REF. 3.4.1 — 12th May, 1970

ABERFOYLE LIMITED

STOREYS CREEK TIN MINING COMPANY N. L.

CUT OFF GRADES FOR ORE RESERVES 1970

ASSUMPTIONS

1. Tin Price $30.00 per unit.
2. WO_3 Price $48.00 per unit.
3. Total cost per ton mined : $15.00 (S.C.T.M.)
   $16.00 (A.L.)
4. Factor to convert tons milled to tons mined :
   1.15 (S.C.T.M.)
   1.00 (A.L.)
5. Mill recovery = 80% (both Mines).

STOREYS CREEK

1. TIN

Recovered units of tin required per ton of ore milled

$$= \frac{\text{Cost/ton}}{\text{Price/unit}}$$

$$= \frac{15}{30}$$

$$= 0.50/\text{ton milled}$$

Allow factor of 1.15

Units required = 0.50 x 1.15

= 0.575/ton mined.

Cut off grade = 0.58% (Recovered Grade)

For Mill recovery of 80%,

Cut off grade = $\frac{0.58\%}{80\%} \times 100$ (i.e. $0.58 \times \frac{100}{80}$)

= 0.72% (Head Grade)

2. WOLFRAM

Units required = $\frac{15}{48}$

= 0.31/ton milled

Allow factor of 1.15

Units required = 0.31 x 1.15

= 0.36/ton mined

Cut off grade = 0.36% (Recovered Grade)

For Mill recovery of 80%,

Cut off grade = $\frac{0.36\%}{80\%}$

= 0.45% (Head Grade)

3. FOR RATIO TIN : WOLFRAM OF 1 : 5

Price per unit of c.m. $= \frac{(1 \times \$30) + (5 \times \$48)}{6}$

$= \$45.00$

Units of c.m. required $= \frac{15}{45}$

$= 0.33$/ton milled

Allow factor of 1.15

Units = 0.33×1.15

$= 0.38$/ton mined

Cut off grade = 0.38% (Recovered Grade)

For Mill recovery of 80%,

Cut off grade $= \frac{0.38\%}{80\%}$

$= 0.48\%$ (Head Grade)

4. FOR RATIO TIN : WOLFRAM OF 1 : 10

Price per unit of c.m. = \$46.40

Units required $= \frac{15}{46.4} = 0.32$/ton milled

Factor 1.15,

Units required = 0.37/ton mined

Cut off grade = 0.37% (Recovered Grade)

80% Recovery,

Cut off grade = 0.47% (Head Grade)

5. FOR RATIO TIN : WOLFRAM OF 1 : 15

Price per unit of c.m.= \$46.90

Units required $= \frac{15}{46.9}$

$= 0.32$/ton milled

Factor 1.15,

Units required = 0.37/ton mined

Cut off grade = 0.37% (Recovered Grade)

80% Recovery,

Cut off grade = 0.46% (Head Grade)

ABERFOYLE

1. TIN

Units required = $\frac{16}{30}$

= 0.54/ton milled

= 0.54/ton mined

Cut off grade = 0.54% (Recovered Grade)

For 80% Recovery,

Cut off grade = 0.67% (Head Grade)

2. WOLFRAM

Units required = $\frac{16}{48}$

= 0.33/ton milled

= 0.33/ton mined

Cut off grade = 0.33% (Recovered Grade)

For 80% Recovery,

Cut off grade = 0.41% (Head Grade)

3. FOR RATIO TIN : WOLFRAM OF 3 :1

Price per unit of c.m. = $34.50

Units required = $\frac{16}{34.5}$ = 0.46/ton

Cut off grade = 0.46% (Recovered Grade)

For 80% Recovery,

Cut off grade = 0.58% (Head Grade)

4. FOR RATIO TIN : WOLFRAM OF 2 : 1

Price per unit of c.m. = $36.00

Units required = $\frac{16}{36}$ = 0.45/ton

Cut off grade = 0.45% (Recovered Grade)

For 80% Recovery,

Cut off grade = 0.56% (Head Grade)

SUMMARY

		Recovered grade %	Head grade %
Storeys Creek	Tin	0.58	0.72
	WO_3	0.36	0.45
	$Sn : WO_3 = 1 : 5$	0.38	0.48
	$Sn : WO_3 = 1 : 10$	0.37	0.47
	$Sn : WO_3 = 1 : 15$	0.37	0.46
Aberfoyle	Tin	0.54	0.67
	WO_3	0.33	0.41
	$Sn : WO_3 = 3 : 1$	0.46	0.58
	$Sn : WO_3 = 2 : 1$	0.37	0.46

REF.3.4.2
9.2.2

July, 1970

STOREYS CREEK TIN MINING COMPANY N. L.

ORE RESERVE ESTIMATE AS AT 1st JULY, 1970

The ore reserve estimate has increased from 266,600 tons to 408,300 tons this year.

