

FL 7/88

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NEWHAM EXPLORATION & MINING SERVICES

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E.L. 7/88

BEACONSFIELD AREA

District Exploration

Proposed Evaluation Program

94-3543

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AMG REFERENCE POINTS ADDED

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Fig 1: Location Map

Map 1: Interpretative Geology and Evaluation Program

1. SUMMARY

Host rock stratigraphy and structural settings are probably the principal geological factors responsible for the formation of the Tasmania Reef at Beaconsfield.

Similar favourable stratigraphy and structural settings potentially continue north west of Beaconsfield into the northern half of E.L. 7/88, where this prospective geology is concealed beneath a cover of younger flat lying sediments of unknown thickness.

Due to the likely physical and chemical nature of Tasmania Reef analogues in this area, it is difficult, if not impossible, to search for them under such a cover by way of remote techniques such as geophysics.

The most effective exploration method is geological and geochemical mapping of the concealed bedrock by way of pattern RC or air core drilling.

Initial wide spaced fences of rotary or hammer holes are recommended to firstly establish the depth of cover rocks, secondly to define areas of prospective bedrock, and thirdly to gain some early bedrock geochemical data.

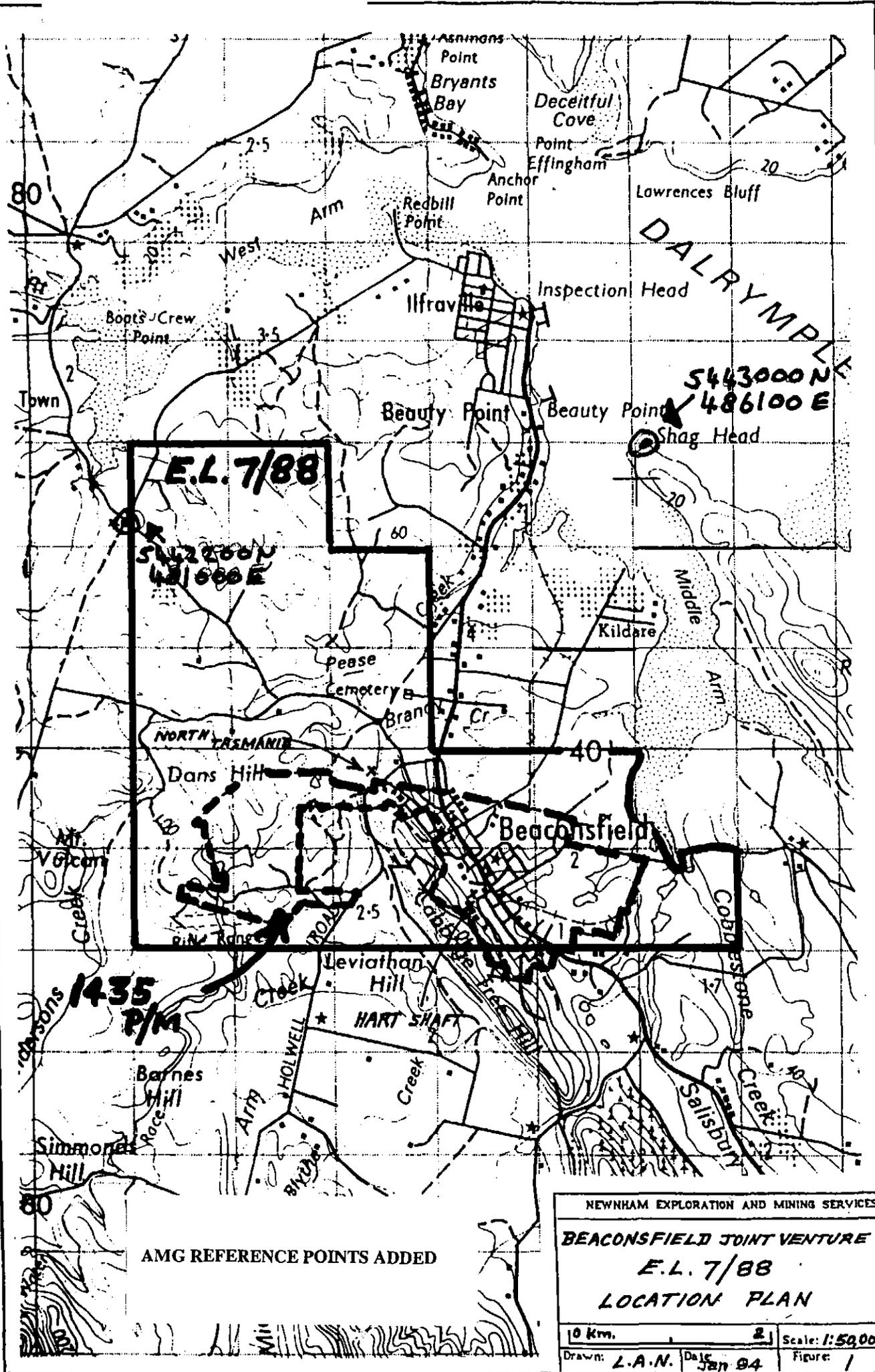
Samples should be assayed only for Au and As. Detailed follow up drilling could then be focused on areas assessed as potentially more prospective.

