

REPORT ON THE NECESSITY FOR PURCHASING A DIAMOND DRILLING

PLANT.

1. OBJECTS OF DRILLING.

The purposes for which drilling is carried out are:-

- (1) To obtain directly by means of the bore-hole gas (natural gas) or liquids (petroleum, brine, water etc.)
- (2) To prove the extension of known mineral deposits whether of metallic or non-metallic minerals, coal, oilshale etc.
- (3) To prospect for or prove the existence of mineral deposits.
- (4) To determine the underground geological structure as a preliminary to further boring for petroleum etc.

In every case in which it is used, drilling is carried out because it is the least expensive and most rapid method of achieving the desired objective. Generally the only alternative would be shaft-sinking which is more expensive and much slower.

In the search for petroleum, water etc. and the obtaining of these materials when located, drilling is the recognised practice.

When interbedded deposits such as those of coal, oil-shale etc. are to be exploited a preliminary drilling campaign is generally undertaken, although the actual working is afterwards carried out by means of shafts etc. In the case of many metallic and non-metallic mineral deposits, the earliest work may be by means of shafts, adits, etc. and is followed later by a drilling campaign. In both instances cited above, the drilling campaign is undertaken in order to prove that there is sufficient reserves of material of suitable quality etc. to justify the capital expenditure necessary for their exploitation.

Often the presence or extension of known deposits at a depth can be predicted as the result of a geological examination of the district. Drilling is carried out to prove such predictions and thus forms an important prospecting agent.

2. DRILLING PLANTS.

There are two drilling plants in possession of the Mines Department viz a Victoria (Calyx) plant and a diamond drilling plant.

The Victoria (Calyx) plant is the property of the Department but the diamond plant is at present being operated under a hire-purchase agreement with the Mines Department of Victoria.

3. THE VICTORIA (CALYX) DRILL.

This drill was purchased two years ago expressly for the purpose of testing the coal measures and the underground water-supply of the Midland and Eastern districts. For these purposes it has proved its worth and usefulness.

The first hole was drilled at Nala Railway Station at a cost of £250 to the Railway Department. A plentiful and continuous supply of water of fair quality was obtained in this bore. Later other holes were drilled at Woodbury and Richmond, the one at Woodbury being equally successful but those at Richmond were unfortunate in striking water of unsuitable quality. The plant is at present on hire at Catamaran and according to the statements of those using it, it is performing its duties to their utmost satisfaction.

The machine is capable of drilling a 6 inch to a 4 inch hole to a depth of 600 feet in rock of medium hardness, such as the Trias-Jura sandstones and felspathic sandstones. The purchase price including accessory parts was £1,237/15/-.

The drill has been let on hire to the Catamaran Boring Company Proprietary Limited for the sum of £2 per week.

4. THE DIAMOND DRILL.

A diamond drilling plant is capable of drilling all rocks of greater hardness than can be penetrated by the Victoria plant.

Under Public Works Expenditure a sum of £1,200 was provided during 1923-24 for the purchase of a diamond drill and £500 for the purchase of diamonds. Last year an option of purchase was obtained for a diamond drill owned by the Victoria Government and £200 was paid as a deposit. This drill has since been employed in boring the coal measures of the Leprena district. It is stated by Mr. J. C. Hudson, who is in charge of boring operations that the results have not been at all satisfactory. It is not recommended that the option of purchase be exercised as the drill is not suitable and not worth the money. (£1,200 being the contract price).

5. PRESENT STATE OF DIAMOND DRILL

ACCOUNT.

The following is a rough statement of the Diamond Drilling Account:-

SUMS PROVIDED:

For purchase of drill	£1,200
For purchase of diamonds	500
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	£1,700
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SUMS PAID:

Deposit on drill	£ 200
Purchase of diamonds	714
Equipment	135
Accessory parts	135
Miscellaneous expenses	79
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	£1,263
Sum in hand	437
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TOTAL £1,700

Of the original sum provided only £637 is available for the purchase of a drill. In the original estimate no provision was made for equipment and accessory parts.

6. COST OF A NEW DIAMOND DRILL.

The drill received from the Victorian Government on trial is a second-hand machine and as already stated unsatisfactory. A machine of the Sullivan "D" type capable of boring to 1,000 feet is required. Such a plant can be obtained at a cost of £1,500 to £1,800. As £600 is already available an additional sum of £1,200 for the purchase of a new drill of the type mentioned is necessary.

7. THE WORKING COST.

The cost of operating one drill with a crew of three men amounts to £1,00 per annum. This sum includes the cost of repairs, any additional accessory parts, and fuel.

If both drills are employed in simultaneous operation the cost becomes at least twice that amount. Probably the cost of repairs to the Victoria (Calyx) drill will be more than that to the if purchased, Diamond Drill as it will be an older plant.

8. REVENUE TO BE DERIVED FROM PUBLIC DRILLING.

The revenue to be derived from Drilling depends upon the policy or policies adopted by the Government and which are discussed below.

If a charge be made it will either be to pay working costs etc. with or without a profit to the Department. In either cases, the charge will be based upon the cost of drilling.

The estimate of cost is based on the nature of the rock to be drilled, the position of the area in relation to lines of transport, the cost of fuel, and the footage to be drilled.

