Cu, 0.2% Zn, 1.76% Pb and 38% FeS₂ over a true width of 8 feet. The fresh sulphides were covered by 2-3 ft. of till. Widespread glacial material in the area has affected geological mapping and geochemical programmes.

Geophysics: Gradient array I.P. has revealed a total of 90 anomalies of which 30 are 1st and 2nd order. Most of the remaining 3rd order anomalies occur west of the fault between 42N. and 50N. To date the most significant

anomalous zone is centred on 49 N. and extends from 47 N. to 52 N., approx 3000 ft.

Geochemistry: Regional 200 x 1200 ft. soil sampling and detailed sampling of I.P. anomalies have been undertaken. The presence of glacial materials has affected the usefulness of the detailed surveys on 70% of the I.P. anomalies.

Drilling: HFZ1 - The I.P. anomaly and coincident Cu anomaly explained by 250 ft. of sheared "dolerite" assaying 0.11% Cu and 1.5% FeS₂.

HFZ2 - I.P. anomaly and coincident Zn anomaly possibly related to a major fault zone, no mineralization was intersected.

HFZ3 - I.P. anomaly explained by the intersection of black pyritic shale and sheared acid lavas carrying 3% pyrite and minor barite.

HFZ4 - I.P. anomaly and coincident geochemical anomaly explained by the intersection of black pyritic shales with trace amounts of base metals and veins of quartz and barite.

HFZ5 - I.P. anomaly and weak geochemical anomaly coincident with costeamed mineralization. The drill hole intersected 14 ft. of 0.34% Cu and 4.2% FeS₂ adjacent to the Henty Fault.

HFZ6 - I.P. anomaly with no geochemical response. The hole intersected the Henty Fault and 60 ft. of sulphides in altered acid lavas and tuffs. The best assays were :
 376 - 378 ft. 1.11% Cu, 4.0% Pb, 7.0% Zn and 30% FeS₂ ^{+85% Ag}
 425 - 435 ft. 0.46% Cu and 10.6% FeS₂ ^{2% Ag}

Red Hills - Gooseneck

Geology: A group of acid lavas and pyroclastics equivalent to the central lavas of the Queenstown area. These have been intruded by a fine grained acid volcanic, brecciated in places, often strongly chloritised and carrying veins of haematite, magnetite and chalcopyrite. Several old adits are present.

To the west of the intrusive the general sequence becomes more pyroclastic to the south where black shales are present. The black shale zone is anomalous in Pb and Zn, assays of up to 1.2% Zn have been obtained from grab samples. The black shale zone possibly continues south under the moraine towards Lake Westwood.

Geophysics: A pole-dipole I.P. survey has been carried out from 80S.

to 8N. This has revealed two major zones coincident with

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the Red Hills intrusive, the whole of which is highly chargeable, and with the black shale zone.

Geochemistry: Regional soil sampling 100 x 800 ft. grid and detailed sampling of the I.P. anomalies have been carried out and revealed strong anomalies over the Red Hills intrusive and the black shale zone.

Drilling: GN1, GN2 and RPH95 were drilled between 1957 and 1959 on a Turam anomaly located by R.T.A.E. and the Electrolytic Zinc Co. on the black shale zone. No significant mineralization was found.

RPH94 - Drilled by E.Z. Co. to test the potential of a shear zone at Red Hills. No significant mineralization.

RH1, RH2 and RH3 plus a number of percussion holes were drilled to test for a large low grade copper body. Some minor copper mineralization was intersected by the percussion drilling.

Selina - Rolleston Grid 144S. - 188N.

Geology: The Cambrian sequence consists largely of acid lavas and pyroclastics. The sequence rests unconformably on Precambrian Quartzites to the east and is overlain to the west by Ordovician Owen Conglomerate. Mineralisation consisting of veinlets and disseminations of pyrite with magnetite, haematite and minor chalcopyrite, galena and sphalerite occurs in sheared and altered volcanics in the Selina and Lake Dora areas. The area was extensively affected by Pleistocene glaciation and much of the area is either obscured by glacial moraine and outwash or exhibits strong erosional features.

Geophysics: The grid has been surveyed with either pole-dipole or gradient array I.P. and several anomalous zones have been outlined (Map 3).

Geochemistry: Soil sampling has been limited by the extensive glacial deposits. Sampling on 800 x 100 ft. grid has been undertaken on areas of "residual" soils and outlined Cu, Pb and Zn anomalies coincident with I.P. anomalies.

Drilling: All the drilling to date has been undertaken on anomaly A1. Sel 1, 2 and 3 were drilled on lines 72N., 64N. and 48N. respectively.

Sel 1 46 ft. x 5.10% FeS₂ minor amounts of Cu, Pb, Zn
Sel 2 134 ft. x 0.90% FeS₂ " " " "
Sel 3 210 ft. x 0.85% FeS₂ " " " " including 20 ft. x 0.38% Cu, 1.01% Pb, 0.41% Zn

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Sel 4, 5, 6, and 7 were drilled on lines 120N., 128N., 136N. and 112N. respectively.

| | | |
|-------|----------------------------------|-----------------------------|
| Sel 4 | 512 ft. x 13.0% FeS ₂ | minor amounts of Cu, Pb, Zn |
| Sel 5 | 70 ft. x 11.1% FeS ₂ | " " " " |
| | 400 ft. x 10.3% FeS ₂ | " " " " |
| Sel 6 | 120 ft. x 5.1% FeS ₂ | " " " " |
| | 50 ft. x 4.0% FeS ₂ | " " " " |
| | 205 ft. x 7.3% FeS ₂ | " " " " |
| Sel 7 | 65 ft. x 10.2% FeS ₂ | " " " " |

3.4 Proposed Budget and Exploration Programme E.L. 9/66

The proposed budget and exploration programme are outlined in Section 6. Total expenditure over four years is estimated at \$468,000.

4. E.L. 10/69, DORA-HUXLEY AREA

4.1 Introduction

Exploration Licence 10/69 was originally issued to the Mount Lyell Mining and Railway Co. Ltd. in June, 1969 and covered 104 square kilometres (40 square miles) to the east and south of the Consolidated Mining Lease. In December, 1970 the lease area was enlarged and now covers 116 square kilometres (45 square miles) from Lake Dora to the King River Gorge.

4.2 Geology (Map 4)

Within E.L. 10/69 Cambrian Mt. Read volcanic rocks crop out in two major belts : Mt. Sedgwick - Lake Beatrice - Lake Dora (Area 1) and South Queenstown - King River (Area 2).

