NEWNHAM EXPLORATION AND MINING SERVICES

ANNUAL REPORT 1992-93

E.L. 20/92

MOINA AREA - NORTHERN TASMANIA

Prepared for: Goldstream Mining N.L.,
24 Outram Street,
WEST PERTH, W.A. 6872

By: L.A. Newnham,
P.O. Box 1002,
DEVONPORT, TAS. 7310

Phone: (004) 282 289
Fax: (004) 282 781

Date: 05 August, 1993

1. SUMMARY

E.L. 20/92 is underlain by a sequence of Cambrian volcanics and Ordovician sediments which have been intruded by a Devonian granite.

Intense fluorine metasomatism in the fractured aureole adjacent to a high level granite spine resulted in the leaching of base and precious metals from the volcanics and their subsequent deposition in fault zones and skarns in the sediments.

During 1992-93, Goldstream and Titan spent $7,245.00 evaluating existing exploration data from this region. Three prospects within the E.L. area were considered to warrant further work:

- Stormont Au-Bi deposits,
- Hugo Au-Zn skarn,
- Narrawa Au-base metal deposits.

Drilling programs have been designed to further test the Stormont and Hugo prospects. Further data evaluation is recommended at Narrawa.

The Hugo area is partly covered by a Retention Licence held by CRA and Shell. Provided an agreement can be concluded with them, it is proposed to further drill test the Hugo Skarn in 1993-94.

2. TENURE

E.L. 20/92 held by Goldstream Mining N.L. was granted on 11th September 1992. Exploration on the Licence is subject to a Joint Venture Agreement between Goldstream and Titan Resources N.L.

Centrally situated within the E.L. is a Retention Licence 8810 held under a Joint Venture agreement by CRA Limited and Billiton (Shell). The R.L. is designed to cover a large drill defined fluorite resource. Goldstream has reached an agreement in principle with CRA and Shell which will allow Goldstream to explore for, and develop, base and precious metal deposits within the Retention Licence area.

3. EXPLORATION PHILOSOPHY:

In the Moina area, Cambrian Mt. Read Volcanics are overlain by a thin sequence of shallow water Ordovician sediments including conglomerate, sandstone and limestone. The volcanics and overlying sediments have been intruded by the Devonian Dalcoath Granite which forms a shallow, elongate east-west ridge beneath the Moina area, and outcrops to the east of Moina.

Intrusion of the granite resulted in the development of several significant NNW trending faults and abundant minor faulting and folding. Massive fluorine metasomatism is associated with the elongate granite ridge.

Two principal styles of mineralisation occur within this faulted metasomatic aureole:

- Sn-W-F veins and massive fluorine - magnetite skarns (mineralisation sourced within granite).
- Au-base metal veins and skarns (mineralisation sourced in Mt. Read volcanics).

E.L.. 20/92 was acquired to facilitate exploration for gold-base metal deposits. The mineralisation is thought to have been derived from the volcanics adjacent to the granite spine and transported by convective fluorine rich metasomatic fluids, operating within the granite aureole, along major faults. Deposition of this mineralisation possibly occurred in both fractured and skarned Ordovician sediments and within fault structures.

Initial exploratory interest based on this model, is centred on three areas within E.L. 20/92:

(a) Stormont Au-Bi skarn deposits,
(b) Hugo Au-Zn skarn,
(c) Narrawa Au-base metal deposits.

At Stormont, a number of known Au-Bi skarn deposits occur within a gently folded sequence of fractured and faulted fluorine - magnetite-garnet skarns developed in the Gordon Limestone. Scope exists for the development of extensions of these known deposits both within the fault structures and in the skarns immediately adjacent to the faults.

At Hugo, previous drilling has intersected a significant Au-Zn skarn deposit in Gordon Limestone to the immediate east of the Bismuth Creek Fault and concealed beneath a thrust fault known as the Hugo Fault. Potential exists for extensions of this skarn to the North and East.

At Narrawa, a number of fault zones appear to have acted as conduits for gold-base metal mineralisation with the subsequent development of Au deposits within the fault zones and base metal (+gold?) deposits in skarned sediments adjacent to the faults.

4. EXPLORATION COMPLETED 1992-93

In pursuit of the exploration philosophy outlined above, work completed in 1992-93 was directed towards a detailed collation of existing data on both the Stormont and Hugo areas.

Results of this work are presented in the two attached reports titled:

(a) "Brief Report on the Hugo Zinc-Gold Skarn Deposit, Moina, Tasmania",

(b) "Stormont Area, Northern Tasmania. Report on Gold and Bismuth Potential".

These reports defined areas which have potential for the development of Au-Bi deposits at Stormont and Au-Zn skarns at Hugo. Drilling programs designed to assess this potential were designed and costed for both areas.

At Narrawa, a start was made on collation of previous data.

5. PROPOSED EXPLORATION

During 1993-94, work on E.L. 20/92 will be directed towards the proposed drilling program on the Hugo skarn, and a detailed evaluation of existing data on Narrawa.

The drilling at Hugo will be dependent on the conclusion of an agreement with the holders of Retention Licence 8810.

989007

GOLDSTREAM MINING N.L.

A.C.N. 009 129 560

GJW/db/GDMM011:1/93

FAXED

3rd August 1993

Lindsay Newnham
Facsimile: 004 282 781

Dear Lindsay

MOINA LICENCE RENEWAL

EL 20/92

1st July 1992 to 30th December, 1992

Salaries	4000
Geological Consultants	2220
Tenement Costs	975

	7195

1st January 1993 to 30th June, 1993

Tenement Costs	50

TOTAL EXPENDITURE TO DATE	**7245**
	=====

Kind regards,
Yours sincerely

for Geoffrey J Wallace
COMPANY SECRETARY

989008

NEWNHAM EXPLORATION AND MINING SERVICES

STORMONT AREA, NORTHERN TASMANIA
REPORT ON GOLD AND BISMUTH POTENTIAL

Prepared by L. A. Newnham
For: Goldstream Mining NL
Date: July 1992

CONTENTS

1. SUMMARY

The Stormont area in northern Tasmania has potential for the development of medium sized gold-bismuth deposits, present as extensions of the former Stormont Bismuth Mine and as nearby repetitions in areas of similar geology.

Any resource so established would probably be amenable to both open-cut and underground development.

The gold-bismuth mineralisation is hosted by a faulted and folded skarned limestone with the gold being intimately associated with bismuthinite in the upper half of the skarn sequence. Former operations suggest nearly all the gold would be metallurgically recovered in a bismuthinite concentrate produced by flotation or gravity.

The resource potential could be further assessed by way of extensions to previously completed geological, geophysical and drilling programs in the area.

A two month program of core drilling, supplemented by minor mapping, sampling and magnetic surveys, costing $83,000 is recommended.

2. GEOGRAPHY

2.1 Land Tenure: (Fig 1)

The Stormont Mine area lies within Exploration Licence 20/92, recently applied for by Goldstream Mining N.L.

No other mining tenements exist in the area.

2.2 Land Management: (Fig 2)

The Stormont Mine occurs within an area classified as Multiple Use Forest Land, and as such comes under the management of the Forestry Commission. MUF Land is principally designated for resource industry development.

2.3 Physiography:

Topography is dominated by moderately rugged hills, covered with dense eucalypt and acacia regrowth forest and associated dense understorey. The major Lea River and tributaries dissect the area.

Elevations lie in the 600-700 metre range, and rainfall is high at approximately 1500-2000mm p.a. Light winter snow is not uncommon.

2.4 Infrastructure:

Access is obtained by travelling approximately 55 kilometres South of Devonport on the sealed Cradle Mountain Link road, then 10 kilometres on unsealed roads through the former mining town Moina, past Lake Gardiner, over the Iris River and along the South bank of the Lea River.

The last four kilometres of this route is suitable only for heavy duty 4-wheel drive vehicles and parts of this section may require re-opening.

An alternate route is from the north, through South Nietta, Smith's Plains and along the North side of the Lea River. Much of this road South of Smith's Plains is steep and suitably only for 4-wheel drive vehicles and foot access.

Water is plentiful in the Lea and Iris Rivers and their tributaries.

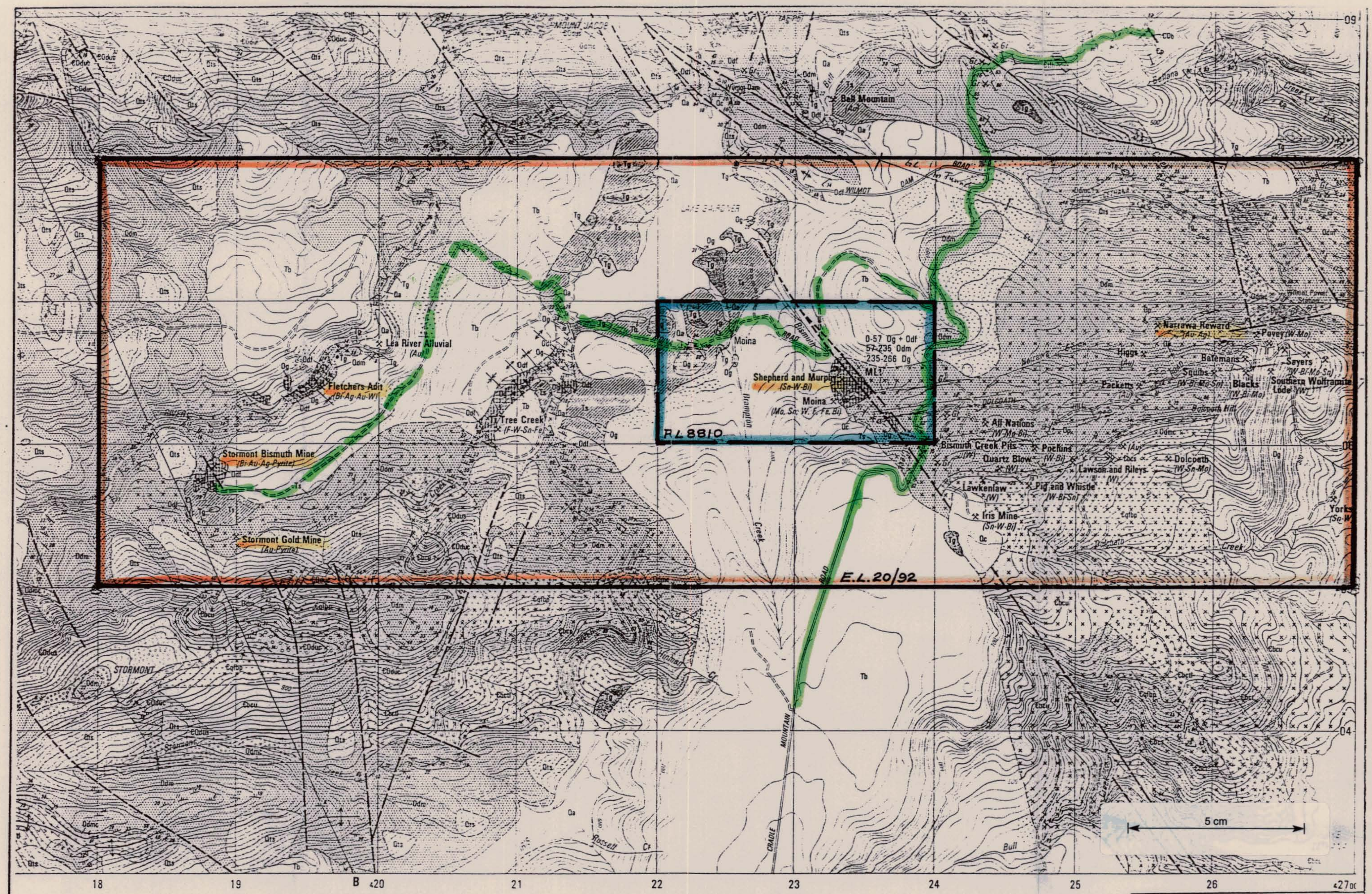
Power is available from the State Grid on the Cradle Mountain Link road.

3 HISTORY:

3.1 Mining: (Fig 1)

The general Stormont area was historically mined for both gold and bismuth.

989012



Qts: Quaternary scree, talus
Tb: Tertiary Basalt
Tg: Tertiary gravels
Ts: Tertiary soils, clays
Og: Gordon Limestone
Odm: Moina Sandstone

Odmc Roland Conglomerate
ЄOdus/ЄOduc Cambro-Ord sediments & volcanics
Єqfbp, Єbcu, Єp, Єpst: Mt. Read Volcanic members
Dg: Dalcoath Granite
x x Dalcoath Granite contact aureole

This map is a direct photocopy of portion of Dept. of Mines Map "Geology of the Waterbrook-Moina Area" MRVP Map 9, Pub. 1989.

