

**MINERAL HOLDINGS AUSTRALIA PTY., LIMITED**

**THE ENDURANCE PROJECT**

**E.L. 11 / 2000**

**MT. CAMERON, GLADSTONE DISTRICT**

**NORTH EAST TASMANIA**

**PRELIMINARY REASSESSMENT OF THE WESTERN  
RESOURCE AREA**

**PREPARED BY:**

*NIUGINI RESOURCES PTY., LIMITED.*

**DATE PREPARED:**

*18<sup>th</sup> September 2002*

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***Neil R. Kinnane – Geologist.***

*Fell.RMIT., Ass.RMIT (Geology).*

*FAusIMM, CPGeo., MGSAust., MGSAmer.*

*MAIG.. AssGSCanada.*

## OVERVIEW

Tin was discovered in the Endurance area in 1875. The first deposits worked were the shallow alluvials associated with streams draining Mt Cameron. The Endurance Tin Mining Syndicate, formed in 1922 appears to have been the first group to undertake mining on the deeper sections of the main Endurance lead. Production from the deposits continued intermittently until the late 1960's when ownership control moved to the Murray – Murray – Maguire Group. The B.M.I mining group acquired the area in 1970. B.M.I while continuing production from shallow ground also commenced a thorough drilling assessment of the deposit, in particular that section of ground lying west of what is now known as the "Bleue Lake".

In 1978 Amdex Mining acquired the deposit from B.M.I. Amdex recalculated the reserves based on previous drilling by the Department of Mines (1958, 1968 – 69), Endurance Tin Mining Company (1943) and B.M.I. (1971 – 72). As a result of their work Amdex Mining quoted a resource base as follows:

6,775,399 cubic metres at an average grade of 250.4 grams/cubic metre of 70% Sn concentrate (cut-off of 200/100 grams / cubic metre).

This resource was contained in two resource blocks, specifically:

Block east of the Tertiary Fault;

And

Block west of the Tertiary Fault.

Amdex describe the "Fault" as being post depositional and having a relative vertical displacement of 14 metres and a relative horizontal displacement of 135 metres. This is reflected in their ore outline that depicts a marked lateral displacement.

In June 2001 a very brief reassessment of old the author on behalf of Mineral Holdings conducted data. A review of those data indicates that while some infill drilling would upgrade the resource from possible to proven, exploration would be better served by:

- Completing more drilling on sections where the boundaries of the resource are yet to be defined;
- Drilling more lines to the west of the resource, the direction of original stream flow and in which the resource remains "open".

The BMI / Amdex resource quotes grades averaged from surface to base of lead (Whole of hole) and includes thick intersections of barren overburden. The current reassessment, whilst at best preliminary, involves the exclusion of this barren overburden from grade calculations. This has resulted in greatly improved grades and in an increase in area of the resource.

The resource figures recalculated at a 100 g/m<sup>3</sup> cut-off grade are described as “Measured Resources” and are summarised as:

❖ **Total Including Overburden**

10,245,828 m<sup>3</sup> at an average grade of 242.10 g/m<sup>3</sup> SnO<sub>2</sub>

or

2,480 tonnes of concentrate at 70% Sn.

❖ **Total Wash Only**

1,912,581 m<sup>3</sup> at an average grade of 1,080.56 g/m<sup>3</sup> SnO<sub>2</sub>

or

2,067 tonnes of concentrate at 70% Sn.

and

8,314,751 m<sup>3</sup> of overburden.

Stripping ratio 4.35 : 1

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## DIGITAL FILE IDENTIFICATION

### FILE IDENTIFIER

Report and Appendices	EL112000_200212_01_report.pdf
Figure 1	EL112000_200212_02_map.tiff
Figure 2	EL112000_200212_03_map.tiff
Figure 3	EL112000_200212_04_map.tiff
Resource Outline	EL112000_200212_05_map.tiff
Section 1	EL112000_200212_06_section.tiff
Section 2	EL112000_200212_07_section.tiff
Section 3	EL112000_200212_08_section.tiff
Section 4	EL112000_200212_09_section.tiff
Section 5W	EL112000_200212_10_section tiff
Section 6	EL112000_200212_11_section.tiff
Section 7	EL112000_200212_12_section.tiff
Section 8	EL112000_200212_13_section.tiff
Section 9	EL112000_200212_14_section.tiff
Section 10	EL112000_200212_15_section.tiff
Section 11	EL112000_200212_16_section.tiff
Long Section A	EL112000_200212_17_section.tiff
Long Section B	EL112000_200212_18_section.tiff

## 1.0 INTRODUCTION

The Endurance Project area is located in the north central section of the extensive Ringarooma River alluvial tin field, a mineralised province that has historically produced in excess of 40,000 tonnes of tin from operations varying from small scale hand mining through to large scale dredging.

The Endurance alluvial deposits are in part derived from locally from streams shedding southwards from the Mt Cameron granitic massif and in part from tin bearing sediments forming part of the ancestral Ringarooma River alluvial system. The resource is contained within a deeply incised east-west trending channel lying immediately adjacent to the southern edge of the massif. See Figure 2 and 3.

The principal cassiterite deposits are concentrated in a basal alluvial horizon resting immediately on granitic bedrock. The deposit consists of coarse, granite-derived sands with a high felspathic component, often difficult to distinguish from weathered basement, and erratically distributed throughout these deposits gravel, pebble, cobble and boulder size fragments derived from granite and metamorphic sources, some ferruginous cement has been observed. The basal mineralised zone is in turn overlain by a horizon consisting of clayey sands and sandy clays.

Whilst previous authors indicate that post depositional faulting has displaced the deposit, the fault trending north west – south east and lying west of the current mined and having a downthrow on the west of some 14 metres and lateral movement of the western block, 135 metres north this is conjectural and there appears little evidence supporting such a theory. This study indicates no movement in the top of the tin bearing alluvial; rather there is a consistent and thickening of the sandy overburden sequence longitudinally from east to west

While the bulk of the cassiterite is medium to fine grained, < 2.0 mm. Locally coarse fractions are recorded in sections of the lead proximal to the Mt Cameron massif, that is, where streams shedding mineralised zones in that massif have fed it. In addition to cassiterite the deposits contain zircon, monazite, ilmenite with minor rutile and corundum. The abundance of these accessory minerals varies dependant on the position in the deposits in relation to both gradient and source.

Previous resource calculations have included both the cassiterite bearing basal wash and the barren overburden or “drift” of the old miners. By application of a 100 gm / m<sup>3</sup> cut-off grade and exclusion of the barren overburden it can be shown that the areal extent of the resource can be increased. Further the resource remains open to the west and in many places to the north and south, further drilling in those regions would be expected to also increase the resource base.