Area 1

The Precambrian rocks to the east, mainly quartzites and quartz-mica schists, are disconformably overlain by a sedimentary unit of quartzites shales and minor conglomerates of probable Lower Cambrian age. Conformably overlying these sediments are felsic volcanic rocks containing dominantly altered felsic lavas with minor felsic pyroclastics and shales. This volcanic sequence is again overlain unconformably by younger volcanoclastic rocks and Ordovician conglomerates. Minor felsic intrusive bodies occur south of Mt. Sedgwick and to the west of Lake Dora.

No drilling has been carried out on E.L. 10/69 but recent mapping has shown minor lead-zinc mineralisation outcropping S.W. of Lake Beatrice within the felsic volcanic sequence. Chalcopyrite-pyrite mineralisation with minor sphalerite and galena is also known west of Lake Dora.

Area 2

The volcanic rocks south of Queenstown can be divided into an easterly sequence of dominantly felsic felsophan porphyry lavas and a westerly sequence of felsic pyroclastics with felsic and

minor basic intrusives.

Fig 2

WORK COMPLETED ON E.L. 10/69 1967-76

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| Year | Access | Geology | Grids | Geophysics | Geochemistry | Comments |
|-------------------------|--|---|--|--|---|--|
| 1967 P.M.I. (Co Ltd) | - | Roaring Meg Creek - detailed mapping. | Roaring Meg Creek - Grid | Ground Magnetics. In- line & Broadside E.M. Pole-Dipole I.P. | Regional Stream Sediment & Soil Sampling Surveys. | Grid essentially within Mine Lease but extends into Northern end of Area 2. |
| 1970-71 | Vehicle access to Whip Spur (Mt. Huxley track). L. Dora track extended to N. Shore of L. Dora. | Geological Mapping of Mt. Huxley Track. Regional Mapping North of L. Beatrice. | - | - | - | - |
| 1971-72 | Mt. Huxley track extended to Mt. Huxley. | Regional Mapping throughout Licence Area. | Huxley Grid Established (86,000'). | Vertical field magnetics - Huxley Grid. | Orientation sampling - Huxley Grid. | Huxley Grid covers lava sequence from Mt. Huxley to Whip Spur. |
| 1972-3 | Walking tracks cleared to give access to area W. of Huxley Grid. | Detailed mapping East end of Mt. Lyell. | - | Schlumberger Depth Soundings East End of Mt. Lyell. | - | - |
| 1973-4 | - | Detailed mapping over Southern Section of Little Owen Grid. | Little Owen Grid. | Gradient Array and Schlumberger I.P. Ground Magnetics. | - | Little Owen Grid largely on Consolidated Mining Lease. |
| 1974-75 | - | Geological mapping of Lava Sequence - Huxley Grid area. | - | - | Regional Stream Sediment and Reconnaissance Soil Sampling - Huxley Grid. | - |
| 1975-76 | Mt. Ellen Gold Mine located. | Geological Mapping : Mt. Sedgwick - L. Beatrice - L. Dora - L. Spicer areas. Geological Mapping over pyroclastic sequence West of Huxley Grid. | - | - | Regional Stream Sediment Sampling South of Mt. Sedgwick. | - |

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Total Expenditure to June, 1976 estimated at : \$102,000

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The dominant structure within the area is a north trending syncline extending southwards from Mt. Lyell Consolidated Mining Lease. Small scale anticlinal structures have been mapped on the western limb of the syncline within the pyroclastic rocks.

Minor pyrite, within felspar porphyry lavas and pyroclastic occurs north and east of Mt. Huxley and gold occurrence in quartz reefs have been recorded at the Mt. Ellen mine N.W. of Mt. Huxley.

4.3 Work Completed to Date

An outline of the work completed on E.L. 10/69 since 1967 is given in Fig. 2 and Map 5.

In general the major exploration effort has been on coverage of the lava sequence and in particular the northern section of Area 2 close to the Consolidated Mining Lease boundary.

Regional soil geochemistry has been partially hampered by contamination from the old Mt. Lyell Smelter, but reconnaissance sampling over the Huxley grid at 200 ft. spacing has identified several copper, lead and zinc anomalous values which require further detailing (see Annual Report E.L. 10/69, 1974-75).

Area 1 and the pyroclastic sequence of Area 2 has been geologically mapped but had no detailed geophysical or geochemical coverage.

4.4 Proposed Budget and Exploration Programme E.L. 10/69

The proposed budget and exploration programme are outlined in Section 6. Total expenditure over four years is estimated at \$233,000.

5. E.L. 41/71, HENTY-YOLANDE AREA

5.1 Introduction

The original Exploration Licence 41/71, totalling 80 square kilometres (31 square miles), was granted to the Mount Lyell Mining and Railway Co. Ltd. in August, 1971. The area had previously been held by Pickands Mather Int. Co. Ltd. as E.L. 12/65. The area (Map 1) was later enlarged and now totals 124 square kilometres (48 square miles).

5.2 Geology (Map 6)

Briefly the geology consists of a central belt of Cambrian acid/intermediate lavas and pyroclastics forming part of the Mt. Read Volcanic arc. To the west shales, siltstones and greywackes which represent trough sedimentation are considered to be laterally equivalent to the volcanics. Eastwards the volcanics are faulted against the Ordovician Owen Conglomerate.

No diamond drilling has been carried out on the lease under the present *exploration program. However in 1964 the Tas Dept of*

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Mines drilled three holes (MHP 1 - 3) to test a barite deposit at Madame Howard Plains and in 1966 Pickands Mather Int. Co. Ltd. drilled two vertical holes (BL 801 - 802) north-east of Basin Lake on a combined Turam/E.I.P. anomaly. BL 802 intersected 0.04% Cu, 0.47% Pb and 0.19% Zn from 207 ft. to 222 ft. where the hole was stopped due to drilling difficulties.

Massive pyrite mineralisation, 3 metres (10 ft.) thick, has also been mapped on the old Lake Margaret tramway within acid pyroclastic rocks while other isolated pyrite and minor Cu-Pb-Zn occurrences have been recorded at various places within the lease (see Annual Report E.L. 41/71, 1973-74).

