

Indicated ore reserves at 31 October, 1980 were 98,370 tonnes @ 0.45% Sn and 0.39% WO<sub>3</sub> as follows:

Location	Sn (%)	WO <sub>3</sub> (%)	Tonnes
Aberfoyle	0.45	0.39	98,370
Storeys Creek	0.32	0.31	166,317
Lutwyche	0.135	CM	457,900

ABERFOYLE MINES

ORE RESERVE ASSESSMENT

AS AT

OCTOBER 7TH, 1980

Indicated Mineable Ore Reserves

- Aberfoyle, Storeys Creek & Lutwyche Ore - 98,370 tonnes @ 0.45% Sn 0.39% WO<sub>3</sub>
- Slime Tailings Dumps - 166,317 tonnes @ 0.32% Sn 0.31% WO<sub>3</sub>
- Jig Tailings Dumps - 457,900 tonnes @ 0.135% CM.

ENDORSED BY :

Mining Engineer

Manager

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GEOLOGICAL RESERVES

ENDORSED BY :

Chief Mine Geologist

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## SUMMARY

Mineable ore reserves at 7th October, 1980 were 98,370 tonnes @ 0.45% Sn and 0.39% WO<sub>3</sub> composed as follows :

	<u>Tonnes</u>	<u>%Sn</u>	<u>%WO<sub>3</sub></u>	<u>MTU Sn</u>	<u>MTU WO<sub>3</sub></u>
Aberfoyle	65,620	0.58	0.26	38,000	17,100
Storeys Creek	5,150	0.07	0.91	400	4,700
Lutwyche	27,600	0.3	0.6	8,300	16,500
<u>TOTAL</u>	<u>98,370</u>	<u>0.45</u>	<u>0.39</u>	<u>46,700</u>	<u>38,300</u>

A detailed tabulation of ore reserves, level by level is attached. The classification categories and constraints are defined in the following test.

### Description of Ore Type

Mineralization throughout occurs as cassiterite and wolframite in quartz veins ranging in width from a few cm up to 2 metres. Both vein width and grade of mineralization can vary widely over short distances along the strike and dip.

Ore reserve tonneages and average grades are those resulting from the aggregation of individual ore reserve blocks, defined for each vein by lateral development and regular intervals along strike.

All tonneages are calculated using a density of 2.56 tonnes/m<sup>3</sup> for both quartz vein and waste dilution.

All grades are derived from visual estimates along all development openings, of the proportion of mineralization in the quartz. These estimates are reconciled with actual production grades achieved and after the appropriate factoring and allowance for mullock sorted, the grades are applied to the ore reserve.

\* Sampling and assaying cannot be successfully applied to the sporadic (nuggety) mineralization.

