

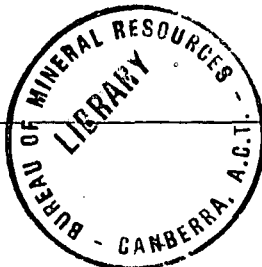
1943/64A

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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS



copy 3

GEOLOGICAL REPORT ON THE

WOMOB1 WOLFRAM MINE

Record No. 1943/64 A.

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DEPARTMENT OF SUPPLY AND SHIPPING
MINERAL RESOURCES SURVEY BRANCH

- GEOLOGICAL REPORT ON THE WOMBEE WOLFTRAM MINE -
Report No. 1943/64A.

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ACCOMPANYING PLANS

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GEOLOGICAL REPORT ON THE WOMOBI WOLFRAM MINE

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INTRODUCTION

Situation: The Womobi wolfram mine is situated in M.L.6798 in the Parish of Thologolong, County of Benambra, one mile east of the main Murray Valley Highway and 42 miles by road easterly from Albury. The nearest railway station is Bullich Siding, 5 miles east of Tallangatta and 22 miles from the mine.

Previous Reports: Reports on the files which deal with the Womobi mine include:-

Report by the Melbourne University Ore-Dressing Laboratory on the concentration of wolfram ores from Thologolong, Victoria - Investigations Nos. 120 and 121, October, 1938. This includes a mineragraphic description by Dr F.L. Stillwell of the ore from the "New Thologolong Lode", 50 feet north of the main reef.

Report on the Thologolong Mine by F. Voss Smith, dated September, 1938.

Report on the Womobi Mining Company, by J.G. Easton, Senior Field Geologist of the Victorian Mines Department, February, 1942. This report summarises the information concerning the property prior to its being taken over by the Commonwealth Government.

Reports by J.C. Coldham, dated March 23rd, 1942, September, 1st, 1942, May, 17th, 1943 and August 26th, 1943.

Report by the Melbourne Ore-Dressing Laboratory on the treatment of mill seconds from the Womobi Wolfram Mine - Investigation No. 260, September 24th, 1943.

Mine Manager's fortnightly reports since August, 1942.

Mapping: The mine was mapped on September 4th, 1943. The geology was plotted on a plan of the mine dated 22/3/43, prepared by the Minerals Production Directorate, and extensions such as the east drive and the 50' level surveyed by compass and tape. The surface was mapped by plane table on December 1st, 1943, in company with Mr E.P. Utting, and underground mapping brought up to date. In plotting the results of this work, it was found that the western section at least of the mine survey plan did not check. The plan of the adit level has been adjusted as far as possible, but may be subject to further correction when the results of a re-survey of the level become available. The plans which accompany this report comprise:-

- Plate 1. Surface plan, scale 100 feet to 1 inch.
 - Plate 2. Geological plans of the adit level and of the 50 feet level.
 - Plate 3. Five cross-sections through the workings.
 - Plate 4. Longitudinal sections.
- Plates 2, 3 and 4 are on a scale of 40 feet to 1 inch.

Development: The mine is developed by a short adit to the reef, with drives along the reef system 370 feet east and 240 feet west, the west drive being connected to the surface by another adit opening. A connection has been made to the surface from the east drive at 190 feet from the adit, and two short rises were previously in existence 20 feet or so on either side of the adit. At 30 feet in the west drive a winze was sunk 50 feet and a level has been driven along the lode. Stopping is in progress above this level and above the east level. The stage of development of the mine at the dates of mapping is shown on the accompanying plans.

ECONOMIC GEOLOGY

General Description: The country rock is medium grained, grey biotite granite, which in the mine is in places fine grained and siliceous. When oxidised it assumes a slightly pinkish colour. According to the Parish Geological Map prepared by the Victorian Geological Survey, the nearest exposure of Ordovician sedimentary rocks is 2½ miles southwest from the mine, but other outcrops may be concealed by alluvium.

The reefs occupy a series of straight fissures which are arranged on echelon right-handedly, i.e. looking along the reef each successive shoot is farther to the right. Down the dip a similar relation seems to hold, the reefs tending to be stepped out into the hangingwall at greater depths, though the stage of development at present reached is not sufficient to definitely establish this point. At the end the reef fissures either die out to a shear plane carrying no mineralisation, or else are cut off by, or absorbed into, steep oblique faults (see Plate 1). Strike of the reefs is fairly constant at 80 degrees east of north and the dip is to the north usually at 70 to 75 degrees. Numerous faults were mapped in the workings, nearly all of which are earlier than the mineralisation. Most of these faults cut the reefs obliquely in a west-northwest direction and dip steeply to the north. Others strike northeast to east-northeast and also dip steeply north. The main fault exposed in the workings is a strike fault with vertical displacement, which has been responsible for a duplication of the middle orebody on or just above the 50 foot level. This fault is divided into two or more branches which dip steeply north and strike nearly parallel to the reef.

The reef material is mainly quartz, which usually carries muscovite, and in places chlorite, fluorite, biotite and amblygonite and contains varying amounts of wolfram, molybdenite, bismuthinite, scheelite, chalcopryrite, sphalerite, galena and cassiterite. Dr Stillwell also reports topaz, tetrahedrite and oxidised molybdenite.