5.3 Work Completed to Date (Map 7)

Between 1971 and 1973 reconnaissance geological mapping and regional stream sediment surveys were carried out over the central and eastern sections of E.L. 41/71. The geological mapping indicated a series of acid/intermediate lavas which were altered and in places partly mineralised and they are considered to be a northerly extension of the Mt. Lyell host rocks. Between 1973 and 1975 more detailed exploration was undertaken on three grids established over these volcanics :

- (i) West Sedgwick Grid
- (ii) Basin Lake Grid
- (iii) Madame Howard Plains Grid

In addition to these grid reconnaissance geological mapping was undertaken over the western section of the licence area.

(i) West Sedgwick Grid

This grid was established in November, 1973 and consists of 20 lines, 183 metres (600 ft.) apart, totalling 40 200 metres (132 000 ft.). Detailed geological mapping, ground magnetics and gradient array E.I.P. was undertaken during December, 1973. The E.I.P. outlined 36 anomalous responses of which 4 are considered to have major significance.

During 1974 extensions to the West Sedgwick grid were cut both to the north (3 lines) and to the south west (7 lines) adding a further 12 200 metres (40 000 ft.) to the existing grid. These extensions were also covered with ground magnetic and gradient array E.I.P. surveys.

During 1974-75 soil geochemistry was carried out over all anomalous geophysical responses. However orientation sampling, over non-anomalous areas, showed that the variation in the level of background values, was too high to allow reliable interpretation, of the sampling results, from the anomalous zones.

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(ii) Basin Lake Grid

This northern grid was established in October, 1974 and consists of 17 lines, 183 metres (600 ft.) apart, totalling 41 500 metres (136 000 ft.). Detailed geological mapping, ground magnetics and gradient array E.I.P. were completed during 1975. The mapping indicated that the area consists of a sequence of acid and intermediate pyroclastics with intermediate and minor basic intrusions. The south east section is covered by glacial moraine.

In all 39 anomalous geophysical responses were recorded over the Basin Lake grid of which 21 are considered to be of major significance.

Geochemical coverage of these major anomalies is being undertaken at the present time but the variable distribution of glacial moraine will probably complicate interpretation of the soil sampling data.

(iii) Madame Howard Plains Grid

The Madame Howard Plains grid, comprising 7 lines totalling 6 400 metres (21 000 ft.), was cut during December, 1974 and surveyed with ground magnetics and gradient array E.I.P.

The geology is essentially a sequence of acid pyroclastics and shales with an acid porphyry body outcropping in the north and eastern part of the area; a number of small barite lodes can be seen in old shallow workings. One minor anomaly over 3 lines was defined by the E.I.P. survey.

5.4 Proposed Budget and Exploration Programme E.L. 41/71

The proposed budget and exploration programme are outlined in Section 6. Total expenditure over four years is estimated at \$317,000.

6. EXPLORATION PROGRAMMES AND BUDGETS 1976 - 1980

The proposed programmes and budgets are outlined in the attached table (Fig. 3).

Unit costs have been calculated as follows :

| | |
|------------------|--------------------------------------|
| Diamond drilling | \$50/m |
| I.P. | \$300/line km (plus materials, etc.) |
| Line cutting | \$50/1000 ft. (300 km) |
| Airborne E.M. | \$100/line mile (\$65/line km) |

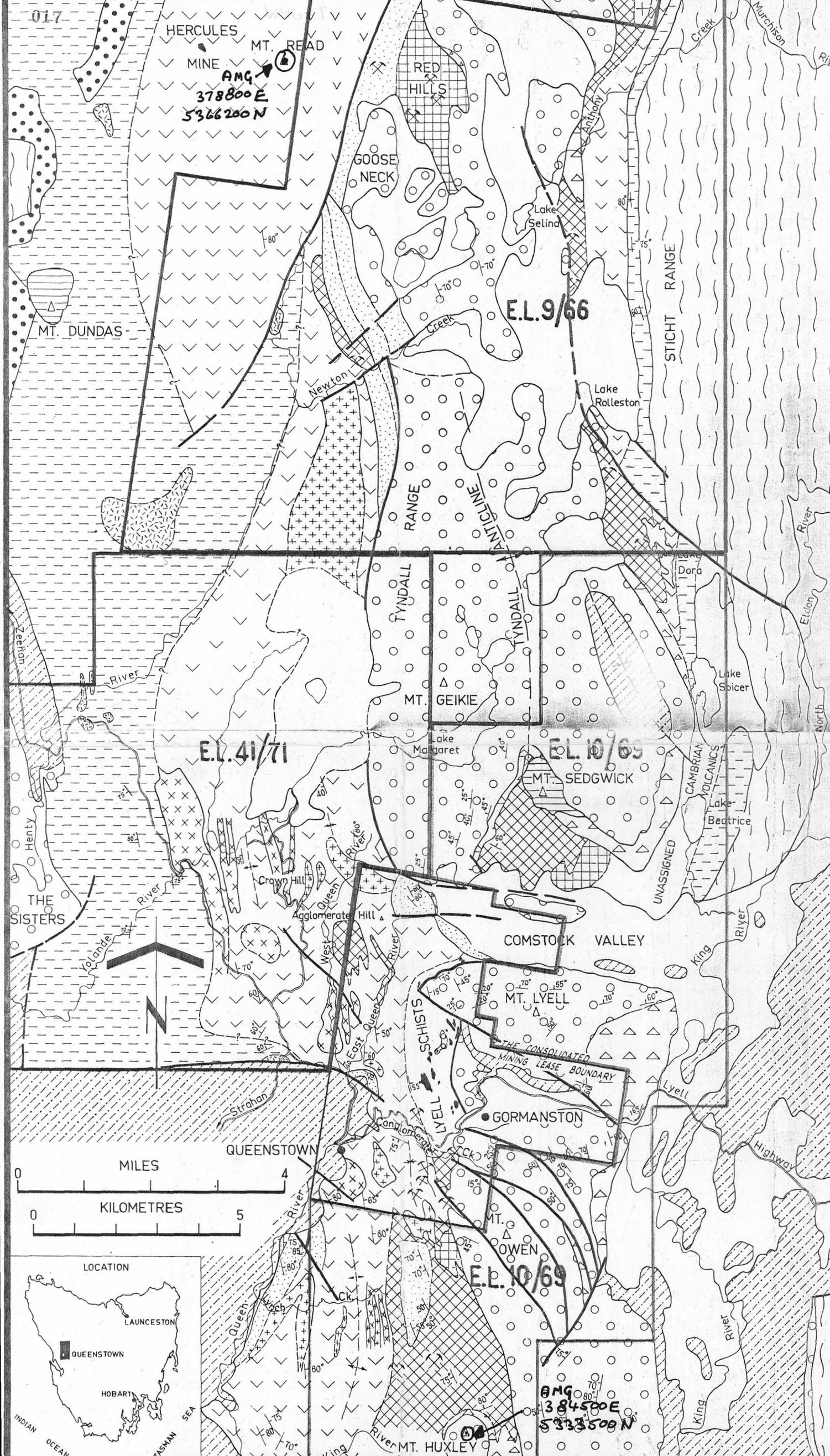
Salaries include : 2 geologists, 2 field assistants and a draughtsman and for budgetting purposes have been divided equally between the three areas.

