

NEW CONSOLIDATED GOLD FIELDS (A'SIA) PTY. LIMITED.

PROGRESS REPORT

ON

OPTIONED MINERAL LEASES NOS. 11M/66 AND 12M/66  
(OLD QUEENSBERRY MINE)

HENTY RIVER PROSPECT (S.P.L. NO.25), TASMANIA

No. 11/1968.

MICROFILMED

BY

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GEOLOGIST

OPEN FILE

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2	Residual soil sampling - Line 00: Profiles over No.1 Lode	1" = 200 feet
3	Residual soil sampling: ppm Lead (Spectrographic)	1" = 200 feet
4	Residual soil sampling: ppm Zinc (Spectrographic)	1" = 200 feet
5	Stream sediment sampling: ppm Lead (Spectrographic)	1" = 200 feet
6	Stream sediment sampling: ppm Zinc (Spectrographic)	1" = 200 feet

1.

INTRODUCTIONGENERAL

This report covers the activities of the 1967-1968 field season in and near the two adjoining Mineral Leases 11M/66 and 12M/66, each of 40 acres, enclosed by Special Prospector's Licence No. 25 situated midway between Zeehan and Queenstown.

The Mineral Leases, held jointly by Messrs. Arthur Reece Smith and Guy Garner Smith, straddle Lode Creek and include most of the old Queensberry Mine workings as shown in Plate 1. This Mine has produced about 780 tons of silver-lead-zinc ore from steep, narrow veins. Both leases have been held under option by The Mt. Lyell Mining and Railway Co. Ltd. since 9th June 1967. The Option Agreement is due to expire if not renewed on the 30th June 1968.

ACCESS

A walking track leaves the Zeehan-Strahan Railway formation at Grieve Siding, 9 miles south of Zeehan, and follows an old horse tramway for 7 miles to the Queensberry Mine. Present helicopter access is to within 1½ miles of the mine.

VEGETATION

Dense rain forest covers the Mineral Leases and necessitates line cutting and creek clearance.

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HISTORY OF OPERATIONS AT THE QUEENSBERRY MINEGENERAL

The discovery of galena and sphalerite bearing lodes in 'McKimmie's Section' on Lode Creek was reported in May, 1893 by the Launceston Geological Survey Office. A low silver content was noted. Subsequent operators were mentioned by McIntosh Reid, Inspector of Mines who reported on the Queensberry Mine in 1927. McKimmie's shallow explorations were followed by those of G. Law and Son. Later, W. Grieve sank a shaft to 46 feet to intersect No. 1 Lode ('Main Shaft' near Mill on Plate 1) and constructed the Horse

Tramway, J. Harrison and party followed Grieve until 1920: they deepened the main shaft to 100 feet and explored No.1 lode for a short distances north and south at that level. A small concentrating plant and the horse tram were in use, and production reached its peak. A. Pearson was the lease holder in 1927.

Between them, Grieve and Harrison produced 780 tons of ore with grades of the order 40-56% Pb and 6-7 ozs./ton Ag. McIntosh Reid's bulk sample assayed 21.6% Pb, 8.1% Zn and 2½ ozs./ton Ag, perhaps indicating that the early production was of hand sorted ore.

The low silver content, low price for zinc, and high transportation costs were given as the main reasons for the failure of the early operators.

Mt. Lyell Mining and Railway Co. Ltd. inspected the mine in Harrison's time (Local information), but the report on the visit, if any, is unavailable.

Rio Tinto (Australia) Exploration and Dr. C. Loftus-Hills are included in a number of parties who have examined the mine since 1927.

The current mining leases 11M/66 and 12M/66 were approved in June, 1966.

#### WORKINGS

No.1 or main lode was worked in three short adits and on the 45 feet and 100 feet levels off main shaft sunk in its hanging wall (60 feet of driving on both levels). No.2 lode, west of No.1 lode, was worked in an adit in the south bank of Lode Creek and in a shallow shaft. Small openings were made on both sides of Lode Creek on No.4 lode, and two shafts, north of the creek, tested this lode to shallow depths. An inaccessible adit and trenches lie north of these workings, but are not in line with the lode (See Plate 1). McIntosh Reid reported that a 50 foot shaft was sunk on a No.3 lode, and suggested that the lode could be tested

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from main shaft. This lode is not visible; the shaft south west of, and near, the No.2 lode workings may be that referred to. A short adit and shallow surface workings expose a narrow lode ('East' lode) 500 feet north east of main shaft. Sundry other shallow pits and trenches lie near the workings referred to above.