East Orebody: Three orebodies, which will be referred to as the East, Middle and West, have been developed in the workings. The East reef which strikes 78 degrees east and dips north at 80 degrees is cut in the east drive at 180 feet from the adit and has been driven on for 181 feet. At the west end it consists of 10 to 12 inches of quartz with some mica but very little wolfram. In the face of the short drive west which has been put in recently the reef narrows to 8 inches of brittle white quartz. Going east the grade soon improves and for a length of 150 feet the reef ranges from 8 to 18 inches in width and carries fairly good wolfram throughout, more in some parts than others, but probably averaging between .5 and 1 per cent. MoS_2 . Molybdenite and bismuthinite occur in places, and patches of sphalerite and chalcopryrite. At the eastern end the reef splits into two narrow branches and is cut off by a strong fault zone which strikes 60 degrees west and dips at 80 degrees to the

northeast. Exploration has not exposed the reef past the fault on the level, but on the surface, 200 feet above the drive, narrow quartz stringers were seen about 20 feet to the south and these may represent the continuation of the reef beyond the fault. It is possible that veins similar to these would be cut by a diagonal drive in a southeasterly direction from the end of the level, but the surface indications are not sufficiently encouraging to justify recommending this exploration. Near the western end of the orebody a rise was put up to connect with the No. 2 shaft from the surface. The reef in this rise and shaft varied from 9 inches to 2 feet in width, averaging 14 inches, and the grade of the ore was generally described by the Mine Manager as fair. The only work done on the surface is a small amount of trenching and the cutting of a bench at the mouth of the shaft. The ore here is partly oxidised and the grade does not seem to be as good as on the level below. Information on the wolfram content at the surface is not sufficient to determine the pitch of the ore-shoot exactly but the intersection of the east end of the orebody on the fault pitches steeply east, and the shoot in general appears to have a similar pitch.

Middle Orebody: This reef strikes 78 degrees like the east orebody and dips north at 70 degrees. On the adit level it contains apparently payable ore for about 50 feet on either side of the adit, and for most of this length it is nearly 2 feet in width, decreasing at the ends. At the west end (see Plate 1) it splits into two veins which become narrower and cut out on reaching an oblique fault of similar orientation to those at the east end of the east orebody. To the east the main reef, after passing through a vertical fracture plane with apparently little displacement, again splits and dies out. The drive then follows a narrow vein on the footwall side which is nowhere more than 9 inches wide, usually only about 6 inches, and which contains fluctuating amounts of wolfram, and patches of dense chalcopyrite and other sulphides. This continues for 100 feet and then pinches to a shear plane. The western end of the drive on the eastern orebody is 12 feet south of this point.

In the west drive at 27 feet from the adit a winze, which is being used as the main haulage-way, was sunk to the 50 foot level. The reef was followed down for 35 feet where it was cut off by a steep fault and at 50 feet depth a crosscut showed the reef to have been displaced about 14 feet out into the hangingwall. In the west drive on this level the reef played out just past the crosscut, but in the east drive the ore continued with good average width and value for 160 feet, giving it a much greater length of shoot than was shown on the adit level. Near the end of the drive the ore becomes poor and the reef splits into two narrow veins.

The longitudinal thrust faults cut in the winze and cross-cut continued to be exposed on the level or in the stope above, the intersection of fault and reef pitching flatly to the east. At the original date of mapping the drive was 120 feet from the crosscut (since increased to 170 feet), and the reef in the face showed double displacement on two arms of the fault. This feature was also displayed in the stope, resulting in a duplication of the reef (see Sections, Plate 2) and has led to exaggerated ore widths being reported. The ore along the fault is particularly good and the fault appears to have caused an enrichment of the values. The reef here is often split into two or more veins, usually a wider hangingwall section 12 to 15 inches wide, and a narrow footwall vein 4 to 6 inches wide and separated from the main vein by 4 to 8 inches of granite. Both branches carry good wolfram, especially under the faults. The faults displace the reef fissures but are earlier than the ore, because they sometimes carry mineralisation themselves, and the reefs above and below the fault do not correspond either in ore content or width, and they may be split into two branches on one side of the fault and

not on the other. Movement on the faults is shown by consistent strong slickenside striations throughout the level to have been nearly vertical. The repetition of the reef between different branches of the fault may add 10 feet or so to the vertical dimension of the ore. The average width of the reef on the level and in the stope, apart from duplication by faulting, is very close to 18 inches. Mica, molybdenite and bismuthinite are present in the reef and fluorite and chalcocypite were also noticed, particularly under the fault.

The western end of the ore shoot pitches east at about 65 degrees and the eastern end has an even more decided pitch to the east. Length of ore on the 50 foot level is 165 feet and the eastern end of the reef, which was represented by a narrow quartz vein with patchy mineralisation on the adit level, has improved in both width and grade to workable dimensions within 50 feet depth. It is possible that this extension in length on the 50 foot level may be due to enrichment along the fault zone. Stopping is in progress above this level, stope development closely following the advancement of the drive.

West Orebody: This reef strikes 75-85 degrees east and dips north at 70 degrees on the surface, but at only 55 degrees in the adit level drive. It has been stoped out above the adit level to a length of nearly 50 feet and appears to have averaged about 18 inches wide. At the west end it pinches to a shear plane and at the east end cuts off on an oblique fault. East of this again a small vein 4 inches wide carrying some wolfram is exposed in the drive. This also is cut off by a fault.

The "North Lode" is exposed in a surface cut and in an adit 30 feet north of the drive on the West reef, and at 14 feet lower elevation. In the adit, which is 50 feet long, it varies from 1 foot to 3 feet in width, dips north at 55 degrees and contains little wolfram. In the face of the adit it tends to split into two branches. Mica and chlorite are abundant. The best wolfram values in this reef were seen in the open cut above, on approximately the same level as the main adit. Although it is possible that the North reef may be a faulted continuation of the West reef it is more likely a separate lens.

On the 50 foot level a diagonal drive was put out in a west-northwest direction to intercept the West reef, but it did not cut any ore. It is probable that if the orebody persists to the 50 foot level the drive just missed its eastern end. This could be decided by extending the drive 15 feet west and then crosscutting south (See Plate 1).

Other Lodes: Other shoots of quartz, some carrying a little wolfram, others apparently barren or nearly so, occur for 800 feet west of the adit. One near the west end is the most persistent of these and can be traced for 250 feet on the surface. Width of the vein is 6 - 12 inches, with a bulge to 2 feet at one place near the west end. Wolfram content is generally low.

Another line of reef outcrops 600 feet northwest of the main adit. It occupies a strong shear or fault plane in fine-grained aplitic granite, and dips and strikes parallel to the main line of reefs. In the few available exposures it varies up to 1 foot in width and is exceedingly barren of wolfram.