General costs include : geochemical assays, petrographic work, bulldozer costs (unless otherwise specified) and vehicle operating costs which have been assessed as 35 cents per Km. an overhead charge of 15% has also been included in the final estimates.

PRELIMINARY EXPLORATION PROGRAMMES AND BUDGET 1976-1980

FIG. 3

| YEAR | LICENCE AREAS | | | | | | TOTAL COST P. 1. |
|-------------------|--|---|---|---|--|--|---------------------|
| | MT. TYNDALL, E.L. 9/66 | | DOHA-HUXLEY, E.L. 10/69 | | HENRY-YOLANDE, E.L. 1/71 | | |
| | Activity* | Cost | Activity | Cost | Activity | Cost | |
| 1976-77 | <u>Diamond Drilling:</u> Red Hills 3 x 300 m Gooseneck 2 x 300 m <u>Grid Cutting:</u> N.W. Corner (45,000') | \$ 75,000 \$ 2,500 | <u>Diamond Drilling:</u> Nil <u>Grid Cutting:</u> Beatrice Grid (120,000') <u>Access Road:</u> (2 km) <u>Geophysics:</u> (I.P.) | - \$ 6,000 \$ 1,500 \$ 12,000 | <u>Diamond Drilling:</u> West Sedgwick 2 x 300 m <u>Grid Cutting:</u> West Sedgwick (42,000') Basin Lake (40,000') Lake Margaret (70,000') <u>Geophysics:</u> (I.P.) | \$ 30,000 \$ 7,500 \$ 16,000 | |
| | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 4,000 \$ 5,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 1,500 \$ 2,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 3,000 \$ 4,500 | |
| | | \$106,000 | | \$ 38,000 | | \$ 76,000 | |
| | O.H. Charge 15% | \$122,000 | O.H. Charge 15% | \$ 45,000 | O.H. Charge 15% | \$ 97,000 | \$264,000 |
| 1977-78 | <u>Diamond Drilling:</u> W.F.Z. 5 x 300 m <u>Grid Cutting:</u> White Spur (30,000') <u>Geophysics:</u> (I.P.) White Spur (60,000') W.F.Z. detail | \$ 75,000 \$ 2,000 \$ 5,500 \$ 3,000 | <u>Diamond Drilling:</u> Beatrice 2 x 300 m <u>Grid Cutting:</u> Nil <u>Geophysics:</u> Airborne E.M. - Lynch Creek (32 line miles) | \$ 30,000 - \$ 3,000 | <u>Diamond Drilling:</u> West Sedgwick 2 x 300 m Basin Lake 2 x 300 m <u>Grid Cutting:</u> Nil <u>Geophysics:</u> Airborne E.M. (70 line miles) | \$ 60,000 - \$ 7,000 | |
| | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 4,500 \$ 5,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 1,000 \$ 3,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 2,000 \$ 5,000 | |
| | | \$110,000 | | \$ 52,000 | | \$ 89,000 | |
| | O.H. Charge 15% | \$126,000 | O.H. Charge 15% | \$ 60,000 | O.H. Charge 15% | \$102,000 | \$288,000 |
| 1978-79 | <u>Diamond Drilling:</u> Selina-Dora 5 x 300 m <u>Grid Cutting:</u> Anthony Creek (70,000') <u>Geophysics:</u> (I.P.) (130,000') | \$ 75,000 \$ 3,500 \$ 6,500 | <u>Diamond Drilling:</u> Lake Dora 2 x 300 m <u>Grid Cutting:</u> Dora-Spicer (30,000') E.M. anomalies (30,000') <u>Geophysics:</u> (I.P.) | \$ 30,000 \$ 2,000 \$ 2,000 \$ 6,000 | <u>Diamond Drilling:</u> Basin Lake 2 x 300 m Lake Margaret 2 x 300 m <u>Grid Cutting:</u> E.M. anomalies (50,000') <u>Geophysics:</u> I.P. over E.M. anomalies | \$ 60,000 \$ 2,500 \$ 4,500 | |
| | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 5,000 \$ 5,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 2,000 \$ 3,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 3,000 \$ 4,000 | |
| | | \$110,000 | | \$ 60,000 | | \$ 89,000 | |
| | O.H. Charge 15% | \$126,000 | O.H. Charge 15% | \$ 70,000 | O.H. Charge 15% | \$ 97,000 | \$289,000 |
| 1979-80 | <u>Diamond Drilling:</u> White Spur 2 x 300 m N.A. & Zone A 2 x 300 m <u>Grid Cutting:</u> Nil <u>Geophysics:</u> Nil | \$ 60,000 - - | <u>Diamond Drilling:</u> Lynch Creek 2 x 300 m <u>Grid Cutting:</u> Nil <u>Geophysics:</u> Nil | \$ 30,000 - - | <u>Diamond Drilling:</u> E.M. anomalies 2 x 300 m <u>Grid Cutting:</u> Nil <u>Geophysics:</u> Nil | \$ 30,000 - - | |
| | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 3,000 \$ 4,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 2,000 \$ 3,000 | <u>Salaries</u> <u>Materials</u> <u>General Costs</u> | \$ 15,000 \$ 2,000 \$ 4,000 | |
| | | \$ 82,000 | | \$ 50,000 | | \$ 51,000 | |
| | O.H. Charge 15% | \$ 94,000 | O.H. Charge 15% | \$ 58,000 | O.H. Charge 15% | \$ 58,000 | \$210,000 |
| Total Cost | | \$468,000 | | \$233,000 | | \$340,000 | \$1,041,000 |