A first stage program of two fences of holes totalling 55 holes on 100 metre centres to a maximum depth of 50 metres as shown on the accompanying plan would cost an estimated \$70,000.

5 cm

TAMAR

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AMG REFERENCE POINTS ADDED

NEWHAM EXPLORATION AND MINING SERVICES

BEACONSFIELD JOINT VENTURE

E.L. 7/88

LOCATION PLAN

10 Km. 2 Scale: 1:50,000

Drawn: L.A.N. Date: Jan 84 Figure: 1

2. INTRODUCTION

The Tasmania Reef at Beaconsfield was a commercially very attractive ore deposit. It produced 27 tonnes Au at an average 62kg./vertical metre and an average grade 24g/t.

Consequently significant effort has been directed towards the location of similar deposits in the region. Discovery of the sub-economic Salisbury Hill deposit to the south and the North Tasmania deposit to the north of Beaconsfield were the closest that explorers have come to achieving this objective.

Such exploration has been restricted both by extensive areas of younger cover rocks to the north and east of Beaconsfield and by the somewhat poor understanding of geological factors which determined the formation of the Tasmania Reef.

The effect of these restrictions has been diminished with new exploration technologies and geological information and it is timely to reconsider district exploitation for Tasmania Reef analogues.

Exploration Licence 7/88 was originally acquired with this longer term objective in mind. It covers an area of prospective ground to the north and north-west of Beaconsfield.

3. TASMANIA REEF

3.1 Geological Setting

The Tasmania Reef is similar to a mega tension gash or kink structure developed between two major bedding parallel thrust structures which parallel the Tamar Suture or Lineament.

The Reef is best developed within a sequence of calcareous siltstones, grits and minor limestones collectively known as the Transition Beds, which presumably derive their name from the fact that they are transitional in composition between the underlying Cabbage Tree Conglomerate and the overlying Gordon Limestone.

The Reef appears to feather out in the Gordon Limestone and Cabbage Tree Conglomerate. However, it is debatable whether this is due to the deformation characteristics of these formations, or the fact that the ends of the reef (tension gash) as it approaches the two bounding thrust structures just happen to lie within these formations.

At least two generations of mineralisation are present in the reef:

- * earlier quartz - arsenopyrite - chalcopyrite - pyrite - coarse (?) gold,
- * later quartz - carbonate - pyrite - fine (?) gold.

No obvious changes in the physical nature, geological setting or chemistry of the Reef have been observed either down dip or along strike. The deepest Au - sulfide mineralisation has been recorded from 1100 vertical metres depth in B10. The proportion of the reef eroded away at surface is difficult to determine but it would seem reasonable to assume that Au-As-S mineralisation was deposited in fault structures at Beaconsfield over a vertical range of at least 1500 metres.

3.2 Mineralisation Controls

The Beaconsfield Mine lies adjacent to a major crustal structure. This is probably the fundamental reason for the deposit being what it is. The Tamar Lineament transects eastern Tasmania, probably western Victoria, and some workers have interpreted it as continuing further northwards through the basement rocks of eastern Australia.