## **2.0 LOCATION AND ACCESS**

The project area is located in northeastern Tasmania approximately 83 kilometres northeast of the northern City of Launceston. More specifically the project is located proximal to the south of the Mt Cameron massif approximately 7 kilometres south west of the township of Gladstone. See Figure 1.

Access to the area is excellent. All weather roads provide vehicular access from Launceston. The northern link via the towns of Bridport and Tomahawk, the southern link via Scottsdale, Branxholm, Derby and Pioneer. In recent years upgrading of these roads has reduced the incidence of road closures due to flooding although extremely wet weather may cause local access difficulties around the Project site. Bulldozed and graded sandy gravel bush tracks provide access throughout the Project area.

### **3.0 TOPOGRAPHY AND CLIMATE**

The project area occupies a relatively flat basin like depression immediately adjacent to the southern slopes of Mt Cameron at elevations of around 35 to 45 metres above sea level (ASL). From the northern boundary of the project area the topography rises sharply to the peak of Mt Cameron at an elevation of 551 metres ASL. See Figures 2 and 3.

The drainage is dominantly east into the Ringarooma River and west into the Boobyalla River. Both those streams flow northward into Ringarooma Bay.

Climate is typically temperate maritime with four seasons and moderate temperatures. Locally winter is the coldest and wettest period. Daily winter temperatures (June to October) range from below 0°C to maximums in the 15 to 20°C range and in summer (November to February) from 15°C up to 30°C. Average annual rainfall varies from 890 mm to 1020 mm.

#### 4.0 TENURE

The project area is currently encompassed by a 4 sq. km Exploration Licence, EL 11 / 2000. Specifically:

Tenement Number	11 / 2000
Area	4 square km.
Location	Mount Cameron
Date of Grant	03 / 01 / 2000
Date of Expiry	08 / 12 / 2005
Beneficial Holder	Mineral Holdings Australia Pty., Limited. 10 <sup>th</sup> Floor 100 Collins Street, MELBOURNE, Vic 3000.
Contact	Mr. Neil Thomas. Managing Director
Contact Point	Phone: +61 3 9654 7999 Fax: +61 3 9650 3855 Email: <a href="mailto:tominex@iprimus.com.au">tominex@iprimus.com.au</a>

## 5.0 HISTORICAL BACKGROUND

The following historical data has been reproduced from a report by Amdex Mining dated 24th March 1980.

Tin was discovered in the Endurance district in 1875. Initially miners exploited the shallow alluvial deposits associated with the many small, deeply incised and steeply rising streams along the southern flank of the Mt. Cameron massif. Those deposits occurred perched well above the buried Endurance deep lead. During this period the Clifton Tin Mining Company and the Endurance Tin Mining Syndicate were the major producers. The Clifton Company worked high-grade ground (2,000 to 3,000 gm/m<sup>3</sup>) along Clifton Creek and the Endurance Syndicate, shallow ground to the northwest of the Clifton workings.

The Endurance Tin Mining Company formed in 1922 acquired the assets of the Syndicate and appears to have also acquired the Clifton leases that were probably nearly completely mined. Initially the groups utilised hydraulic monitors supplied by steam driven water and gravel pumps. A lack of adequate water supply necessitated the establishment of pumped water return system. The groups appear to have been able to exploit ground to around 10 metres in depth at grades of up to 7,000 gm/m<sup>3</sup>.

By 1928 the scarcity of an adequate supply of wood to fire the boilers necessitated the introduction in that year of diesel driven plant. Declining tin prices soon forced the closure of all operations. Small-scale tribute mining continued until the early 1930's when the Endurance Company completed a successful restructure of its share capital and acquired, for the sum of \$30,000.00, the Tasmanian assets of the Pioneer Tin Mining Company. These assets included the hydroelectric power station at the Frome Dam and this enabled the Endurance Company to electrify its operations at Endurance.

In 1934, Mr. C. Ryan, the former manager of Pioneer was appointed General Manager of the Endurance operations. Ryan commenced a scheme to exploit the remaining shallow ground and to commence operations of the deeper sections of the main lead.

The Ryan plan included:

- Installation of a pumping platform on the Ringarooma River to provide water for sluicing;
- Introduction of a 254 mm gravel pump to develop the shallow ground;
- Replacement of the pontoon steam driven plant by larger gravel pumps to enable exploitation of the deeper ground; and
- Provision of a tails race to the Ringarooma River to dispose of tailings derived from the upper or eastern end of the lead.

Sluicing of the ground commenced in February 1935 following the successful commissioning of the pumping plant. Initial mining was hampered by unreliable and inadequate boring results and it proved necessary for the Company to redrill some areas to allow for more selective mining to be implemented. By 1937 production was in full swing and in the first year of operations a total of 150.9 tonnes of high-grade tin concentrates were produced. Historical mining costs are quoted as being 7.44 cents / metre and recovery quoted as being 528 grams of SnO<sub>2</sub> / m<sup>3</sup>.

In 1939 as operations became more settled the Company treated some 277,500 m<sup>3</sup> of alluvial ground for a recovery of 142 tonnes of tin concentrates, a grade of 475 grams/m<sup>3</sup>. The more efficient operations resulted in the costs being lowered to around 5.5 cents / m<sup>3</sup>. At this time the Company estimated the deposit to contain a resource of just over 3.8 million m<sup>3</sup> containing 1,400 tonnes of tin concentrate equating to an average grade of around 310 grams/m<sup>3</sup>. In 1940 the lead produced 130.8 tonnes of concentrate from 359,000 m<sup>3</sup> of feed equating to an average grade of 364 grams/m<sup>3</sup> at a cost of 6 cents / m<sup>3</sup>.

By 1945 all the economic shallow ground at the eastern end of the lead had been exhausted although the deep unexploited ground still contained 2.68 million m<sup>3</sup>. In that year the production pontoon was moved to the western central section of the lead and by 1947 the operation was confined to the main lead apart from some small-scale production of 18 tonnes of concentrate from shallow ground. Total production for the 1947 year is reported to be 134 tonnes equating to an average grade of 338 grams/m<sup>3</sup>.

In 1950 sluicing was continuing in the western section of the main lead, 108.4 tonnes being produced for the year from 325,000 m<sup>3</sup> of wash at average grades of 333 grams/m<sup>3</sup> however costs in working the deeper ground had risen to 19.6 cents / m<sup>3</sup>. By 1954 profitability of mining the deeper ground had become a problem, costs had risen to around 32.7 cents /m<sup>3</sup> for a recovered grade of only 285 grams/m<sup>3</sup>.