In the Midlands using the Victoria (Calyx) drill a charge of 12/6 per foot was made; but, ~~although~~ the actual cost of drilling did not exceed that amount because of breakages and the consequent delay in the operations resulted in an ultimate loss. Under favourable conditions and a long contract drilling can be performed at a very cheap rate.

The suggestion that payment be made for drilling on actual cost plus an allowance for depreciation of plant does not meet with approval as clients desire as a preliminary an estimate of cost. The present method of conducting the business of drilling appears the more acceptable.

9. DRILLING POLICIES.

There are three policies to be considered in connection with drilling by the State:

1. To make the operations pay all working costs, depreciation etc. and return a profit to the State.
2. To make the operations pay all working cost, depreciation etc. without returning any profit.

3. To carry out operations free of charge in order to assist the mining industry.

The adoption of one or more of the policies is a matter for determination by the Government and the following remarks are submitted in connection therewith.

There is no great difference between the first and second policies outlined above except that in the first the aim is to return a margin of profit. The object of Government owned drills is to assist the mining industry and make available drilling facilities for those who require them. It is a natural corollary to this policy of assistance that drilling be performed as cheaply as possible. It would therefore appear preferable to attempt to cover working costs, depreciation etc. without showing any large margin of profit. There are numerous companies and individuals who are willing and prepared to make use of the drilling plants under such conditions.

The third policy viz free drilling differs materially from the others as it means the carrying of the policy of assistance to the mining industry to a further extent than in the other two cases. Its application would include the following:-

- (a) Drilling free of charge for syndicates and individuals of small means who are in the possession of mineral deposits of potential value.

Such a procedure would be of immense assistance to prospectors, small syndicates etc. and might possibly lead to a revival in the mining industry. A necessary preliminary step would be an examination and report by the Geological Survey and drilling should be performed only on the recommendations contained therein. The drilling might be carried out conditionally that the cost thereof be refunded should the deposit be profitably worked after the drilling, which would be fair and just and assist the State.

- (b) Drilling in localities suggested and approved of by the Geological Survey. This could be performed when the plants are not otherwise engaged. Many deposits could be tested in this way with the object of proving their value etc. Results could be withheld or other means adopted from those whom they would ultimately benefit, if it was so desired.

It is therefore either a question of : drilling and charging sufficient for it to pay working costs, depreciation etc.; of drilling free; or a combination of both policies depending upon circumstances. In the latter case, discretionary powers would have to be given to the Minister or the Secretary of Mines.

The present policy is to charge a sufficient amount so that the Department will not be working at a loss.

10. PRESENT POSITION.

Operations are now being conducted at Catamaran and at Leprena. These works will be completed within three months. The diamond drill will then be taken to Freolanna to bore the land leased by the Preolana Coal Company. Operations there should result in a considerable profit to the Department. No other engagement has been arranged after the completion of the Preolanna work.

In the Mersey Valley two drilling plants have been in almost continuous operation for two years at great profit to the Goldfield Diamond Drilling Co. The greater part of that work could have been undertaken by the Department if the plants had been suitable. In some cases applications for the use of the drills had to be refused for that reason.

11. NECESSITY FOR THE DEPARTMENT POSSESSING A DIAMOND DRILLING PLANT.

The Mines Department at present owns a Victoria (Calyx) plant which is capable of drilling for coal, water etc. in rocks with hardness equal to those of the Trias-Jura sandstones and felspathic sandstones. Another plant such as a diamond drill is required to drill rocks harder than the above. The following include the more important reasons for the Department purchasing such a plant.

1. The Department does not at present own such a plant.
2. No private firm or company in Tasmania have such a plant which can be hired or otherwise utilised by anyone desirous of drilling.
3. It is necessary for anyone who require drilling carried out to make arrangements with mainland firms such as the Goldfields Diamond Drilling Co. to perform such work.

This Company will not undertake such work unless a total of 1,000 feet is guaranteed. This is often inconvenient to those who do not require such an amount and always results in the scheme of drilling not being proceeded with.

Further even if the drill is sent over, the cost of transport to and from Melbourne must necessarily be added to the boring expenses which are therefore higher by this amount.

4. There is a demand for a plant of this description. At any time, during the past two years the companies operating in the Mersey Valley would have made use of a Mines Department drill had such been available.

Other applications during the past 12 months were made by: W. D. Weston to bore at Preolenna; Eric Lowe to bore at West Tamar; and E. C. Stone to bore at Latrobe. In addition a large number of applications were received for the Victoria (Calyx) plant to bore for water in the South-eastern part of Tasmania. In many other cases application was not made because of the fact that it was known that the plant was not available.

Recently, Messrs. Brock were desirous of obtaining the plant to drill for surfiferous quartz lodes on their leases at Bathinna.

There has also been an application by the Preolenna Coal Co. and the plant will be taken there next in fulfillment thereof.

5. Such a drill is necessary if the Government decided upon a policy of free drilling as outlined above.
6. The provision of such a drill would be of assistance to those engaged in the mining industry in providing facilities for drilling whether free or otherwise.
7. There is a recommendation from the State Development Advisory Board that a diamond drilling plant be purchased.

P.B. Nye

GOVERNMENT GEOLOGISTS.

Robert, 15th July, 1924.