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EXPLORATION FOR CHRYSOTILE ASBESTOS

PAD 2 TO HIBBS LAGOON

E.L. 13/65, S.W. TASMANIA

JANUARY TO MARCH 1972

by

P.W. McGregor

MELBOURNE

APRIL, 1972

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FIGURES

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| 2           | A1-35          | E.L.13/65, S.W. Tasmania Geology HB21  |
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| 9           | A3-9           | E.L.13/65, S.W. Tasmania - map showing costeans and asbestos occurrences at the southern end of the Eastern Ultra-basic Belt.                              |

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1. INTRODUCTION

The purpose of the exploration programme was to test the unexplored portion of the Sorell Peninsula ultrabasic belt for chrysotile asbestos. This portion lies between Pad 2, Fern Creek and the Hibbs Lagoon area a strike distance of about 6 miles (see Fig. 1).

North of Pad 2, exploration had been carried out in 1966-67, 1967-68 and 1970-71. Most of this work was concentrated at Noddy Creek where the best reserves of asbestos occur. These reserves are insufficient for an economic deposit.

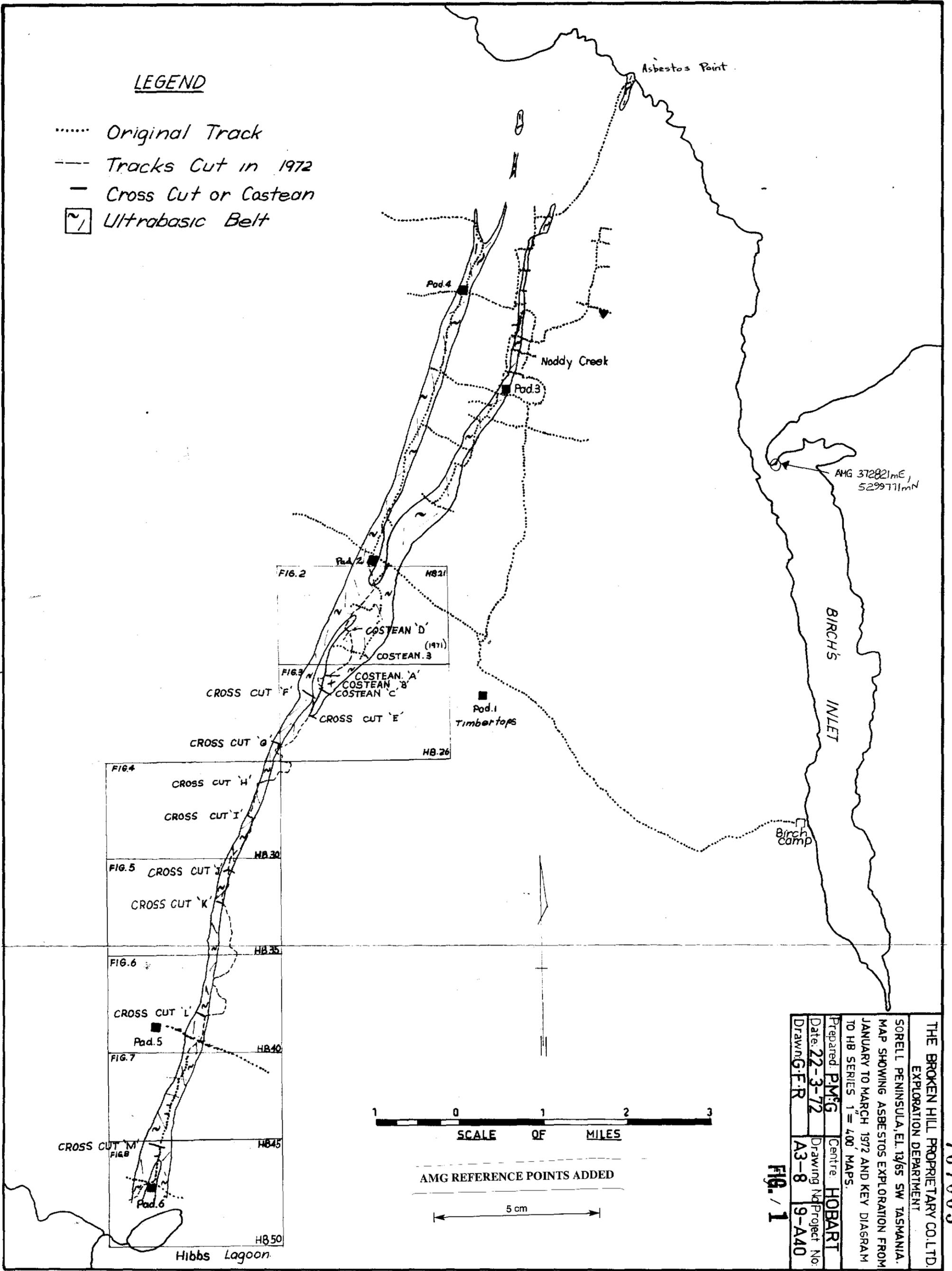
During the 1966-67 field season the ultrabasic belt was cleared for a distance of two miles north of Hibbs Lagoon. Only minor chrysotile asbestos was noted. The area was revisited in 1971 and this inspection revealed additional chrysotile asbestos particularly on the OO line which is 2,000 feet north of Hibbs Lagoon. As the strike extensions of this asbestos were open for 2,000 feet to the south and 7,300 feet to the north it was considered worthy of further clearing.

The massive pyroxenite body south of Pad 2 is similar to the massive pyroxenite body at 1500'S at Noddy Creek where Deposit 2 is located. The Pad 2 pyroxenite body is at least 4 times larger than the one at Noddy Creek and was only partially tested in 1966-67 and in 1971. Costean 3 (1971) marks the southern limit of the previous testing of this body.

One geologist, two bulldozer operators and three support personnel were employed on the testing of the ultrabasic belt between January 11th and March 17th, 1972. During this time  $7\frac{1}{2}$  miles of access tracks and  $1\frac{1}{4}$  miles of costeans and cross cuts were made by two bulldozers; a Komatsu D60A and an International TD20B. Heavy scrub, swamps and continual mechanical problems with the International TD20B bulldozer were the main access problems, but

**LEGEND**

- ..... Original Track
- Tracks Cut in 1972
- Cross Cut or Costean
- ☐ Ultrabasic Belt



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 EXPLORATION DEPARTMENT  
 SORELL PENINSULA, EL. 13/65 SW TASMANIA.  
 MAP SHOWING ASBESTOS EXPLORATION FROM  
 JANUARY TO MARCH 1972 AND KEY DIAGRAM  
 TO HB SERIES 1" = 400' MAPS.

|                      |                        |
|----------------------|------------------------|
| Prepared <b>PM:G</b> | Centre <b>HOBART</b>   |
| Date <b>22-3-72</b>  | Drawing No/Project No. |
| Drawn <b>G.F.R</b>   | <b>A3-8 9-A40</b>      |

**FIG. 1**

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these were considerably offset by the exceptionally dry weather throughout the season.