In Tasmania, it separates shallow water marine sediments of the west from contrasting deep water turbidites to the east. Together with adjacent subsidiary thrust structures, it has probably controlled and facilitated the introduction of Cambrian ultra basic rocks to the west of Beaconsfield, Devonian granitic plutons to the east and Jurassic dolerite extrusions.

A major structure such as the Tamar Lineament is not a single structure but rather a zone of major structural deformation. A number of significant thrust structures which parallel the main feature have been recognised in the Beaconsfield area. They result in the thrusting of Cambrian sediments over Ordovician sediments to the east and west of Beaconsfield. Horizontal movement on these thrusts has produced mega tension gashes or kink faults at right angles to the thrusts.

The Tasmania Reef and the North Tasmania Reef are two such structures and the Salisbury Hill deposit to the south may be a third. The Lefroy Field to the east of the Tamar Lineament may represent a group of similar reef structures within the turbidite sequence.

With regional tectonics of this magnitude, it is reasonable to assume that Tasmania Reef structural analogues may exist to the north of Beaconsfield within E.L. 7/88.

The source of gold at Beaconsfield is not clear. However, there are several possibilities, including:

- ultrabasics,
- deep seated granites east of the Tamar Structure,
- turbidites east of the Tamar Structure.

Au may have been transported in a sulfide rich vapour phase within a large convective cell driven by tectonic or Devonian magmatic heat associated with the Tamar Structure.

Precipitation of the auriferous fluids may have been controlled by the presence of reductant host rock chemistry.

The transition Beds and the Cabbage Tree Conglomerate both in the FW and HW of the Reef contain abundant stylolitic fractures which are carbon and/or hematite infilled. Pyrite is pervasive both within the stylolitic fractures and disseminated in the sediments.

These factors may have created a chemically reductant host rock environment conducive to the deposition of gold. By contrast, the Gordon Limestone (carbonate) carries less pyrite and may have been chemically less attractive to Au deposition.

Stratigraphic sequences to the north of Beaconsfield with similar chemistry to those hosting the Tasmania Reef are therefore arguably favourable host rocks for gold deposition.

4. GEOLOGY NORTH OF BEACONSFIELD

The **North Tasmania Mine**, one kilometre north of the Tasmania Reef has correctly been regarded as a Tasmania Reef analogue, and for this reason has been considered prospective. The known reef structure is of a similar length to the Tasmania reef, but from surface to 200 vertical metres it is thin (<0.5m) and relatively low grade (?<5g/t).

There is no evidence to suggest it will get better or worse with depth. Only drilling can satisfactorily determine that. A drilling program to test the reef at depth was presented in the 1992-93 Annual Report on E.L. 7/88.

North of the North Tasmania Mine, exploration has been severely restricted by an extensive cover of Permian, Tertiary and Quaternary sediments and Jurassic dolerite.

Sporadic outcrops of Transition Beds and Cabbage Tree Conglomerates continue for one kilometre north-west of the North Tasmania Mine, then they disappear beneath cover rocks of unknown thickness. These outcrops were subjected to early prospecting by pitting and trenching.

Auger drilling and gravel quarrying suggests the extensive Tertiary quartz gravels to the immediate north of the North Tasmania are thin (<20m).

Airborne magnetic surveys and regional gravity studies define both the eastern boundary of an ultrabasic body which underlies the western portion of the E.L., and the Jurassic dolerite extrusion which covers a very small section of the north-east of the E.L.

The major thrust structures which lie east and west of the Tasmania Reef and parallel to the Tamar Lineament, probably extend to the north beneath the cover rocks. Cambrian sediments lie east and west respectively of these two structures.

It is therefore postulated that north of the North Tasmania Mine, there may be an area within E.L. 7/88 approximately 1-2 kilometres wide and 3-4 kilometres long which contains all the stratigraphic and structural elements considered important to the formation of Tasmania reef analogues, and which is concealed by younger sediments.