In summary, the period 1946 to 1959 saw the Endurance Lead produce 1,220 tonnes of tin concentrates from some 3.82 million m<sup>3</sup> of alluvial wash for an average grade of 319 grams / m<sup>3</sup> SnO<sub>2</sub>. Operations were hampered by the inability to dispose of tailings and from time to time the presence of abundant pyritic material.

In 1960 the Company commenced sluicing eastwards from the Blue Lake region. Production was hampered however as the lead was becoming narrow, was hard against the flanks of the massif and contained abundant large boulders in the basal layers. The average annual production for the period 1960 to 1966 was 70 tonnes of tin concentrates per annum, an average grade of 237 grams/m<sup>3</sup>. In the period 1966 to 1968 production further declined with only 75 tonnes of concentrates being produced for the period and while the average remained at 237 grams/m<sup>3</sup> costs had risen and operations were terminated in the east in late 1968. Operations were relocated to the western sections in the same year.

In mid-1969 the ownership flowed to the Murray – Murray – Maguire Group to and from groupings that made up the Attunga Mining Syndicate and finally to interests associated with Walter Shapiloff. In early 1970 B.M.I Mining acquired the interests of the Endurance Mining Corporation and thus of the Endurance Lead. B.M.I discontinued the mining operations in the western lead in favour of mining of shallow terrace ground to the east. In conjunction with this move the group commenced an extensive evaluation of the deposit.

In 1978 the Triako – Amdex Mining Group acquired to B.M.I tenements and continued shallow mining and exploration, their operations ceased in the early 1980's. From that time the deposit has remained idle and the resource quoted by Amdex remains largely intact.

## 6.0 GEOLOGICAL SETTING

The tin bearing gravel deposits, probably representing part of the ancestral Ringarooma River system are located immediately adjacent to the Mt Cameron granite massif and are developed on a weathered granite basement.

Study of airphotos indicates the massif is cut by a series of major faults and fractures (joint or shear systems) that have a general trend of 330° to 335° M. The largest of these is located along Clifton Creek and appears to have a lateral displacement on the east of around 300 metres southwards and an apparent downthrow to the west.

Previous workers have interpreted the western resource to be disrupted by a north – south trending Tertiary post-depositional fault located between Lines 5W and 10W. Study of the airphoto indicates the trace of this feature is arcuate and rather than being a fault may represent jointing or shearing related to cooling of the granite. Certainly whatever the feature is, it has resulted in marked changes in the elevation of depositional basement and has had a strong influence on the nature of the alluvial deposits. Longitudinal sections appended to this report that differentiate between overburden and wash indicate that the fault is most likely to be pre-depositional if in fact a fault does exist.

To the east of the feature the alluvials are developed in a broad relatively more shallow channel some 200 to 250 metres in width and 20 to 30 metres in depth. The channel has a flat to undulating base although a small rise in basement on Sections 4 and 6 has resulted in the tin-bearing channel being split into two sections.

The feature itself appears to have been marked by a pronounced waterfall with a 15 to 20-metre drop down to the west. This has resulted in the development on the western side of the feature of a somewhat narrower and deeper “U” shaped channel. The main channel has a depth of around 35 to 55 metres and is 70 to 100 metres in width and is flanked by shallower slightly lower grade alluvial deposits. West of Section 10 the channel becomes less distance and previous auger drill data suggests that the ancestral stream may occupy several channels west of the drilled resource.

Immediately to the west of the feature the stream has developed a deep pool from which very high grade tin has been reported.

The dominant features of the remaining resource area are:

- ❖ The fault or fracture feature is pre-depositional with elevations on the west at levels of 15 to 20 metres below the east;
- ❖ The stream system flowed from east to west;
- ❖ Above or upstream of the postulated fault feature the stream occupied a broad shallow valley and evidence suggests the stream was well entrenched and meandered across this valley;
- ❖ The tin load in the alluvial system was sourced both from the Mt Cameron Massif and from the source rocks upstream of the Endurance project area;
- ❖ A deep pool at the base of the postulated waterfall acted as a significant alluvial trap and contains high grades in a thickened sequence.

## 7.0 DATA ASSESSMENT

In preparing this Resource Statement as much of the previous exploration data as was available from both within the files of Mineral Holdings and on Open File at the Department of Minerals and Energy, Tasmania was accumulated and assessed.

### 7.1 PREVIOUS EXPLORATION DATA

Early exploration drill results of the Department of Mines (1958, 1968 – 1969) and the Endurance Tin Mining Company (1943) were not available but are believed to be available through “Open File” records at the Department of Mineral Resources in Hobart.

The most reliable data package appears to be the work by B.M.I and Amdex Mining. Detailed logs are available as are various plans depicting drill hole and resource locations.

The most recent and definitive work is that by Amdex in 1980. That group completely recalculated the resource converting all previous “Imperial “ measurements to “Metric” and plotted boundaries of all worked ground. It should be noted however that Amdex continued to plot data in “Imperial” measure and calculated grades “Top to Bottom” or “Whole of Hole” of the drill holes probably because current mining practice at the time was to treat the resource “Top to Bottom”.

The grades used in the Amdex assessment were based on holes drilled by the Department of Mines, Endurance Tin Mining Company and B.M.I. The holes were drilled at 15 metre intervals along lines that varied in separation from 48 to 259 metres. Line spacings average 150 metres. It is unclear from the Amdex work if volumes and grades quoted are “Bank” or “Loose” and a more detailed recalculation of the resource beyond the scope of the reassessment is considered essential to qualify the volume and grade types.

## **7.2 RECENT TESTING AND ASSESSMENT PROGRAMS, YEAR 2001**

In June 2001 Mineral Holdings undertook a program of pitting, bulk sampling and sample treatment at the Monarch Project. Following the success of that program that included a re-assessment of the resource it was decided to briefly review the resource base at the Endurance Project. This involved several on site inspections of the worked areas and included the collection of several alluvial heavy mineral concentrates to determine if valuable accessory minerals also occurred in conjunction with the cassiterite.

An inspection of the Endurance data indicated that the Amdex resource was based on grades averaged "Top to Bottom" of all holes. The resource thus included a substantial volume of barren overburden or "drift". Mineral Holdings in its work at the Monarch had already established that by removing this barren material from the resource calculation it was possible to increase the areal extent of the resource and also increase the volume of contained tin concentrate.

In order to establish if the same procedure would be successful at the Endurance Project three holes were initially selected at random and grades recalculated after deletion of barren surface zones. Intersections and grades in all holes in the western resource area have now been recalculated and while this work requires checking and confirmation it does establish some changes in ore boundaries and in depositional characteristics.