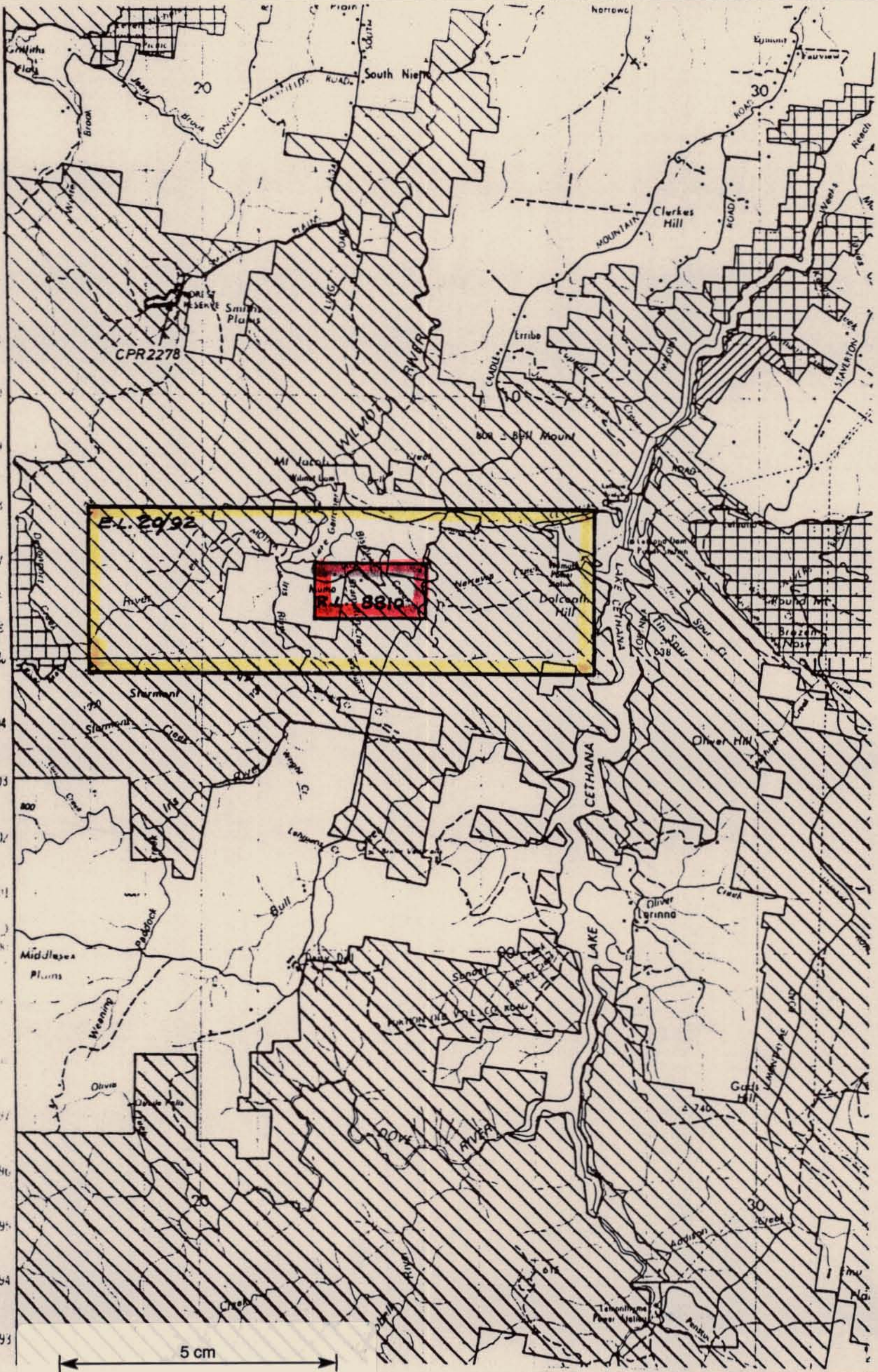
N

NEWNHAM EXPLORATION AND MINING SERVICES

E.L.20/92 – MOINA AREA
ACCESS, PHYSIOGRAPHY
MAJOR MINERAL DEPOSITS and BASIC GEOLOGY

0 — 1 km Scale 1:25,000

Drawn: LAN. Date: July 92 Figure 1



Multiple Use Forest Land

Deferred Forest Land

Unhatched areas mainly private land

NEWNHAM EXPLORATION AND MINING SERVICES

E.L. 20/92
MOINA AREA
LAND MANAGEMENT

0 — 4 km   Scale 1:100,000

Drawn: LAN	Date: July 92	Figure 2

Gold was produced from alluvial workings on the Lea River, approximately two kilometres downstream of the Stormont Bismuth Mine, from shallow open cuts and tunnels in skarn bodies at Fletchers Adit and Stormont Bismuth Mine, and from fracture zones and faults in Ordovician sandstone at the Stormont Gold Mine, and the Devonport, Golden Cliffs and Blacks Mines to the immediate West of E.L. 20/92.

Total production from these latter workings is not known, but was small.

Recorded production from the Devonport Mine averaged 19g/t and Blacks Mine 20g/t.

The principal mine in the area was the Stormont Bismuth Mine (quite separate to the Stormont Gold Mine), which between 1928-34 produced 6.3 tonnes bismuth contained in concentrates averaging 63% Bi, 450g/t Au. Ore grades are difficult to determine but were probably in the range 1-2% Bi and 8-10g/t Au. This would suggest 5-10,000 tonnes were selectively mined. Mining was initially by open-cut and later by adit.

Gold was closely associated with bismuthinite in an andradite garnet skarn developed above a Au-Bi depleted magnetite skarn. Grades were highest close to N.W. trending faults and shears.

Gold was a by-product mineral contained in the bismuthinite concentrate produced in a simple crushing-grinding-gravity mill.

3.2 **Exploration:**

The Stormont area has been extensively explored in the 1960s and 1980s, principally by the RGC Group.

A number of cut traverse line grids have been established and various geological mapping, geochemical and geophysical surveys completed on the grids. This work was complimented by aerial magnetic surveys and ground stream sediment surveys. The Stormont Bismuth Mine was thoroughly chip sampled in 1987 and two programs of core drilling were completed in 1988 and 1989-90.

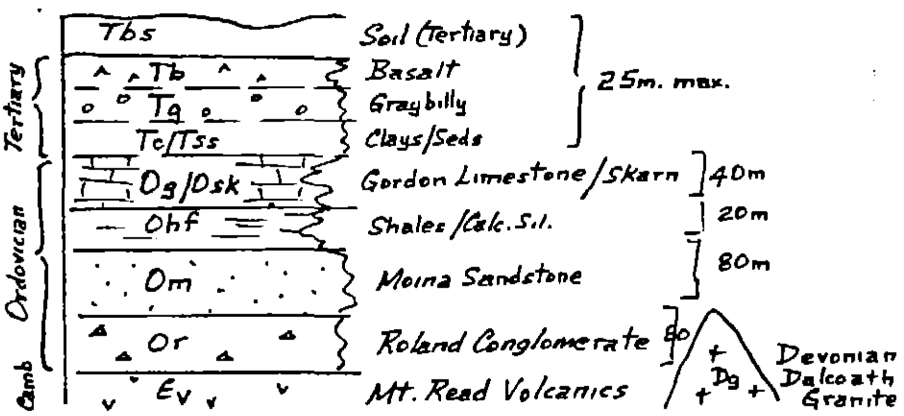
Geological Mapping:

Mapping in the area is complicated by several factors:

- poor outcrop
- extensive cover of tertiary basalt and basalt derived soils
- extensive cover of cemented tertiary gravels, known as graybilly, which not only conceal Ordovician geology, but also are readily mistaken for Ordovician conglomerates and sandstones.
- presence of thin sandstones above the Gordon limestone which can be confused with sandstones from beneath the limestone.
- deep weathering of limestone and skarn

In view of these difficulties, it is not surprising to see the evolution and variation in geological mapping. Knowledge of sub-basaltic geology has also changed significantly following the two drilling programs. In particular, drilling has demonstrated that the skarn is far more extensive than previously thought.

The local geological column is illustrated below:



Several periods of Devonian tectonism impact on the area. Most of the skarn lies in the keel of the E.W. Belvoir Syncline. Imposed on this regional syncline are at least three later phases of NW and EW folding. Fold axes in the NW direction are close spaced through the Stormont area, typically 50-60m apart.

The result of multiple periods of folding on a stratigraphic sequence of variable ductility was the development of numerous stress relief faults and shear zones, commonly in the N.W. direction.

The region was intruded in the upper Devonian by the Dalcoath Granite. Gravity data suggests Stormont is situated directly above the crest of an elongated, west plunging granite cusp which is probably buried at a depth of approximately 500 metres.

Granite intrusion was accompanied by intense metasomatism of adjacent sedimentary formations and the Gordon Limestone was extensively skarned. Metasomatism was dominated by fluids carrying F-Sn-W with lesser amounts of Bi-Mo-Cu-Ag-Cu-Pb-Zn. Brittle fractures in the Moina Sandstone are frequently filled with narrow greisen veins.

The metasomatic processes which produced skarns in the Gordon Limestone have been studied in detail by various researchers, and the processes are predictably complex and variable in the general Moina area.

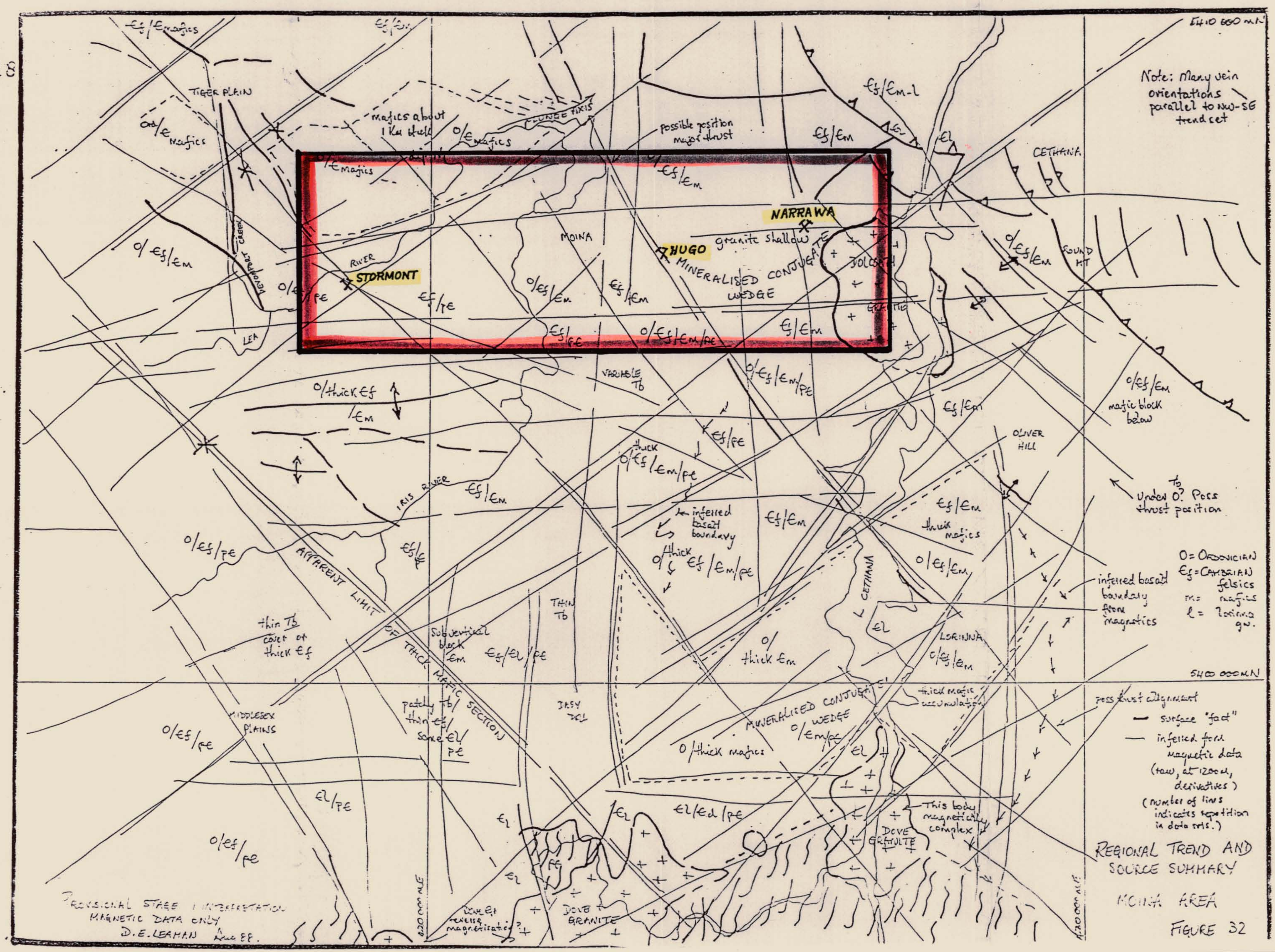
Geophysics:

Geophysics in the Stormont area has been dominated by magnetic surveys, supplemented on occasions by I.P.

Magnetics defines the magnetite bearing skarns well, but the picture is complicated by the variable magnetic nature of the Tertiary basalt and the fact that Au-Bi enriched upper sections of the skarn are usually magnetite depleted.

A regional interpretation of magnetic data over the general E.L. 20/92 area was undertaken by Leaman for RGC in 1988 Fig 3(a). It suggested the Stormont Bismuth Mine lay on a major regional NW trending structure which cut not only the spine of the

418



MOINA AREA MAGNETIC INTERPRETATION Leaman 1988 for AGC.

FIGURE: 3(a)

Devonian Granite cusp, but also the Cambrian Dove Granite. This trend possibly represents a Cambrian structure which was active through to the upper Palaeozoic.

Geochemistry:

Stream sediment surveys completed by RGC indicated that streams draining the Stormont Ridge to the South of the Stormont Bismuth Mine were widely gold anomalous. This ridge is underlain by Moina Sandstone and hosts the Stormont Gold Mine.

Soil sampling of grids over the Stormont Bismuth Mine -Fletchers Adit area was compromised by extensive Tertiary basalt soils and Tertiary gravels. Where sampling was undertaken in Ordovician soils, the skarns were shown to be extensively anomalous for Bi and Zn, and to a lesser extent Sn, W, Cu.

The grid coverage was limited and did not extend far North of the Lea River.

Mine Sampling: (Fig 3b)

The Stormont Bismuth Mine was channel sampled in 1987 by RGC. Samples were taken over continuous 2 metre intervals, using a pneumatic chisel.

In the open-cut, 16 such samples taken on the South wall averaged 4.8g/t Au, 7.6 g/t Ag, 0.56% Bi.

In the adit, 37 samples from the skarn averaged 9.5g/t Au, 4.4g/t Ag, 0.47% Bi.

A further seven samples taken underground across the main NW fault zone averaged 28g/t Au.

Random chip sampling around the Fletchers Adit workings indicated lower and more erratic gold grades.

Chip sampling of the Stormont Gold Mine trenches provided disappointing results with only one sample above 1g/t Au.

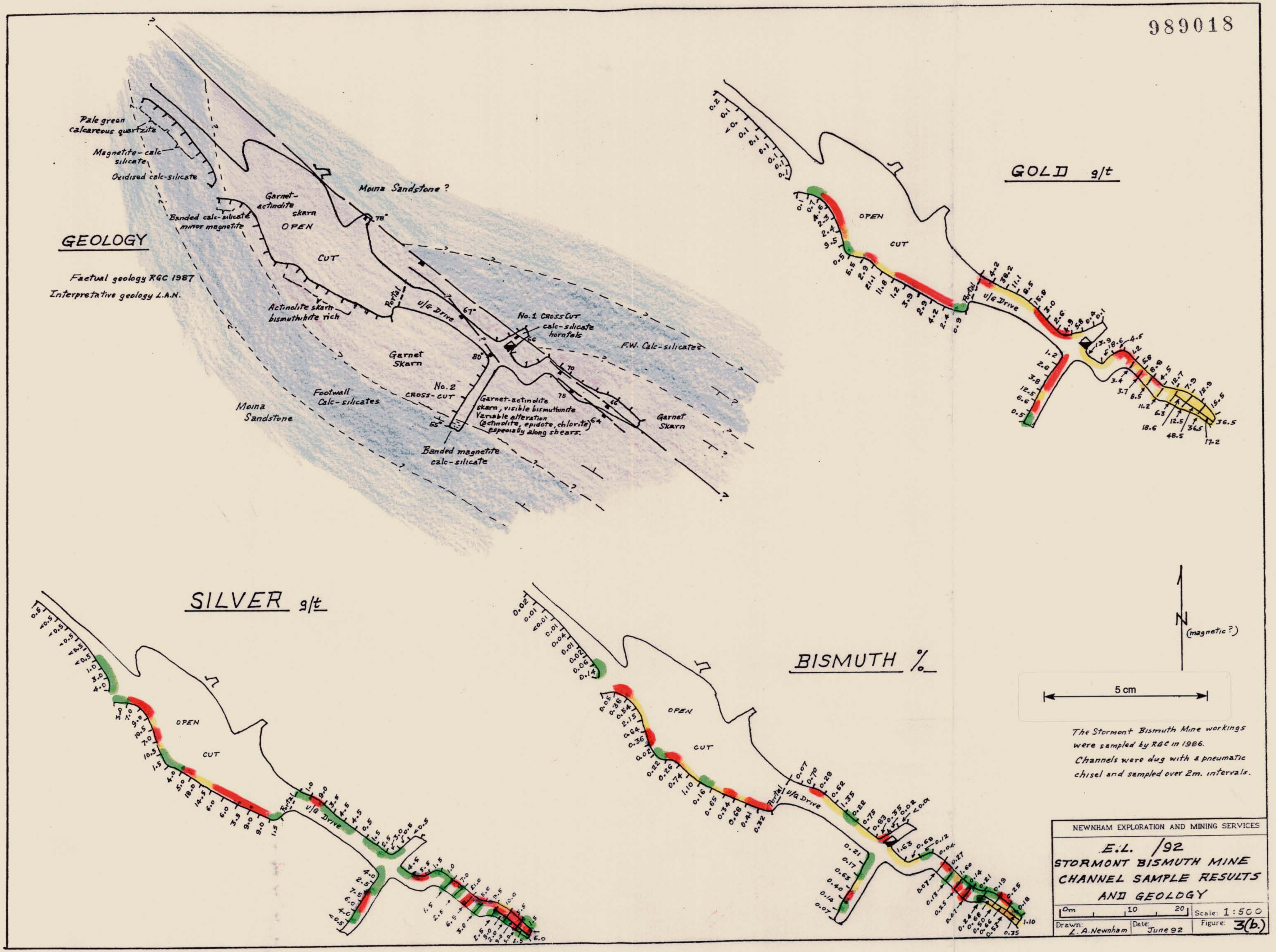
Drilling: (Fig 4,5)

In 1988, RGC drilled six cored holes around the Stormont Bismuth Mine and nine at Fletchers Adit. In 1989-90 they drilled a further 15 holes with an average length of 38 metres at Stormont.