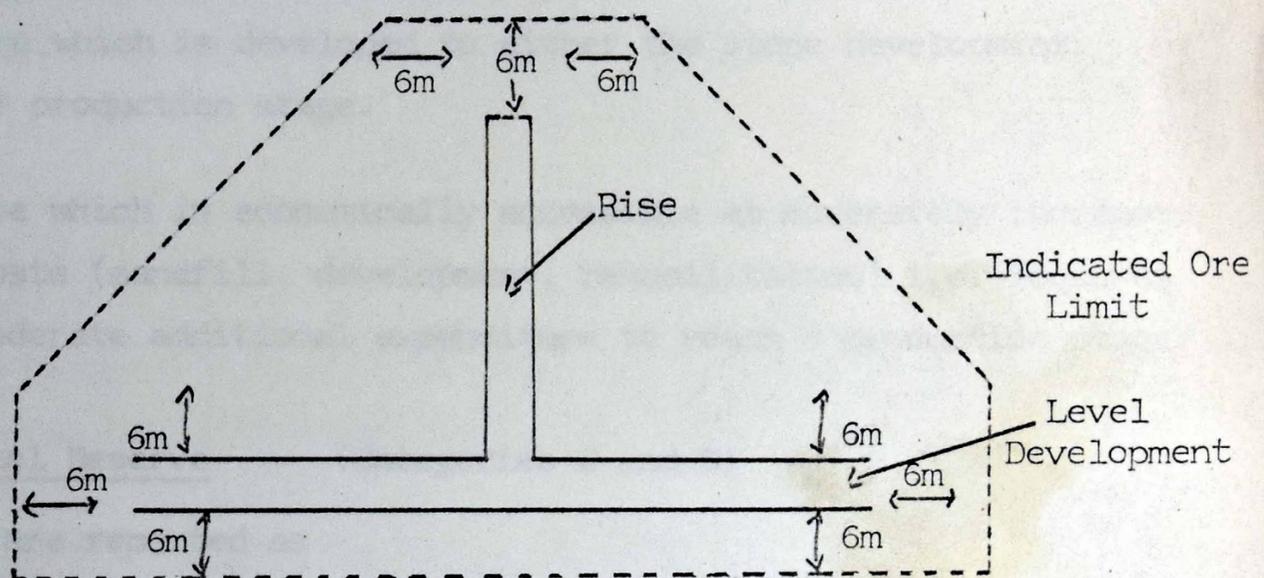
## RESERVE CLASSIFICATIONS

In decreasing order of confidence, reserves are classified as -

Measured, Indicated and Inferred.

Measured Reserves - Those whose tonnage and grade can be estimated with a high level of confidence. Variability of grade and vein width precludes this level of confidence, and hence no reserves are reported to this classification.

Indicated Reserves - Those defined at least in part, by development in quartz veining. Quartz tonneages are calculated from observed vein widths and distances along strike and dip exposed by level and rise development. Indicated ore extends to 6 metres beyond such development for blocks developed on one side only (except that no strike or dip extensions are made to blind level or rise development respectively), and as shown in the diagram for blocks developed on two or more sides.



Where circumstances indicate an appropriate level of confidence, data from diamond drill holes, adjacent stoping, crosscutting etc., may be used to extend Indicated Ore limits, but only in conjunction with development on at least one side of the block.

Inferred Reserves - Those which extend 6 metres beyond Indicated Ore limits unless development information suggests otherwise. Where extensive development and/or diamond drilling information is available, Inferred Ore may be judged to extend beyond the 6 metre limit.

## DEFINITIONS

### 1. Geological Reserves

Mineralization which is potentially mineable, but without regard to profit. Mining plans need not have been developed.

The geological reserves are subdivided into indicated reserves (Categories A, B, C, D.), and inferred reserves (Category E), depending on the degree of confidence with which tonnage and grade can be estimated.

The indicated geological reserve is further subdivided into diluted indicated mineable (at a profit) reserves (Categories A and B), and non-mineable geological reserves (Categories C and D).

### 2. Diluted Mineable Ore Reserve

Ore (diluted) above an appropriate cut off grade which can be mined at a profit.

Category A - Ore which is economically accessible at present costs - ore which is developed to either the stope development or production stage.

Category B - Ore which is economically accessible at moderately increased costs (sandfill, development, rehabilitation) i.e. requires moderate additional expenditure to reach a production stage.

### 3. Non-Mineable Geological Reserve - (Categories C and D)

These two categories are reported as

Sub-Ore - Ore which is below typical cut off grades and which after taking due account of its predicted direct mining costs cannot be mined at a profit.

Planned Loss Non-Recoverable - Reserve blocks either sub-ore or above cut off grade, but are non recoverable due to location i.e. shaft pillars, stope pillars, level pillars, hazardous previously abandoned areas.

### 4. Dilution

Owing to the nature of narrow vein mining it becomes impractical to stope at widths less than about one metre. Consequently stoping of narrow veins will result in planned waste dilution. Planned dilution for Aberfoyle Mine and Lutwyche is estimated as the difference between the average vein width and a 1.22 metre stoping width. No account is taken of waste sorting from the ore stream.

At Storeys Creek where vein widths more nearly approximate the stoping width an historical dilution estimate can be made from production records of vein and stope width, and this estimate is considered to be more accurate than that for Aberfoyle Mine. For vein widths in excess of 1.22 metres, no dilution is added. For vein widths less than 1.22 metres, 55% dilution is added.

5. Extraction Loss

Ore grade mineralization left as remnants as a result of the mining method. Open stope mining at Storeys Creek Mine necessitates the leaving of random support pillars, the location and size depending on ore grade and ground conditions. It is estimated that 10% of the reserve blocks will be left as stope pillars.

Aberfoyle and Lutwyche stopes are mostly cut and fill mining, and require level pillars of 2.44 metres. Roof pillars are not required if there is no development on the level above a stope block.

6. Cut-Off Grade

The cut-off grade is that grade at which value of production is equal to the cost of production.

