

1942/25A

## GEOLOGICAL REPORT ON THE DUNDURRABIN COPPER MINE

### Situation

The Dundurrabin copper prospect is  $3\frac{1}{2}$  miles northwest of Dundurrabin sawmill and settlement, and 5 miles from Tyringham, which is connected by road to Grafton, Armidale and Dorrigo. Nearest railway station is Dorrigo,  $17\frac{1}{2}$  miles from Tyringham. The road from Tyringham to the property is a timbergetter's track, fairly rough in parts, but trafficable right to the mouth of the adit. Both it and the road to Dorrigo are hilly, with some moderately steep grades, and the use of producer gas units for ore haulage would not be practicable.

The mine is favourably situated with regard to supplies of water and timber.

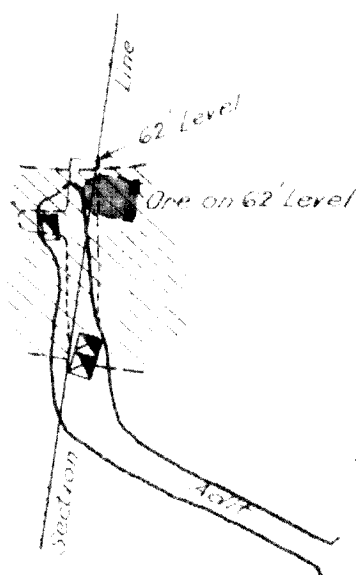
Development consists of an adit to the lode with a cross-cut through it (Plate I), connected to a shaft from the surface on the south wall of the lode. The shaft has been sunk 30 feet below the adit with another cross-cut at that level through the formation. A few pits and costeans have been put down along the strike.

### Geology

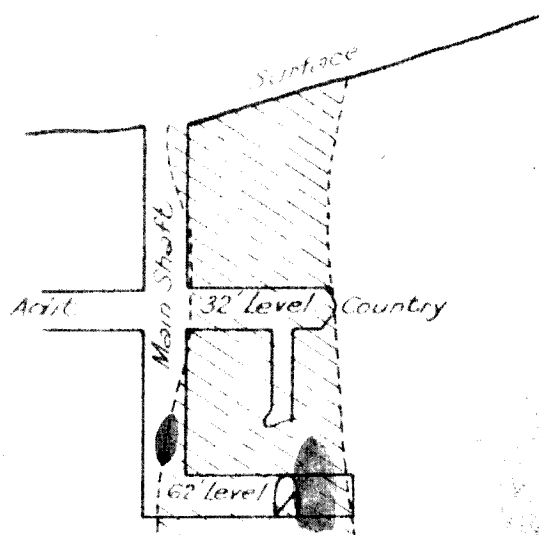
The lode occurs in sedimentary rocks, probably Silurian. Bedding directions could not be determined in the workings owing to the massive character of the rock, but the strike is said to be regionally more or less east-west. Granite outcrops within half a mile of the mine which is situated between two tongues of granite, elongated in an east-west direction, parallel to the general orientation of the sedimentaries (E.J.Kenny, verbal communication). Surface exposures on the lease are poor.

The lode formation consists of strongly shattered rock which has been considerably altered and mineralised. In the workings (See Plate I) it is 22 to 30 feet wide, without well-defined walls, dipping very steeply, practically vertical, and striking apparently east-west.

Chloritic material is abundant, and other minerals include quartz, calcite, pyrite, chalcopyrite, pyrrhotite, galena, sphalerite, bornite and native copper. The copper minerals occur in small shoots, one of which is exposed in the bottom cross-cut on the eastern side, (See Plate I) while a smaller development frozen to the country rock in the shaft on the southern wall of the lode provided a little ore during development.



Plan of Adit Level  
Lower Level dotted outline



Cross Section Through Workings

PLAN AND SECTION  
DUNDURRABIN COPPER MINE N.S.W.

30 0 30 FT.

Taken partly from Plan by M.D. Garretty,  
North Broken Hill Ltd.

Legend



Lode formation (mostly barren)



Shoots of good ore

Around the margin of the shoot copper gives way to iron pyrites in a siliceous gangue. Pyrite is also common in well-shaped cubes in the clayey decomposed rock of the lode. Calcite veining appears to be the latest mineralisation. Native copper was found in the bottom of the winze from the adit level and on No.2 level. Apart from the shoots the lode formation contains only traces of copper. No gold values are present. Slickensiding is conspicuous, with most of the striations nearly horizontal, and striking  $30-35^{\circ}$  W of N, particularly on the East side of the lower cross-cut, though in the short West drive they were also noticed striking  $30^{\circ}$  E of N.

Water level in the mine stands just below the adit, and the ore is practically unoxidised below this level. Some evidence of leaching was observed along solution channels near the north wall, but no important leaching is considered to have taken place in this section of the lode at least. Chalcocite or other evidence of secondary sulphide deposition was not seen, and it must be concluded that the shoots of ore are preserved as originally formed.

West from the workings for some 550 feet the outcrop is not exposed, and then gossanous material can be traced for 100 feet or so. Near the west end of this section is a costean across the outcrop, with an old shaft 20 feet deep. No notable mineralisation was found, though pyrite and a little chalcopyrite can be seen on the dump from the shaft, but the most favourable looking outcrop material occurs here, and as it is some 150 feet higher, and depth to water level is probably greater, a better chance exists here for leaching to have taken place.

Farther west sporadic pits and costeans along the general strike line have exposed poor evidences of mineralisation. East of the mine workings, no work has been done.

### Prospects and Recommendations

Leaching has not been as important as the literature on the mine available here, tends to suggest, and it is the writer's opinion that if shoots of ore of significant size had outcropped at the surface, at least some traces of the carbonate or oxide minerals would remain. Comparison with outcrops of the other copper mines in Northern New South Wales where topographical and climatic conditions are similar, supports this view, and in cases where water level is many times deeper and conditions for removal of outcrop copper much more favourable than at Dundurrabin, there are still carbonates showing on or very close to the surface. The impression

gained at Dundurrabin is that though where exposed underground the lode formation is large and looks receptive enough to mineralising solutions, there just has not been the necessary quantity of copper mineralisation to form large bodies of ore. Undoubtedly other shoots exist, for it would be unreasonable to suppose that one small set of workings, put down where surface indications are little, if any, more favourable than at several other points along the strike, should ~~tap~~ be the only small ore-shoot in such a large lode formation. On the other hand the extent of the formation and the probable small size of the ore-shoots makes exploration a costly business, and many hundreds of feet of driving and sinking might be undertaken without finding values. The same limitation applies to diamond drilling. The proposal to costean the surface at 66 feet intervals in order to study the outcrop should be limited to the section between the main workings and the old prospecting shaft 675 feet to the west. This involves 9 or 10 costeans, of 40-50 feet length each. If as a result of this work no favourable indications were obtained no further work should be done.

The holders of the property have been advised to mine out the sulphide ore showing on the east side of the bottom crosscut, at the same time holing through to the winze down from the upper level to provide ventilation, as the air is not good, owing to the presence of carbon dioxide. If mining operations prove the shoot to extend any appreciable distance to the East, the question of sinking on it further can be considered. Copper content of the parcel of ore sent away previously, mainly from this shoot, was 11.9%, so that this work should easily pay for itself.

Specimens of the outcrop wherever exposed have been forwarded to Mr. Roland Blanchard at Mt. Isa for examination in the light of his wide experience and detailed knowledge of leached outcrops, and his findings will be attached to this report.

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26th. Sept. 1942

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