Trenches and a waterfilled, and apparently shallow, shaft were found north of the Queensberry Mine area, and outside the optioned leases, in a tributary of Lode Creek (Plate 1). A 30 feet wide zone of quartz filled shears was exposed. Galena and sphalerite were found in one fragment from the dumps.

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### PRESENT ACTIVITIES

#### GENERAL

Field activities were carried out intermittently between 16th September 1967, and 2nd May 1968. 33 days were spent by the writer in geological mapping, surveying, residual soil and stream sediment sampling within the area of Plate 1. About 23,000 feet of grid lines were cut by two contract line cutters.

A camp was established in an old hut at the Queensberry Mine. Rations and equipment were initially man-packed from Grieve Siding. Several weeks rations were flown to within 1½ miles of the mine by helicopter early in January 1968.

#### GEOLOGICAL OBSERVATIONS

Mapping of Creek beds, pits, tracks and workings are recorded on Plate 1. Petrological examination of 3 specimens and mineragraphic examination of 1 specimen were done by AMDEL, South Australia.

#### GEOCHEMISTRY

##### (i) Residual Soil Sampling

224 samples of C horizon soil were taken from

## 4.

pits dug along 7 east-west lines. Pit interval along line, usually 100 feet, was reduced to 25 feet over No.1 lode on line 00 and 50 feet across a broad anomalous zone on line 500S. No detailed orientation survey was done.

(ii) Bed Rock Sampling

Samples of the three major rock types were crushed and analysed as for residual soil samples.

(iii) Stream Sediment Samples

80 samples were taken in the area of Plate 1. Double sampling was done only in Lode Creek and a tributary in the vicinity of No.1 lode.

All geochemical samples were analysed spectrographically by AMDEL, South Australia, for lead, zinc, copper and silver. Tin and nickel were determined in stream sediment samples and some soil samples in which latter several other elements were determined. Spectrographic analyses were accurate to  $\pm$  50%.

LODE SAMPLING

3 channel samples from No.4 lode were analysed for Cu, Pb, Zn, Ag and Au by Mt. Lyell Mining and Railway Co. Ltd.

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OBSERVATIONS AND RESULTSA. GEOLOGY(i) General

The host rocks for the Queensberry mine fissure lodes are part of a folded sequence of unmetamorphosed (?) Upper Cambrian sediments and minor interbedded pyroclastics. These

pyroclastics are relatively common in the area of Plate 1.

Three rock types were distinguished:-

Crystal Tuff

A dark grey-green chloritic rock with plagioclase (albite-oligoclase) and quartz crystals averaging 0.1-0.3 mm. A specimen from site B was examined by AMDEL. Devitrified quartz-andesite, found only at site C, probably represents the parent lava.

Black Shale

Intensely cleaved in this area. Occasional sandy interbeds indicate bedding.

Micaceous Sandstone or Argillaceous Siltstone

A finely bedded, water lain silty sediment interbedded with black shale, and grading to a tuffaceous sandstone near crystal tuff contacts. A specimen from site A was examined by AMDEL.

Heavy colour and symbols indicates observations of the above rock types on Plate 1. Lighter colour indicates inferred distributions.

Crystal tuff and micaceous sandstones show a close association and were observed only in the northern half of the area examined.

(ii)

Structure

Folding - Intense NW-SE cleavage has

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largely obscured the bedding in the finer-grained sediments. The south-eastward plunging folds shown in Plate 1 are necessarily based on few reliable observations of bedding and, at this stage, are a preliminary interpretation to link scattered exposures of the crystal tuff. The cleavage direction does support the axial direction shown. Irregular bedding in the sediments north-east and south-west of the mine area indicates folding in both directions. Devonian folding is assumed.

Faulting - McIntosh Reid remarked in 1927, on "Parallel Faults coursing approximately  $70^{\circ}$ " "...displacing the ore bodies. During this current examination east striking faults were observed at the Lode Creek - No.4 lode intersection, and in Lode Creek between No.1 and No.2 lodes. Here No.1 lode is seen to be displaced. Similar faults were strongly inferred south of No.1 lode and No.2 lode workings, and south of the 'East' lode workings.