The classification of ore reserves has been carried out on the same system as in previous years. A description of each category is shown below and Table I shows the ore reserves on each level, broken down into categories.

CATEGORIES

Indicated Ore - (Categories A, B, C and D)

Is defined as ore, considered to be of economic grade based on visual grade estimation, that has been outlined.

(i) By a development or stope opening on three or more sides.

(ii) Projected up to 30 feet beyond an isolated development or stope opening.

An exception to this, included in the reserves this year, is ore below 11 level on Footwall Vein, which has been projected to diamond drill intersections. This ore which has been included in category C amounts to 21,000 tons.

Category A - Ore blocks considered to be economical at current prices (WO_3 = $53.57/unit, Sn = $30.50/unit, realised prices in dollars Australia) and accessible now at present costs.

Category B - Ore blocks considered to be economical at current prices and accessible with moderately increased costs (sandfill, development and rehabilitation).

Category C - Ore blocks considered to be economical, but of marginal profitability at current prices or accessible with high costs (sandfill, development, rehabilitation) or after shaft sinking.

Category D - Ore blocks considered to be uneconomical at present prices due to low grade or excessive costs.

Category E - Inferred Ore - Is defined as ore projected up to 30 feet beyond indicated ore.

Table II gives a comparison of tonnage estimates in each category for this year to the previous years estimate.

Factors influencing year to year variation in the various categories are -

1. Category A. - Increase 75,600 tons.

a) Extensive development on 6, 7, 9 and 11 levels.

b) Reassessment

c) Transfer of ore from lower categories due to sand filling

2. Category B - Increase 40,900 tons.

a) Ore outlined by development on 2 level not yet located on 11 level.

b) Reassessment.

c) Transfer from lower categories.

3. Category C - Increase 32,400 tons.

a) Ore included below 11 level outlined by diamond drilling.

b) Reassessment

c) Transfer from Category D due to a lower economic cut off grade.

4. Category D - Decrease 27,100 tons

No ore has been included in this category this year due to lower economic cut off grade.

5. Category E - Increase 19,900 tons.

Resulting from a general increase in indicated ore.

Ore Reserve Plans

A new set of ore reserve plans have been drafted based on the same system as in previous years, i.e. A plan of each vein system drawn to a scale of 40 feet to one inch, showing areas previously mined, and areas of indicated and inferred ore. Tonnages have been calculated using a factor of 13.6 cu.ft./ton for ore in situ and a stoping width of 4 feet for veins less than 4 ft. or a stoping width equal to vein width for veins greater than 4 feet.

Table IV is an index to ore reserve plans.

Summary of Major Reasons for increased Ore Reserve Tonnage

1. Development - resulting from an extensive development programme continued this year, concentrated on 6, 7, 9 and 11 levels on Sub-footwall Vein, Footwall Vein, Y-Vein, W-Vein and Hangingwall Vein.

2. Stope Development - including both rising and driving carried out from operating stopes.

3. Stoping Method - A vertical slice, hydraulic cut and fill method of stoping has now been established at the mine, replacing the previous system of open stoping leaving random pillars. This method enables almost complete extraction of the ore blocks and therefore it is not necessary to cut ore reserve tonnages by 10% to allow for losses in pillars and other contingencies as has been the practice in previous years.

4. Lower Economic Cut off Grade - The combination of a lower mining cost per ton together with an increased realised metal prices has resulted in a lower economic cut off grade. This accounts for -

higher categories.

ii) addition of a number of blocks previously considered uneconomic.

The areas included in this category are Hanging Wall Vein 'A' Split, Handing Wall Vein 'B' Split and Hanging Wall Vein 'B' Split West Branch written off the ore reserves the previous year.

