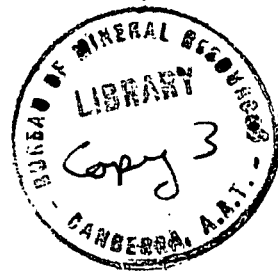


COMMONWEALTH OF AUSTRALIA.

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DEPARTMENT OF SUPPLY AND SHIPPING.  
BUREAU OF MINERAL RESOURCES  
GEOLOGY AND GEOPHYSICS.

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REPORT No. 1949/78  
(Geol. Ser. No. 56)

SUMMARY REPORT ON SOME WESTERN AUSTRALIAN GOLD MINES  
WITH A SUPPLEMENTARY NOTE ON COMMONWEALTH  
ASSISTANCE FOR EXPLORATION AND DEVELOPMENT.

by

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Introduction.

This report is supplementary to Report No. 1948/33 of 24th June, 1948, and to Report No. 1948/16 of 27th February, 1948. The information given below was obtained during a visit to the Western Australian Goldfields in company with H.J. Cook, Mining Engineer, and R.N. Drummond of the Department of the Treasury. The period April 26th to May 2nd was spent at Kalgoorlie, May 3rd and May 4th at Sons of Owalia Mine, May 5th at Kalgoorlie, and May 6th in discussions at Perth with the Under Secretary for Mines and others.

PARINGA MINING AND EXPLORATION CO. LIMITED.

The notes given here are supplementary to those supplied by Mr. Cook.

Results of Development.

In the previous report on this mine by the writer (No. 1948/33), it was shown that, for the year ended 31st August, 1947, an average of 11 tons of ore were obtained per foot of development. For the year ended 31st August, 1948, 61,000 tons of ore were obtained from 5,674 feet of development, an average of 10.8 tons per foot. This compares with an average of 21.5 tons per foot for current operations at South Kalgoorlie, and a general average of 20-30 tons per foot for Kalgoorlie as a whole.

As noted by Mr. Cook, for the 7 periods ended 15.3.49, 47,965 tons treated had an average head value 4.757 dwt. per ton, compared with 5.156 dwt. per ton for the year ended 31st August, 1948.

The above results indicate that, during the past year, the company has not been very successful in finding ore.

It is interesting to note also, that for the period 1st September, 1948, to 1st March, 1949, the company carried out development at an average rate of 378 feet per 4-weekly period as against a minimum average of 460 feet asked for in the Prime Minister's letter and an average of some 615 feet per period which the Government allowed as a maximum. This reflects the difficulty experienced by the company in maintaining both output and development at a reasonable level. Had the full development allowed by the Government been carried out, the losses would, of course, have been proportionately higher. The relatively small amount of development carried out is likely to be reflected in a fall in ore reserves when these are calculated at 31st August of this year.

The above rather unfavourable results are offset to some extent by the hopeful developments listed by Mr. Cook on page 2 of his memorandum (11.5.49); however, as

stated by him, the ore shoots intersected are probably small.

### Future Possibilities.

Possibly more important than these intersections however, are a number of recent recommendations by K.J. Finucane, Consulting Geologist to the company. In the past Mr. Finucane, has given advice to the company only in connection with isolated problems and it is not certain that this advice has always been followed. Recently, however, he has commenced a more comprehensive study of a number of the leases, and, as a result of this work, some important recommendations have been made. The most hopeful of these results from the realization that a large ore system, developed in recent years in the North Kalgurli Mine, and known as the Eastern System of Calc Schist Lodes, could extend northward into the Paringa and North Kalgurli Central Leases held by the Paringa Company. This possibility can be cheaply tested by drilling from existing workings, and should results be favourable, the outlook for Paringa could be much better than it is at present. It is known that the management of the North Kalgurli Mine, knowing these possibilities, is prepared to buy the Paringa leases in question if acceptable terms can be arranged.

Three other recommendations by K.J. Finucane, could lead to the discovery of smaller shoots.

### Recommendation.

It is considered that there is a reasonable case for the continuance of assistance for a period of 6 to 9 months, which should enable the company to test the prospects outlined above. For the purpose of carrying out this work, the development footage at present allowed (6,000 to 8,000 feet per year) is quite adequate, and, as already noted, the company has not been able to comply even with the minimum requirements.

In the question of diamond drilling however, which is vital to the exploration programme on which the future of this mine depends, it seems that the Government may have been too restrictive. For the seven periods ended 15.3.49, the company carried out 5,911 feet of diamond drilling at an average cost of 8.08 shillings per foot. This is equivalent to an annual rate of expenditure on drilling of approximately £4,400, whereas the sum allowed by the Government was £3,000.

### SOUTH KALGURLI CONSOLIDATED.

#### Ore Position on Mine.

The development and exploration carried out by South Kalgurli Consolidated during the period of Commonwealth assistance have given quite favourable results.

For the year ended 29.3.49, the following ore was treated:-

<u>Tons.</u>	<u>Hd. value</u> <u>dwt/ton</u>	<u>Recov.</u> <u>dwt/ton</u>
79,994	5.46	4.86

Thus, the mine was able to maintain output at 6,000 tons per month, a little above the grade of 5.3 dwt. stipulated.