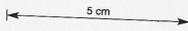
LEGEND

- QUATERNARY
- Undifferentiated mainly glacial and fluvioglacial deposits
- PERMIAN - JURASSIC
- Permo - Triassic sediments and Jurassic Dolerite
- ORDOVICIAN - DEVONIAN
- Ordovician limestone and Siluro - Devonian rocks
 - Owen Conglomerate and correlates
- CAMBRIAN
- Tyndall Group - Newton Creek sandstones, Comstock tuffs
 - Jukes Breccia and equivalents of Tyndall Group?
 - Andesitic porphyry bodies (mainly intrusive)
 - Acid porphyry bodies (mainly intrusive)
 - Queenstown Pyroclastics - tuffs, minor sediments and lavas
 - Rhyolites and rhyolitic porphyries with minor pyroclastics
 - Massive pink Darwin-type rhyolites ("Darwin Keratophyre")
 - Granite
 - Sedimentary sequences with minor pyroclastics
 - Basic and ultrabasic intrusives, basic volcanics
- UPPER PROTEROZOIC - ? LOWER CAMBRIAN
- Unmetamorphosed sediments
- PRECAMBRIAN
- Metamorphosed schists and quartzites
- AMG REFERENCE POINTS ADDED
- Ore body
 - Prospect
 - Fold axis
 - Major faults
 - Geological boundary
 - Approximate geological boundary
 - Strike and dip of bedding

018



LEGEND



- | | | |
|---|--|---|
| <p>QUATERNARY</p> <p> MORAINE/SCREE.</p> <p>ORDOVICIAN</p> <p> OWEN CONGLOMERATE.</p> <p>CAMBRIAN</p> <p> JUKES CONGLOMERATE/TYNDALL GROUP.</p> <p> UNCONFORMITY.</p> <p> ACID INTRUSIVE.</p> <p> INTERMEDIATE COMPLEX OF LAVAS, PYROCLASTICS PLUS INTRUSIVES.</p> <p> ACID LAVAS PLUS PYROCLASTICS, NORTH OF HENTY FAULT. CONTAINS NUMEROUS INTERMEDIATE/BASIC INTRUSIONS.</p> | <p> FINE-COARSE PYROCLASTICS PLUS SEDIMENTS.</p> <p> GREYWACKES, SHALES - DUNDAS GROUP.</p> <p> CONGLOMERATES, SHALES, DOLOMITES - STICHT RANGE SEQUENCE.</p> <p> ADAMELLITE.</p> <p> GABBRO.</p> <p>PRECAMBRIAN</p> <p> QUARTZITES.</p> | <p> CENTRAL LAVAS PLUS EQUIVALENTS.</p> |
|---|--|---|