5. EXPLORATION STRATEGY

Geochemistry represents the most effective exploration method for reef structures similar to the Tasmania Reef, in particular Au and As bedrock geochemistry.

The wall rocks of the Tasmania Reef are As (and to a lesser extent Au) anomalous for 10-25 metres either side of the reef structure. Hence there is a geochemical halo approximately 30-50 metres wide, and this presents a realistic exploration target.

The most definitive method of exploring the area north of the North Tasmania Mine beneath cover rocks is with good quality auger/hammer drilling programs, having three fundamental objectives:

- (i) establish depth of cover rocks,
- (ii) define physical limits of Ordovician sediments,
- (iii) provide samples of Ordovician basement rocks for Au-As analysis.

The fact that the surface extension of the North Tasmania Mine was located with this approach attests to the effectiveness of the strategy.

Widely spaced holes on widely spaced fences would satisfy the first two of these objectives.

Results from this initial program could then be used to design follow up programs of closer spaced holes on closer lines over selected areas.

Drilling should be with either an air core rig or a face sampling RC system.

6. RECOMMENDED PROGRAM

An **initial program** of two widely spaced fences of vertical holes on 100 metre centres is recommended (Lines A. and B. on accompanying plan). Holes should be drilled to 50 metres maximum.

Exact location of holes would depend upon a more detailed investigation of cultural features such as tracks, fence lines etc. However, the lines should be orientated so as to cut the anticipated strike of both the reef structures and sedimentary formations at reasonably high angles.

The two proposed lines should establish the extent of Ordovician sediments and the depth of cover rocks in that section of E.L. 7/88 north of the North Tasmania Mine, as well as providing some limited but specific bedrock geochemical data.

Care would be required to differentiate between Ordovician and Permian sediments and their weathered derivatives.

This initial program involves 55 holes at 50 metres (maximum) each, say total 2500m. of RC or air core drilling. This would take 2-3 weeks to complete.