TABLE II

LEVEL BY LEVEL COMPARISON OF ORE RESERVE CATEGORIES JULY 1969 - JULY 1970

CATEGORY	A		B		C		D		E		TOTAL	
LEVEL	1969	1970	1969	1970	1969	1970	1969	1970	1969	1970	1969	1970
Adits	10,500	12,350	5,900	1,400	1,050	1,150	-	-	1,200	750	18,650	15,650
1	14,050	16,150	3,000	3,150	-	-	-	-	1,700	2,550	18,750	21,850
1A	1,750	2,150	4,000	4,100	-	1,150	-	-	-	-	5,750	7,400
2	5,800	5,750	7,250	7,050	-	4,500	3,250	-	-	-	16,300	17,300
3	11,450	16,000	5,750	6,650	400	450	-	-	4,250	6,000	21,850	29,100
4	1,850	2,050	2,050	5,200	-	2,450	4,650	-	1,950	1,950	10,500	11,650
5	-	-	-	-	-	1,900	4,050	-	-	-	4,050	1,900
6	5,450	7,650	3,950	5,050	2,900	6,200	6,050	-	2,350	2,900	20,700	21,800
7	9,700	16,300	4,150	6,100	5,650	4,400	1,650	-	850	550	22,000	27,350
7A	1,800	1,650	-	-	-	-	2,250	-	-	-	4,050	1,650
7B	2,150	1,950	2,000	2,550	-	-	600	-	-	-	4,750	4,500
8	13,700	15,300	3,550	9,750	2,000	3,800	750	-	1,550	6,250	21,550	35,100
8A	-	-	-	-	-	2,550	2,100	-	-	-	2,100	2,550
9	28,100	68,250	3,450	15,450	2,100	-	-	-	10,450	17,200	44,100	100,900
11	10,850	27,200	6,800	26,300	6,500	9,200	1,750	-	14,750	24,500	40,650	87,200
12	-	-	-	-	5,750	21,000	-	-	5,100	1,400	10,850	22,400
TOTAL	117,150	192,750	51,850	92 ,750	26,350	58,750	27,100	-	44,150	64,050	266,600	408,300

TABLE III

LEVEL BY LEVEL COMPARISON OF THE ORE RESERVE AS AT 1st JULY, 1969 AND 1st JULY, 1970.

Level	1.7.69 Ore Tons	1.7.70 Ore Tons	Difference Ore Tons	Remarks
Adits	18,650	15,650	- 3,000	Due to Extraction
1	18,750	21,850	+ 3,100	Due to reassessment
1A	5,750	7,400	+ 1,650	Due to reassessment
2	16,300	17,300	+ 1,000	Due to reassessment
3	21,850	29,100	+ 7,250	Due to Stope development and reassessment
4	10,500	11,650	+ 1,150	Due to reassessment
5	4,050	1,900	- 2,150	Due to reassessment
6	20,700	21,800	+ 1,100	Due to stope development and reassessment
7	22,000	27,350	+ 5,350	Due to development, rehabilitation and reassessment
7A	4,050	1,650	- 2,400	Due to reassessment
7B	4,750	4,500	- 250	Due to reassessment
8	21,550	35,100	+ 13,550	Due to Development and reassessmen
8A	2,100	2,550	+ 450	Due to reassessment
9	44,100	100,900	+ 56,800	Due to development and reassessmen
11	40,650	87,200	+ 46,550	Due to Development and reassessmen
12	10,850	22,400	+ 11,550	Due to reassessment
TOTAL	266,600	408,300	+141,700	

STOREYS CREEK TIN MINING COMPANY N. L.

INDEX TO ORE RESERVE PLANS - 1970

TABLE IV.

Vein Name	Plan Number
Sub-Footwall Vein. Footwall Vein split East Vein - 8 Level	SC-OR-01
'X' Vein	SC-OR-02
Caunter Vein	SC-OR-03
Cross Vein. Cross Vein 2 Adit	SC-OR-04
'Y' Vein. Footwall Vein - West Branch 9 Level. 'W' Vein. East Vein - 11 level	SC-OR-05
Footwall Vein. Footwall Tin Vein. Footwall Link Vein	SC-OR-06
No. 1 Vein - East Branch. No. 1 Vein South - East West Link	SC-OR-07
No. 1 Vein West Branch. No. 1 Vein East Branch South	SC-OR-08
Handingwall Vein 'A' Split	SC-OR-09
Hangingwall Vein 'B' Split. Hangingwall Vein 'A' Split F/W Sput. Footwall Split of Hangingwall Vein - 11 Level.	SC-OR-10
Hangingwall Vein 'B' Split West Branch. No. 2 Vein 'B' Split	SC-OR-11
No. 2 Vein 'A' Split	SC-OR-12
No. 2 Vein 'C' Split	SC-OR-13

ORE RESERVES AS AT 1st JULY, 1970.

TABLE I

TONS

LEVEL	A	B	C	D	E	TOTAL
Adits	12,350	1,400	1,150	-	750	15,650
1	16,150	3,150	-	-	2,550	21,850
1A	2,150	4,100	1,150	-	-	7,400
2	5,750	7,050	4,500	-	-	17,300
3	16,000	6,650	450	-	6,000	29,100
4	2,050	5,200	2,450	-	1,950	11,650
5	-	-	1,900	-	-	1,900
6	7,650	5,050	6,200	-	2,900	21,800
7	16,300	6,100	4,400	-	550	27,350
7A	1,650	-	-	-	-	1,650
7B	1,950	2,550	-	-	-	4,500
8	15,300	9,750	3,800	-	6,250	35,100
8A	-	-	2,550	-	-	2,550
9	68,250	15,450	-	-	17,200	100,900
11	27,200	26,300	9,200	-	24,500	87,200
12	-	-	21,000	-	1,400	22,400
TOTAL	192,750	92,750	58,750	-	64,050	408,300