All holes were vertical and their locations are shown on the accompanying Figures 4, 5.

The best drill hole intersections at Stormont were:

SD1: 13m 4.12g/t Au, 0.46% Bi
SD3: 2.1m 12.7 Au, 0.35 Bi
SD8: 1.3m 2.99 Au
SD10: 5.4m 2.5 Au, 0.1 Bi
SD20: 6.0m 0.44 Au


989018
GEOLOGY
Factual geology RGC 1987
Interpretative geology L.A.N.
Pale green calcareous quartzite
Magnetite-calc silicate
Oxidised calc-silicate
Banded calc-silicate minor magnetite
Garnet-actinolite skarn
OPEN CUT
Moina Sandstone ?
Actinolite skarn bismuthinite rich
Portal
U/G Drive
No.1 CROSS CUT
calc-silicate hornfels
F.W. Calc-silicates
Garnet Skarn
No.2 CROSS-CUT
Footwall Calc-silicates
Moina Sandstone
Garnet-actinolite skarn, visible bismuthinite
Variable alteration (actinolite, epidote, chlorite) especially along shears.
Banded magnetite calc-silicate
Garnet Skarn
GOLD g/t
SILVER g/t
BISMUTH %
N (magnetic ?)
5 cm
The Stormont Bismuth Mine workings were sampled by RGC in 1986.
Channels were dug with a pneumatic chisel and sampled over 2m. intervals.
NEWNHAM EXPLORATION AND MINING SERVICES
E.L. /92
STORMONT BISMUTH MINE
CHANNEL SAMPLE RESULTS
AND GEOLOGY
0m 10 20
Scale: 1:500
Drawn: L.A.Newnham
Date: June 92
Figure: 3(b.)

Results around Fletcher's Adit were patchy and generally lower than Stormont:

FD4: 5m 0.32 Au
FD7: 2m 1.5 Au
FD8: 3m 0.4 Au
21m 0.3 Au

35m gold anomalous skarn intersection in FD8

4. INTERPRETATION OF EXISTING DATA:

A considerably quantity of useful exploration data has been collected in the general Stormont - Fletcher's Adit area over the past 25 years, principally by RGC who were exploring for large tonnages of open-cuttable skarn hosted tin and gold mineralisation in flat lying Gordon Limestone.

In addition to the natural exploration problems in the area such as the extensive Tertiary cover and generally poor outcrop, there appears to be confusion on some RGC maps between magnetic north and AMG north. The problem is however not considered serious to an interpretation of existing data.

Past exploration and mining have indicated:

- skarn is far more extensive than previously thought, often concealed at shallow depths beneath younger formations.
- stratigraphy is gently folded along close spaced (<60m) NW fold axes, and probably also along wider spaced EW axes.
- stratigraphy in the general Stormont-Fletchers area is affected by abundant NW trending faults with apparent small movement. One such structure through the Stormont Bismuth Mine has been interpreted from magnetics as a regional feature.
- most of these faults are not recognised on the surface but interpreted from drilling and underground mapping.
- gold and bismuth mineralisation in the skarn appears closely related to these faults.
- skarn is generally 30-40m thick and variable in composition - almost layered. The upper half (HW skarn) is typically a garnet (andradite) -actinolite skarn, whilst the lower section (FW skarn) is a diopside - chlorite - magnetite -actinolite - garnet skarn

  Low grade Sn-W-F metasomatism is pervasive but significant Au-Bi mineralisation occurs only in the HW skarn.
- because of the shallow nature of the skarn, this more prospective HW skarn is commonly absent through erosion.
- gold is intimately associated with coarse bismuthinite. Former mining operations produced a bismuth concentrate of approximately 65% Bi and 450g/t Au by simple gravity means. It is not possible to determine gold

recoveries from this information but it suggests nearly all the gold was recovered with the bismuthinite.

Past exploration results, together with re-interpretation by this writer are presented on the accompanying Figs 4, 5, 6, 7.

Figure 4 is a 1:5000 geological plan of the Stormont-Fletchers area. It highlights the two main basins of known skarn mineralisation at Fletchers Adit and the Stormont Bismuth Mine.

The nine holes drilled north of Fletchers Adit intersected an extensive, thick skarn (25-40m), largely concealed beneath Tertiary cover, and carrying scattered low grade gold-bismuth mineralisation. It is important to note that no drilling was undertaken in the Fletchers Adit skarn South of the Lea River where the main workings occur, because of access problems in the steep sided valley.

Results of the 21 holes south of the Stormont Bismuth Mine were more encouraging and are shown in greater detail on Fig 5.

The initial 6 holes were designed to both follow up the encouraging underground channel sampling and to test the lateral extents of the skarn to the east and west of the Stormont Fault.

The follow up program of 15 holes was drilled in a close spaced EW fence of holes designed to better understand the structure and extent of the skarn, and to determine the potential for a large scale low grade open cut target.

These holes were concentrated east of the Stormont Fault where magnetic anomalism was strongest and appear to have overlooked the fact that the anomaly was strongest because the more prospective upper sections of the skarn beneath the basalt had been eroded away.

Interpretative sections through some of this drilling are attached as Figs. 6, 7. Several faults are postulated parallel to the Stormont Fault (Fig 6) in order to explain drill hole and outcrop stratigraphy. An alternative interpretation would be to simply fold the sequence more tightly. However drill hole B.C.A.'s and surface mapping support the concept of generally low dips throughout the area, as opposed to tight folding.

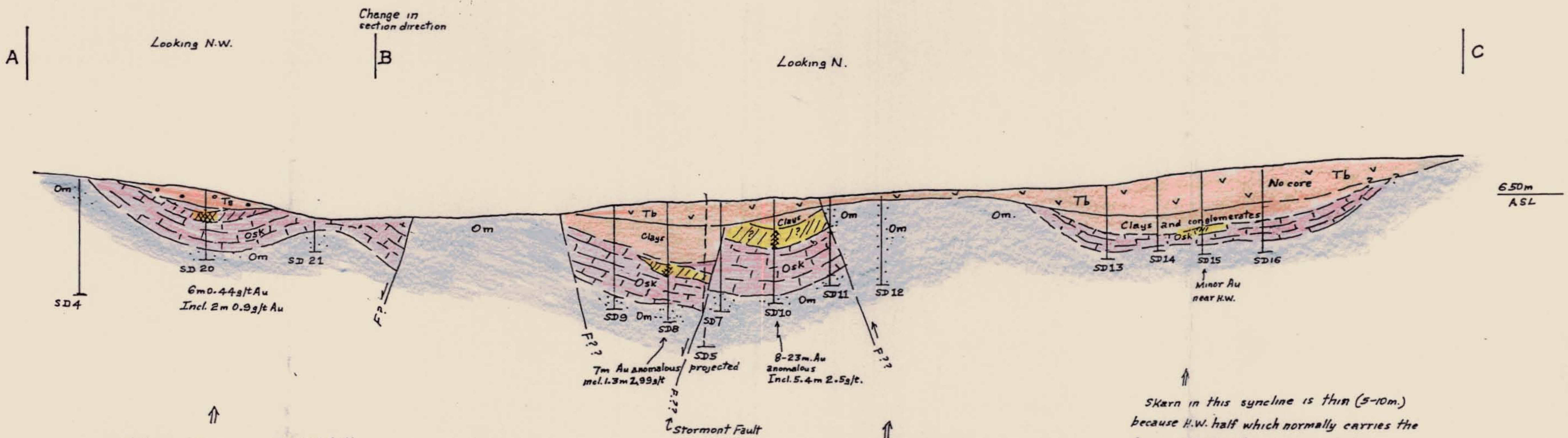
The faulted interpretation is important firstly because the Au-Bi mineralisation is associated with faults and fractures (plumbing system) within the skarn, and secondly the HW skarns are better preserved where downturned against these faults.

Available data has been interpreted to suggest the following:

a) South of the Stormont Bismuth Mine, skarn occurs extensively in three synclines: a western syncline indicated by holes SD20 and SD21; a central syncline around the Stormont Fault and an eastern syncline outlined by SD13-19 and SD6.

b) The eastern syncline appears to be very shallow and the upper mineralised section of the skarn has been eroded away - only the bottom 5-10m remains. The only potential for economic mineralisation in this

989021



Gold normally occurs in the HW. half of the skarn. That section has been eroded away in SD 21, and a remnant exists in SD 20.

Thicker skarn sections adjacent to the inferred fault are prospective, either to North or South, depending on which way Syncline plunges.

Steep folding would produce a similar interpretation to the inferred faults.

However flat dips in outcrop and drill holes do not support steep folding

The sandstone above skarn in SD11 appears to be Om. If so, it can be explained by a reverse fault or steep folding.

BCA's in SD11 suggest flat bedding.

Skarn in this syncline is thin (5-10m.) because H.W. half which normally carries the Au mineralisation has been eroded away.

If the syncline plunges South, the skarn should thicken South of this section

5 cm

NEWNHAM EXPLORATION AND MINING SERVICES

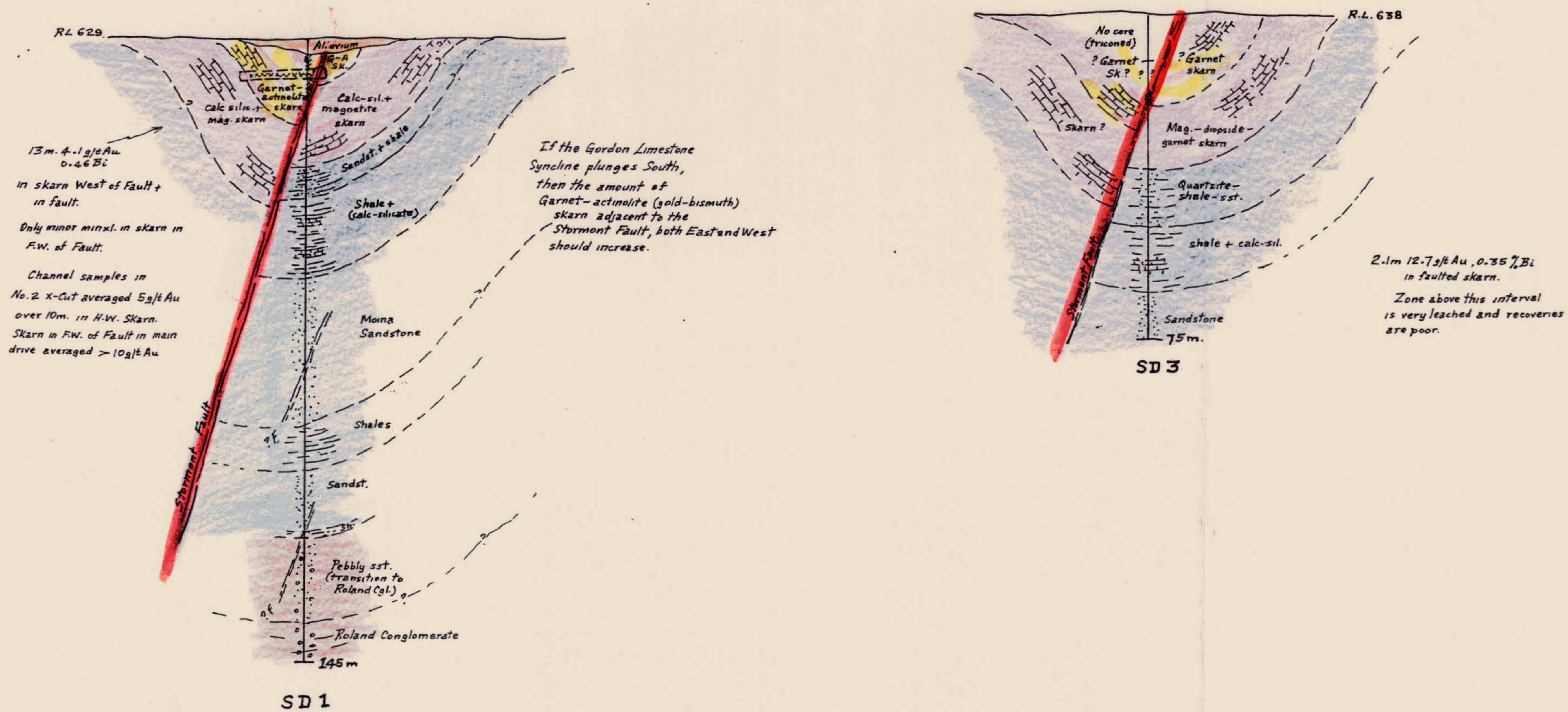
STORMONT MINE PROJECT

SECTION A-B-C

(See 1:1000 plan for location)

0 — 80m	Scale: 1:2000
Drawn: L.A. Newnham · Date: July 92	Figure: 6.

989022



5 cm

Sections Looking North

NEWNHAM EXPLORATION AND MINING SERVICES

E.L. 20/92

STORMONT MINE AREA

INTERPRETED DRILL SECTIONS

SD 1 and SD 3

0 — 40m	Scale 1:1000	
Drawn: LAN	Date: July 92	Figure 7

syncline would be if the syncline plunged either SE or NW of the existing drill pattern beneath the Tertiary cover, in which case the skarn would thicken and the more prospective HW skarn would be preserved.

Magnetics and stratigraphic trends suggest the syncline may be rising to the SE, in which case the potential in this direction is greatly diminished.

Potential is seen to the NW of SD17, SD18 where the skarn appears to be thickening. The presence of a siltstone -sandstone unit above the skarn in SD18 suggests there may be a reverse fault on the east side of the syncline.