Occurrence of Scheelite: The reefs wherever exposed were examined under ultra-violet light but appreciable amounts of scheelite were seen in only two places, one about the middle of the stope on the east orebody and the other right against the fault on the 50 foot level. In both places the scheelite was associated with rich patches of wolfram. A few crystals of powellite, fluorescing a yellow colour quite distinct from that of the scheelite, were noticed, always along the walls of the reefs.

PRODUCTION

Victorian Mines Department records state that .45 ton of wolfram concentrates were obtained from Thologolong in 1919. This probably corresponds to the 9 cwt. of wolfram mentioned in Mr J. Easton's report, which, together with 10 cwt. of mixed concentrates, was obtained by A.J. Lukins from 21 tons of ore. In 1938 three parcels were treated at the Granya State Battery for L.J. Pascoe - 32 tons for 70 lb. of wolfram and 160 lb. of bismuth, 30 tons for 3 cwt. of wolfram and 36 tons for 4 cwt. 3 qrs. 6 lb.

Table 1 shows the ore milled at the Granya battery from the time the Commonwealth Government took over the mine up to October 15th, 1943, divided into four-weekly periods. This table is compiled from the fortnightly reports, which give tonnage milled and the amounts of first grade concentrates and of mixed concentrates produced, and from figures supplied by the Minerals Production Directorate. Eleven assays are available of the first grade concentrates, ranging from 58 to 65 per cent. and averaging 61.5 per cent. WO_3 , so this figure has been adopted in reducing the first grade concentrates to tungstic oxide where the actual assay value of the concentrates is not known. The mixed concentrates are more variable in composition, the six available assays ranging from 15 to 35 per cent. WO_3 , and in the absence of more detailed information all that is possible is to average these known figures and apply that average, namely 24.7 per cent. WO_3 to the remaining periods. Treatment tests on this mixed concentrate by the Melbourne Ore Dressing Laboratory (Investigation No. 260) have shown that 75 per cent. of the wolfram in this concentrate can be extracted, so in calculating the average recoverable grade of the mixed concentrate, the assay value has been multiplied by 75 per cent. and the result, taken as the extraction of tungstic oxide which will be obtained on re-treatment of these concentrates. This figure works out to 18 per cent. WO_3 for those periods where detailed information is not available. The second-grade concentrates also contain 3 to 6 per cent. Cu, 4 to 6 per cent. Bi, 4 to 10 per cent. MoS_2 , and about 1 per cent. Sn, according to assays by the Melbourne Ore Dressing Laboratory and by O.T. Lempriere Pty. Ltd. Most of the molybdenite and bismuth could probably be extracted but the recoverable amount of each of these substances in the ore represented by the above figures works out at only .01 to .02 per cent.

In known tests the recoveries by the mill, including the total wolfram in first and second grade concentrates, varied from 56 to 76 per cent., average 67 per cent., and this figure has been used in recalculating the head values where the exact recovery is not known. Owing to need for adjustments at the mill it is probable that the recoveries during the last two months were lower than this.

TABLE 1. WCMOBI PRODUCTION - JUNE, 1942 TO OCTOBER, 1943.

<u>Period</u>	<u>Ore</u> <u>Milled</u>	<u>First</u> <u>Grade</u> <u>Concs.</u>	<u>WO₃</u>	<u>Mixed</u> <u>Concs.</u>	<u>Total</u> <u>Recov'ble</u>	<u>Total</u> <u>Recovery</u>	<u>Calcd.</u> <u>Head</u> <u>Value</u>
	Tons	Tons	%	Tons	WO ₃ Tons	WO ₃ %	WO ₃ %
Total to 5/1/43	404	2.41	59.16	.73 ^x	1.58	.39	.65
8 wks. to 3/3/43	258	1.73	61.2	.63	1.17	.45	.68
4 wks. to 31/3/43	66	0.49	65.3	.18	.35	.53	.79
4 wks. to 28/4/43	108	0.79	63.0	.35	.54	.51	.68
4 wks. to 28/5/43	192	1.10	61.2	.75	.81	.42	.66 ^ø
4 wks. to 23/6/43	108	0.79	64.0	.31	.56	.52	.80 ^ø
4 wks. to 21/7/43	124	0.89	59.2	.36	.59	.48	.74 ^ø
4 wks. to 17/8/43	167	1.44	63.6	.36	.98	.56	.85 ^ø
4 wks. to 13/9/43	263	1.85	61.5 ^ø	.49	1.23	.47	.71 ^ø
4 wks. to 13/10/43	301	1.85	61.5 ^ø	.58	1.24	.41	.63 ^ø
<u>Total:</u>	2,000	13.34	61.5	4.74	9.05	.45	.70

x - In part estimated.

ø - 67 per cent. recovery assumed.

ø - Average of previous assays assumed.

These recoveries are remarkably constant and even the fortnightly periods show little more variation than the four-weekly periods. In some periods most of the ore came from development but during the last four months the production has been mainly, and in some periods entirely, from stopes but the returns show no significant rise in grade, indicating that the degree of dilution has been fairly consistent throughout, or else that any appreciable changes have been balanced by changes in the grade of the ore or in mill recoveries. From measurements of the reefs made while the mine was being mapped the average width of the ore mined up to the present is 17 inches. The average of 87 reef measurements made by the Mine Managers during the development of the mine and included in their fortnightly reports works out to 18 inches and affords a good check to the above figure. By calculating the area covered by stope and development and dividing into the tonnage treated, the indicated average width of lode extracted is at least 24 inches. From these figures it seems that about 25 per cent. of the ore milled has been wall rock and 75 per cent. ore.

Up to the end of October, 1942, the ore treated came from drives and the No. 1 winze on the Middle reef, and from drive and stope on the West reef. The stope on the West reef above the adit was completed about the end of February, 1943. The drive on the reef at the 50 foot level was started in December, 1942, and the leading stope in February, 1943. Driving and stoping on and above the 50 foot level have been more or less continuous ever since. The drive on the East reef commenced in November, 1942, and reached the fault

at the east end in July, 1943. The leading stope on this reef was started in December, 1942, and stoping has been carried out above the level right up to the present.