In addition to this, the ore reserves have been increased by about 18,000 tons while the grade of the reserves which, at 3rd November, 1948, was 5.50, had, by 12th October, 1948, been increased to 5.55 dwt. ton. At the time of the previous inspection, the grade was being maintained by drawing an unusually high proportion of ore from the relatively rich No. 2 Cross-Lode. During recent months, this has not been necessary, higher grade ore having been obtained elsewhere.

Ore reserves at 12th October, 1948, including positive, probable and broken ore amounted to:

<u>Ore</u> <u>Long Tons.</u>	<u>Grade</u> <u>dwt. per ton</u>
418,738	5.55

#### Development Allowed by Government.

The development allowed by the Commonwealth was 5,000 feet per year. This is close to the amount carried out for the year ended 31st March, 1948, and is in excess of that performed during the latter years of the war period. However, towards the end of the first twelve months of Government assistance (ended 29th March, 1949), the company cut down on development in order to remain within the limit allowed, and could possibly have carried out 6,000 feet for the year instead of 5,000. As the development performed with the aid of Commonwealth has given favourable results and has yielded approximately 21.6 tons of ore per foot, it is considered that the company should be allowed to carry out 6,000 feet of development per annum. In 1941 and 1942, the footages were 6,540 feet and 6,460 feet respectively.

#### Diamond Drilling.

The Government allowed 4,500 feet of diamond drilling per annum and it is believed for similar reasons to those outlined above, that this amount should be increased by 1,000 to 1,500 feet per annum.

#### KALGOORLIE ENTERPRISE LIMITED.

From the geological viewpoint, the major item of discussion with this company was the question of Government finance for the long exploratory north drive at the 2050 foot level.

In my report No. 1948/33, this drive was characterised "as a rather speculative venture". During the present examination, all available evidence was re-examined and the accompanying plan and section were prepared. The conclusion arrived at was similar to that given formerly. The longitudinal section indicates that the rich shoots mined on the North Kalgurli leases have a flat pitch, and will not enter Enterprise ground at depth. Diamond drilling by the company has certainly intersected some ore which may be a repetition at depth of the shoot worked by North Kalgurli. However, it is considered doubtful whether there is a sufficient chance of discovering an orebody large enough to warrant the considerable expenditure which will be necessary to explore the possible deposit and to prepare it for mining.

SONS OF GUALIA LIMITED.

This has been one of the most consistent orebodies ever worked in Western Australia and, from the information gathered during the present examination, there is no indication that the orebody is likely to fail in the near future.

At 31st December, 1948, ore reserves were estimated by the Company as follows:-

<u>Long Tons</u>	<u>Gold Content Fine Ozs.</u>	<u>Average dwt/ton</u>
532,778	169,612	6.35

A study of the ore reserve plans indicated that of this total, some 155,000 tons will probably never be recovered as it occurs above levels which would be too costly to recondition. This leaves approximately 378,000 tons actual ore reserve, but of this, approximately 160,000 tons has not been prepared for stoping. Thus, ore proved and prepared for stoping, amounts to approximately 218,000 tons.

Most of this reserve occurs above No. 31 level, the lowest yet driven. Two winzes have been sunk from here to the next proposed level, and these indicate that the deposit is continuing with the usual thickness and grade. The driving of No. 32 level is likely to add a further 200,000 tons to ore reserves.

GENERAL NOTES.

The present form of Commonwealth assistance is of very considerable help to some marginal mines, but the industry as a whole is in trouble owing to a number of well-known factors, already discussed in various reports. The most important of these is of course, the rise in cost of production per oz. of gold: J.F. Thorn, General Manager, Lake View and Star Limited, supplied the following figures which appear to be sound:

<u>Year</u>	<u>Average cost per ounce for all mines affiliated with Chamber of Mines.</u>
1939 ... ..	\$6. 9. 9
1947 ... ..	9. 1. 5
Present .....	9.15. 0 to £10.

From the geological point of view, it is suggested that, if there is any real reason to believe that the price of gold will ultimately rise, it would be a sound investment for the Government to help finance development and exploration in several Kalgoorlie Mines and in a number of other properties outside of this area. Clearly, development could not be subsidised in any and every circumstance, as this might lead to some very speculative undertakings. To guard against this, it would perhaps be possible to stipulate that, for development to be subsidised, it would have to yield a certain percentage payability or a certain number of tons of ore per foot. To the extent that the stipulated figures were not attained, the cost would be to the companies account.

Exploration and development are sound investments for the industry from any long-range point of view, and it is

felt that Kalgoorlie and several other localities have every prospect of responding favourably. However, the chances of finding extremely rich deposits, which would be highly-profitable even under present economic conditions are not high and few mines would last very long if they were forced to mine only high-grade ore. It is considered, therefore, that the encouragement of exploration and development is sound, only if the future of the industry itself is considered to be hopeful from the long-range point of view. The main purpose of these remarks is to indicate that the geological evidence shows that there is probably much gold yet to be found in Western Australia and that some of it can be found at reasonable cost.

At present, lack of labour and shortage of essential equipment place severe limitations on exploration, while in addition, companies and investors generally lack confidence in the immediate future. Should the Government desire to inspire confidence in the industry, an indication of willingness by the Government to invest in development and exploration would help very considerably in their direction.

CANBERRA, A.C.T.  
19th May, 1949.

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