## **7.3 RESULTS OF THE 2001 ASSESSMENT**

Three drill holes were selected at random from the large number of holes available, specifically Holes P118, P127 and P175. All data were converted from "Imperial" to "Metric" and new intersectional grades calculated deleting any barren or low-grade surficial material. This recalculation achieved increases in grade of between 2.4X (Hole P175) to 3.6X (Hole P118). Results appear as Appendix 11.1.

Stripping ratios varied from a low of 2:1 to a high of 2.8:1. Results of this assessment appear as Table 1.

**TABLE 1**  
**ENDURANCE PROJECT**  
**DRILL HOLE RE-ASSESSMENT**

<b>HOLE NUMBER</b>	<b>FROM m</b>	<b>TO m</b>	<b>INTERVAL m</b>	<b>GRADE gm/m<sup>3</sup></b>	<b>PREVIOUS</b>
<b>P118</b>	0	21.43	21.42	O/B	<b>0 – 27.74, 27.74 m at 529.9 gm/m<sup>3</sup></b>
	21.34	28.97	7.63	<b>1,900.5</b>	
<b>P127</b>	0	39.62	39.62	O/B	<b>0 – 56.08, 56.08 m at 262.1 gm/m<sup>3</sup></b>
	39.62	56.08	16.46	<b>892.88</b>	
<b>P 175</b>	0	18.29	18.29	O/B	<b>0 – 26.21, 26.21 m at 58.6 gm/m<sup>3</sup></b>
	18.29	27.43	9.14	<b>142.88</b>	

Whilst the depths of barren overburden appear excessive the thickness of cassiterite bearing wash intervals reduced the stripping ratios to a manageable level of around 2 to 2.8:1. Further the removal of barren intersections brings into play areas along the margins of the Amdex resource that were excluded from the previous calculations. The effect of the inclusion of these areas is an overall increase in the resource base.

It is interesting to note that Amdex included comment in their resource report that many un-sampled intervals were assigned theoretical volumes with zero grades. This methodology would have resulted in an undervaluing of nearly all of the “whole of hole” grades.

The resource is open to the west and further lines of drilling would no doubt extend the resource in a westerly direction, that is, west of the fault. A preliminary recalculation of all intersections including those marginal to the Amdex resource has been now been conducted and forms the basis of this report.

## 8.0 RESOURCE

The resources quoted here include that prepared by Amdex Mining in 1980 and are encompassed in two sections one east and one west of the postulated northwest trending fault.

### 8.1 AMDEX GRADE CALCULATIONS

Grades used by Amdex were based on grades reported in holes drilled by The Department of Mines (1958, 1968 to 1969), by the Endurance Tin Mining Company (1943) and by B.M.I (1971 to 1972). Many of the holes drilled failed to report grades in the upper sections, the overburden or “drift”. Amdex noted that in order to conduct the evaluation the “whole of hole” grades were calculated using only the grades from the sampled section. Un-sampled intervals were assigned theoretical volumes with a zero grade.

Cut-off grade boundaries of 200 gm/m<sup>3</sup> and 100 gm/m<sup>3</sup> proved to be almost coincident and thus Amdex only quote one reserve figure as follows:

6,775,399 m<sup>3</sup> at an average grade of 250.4 g / m<sup>3</sup> of 70% Sn concentrate  
1,672 tonnes of tin concentrate at a 70% Sn content

In the current re-assessment all available logs were evaluated and all “Imperial” measurements converted to “Metric” using the following conversion factors:

- ❖ Lb / y<sup>3</sup> = 37.08 g/m<sup>3</sup>;
- ❖ One Foot = 0.3048 metres.

Drill results were subdivided into + / - 100 g/m<sup>3</sup> intersections, the former representing tin bearing ore horizons, the latter barren or low grade overburden. In addition top to bottom of hole grades were calculated.

## 8.2 AMDEX VOLUME CALCULATIONS

Amdex calculated reserve volumes using the cross-section method. The differences between “Geological” and “Possible” Reserves reflect the application of a mining batter of 60°.

In this instance cross sectional areas were again used and volumes calculated using the Modified Simpson’s Formula. There are a number of areas in which the volume calculations can be improved, specifically:

- ❖ Old data should be digitised and rescaled to new metric scales; and
- ❖ New cross sections and plan sections constructed.

## 8.3 YEAR 2002 ASSESSMENT

All previous data reported in “Imperial” units were converted to “Metric” units. Grade and intersections were selected at a 100 gm / m<sup>3</sup> cut-off grade and along with basement intersections were plotted to section (Sections look east). Average sectional grades were calculated (Weighted averages), these appear on each section. For accurate locations of these data, reference should be made to the report by Amdex, see Bibliography.

While not ideal, volumes of overburden and cassiterite bearing wash horizon were calculated using the Modified Simpson’s Formula. Overburden limits were plotted as “Mining Batter”, assumed to be standing at 30°, although experience elsewhere suggests that steeper batters may be achievable and thus overburden volumes reduced.

## 8.4 ACCESSORY MINERAL CONTENT

Recent test work at the Monarch Prospect and in the lower Ringarooma River on the Great Northern Plains indicates that in addition to cassiterite the alluvial deposits also contain a significant accessory mineral component. In reviewing the resource no effort has been made at this time to quantify the content of accessory minerals present in the basal wash zone.

These minerals include, rutile, zircon, ilmenite, gold, sapphire, the REO's monazite and xenotime and possibly a tantalite/columbite mineral.

While these minerals have been quantified in other resources in the region, resources that have the same mineralogical derivation as the alluvials at the Endurance, their contents at the Endurance remain conjectural. Ample evidence exists to suggest that rutile, zircon and ilmenite occur in grades of 50 to 200 gm/m<sup>3</sup>, gold at 15 mgm/m<sup>3</sup>, REO's in the order of 100 to 200 gm/m<sup>3</sup> and Ta minerals in the order of 1 to 2 gm/m<sup>3</sup>. Substantial quantities of fine blue sapphire has been observed in tin shed tailings and grades of 1 gm/m<sup>3</sup> of gem quality stone are postulated.

