

PROPOSAL TO DRILL TEST THE

KOOKABURRA VEIN

SYSTEM

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PROPOSAL TO DRILL TEST THE KOOKABURRA VEIN SYSTEM

SUMMARY

As ore reserves have decreased at Storeys Creek and Aberfoyle mines, the need for development in new vein systems has become urgent.

Exploration on the surface and underground has outlined significant potentially economic veins at the Lutwyche prospect, approximately 900 metres north east of Spiers shaft.

Declining tungsten prices and increasing labour costs force the operation at Aberfoyle to optimisation in the form of increasing production rates and more efficient utilisation of infrastructure.

Such optimisation will be best achieved by high rates of production from Lutwyche. It is apparent that veins are not numerous at Lutwyche. Consequently, it is highly desirable to urgently explore new veins which are readily accessible from current mine openings.

The Kookaburra veins are 200 metres closer to the Aberfoyle shaft, would be accessible from the Lutwyche crosscut, and have not been explored below the surface. Their orientation suggests that they are structurally and genetically related to those at Lutwyche. It is interpreted that they will thicken with increasing depth as do those at Lutwyche.

Prior to committing significant exploration expenditure to the Kookaburra prospect, down dip exploration is required. Two diamond drill holes are proposed to intersect the veins at RL 450 metres.

It is estimated the programme will cost \$44 500.

INTRODUCTION

The rocks in the area of the Lutwyche prospect consist of low grade metasediments, including quartzites and pelites, which have been folded and faulted.

Two zones of mineralised veining are present and both are oriented parallel to the strong north westerly tectonic trend of the district. The major vein system (Lutwyche) has been tested by diamond drilling from the surface over a distance of approximately 900 metres. One drill hole has tested north of the minor vein system (Kookaburra).

A crosscut was extended from the main Aberfoyle shaft (Spier's Shaft) to test the Lutwyche vein system approximately 350 metres below the surface.

Exploration development at that level (13L) succeeded in outlining at least two major veins. One other was indicated in diamond drilling and several others may warrant development. The major veins on 13L vary in width up to 46 centimetres, and over significant intervals, are well mineralised.

It is clear that if they occurred in the Aberfoyle mine, they would be considered mineable and economic.

Underground exploration was suspended in 1969.

In December 1976 the Lutwyche prospect was reappraised when it became apparent that the decline in ore reserves at both Storeys Creek and Aberfoyle mines indicated that production may decline and consequently the operation would become increasingly uneconomic. The imminent closure of Storeys Creek mine would place severe pressure on Aberfoyle mine and at an increased rate of production the latter would face closure through lack of available ore reserves.

It was evident that the only possible way to extend the life of the Aberfoyle mining and milling operation was to bring Lutwyche into production. Initially production rates would need to be sufficient to replace that from Storeys Creek on its closure. In the immediate future with decline in production from Aberfoyle, it would be necessary to increase production from Lutwyche to a level where it became the major ore source.

In 1977 exploration development of Lutwyche was recommenced and is currently in progress.

During 1978 the decline in the price of W_3O_8 and the increase in the price of labour have continued to make the operation increasingly uneconomic. These factors can only be offset by increased efficiency in the total operation. This can be achieved by increasing the utilisation of the mill (currently operating 3 days for a total of 4 shifts) and by increasing the ore production per man shift. Both require not only a significant ore reserve, but the capacity to produce at a higher rate from bigger and better grade ore sources, which may be mined more efficiently.

SURFACE EXPLORATION AT LUTWYCHE

Outcrop in the vicinity of the surface exposure of the Lutwyche veins is very good. Detailed mapping in 1968 outlined a number of narrow veins dipping 50 to 60 degrees south west and striking NW-SE. The veins were mapped over a strike length of 300 metres and are apparently terminated at the junction with a near vertical SW-NE striking vein (Battery Vein). North west of the Battery Vein, vein outcrop is rare and although the Lutwyche orientation continues, significant veins are not evident. Fig 1.

LUTWYCHE VEINS

The Lutwyche vein outcrop is intense over a lateral interval of 30 or 40 metres, and as many as fourteen separate parallel veins were identified. The individual veins vary in thickness up to an observed maximum of 15 centimetres. The veins are commonly mineralised with cassiterite and wolframite, have been extensively prospected but not mined. They were and are uneconomic at outcrop level.

Eight diamond drill holes (S17, S19, S20, S27, S30, S32, S33) tested down dip from the vein outcrop. The average thickness of the major vein intersected in each hole is 18 cm and the minimum 11.4 cm. The vein intersected in the two deeper holes (about 230m below surface) is 27.5 cm. Only three holes tested the veins at depths greater than RL 500m. Fig 2. (Surface varies from RL 620 to 690 m).

BATTERY VEIN

At the north western limit of the Lutwyche Vein outcrop, the Battery vein outcrops. It strikes N.E.-S.W., is mapped over a strike length of 90 metres, and was tested prior to this company's mining activities at Rossarden, by one drill hole and an adit. The adit collapsed and records are not available for the diamond drill hole.

At the surface the vein is 7.6 cm wide, dips at 75° to 90° (S.E.) and is well mineralised. It has been prospected but not mined.

This company has not tested the depth extensions of the Battery vein by diamond drilling from the surface.

HANGING WALL VEIN

North West of the Battery Vein a further seven drill holes (S14, S21, S29, S31, S34, S35, S36) tested the down dip and strike extension of the Lutwyche line. No significant vein outcrop is evident, however five of the holes achieved significant vein intersections. The two shallow holes testing above RL 500 did not intersect major veins. The average true vein width intersected below RL 500 was 25 cm. Fig 2.