THE CONSOLIDATED SYNDICATE

MT. TYNDALL AREA
E.L. 9/66

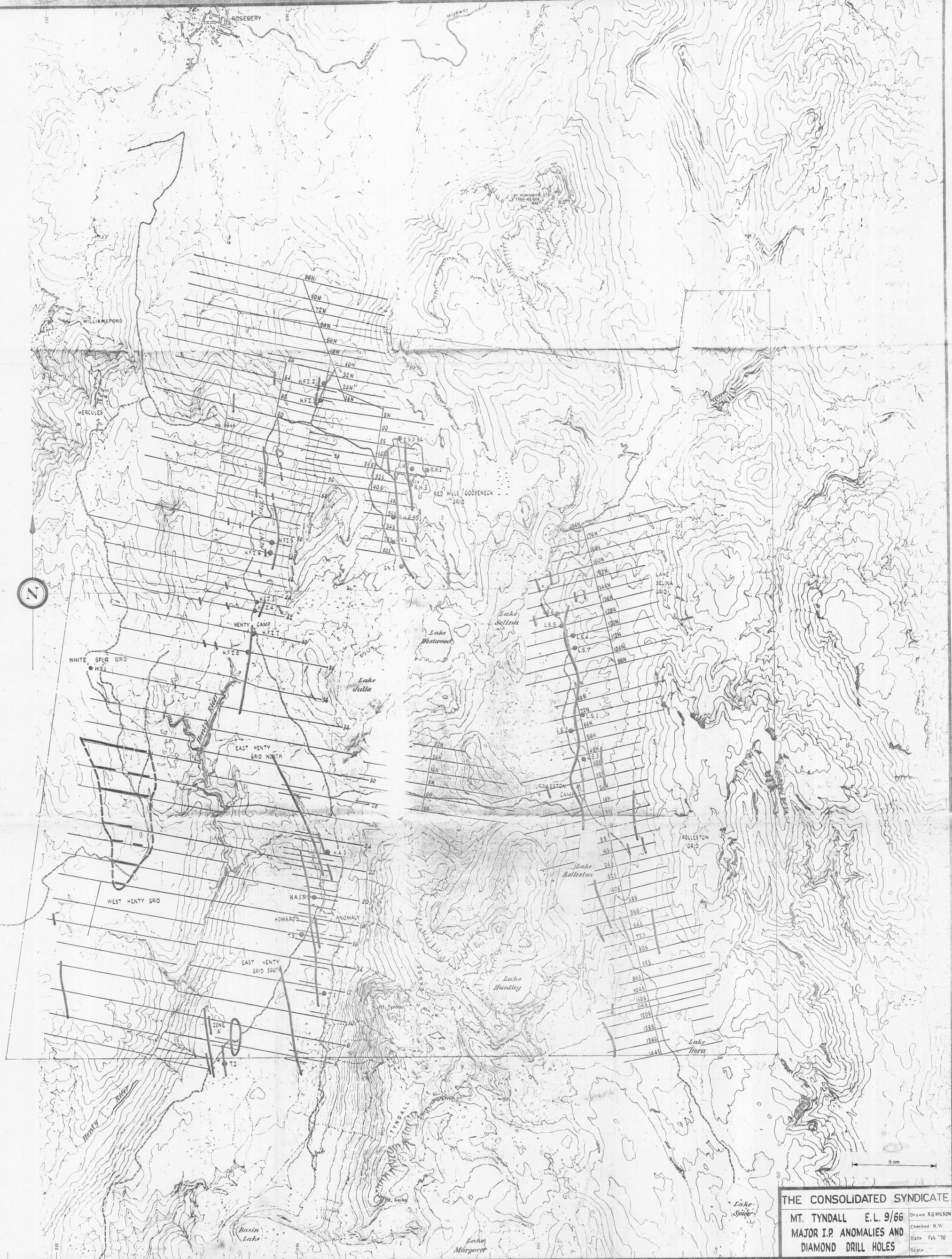
GEOLOGICAL MAP

504019

MAP 2

Drawn: K. WELLS
Checked: A.W.
Date: Feb '76
Scale: 2" = 1 mile

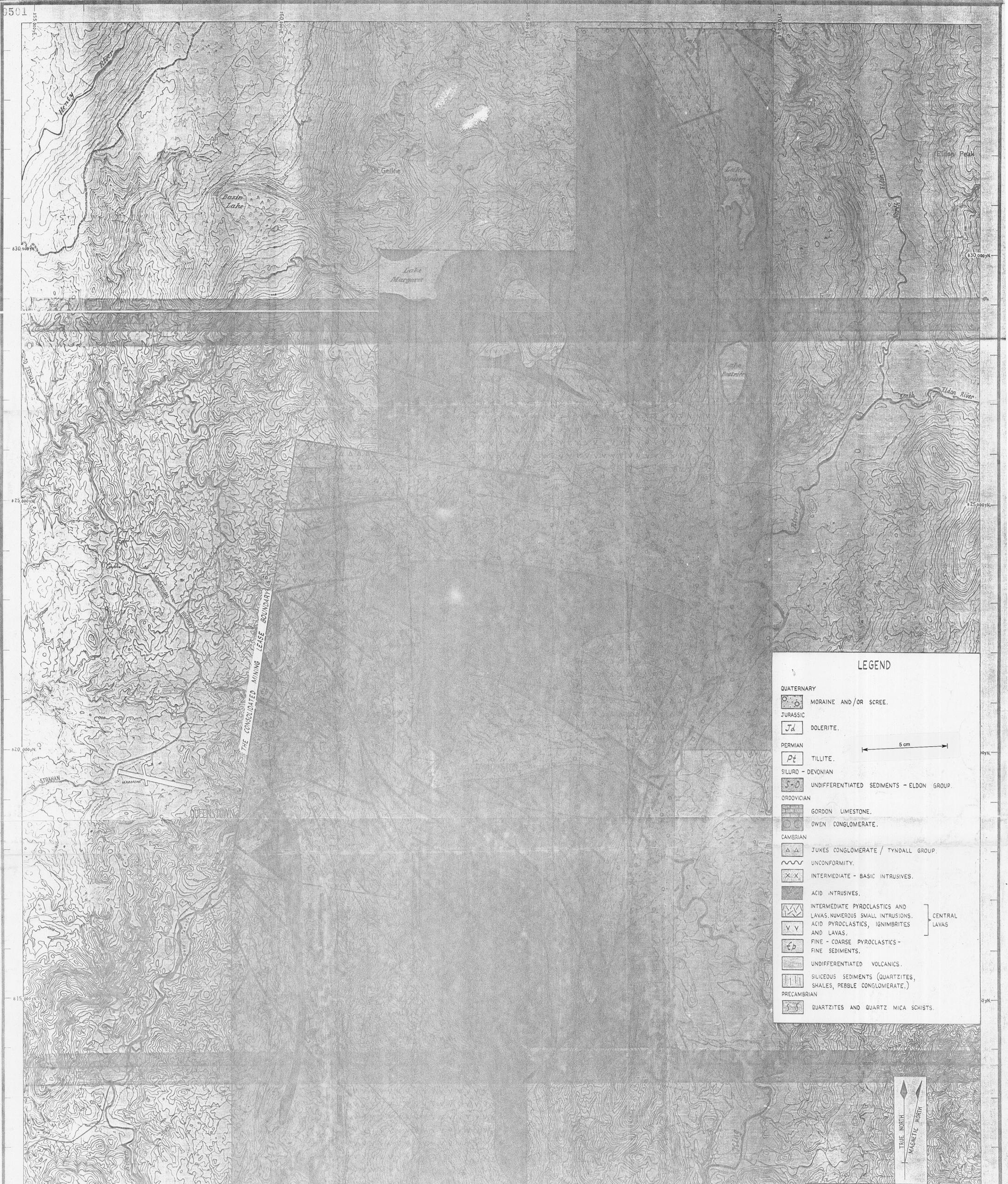
Base map by Lands and Surveys Department, Hobart. "Marchion" 40 chain to 1 inch sheets.



THE CONSOLIDATED SYNDICATE
 MT. TYNDALL E.L. 9/66
 MAJOR I.P. ANOMALIES AND
 DIAMOND DRILL HOLES

Drawn R.G. WILSON
 Checked K.W.
 Date Feb '76
 Scale

Note map by Lands and Survey Department, Hobart. "Murchison" 40 chain to 1 inch sheets



LEGEND

- QUATERNARY
 - MORAINE AND/OR SCREE.
- JURASSIC
 - DOLERITE.
- PERMIAN
 - TILLITE.
- SILURO - DEVONIAN
 - UNDIFFERENTIATED SEDIMENTS - ELDON GROUP.
- ORDOVICIAN
 - GORDON LIMESTONE.
 - OWEN CONGLOMERATE.
- CAMBRIAN
 - JUKES CONGLOMERATE / TYNDALL GROUP.
- UNCONFORMITY.
 - UNCONFORMITY.
- INTERMEDIATE - BASIC INTRUSIVES.
 - INTERMEDIATE - BASIC INTRUSIVES.
- ACID INTRUSIVES.
 - ACID INTRUSIVES.
- INTERMEDIATE PYROCLASTICS AND LAVAS, NUMEROUS SMALL INTRUSIONS.
 - INTERMEDIATE PYROCLASTICS AND LAVAS, NUMEROUS SMALL INTRUSIONS.
- ACID PYROCLASTICS, IGNIMBRITES AND LAVAS.
 - ACID PYROCLASTICS, IGNIMBRITES AND LAVAS.
- FINE - COARSE PYROCLASTICS - FINE SEDIMENTS.
 - FINE - COARSE PYROCLASTICS - FINE SEDIMENTS.
- UNDIFFERENTIATED VOLCANICS.
 - UNDIFFERENTIATED VOLCANICS.
- SILICEOUS SEDIMENTS (QUARTZITES, SHALES, PEBBLE CONGLOMERATE.)
 - SILICEOUS SEDIMENTS (QUARTZITES, SHALES, PEBBLE CONGLOMERATE.)
- PRECAMBRIAN
 - QUARTZITES AND QUARTZ MICA SCHISTS.