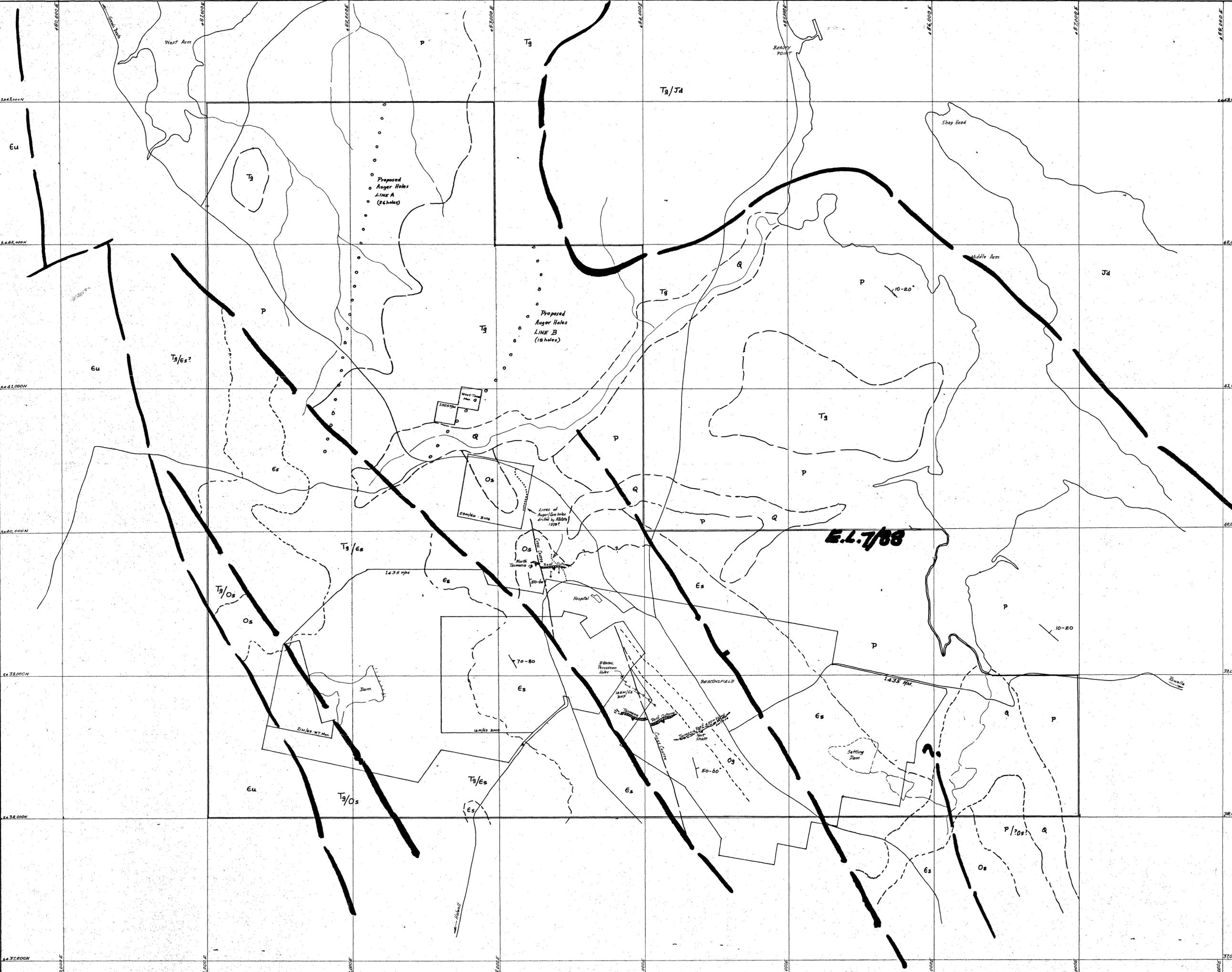
Budget Summary

	\$
2500m. drilling at \$20/m	50,000
Sampling crew (2-3 weeks)	6,000
Design and evaluation (2 weeks)	3,000
Assaying 500 samples at \$14/sample	7,000
Field supplies	3,000
Contingencies	1,000
	\$70,000

It is always preferable to undertake RC/air core drilling in dry weather. The total program would take one month to complete.

Follow up programs of closer spaced holes would be guided by results of this initial program. Such holes would be designed to locate and define bedrock Au-As geochemical anomalies in areas selected on the basis of results from the initial program.

Should this follow up geochemical drilling successfully define attractive geochemical anomalies, a third phase of exploration involving core drilling would be required.



Proposed Auger Holes
LINE A
(8 holes)

Proposed Auger Holes
LINE B
(18 holes)

Lines of Auger Holes drilled by Eldon 1978?

E.L. 7/88

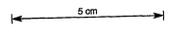
- Q Recent alluvium, mainly in drainage channels
 - Tg Tertiary gravels, sands, ferruginous material
 - Jd Tertiary shales - location West of Tamar interpreted from aeromagnetic
 - P Permian massive sandstones - mudstones, sandstones, minor limestones
 - Os Ordovician sandstone - Gullin Limestone, Manna Sandstone, (Trematon Beds), Gabbage Tree Conglomerate
 - Og Lower Gullin Limestone
 - Es Cambrian sandstone - black shales and phyllites
 - Eu Cambrian ultra-basite (granophyre)
- Minor fault
 - - - Interpretative major structure

The simplified geological interpretation on this plan has been derived from various existing data sources including state geological maps, Allstate plans, aerial magnetic surveys, drill hole and mine data.

To further evaluate the potential of the concealed Ordovician sandstone, and of Beaconsfield to host primary gold deposits, it is recommended that initially two lines of RC drill holes, as shown, should be completed. Holes are spaced on 100m centres and should be approx. 50m deep. In total 28 holes x 50m = 2750m.

Results of these holes could then be used to guide the direction of future exploration in the region.

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NEWHAM EXPLORATION AND MINING SERVICES

CLIENT: BEACONSFIELD GOLD JOINT VENTURE

EXPLORATION LICENCE 7/88

INTERPRETATIVE GEOLOGY

&
INITIAL EVALUATION PROGRAM

DRAWN: L.A. Newham DATE: January 1984 FIGURE: