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PRELIMINARY REPORT

TO

TASMINEX N.L.

EXPLORATION LICENCE 17/78

MATHINNA GOLDFIELD

OPEN FILE

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INTRODUCTION

A preliminary appraisal of EL 17/78, Mathinna Goldfield, currently held by Tasminex N.L. was completed between Monday 11th December and Wednesday 20th December 1978. This work included literature search, confirmation of title to the area, field inspection, and discussion with Mines Department personnel of exploration requirements. Additionally an area of 44.25 hectares covering the Golden Gate tailings dumps was pegged and applied for as an exploration licence on behalf of Tasminex N.L., this being crown land lying within EL 17/78 but not held by the Company.

Several attractive exploration targets which have the potential to provide modest cash flow in the short term exist within the licence area. These centre on shallow alluvial prospects and mine tailings in Mathinna township. However the longer term aims of locating major primary gold ore bodies will not be realized without substantial exploration expenditure.

Preliminary test work to determine tonnage, grade and possible treatment methods of the Golden Gate tailings is recommended as the first stage of exploration. Stream sediment sampling over the prospective country south from Mathinna to Mangana is also recommended to locate arsenic and copper alteration which may indicate sub-surface gold mineralisation. Discussion with Department of Environment personnel is recommended as a necessary prelude to any consideration of the alluvial gold prospects at Mathinna township.

CONCLUSIONS AND RECOMMENDATIONS

- (1) Tailings dumps from the New Golden Gate mine have been sampled by the Mines Department who estimate 420,000 tons averaging one dwt/ton. This material represents an attractive exploration target, and if amenable to cyanide leach may provide a short term cash flow for a modest capital outlay. Tasminex N.L. holds title to about half of the dumps, the remainder being held under two separate titles by other parties. Details of Department testing should be obtained prior to further work, but careful sampling of the dumps by Tasminex is recommended, together with bench tests to determine gold extraction rates and the mode of occurrence of gold in the sands.
- (2) Recent backhoe testing of alluvial ground in Black Horse Gully, which drains the western half of the Mathinna field, has indicated 250,000 cu. yds. averaging 0.33 dwt/yd. While the backhoe testing was carefully controlled, sampling of the wash and subsequent assaying was inadequate, and could result in significant error in overall grade. Resampling of critical lines is recommended, with close attention to assaying to minimize error.
- Environmental controls over alluvial mining will be severe, particularly in the Mathinna area, where the alluvial gold deposits lie partly beneath the South Esk river flats. The views of the respective government departments should be sought prior to any grade verification to determine attitudes to alluvial mining and likely pollution controls.
- (3) The potential for outcropping major hardrock deposits is very low due to the intensive prospecting over the last 120 years. Exploration must be directed towards buried deposits, using, initially, geochemical techniques. In common with many Victorian occurrences, the Mangana-Mathinna gold is associated with minor amounts of lead, copper and arsenic. Previous work has shown both copper and arsenic to be good indicators, and a

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programme of detailed stream sediment sampling is recommended to locate "halos" of these metals which will be dispersed around the gold reefs. The principal area of interest is the narrow belt of country between Mangana and Tower Hill, which has numerous alluvial prospects but few significant quartz reefs. Anomalous areas should be detailed by bedrock auger sampling and geological mapping, followed by drilling as warranted. This latter work may be the subject of a joint venture if significant targets can be outlined by geochemical prospecting.

LAND TITLES

Six mineral leases are current within EL 17/78.

The only leases of significance are 100M/68 and 20M/74, which cover the northern end of the New Golden Gate tailings dump.

Current titles are as follows:

Title:	2M/68	5 hectares
	101M/74	21 hectares
	7M/75	21 hectares

Holders: Jointly - D.A. & C.M. Beswick, c/- Sunnyside, Brankholm.

Title:	100M/68	8 hectares
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Holder: J.M. Dwyer, 9 Dangenong Road, Trevallyn.

Title:	55M/64	1 hectare
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Holder: A.E. Hughes, 122 Forest Road, West Hobart.

Title:	20M/74	1 hectare
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Holder: H.T. Moses, P.O. Box 14, St. Helens.

Four leases have been surrendered subsequent to grant of EL 17/78 and have reverted to the Crown. These areas are specifically excluded from the licence, and cover the remaining tailings dumps.

