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HAWKES ALLUVIAL S

REPORT ON ALLUVIAL TIN AREAS

HELD BY CURTAIN'S SYNDICATE

ON KING ISLAND

BASS STRAIT

H. Keith Turner  
26th March, 1964

Attachments:

Plan of Areas - 4" = 1 mile  
Boring Plan - W. A. Beamish  
Report by J. B. Scott

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INTRODUCTION

Hawkes Alluvials is a section of tin bearing country in the north-east of King Island, about sixteen miles to the north of the town of Currie.

The topography, history, geology and tin occurrences are well recorded in the attached report by J. B. Scott, Government Mining Engineer, written in 1926.

Since that date, the field has been almost completely idle. The key lease of 40 acres is held by John Curtan, a former metallurgist at Mount Lyell. Mr. Curtan retired to King Island in the 1930's.

Recently the Tasmanian Mines Department surveyed the field and check sampled many of the shafts. J. Hughes, Chief Geologist, and J. B. Braithwaite, Mining Engineer of the Department, have reported that the drilling and sampling carried out for the Sea Elephant Prospecting Co. by W. A. Beamish is reliable.

Beamish was an experienced alluvial man, and was seconded to the task from Brisies by Lindsay Clarke Senior. Beamish held the position of Assistant Manager of Brisies, and was drowned in the disaster at Derby in 1929.

From an inspection of the field on 9th and 10th March, 1964, the writer concludes that there is potential, and several million cubic yards of economic ground is a realistic target.

1. TITLE POSITION AND OPTION ARRANGEMENTS:

The Curtan Syndicate holds the central lease of 40 acres and a Permit to Enter covering 1,600 acres to the north of ML596. Further applications for Permits to Enter covering around 3,000 acres have been lodged with the Mines Department, and it is certain these will be granted (refer the attached plan).

An agreement has been reached with the Syndicate that the whole of the area above is available for £10,000 in shares in the company formed to operate, plus £10,000 in cash so long as three to four million cubic yards of one lb. or soundly economic ground is proved within the areas.

The Syndicate undertake to secure the mining rights over all the ground which is freehold; to this end they have secured around 50% by arrangement with the owner, one Webster, for the sum of £1 per acre. The remainder is presently being negotiated and, if necessary, will be taken before the Mining Warden.

The option to be written will be for six months with the right of renewal for a further six months. The Tasmanian Mines Department, with whom the writer has discussed the above matter, are keen to see a sound exploration programme in the field and will give every support.

2. THE POTENTIAL OF THE FIELD:

The extensive drilling and shaft sinking completed in 1926 by the Sea Elephant Prospecting Co. is shown on the attached plan by W. A. Beamish. His written report is not available; the Mines Department have no record. However, in the past few months a survey of the field by Mines Department officials was completed and from discussion they confirm that sampling in the old shafts soundly supports Beamish's figures and, in

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the areas selected by Beamish, they estimate 400 tons of tin concentrates are recoverable. Their view, in fact, is that Beamish's figures are conservative.

Curtan has, over the years, prospected this large tract of land and claims continuation of values north to the area developed by the Closer Settlement Board and extending beyond the divide into these presently good farm lands, valued at £20 to £30 per acre. Certainly the type of ground does not change to the north; Scott describes the wash types fully, and having regard to the probable source of tin from veins and lodes in and around old leases 79P/M and 82P/M, it is a reasonable statement that a run of values exists north-west from Curtan's lease to these leases over a distance of three to four miles.

In these terms, it appears favourable that additional concentrations of tin values exist to the north of the Beamish prospecting.

The vein and lode formation may well be targets, but are considered secondary to the proving of one to two million cubic yards of economic ground on which an operation can be based.

### 3. MINING ASPECTS:

The following points are noted:

- (a) The ground is comparatively shallow in the areas tested; an average of nine feet could be close to the mark.
- (b) The area is well drained, the top soils sandy and earth moving plant would not be hampered by winter conditions.
- (c) The wash carries a high percentage of oversize ( $+\frac{3}{8}$ " ), is free and capable of being screened out at low cost.
- (d) Bottom, where observed, is decomposed or partly decomposed schist or slates (the clays referred to in Scott's Report are probably decomposition products of schist and slate).
- (e) At some points, cemented and iron stained drifts were observed, but these are shallow and would present no problems in mining.
- (f) Tin is in medium grained particles, of good assay, and readily recoverable. In the lower sections where mining has been carried on gold particles have been observed (seven grains per yard recorded by Beamish in the southern part of Curtan's lease).
- (g) Associated minerals include pyrite (probably secondary) and the spinel pleonaste, the latter in appreciable quantities and regarded as a good indicator (c/f Dorset areas).
- (h) The contours are generally well suited for stacking of oversize and for tailings dams.
- (i) Water supply - several sections are suitable for local dams and an adequate all year supply is available on Sea Elephant River, one mile from the centre of the area tested (rainfall averages around 30 inches per annum).

- (j) Weather conditions throughout the year are considered by local residents to be less severe than the Tasmanian mainland.
- (k) No electric power supplies are available, but bulk oil facilities exist at Naracoopa, a few miles to the north, and diesel power is certainly competitive.
- (l) Labour requirements for an operation similar to Australian Placer can be secured locally and supplemented from Tasmania.

#### 4. SUGGESTED MINING METHODS:

A scraper operation is indicated, the material being delivered to a mobile screening plant, oversize being dumped on the mined-out areas and undersize pumped to a central but readily movable treatment plant of cyclones and jigs. Tails are also stacked on mined-out areas.

#### 5. MINING COSTS, ETC:

In nearly every respect, costs will follow the pattern of Australian Placer's. These figures are for 72,000 yards per 28 day periods:

Earthmoving	6,000 (1/8d per yard)
Treatment costs	1,050
Water Supply)	
Power Supply)	570
Overheads and Head Office	700
Stores	500
Mine Office and Overheads	486
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	£9,306 = 2/7d per yard

Recovered Values: On the basis of 1 lb. SnO<sub>2</sub> per yard recovered = 72,000 lbs per 28 days = 32 tons @ £850 per ton = £27,200 value.

Recovered .75 lb = £20,400 per month  
 Recovered .50 lb = £13,600 per month

Then one million yards treated (13 periods of 28 days):

<u>Recovered</u>	<u>Total Operating Cost</u>	<u>Recovered Value</u>	<u>Gross Profit</u>
1 lb	£130,284	353,600	223,316
$\frac{3}{4}$ lb	£130,284	265,200	134,916
$\frac{1}{2}$ lb	£130,284	176,800	46,516

#### 6. CAPITAL ESTIMATES:

Taking again Australian Placer figures:

Establishment, including prospecting	£85,500
Working capital	12,500
Formation expenses	2,500
Cash consideration property	10,000
Vendors share interest	10,000
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	£120,000

Assume borrowings £60,000 - Equity capital.

Assuming 2 million cubic yards of alluvials, .75 lbs recovered at £850 per ton of tin concentrates.

Gross Profit	£269,832	in 26 periods of 28 days
Say, Repayment borrowings	60,000	
	<u>£209,832</u>	
Interest on borrowings, 2 years at 6%	2,400	
	<u>£207,432</u>	before Tax

Tax calculation:

Gross	£207,432	over 26 months
Less Depreciation, purchase, etc.	95,000	
	<u>£112,432</u>	
Less 20%	22,605	
	<u>£89,837</u>	
Taxable income	£89,837	
Tax, 8/- (Rebate)	35,935	
	<u>£53,902</u>	

Return on Capital:

Working profit	£207,432	
Less taxation	53,902	
	<u>£153,530</u>	
Less Recovery of capital	60,000	
	<u>£93,530</u>	nett available

Equity capital	=	£60,000
Return £93,530 over 26 periods	=	- say 2½ years
Nett per annum	=	£42,400
	=	70% on Equity capital

The above estimates indicate that a recovery of .75 lbs per cubic yard and 72,000 cubic yards throughput per period of 28 days, with costs at 2/7d per yard and capital estimates similar to Australian Placer, will provide a sound economic picture.