Wherever possible the access tracks were made on the ultrabasic rocks which occur in two adjacent belts; the Eastern Ultrabasic Belt and the Western Ultrabasic Belt. However, it was not feasible to cut an access track along the Western Ultrabasic Belt for most of its length since it occurs in a swampy valley. Four costeans and one cross cut were made across the Eastern Ultrabasic Belt which ends about 2 miles south of Pad 2. Eight cross cuts were made across the Western Ultrabasic Belt. The spacing of these cross cuts was dependent on geology, distance and accessibility. Below are listed the costeans and cross cuts made and their location (see also Fig. 1).

|           |   | <u>Yards North</u> |                           |
|-----------|---|--------------------|---------------------------|
| Costean   | A | 770,550            | } Eastern Ultrabasic Belt |
| "         | B | 770,400            |                           |
| "         | C | 770,200            |                           |
| "         | D | 771,700            |                           |
| Cross Cut | E | 769,900            | } Western Ultrabasic Belt |
| "         | F | 770,200            |                           |
| "         | G | 769,300            |                           |
| "         | H | 768,400            |                           |
| "         | I | 767,600            |                           |
| "         | J | 766,600            |                           |
| "         | K | 766,100            |                           |
| "         | L | 763,500            |                           |
| "         | M | 761,000            |                           |

All tracks were pegged and surveyed by tape and compass. The results of geological mapping are shown on Figs. 2 to 8 and a magnetometer was used to delineate the ultrabasic belts accurately. Magnetometer readings were taken at 25 feet intervals across the ultrabasics but no relationship was found between the asbestos and the magnetic intensity. This is also the case at Noddy Creek. All chrysotile asbestos occurrences are shown on the accompanying figures and logs of costeans A to D can be found in the Appendix. All fibre occurrences mentioned in the report refer to cross fibre.

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## 2. GEOLOGY

### EASTERN ULTRABASIC BELT

The Eastern Ultrabasic Belt extends southwards from Pad 2 for a distance of 2 miles. It reaches a maximum thickness of about 2,000 feet in the middle of the plain south of Pad 2. The plain is composed of pyroxenite with serpentinite around the edges. The serpentinite zone is thickest along the western edge and chrysotile asbestos is restricted to this zone. The pyroxenite is almost wholly altered to talc which forms 80 to 90 percent of the rock. Gabbro occurs as small stocks within the northern half mile of the Eastern Ultrabasic Belt, where the serpentinite zone is thickest. This area is covered in forest, unlike the plain, and also contains the best developments of chrysotile asbestos.

The contact rocks of the belt are talc schist and sheared volcanics and sediments to the west and andesites and sediments to the east. Much shearing is evident in the ultrabasic belt at the contact and in the contact rocks particularly on the western side. Unsheared andesite was encountered at the eastern end of Costean C. The location of Cross Cut E is thought to be the southern most extremity of the Eastern Ultrabasic Belt since the belt is only 130 feet wide of which 20 feet is massive serpentinite. There is a marked narrowing of the belt. It was not possible to continue southwards from Cross Cut E due to ground conditions, but the vegetation and photo pattern indicate that the serpentinite does not continue southwards. The strike extension of this point was crossed a further 3,000 feet southwards and no ultrabasic rocks are present.

### WESTERN ULTRABASIC BELT

The Western Ultrabasic Belt extends continuously from Pad 2 to Hibbs Lagoon. It varies from 1,300 feet wide at Pad 2 to 200 feet wide 4 miles south of Pad 2 and to 2,000 feet wide on the OO line at Hibbs Lagoon. The serpentinite is highly sheared from Pad 2 to the 10,000'N line of the Hibbs tracks system, a distance of 6 miles. Much calcite or aragonite is present forming radiating clusters along shear planes. Occasional pods of partly sheared brittle serpentinite occur and may contain sparse showings

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of very poor quality cross fibre asbestos. No asbestos is present in the sheared serpentinite. The occasional boulder of pyroxenite is present.

The Western Ultrabasic Belt in the vicinity of the Hibb's track system is similar to the Eastern Ultrabasic Belt. It contains pyroxenite, massive serpentinite, sheared serpentinite, gabbro and chrysotile asbestos. Just north of the 00 line the belt is split in two being divided by sheared volcanics. Chrysotile asbestos occurs in the western side only.

The contact rocks on the western side of the Western Ultrabasic Belt are generally of Ordovician age. Gordon Limestone is present in Cross Cut H. At Cross Cuts G, K and L the contact is obscured by scree composed of Caroline Creek Sandstone. It is quite likely that this scree overlies the Gordon Limestone. At Cross Cut J, the western contact of the ultrabasic belt is against a quartzite. This quartzite does not occur elsewhere and is very obvious, forming a small hill in the middle of an otherwise flat valley. It lies between the ultrabasics and the Gordon Limestone. In the Hibbs Lagoon area the Western Ultrabasic Belt is bounded by Cambrian sediments.

The contact rocks on the eastern side of the Western Ultrabasic Belt are chloritized volcanics, tuff, quartz felspar porphyry or sediments ranging from pebble conglomerate to siltstone. All contact rocks to the east belong to the Cambrian Dundas Group.

3. ASBESTOS INTERSECTIONSEASTERN ULTRABASIC BELT (See Fig. 9)

The Eastern Ultrabasic Belt contains the Noddy Creek asbestos deposits located about 3 miles north of Pad 2. It also contains the Asbestos Point deposit. The Eastern Ultrabasic Belt is faulted out for about  $1\frac{1}{2}$  miles between Asbestos Point and Noddy Creek. Good quality chrysotile asbestos occurs throughout the whole of the Eastern Ultrabasic Belt but not in economic quantities.

During previous seasons, intersections of chrysotile asbestos had been made at 2,000 feet south of Pad 2 (1966-67 bulldozer track) and at 6,000 feet south of Pad 2 (Costean 3, 1971). Although these intersections of asbestos are only minor the area was thought to be worthy of further exploration since the geological environment is similar to Deposit 2 at Noddy Creek and is at least four times larger.

Work this season consisted of the making of a north south access track along the Eastern Ultrabasic Belt and four costeans and one cross cut. This work revealed that the best asbestos occurs at the southern end of the pyroxenite plain where serpentinitization is greatest. This area is about 2,000 feet south of Costean 3 (1971). Three costeans were cut across the strike of the asbestos zone in this area - Costean A, Costean B (450 feet south of A) and Costean C (600 feet south of B). Logs of these costeans can be found in the Appendix. The best fibre occurs in Costean A which contains a 5 feet zone of 9.6% chrysotile fibre in partly sheared apple green serpentinite. Another fibre zone in Costean A occurs between 255 and 355 feet in massive hard dark grey serpentinite. This zone contains 55 feet of 0.7% chrysotile asbestos between 300 and 355 feet. East of 355 feet the massive serpentinite changes to pyroxenite containing much brucite and no chrysotile asbestos. In Costean B the best chrysotile asbestos zone occurs between 215 feet and 275 feet east, a distance of 60 feet and contains 0.7% chrysotile asbestos. The best intersection in Costean C is 5 feet of 2.7% chrysotile fibre. The ultrabasic belt is about 700 feet wide here. Cross Cut E was made 900 feet south of Costean C and intersected 130 feet of

sheared serpentinite containing 20 feet of massive serpentinite. No chrysotile asbestos is present. Costean D was cut 1,500 feet north of Costean 3 (1971). The log can be found in the Appendix and shows that the amount of fibre is of the same order as that found at 2,000 feet and 6,000 feet south of Pad 2.