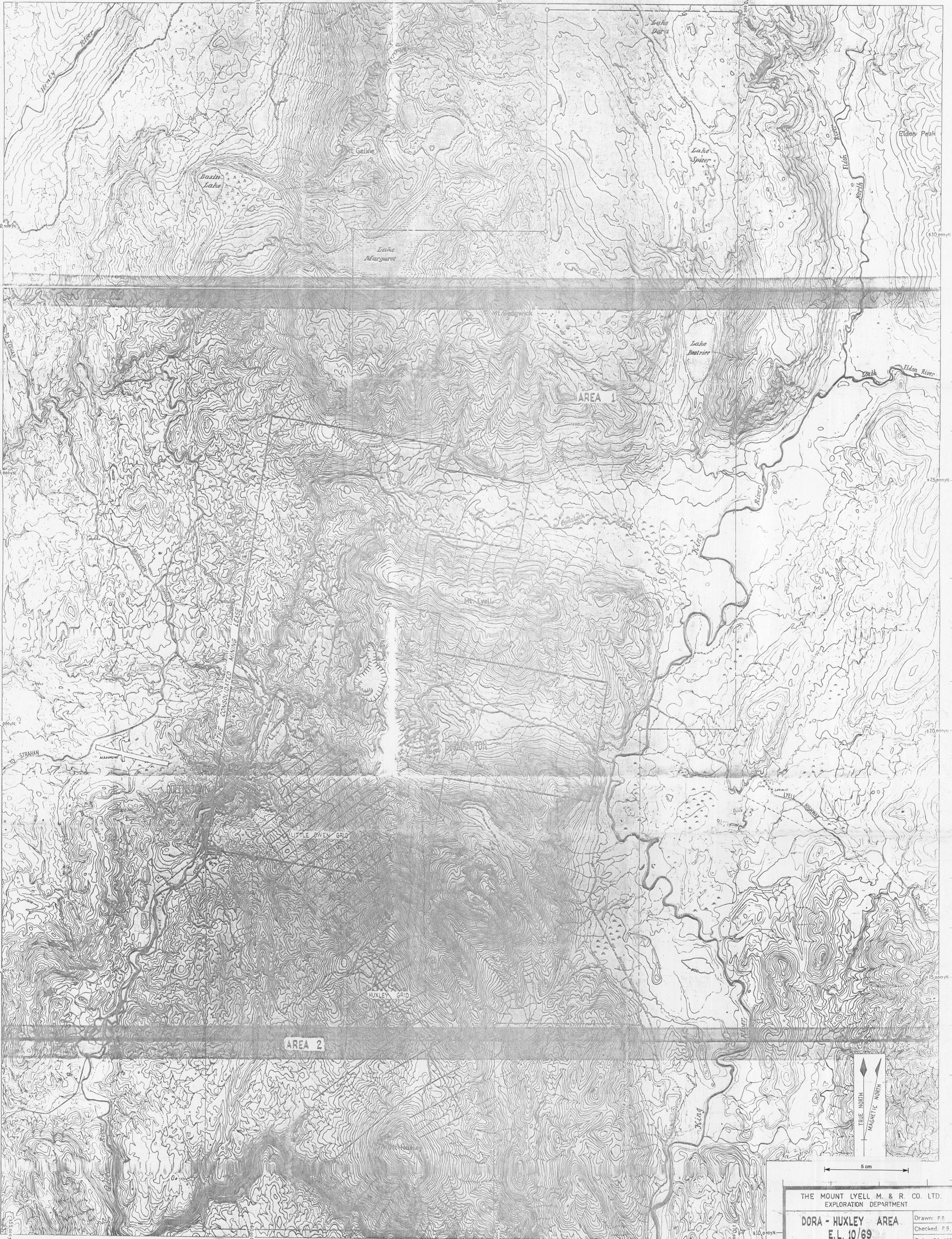


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EXPLORATION DEPARTMENT

DORA - HUXLEY AREA
E.L. 10/69

GEOLOGICAL MAP

Drawn: K.WELLS
Checked: K.W.
Date: Feb, '76
Scale: 2" = 1 mile



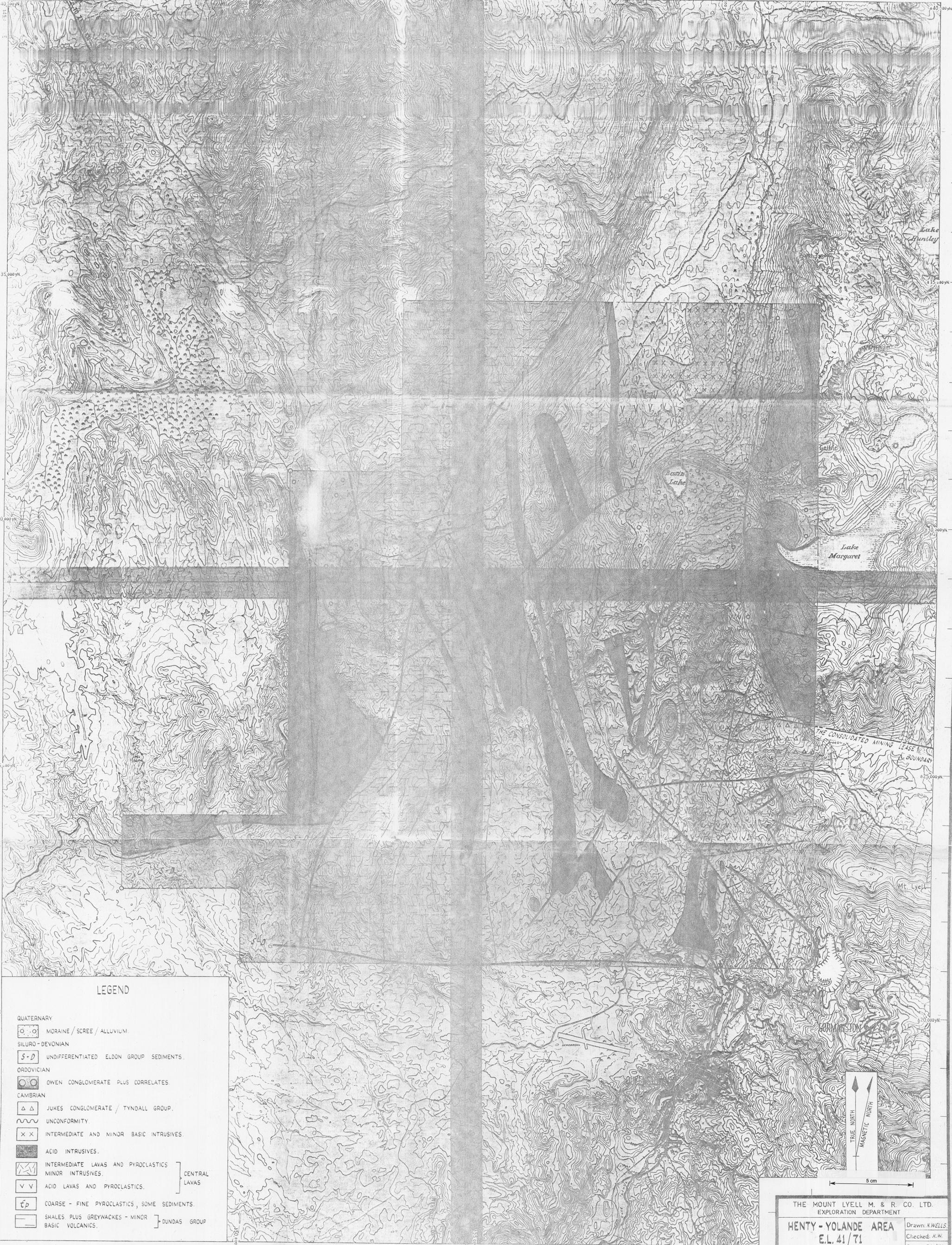
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EXPLORATION DEPARTMENT