An efficient mill should recover 80 per cent. of the wolfram in the Womobi ore, and it is assumed that when this ore is treated at the Wymah battery this recovery will be obtained, which on the above figures should give an average of .65 per cent. WO_3 as the recoverable grade of the ore mined to October 15th, 1943. If the first period in the table be omitted this figure is raised to .59 per cent. WO_3 . The average recoverable grade of the undiluted ore would be .75 to .8 per cent. WO_3 .

ORE RESERVES

The ore reserves in the mine at the date of mapping (4/9/43) are shown in Table 2. From this should be subtracted about 600 tons which have been mined since that date. The lengths of shoot are as shown on the plans and the average widths adopted are the results of a number of measurements which have been checked against the widths reported during development by the Mine Manager in his fortnightly reports. The East reef at the surface appears to be of lower grade than on the adit level and there is reason to doubt the validity of applying the recoverable average of .6 per cent. WO_3 to the whole of this orebody, and the figure given should be regarded as a maximum. The Middle orebody increases considerably in length from the adit level where it is 176 feet long to the 50 foot level where it has been proved to carry ore for a length of 165 feet. Some allowance has been made for duplication of the reef by faulting, which has caused an increase in the ore between the levels. Ore below the 50 foot level has been calculated on the dimensions at that level. The West orebody has not yet been picked up on the 50 foot level but it is unlikely that it has played out completely before reaching that depth and it is here assumed that it will be developed at a later date. In all calculations of ore reserves a tonnage factor of 14 cubic feet to the ton has been used.

TABLE 2. ORE RESERVES - WOMOBI MINE

<u>Block</u>	<u>Length</u>	<u>Height</u>	<u>Avg. Width</u>	<u>Ore</u>	<u>Ore + 25% Dilution.</u>	<u>Recoverable WO_3</u>	<u>Value</u>
	<u>Ft.</u>	<u>Ft.</u>	<u>Ins.</u>	<u>Tons</u>	<u>Tons</u>	<u>Tons</u>	<u>£</u>
<u>Positive Ore.</u>							
East orebody, adit level to level of shaft collar.	150	90	14	1125	1400	8.40	4620
Do. - above level shaft collar.	55	24-50	12	150	190	1.14	627
Middle orebody, above adit level.	95	7-24	18	120	150	.90	495
Middle orebody, above 50' level.	140	40	18	600	750	4.50	2475
Total Positive Ore	-	-	-	1995	2490	14.95	8217

TABLE 2. (CONTINUED)

<u>Block</u>	<u>Length</u>	<u>Height</u>	<u>Ay. Width</u>	<u>Ore</u>	<u>Ore + 25% Dilution.</u>	<u>Recoverable NO. 3</u>	<u>Value</u>
	<u>Ft.</u>	<u>Ft.</u>	<u>Ins.</u>	<u>Tons</u>	<u>Tons</u>	<u>Tons</u>	<u>£</u>
<u>Probable Ore.</u>							
East orebody to 50' depth.	150	50	14	625	780	4.68	2574
Middle orebody 50 - 100 foot depth.	160	50	16	760	950	5.70	3135
West orebody to 50 feet depth.	45	50	18	240	300	1.80	990
Total Probable Ore -				1625	2030	12.18	6699
Sum Positive and Probable -				3620	4520	27.12	14916

This is the amount of ore which the present mining programme contemplates extracting. Possible ore in addition to the above reserves may be taken as 12.5 tons per foot of depth in the East orebody below the 50 foot level and 15 tons per foot of depth in the Middle orebody below the 100 foot level. Other reserves may exist in the West reef below the 50 foot level and in some of the other reefs.

CONCLUSIONS

The amount spent on the mine is £16,000. It is obvious from the foregoing figures that there is no possibility of this money being returned on the programme of mining so far outlined, i.e. to mine the Middle orebody to 100 feet below the adit and the east and west orebodies to 50 feet below the adit. The production target aimed at is 400 tons per month. The best that has yet been realised is 301, but even if the 400 is achieved the concentrate obtained (at 80 per cent. recovery) will contain a total of only 2.4 tons tungstic oxide, worth £1,320. Monthly running costs at present are put down at £1,500, to be reduced to £1,200 when the ore is being treated at the new Wymah plant. It is difficult to see how this large reduction in costs is to be achieved when it involves a longer and much more difficult ore haulage unless the whole of the running cost of the Wymah plant is to be charged against the Wymah mine.

The position now is that if the tonnage can be increased 30 per cent. above the best achievement to date without increase in costs, and further if the 20 per cent. decrease in costs and the 13 per cent. increase in recoveries are realised by the switch-over to the Wymah treatment plant, the mine will show a slight profit over operating expenses viz. £1,320 - £1,200 = £120 per month. With so many conditions attached it is obviously doubtful whether this profit will actually be realised, unless an appreciable improvement in the grade of the ore takes place, and it is more likely that the grade will drop slightly, for two reasons:-

(1) The East reef on the adit level seems to carry better ore than at the surface and the stope may get into poorer ore as the height above the level increases.

(2) The ore in the Middle reef may not be so good when it leaves the fault zone.

Consequently mining efficiency and avoidance of dilution will be critical factors in determining whether the mine can be run at a profit. It is emphasized here that the figures given throughout this report are based, not on any visual estimate of the width of ore or the amount of wolfram it might contain, but on the most careful measurements and on mill returns over a long period, in which the margin of error in the estimation of the wolfram content of the ore is probably less than 10 per cent.

SUMMARY

The Momobi reefs occupy straight fissures in granite. Three orebodies have been developed, their relevant dimensions being:-

<u>Orebody</u>	<u>Length</u>	<u>Av. Width</u>	<u>Ore above Adit</u>	<u>Ore to 50' Depth</u>	<u>Ore 50-100' Levels</u>
East	150'	14"	1275 tons	625 tons	625 tons ?
Middle	110-165'	16-18"	120 tons	600 tons	760 tons
West	45'	18"	Mined out	240 tons	?