#### WESTERN ULTRABASIC BELT

North of Pad 2 only very minor chrysotile asbestos has been found in the Western Ultrabasic Belt which is sheared throughout. At Pad 2 the belt is 1,300 feet wide is highly sheared and contains no asbestos. This belt is continuous to Hibbs Lagoon and cross cuts were made at intervals between Pad 2 and Hibbs Lagoon. The first cross cut south of Pad 2 is Cross Cut F which is  $1\frac{3}{4}$  miles south of Pad 2. The serpentinite is about a 1,000 feet wide and is highly sheared throughout. No chrysotile asbestos is present. The next cross cut, 2,700 feet further southwards, is Cross Cut G which intersected about 300 feet width of highly sheared and flakey serpentinite containing much calcite or aragonite as radiating crystals in the shear planes. A few minor poor quality chrysotile asbestos veins were found in the less sheared serpentinite. They are gash veins of a maximum width of less than  $1/32$  inch. Cross Cuts H and I, respectively 2,700 feet and 5,100 feet south of Cross Cut G, intersected sheared flakey serpentinite with very minor sporadic chrysotile asbestos less than  $1/32$  inch wide. One vein of chrysotile fibre of less than  $1/32$  inch wide was seen in Cross Cut J, 3,000 feet south of Cross Cut I. Cross Cut K intersected a 400 feet width of sheared flakey serpentinite with some massive serpentinite and much calcite. It is 1,500 feet south of Cross Cut J and contains no chrysotile asbestos. Cross Cut L is 7,800 feet south of Cross Cut K. Due to the nature of the country it was impractical to make a cross cut between K and L. It was also not warranted when the results in Cross Cuts K and L and the photo interpretation were considered. Cross Cut L is 1,100 feet north of the old Hibbs track system which was made for 10,000 feet along strike in 1967. No chrysotile fibre was seen in Cross Cut L which contains flakey serpentinite over a width of about 400 feet. A cross cut, M was made at 2,600'N in the Hibbs track system. This cross cut was made to see if the asbestos on the OO line was continuous northwards. Good quality fibre was found over a width of 50 feet

LEGEND



Serpentinite



Pyroxenite

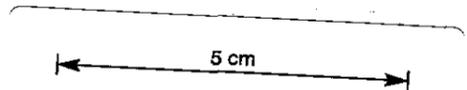
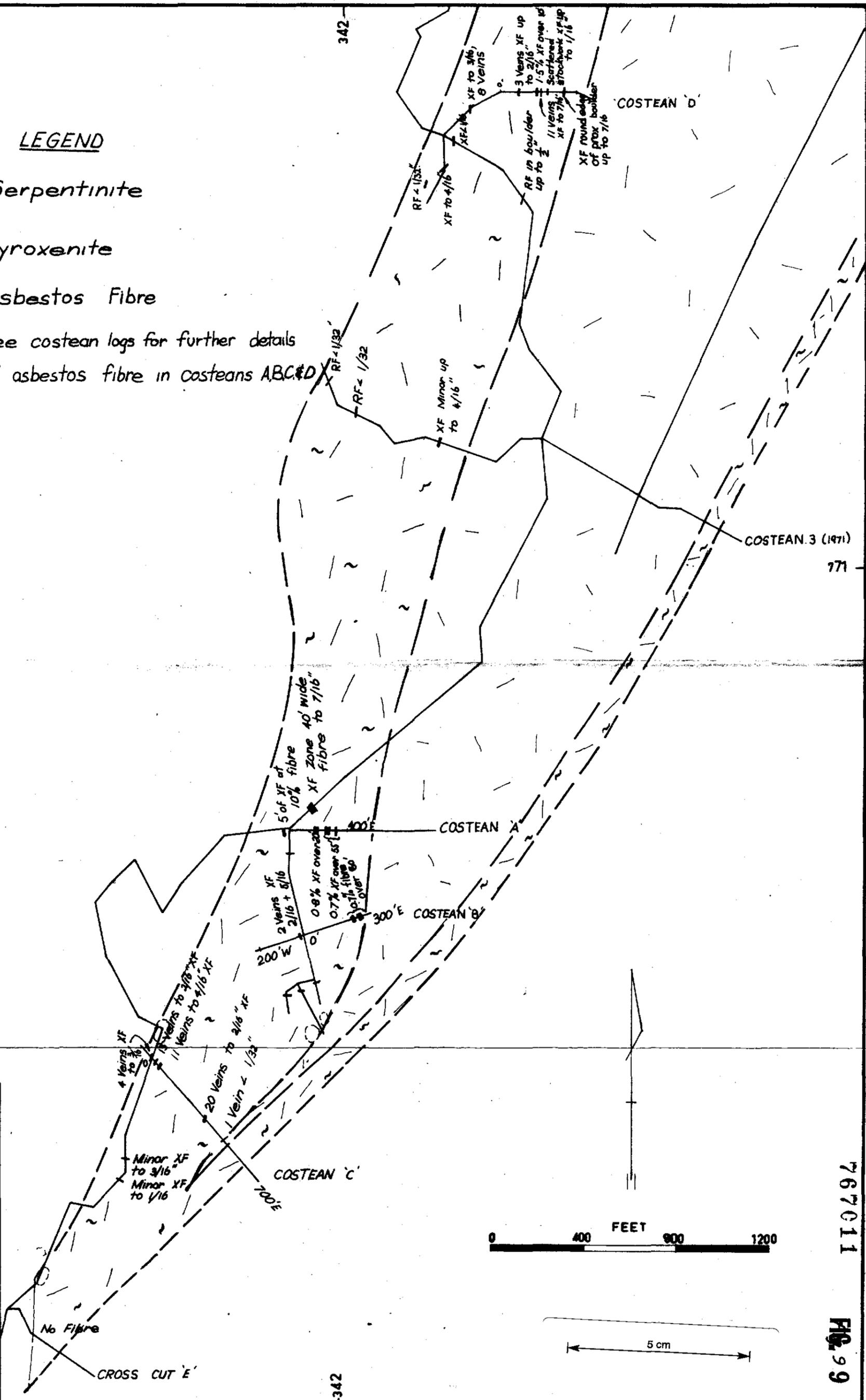


Asbestos Fibre

See costean logs for further details of asbestos fibre in costeans ABC&D

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EL. 1965 S.W. TASMANIA  
MAP SHOWING COSTEAN AND ASBESTOS OCCURRENCES AT THE SOUTHERN END OF THE EASTERN ULTRABASIC BELT

Prepared by: P.M.G.  
Date: 23-3-71  
Centre: HOBART  
Drawing No: A3-9  
Project No: 9-A.40  
Drawn: G.F.R.

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FIG. 99

342

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in Cross Cut M. The grade is estimated to be about 1%. A cross cut was attempted at 2050'N but was unsuccessful since only boggy ground is present underlain by highly sheared serpentinite. This cut showed that the chrysotile fibre was not continuous between 00 and 2600'N. Photo interpretation shows that a hill is present on both the 00 line and the 2600'N line. Between these hills the ground is flat and would therefore be underlain by sheared serpentinite precluding the presence of chrysotile fibre. A track was cut southwards towards Hibbs Lagoon from the 00 line. As much clearing was done in this area as possible, which was limited by the boggy ground conditions. This clearing showed that the chrysotile fibre petered out southwards as soon as the vicinity of the massive serpentinite forming the hill was passed. Cross cuts were also attempted at 4300'N and 4800'N. In both cases these cross cuts were hampered by boggy ground conditions.

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4. CONCLUSIONSEASTERN ULTRABASIC BELT

The Eastern Ultrabasic Belt contains chrysotile fibre of good quality along the western edge. The fibre occurs over a strike width of between 400 and 600 feet and a strike length from Costean D to Costean C of about 5,000 feet. The fibre across strike is by no means continuous containing barren areas over 100 feet wide. The fibre along strike is by no means uniform and reaches its greatest concentration in the vicinity of Costeans A and B. The following summarizes the best chrysotile fibre recorded in each costean:-

|           | <u>Feet South</u> | <u>Fibre</u>                      |
|-----------|-------------------|-----------------------------------|
| Costean D | 0                 | 10 feet containing 1.5% fibre     |
| Costean 3 | 1500'             | Few veins in boulder to 4/16 inch |
| Costean A | 3450'             | 55 feet containing 0.7% fibre     |
| Costean B | 3900'             | 60 feet containing 0.7% fibre     |
| Costean C | 4500'             | 5 feet containing 2.7% fibre      |

Chrysotile fibre was recorded elsewhere in the costeans but was in such small amounts that any inclusion to the above fibre zones would severely reduce the grade (see fibre logs). The above fibre intersection show that there is no possibility of chrysotile fibre being present in economic proportions in the Eastern Ultrabasic Belt.