**VALUE OF ACCESSORY MINERALS**  
(ASSUMED FROM HISTORICAL AND TESTING DATA)

COMMODITY	ESTIMATED CONTENT	CURRENT VALUE / m <sup>3</sup>
Rutile / Ilmenite As TiO <sub>2</sub>	100 g / m <sup>3</sup>	0.06
Zircon	100 g / m <sup>3</sup>	0.06
Gold	15 mgm / m <sup>3</sup>	0.28
Tantalite	1.5 g / m <sup>3</sup>	0.12
Sapphire	1.5 g/m <sup>3</sup> 20% gem	2.00

## 8.5 RESOURCE EXTENSION AND PROSPECTIVITY

Referring to individual sections, prospectivity is indicated as follows:

- SECTION 1: Auger Holes A115 / 116 not sampled and ore appears to trend northwards toward the massif.
- SECTION 2: Possible channel at location A 101 not tested, extension toward A353 indicated.
- SECTION 3: Area of A 191 & 192 not adequately tested, ore extension to north possible. No holes drilled between A 200 and 202.

- SECTION 4: Possible high grade gutter located at 210, extension to the south possible.
- SECTION 5W: Reliability of old drilling suspect, particularly on the northern edge at 5W / 2 and 5W / 3.
- SECTION 6: Extension possible at location 207.
- SECTION 7: Possible extension to the south.
- SECTION 8: Only two holes drilled on this section large increases in volume and grade probable.
- SECTION 9: No results for the 20W series holes at this time, prospectivity to north and south.
- SECTION 10: Section open at A 146, extensions possible.
- SECTION !!: Not drilled but included here to show how the channel changes to the west becoming more broad with several distinct prospective deep channels. Stream system may bifurcate at this point.

Further this assessment of previous data indicates possible extensions to the resource base by:

- ❖ Location of the remaining missing data;
- ❖ Drill extensions to sections that terminate in +100 g/m<sup>3</sup> ore;
- ❖ Drill new infill lines as:
  - Section 1A (Between Section Line 1 and 2);
  - Two longitudinal Sections across the postulated fault;

## 9.0 RESOURCE STATEMENT

### 9.1 AMDEX RESOURCE

Amdex quote two different resources, specifically:

#### GEOLOGICAL RESOURCE

AREA	CLASS	CUT-OFF GRADE (gm/m <sup>3</sup> SnO <sub>2</sub> )	VOLUME m <sup>3</sup>	Wt.Av. Grade gm/m <sup>3</sup> SnO <sub>2</sub>	CONTAINED SnO <sub>2</sub> tonnes
East of Fault  Top 18.3 m	Probable	200 / 100	3,265,710	237.6	776
	Probable	200 / 100		37.4	81
West of Fault	Probable	200 / 100	2,171,675	343.5	746
				48.3	69
<b>TOTAL</b>			<b>5,437,385</b>	<b>307.5</b>	<b>1,672</b>

While slope stability at the Endurance is not known, Amdex applied the effect of batter on the geological reserves the probable mine reserves have been recalculated using a batter angle of 60°.

#### POSSIBLE MINING RESERVES

AREA	CLASS	CUT-OFF GRADE (gm/m <sup>3</sup> SnO <sub>2</sub> )	VOLUME m <sup>3</sup>	Wt.Av. Grade gm/m <sup>3</sup> SnO <sub>2</sub>	CONTAINED SnO <sub>2</sub> tonnes
East of Fault	Possible	200 / 100	3,701,700	236.1	838
West of Fault	Possible	200 / 100	3,073,699	279.3	858
<b>TOTAL</b>			<b>6,775,399</b>	<b>250.4</b>	<b>1,692</b>

## 9.2 CURRENT REASSESSMENT

Two resources have been developed, both are considered to be “Measured resources” using the current AusIMM, JORC Code, specifically:

❖ **OVERBURDEN INCLUDED**

10,245,828 m<sup>3</sup> at an average grade of 242.10 g/m<sup>3</sup> of 70% Sn concentrate or 2,480 tonnes of 70% tin concentrate.

❖ **OVERBURDEN EXCLUDED**

1,912,581 m<sup>3</sup> at an average grade of 1,080.56 g/m<sup>3</sup> of 70% Sn concentrate or 2,067 tonnes of 70% Sn concentrate.

This resource is overlain by 8,314,751 m<sup>3</sup> of barren to low grade overburden resulting in a stripping ratio of 4.35:1.

## 10.0 CONCLUSIONS

A preliminary recalculation of the Endurance Ore Resource indicates that the deletion of overburden from the resource results in dramatically increased grades and an increase in the quantity of contained tin concentrate from 1,692 tonnes to 2,480 tonnes.

### COMPARISON OF RESOURCE CALCULATIONS OVERBURDEN INCLUSIVE

ITEM	AMDEX	CURRENT	COMMENT
VOLUME	6,775, 399 m <sup>3</sup>	10,245,828 m <sup>3</sup>	Increase in area of resource and recognition of continuity across the fault feature rather than dislocation of the deposit
GRADE	250.4 g/m <sup>3</sup>	242.10 g/m <sup>3</sup>	Slight decrease in grade due to inclusion of lower grade peripheral results
CONCENTRATE VOLUME	1,692 tonnes	2,480 tonnes	Increase in content due in main to increased volume.
PROSPECTIVITY			Better definition of current resource boundaries and drilling out of western extension could increase total contained tin concentrate to 2,500 to 3,000 tonnes
ACCESSORY MINERALS	NIL	Ti, Zr, Ta, Au, Sapphire	Estimated if values substantiated to add Aus \$2.52 / m <sup>3</sup> to the value of the deposit .

**COMPARISON OF RESOURCE CALCULATIONS  
OVERBURDEN EXCLUSIVE**

ITEM	AMDEX	CURRENT	COMMENT
VOLUME	6,775, 399 m <sup>3</sup> Inclusive of O/B	1,912,581 m <sup>3</sup>	Increase in lateral area of resource and recognition of continuity across the fault feature rather than dislocation of the deposit
GRADE	250.4 g/m <sup>3</sup>	1,080.56 g/m <sup>3</sup>	4.2 X increase in grade due to exclusion of lower grade or barren overburden
VALUE / m <sup>3</sup>	\$1.46 / m <sup>3</sup>	\$6.33 / m <sup>3</sup>	
CONCENTRATE VOLUME	1,692 tonnes	2,067 tonnes	Increase due to increased volume in peripheral zones of lower than the average grade.
OVERBURDEN	Nil	8,314,751 m <sup>3</sup>	Stripping ratio of 4.35: 1
PROSPECTIVITY			Better definition of current resource boundaries and drilling out of western extension could increase total contained tin concentrate to 2,500 to 3,000 tonnes
ACCESSORY MINERALS	NIL	Ti, Zr, Ta, Au, Sapphire	Estimated if values substantiated to add Aus \$2.52 / m <sup>3</sup> to the value of the deposit .