The fault zone shown is thus generally inferred. The zone is essentially unmineralised. Minor veining in the cross shear slightly displacing No.4 lode in Lode Creek suggests that some faults in the zone may be pre-mineralisation, but the writer is inclined to relate the major faults in the zone to later major post-Permian faulting.

The lode channels are fairly clearly defined, and are best developed within the more competent crystal tuffs. Nos. 1, 2 and 4 lodes occupy westerly dipping fissures, 'East' lode a near vertical

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north easterly striking fissure, while the steeply dipping zone north of lease 11M/66 strikes easterly. Minor quartz veins show no preferred direction.

Splitting and parallel veining with related shattering are evident in all the major lodes, so that ore bodies in the Queensberry Mine may be over seven feet wide in the strict sense, although the individual veins are usually less than 5 feet. Lode channel formation, post folding and pre-mineralisation is related to the Devonian orogeny.

(iii) Orebodies

Mineralogy - Quartz is the principal gangue mineral, while siderite is less important and more variable in content. Galena, sphalerite, chalcopyrite, tetrahedrite and pyrite occur in all lodes with the proportion of chalcopyrite being greater in No.4 lode than in 'East' and No.1 lodes. A local report of arsenic-bearing water in the adit north of No.4 lode workings suggest that arsenopyrite may be important in that vicinity. Tetrahedrite from the 'East' lode dump (site M on Plate 1) carried 2-4% silver - a low silver variety in view of known contents up to 17% in that mineral.

Brief Description of the Lodes - Only surface exposures were examined. No.1 lode is exposed over 350 feet in the three adits. A northward, but not a southward, extension is indicated by other shallow workings. The lode is known only in the vicinity of main shaft to a depth of 100 feet: it dips  $60^{\circ}$  to the west. The main vein is 3 feet wide, although lesser veining increases the shear zone to 7 feet.

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Grade is given under 'History' above.

No.2 lode workings indicate a lode of from 1 to 2 feet in width dipping  $63^{\circ}$  to the west and worked over a length of 50 feet. Potential is small.

No.3 lode was not relocated.

'East' lode - 1 foot wide and nearly vertical, was exposed over a length 120 feet. It is well mineralised, but potential is slight on surface indications.

No.4 lode dips  $60^{\circ}$  westward and was 50 inches wide and well mineralised in the north bank of lode creek and the north wall of the easterly of the two shafts. Analyses at these two locations show that grade is variable -

	Sample Width	Cu %	Pb %	Zn %	Ag ozs./ ton	Au ozs./ ton
North Bank of Lode Creek	52"	2.02	6.8	15.3	1.68	0.01
N/Wall Shaft	40"	0.223	3.0	3.8	0.69	0.005

It is evident, too, that the proportion of zinc is higher than in McIntosh Reid's bulk sample (from ? No.1 lode). The lode passes into black shale in the south bank of the creek, and is much diminished in grade. Sample width includes several minor quartz veins and the lode is generally poorer.

	Sample Width	Cu %	Pb %	Zn %	Ag ozs./ ton	Au ozs./ ton
South Bank of Lode Creek	45"	0.012	Tr	0.067	0.050	TR

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Extension to the north of the shafts was not confirmed.

The lodes north of the 11M/66 are of very low grade and have no potential.

Queensberry Mine lodes are thus well mineralised but narrow.

B. GEOCHEMISTRY

(i) Residual Soil Sampling

High concentrations of lead and zinc in the residual soil near the main lodes indicated that these elements were suitable pathfinders. Good peak contrast is evident in Plate 2. Plates 3 and 4 illustrate the distribution of these elements in the area of Plate 1. No.1 lode is reflected in the zinc-A and lead-B anomalies and a northerly, but not a southerly, extension of this lode is indicated. A northerly extension of 'East' lode, or possibly a new lode in the crystal tuff, is indicated by lead-A and part of the zinc-A anomalies. Only a weak expression of No.4 lode is found along the 500S line but the northern end of the zinc-B anomaly suggest a northward extension of this or an adjacent lode. Of greatest interest is the lead-C and Zinc-B anomaly on 500S line on a steep rise west of lode creek. Seepage has probably been the important factor in the lateral spread of the anomalous zone, and the highest values, in the bank of Lode creek, are likely to be due to flood-water-carried tailings from the old mill, but this high grade anomalous zone is a good indication of a yet unknown orebody. A copper and low grade silver anomaly, plus the presence of the favoured host rock and relative

abundance of quartz veining in this section, lend further support.