Titles:	Former 57M/74	2 hectares
	Former 56M/74	1 hectare
	Former 47M/74	0.25 hectare
	Former 63M/76	41 hectares

Following discussion with the Mining Registrar, Hobart, an exploration licence covering this vacant ground was pegged on 18th December 1978 in the name of Tasminex N.L. Application should be made for this area to be included within EL 17/78.

SETTING OF GOLD MINERALIZATION

The Mangana-Mathinna-Alberton mineralized belt contains numerous minor gold prospects, but only one significant producer, the New Golden Gate at Mathinna.

Gold mineralization occurs in narrow quartz veins in tightly folded slatey sediments of the Mathinna group, which outcrop throughout EL 17/78, and form part of a narrow belt running north-westerly from Mangana for over 90km. The significant deposits lie close to strongly sheared zones, and are roughly parallel to fold axes, striking north to north-westerly and dipping steeply east to west. Several transverse veins are known but these were only minor producers.

While there are many gold prospects, few were mined to depths greater than 30 metres, and most veins were very short, 10 to 50 metres in strike length. Only at the Golden Gate were major veins developed, but here only two, the East reef, 150 metres long, and the West reef, 310 metres long were really significant. Most oreshoots were between 100-1000 tonnes, and even the major Golden Gate West reef was possibly only 60-80,000 tonnes. Grade however was high, around 30 grams/tonne, with the Golden Gate averaging around 26 grams/tonne. Overall Mathinna production from 1880 to 1932 was 270,895 ounces, and the Golden Gate-Tasmanian Consols mines, working the same reef system to a depth of 630 metres, produced 264,858 ounces.

Gold occurred in quartz veins, or quartz stringers mixed with country rock, and was accompanied by arsenic, copper and lead sulphide minerals, all of which were regarded as favourable indicators of high grade ore. The ore however was free milling, as the sulphides averaged only 1-2%. There appears to be a change in mineralogy in depth in the Golden Gate, where veins remained strong below 500 metres, but grade fell away to uneconomic levels.

Thus the overall picture of gold mineralization throughout the area

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covered by EL 17/78 is one of very high grade but small quartz veins, with one significant centre of intense mineralization. It is significant that the outcrop in this area was very small and the mine had been abandoned for many years before a small quartz stringer in an adit was tested in depth, leading to the development of the Golden Gate vein system. Any future exploration must aim to locate similar non-outcropping veins in an area which has been prospected for over 120 years.

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PREVIOUS EXPLORATION

Several groups have included the Mathinna goldfield in recent exploration programmes. By far the most significant work was carried out by Geophoto Resources Consultants, an associate company of Texas Instruments, between 1968 and 1973, within exploration licence 6/68. With emphasis on geophysical and geochemical techniques, the group concentrated on the Mathinna township area, with little work to the south through Tower Hill to Mangana. The following conclusions have been reached through a study of this work.

- (1) Geological mapping has accomplished little, both on a regional and local scale. There is a recognised association of gold mineralization with strongly sheared zones, a fact recognised by the earliest prospectors, but mapping itself is not a definitive prospecting tool.
- (2) Geophysical techniques, particularly induced polarization and electro-magnetic methods, do not give good definition over known gold bearing areas. The presence of sulphide rich shale bands suggests that geophysical response of gold orebodies, weak sulphide carriers, will be very minor by comparison. This appears to be the case in the Jubilee-Mountaineer area south-east of Mathinna, where pilot geophysical studies were carried out, and the relationship probably holds true for most of the goldfield. However these techniques have value in final target selection prior to drilling.
- (3) Geochemical sampling, particularly soil auger testing, shows good correlation of As and Cu with gold mineralization. An As/Cu ratio greater than 75:1 in soil sampling appears a significant indicator of gold in the Jubilee-Mountaineer area. Stream sediment sampling shows some promise but to date sample numbers have not been statistically significant. The presence of As and Cu within sediments remote from gold should not be

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discounted, however experience in Victorian goldfields with similar geochemistry suggests that higher metal values are more likely to reflect gold mineralization than sedimentary concentration.

In the early 1960's the Tasmanian Mines Department drilled ³ ~~six~~ diamond holes to depths of between 250 and 300 metres on two traverses north and south of the Golden Gate mine, in areas thought favourable for repetition of quartz veins. Although minor quartz stringers were intersected in sheared slates, values in all cases were nil to a trace Au. Structural drilling of this type is not economically feasible for company operations and drilling must be preceded by careful target selection processes.