WESTERN ULTRABASIC BELT

Virtually no chrysotile fibre is present in the Western Ultrabasic Belt until the Hibbs track system is reached. North of the Hibbs track system any fibre present occurs as gash veins of less than 1/32 inch which are very sporadic. Chrysotile fibre is fairly well developed along the 00 line at Hibbs Lagoon where the best intersection is between 440 and 485 feet west which contains 0.6% fibre. However, further track making in this vicinity shows that the fibre is restricted to a hill (see Fig. 8 and is not continuous along strike. The same is the case at 2600'N where a 50 feet wide zone of chrysotile fibre occurs. The narrowness of the fibre zones and the discontinuity along strike

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show that there is no possibility of an economic asbestos deposit occurring in the Hibbs track system. The same applies to the north of Hibbs Lagoon where essentially, there is no chrysotile fibre whatsoever.

APPENDIX

1. Costean A
2. Costean B
3. Costean C
4. Costean D



FIBRE LOG SHEET

016

( Hole:

Interval: 0 - 305'E

Footage:

Costean: B

Fibre Log:



| FROM        | To  | REC | Code | 1/32 | 1/16 | 2/16  | 3/16 | 4/16 | 5/16 | 6/16 | 7/16 |  |  | Sum<br>1/16 | Vein<br>Angle | Vol<br>% |
|-------------|-----|-----|------|------|------|-------|------|------|------|------|------|--|--|-------------|---------------|----------|
| 0           | 80  | 80  |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 80          | 85  | 5   |      |      | 1    | 1     |      |      | 1    |      |      |  |  | 8           |               | 0.8      |
| 85          | 120 | 45  |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 120         | 125 | 5   |      |      | 1    |       |      |      |      |      |      |  |  | 2           |               | 0.2      |
| 125         | 130 | 5   |      | 1    |      |       |      | 1    |      |      |      |  |  | 5           |               | 0.5      |
| 130         | 150 | 20  |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 150         | 180 | 30  |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 180         | 185 | 5   |      | 1    | 2    |       |      |      |      |      |      |  |  | 3           |               | 0.3      |
| 185         | 190 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 190         | 195 |     |      | 1    | 1    | 2     |      |      |      |      |      |  |  | 5           |               | 0.5      |
| 195         | 200 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 200         | 205 | 5   |      |      | 3    |       |      |      |      |      |      |  |  | 3           |               | 0.3      |
| 205         | 210 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 210         | 215 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 215         | 220 | 5   |      |      | 1    |       |      | 1    |      |      |      |  |  | 6           |               | 0.6      |
| 220         | 225 | 5   |      | 1    | 3    | 1     |      |      |      |      |      |  |  | 6           |               | 0.6      |
| 225         | 230 | 5   |      | 5    | 6    | 2     | 1    |      |      |      |      |  |  | 16          |               | 1.6      |
| 230         | 235 | 5   |      |      | 6    | 1     | 1    |      | 1    |      |      |  |  | 16          |               | 1.6      |
| 235         | 240 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 240         | 245 | 5   |      | 1    |      | 1     |      |      |      |      |      |  |  | 3           |               | 0.3      |
| 245         | 250 | 5   |      |      |      |       | 1    |      |      |      |      |  |  | 3           |               | 0.3      |
| 250         | 255 | 5   |      |      | 4    | 1     |      | 1    |      |      |      |  |  | 10          |               | 1.0      |
| 255         | 260 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 260         | 265 | 5   |      |      | 1    | 4     | 1    |      |      |      |      |  |  | 12          |               | 1.2      |
| 265         | 270 | 5   |      |      |      | N I L |      |      |      |      |      |  |  | 0           |               | 0        |
| 270         | 275 | 5   |      | 2    | 2    | 1     | 1    |      |      |      | 1    |  |  | 15          |               | 1.5      |
| (Continued) |     |     |      |      |      |       |      |      |      |      |      |  |  |             |               |          |

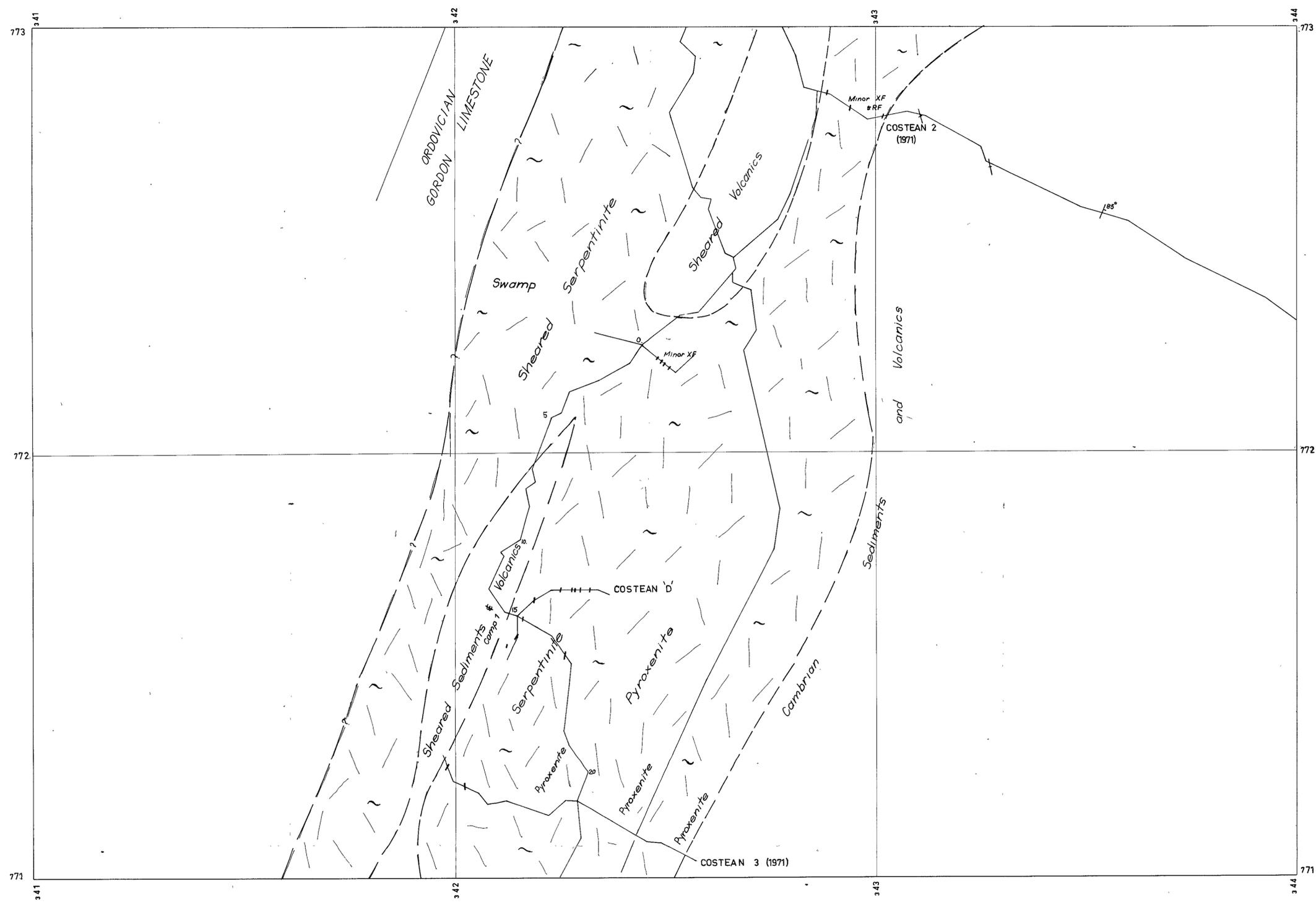
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**LEGEND**

 Ultrabasic Belt

 Asbestos Occurrence  
(for further details see fig 9)

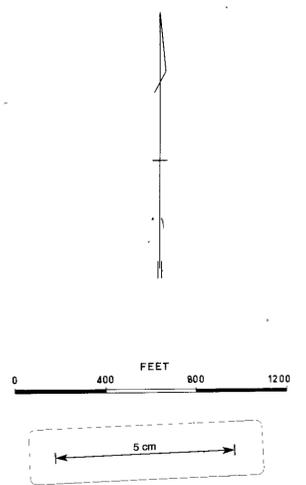
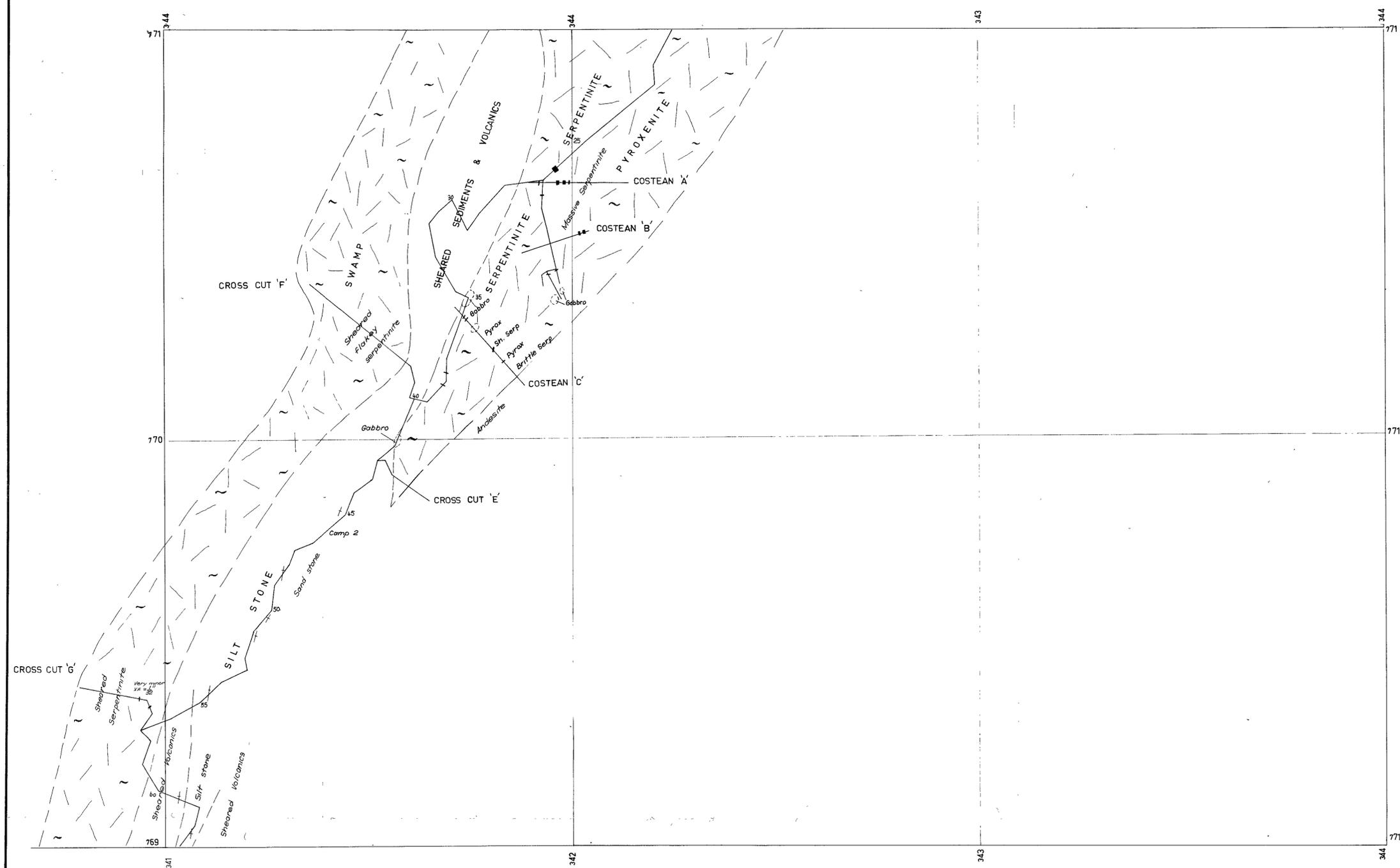


Fig. No. 2 1130  
 To accompany.....  
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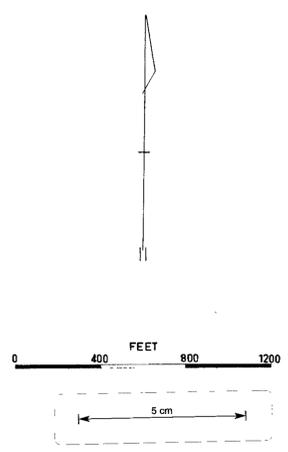
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| Drawn PMG   | Date 2/3-72 | Centre HOBART |  |
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**LEGEND**

Ultrabasic Belt

Asbestos Occurrence  
(for further details see fig 9)



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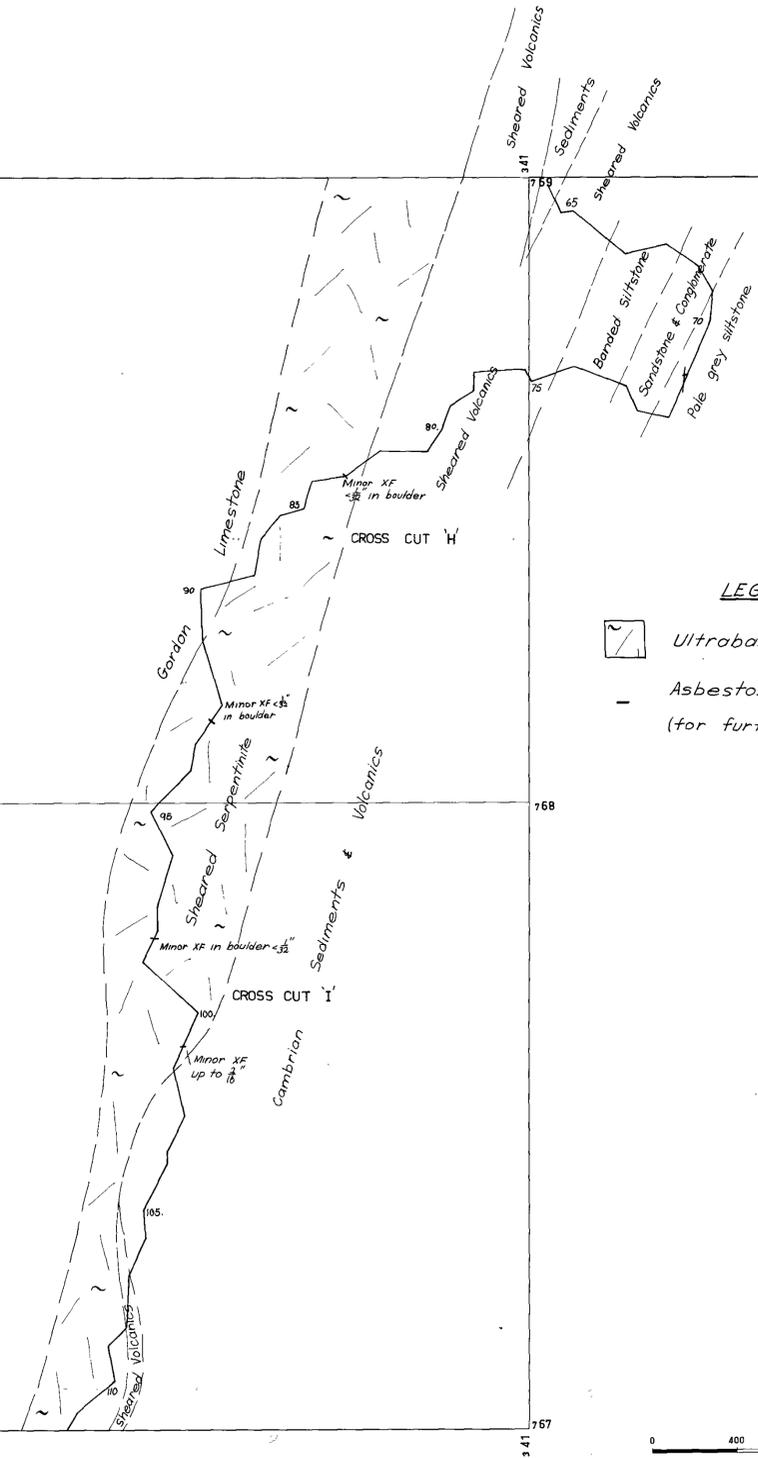
Fig. No. 3  
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| E.L. 13/65 SOUTH WEST TASMANIA<br>NODDY CREEK AREA SHEET HB 26<br>GEOLOGICAL MAP |                   |                   |
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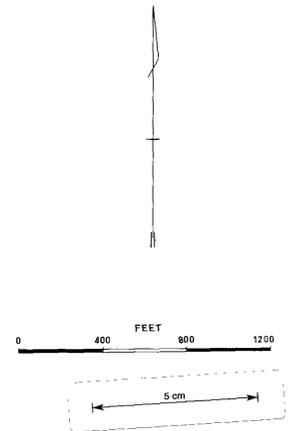
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**LEGEND**

-  Ultrabasic Belt
-  Asbestos Occurrence  
(for further details see fig 9)

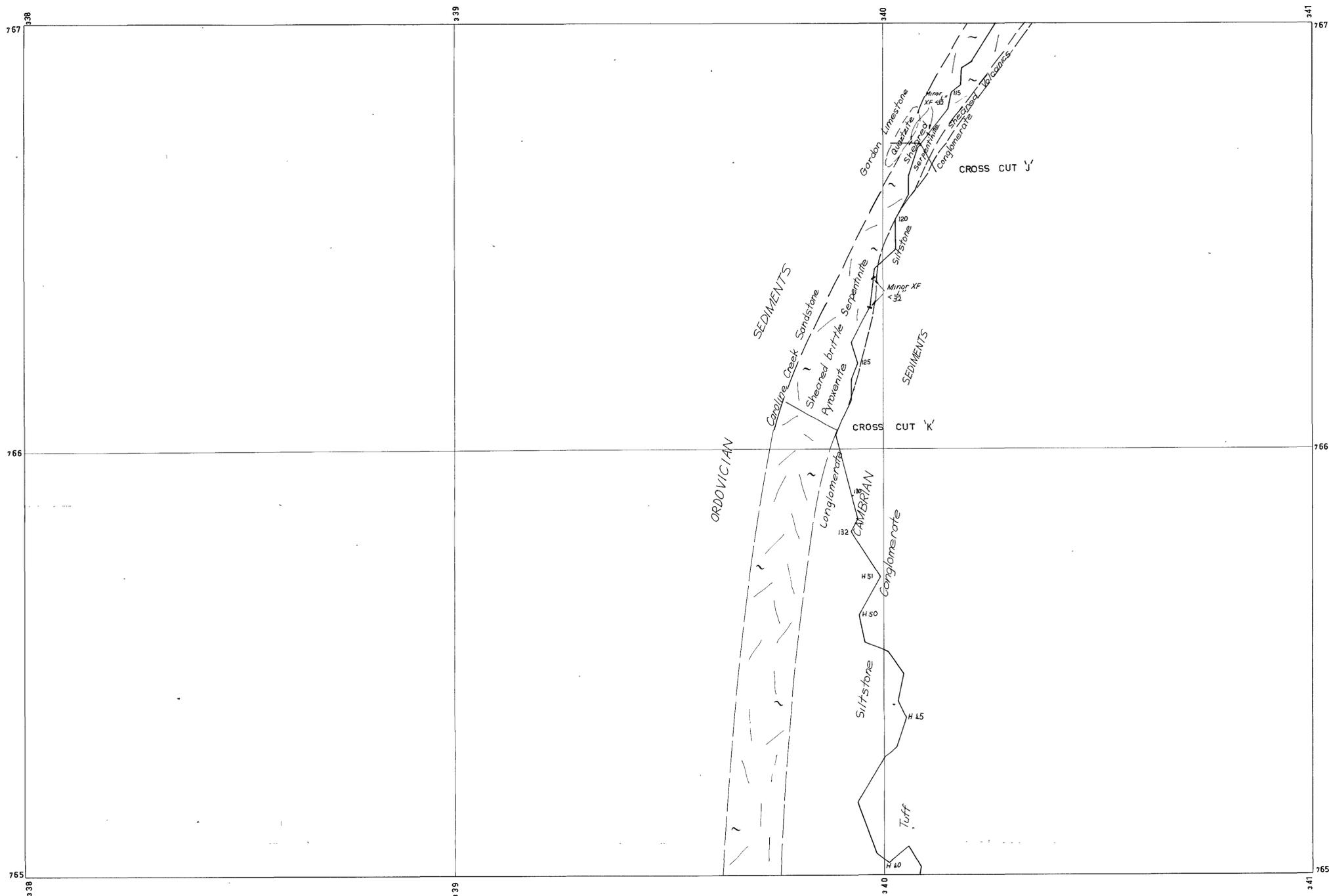


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Fig. No. 4  
To accompany  
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| Drawn   | PMG | Date 21-3-72 | Centre HOBART |
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| Checked   |     | 9-A40        | A1-37         |
| Q.L.C.  |     |              |               |



**LEGEND**

-  Ultrabasic Belt
-  Asbestos Occurrence (for further details see fig 9)