The mine costs, mill recoveries, and metal prices as outlined in the 1981 Plan were used as the basis for determining cut-off grades.

Total production cost per tonne ore milled           \$105.00

Mill Recoveries	Sn	80%
	WO <sub>3</sub>	80%
Metal Prices	Sn	\$131.00
	WO <sub>3</sub>	\$131.00

Waste sorted from ore stream at Aberfoyle - 10% of ore hoisted, equivalent to a 10% upgrading in head grade.

Thus the cut-off grade for Sn and WO<sub>3</sub> at Aberfoyle becomes

$$\frac{105}{131 \times 0.80 \times 1.10} = 0.91\%$$

Waste sorting at Lutwyche is not planned.

∴ the cut-off grade for Sn and WO<sub>3</sub> at Lutwyche = 1.00%

At Storeys Creek waste sorted from the ore averages 5%, equivalent to a 5% upgrading in head grade

$$\frac{105}{131 \times 0.80 \times 1.05} = 0.95\%$$

RECONCILIATIONAberfoyle Mine

	Tonnes	%Sn	%WO <sub>3</sub>	MTU Sn	MTU WO <sub>3</sub>
(a) Reserves 11 March 1980	65,260	0.54	0.27 <i>0.81</i>	35,200	17,600
(b) Reserves 7 Oct., 1980	65,620	0.58	0.26	38,000	17,100
(c) Ore Extracted	14,410	not	measured		
(b + c - a)	+14,770				

Reduction of reserves at Aberfoyle resulted from depletion of known reserves by production.

The overall increase of 14,770 tonnes above the March 11th, 1980 ore reserves is due to the mining of additional strike length of veins outside the original reserve blocks, reclaimed ore from mullock filled stopes, and an additional 9000 tonnes by upgrading blocks from Category C to Category A. These blocks have been regraded after rehabilitation and development and are now operating stopes.

Storeys Creek Mine

	Tonnes	%Sn	%WO <sub>3</sub>	MTU Sn	MTU WO <sub>3</sub>
(a) Reserves 11 March 1980	11,180	0.04	0.93 <i>0.91</i>	400	10,400
(b) Reserves 7 Oct., 1980	5,150	0.07	0.91	400	4,700
(c) Ore Extracted	8,460	not	measured		
(b + c - a)	+2,430				

The increase in the Storeys Creek Mine ore reserves is a result of additional veining being exposed and extracted as stoping proceeds along strike and dip of a vein, and by the upgrading of Category C blocks to Category A, on 8 and 9 levels and a small amount on 11 level.

Lutwyche

	Tonnes	%Sn	%WO <sub>3</sub>	MTU Sn	MTU WO <sub>3</sub>
(a) Reserves 11 March 1980	31,360	0.3	0.6 <i>0.9</i>	9,400	18,800
(b) Reserves 7 Oct., 1980	27,600	0.3	0.6	8,300	16,500
(c) Ore Extracted	3,540				
(d) Broken Ore in Shrink Stope	1,100				
(b + c + d - a)	800				

The increase of 880 tonnes in the Lutwyche ore reserves is a result of additional veining being exposed as stoping proceeds in the Battery Vein Shrink Stopes plus additional reserves from level drive, stope drive and rise development.

SURFACE ORE RESERVES

The surface ore bodies are -

1. Slime tailings dumps.
2. Jig tailings dumps.

1. SLIME TAILINGS DUMPS

Slime added to storage 12.3.80 to 7.10.80 -  
2202 tonnes @ 0.40% Sn 0.38% WO<sub>3</sub>.

	Tonnes	Sn%	WO <sub>3</sub> %	CM%
Diluted mineable reserve at 12.3.80	164,500	0.32	0.31	0.63
Diluted mineable reserve added 12.3.80 to 7.10.80 (75% recovery and 10% dilution)	✓ 1,817	0.36	0.34	0.70
Diluted mineable reserve 7th October, 1980	166,317	0.32	0.31	0.63

2. JIG TAILINGS DUMPS

Jig Tailings dumps occur at both the Aberfoyle and Storeys Creek Mines.

(a) Aberfoyle Jig Tailings Dumps

A re-survey at mid June, 1980 indicated a total recoverable tonnage of 556,663 tonnes.