The lead-D anomaly, with which a low grade copper anomaly was associated, is based on one pit in the bank of a small gully. No explanation is offered for what may be a seepage anomaly.

A rather high background for lead in soil developed over crystal tuff appears more likely to be due to orebody mineralisation rather than to a high primary background in the parent rock as the following analyses of the three main rock types indicates:-

Rock Type	Pb ppm	Zn ppm	Ag ppm	Cu ppm	Ni ppm	Sn ppm
Crystal Tuff	5	50	0.2	3	5	4
Black Shale	30	80	0.1	50	100	6
Micaceous Sandstone	20	80	0.2	60	150	6

(Spectrographic Accuracy  $\pm$  50%)

Low grade copper and silver anomalies, with the exceptions noted above, could not be readily related to lead and zinc anomalies or known orebodies (See Plate 2 for example). Arsenic values rose above the detection limit only over the possible extension of No.4 lode near which arsenopyrite is said to occur (Plate 2). Nickel values in the soils tended to be somewhat higher over the tuff-sandstone area than over the black shales.

(ii) Stream Sediment Sampling

The dispersion of lead, zinc, silver and copper down Lode creek from the

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Queensberry Mine, and particularly the mill, is the dominant feature of this sampling. Lead and zinc contents of sediments from tributaries (See Plates 5 and 6) broadly reflected the residual soil anomalies and geological observation. Copper and silver distributions were much less regular.

## 5.

DISCUSSIONGEOCHEMISTRY

Residual soil (C horizon) sampling using pits has given satisfactory results in this area in which soil depth is usually less than 3 feet. Lead and zinc anomalies are sharp, and spatially closely related to the lodes: less sharp copper and silver anomalies accompany some lead and zinc anomalies, so that analyses for the four elements is justified in further sampling in this area. Augering is obviously more rapid than pit sinking, but reliable bed rock observations at pit bottom are very useful during mapping of this area.

Stream sediment sampling, essentially a reconnaissance method, was performed more to gain background data for the wider sampling of S.P.L. No.25. Lead and zinc again appear to be suitable pathfinders for the Queensberry ore type.

POTENTIAL OF THE QUEENSBERRY MINE

Ore shoots appear to be localised in relatively competent crystal tuffs in a sedimentary sequence which has been tightly folded and faulted. The tuffs are exposed over only part of the area of interest (Plate 1). The more important orebodies are up to 7 feet wide but average width of workable lodes is more likely to be 3 feet. Lodes are disturbed by cross-faulting. On the assumption that ore shoots are restricted to the tuffs, the evidence of workings and geochemical anomalies suggests that the length of the individual shoots is unlikely to exceed 500 feet: such a shoot, with an average width of 3 feet, would have a potential of some 100 tons/vertical foot.

'East' lode and No.2 lode are obviously not of this magnitude at surface. Nos. 1 and 4 lodes, and the lode indicated by geochemical sampling west of lode creek, may be of this order, but available surface evidence indicates that total potential is much less than 300 tons/vertical foot; expected ore grade would be 10-20% Pb, 8-15% Zn, 2% Cu, 1-3 ozs./ton Ag.

6.

CONCLUSIONS AND RECOMMENDATIONS

The intense lead-zinc anomaly west of Lode Creek, wholly within the Optioned areas, is the most interesting target resulting from the seasons work, although it is likely to be associated with a lode of but small potential tonnage. 4000 feet of intermediate line cutting and about 50 residual samples with follow up trenching and lode sampling are required to more precisely delineate this and other anomalies.

This work is of low priority, however, as the potential of the Queensberry Mine alone, and hence the Optioned areas, is small. Interest in the mine would be greater if other lodes were to be found in S.P.L. No.25 and the known occurrence of quartz-veined crystal tuffs in Melody creek to the east of the mine is of note in this regard. Further work in the Optioned Leases appears to be warranted only if satisfactory results are obtained elsewhere in the S.P.L.

*D. L. Forsythe*

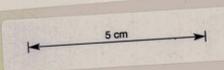
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LEGEND

- CRYSTAL TUFF
- BLACK SHALE (WITH MINOR INTERBEDDED SANDSTONE)
- INTERBEDDED SHALE AND SANDSTONE
- MICACEOUS SANDSTONE (QUARTZITE) (WITH MINOR INTERBEDDED SHALE)
- GEOCHEMICAL SOIL SAMPLE HOLES ON CUT LINES.