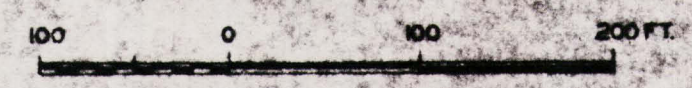
The reefs terminate by lensing out or are cut off by faults. A steeply dipping strike fault has caused duplication of the Middle reef on or just above the 90 foot level. The gangue is mostly quartz with some mica and, in places, fluorite, chlorite, topaz and amblygonite, while the metallic minerals are wolfram, molybdenite, bismuthinite, scheelite, chalcopyrite, sphalerite, galena, cassiterite and tetrahedrite.

Average value recovered from 2,000 tons of ore milled is fairly constant, averaging .45 per cent. WO_3 , equivalent to .70 per cent. WO_3 head value. The ore treated is estimated to have contained 25 per cent. wall rock dilution, hence grade of clean ore is .93 per cent. WO_3 . If 400 tons per month output and 80 per cent. extraction, and the anticipated decrease in costs when the ore is treated at the new Hymah battery, are realised, the mine should show a small margin over operating expenses, but chances of recovering the initial investment of £16,000 are slight.

(N.H. FISHER)
Chief Geologist

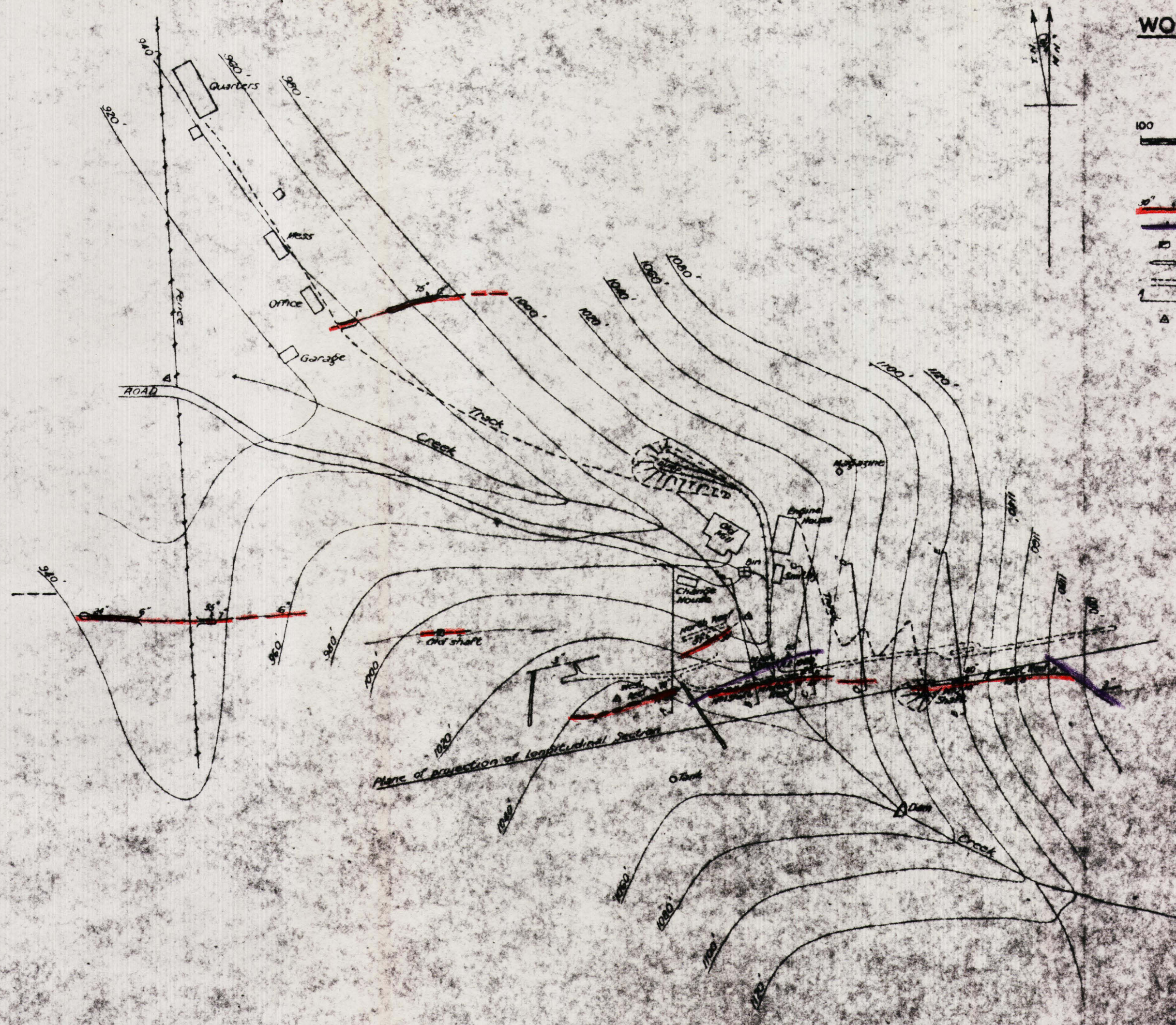
SURFACE PLAN WOMOBI WOLFRAM MINE

PARISH OF THOLOGONG
COUNTY OF BENAMBA
VICTORIA












LEGEND

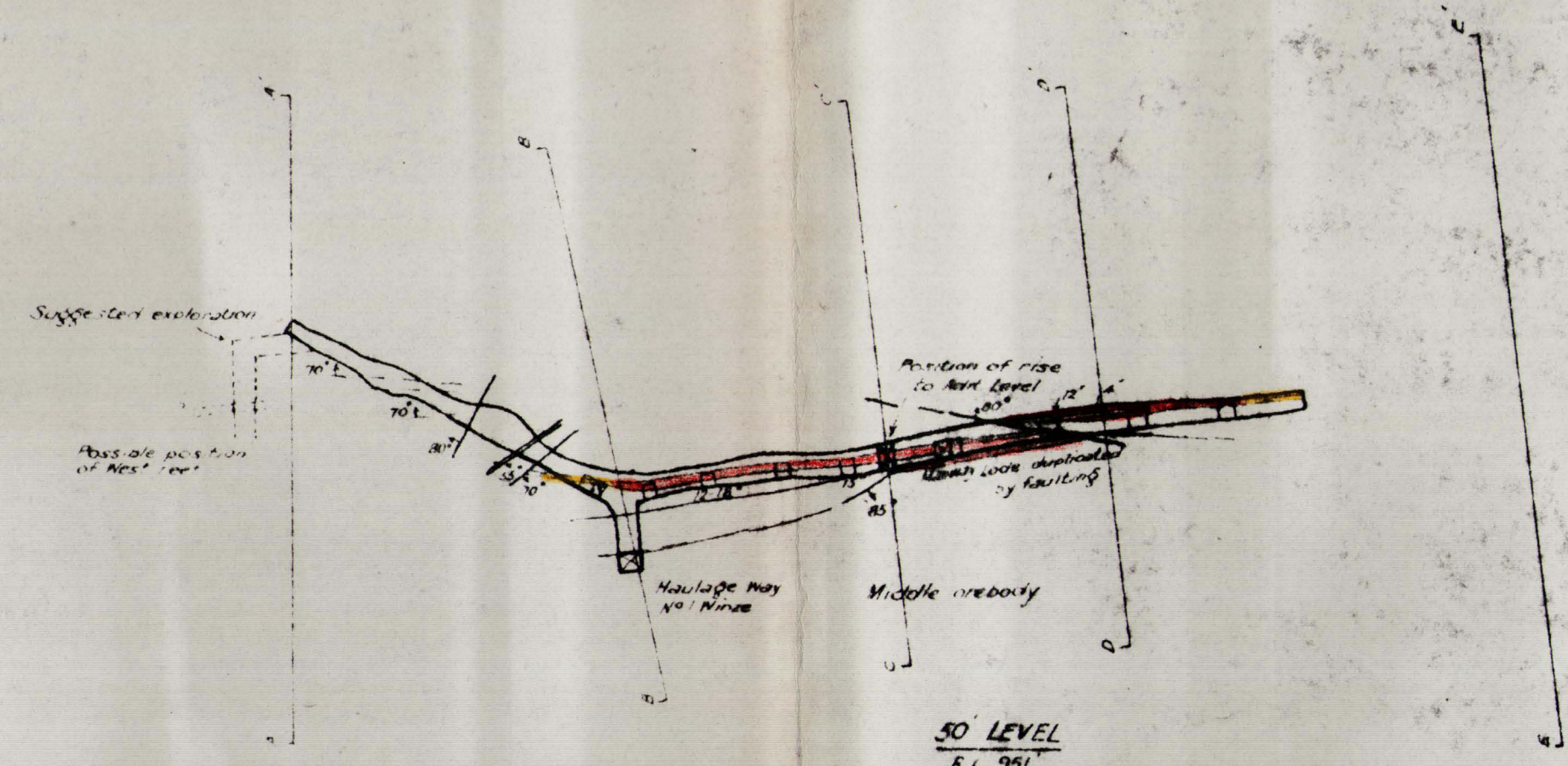
- Quartz reef with dip & thickness
- Fault
- Shaft
- Costean
- Adit
- Section line
- Plane Table Station
- Country rock all granite
- Contours approximate heights above sea level
- Mouth of Main Adit taken as 1000'



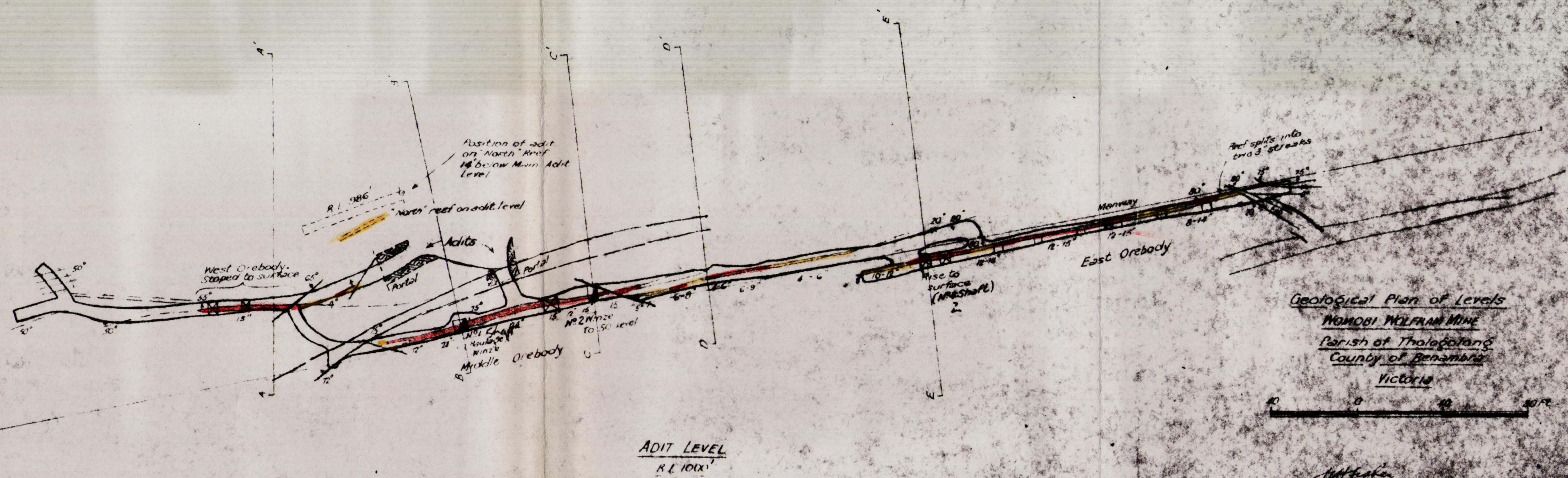
W. H. H. H.
Chief Geologist
Mineral Resources Survey Branch
Dec. 1943