It was established that 40% of the total was actual Jig Tailings as -12mm material. That is, actual Jig Tailings amounted to 222,665 tonnes and 80% of the total float material was -12mm material, amounting to 267,198 tonnes.

From 14th June, 1980 to 7th October, 1980, 11,174 tonnes of ore float material and 1985 tonnes of Jig Tailings were added to the jig tailings dump. From this, approximately 584 tonnes of ore float material and 80 tonnes of jig tailings were rod-milled for stope filling. Therefore at net tonnage of 10,590 tonnes of ore float material and 1905 tonnes of jig tailings were added to the Jig Tailings Dump.

On 7th October, 1980 the reserve in the Aberfoyle dump was :-

Jig Tailings	Ore Float Material
222,665	267,198
1,905	10,590
<u>224,570</u>	<u>277,788</u>

Estimate recovery at 75% = 376,700

∴ Mineable reserve is 376,700 tonnes @ 0.136% CM.

(b) Storeys Creek Jig Tailings

Surveyed tonnage = 162,216

Estimate recovery of 50% = 81,100 tonnes at 0.13% CM.

(c) Total Accumulated Jig Tailings Mineable Reserves

Aberfoyle 376,700 tonnes @ 0.136% CM

Storeys Creek 81,100 tonnes @ 0.13 % CM

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TOTAL 457,900 tonnes @ 0.135% CM

Detailed engineering and capital evaluation studies on treating the jig tailings was nearing completion on 7th October, 1980.

ORE POTENTIAL

A preliminary percussion-drilling programme to evaluate the potential of open-cut mining operations at the Aberfoyle Mine should be completed by January 1981.

72 metres of well mineralised vein about 60 cm wide has been exposed on 12 level Lutwyche. This vein is expected to extend a further 100 metres south. To the north, the Footwall Vein has been exposed with a true width of 30 cm and a strike length of 100 metres is anticipated.

On 13 level Lutwyche, diamond drill holes AU13-112 and AU13-110 have intersected the Footwall South Vein. The vein is well mineralised and the apparent true width is 0.7m.

It appears likely that the Battery Vein will extend right through to the Kookaburra System, a further 100 metres.

To date, 450 metres of mineable grade veins has been exposed on 13 level Lutwyche and diamond drilling has indicated another 150 metres of veins, making a total potential of 600 metres.

Diamond drill holes AU13-103 and AU13-105 both intersected well mineralized quartz over an apparent strike length of 80 metres. These intersections are in the Kookaburra Vein system area.

ABERFOYLE TIN LIMITED

DILUTED MINEABLE ORE RESERVE STATEMENT

ABERFOYLE MINE

OCTOBER, 1980

Level	Indicated Geological Reserves (Categories A,B,C,D.)			Inferred Geological (Category E)		Non Mineable Geological Indicated Reserves (Quartz Tonnes) C.D.			Undiluted Indicated Mineable Reserve <i>A+B</i>			Planned Waste Dilution	Extraction Loss (Pillars)	Indicated Diluted Mineable Reserve		
	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Ore Tonnes	Ore Grade CM%	Sub-Ore	Planned Loss (non recover.)	Sub- Total	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Tonnes	Dil <sup>n</sup> Tonnes z/y	Ore Tonnes	Ore Grade Sn %	WO <sub>3</sub>
1	2810	2.4	0.5	2.9 2550	0.52	1520	550	2070	740	2.5	0.9	3.4 2420	76% - 0.28m	3160	0.6	0.2
2	4410	2.6	0.9	3.5 4350	0.73	1220	300	1520	2890	2.5	1.3	3.8 11100	79% - 0.25m	13990	0.5	0.3
3	3740	2.6	0.7	3.3 4250	0.72	1110	350	1460	2280	2.7	1.0	3.7 8740	79% - 0.25m	11020	0.6	0.2
4	4700	3.2	0.7	3.9 600	0.90	1260	1390	2650	2050	3.5	1.2	4.7 8950	81% - 0.22m	11000	0.7	0.2
5	8440	2.4	0.5	2.9 7700	0.52	5330	1250	6580	1860	3.1	0.8	3.9 6330	79% - 0.25m	8190	0.7	0.2
6	6560	2.3	0.7	3.0 14790	0.59	3720	790	4510	2050	2.3	1.4	3.7 6530	-	8580	0.6	0.3
7	6630	1.9	0.5	2.4 1650	0.73	2570	3590	6160	470	3.0	1.1	4.1 2030	-	2500	0.6	0.2
8	8270	1.5	0.9	2.4 6400	0.62	4840	3030	7870	400	1.8	2.3	4.4 1810	-	2210	0.3	0.4
9	5710	1.4	0.9	2.3 6000	0.78	1590	3910	5500	210	3.0	2.8	5.9 1060	-	1270	0.5	0.4
10	1050	1.7	1.4	3.1 300	0.70	-	70	70	980	1.7	1.4	3.1 2720	73.5% -	3700	0.4	0.4
11	600	1.0	0.7	1.7 -	-	110	490	600	-	-	-	-	-	-	-	-
12	1150	1.8	0.5	2.3 -	-	-	1150	1150	-	-	-	-	-	-	-	-
TOTAL	54070	2.14	0.71	48590	0.64	23270	16870	40140	13930	2.68	1.21	51690	-	65620	0.58	0.26