AMG REFERENCE POINTS ADDED



SPL 25  
AREA OF PLAN

122015

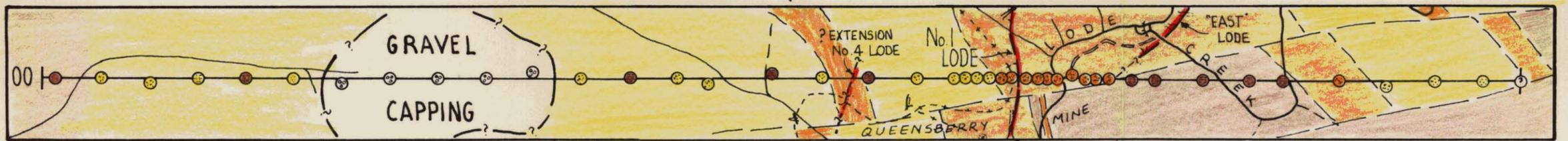
TO ACCOMPANY  
N.C.G.F.A. REPORT NO. 11/1968. **PLATE No 1**

NEW CONSOLIDATED GOLD FIELDS (ASIA) PTY. LTD.  
CONSOLIDATED SYNDICATE EXPLORATION  
SPL 25 - HENTY RIVER PROSPECT  
... GEOLOGICAL PLAN ...  
VICINITY OF QUEENSBERRY MINE  
Scale 200 FT. TO 1 INCH 16-5-68 D.L.F.

122016

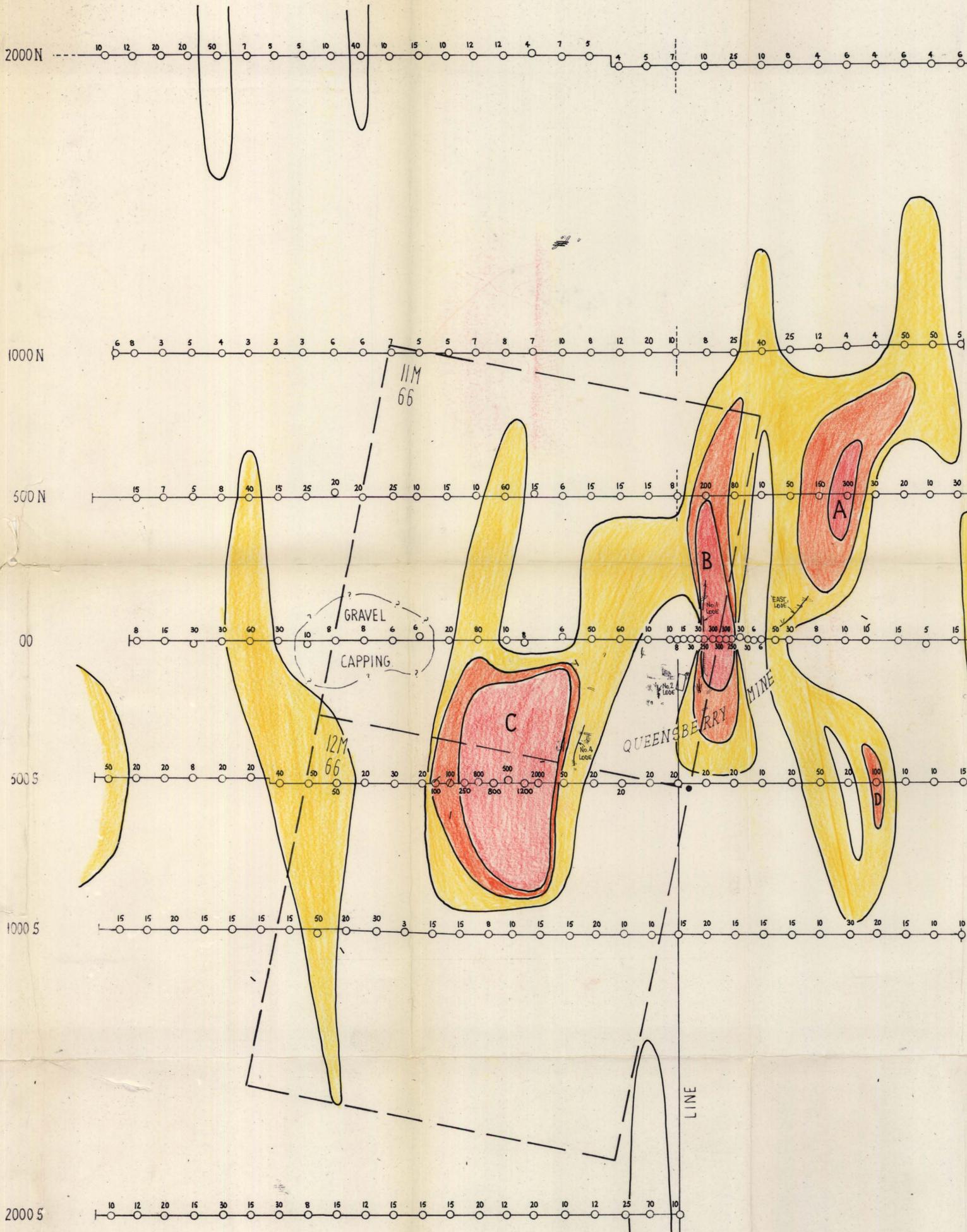
LINE 00 - PLAN (REFER TO MAIN GEOLOGICAL PLAN FOR SYMBOLS, ETC.)