- Legend -

-  Granite
-  Quartz reef with estimated wolfram content $> 5\% \text{ WO}_3$
-  Quartz reef with estimated wolfram content $< 5\% \text{ WO}_3$
-  Fault with dip & direction of slickensiding
-  Strong fractures
-  Winze,  Rise,  Ore chute
-  Section Line
- 12-15" Width of reef in inches



50 LEVEL
R.L. 951'



ADIT LEVEL
R.L. 1001'

Geological Plan of Levels
WOMBOI WOLFRAM MINE
Parish of Thalepaling
County of Benambra
Victoria



H. H. H. H.
Chief Geologist
Mineral Resources Survey Branch
Oct. 1923

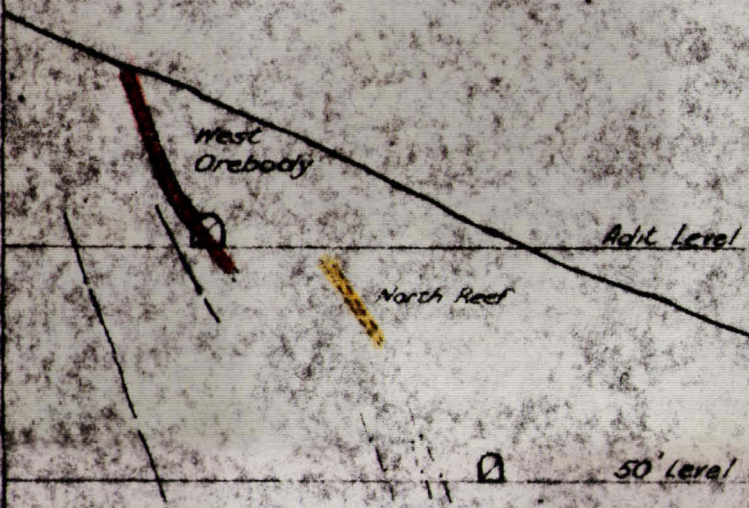
CROSS SECTIONS
WOMBEI WOLFRAM MINE
THOLOLO LONG
VICTORIA
Looking West

Legend

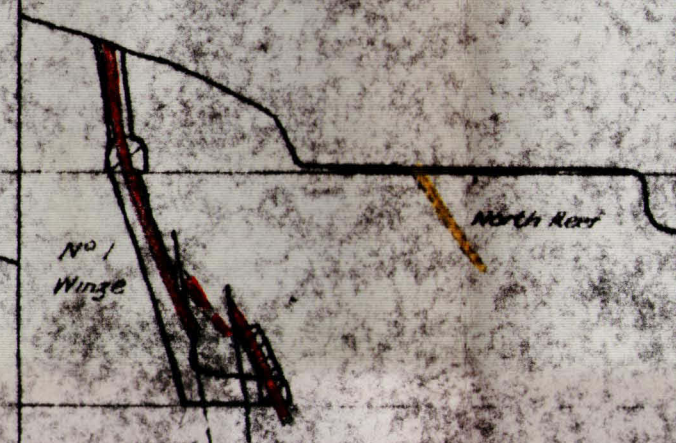
■ WU_3 content estimated $> 5\%$
■ " " " " $< 5\%$