8. NOTES ON PROPOSED PROSPECTING PROGRAMME:

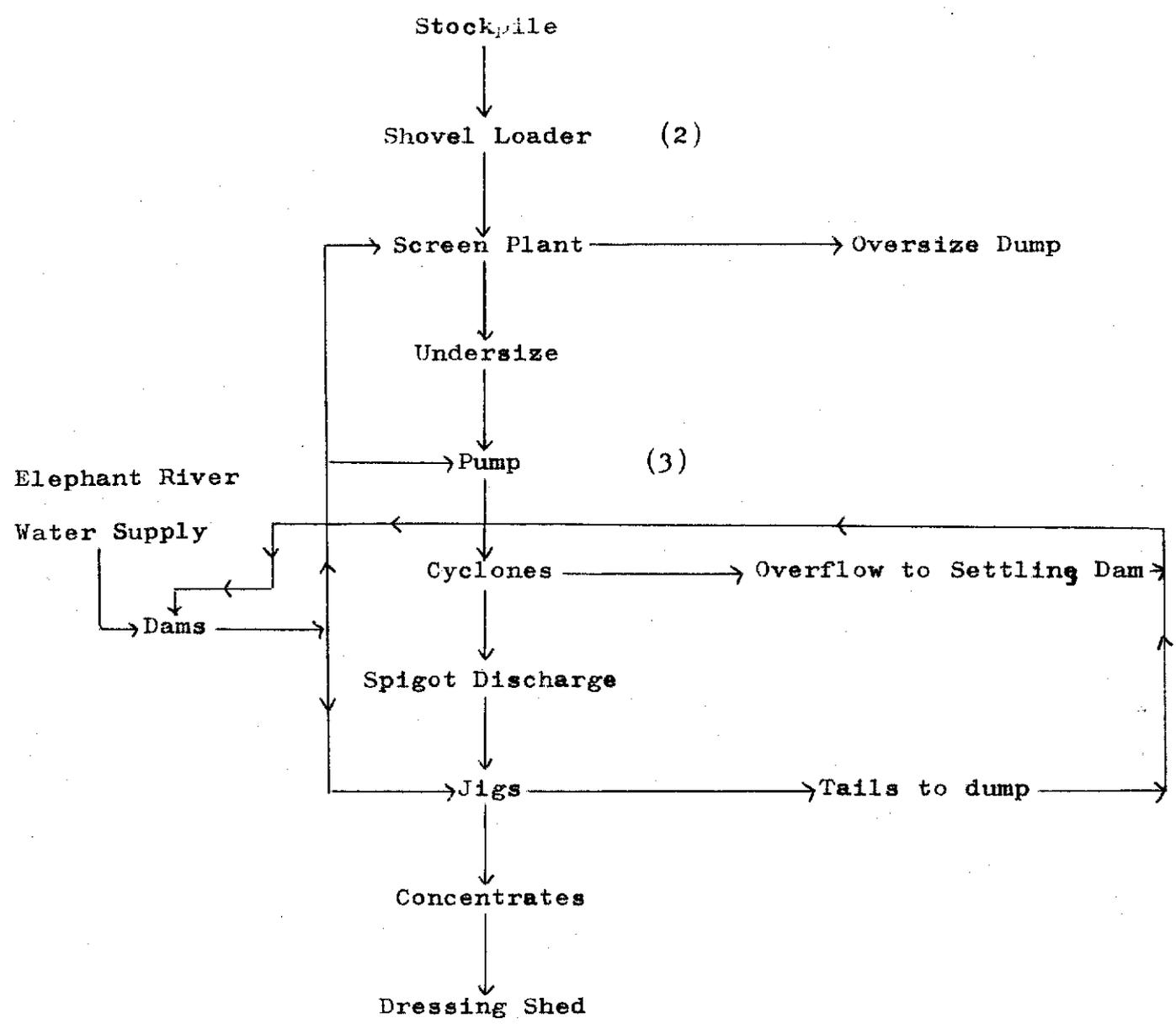
- (a) In the first instance, the campaign should provide for a broad reconnaissance of the selected areas shown on Beamish's drawings. A post hole digger in conjunction with sampling of old shafts (many of which are open), would be a suitable tool to give check figures. A wide pattern of holes extending north-west on a ten chain grid would be suitable at this stage to determine possible economic areas.
- (b) Stage 2: Would depend on results to the north-west. If successful, the Conrad plant and Dorset screen and jig could be secured with operators from Dorset. This has regard for the quantity of oversize stone in the wash.
- (c) Stage 3: A further closing up of holes, particularly where values show irregularity without reason,
- (d) Allocation of £10,000 for the three stages to provide three to four million yards.

CONCLUSIONS AND RECOMMENDATIONS

1. Hawkes Alluvials and the possibility of extensions to the north-west towards the source of the alluvial tin offer an opportunity to develop a useful alluvial field.
2. The present information and boring plan by W. A. Beamish appears to be based on good prospecting practice.
3. The purchase price of the titles at £10,000 in shares and £10,000 in cash for three to four million cubic yards minimum of economic ground of the order of 1 lb per cubic yard is in line with other options secured in New England and elsewhere.
4. Water supplies, suitability for mining with modern plants, and other operating factors are satisfactory; the country is friendly.
5. Recoveries of around .75 lbs tin concentrate per cubic yard will provide sound profits in the above terms.

It is recommended that Stage 1 of the prospecting programme be considered at an early date; this programme should cost not more than £1,000, representing around 25 man weeks plus supervision and overheads.

MINING - SCRAPERS (1)



1. Scrapers handle 325 yards per hour, 8 hours per day
2. Feed to Screen 120 yards per hour, 24 hours per day
3. Undersize from Screen 60 yards per hour  
Cyclone and jigs 24 hours per day

With wash 9' average depth - 5 acres mined per 28 day period.