

REPORT ON THE GOLDEN ZONE MINE,  
LEFROY

Location and Access

This mine is situated about 1 mile north-west of Lefroy, on the south-western part of the 7,000 acre block held under lease by the Closer Settlement Board from the Crown and leased by them to returned soldier's lessees.

Mr. C. Digney holds a permit to enter upon 160 acres of this land.

The mine was worked during 1898 and 1899 and was then held under gold lease as 1451/93G of 10 acres by Messrs. P.C. Weetman and F.H. Crockford. The mine is accessible by a cart track from the main road through Lefroy.

Geology

The country in the vicinity of the mine workings is composed of Cambrian-Ordovician sandstone and slates. The sandstones are the more plentiful and consist of fine to medium grained types showing a certain amount of alteration as evidenced by the development of secondary mica. The slates are subordinate in amount and consist of dark black graphitic types.

Very few exposures occur in which the strikes and dips can be recorded, but at the 100 foot level the strata have a general NWN strike and dip to the west at low angles up to 40 degrees.

Mine Workings

The surface workings consist of a trench which was cut from the small gully in a general northerly direction to the outcrop of the reef. Other trenches were cut along the outcrop to the east and west of the above one. To the west a pass connects with some old stopes which are said to be connected with the 60 foot level. Further west a shallow shaft has been sunk on the reef.

To the south west of this shaft a main shaft has been sunk on the hanging wall side of the reef. It is a two-compartment shaft with one travelling and one winding compartment and is close-timbered.

It is stated that a level was opened out at 60 feet but this was timbered up and could not be entered.

A level was opened out at a depth of 100 feet. A short crosscut of a few feet to the south cut the lode and drives were put to the east and west. The eastern drive is 7 feet in length and the western one 35 feet. At 30 feet a short crosscut was driven to the north for 12 feet and at 35 feet a rise was put up for 6 feet.

The recent work consisted in unwatering and repairing the shaft and in sinking a winze a few feet deep on the lode opposite the shaft.

### The Reef

It is stated that gold was discovered in the small gully near the main shaft and that the soil and detrital matter were treated to obtain the gold. The trenches across and along the outcrop testify to the subsequent prospecting for the outcrop of the reef from which this gold was shed. The reef does not outcrop prominently at the surface, being represented by a track with a small amount of quartz in it. No efforts appear to have been made to locate the outcrop to the west of the shaft if any actually exists.

The pass from the surface to the old overhead stopes from the 60 foot level suggest a short shoot of ore with a westerly pitch. The 60 foot level cannot be entered but it is stated that the reef was stoped overhead for a short distance.

At the 100 foot level, the reef consists of one to five inches of quartz lying against the footwall. It has a strike of 80 degrees and a dip at very high angles to the south. The quartz is generally a white, translucent to opaque variety. It contains numerous small vughs into which small crystals of quartz project. No free gold could be detected in the quartz during the writer's visit, but it is stated that free gold has been observed. In some parts of the reef the quartz contains fine-grained sulphide which appears to be arsenopyrite (arsenical pyrite). In association with the arsenopyrite the quartz is nearly translucent and has a bluish tinge and this is locally known as "laminated" quartz which however is strictly a misnomer.

Five samples of quartz from the 100 feet level with the results given in the table below. Sample Nos. 1, 2 and 3 were representative samples taken by the writer. No. 1 was from the winze opposite the crosscut from the main shaft, two to three inches of quartz and accompanying soft material on the walls being included. No. 2 was taken from the fourth set west from the shaft and includes four inches of quartz. No. 3 was taken from the western end of the drive and includes two inches of quartz. Nos. 4 and 5 were not taken by the writer, No. 4 representing quartz from the eastern end of the 100 foot level and No. 5 representing a mixture of quartz from the 60 and 100 foot levels.

Sample	GOLD (per ton)			SILVER (per ton)		
	oz.	dwts.	grs.	oz.	dwts.	grs.
No. 1	0	7	20	0	1	7
No. 2	0	Trace			Trace	
No. 3	0	1	7	0	0	20
No. 4		Trace			Trace	
No. 5	0	2	15	0	1	21

These assays prove the gold content to range from a trace to nearly 8 dwts. per ton.

### The Reef Channel

The reef has a general strike of 75 to 80 degrees and a dip of 70 to 80 degrees to the south. At the 100 foot level the quartz rests on a very definite wall which correspond in strike and dip with that of the reef. From

two to four feet to the south of the footwall a similar and parallel wall exists which has been referred to as the hanging wall. Quartz does not occur against this hanging wall except at one place near the west end of the drive. In between these walls the material except for the narrow vein of quartz, consists of sandstones similar to those in the footwall country. As these sandstones have a strike from NNW to SSE and a dip to west the footwall and hanging wall represent cross-fractures or fissures. The fissures are parallel to the system which characterises the Lefroy field and in which the reefs were formed. These fissures may represent fault planes but if so the displacement of the strata in the Golden Zone mine would be very small.

As so far exposed the whole of the space between the foot and hanging wall does not represent the lode, quartz being formed only on the footwall and except at one spot, not on the hanging wall. Whether a greater amount of quartz will occur between the walls at other places cannot be stated.

### Conclusions

The mine can only be regarded as being in the prospecting stages. The size of the reef and the gold content of the quartz (from a trace to 8 dwts. per ton) are such that no payable quartz could be extracted from the mine. The prospect of the mine becoming a producing one is therefore entirely dependent on what may be revealed by future operations. Unfortunately there is no evidence to indicate whether the reef will maintain its width and value or undergo increases or decreases thereof.

The favourable features are that the reef occupies fissures parallel and similar to those of the larger and richer reefs on the field, and that the quartz is mineralised and carries a small amount of gold.

The unfavourable features are its small size and value as so far exposed and the uncertainty of any improvement in these respects.

If further prospecting work is contemplated it should be devoted to further driving on the reef at the 100 foot level and sinking to test it at greater depth.

P.B. Nye  
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Hobart.  
13th October, 1925.