— Fault
--- Fracture

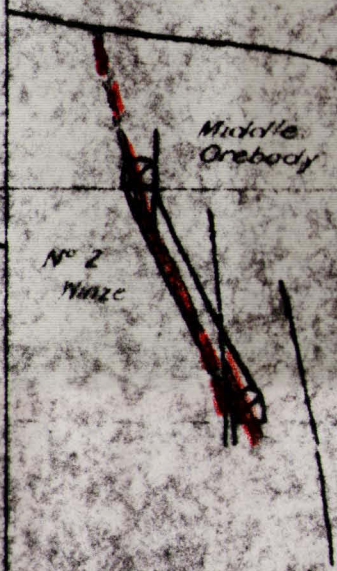
SECTION A-A



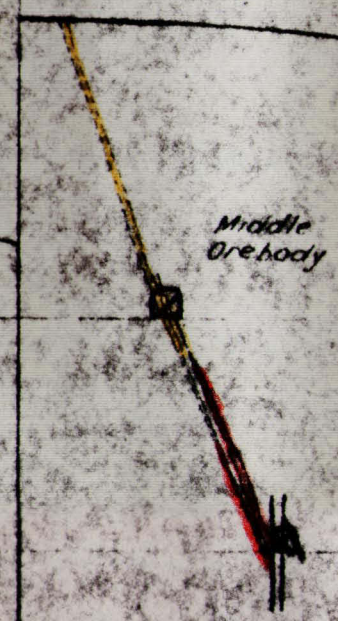
SECTION B-B



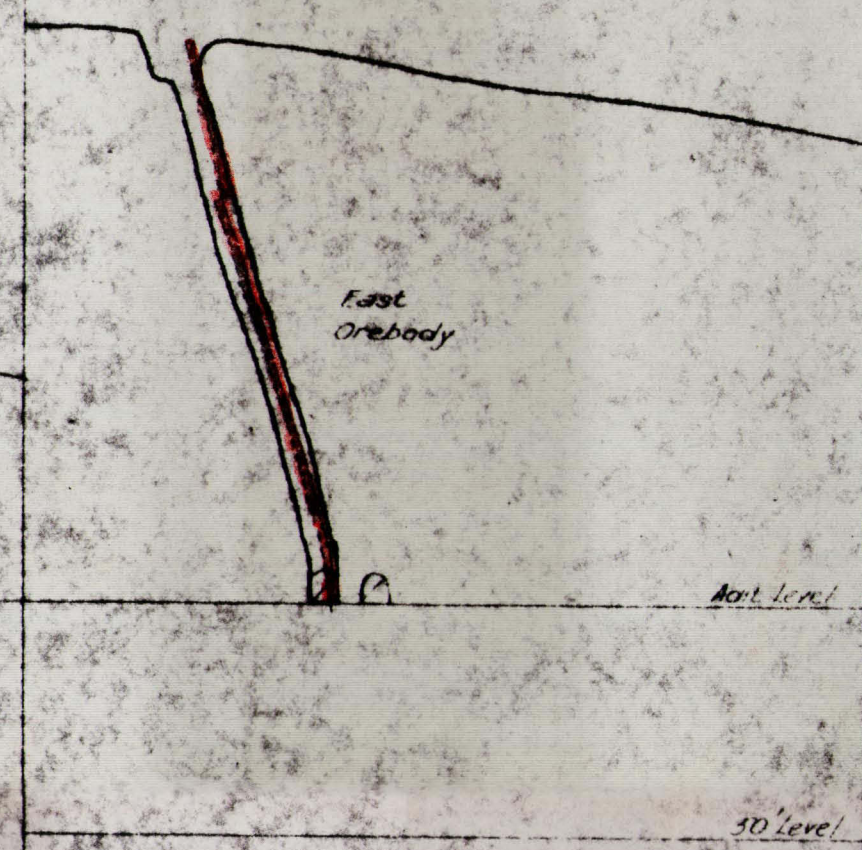
SECTION C-C



SECTION D-D



SECTION E-E



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Oct 1943

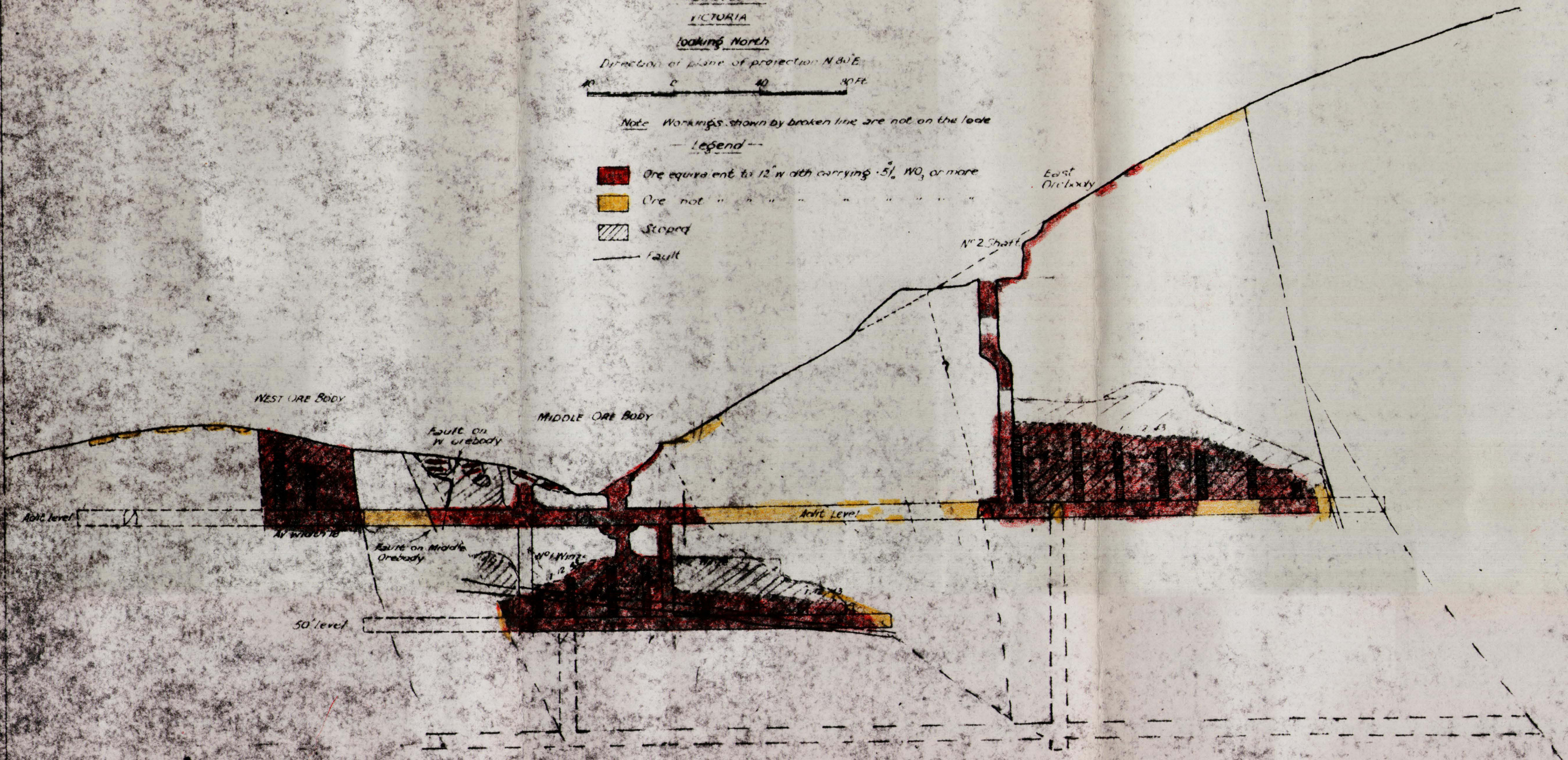
LONGITUDINAL SECTION
WOMORI WOLFRAM MINE
TULOGGOLONG
VICTORIA
Looking North

Direction of plane of projection N 80° E
0 40 80 Ft

Note Workings shown by broken line are not on the ledge

Legend

- Red: Ore equivalent to 12' width carrying 5% WO₃ or more
- Yellow: Ore not " " " " " " " " " " " "
- Hatched: Sloped
- Line: Fault



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Chief Geologist
Mineral Resources Survey Department
Oct 1943