UNDERGROUND EXPLORATION

A crosscut was extended from Spier's Shaft at 13 L for approximately 800 metres and intersected the Hanging Wall Vein. Development on the vein was completed NW and SE of the crosscut over a total length of 220 metres, of which approximately 150 metres exposed potentially economic vein. Fig 3.

Thirty five metres south east of the Hanging Wall Vein, the Battery Vein was intersected in development. To date the Battery Vein has been developed over a strike length of 60 metres and good potentially economic vein is evident over the full length. Level development is continuing to the north east.

No significant veins were encountered parallel to the Hanging Wall Vein, south east of Battery Vein.

Extensive diamond drilling was completed on 13 L and it is evident that at least one other vein occurs (intersected in four drill holes) approximately 50 metres north east of the Hanging Wall Vein drive and Battery Vein intersection.

RELATIONSHIP BETWEEN RESULTS OF SURFACE AND UNDERGROUND EXPLORATION

It is evident that the veins at Lutwyche improve in thickness and metal content with depth. They change from being uneconomic at the surface to potentially economic on 13 L.

Two major anomalies are evident in the comparison between the developed underground vein exposure and the surface exposure.

Underground, all development on NW-SE trending veins is north of Battery Vein. In contrast, the most intense exposure of veins at the surface is south of the Battery Vein. Fig 1 and Fig 3.

Battery Vein is exposed at 2450N, 1000E at the surface but was encountered in development at 2200N, 815E., approximately 220 metres SW of the surface exposure.

In the first situation, it is considered that the main Hanging Wall Vein (in underground development) is not the same vein as those exposed at the surface SE of Battery Vein.

It is interpreted that the veins intersected in underground drilling south east of Battery Vein are related to the surface exposure of the Lutwyche Vein.

Consequently it is proposed that major vein development is yet possible SE of Battery Vein. (During exploration development on 13L it appears that the Hanging Wall Vein was interpreted to be the same as the Lutwyche Veins and that a plunge through Battery Vein of 60° to 70° was evident).

In the second situation two explanations for the displacement of Battery Vein are equally acceptable.

It is possible that Battery Vein plunges parallel to the dip of the Lutwyche Veins. Alternatively, it may be that the Battery Vein has greater strike length than is indicated by the surface exposure and that it has a vertical plunge.

Since the Battery Vein has not been drilled from the surface it is not possible to determine whether either possibility is true.

FUTURE MINING OF LUTWYCHE

X The occurrence of two and possibly four potentially economic veins on 13L, X
indicates that the Lutwyche vein system is attractive with a potential for X
1500 to 2000 tonnes per vertical metre. X

Current mine planning indicates the need for approximately 180,000 tonnes of ore to be mined from Lutwyche.

To achieve this production, severe pressure will be placed by 1983 on lateral and in particular vertical development.

This situation can be improved by addition to ore reserve potential, particularly in the form of additional veins.

Although the surface exposure of the Lutwyche veins indicates that several veins may present, it is not apparently the case at 13L. In fact the situation parallels that of Storeys Creek veins where one or two main veins are present. Consequently new veins must be located and explored.

To be of benefit in the short term mining future, such veins should be close to current access, and require only minor exploration expenditure prior to development.

EXPLORATION AND ORE POTENTIAL

The only known veins which satisfy the above requirements are the Kookaburra veins which outcrop 200m S.E. of the Lutwyche Veins. The veins are similar in attitude (both strike and dip) to the Lutwyche veins, are mineralised with cassiterite and wolframite and are persistent over a strike length of greater than 100 metres. Fig 1.

At the north western limit of the observed strike extent of the Kookaburra Veins, a well mineralised vein (Johnson's Vein) striking S.S.W. was mapped. It is 5.1 centimetres wide at the surface, outcrops over 60 metres, and has been explored by deep pitting and an adit, 30 metres below the outcrop level.

One drill hole (S21) tested the strike and down dip extent of this vein. This hole intersected four veins of widths greater than 20cm one of which was interpreted as the Pay Vein (See 13L Plan). The Pay Vein and Johnson's Vein are similar in orientation (and may be the same vein). Further underground exploration will determine the relationship.

The Kookaburra veins, have not been tested down dip from the vein outcrop. The crosscut to Lutwyche at 13L, passed north of the veins, and did not encounter any significant along strike equivalents. Exploration development of Lutwyche at 13L will not provide openings from which the Kookaburra Veins are accessible for diamond drilling equipment currently in use. Fig 4.

Before drill access development at 13L can be justified, exploratory drilling from the surface should be completed to determine the down dip variations in thickness and attitude.

EXPLORATION PROPOSAL

It is proposed that two diamond drill holes be completed from the surface to test the Kookaburra veins approximately 200 metres below the surface.

The collar locations are illustrated on Fig 1.

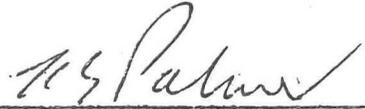
In siting the targets, it is interpreted that the Kookaburra veins increase in thickness with increasing depth as do the Battery and Hanging Wall veins and that they plunge steeply (80-85 degrees) south as does the Hanging Wall vein.

It is considered that two tests of the Kookaburra vein at RL 450 will adequately define the potential such that underground drill access development and diamond drilling may proceed after well founded planning.

FINANCE

Diamond Drilling 600 metres @ \$60	\$ 36 000
Core trays and storage @ \$2/metre	1 200
Site preparation and access	1 000
Geology, (core logging, drill supervision) 1 month	1 700
Survey	300
Vehicles and accommodation	700
Sundries (includes drafting, petrology)	200
	<hr/> 41 100
Administration	3 720
	<hr/> 3 720
TOTAL	<hr/> \$ 44 820

Signed by:



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