PLATE No 2



NEW CONSOLIDATED GOLD FIELDS (ASIA) PTY. LTD.  
 CONSOLIDATED SYNDICATE EXPLORATION  
 S.P.L.25 - HENTY RIVER PROSPECT, TAS  
 RESIDUAL SOIL SAMPLING VICINITY OF QUEENSBERRY MINE  
 LINE 00: PROFILES OVER No. 1 LODE  
 Scale: 200 FT. TO 1 INCH 16.5.68 D.L.F.

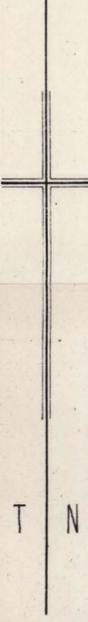
5 cm



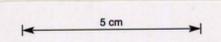
COLOUR KEY

p.p.m. Pb	
<span style="display:inline-block; width:15px; height:15px; border:1px solid black; background-color:white;"></span>	0 - 30
<span style="display:inline-block; width:15px; height:15px; border:1px solid black; background-color:yellow;"></span>	30 - 80
<span style="display:inline-block; width:15px; height:15px; border:1px solid black; background-color:orange;"></span>	80 - 200
<span style="display:inline-block; width:15px; height:15px; border:1px solid black; background-color:red;"></span>	> 200