In addition further drilling of the resource to the west, the area currently deemed to be “Open” would also probably see additional volumes at grades similar to those already reported. The effect of these additional programs, will, it is felt, increase the contained content of cassiterite concentrate in the resource by some 20% to 50%.

Clearly some work remains to be done on the Endurance Project to up-grade and increase the resource. This work should include quantitative testing for accessory minerals.

## **11.0 BIBLIOGRAPHY**

NEALE, T. I. 1980

Ore Reserves of Alluvial Tin Deposits in North-eastern Tasmania.

Amdex Mining Limited.

## **12.0 APPENDICES**

### **APPENDIX I - DRILL LOG RECALCULATION SHEETS**

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002

SECTION LINE 1

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A 115	71.93	27.13	27.13						
A 116	71.69	26.21	26.21						
A 117	71.72	23.47	23.47						
P 116	71.90	24.69	24.69	15.20	375.29	21.34	3.65	572.25	2,088.71
P 152	71.80	24.69	25.91	25.91	187.25	21.34	5.17	819.34	4,235.99
P 117	71.81	26.21	26.21	212.84	5,578.54	21.34	6.10	864.80	5,275.28
P 153	71.75	26.21	26.21	499.10	13,081.41	21.34	6.10	2,117.28	12,915.41
P 118	71.84	27.74	27.74	529.87	14,698.59	21.34	6.10	2,359.59	14,393.50
P 154	72.69	32.61	32.31	229.53	7,416.11	22.86	12.19	933.09	11,374.37
P 119	72.66	27.43	27.74	305.17	8,465.42	24.38	3.05	2,302.85	7,023.69
P 155	72.66	26.82	26.82	109.89	2,947.25	24.38	2.44	1,097.14	2,677.02
P 120	72.79	28.96	29.26	122.99	3,598.69	24.38	4.58	432.10	1,979.02
P156	72.97	26.21	26.21	48.95	1,282.98	24.38	3.05	296.09	903.07
P 121	73.12	29.26	29.26	193.93	5,674.39	25.91	4.27	1,034.33	4,416.59
P 157	73.18	27.43	27.74	24.47	678.80	25.91	0.30	139.05	41.72
P 122	73.37	29.26	29.26	417.15	12,205.81	24.38	6.10	943.60	5,755.96
P 158	73.49	22.40	22.40	11.12	249.09	22.40			
P 141	73.61	23.16	23.16	11.49	266.11	23.16			
A 125	73.70	27.74	27.74						
P 219	73.76	22.86	22.86	7.05	161.16	22.86			
A 126	73.85	25.60	25.60						
P 220	73.79	22.86	22.86						
A 127	73.82	24.99	24.99						
A 128	73.76	25.91	25.91						
A 129	73.49	20.73	20.73						
A 130	73.21	24.69	24.69						
<b>TOTALS</b>			334.67		75,815.24	303.28	63.10		73,080.33
			<b>27.89</b>	<b>226.54</b>		<b>23.33</b>	<b>4.85</b>	<b>1,158.17</b>	

STRIPPING RATIO 4.81 : 1

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

SECTION LINE 1A

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 159	71.20								
P 160	71.01								
P 161	71.01								
P 162	71.14								
P 163	71.08		THIS LINE NOT DRILLED						
P 164	71.11								
P 165	71.23								
P 166	71.29								
P 167	71.20								
P 168	71.17								
<b>TOTALS</b>									
<b>STRIPPING RATIO</b>									

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002

SECTION LINE 2

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A 353	72.79	25.60	25.60						
P 137	72.48	22.86	23.16	84.54	1,957.95	10.67	3.05	618.13	1,885.30
A 101	72.18	NTB	31.85						
P 136	71.87	24.38	24.38						
P 169	71.57	24.69	24.69	75.27	1,858.42	21.34	4.57	370.56	1,693.46
P 110	71.26	24.69	24.69	61.55	1,519.67	22.86	3.05	469.25	1,431.21
P 170	71.29	25.91	26.21	14.09	369.30	24.38	1.52	115.69	175.85
P 111	71.20	27.43	26.67	239.17	6,378.66	22.86	4.57	1,367.88	6,251.21
P 171	71.14	26.82	26.82	368.58	9,885.32	22.86	4.57	1,602.84	7,324.98
P 112	71.14	26.21	26.21	114.21	2,993.44	24.38	3.05	883.81	2,695.62
P 172	71.14	26.21	26.21	1,068.27	27,999.36	22.86	6.10	4,576.14	27,914.45
P 113	71.08	28.96	28.96	690.80	20,005.57	22.86	6.10	3,135.21	19,124.78
P 173	70.99	27.43	27.43	37.45	1,027.25	24.38	4.58	188.24	862.14
P 114	70.99	27.74	27.74	41.53	1,152.04	24.38	3.05	326.35	995.37
P 174	71.01	27.74	27.74	103.82	2,879.97	24.38	4.58	565.22	2,588.71
P 115	70.96	26.82	26.82	211.73	5,678.60	22.86	5.79	1,353.26	7,835.38
P 175	71.26	25.91	26.21	58.58	1,535.38	24.38	1.52	736.78	1,119.91
P 140	71.20	27.13	27.13	325.93	8,842.48	22.86	4.27	1,245.95	5,320.21
A 109	71.14	44.81	44.81						
P 221	71.17	24.08	24.38	13.72	334.49	24.08			
A 110	71.20	43.28	43.28						
P 222	71.20	19.81	19.81	11.49	227.62	19.81			
A 111	71.20	38.71	38.71						
A 112	71.29	27.13	27.13						
A 113	71.26	27.43	27.43						
A 114	71.20	24.99	24.99						
A 162	71.23	24.69	24.69						
A 163	71.66	17.68	17.68						
A 164	71.81	21.95	21.95						
A 165	72.08	17.68	17.68						
A 166	72.30	8.08	8.08						
A 167	72.60	14.33	14.33						
A 168	71.81	20.42	20.42						
A 169	72.30	30.33	30.33						
A 170	72.39	35.97	35.97						
A 171	72.60	41.45	41.45						
<b>TOTALS</b>			297.94		88,378.07	338.31	60.37		87,218.56
			<b>27.09</b>	<b>296.63</b>		<b>22.55</b>	<b>4.02</b>	<b>1,444.73</b>	
<b>STRIPPING RATIO</b>								<b>5.61 : 1</b>	