DORA - HUXLEY AREA
E.L. 10/69
MAJOR I.P. ANOMALIES

Drawn: P.B.
Checked: P.B.
Date: Feb. '76
Scale: 2" = 1 mile

5 cm





LEGEND

- QUATERNARY
 - MORAINE / SCREE / ALLUVIUM.
- SILURO-DEVONIAN
 - UNDIFFERENTIATED ELDON GROUP SEDIMENTS.
- ORDOVICIAN
 - OWEN CONGLOMERATE PLUS CORRELATES.
- CAMBRIAN
 - JUKES CONGLOMERATE / TYNDALL GROUP.
- UNCONFORMITY
- INTERMEDIATE AND MINOR BASIC INTRUSIVES.
- ACID INTRUSIVES.
- INTERMEDIATE LAVAS AND PYROCLASTICS
- MINOR INTRUSIVES. } CENTRAL LAVAS
- ACID LAVAS AND PYROCLASTICS.
- COARSE - FINE PYROCLASTICS, SOME SEDIMENTS.
- SHALES PLUS GREYWACKES - MINOR BASIC VOLCANICS. } DUNDAS GROUP



5 cm

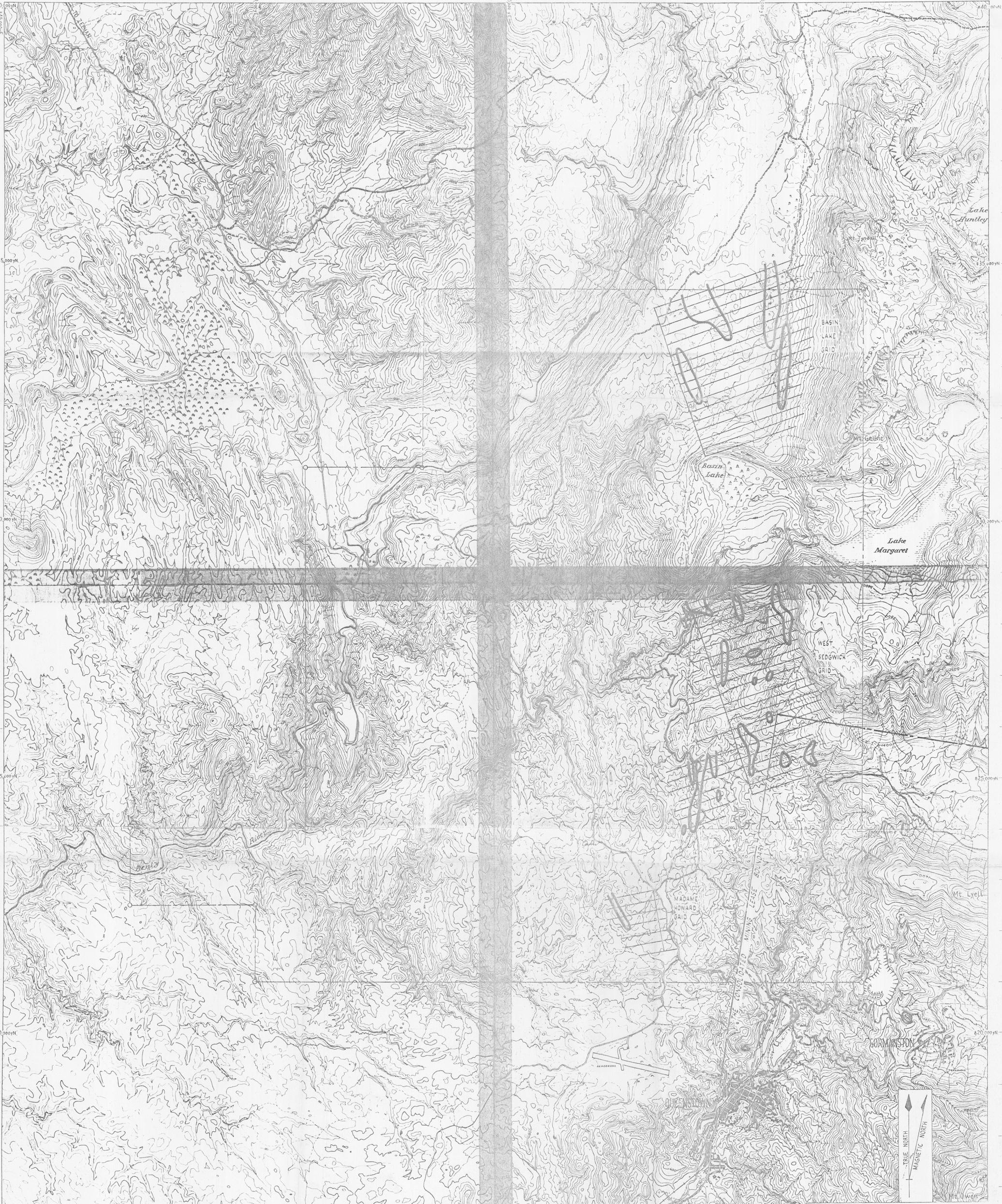
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HENTY-YOLANDE AREA
E.L. 41/71

GEOLOGICAL MAP

Scale: 2" = 1 mile

Drawn: K.W.L.S.
Checked: A.W.
Date: Feb. '76



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 EXPLORATION DEPARTMENT
HENTY-YOLANDE AREA
 E.L. 41/71
MAJOR I.P. ANOMALIES

Drawn: P.BROPHY
 Checked: P.B.
 Date: Feb '76
 Scale: 2" = 1 mile