SD18 intersected 2m 0.4g/t Au in the remnant of the HW skarn adjacent to this inferred fault.

c) the western syncline is interpreted as a north plunging syncline, with a faulted east margin. SD20 and SD21 are the only holes in this syncline.

SD20 intersected 20m of skarn including 6m 0.44g/t Au (including 2m 0.9g/t Au) near the eroded HW.

D21 intersected only 5m of skarn, with the mineralised HW section completely eroded away.

Potential certainly exists in this syncline for the skarn to thicken down plunge (?north, possibly south?) and where folded down against margin faults to the east.

d) the central syncline is influenced by the main Stormont Fault and inferred faults on the east and west margins of the syncline. It carries the main Stormont Bismuth Mine workings and is interpreted as a South plunging syncline with Au-Bi mineralisation developed in the HW skarn adjacent to fault zones.

SD1 was drilled adjacent to the Stormont Bismuth Mine adit. It intersected 13m 4.1g/t Au, 0.5% Bi in the HW skarn West of the Stormont Fault. The FW skarn intersected east of the Stormont Fault was predictably unmineralised.

This intersection conforms well with observations in the nearby adit where the HW skarn was well mineralised both east and west of the Stormont Fault.

SD3 was drilled 80m SE of SD1. It intersected 2.1m 12.8g/t Au in the Stormont Fault and the adjacent HW skarn immediately west of the fault. the FW skarn east of the fault was predictably unmineralised.

A further 80m SE of SD3, holes SD10 and SD8 intersected mineralised HW skarn approximately 20m both east and west of the Stormont Fault.

Hole SD10 intersected 5.4m 2.5g/t Au within a 14m wide gold anomalous zone of HW skarn whilst SD8 intersected 1.3m 2.99g/t Au within a 7m wide gold anomalous zone of HW skarn.

SD7 is interpreted as having passed through the fault close to the collar and into FW skarn, therefore missing HW skarn.

It is difficult to predict if the central syncline will continue to plunge or rise to the South of SD7.

e) Regional magnetics and drainage patterns suggest the Stormont Fault continues NW of the Stormont Bismuth Mine, north of the Lea River. There is a one kilometre interval between the Lea River and the outcrop of older Moina Sandstone which is mapped as covered by Tertiary units. No drilling or thorough ground studies have been conducted in that areas to determine if skarn synclines may exist beneath the Tertiary.

The genesis of mineralisation at Stormont is debateable. Undoubtedly the skarn event and the pervasive Sn-W-F metasomatism are directly related to the intrusion of the Dalcoath Granite which probably lies about 500m beneath Stormont.

However, it is suggested that the source of the Au-Bi and minor Cu and Zn may have been Cambrian volcanics of the Mt. Read Volcanic Group which may lie between the granite and the Ordovician sediments. These elements may have been leached from the Cambrian volcanics by the Devonian hydrothermal fluids and deposited in special temperature - chemical regimes at the top of the skarned limestone.

5. RESOURCE POTENTIAL:

Value of the mineralisation:

The old Stormont Bismuth Mine appears to have been worked at grades of 1-2% Bi and 8-10g/t Au. Undoubtedly it was high graded.

Drilling suggests more typical grades may be 4-5g/t Au and 0.4-0.5% Bi.

Bismuth is worth about $6kg, so 0.4-0.5% Bi is equivalent to 1.5-2.0g/t Au.

Thus in gold equivalent, typical Au-Bi skarn at Stormont could be around 5-7g/t, or $70-$100/tonne.

The area has a number of positive commercial features:

- infrastructure such as power, roads, water, workforce and all close by.
- mining characteristics are good. Topography renders the area easy to develop both by open-cut and underground. Skarn tends to be reasonably soft but competent.
- metallurgical factors appear favourable. It would seem relatively simple to recover Au into Au-Bi concentrate by either gravity or flotation.

The only negative factor is proximity to the Lea River. However room does exist for the mandatory stream side reserve.

Mineralisation Potential:

Four areas proximal to the Stormont Bismuth mine have potential for hosting Au-Bi mineralisation in HW skarn.

i) central syncline between the mine and SD10, and possibly further SE.

ii) western syncline

iii) eastern syncline NW of SD17 and 18

iv) NW of the mine between the Lea River and the "top road."

i) **Central Syncline:**

Available data suggests that where the HW skarn is mineralised adjacent to the Stormont Fault, it can be so over stratigraphic thicknesses of 15+ metres and up-dip lengths of 20+ metres from the fault.

Therefore, for each 100 metres of strike length, the tonnage potential on each side of the fault could be -

15 x 20 x 100 x 3 = 90,000 tonnes.

If the skarn was so mineralised on both sides of the fault, the potential could be 180,000 tonnes.

This potential has already been suggested by holes SD10 on the east side of the fault, and SD1,3,8 on the west side of the fault for approximately 150 metres SE along the fault zone.

If the syncline continued to plunge SE, this potential could be increased further.

ii) **Western Syncline:**

Depending upon which way this syncline plunges, undrilled and unquantifiable potential exists for development of HW skarn mineralisation. Magnetic data suggests the syncline may plunge North.

The presence of an old shallow shaft adjacent to an inferred fault on the eastern side of the syncline indicates former miners located HW skarn in this area.

iii) **Eastern Syncline:**

Potential for mineralised HW skarn exists in this syncline, either NW or SE of the previously drilled area, depending which way the syncline plunges.

Drill hole information, magnetics and the presence of an old shaft north of SD17,18 suggests the syncline may plunge north, where there is a considerable area of untested skarn.

The adit at the NW end of this syncline should also be located, mapped and sampled because it lies in a very similar structural position to the main Stormont Bismuth Mine.

iv) **North West of the Mine:**

The Stormont Fault is considered a regional structure which extends well north of the Stormont Bismuth Mine beneath thin Tertiary cover. Because Moina Sandstone outcrops on the Top Road one kilometre north of the mine, and again immediately north of the mine in the Lea River, it has been assumed that the intervening section is also underlain by Moina Sandstone.

No detailed ground studies have been conducted in this area. Drilling elsewhere in this region showed skarn beneath Tertiary cover to be far more extensive than previously thought.

It appears premature to dismiss the area as not having scope for the development of further HW skarn bodies adjacent to the Stormont Fault.

6. RECOMMENDATION:

The Stormont area has potential to host a number of adjacent Au-Bi skarn deposits which collectively could support a medium sized open-cut or underground operation in an area with favourable technical and infrastructure factors.

This potential could be further evaluated by a drilling program combined with some geological mapping and sampling, and geophysical surveying.

The targets sought present some drilling problems in that they are long, cigar shaped bodies, hence the drill holes have to be closed spaced across the "cigar".

The type of drilling method is also a difficult decision. The holes required are short (average 40 metres) and vertical, and there is a temptation to recommend RC or air core. However, the country is reasonably difficult and the geology is complex. Core drilling would be preferable. However, if for cost reasons RC was selected, the rig would have to be track mounted and have coring capabilities.

Because the gold in these skarns is erratic but fine, an alternative approach to core drilling would be to use a manportable 46TT core drill. This approach has some cost advantages but is a difficult technique in broken, clayey overburden such as at Stormont.

A program of 20 x 40 metre (800m total) holes with associated geological work is recommended as follows (fig 5):

eastern syncline: 2 holes north of SD17 and SD18 plus sampling of workings further north along this syncline.

western syncline: 8 holes close to the eastern margin and adjacent to hole SD20.

central syncline: 9 holes between SD1 and SD10, testing the HW skarn either side of the Stormont Fault, and one hole south of SD10 to test the syncline potential further along strike.

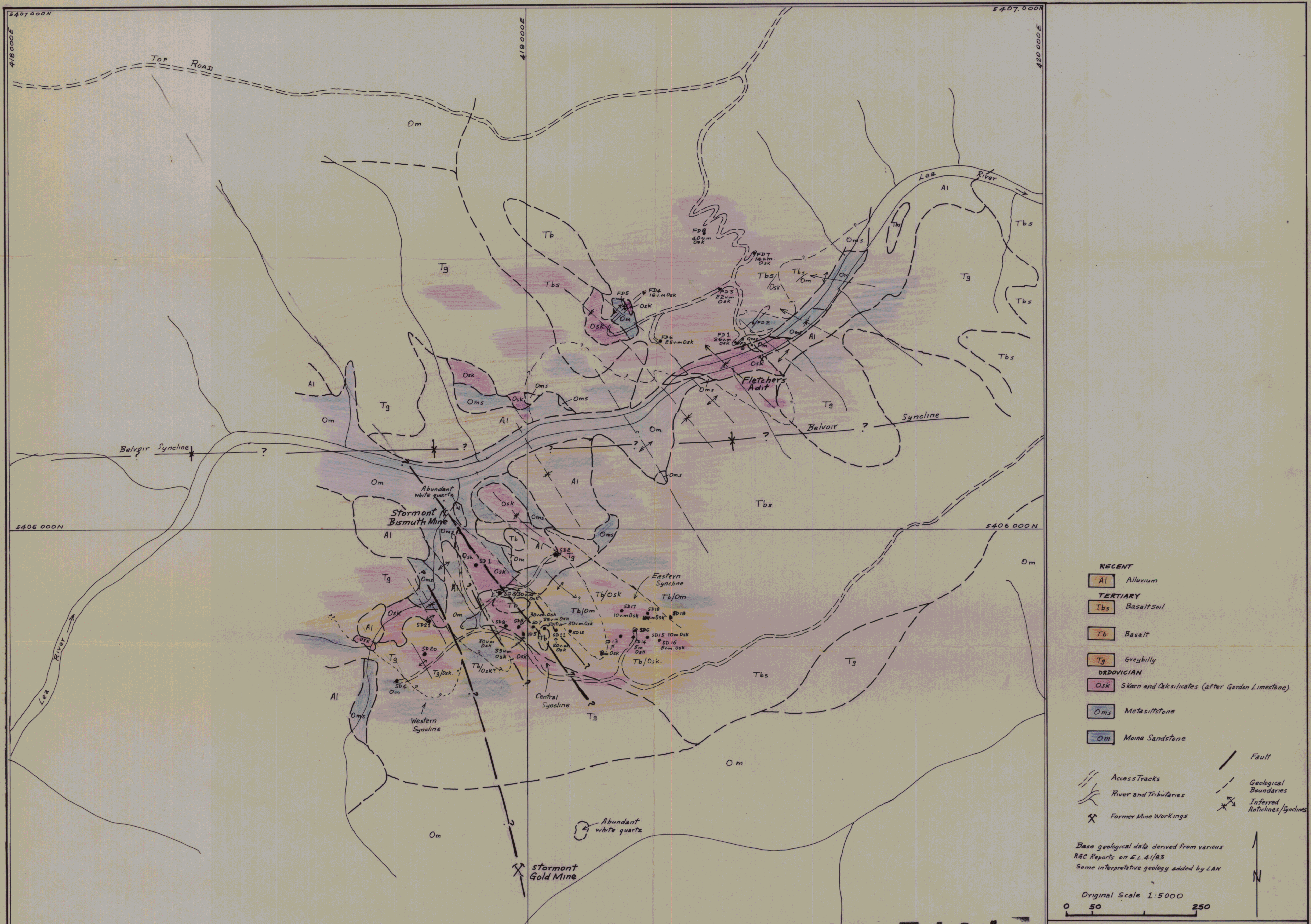
northern syncline: geological mapping and limited magnetic surveys between the Lea River and the top road; to be undertaken during the drilling program.

Budget:

The above program, would cost approximately $85,000 if core drilled and $65,000 if RC - core drilled.

	$	
Drilling 800 metres:	55,000 (core)	35,000 (RC)
Access development:	2,000	
Rehabilitation:	2,000	
Assaying, splitting (400m):	6,000	
Field equipment (trays, magnetometer etc.)	4,000	
Travel (daily total 5000 km)	2,000	
Management (planning, supervision, reporting)	12,000	
	83,000	63,000

The program would take two months to complete.

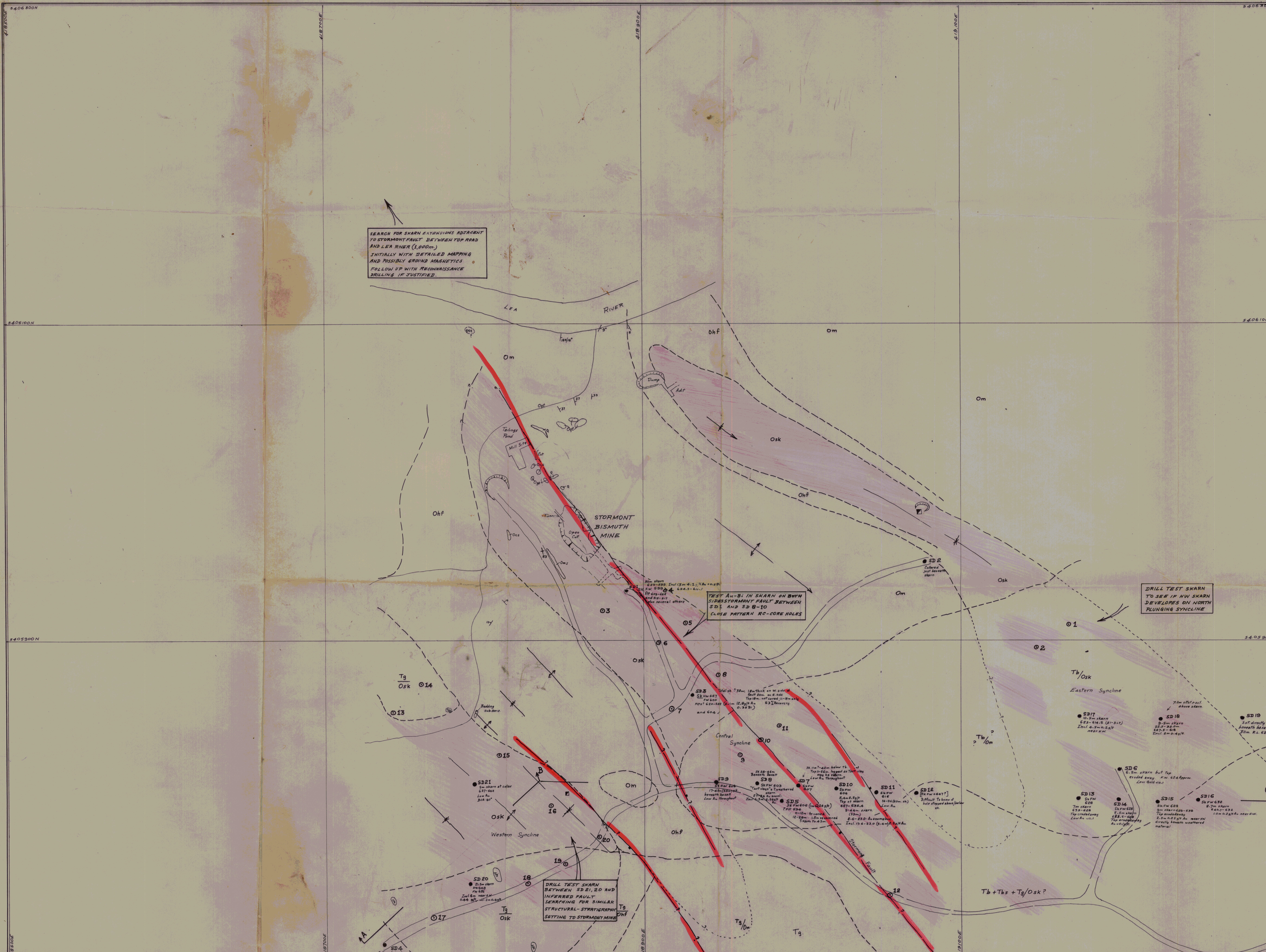


NEWNHAM EXPLORATION AND MINING SERVICES

STORMONT PROJECT GENERAL GEOLOGY

Drawn: L.A. Newnham | Date: June 92 | Fig. 4.