It is probable that all three techniques, geochemistry, geophysics and geological mapping will be necessary to define targets prior to drilling. An initial approach with good cost effectiveness and reasonable target selectivity is stream sediment sampling at a density of 10 samples per square kilometre, followed by soil auger sampling of anomalous areas combined with geological mapping. However care is required to overcome the effects of old mine dumps, mullock heaps etc., and the technique is only useful on the zone southward of Tower Hill where surface contamination is minimal.

- (4) Alluvial deposits in Black Horse Gully which drains the western portion of the Mathinna field were tested by backhoe sampling. The deposit is a maximum 4 metres deep, consisting of clayey wash, with a basal concentration of free gold over 50 centimetres, resting on a decomposed clayey slate-siltstone bottom. There is a strong probability of a gutter or old stream channel which may be of higher grade than the rest of the wash. The area has been prospected by numerous pits and shallow shafts, consequently there will be an erratic present gold distribution due to this activity. Estimated reserves are 250,000 cu.yds. averaging 0.33 dwt/yd. Previous testing in 1906 estimated 500,000 cu.yds. averaging

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0.5 dwt/yd. The recent test programme had an inbuilt sampling bias and may have undersampled the grade.

- (5) Mines Department sampling of the tailings dumps estimated 420,000 tons averaging 1.0 dwt/ton, with appreciable arsenic. No details of this work are available, but the high grade makes the dump an attractive prospect which may give a short term cash flow.

PROPOSED EXPLORATION(1) TAILINGS DUMPS

A programme of auger sampling is required to provide material suitable for cyanide leach tests and to establish the nature of gold occurrence. Detailed testing is not warranted at this time, but ultimately if preliminary work is favourable, the dumps will require sampling on a 30 x 30 metre grid.

The dump is aligned north-south on the slope of Long Gully creek, and is approximately 700 metres long by 180 metres wide. Title is held to approximately 60% of this area by Tasminex. Initially a line of holes is proposed on the long axis of the dump, spaced 60 metres apart, with cross lines sampled at 30 metre intervals to establish the dump and sub-surface profile. Samples will be taken at one metre intervals in each hole. Total number of holes is probably 50-60 with up to 5 samples per hole. Sample preparation will consist of riffing down to 500 grams, to be sent for assay, the remainder stored for subsequent test work. Surveying of hole sites and the dump profile will be necessary to calculate tonnage.

If tonnage and grade are favourable, samples will be subjected to cyanide leach and size distribution analysis to determine the nature of gold distribution, and gold recovery. From this point a decision can be made to continue with detailed sampling, and preliminary feasibility studies, or reject the prospect.

(2) HARD ROCK GOLD PROSPECTS

Due to the amount of prospecting over the last 120 years, out-cropping mineralization has probably been located and tested, thus any search must be directed towards non-outcropping veins. Geochemical sampling appears to provide the best means of locating such mineralization and a programme of stream sediment

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sampling is recommended to cover the zone of prospective country from Mangana to Tower Hill, commencing at Tower Hill.

It is proposed to sample on a density of 10 per square kilometre, taking sediment in the -80 mesh range from active and dry streams, and assaying for As, Cu and Pb, which are elements showing the greatest contrast and known to be closely associated with gold. Approximately 500 samples will be required to adequately cover the area.

Sample preparation will consist of drying, sieving to -80 mesh to obtain a 5 gram sub-sample, which will be assayed by standard A.A.S. techniques. The programme will require two operators and will take 15-20 days depending on access.

Anomalous areas will be defined by bedrock sampling on lines running east west across the strike of the country, on a spacing determined by the size of the anomaly.

A programme of this nature will quickly isolate areas of interest for further detailed work, at a low cost. Conversely, lack of success in this programme will allow surrender of the area without further exploration, on the assumption that mineralization is either absent or too deeply buried and thus unattractive as an exploration target.

(3) ALLUVIAL GOLD PROSPECTS

No further work is recommended pending discussion on likely pollution controls. These should be between the Department of the Environment and senior Tasminex personnel. Some basic research into likely mining methods, costs and surface reclamation may also be useful at this stage. These studies may indicate the economic tonnage range for shallow alluvial deposits. The Mathinna deposits may well lie below this range.