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002

SECTION LINE 3

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A 191	71.57	19.20	19.20						
A 192	71.34	20.73	20.73						
P 177	71.32	26.21	26.21	75.64	1,982.52	24.38	3.04	620.72	1,886.99
P 178	71.34	26.21	25.91	499.46	12,941.01	22.86	4.57	2,776.68	12,689.43
P 179	71.20	26.21	26.21	14.83	388.72	24.38	4.58	465.35	2,131.30
P 180	71.23	29.26	29.26	893.63	26,147.61	24.38	6.10	4,252.99	25,943.24
P 181	71.27	28.65	28.65	96.41	2,762.15	22.86	7.01	318.68	2,233.95
P 182	71.30	28.04	28.65	31.14	892.16	25.91	2.44	192.45	469.58
P 183	71.35	27.74	28.04	24.84	696.51	25.91	1.67	182.36	304.54
P 142	71.26	27.43	28.65	45.98	1,317.33	22.86	4.27	197.81	844.65
R6	71.32	NO DATA							
P 184	71.60	28.35	28.35	104.57	2,964.56	25.91	3.05	588.65	1,795.38
R5	71.54	NO DATA							
P 143	71.54	27.74	27.74	104.94	2,911.04	24.38	4.58	556.57	2,549.09
P 186	71.78	30.78	28.65	148.32	4,249.37	24.38	7.17	498.51	3,574.32
P 144	71.60	29.26	29.26	78.24	2,289.30	25.91	3.05	630.59	1,923.30
P 187	71.78	27.43	27.43	276.10	7,573.42	24.38	4.88	1,475.88	7,202.29
P 188	71.87	27.43	27.43	132.00	3,620.76	25.91	3.66	556.87	2,038.14
A 200	71.96	24.08	24.08						
A 201	72.12	25.91	25.91						
A 202	72.05	26.82	26.82						
A 203	71.87	23.47	23.47						
A 204	72.05	19.51	19.51						
A 205	72.21	17.98	17.98						
A 206	72.42	15.24	15.24						
A 207	72.76	NTB	29.26						
A 208	72.51	21.95	21.95						
A 209	72.42	15.24	15.24						
<b>TOTALS</b>			364.23		68,753.94	344.41	60.07		65,586.20
			<b>28.02</b>	<b>188.76</b>		<b>24.60</b>	<b>4.29</b>	<b>1,091.83</b>	
<b>STRIPPING RATIO</b>								<b>5.73 : 1</b>	

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

SECTION LINE R1

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 159		<b>NOT DRILLED</b>							
R 23	71.20	<b>NO DATA</b>							
R 22	71.01	<b>NO DATA</b>							
R 21	71.11	<b>NO DATA</b>							
R 20	71.11	<b>NO DATA</b>							
<b>TOTALS</b>			0.00		0.00	0.00	0.00		0.00
			<b>0.00</b>			<b>0.00</b>	<b>0.00</b>		
<b>STRIPPING RATIO</b>									

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002  
SECTION LINE R WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
R 14		NO DATA							
R 13		NO DATA							
R 12		NO DATA							
R 11		NO DATA							
R 10		NO DATA							
R 9		NO DATA							
R 8		NO DATA							
R 7		NO DATA							
R 6		NO DATA							
P 184	71.60	28.35	28.35	104.57	2,964.56	25.91	3.05	588.65	1,795.38
R 5		NO DATA							
P 143	71.54	27.74	27.74	104.94	2,911.04	24.38	4.58	556.57	2,549.09
P 186	71.72	30.78	28.65	148.32	4,249.37	24.38	7.17	498.51	3,574.32
R 4		NO DATA							
R 3		NO DATA							
R 2		NO DATA							
R 1		NO DATA							
R1		NO DATA							
R 15		NO DATA							
R 16		NO DATA							
R 17		NO DATA							
R 18		NO DATA							
R 19		NO DATA							
A 211	73.18	23.47	23.47						
<b>INSUFFICIENT DATA TO UTILISE SECTION IN RESOURCE CALCULATION</b>									
<b>TOTALS</b>			84.74		10,124.96	74.67	14.80		7,918.79
			<b>28.25</b>	<b>119.48</b>		<b>24.89</b>	<b>4.93</b>	<b>535.05</b>	
<b>STRIPPING RATIO</b>									

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

SECTION LINE 2W

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
2W / 1	73.09	NTB	9.10			9.10			
2W / 4	71.93	24.38	24.38			24.38			
2W / 5	71.87	26.82	26.82			26.82			
2W / 7	71.89	30.48	30.48	74.16		27.43	3.05	713.79	2,177.06
2W / 8	71.90	30.48	30.48	18.54	565.10	27.43	1.52	289.22	439.61
2W / 9	72.02	30.48	30.48	27.81	847.65	27.43	3.05	263.27	802.97
<b>TOTALS</b>			60.96		1,412.75	82.29	7.62		3,419.65
			<b>30.48</b>	<b>23.18</b>		<b>27.43</b>	<b>2.54</b>	<b>448.77</b>	
<b>STRIPPING RATIO</b>								<b>10.78 : 1</b>	

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

SECTION LINE 4

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 229	72.02	26.82	26.82	18.17	487.32	25.91	1.52	146.84	223.20
P 217	71.99	28.04	28.04	21.51	603.14	24.38	1.52	124.96	189.94
P 228	72.05	28.65	28.65	10.75	307.99	28.65			
P 218	72.18	29.57	29.57	10.75	317.88	29.57			
P 227	72.21	29.57	29.57	11.12	328.82	25.91	1.52	114.21	173.60
P 101	72.21	30.48	30.78	118.66	3,652.35	25.91	4.57	229.16	1,047.26
P 226	72.21	31.39	31.09	371.17	11,539.68	27.43	4.57	2,474.47	11,308.33
P 102	72.24	29.87	30.18	16.69	503.70	27.43	3.04	136.83	415.96
P 225	72.30	29.57	29.57	17.06	504.46	28.96	1.52	149.43	227.13
P 103	72.33	30.48	30.78	135.34	4,165.77	27.43	3.04	427.54	1,299.72
P 224	72.45	28.96	28.96	34.86	1,009.55	27.43	3.04	210.62	640.28
P 104	72.69	30.78	32.00	16.69	534.08	27.43	4.57	149.31	682.35
P 223	72.66	32.00	32.00	22.62	723.84	27.43	3.04	168.35	511.78
P 105	72.69	31.09	31.39	1.48	46.46	31.09			
P 190	72.54	28.97	29.26	28.18	824.55	27.43	1.52	145.35	220.93
P 106	73.03	32.00	33.53	251.03	8,417.04	25.91	6.40	683.83	4,376.51
P 191	72.98	NOT DRILLED							
P 107	72.94	30.78	30.78	237.31	7304.40	27.43	4.57	1,216.78	5,560.68
P 139	72.85	28.96	28.96	10.01	289.89	28.96			
A 210	73.15	36.27	36.27						
A 211	73.18	23.47	23.47						
A 212	73.03	16.46	16.46						
A 213	72.94	19.81	19.81						
A 214	73.00	16.46	16.46						
A 215	72.84	NOT DRILLED							
A 216	72.88	18.29	18.29						
A 217	72.94	29.26	29.26						
A 218	73.06	36.58	36.58						
A 219	74.49	38.10	38.10						
A 220	75.50	41.45	41.45						
A 221	75.99	43.28	43.28						
A 222	75.90	40.84	40.84						
A 223	75.83	39.62	39.62						
A 224	75.16	41.15	41.15						
A 225	74.25	40.54	40.54						
A 226	72.36	41.15	41.15						
<b>TOTALS</b>			214.58		18,981.07	357.22	41.40		26,464.55
			<b>30.65</b>	<b>88.46</b>		<b>27.48</b>	<b>3.45</b>	<b>639.24</b>	
<b>STRIPPING RATIO</b>								<b>7.97 : 1</b>	