5 cm



Tb	Tertiary Basalt, often magnetic
Tbs	Basalt soils
Tg	Tertiary gravels (graybilly); easily confused with Om and Or
Osk	Skarned Gordon Limestone (mag., garnet, actinolite, chl.)
Ohf	Hornfelsed shales, sandstones, calc silicates
Om	Moina Sandstone; tubicolor sandstone
SD3 ●	Cored drill holes by RGC 1986-87
10 ⊙	Proposed drill holes

Basic mapping data by RGC
Extensively reinterpreted by incorporating drill hole data - L.A. Newnham.

93-3484.

N (AMG)

0m — 50m
SCALE 1:1,000

NEWNHAM EXPLORATION AND MINING SERVICE

STORMONT PROJECT

DETAILED PLAN
STORMONT MINE AREA

Drawn: L.A. Newnham | Date: October 91 | Fig: 5.

989029

989030

BRIEF REPORT ON THE HUGO ZINC- GOLD SKARN DEPOSIT, MOINA, TASMANIA.

Prepared By : L.A.Newnham
Box 1002, Devonport
Phone (004) 282 289
Fax (004) 282

SUMMARY

An interpretation of data from 10 drill holes in the Hugo Skarn at Moina, suggests potential exists in the immediate, previously drilled, area for 0.5Mt. 10+% Zn and 1g/t Au to occur in a folded sequence of skarned limestones lying in the immediate footwall of a major thrust fault which has concealed the skarn beneath older sandstone beds.

From a near outcrop position, the known deposit is interpreted as dipping approximately 30 degrees to the North West.

Application of this interpretation to a wider region suggests there is considerable scope for both extensions and repetitions of this deposit.

Confirmation of the indicated resource and extensions to the North would require further drilling. The possibility of nearby repetitions to the East could be assessed through a more thorough examination of existing regional data including magnetic surveys, followed where appropriate by RC and core drilling programs.

The Hugo Skarn area is currently held by CRA-Shell as a Retention Licence, primarily for the large but currently sub-economic fluorite resource. The ground East of Hugo Skarn is currently largely vacant ground.

Based on this re-interpretation, the assessed prospects for locating substantial gold-base metal deposits in this region are considered quite exciting and worthy of further evaluation.

INTRODUCTION:

In the Moina area, South of Devonport in northern Tasmania, a sequence of Ordovician sediments and Cambrian volcanics has been folded and faulted by several periods of post Cambrian, Palaeozoic deformation, and intruded by a Devonian granite. In addition to contact metamorphic effects associated with this granite, several periods of hydrothermal metasomatism appear to have occurred.

This metasomatic activity, either directly related to or enhanced by the granite intrusion, has resulted in the development of a variety of mineral deposits in the area:

* quartz vein swarms; quartz is typically accompanied by Sn-W-Bi-Mo (eg) Shepherd and Murphy Mine, All Nations Mine.

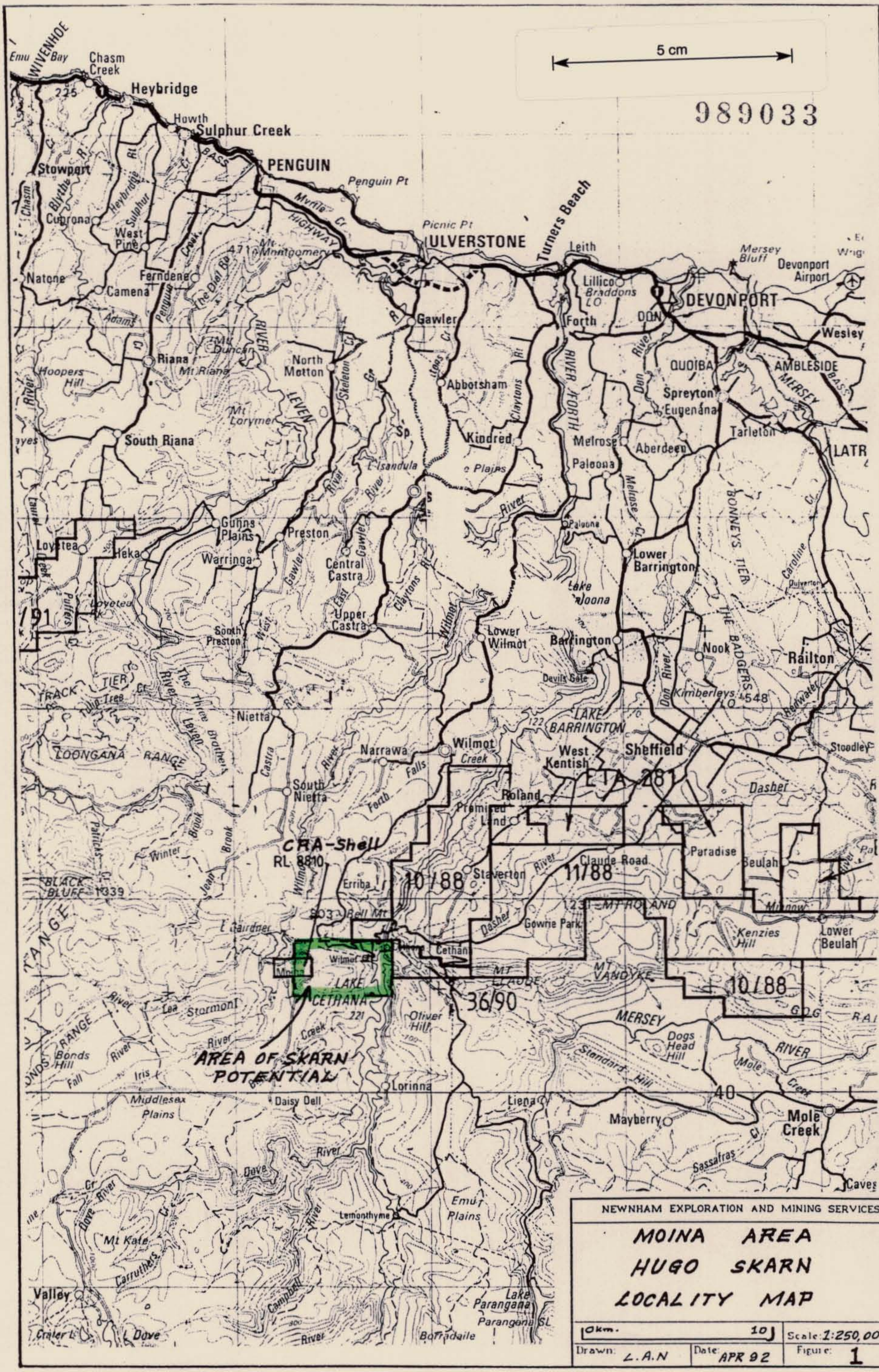
* large fluorite-magnetite skarn bodies in Gordon Limestone, with accompanying pervasive low level Sn-W (eg) Moina Skarn

* Au-Bi skarns in Gordon Limestone (eg) Stormont and Fletchers Adit.

* Pb, Ag (Cu, Au) deposits in structurally prepared anticlinal sites adjacent to thrust faults (eg) Round Hill.

* Zn-Au skarns in Gordon Limestone adjacent to major thrust faults (eg) Hugo Skarn

This brief report deals with a geological interpretation and assessment of potential of the Hugo Skarn.


5 cm
989033
Heybridge
Sulphur Creek
PENGUIN
ULVERSTONE
Turners Beach
DEVONPORT
Gawler
Riana
South Riana
North Motton
Abbotsham
Kindred
Gunns Plains
Preston
Warringa
Central Castra
Upper Castra
Lower Wilmot
Barrington
Lower Barrington
Nook
Railton
Sheffield
West Kentish
LAKE BARRINGTON
Nietta
South Nietta
Narrawa
Wilmot
Roland
Claude Road
Paradise
Staverton
Gowrie Park
Cethana
CRA-Shell
RL 8810
10/88
11/88
36/90
LAKE CETHANA
AREA OF SKARN POTENTIAL
Lorinna
Liena
Mayberry
Mole Creek
Lemonthyme
MERSEY RIVER
NEWNHAM EXPLORATION AND MINING SERVICES
MOINA AREA
HUGO SKARN
LOCALITY MAP
0 Km. 10
Scale: 1:250,000
Drawn: L.A.N
Date: APR 92
Figure: 1

DATA BASE:

Existing data on the Hugo Skarn is comprised of 10 cored drill holes, 1:2500 surface mapping and a variety of geophysical surveys.

This local data is supplemented by a substantial quantity of regional mapping, geophysical and drilling information.

The area was first drilled by the Mt. Lyell Mining and Railway Company Limited in 1969. Three cored holes were completed primarily to test the tin-tungsten potential of the Shepherd and Murphy Mine vein system, to the West of the Bismuth Creek Fault.

Two of these holes intersected skarn to the East of the Bismuth Creek Fault. However it was not recognised as such and was not extensively assayed.

From 1976-78, Comalco completed an extensive drilling program in the general area, principally to test the fluorite-Sn-W resource in the Moina Skarn.

Three of these holes (SMD13,16,24) intersected Hugo Skarn. A fourth hole was abandoned because of drilling difficulties prior to intersecting skarn. Assaying for fluorite, Sn, W, and base metals was thorough but gold assaying was patchy.

In 1980-81, the Shell Company in joint venture with Comalco, also undertook extensive drilling programs in the district, mainly to the West and North of Moina searching for Sn and tungsten in the sulfide rich sections of the Moina Skarn. They completed four holes in the Hugo Skarn (MD 32,39,42,43) and assayed extensively for Sn,W and base metals, but again gold assaying was patchy.

In 1987, CRA in joint venture with Shell, completed two holes: one to test for eastern extensions of Hugo Skarn and the other to test geophysical anomalies East of Hugo. Their minimum target in Hugo Skarn was 1Mt. 10%Zn. The one hole adjacent to Hugo Skarn failed to intersect skarn.

Importantly, CRA also assayed all existing core for gold.

In conjunction with the above drilling programs, all Companies mapped the general area at various scales and completed a variety of geophysical programs in the region including IP., ground and airborne magnetics.

Differences in the mapping over the Hugo Skarn area are illuminating and reflect (amongst other things) poor outcrop, superficial cover and complex geology.

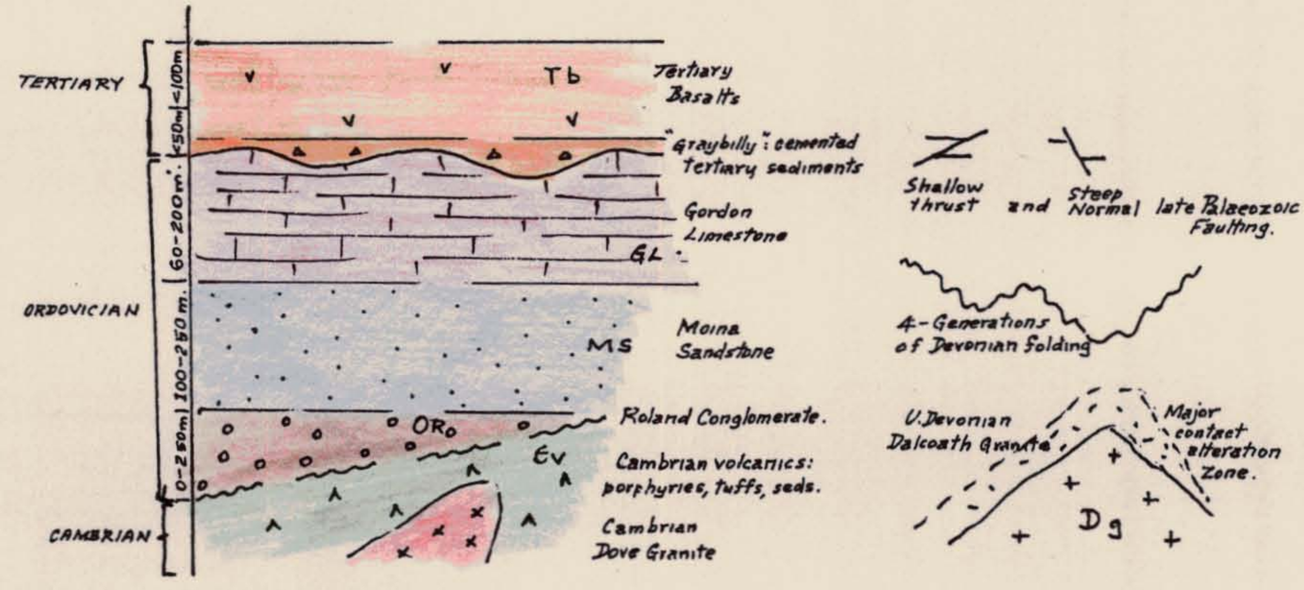
Government mapping of the area is represented on the recently published 1:25,000 Mt. Read Volcanic Project Map 9 of the Winterbrook-Moina area, the 1:50,000 Cethana Metallogenic Map and various HEC maps of the Wilmot Tunnel to the immediate North of the area.

A vast array of Company and Government reports exists on various mines and exploration programs completed in the general Moina - Cethana area, which has been widely recognised for over a century as an intensely and diversely mineralised area.

This brief introductory report on the Hugo Skarn utilises information from most of the above data sources.

GEOLOGICAL SETTING:

The basic geological elements of the Moina-Cethana region are summarised in the diagram below:



The impact of tectonism and plutonism on mineralisation processes in the region is dramatic and important.

There were four (at least) periods of post Ordovician, Palaeozoic folding. The whole area forms part of a first order regional East-West syncline, approximately 6,000 metres wide. A second order North-West trending synclinorium was superimposed on this first order fold, with fold axes approximately 600 metres apart. Third and fourth order folds with wavelengths of 60 metres and less, are generally represented as drags and shears on the limbs of second order folds.

A minor but persistent North-East trending set of folds is also present in places.

The thick sequence of Ordovician sediments and Cambrian volcanics with its marked variations of competency and plasticity, responded chaotically to this multiplicity of folding and a complex array of fault types developed.

The region is disrupted by several major North-West striking normal or strike slip faults (eg) Kauri and Bismuth Creek Faults.