ABERFOYLE TIN LIMITED

DILUTED MINEABLE ORE RESERVE STATEMENT

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LUTWYCHE MINE

OCTOBER, 1980

Level	Indicated Geological Reserves (Categories A,B,C,D.)			Inferred Geological (Category E)		Non Mineable Geological Indicated Reserves (Quartz Tonnes) C.D.			Undiluted Indicated Mineable Reserve			Planned Waste Dilution	Extraction Loss (Pillars)	Indicated Diluted Mineable Reserve A.B.		
	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Ore Tonnes	Ore Grade CM%	Sub-Ore	Planned Loss (non- recover.)	Sub- Total	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Tonnes	Tonnes	Ore Tonnes	Ore Grade	
															Sn %	WO <sub>3</sub> %
12	380	1.2	1.5	930	0.9	-	-	-	380	1.2	1.5	780	280	880	0.4	0.5
13	8030	0.9	2.0	6040	0.86	430	-	430	7590	1.0	1.9	17720	3680	21630	0.3	0.6
14	2980	0.9	2.0	9870	0.87	300	-	300	2680	1.0	2.0	5900	3490	5090	0.3	0.6
TOTAL	11390	0.91	1.98	16840	0.87	730	-	730	10650	1.01	1.91	24400	7450	27600	0.3	0.6

ABERFOYLE TIN LIMITED

DILUTED MINEABLE ORE RESERVE STATEMENT

- STOREYS CREEK MINE

OCTOBER, 1980

Level	Indicated Geological Reserves (Categories A,B,C,D.)			Inferred Geological (Category E)		Non Mineable Geological Indicated Reserves (Quartz Tonnes)			Undiluted Indicated Mineable Reserve			Planned Waste Dilution	Extraction Loss (Pillars)	Indicated Diluted Mineable Reserve		
	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Ore Tonnes	Ore Grade CM%	Sub-Ore	Planned Loss(non- recover.)	Sub- Total	Quartz Tonnes	Sn %	WO <sub>3</sub> %	Tonnes	Tonnes	Ore Tonnes	Ore Grade Sn %      WO <sub>3</sub> %	
ADITS	3650	0.1	0.5	350	-	-	3650	3650	-	-	-	-	-	-	-	-
1	1520	0.2	0.5	350	-	-	1400	1400	120	0.4	1.8	100	20	200	0.2	1.0
2	9930	0.1	0.6	1100	-	-	9750	9750	180	1.8	1.8	150	30	300	1.0	1.0
3	6400	0.2	0.5	650	-	250	6150	6400	-	-	-	-	-	-	-	-
4	3150	0.1	0.4	-	-	-	3150	3150	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	4950	-	0.5	900	-	500	4400	4900	50	-	2.0	50	10	90	-	1.0
7	5930	-	0.5	800	-	1950	3500	5450	480	-	1.7	400	80	800	-	0.9
8	10650	-	0.5	2350	-	1650	8700	10350	300	-	1.7	250	50	500	-	0.9
9	9460	-	0.6	1000	-	1550	6150	7700	1760	-	1.6	1440	290	2910	-	0.9
11	8960	-	0.6	3000	-	3950	4800	8750	210	-	1.5	170	30	350	-	0.85
12	5800	-	0.6	6550	-	5550	250	5800	-	-	-	-	-	-	-	-
TOTAL	70400	0.05	0.59	17050	-	15400	51900	67300	3100	0.12	1.64	2560	510	5150	0.07	0.91