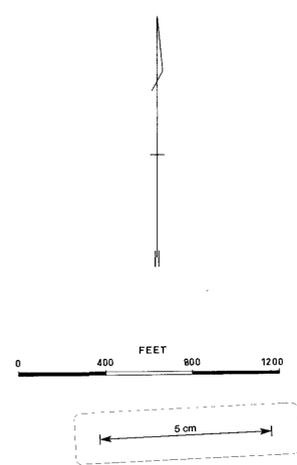
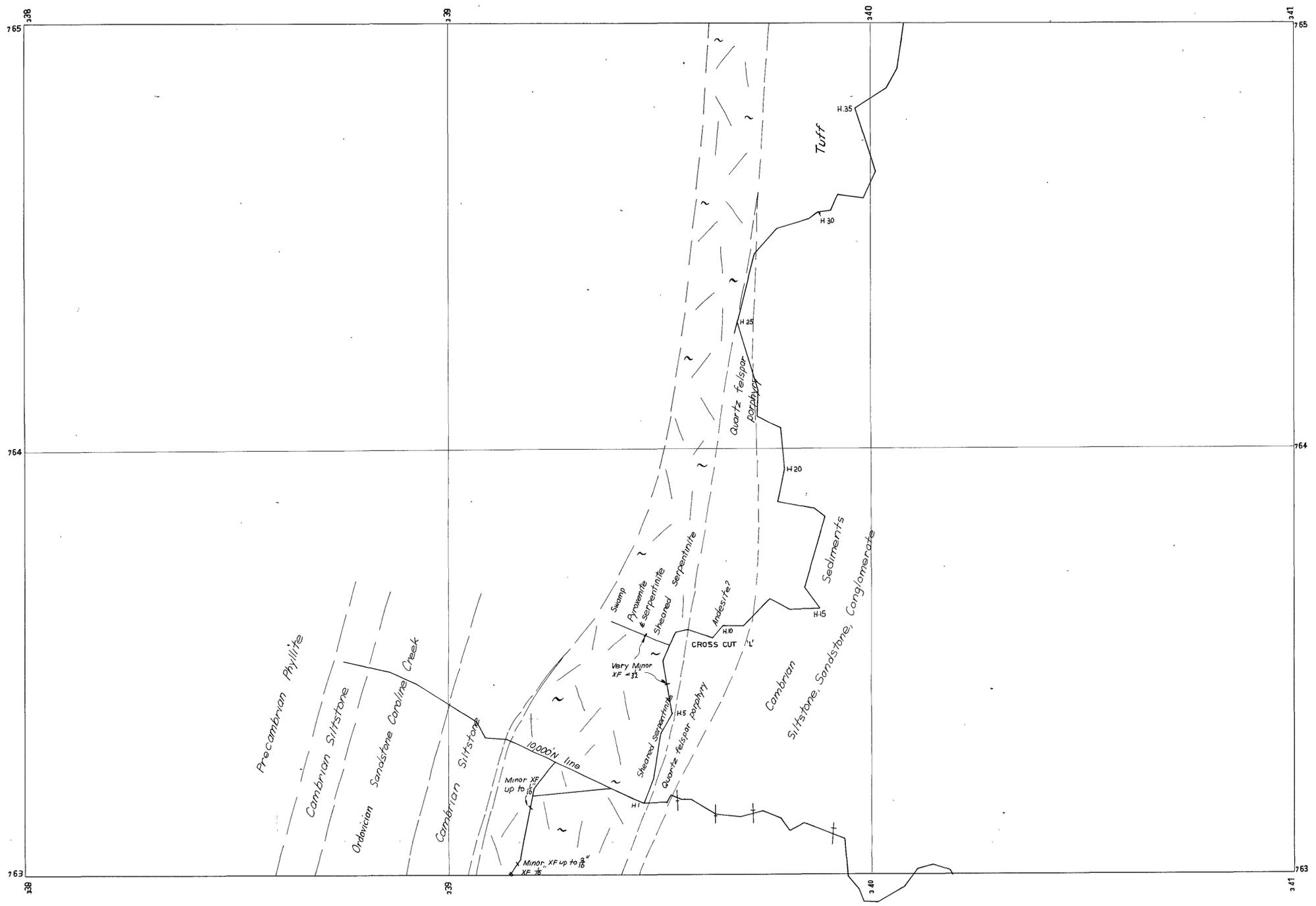


Fig. No. 5  
 To accompany 1133  
 Dated 767025

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| NODDY CREEK AREA - SHEET HB 35       |     |             |         |
| GEOLOGICAL MAP                       |     |             |         |
| Drawn                                | PMG | Date        | 21-3-71 |
| Traced                               | GFR | Centre      | HOBART  |
| Checked                              |     | Project No. | 9-A40   |
| O.I.C.                               |     | Drawing No. | A1-38   |



**LEGEND**

 Ultrabasic Belt

 Asbestos Occurrence  
(for further details see fig.9)

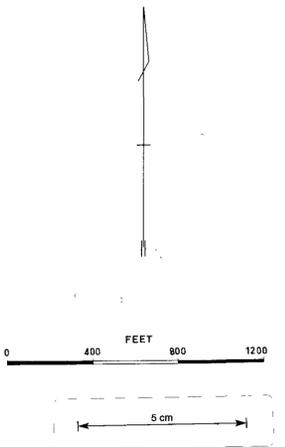
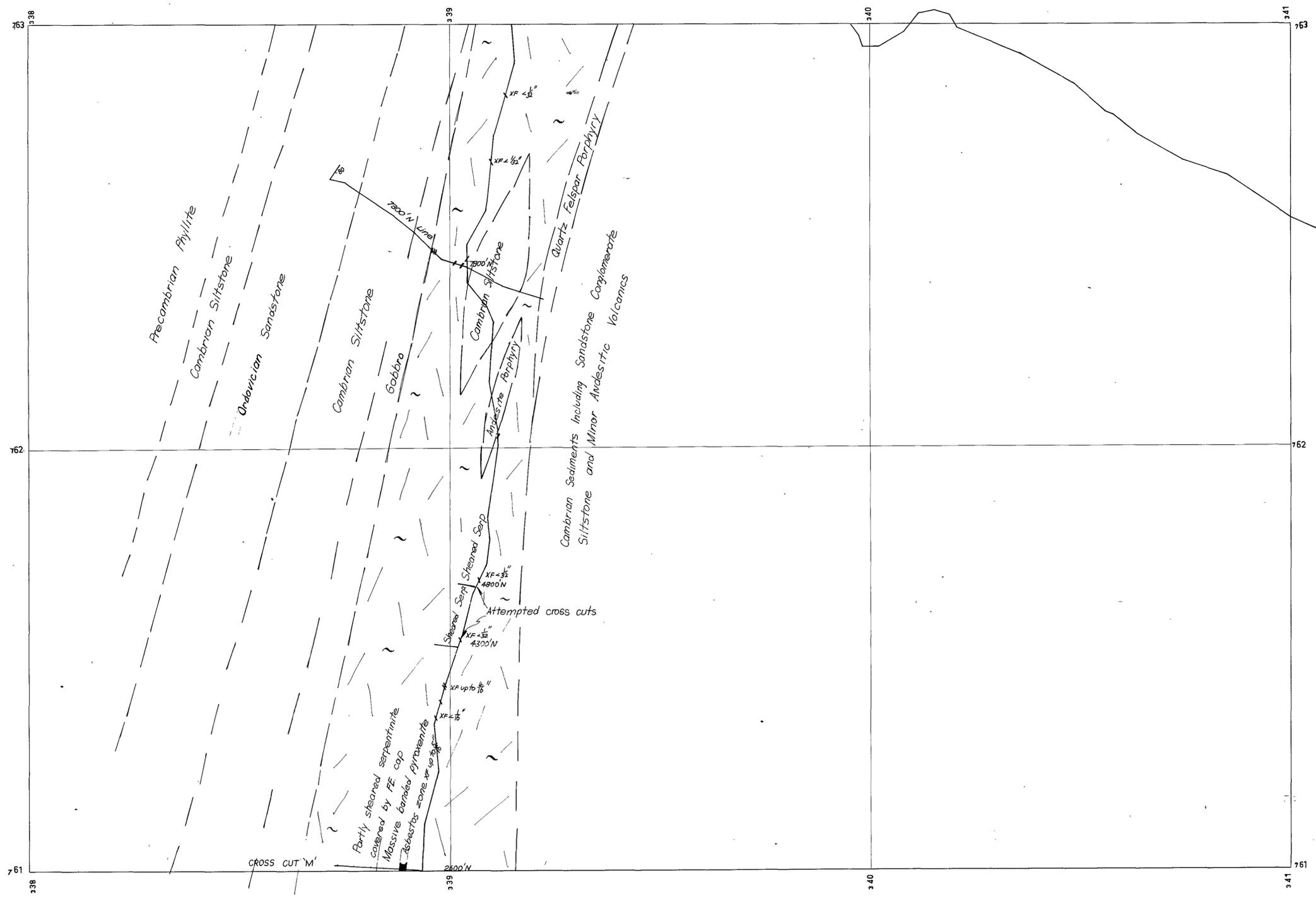


