

REPORT ON SECTION 9452/M.Location and Access

This mineral lease embraces an area of 20 acres, chartered in the names of A.J. Salmon and R.W. Maskell, is situated in the North Dundas Mining District, West Coast. The locality is known as the Exe River district which is a fairly extensive tin bearing belt of country lying between Zeehan and Rosebery.

The Emu Bay railway which connects the port of Burnie with the town of Zeehan passes through the north-east portion of the lease.

The distance by rail from Burnie is 74 miles and to Zeehan 14 miles. The area is therefore well served by railway communication.

Topography

The lease is situated on the western side of the valley of the Pieman River which flows in a northerly direction past the north-east corner of the section.

The ground rises steeply from the river level to some distance beyond the western boundary to a plateau standing at an elevation of several hundred feet above the river bed. Good facilities are therefore available for mining by tunnels.

Geology

The country rock where exposures are to be seen consist of a Cambro-Ordovician slate, a short distance north of the north boundary an outcrop of serpentine occurs.

At the surface the slate rock is much weathered and stained brown; in the underground workings the normal colour is black. The strata have a general north-west trend dipping slightly to the north-east. Abundant cleavage planes occur in slate, the bedding planes are hard to distinguish. Passing from the south west to the north east corner of the section, the outcrop of a lode can be traced which at intervals has been trenched. The lode consists of siliceous gossan, and at one point near the centre of the section, above the tunnel, rich tin oxide occurs, particularly on the footwall portion.

A tunnel has been driven to cut the lode at a depth of 120 feet below the outcrop, and at the point of intersection it consists of white opaque quartz with a vein on the footwall Le
er, about four inches in width impregnated with arsenopyrite. Small quantities of the latter occur irregularly through the lode, but not nearly so abundant as on the foot and hanging walls. The lode carries payable quantities of tin oxide associated with the arsenical pyrites; those portions of the lode free of the latter do not seem to be tin bearing. The lode where intersected in the tunnel is a well-defined tabular formation of true fissure type. The width where out in tunnel (5' 6") is the same as where exposed at surface above the tunnel, the dip is 10 degrees - about 1 in 6. In driving the tunnel a considerable thickness (about 90ft) of old river gravel and clay was passed through, being the old bed of the Pieman River.

In the railway cutting about 50 feet below the tunnel level a tin bearing gossan formation is exposed for some distance, running parallel with the line. A bulk sample from this lode assayed slightly under one per cent tin.

Mine Workings -

The workings on the section consist of two tunnels driven from the eastern side of the hill and some surface trenching on the lode outcrop. The lower was driven some years ago apparently for the purpose of cutting the lode exposed in the railway cutting at a depth of about 60 feet below the level of the line. This tunnel was driven a distance of 121 feet but although a lode formation carrying tin was passed through there is not sufficient work done to be of any value in proving the lode.

The tunnel driven by the present lessees has a direction of S 58° W and intersected the lode at a distance of 224 feet from the approach, the vertical depth from the point of intersection to the surface being 120 feet. The lode where cut consists of quartz with a band four inches in width on the footwall thickly impregnated with arsenical pyrites. There are also some small quantities of pyrites disseminated through the quartz. Apart from exposing the lode from wall to wall in the tunnel very little work has been carried out. A drive has been extended northerly for a few feet on the course of the lode and a sample taken across the face of the drive which includes the full width of lode assayed, 0.17 per cent tin.

A sample from the vein referred to on the footwall assayed 1.70 per cent tin.

A sample cut across the south side of crosscut assayed 0.97 per cent tin.

It is difficult to account for the variation in value samples, as there is practically no difference in appearance of the lode material in the north end to that in the south. The hardness of the quartz constituting the lode to a great extent prevents a truly representative sample being taken in the ordinary method of chipping from the ~~face~~ of a drive.

Owing to the erratic nature in the distribution of the tin in a lode of this type a sample taken at any particular point on the lode cannot be regarded as a true or approximately true representation. It is therefore essential to carry out developmental work over a fair area taking samples at regularly spaced distances along drives and in rises when the work of blocking out the lode is in progress.

A drive along the course of the lode for about 50 feet from either side of the crosscut and a rise a similar distance from any point on the lode where indications warrant it would give sufficient information to determine the value of the lode at that depth.

The prospects so far obtained are sufficiently encouraging to warrant further developmental work being undertaken. Another tunnel driven to intersect the lode between the present 120 foot level and the surface would greatly assist in the development of the lode. A tunnel at this depth would serve the dual purpose of further prospecting work and provide an intermediate level to facilitate ore production if needed and would also be useful for ventilation purposes when connected with the lower level by rises. A tunnel to cut the lode at 60 feet below the outcrop would take less than half the distance to that at the 120 foot level.

The tunnel below the railway line is well situated for the development of the lode at a deeper level and should the prospects at the 120 foot level be sufficiently encouraging to warrant its extension.

Method of Working

The general features of the lode, its situation and character of ore lends itself to the cheapest form of underground mining. Being of true tabular form with very little underly and enclosed within solid walls, the ore could be mined with a minimum quantity of timber. The lode is of a convenient width for stoping and the whole of the ore can be mined without breaking into the enclosing walls. At convenient points along the course of the lode rises can be put up to the surface to serve as passes for filling the depleted stopes. Material for this purpose can be cheaply obtained from the surface as required. The lode is an ideal one for the application of the rill system of stoping.

Timber

Good forests of suitable mining timber are available within easy reach of the section.

Water

The Exe River carries sufficient water for dressing purposes in a concentration plant. This stream flows into the Pieman River a short distance to the south-east of the section. Water from it could be obtained by gravitation at any desired elevation in the vicinity of the lease. The Pieman River itself is a large stream which flows close by the north-east corner of the section; failing other sources this could be drawn on for supplies which would necessitate pumping.

Milling Plant

There is an excellent site for a milling plant close to the eastern boundary of the section between the railway line and the river. All ore mined from the tunnels could be conveyed to this site by gravitation. The question of the erection of a milling plant will depend entirely on the developments of lode and the quantity of payable ore available. With a modern plant capable of treating 50 tons of ore per day consisting of rock-breaker, rolls and a ball mill with necessary classifiers, concentrators and roasting plant, the cost of mining, transport and treatment of ore, should not exceed 15/- per ton.

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Margin

The margin over working costs for various grades of ore with tin at £300 per ton, allowing for a recovery of 75% and a deduction of £25 per ton to cover smelting and realisation charges would be as follows:-

Price of tin per ton -	£300
On 0.5% ore -	5/6
" 0.75% " -	15/9
" 1.0% " -	25/6

Conclusion and Summary

The relatively small amount of work done on the lodes precludes the idea of any estimation as to quantity and value of the ore. Developmental work is needed to prove this.

The property can be developed cheaply by tunnels to a depth of several hundred feet below the outcrop of the lodes. The district is one of much promise and the lodes are worthy of being thoroughly prospected.

It is probable with the development of the lode at the 120 foot level rich makes of ore will be met with. The tin is associated with the arsenical pyrites and where the latter is most abundant the best values in tin will be found. The tin is of very good quality and would not be difficult to save.

J. B. Scott,
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