ACCURACY  $\pm 50\%$



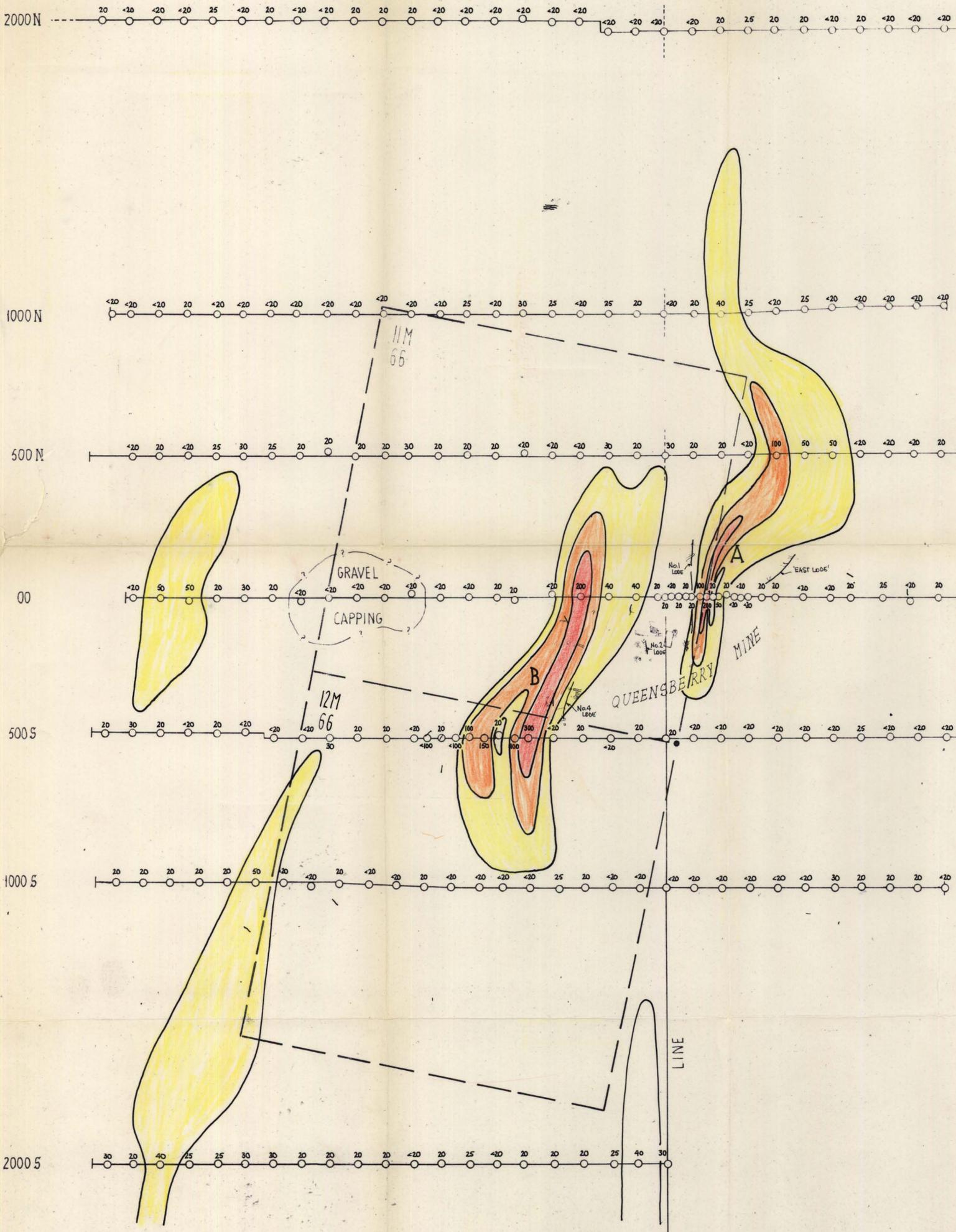
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TO ACCOMPANY  
N.C.G.F.A. REPORT NO. 11/1968. **PLATE N°3**

NEW CONSOLIDATED GOLDFIELDS (ASIA) PTY. LTD.  
CONSOLIDATED SYNDICATE EXPLORATION  
SPL 25 - HENTY RIVER PROSPECT, TAS.  
RESIDUAL SOIL SAMPLING VICINITY OF QUEENSBERRY MINE  
p.p.m. LEAD (SPECTROGRAPHIC)

Scale: 200 FT. TO 1 INCH 14-5-68 DLF



COLOUR KEY

	p.p.m. Zn
White	0 - 30
Yellow	30 - 80
Orange	80 - 150
Red	>150

ACCURACY  $\pm 50\%$

TO ACCOMPANY  
 N.C.G.F.A. REPORT NO. 11/1968. **PLATE N°4**

NEW CONSOLIDATED GOLDFIELDS (A/ASIA) PTY. LTD.  
 CONSOLIDATED SYNDICATE EXPLORATION  
 SPL 25 - HENTY RIVER PROSPECT, TAS.  
 RESIDUAL SOIL SAMPLING VICINITY OF QUEENSBERRY MINE  
 p.p.m. ZINC (SPECTROGRAPHIC)  
 Scale: 200 FT. TO 1 INCH 14.5.68 DLF



COLOUR KEY

- p.p.m. Pb
-  0 - 30
  -  30 - 80
  -  > 80

GIS 33924 → 33999  
 then 41759 → 41762  
 Professor 1:25000

122019

5 cm

TO ACCOMPANY  
 N.C.G.F.A. REPORT NO. 11/1968.

PLATE N°5

NEW CONSOLIDATED GOLD FIELDS (ASIA) PTY. LTD.  
 CONSOLIDATED SYNDICATE EXPLORATION  
 S.P.L. 25 HENTY RIVER PROSPECT  
 STREAM SEDIMENT SAMPLING VICINITY QUEENSBERRY MINE  
 p.p.m. LEAD (SPECTROGRAPHIC)

Scale 200 FT. TO 1 INCH

17.5.68

D.L.F.

4732