Fig. No. 6 1134  
 To accompany  
 Dated

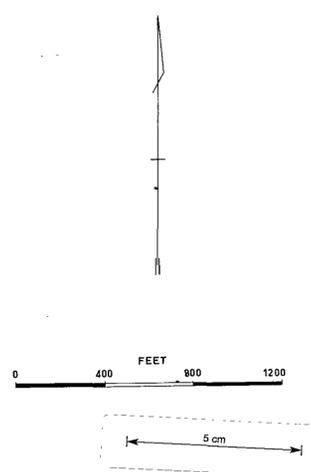
|  |     |             |         |
|--|-----|-------------|---------|
| THE BROKEN HILL PROPRIETARY CO. LTD.<br>EXPLORATION DEPARTMENT                     |     |             |         |
| E.L. 13/65 SOUTH WEST TASMANIA<br>NODDY CREEK AREA - SHEET HB 40<br>GEOLOGICAL MAP |     |             |         |
| Drawn  | PMG | Date        | 21-3-72 |
| Traced   | GFR | Project No. | 9-A40   |
| Checked  |     | Centre      | HOBART  |
| G.I.C.   |     | Drawing No. | A1-39   |



**LEGEND**

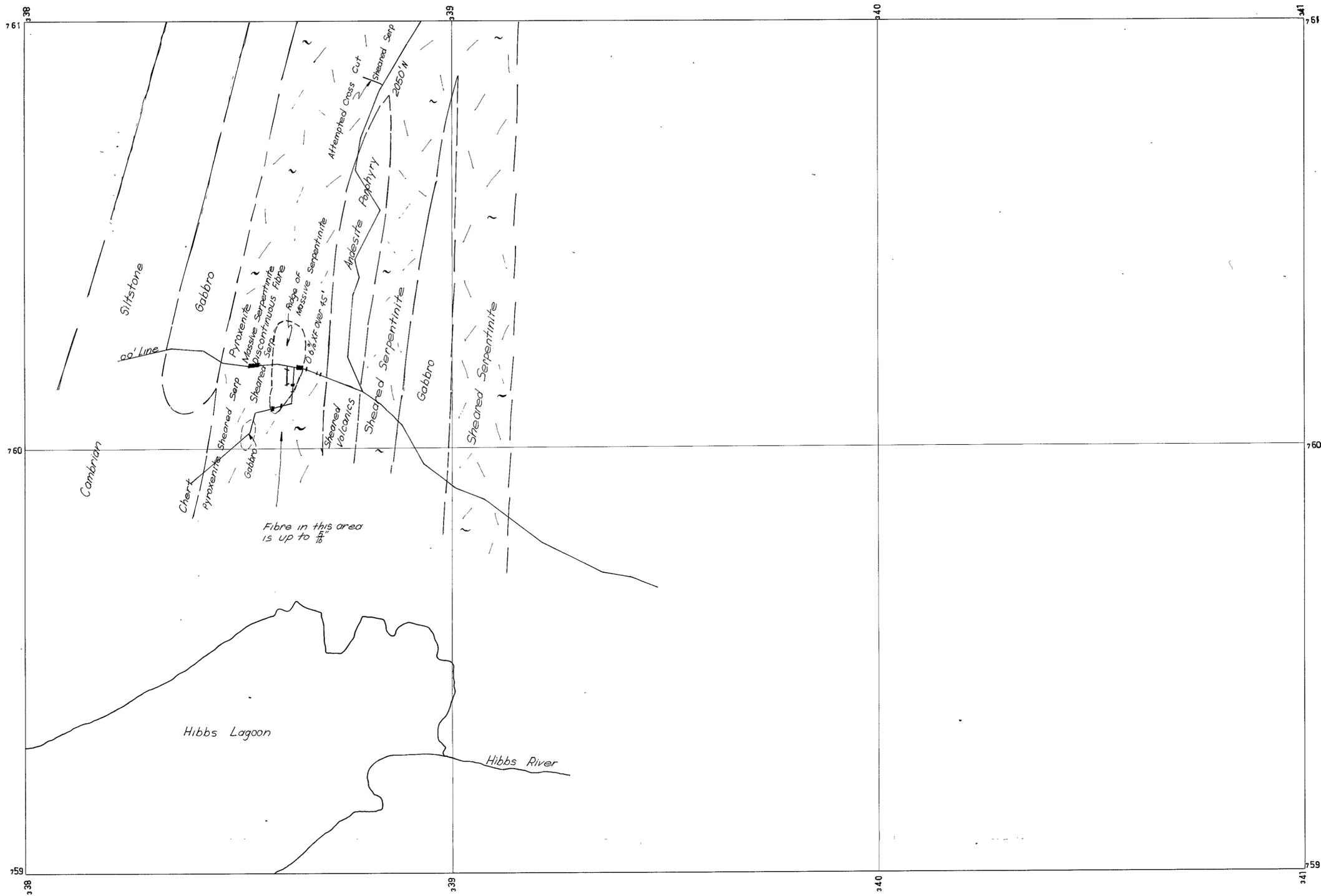
Ultrabasic Belt

Asbestos Occurrence  
(for further details see fig 9)



767027 Fig. No. 7 1135  
 To accompany  
 Dated

|   |        |             |         |
|---|--------|-------------|---------|
| THE BROKEN HILL PROPRIETARY CO. LTD.<br>EXPLORATION DEPARTMENT                    |        |             |         |
| E.L.13/65 SOUTH WEST TASMANIA<br>NODDY CREEK AREA - SHEET HB 45<br>GEOLOGICAL MAP |        |             |         |
| Drawn   | P.M.G. | Date        | 21-3-71 |
| Traced  | G.F.R. | Centre      | HOBART  |
| Checked   |        | Project No. | 9-A40   |
| O.I.C.  |        | Drawing No. | A1-40   |



LEGEND

-  Ultrabasic Belt
-  Asbestos Occurrence  
(for further details see fig 9)

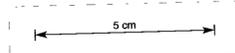


Fig. No. 9 1156  
 To accompany  
 Dated

767028

|   |              |               |        |
|---|--------------|---------------|--------|
| THE BROKEN HILL PROPRIETARY CO. LTD.  |              |               |        |
| EXPLORATION DEPARTMENT  |              |               | 72-862 |
| E.L. 13/65 SOUTH WEST TASMANIA<br>NODDY CREEK AREA - SHEET HB50<br>GEOLOGICAL MAP |              |               |        |
| Drawn PMG   | Date 21-3-72 | Centre HOBART |        |
| Traced GFR  | Project No.  | Drawing No.   |        |
| Checked   | 9-A.40       | A1-41         |        |
| O.I.C.  |              |               |        |