The presence of extensive low angled thrust fault development in the Moina area has long been recognised, but the magnitude and exploration importance of this event has perhaps not been appreciated. Thrust faulting at the Round Hill Ag-Pb mine to the East of Moina is regarded as the plumbing system for mineralisation in the Moina Sandstone in that area, and a similar process is herein postulated for both the Au-Zn mineralisation in the Hugo Skarn and the Au-base metal mineralisation in the linear belt of known deposits between Moina and the Dalcoath Granite.

A further important implication of this low angled thrusting is that it results in older, generally less prospective units such as the Roland Conglomerate, Moina Sandstone and Cambrian volcanics being thrust over the top of younger, generally more prospective units, such as the Gordon Limestone. Unless the thrusting is recognised, the resultant surface geological maps can convey a false impression of prospectivity.

Intrusion of the late Devonian Dalcoath Granite followed, and probably contributed to, this complex folding and faulting regime. The granite is represented in the Moina area by a shallow, highly fractionated, volatile spine or ridge like cusp, striking East-West and outcropping several kilometres East of Moina.

Contact thermal metasomatism was extensive. Huge volumes of fluorine enriched fluids, probably carrying dissolved metals, emanated from the cusp, producing a wide variety of mineral deposits over the adjacent 100 sq.kilometre area.

This granite related metasomatic event is by far the largest such one known in Tasmania.

Most of the F-Sn-W-Bi-Mo vein and replacement deposits in the district are attributed directly to granite derived hydrothermal fluids. However the precious metal and base metal deposits may be a later event derived from the leaching of these metals from Cambrian volcanics and sediments by granite related hydrothermal convection cells.

For example, the large Moina Skarn is dominated by F-Sn-W metasomatic replacement mineralisation. However, at the Stormont and Hugo Skarns, which are essentially only small fragments of the main Moina Skarn, this pervasive metasomatism appears to have been selectively overprinted by fault related Au-Bi and Au-Zn mineralisation respectively.

The Ordovician sedimentary sequence is overlain by Tertiary basalts and Tertiary sediments. The latter are represented by cemented gravels known locally as "graybilly", which has frequently been mistaken for Ordovician Moina Sandstone or Roland Conglomerate, with obvious serious mapping implications.

The Tertiary basalt cover is extensive and presents two exploration problems: firstly it conceals the more prospective older formations and secondly it is erratically magnetic and thus complicates the interpretation of sub-basaltic magnetic data.

HUGO SKARN - GEOLOGICAL INTERPRETATION:

Local Setting:

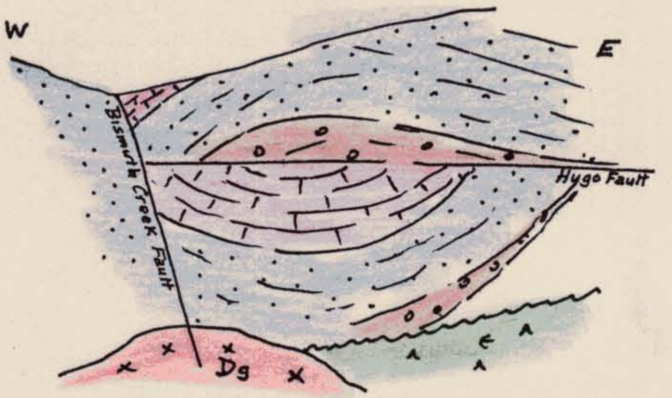
On the basis of data from 10 drill holes and surface mapping, the Hugo Skarn is interpreted as a North plunging synclinal section of skarned Gordon Limestone, folded along a North West axis, beneath the Hugo Fault.

The skarn is truncated to the West by the Bismuth Creek Fault, which is a North West trending steeply East dipping normal or strike slip fault, and to the East by the Hugo Fault, which is interpreted as a low angled thrust fault striking East West and dipping North at 20-30 degrees.

The Gordon Limestone in the Hugo Skarn is thick (up to 100m.) and appears to be thickening to the North.

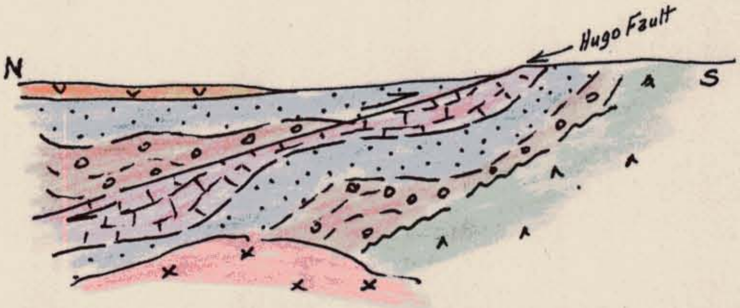
The beds above Hugo Fault are anticlinally folded and are older than the synclinally folded beds beneath the fault. This suggests movement on the fault was the upper units being thrust South or South West.

Schematic sectional sketches of this basic structure are shown below.



EAST - WEST SECTION

Parallel to Strike of Hugo Fault



NORTH - SOUTH SECTION

Perpendicular to strike of Hugo Fault

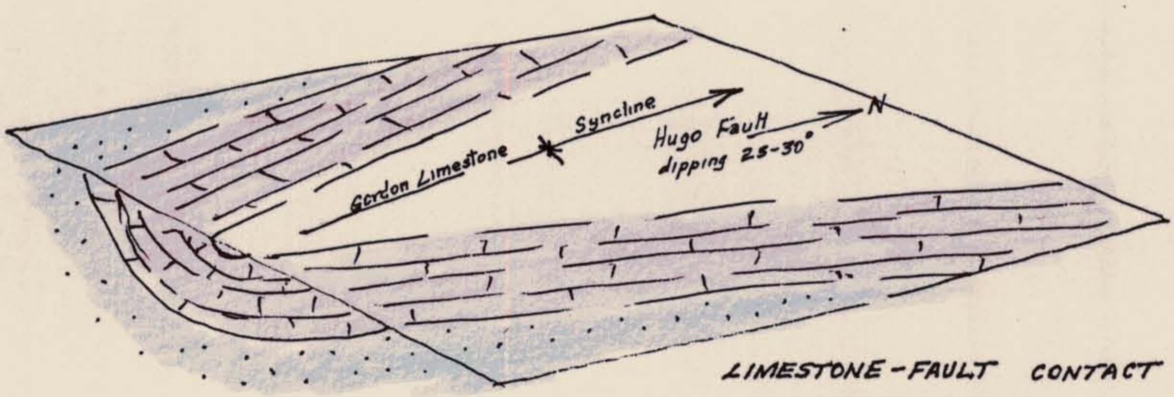
This faulting and folding pattern means that skarned Gordon Limestone both above and below Hugo Fault should outcrop: this in fact does occur and hence this interpretation is supported by surface mapping, which previously had been difficult to understand.

Further, the anticlinal structure above Hugo Fault is reflected in roadside mapping on the Cradle Mountain Road.

The relationship between the sedimentary sequences and the underlying Cambrian volcanics is unclear (see MD43) and suggests additional thrust faulting.

As the syncline below Hugo Fault plunges North West, sediments younger than Gordon Limestone should appear in the keel of the syncline in contact with the fault. This appears to occur in the case of MD 39.

Thus the nature of the contact between Hugo Fault and the underlying synclinal skarn is like a pair of trousers in plan view, with one leg going North West and the other North East. Such a pattern cannot of course continue indefinitely to the North, and will either be terminated by faulting or reversed by North East trending folds.



LIMESTONE - FAULT CONTACT
THEORETICAL PERSPECTIVE

To the North of the drilled Hugo Skarn area, the Ordovician sediments are covered by Tertiary basalts. Thus the true nature of this skarn has been largely obscured firstly by overthrusting of older sediments and secondly by Tertiary basalt.

The Gordon Limestone in the Hugo Skarn has been altered in total (ie) there is no unreplaced limestone in any of the drill holes or in outcrop.

It is logged as either calc-silicates (which may represent altered limestones with minimal added hydrothermal components) and skarn, consisting of varying amounts of diopside, magnetite, garnet, biotite and fluorite. Sometimes the magnetite-fluorite rich portions take on a characteristic swirling texture, known as wrigglite.

Fluorine metasomatism, typically accompanied by low but significant levels of Sn-W, is pervasive both in the Moina and Hugo Skarns.

The Moina Skarn West of the Bismuth Creek Fault is host to both an East West set of near vertical Qtz.-Sn-W-Bi-Mo veins which represented the resource base for the significant Shepherd and Murphy Mine, and a major fluorite-Sn-W replacement deposit estimated to contain 26Mt. 18% fluorite, 0.1%Sn, 0.1%W.

In the Hugo Skarn East of the Bismuth Creek Fault, the Shepherd and Murphy vein swarm is absent and the pervasive fluorite-Sn-W mineralisation is less intense. However, "lenses" of sphalerite and significant Au mineralisation occur in the skarn beneath the Hugo Fault and these have not been observed in the Moina Skarn.

The sphalerite typically occurs in a granular andradite-diopside skarn as spongy intergranular aggregates with some pyrite. The sphalerite tends to be iron rich and limited initial tests suggest a maximum 60% Zn concentrate may be possible.

The highest grade Zn intersections are:

SMD 13: 17m. 8.6% Zn incl. 7.5m. 13% Zn
SMD 16: 5m. 10.7% Zn + 13m. 4.4% Zn + 4m. 4.2%Zn
MD 42: 18m. 1.8%Zn
MD 24: 3m. 1.7% Zn

Low grade but anomalous Au occurs in a number of skarn intersections. This is often but not always associated with the high grade Zn zones.

Intersections of note are:

SMD 13: 40m. > 0.1g/t., incl. 10m. 1.0g/t with 13% Zn
SMD 16: 72m. > 0.1g/t., incl. several zones 0.5-1.0g/t., with 4-10% Zn
SMD 24: 18m. > 0.1g/t., incl. 9m. 0.7g/t., + 6.0m. 0.87g/t., with 3.0m. 1.7% Zn
MD 32: 18m. 0.13Au, in the skarn *above* the Hugo Fault.
MD 39: 40m. > 0.1g/t., incl 15m. 0.7g/t (with low zinc)

The distribution pattern of gold and zinc mineralisation gives the impression that gold accompanies zinc but forms a much broader low grade halo of anomalous Au around the Zn (ie) anomalous gold (>0.1g/t) is a good indicator of nearby high grade Zn mineralisation.

An interpretation of the 10 cored holes as shown on the accompanying drawings is summarised below:

MD 43 and MO 2:

Drilled East of the contact between the skarn footwall and the Hugo Fault, therefore no skarn intersection. The Cambrian volcanic intersection in MD 43 above Moina Sandstone is difficult to interpret. Possibly the underlying sandstone is Cambrian?

ML 1:

This hole was drilled to test the Shepherd and Murphy vein system but collared just East of the Bismuth Creek Fault. It intersected the Hugo Skarn above the Hugo Fault prior to passing through the Bismuth Creek Fault. Thus it did not intersect the Hugo Skarn below the Hugo Fault.

MD 42:

Intersected skarn below Hugo Fault; significant Zn zone (18m. 1.8% Zn) but low Au. Au assaying not complete.

MD 39:

Intersected 100 vertical metres of skarn below Hugo Fault; broad anomalous gold but low Zn; because it was drilled in the keel of the syncline, the skarn was separated from Hugo Fault by a hornfelsed siltstone, which may explain the lack of base metal mineralisation.

MD 32:

Interpreted as intersecting skarn both above and below Hugo Fault; low gold and zinc below fault.

SMD 24:

A number of thick Au anomalous zones in skarn beneath Hugo Fault; with one exception (3m. 1.7% Zn) zinc was low. SMD 25 was abandoned in Moina Sandstone above the fault because of drilling difficulties.

SMD 13, 16:

Both holes intersected thick well mineralised skarn zones beneath Hugo Fault.

ML 3:

This hole was drilled to test for extensions of the Shepherd and Murphy veins. It collared West of the Bismuth Creek Fault and passed through this fault into the footwall calc-silicate zone of the Hugo Skarn.

Regional Setting:

An extension of this Hugo Skarn interpretation into the adjacent region presents some quite exciting exploration opportunities.

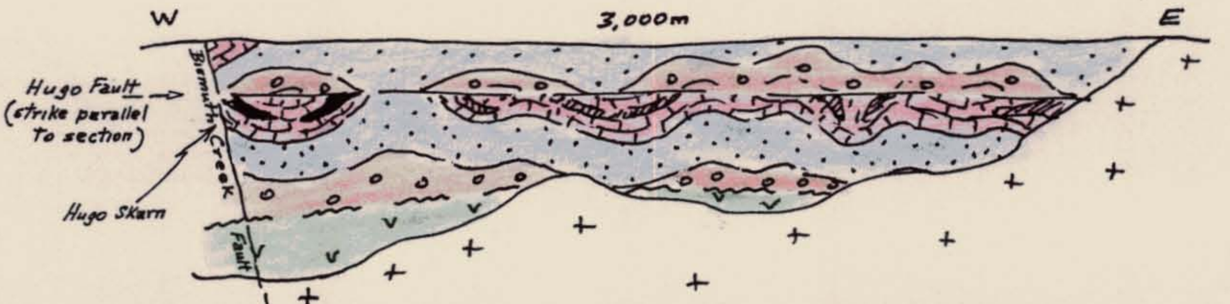
The Hugo Fault is a flat lying thrust. When extended East in rugged country, its outcrop pattern is quite erratic. (Fig.5).

The Sn-W lodes in the All Nations Mine were disrupted by a significant thrust of the same dip and strike as the Hugo Fault and it would now seem reasonable to regard them as one and the same fault.

Similarly, the Gordon Limestone intersected beneath Moina Sandstone in the Wilmot Tunnel may well lie beneath a further eastward extension of the Hugo Fault.

Most of the area North of this possible eastern extension of the Hugo Fault is covered either by Tertiary basalt or Moina Sandstone, both of which may well conceal previously unrecognised extensive areas of Gordon Limestone within the contact aureole of the Dalcoath Granite.

An interpretation of the broader fold pattern of the Moina Skarn based on drilling and mapping suggests North West fold axes are uniformly spaced at 60-100m. Thus East of Hugo Skarn there could be abundant structural opportunities for the Gordon Limestone to be skarned and mineralised where it is beneath and in direct contact with the Hugo Fault.



E-W REGIONAL SECTION

Illustrating opportunities for mineralised skarns beneath Hugo Fault

(Hugo Fault shown horizontal because section parallel to fault strike)

A genetic link between Devonian thrust faulting and late Devonian mineralisation is rapidly gaining support in deposit modelling around Tasmania.

In the Moina area, the Round Hill Ag-Pb deposits, which occur in anticline axial zones in Moina Sandstone, are genetically linked with low angled thrusting on the periphery of the Dalcoath Granite alteration zone.

The known Hugo Skarn Au-Zn deposit appears genetically linked with the Hugo Fault, which is itself well mineralised (Au, Ag, Cu, pyr.) in a number of holes.

A feature of the mineralisation distribution within the Dalcoath Granite alteration zone which has always appeared curious is its clustered nature within an East West trending zone between the Dalcoath Granite outcrop and the Shepherd and Murphy Mine.

Applying the concept of the Hugo Fault extending through this area as shown on the attached plans, it is apparent that nearly all the known mineralisation lies within siliceous sediments either just above or just below the predicted Hugo Fault outcrop zone.

This model may therefore genetically link all late stage mineralisation in this area (principally Au and base metals) to the Hugo Fault. This clustered East West pattern of known shallow mineralisation is highlighted further on the 1:50,000 metallogenic map extract attached as Fig 6.

Whilst most known deposits along this zone are relatively small vein styles, opportunities for larger replacement deposits should occur in the footwall of the Hugo Fault, where the fault directly intersects Gordon Limestone.

The area where this may potentially occur is large and is outlined on Figs. 5, 6.

This proposed regional model is further supported by the rather complex air mag. pattern between Moina and the Dalcoath Granite outcrop. Such a pattern would not be expected from altered Moina Sandstone but could be anticipated from folded and variably skarned Gordon Limestone lying at shallow depths beneath the Hugo Fault. The scope of this report did not permit a more rigorous examination of the air mag. data.

RESOURCE POTENTIAL:

The Hugo Au-Zn deposit is interpreted to have developed where metasomatic skarns in the Gordon Limestone are in *direct* contact with the Hugo Fault, which acted as a plumbing system for the mineralising fluids.

High grade Zn mineralisation is accompanied by anomalous gold but a low grade gold anomalous zone may extend well beyond the Zn mineralisation.

On the basis of this model, **potential within the known Hugo Skarn** for a deposit of >10% Zn + 1g/t Au, is confined to an elongated area along the skarn-Hugo Fault contact zone.(figs. 2,3).

The high grade intersection in SMD 13 (7.5m. 13% Zn) is interpreted as the same intersection in SMD 16 (5m. 10.7% Zn) - see Section C.

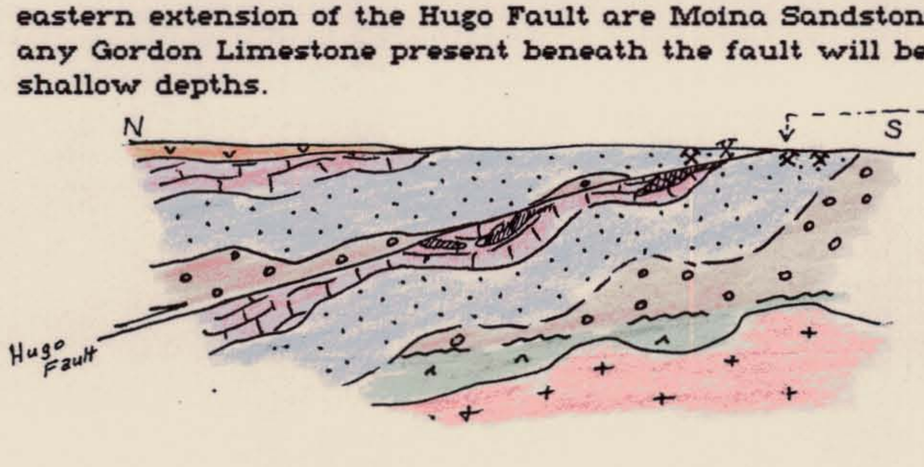
SMD 24 is assumed to have just clipped the edge of the potential mineralised zone. MD 39 is not well mineralised because the skarn was separated from the fault by a siliceous bed, but it did intersect a Au anomalous zone around the postulated zinc body - Section A.

Thus the possible high grade zone could be 400m. long, 60m.wide (down dip) and 8+m. thick. With an SG of 3, this would represent 576,000t., say 500,000t.

Potential for **immediate extensions** of the Hugo Skarn, as outlined above, exist down dip to the North West and North East where the skarn appears to be thickening and where it is in direct contact with the Hugo Fault. In these directions it will be concealed beneath Tertiary basalt.

Potential for **repetitions** of the Hugo Skarn model exist to the East beneath the Hugo Fault. Based on known mineralisation patterns, the Hugo Fault could extend at least 3,000m. to the East and if the Gordon Limestone is present beneath the fault for this full extent, then the replacement mineralisation potential, where the limestone is in contact with the fault, is substantial.

Because the rocks which outcrop on the footwall of the proposed eastern extension of the Hugo Fault are Moina Sandstone, it follows that any Gordon Limestone present beneath the fault will be at relatively shallow depths.



NORTH-SOUTH REGIONAL SECTION
Illustrating opportunities for shallow mineralised skarn beneath Hugo Fault.

DEVELOPMENT CONSIDERATIONS:

This area has excellent development infrastructure:

* not classified as an environmentally sensitive area
* power and water are available nearby in virtually unlimited quantities.
* existing road access.
* appropriately skilled local workforce
* close to the well serviced city of Devonport

The moderately rugged topography is ideal for rapid, low cost underground access.

CRA's current Retention Licence covers both the known Hugo Skarn and potential extensions to the North. The **area to the East,** which has regional potential for repetitions of the Hugo skarn model, **is essentially open ground**, although a few small non-operational Mining Leases may still exist.

FURTHER EVALUATION:

The **immediate Hugo Skarn** could be further evaluated by a pattern of vertical RC-cored drill holes. Five or six holes totalling 1500m. would result in an overall 100 x 100m coverage. The total cost of such a program would be approximately $150,000.

Exploration for **direct extensions** of the Hugo Skarn to the North East and the North West would also require a drilling program of similar magnitude to that above.

To evaluate the area East of Hugo Skarn for **repetitions** of Hugo Skarn, a sequenced program should consist of:

- thorough compilation of existing data.
- interpretation of available magnetic data.
- pattern of carefully sited RC and cored holes to test the proposed concept.
- detailed drilling programs in selected areas if the concept is confirmed.

CONCLUSIONS:

Existing data on the Hugo Au-Zn skarn deposit has been reinterpreted and suggests potential exists for:

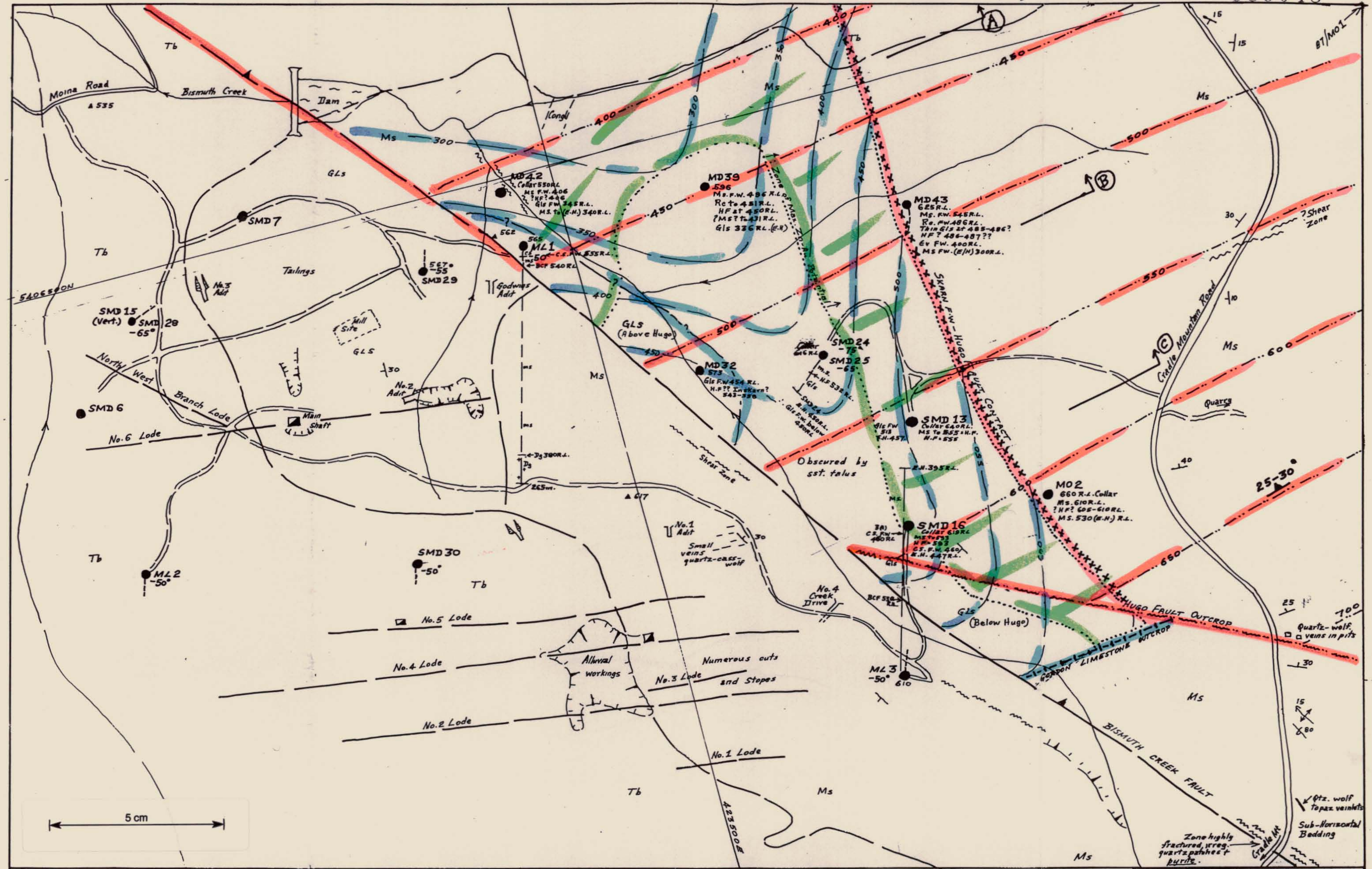
1. development within the known skarn of 0.5Mt.of Au-Zn mineralisation, possibly averaging +10% Zn and 1g/t Au.
2. the known Hugo Skarn to extend North West and North East
3. repetitions of the Hugo Skarn model for considerable distances to the East in folded Gordon Limestone beneath and in direct contact with the Hugo Fault.

Due to the large skarn thicknesses and skarn-fault contact areas, exciting opportunities exist in this region for the development of significant base metal-gold deposits.

These opportunities could be best evaluated by drilling programs, preceded in some cases by a thorough evaluation of existing data.

The cost of developing any defined resources would be relatively low because of the excellent infrastructure features of the area.

989048



Tb — Tertiary Basalt

ORDOVICIAN:
- GLS — Gordon Limestone – typically a magnetite-garnet-diopside skarn c̄ CaF_2, cassit-Tungsten ± Zinc, Au
- MS — Moina Sandstone – Hornfelsed, fractured, vein min.
- RC — Roland Conglomerate
- Bull Creek Volcanics – quartz porphyritic rhyolites

Roads, Tracks

Geological Boundaries

Bismuth Creek Fault

No. 5 Lode — Surface Trace of Shepherd & Murphy QTZ-W-Sn-Bi-Mo Veins

Cored drill hole collars and

Hugo Fault Contours

Hugo Fault Outcrop

Base of Gordon Limestone

Outcrop of Base Gordon Lst.

Intersection of Hugo Fault and Base of Limestone

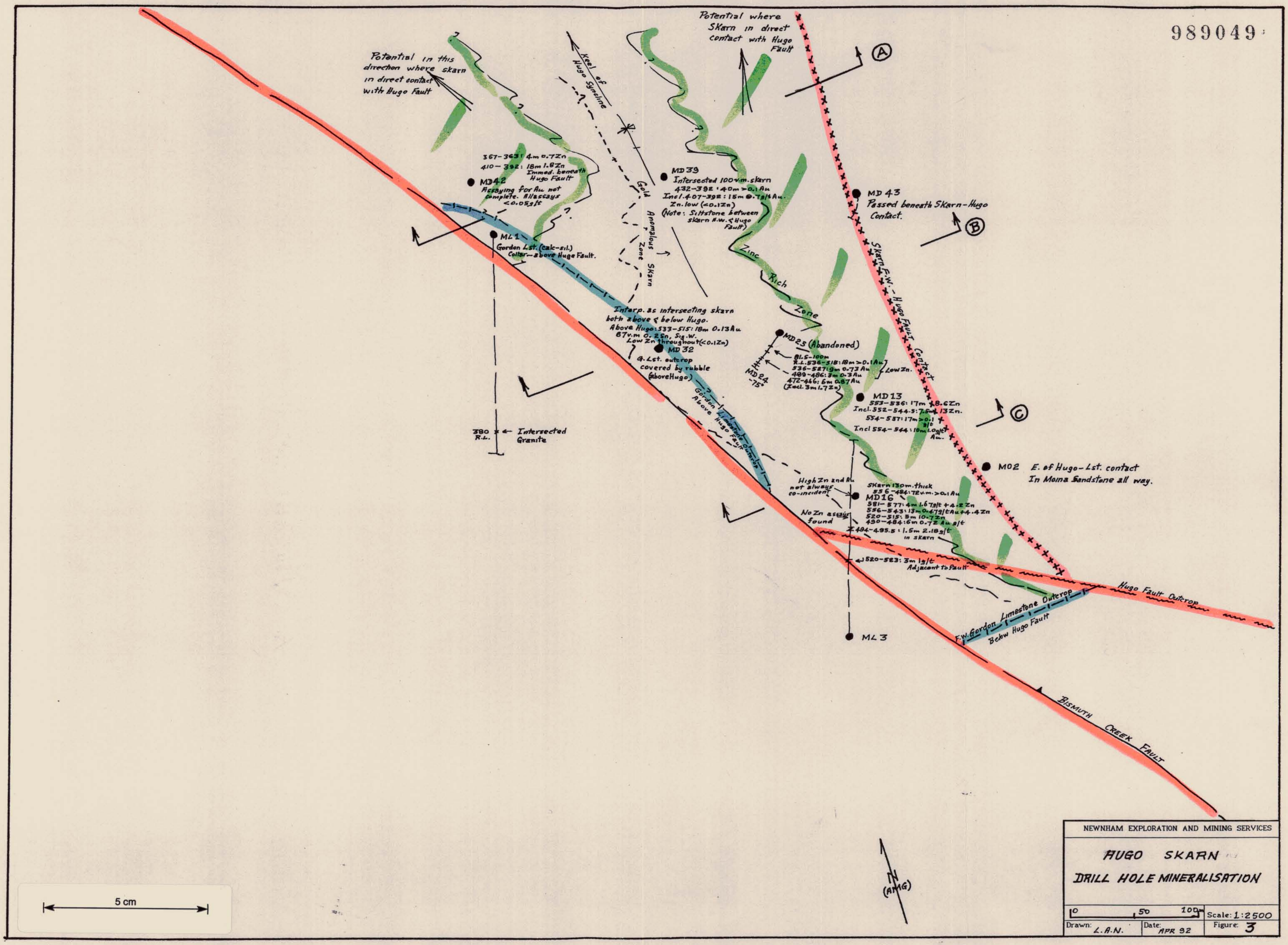
Zone of predicted Au-Zn skarn (max. interest)

NEWNHAM EXPLORATION AND MINING SERVICES

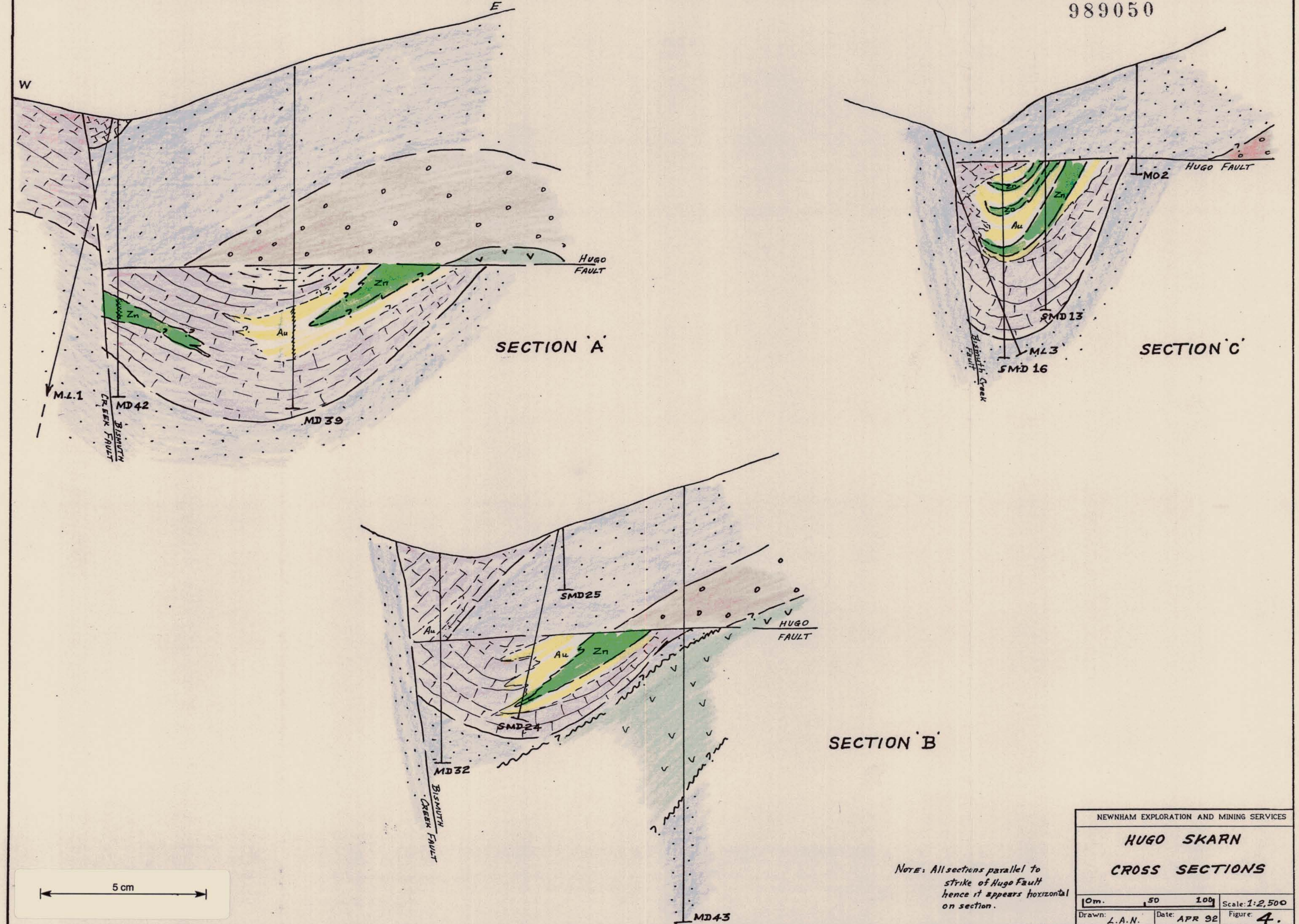
MOINA AREA
HUGO SKARN
GEOLOGICAL INTERPRETATION

0m. 50 100 — Scale: 1:2,500

Drawn: L.A.N. | Date: APR. 92 | Figure: 2


989049
Potential in this direction where skarn in direct contact with Hugo Fault
Keel of Hugo Syncline
Potential where Skarn in direct contact with Hugo Fault
A
367-363: 4m 0.7Zn
410-392: 18m 1.8Zn Immed. beneath Hugo Fault
MD42
Assaying for Au not complete. All assays <0.05g/t
MD39
Intersected 100v.m. skarn
432-392: 40m >0.1Au
Incl. 407-392: 15m @ 0.79g/t Au.
Zn. low (<0.1Zn)
(Note: Siltstone between skarn H.W. & Hugo Fault)
Gold Anomalous Zone
Skarn
MD 43
Passed beneath Skarn-Hugo Contact.
B
ML1
Gordon Lst. (calc-sil.) Collar - above Hugo Fault.
Zinc Rich Zone
Skarn F.W. - Hugo Fault Contact
Interp. as intersecting skarn both above & below Hugo.
Above Hugo: 533-515: 18m 0.13Au
87v.m 0.2Zn, Sig.W.
Low Zn throughout (<0.1Zn)
MD25 (Abandoned)
MD 32
G. Lst. outcrop covered by rubble (above Hugo)
MD24 -75°
MD13
C
380 R.L. ← Intersected Granite
Gordon Limestone Outcrop Above Hugo Fault
MO2 E. of Hugo-Lst. contact In Moina Sandstone all way.
High Zn and Au not always co-incident
Skarn 130m. thick
MD16
No Zn assays found
in skarn
Adjacent to fault
Hugo Fault Outcrop
F.W. Gordon Limestone Outcrop Below Hugo Fault
ML3
Bismuth Creek Fault
N (AMG)
5 cm
NEWNHAM EXPLORATION AND MINING SERVICES
HUGO SKARN
DRILL HOLE MINERALISATION
0 50 100
Scale: 1:2500
Drawn: L.A.N.
Date: APR 92
Figure: 3

989050



NOTE: All sections parallel to strike of Hugo Fault hence it appears horizontal on section.

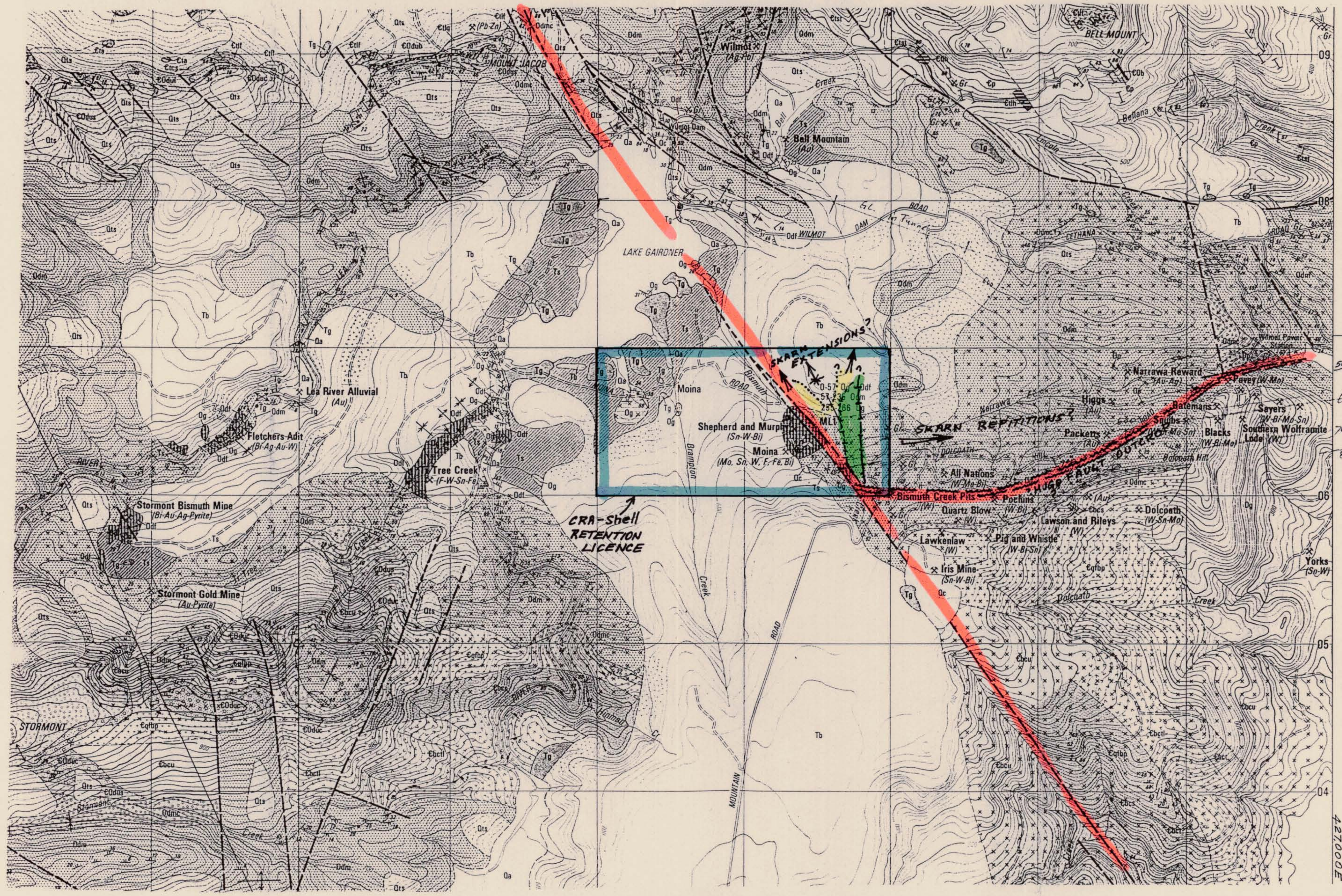
NEWNHAM EXPLORATION AND MINING SERVICES

HUGO SKARN

CROSS SECTIONS

0m. 50 100	Scale: 1:2,500	
Drawn: L.A.N.	Date: APR 92	Figure: 4.

989051



	Hugo Fault projected outcrop
	Hugo Skarn Au-Zn mineralisation
	Possible skarn extensions beneath Basalt.
Tb	Tertiary Basalt
Tg, Ts	Tertiary sediments and gravels
Og	Gordon Limestone (Vertical stripes = skarn)
Odm	Moina Sandstone
Odmc	Roland Conglomerate
Є∨x∨	Various Cambrian Volcs + Seds
Dg	Dalcoath Granite
x x	Contact alteration zone around Dg.

5 cm

Map is a photocopied section of the State 1:25,000 Winterbrook-Moina Geol. Map. (MRVP Map 9.)

NEWNHAM EXPLORATION AND MINING SERVICES

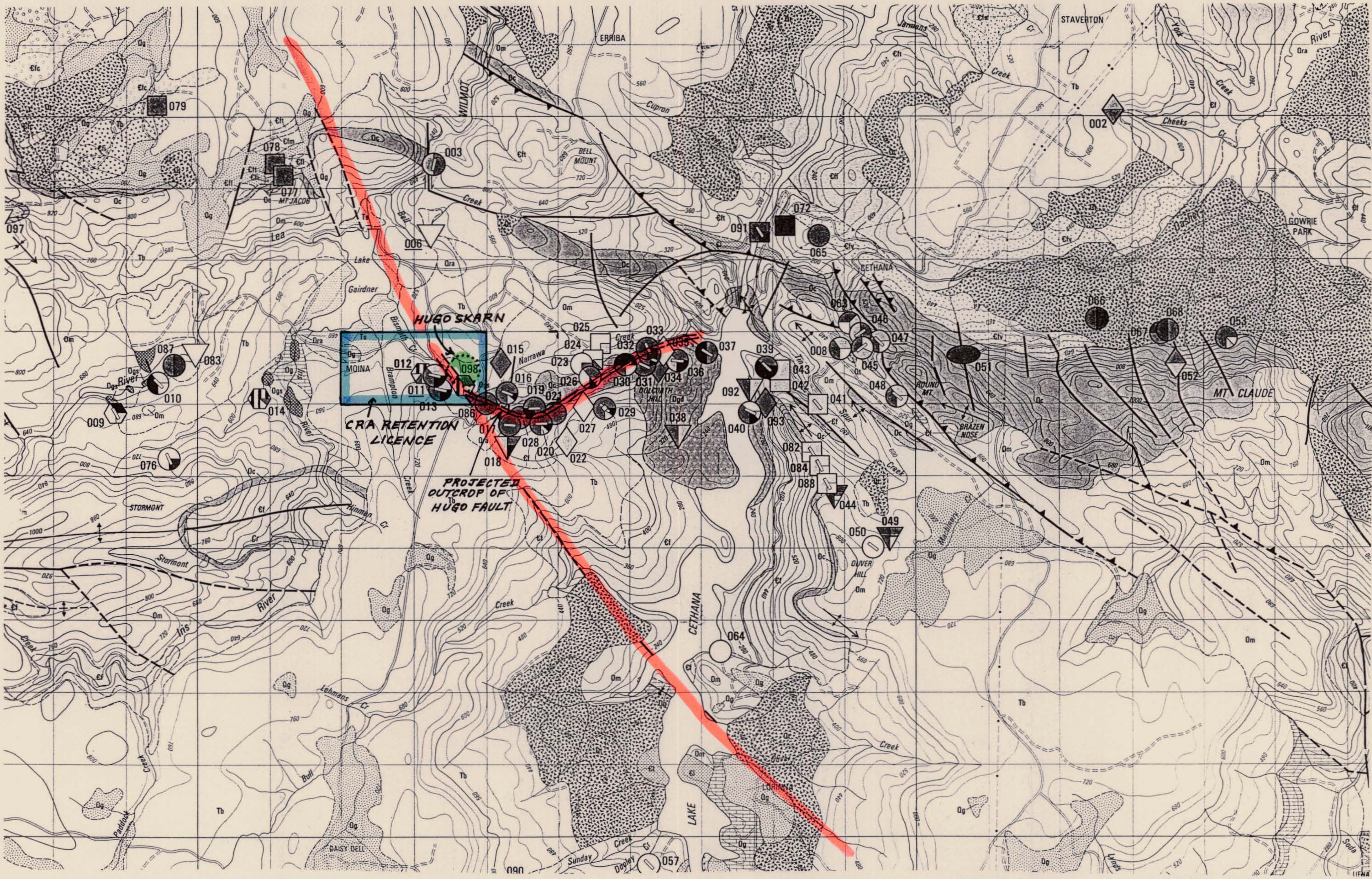
MOINA AREA

REGIONAL GEOLOGY

0 Km. 0.5 Km 1

Scale 1:25,000

Drawn: LAN | Date: APR 92 | Figure: 5



9896052

5 cm

This map is a photocopy of section of the colored Cethana 1:50,000 Metallogenic Map
Its purpose is to illustrate the close relationship between shallow Sn, W, Au, Bi, Base Metal deposits and the projected outcrop of the Hugo Fault.

N
AMG

NEWNHAM EXPLORATION AND MINING SERVICES

MOINA AREA
METALLOGENIC MAP

0 1 Km 2			Scale 1:50,000
Drawn: LAN	Date: APR 92		Figure 6