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002

SECTION LINE 5W

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A 161	73.94	34.14	34.14						
P 138	73.55	28.04	28.04	4.08	114.40	28.04			
P 210	72.54	32.00	<b>NOT DRILLED</b>						
5W / 4	72.27	29.87				29.87		NS?	
5W / 3	72.27	31.39				31.39		NS?	
P 210	72.42	32.00	<b>? Duplicate number on location map</b>						
5W / 2	72.42	30.05				30.05		NS?	
5W / 1	72.51	30.05	30.05	0.00	0.00	30.05		<b>NS?</b>	
5W / 11	72.69	35.05	35.05	559.91	19,624.85	28.96	6.10	3,137.90	19,141.19
5W / 12	72.94	32.00	33.53	88.99	2,983.83	28.96	3.05	889.92	2,714.26
5W / 13	73.06	33.52	33.52	189.11	6,338.97	30.05	3.05	1,904.06	5,807.38
5W / 14	73.18	35.05	36.58	318.89	11,665.00	29.57	5.49	1,577.41	8,659.98
5W / 15	73.37	35.05	36.58	40.79		30.48	3.05	457.94	1,396.72
5W / 16	73.33	33.53	28.96	81.58		28.96	4.57	587.10	2,683.05
5W / 17	73.43	30.05	30.05	18.54		27.43	3.05	181.69	554.15
5W / 18	73.43	28.96	28.96	7.42					
5W / 19	73.94	21.33							
<b>TOTALS</b>			168.73		40,612.64	204.41	28.36		40,956.73
			<b>33.75</b>	<b>240.70</b>		<b>29.20</b>	<b>4.05</b>	<b>1,444.17</b>	
<b>STRIPPING RATIO</b>								<b>7.21 : 1</b>	

### ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance                      TENEMENT: E.L 11/2000                      DATE: 20/09/2002

SECTION LINE 6                      WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 207	72.85	33.83	33.83	62.29	2,107.27	30.48	4.57	397.00	1,814.29
P 192	72.82	32.00	32.00	42.64	1,364.48	28.96	3.04	211.20	642.05
P 193	72.23	32.00	32.00	73.80	2,361.60	28.96	3.04	667.10	2,027.98
P 194	73.61	35.05	35.05	645.60	22,628.28	28.96	6.09	6,366.10	38,769.55
P 195	72.97	32.00	32.00	179.80	5,753.60	27.43	7.62	708.52	5,398.92
P 196	73.12	32.00	32.00	107.20	3,430.40	28.96	4.57	682.40	3,118.57
P 197	73.18	32.00	32.00	32.26	1,032.32	32.00			
P 198	73.33	32.31	32.31	73.79	2,384.15	28.96	6.09	337.90	2,057.81
P 199	73.27	32.00	32.31	90.10	2,911.13	30.48	6.09	493.87	3,007.67
P 200	73.33	32.00	32.00	142.39	4,556.48	28.86	4.57	882.10	4,031.20
P 201	73.40	32.00	32.31	25.58	826.49	30.48	1.52	298.86	454.27
5W / 16	73.33	33.53	33.53	81.58	2,735.38	28.96	4.57	587.10	2,683.05
5W / 17	73.43	30.48	30.48	18.54		27.43	3.05	181.69	554.15
5W / 18	73.61	28.96	28.96	7.42					
5W / 19	73.94	21.33				21.33			
<b>TOTALS</b>			227.67		42,696.37	380.92	54.82		64,559.51
			<b>32.52</b>	<b>187.54</b>		<b>29.30</b>	<b>4.57</b>	<b>1,177.66</b>	
<b>STRIPPING RATIO</b>								<b>6.41 : 1</b>	

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**
**PROJECT:** Endurance      **TENEMENT:** E.L 11/2000      **DATE:** 20/09/2002

SECTION LINE 7

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 108	73.67	35.97	35.97						
10W / 7	73.55	36.58	36.58	192.82	7,053.36	32.00	4.57	1,554.89	7,105.85
10W / 6	73.37	45.72	45.72	259.56	11,867.08	32.00	13.72	835.54	11,463.61
10W / 5	73.30	46.33	46.33	734.18	34,014.56	33.53	12.80	2,542.88	32,548.86
10W / 4	73.24	48.77	48.77	571.03	27,849.13	30.48	18.29	1,485.36	27,167.23
P 202	73.23	<b>NOT DRILLED</b>							
10W / 3	73.22	48.77	48.77	889.92	43,401.40	30.48	18.28	2,504.32	45,778.97
10W / 2	73.33	47.24	42.67	326.30	13,923.22	27.43	15.24	928.22	14,146.07
10W / 1	73.49	39.62	39.62			39.62	NOT CALCULATED ON LOG		
P 109	73.49	NTB	42.67	1.48	63.15	42.67	0.00	0.00	0.00
A 174	73.73	44.81	44.81						
P 135	73.76	35.40	35.40	119.00	4,212.60	30.48	6.10	650.40	3,967.44
A 175	73.82	42.37	42.37						
P 134	73.88	32.00	32.00	48.20	1,542.40	30.48	1.52	618.10	939.51
A 176	73.94	32.92	32.92						
A 177	73.97	32.92	32.92						
A 178	74.28	24.08	24.08						
A 179	74.13	25.60	25.60						
A 180	76.05	22.56	22.56						
<b>TOTALS</b>			268.84		138,108.75	329.17	90.52		143,117.55
			<b>44.81</b>	<b>513.72</b>		<b>32.92</b>	<b>11.32</b>	<b>1,581.06</b>	
<b>STRIPPING RATIO</b>								<b>3.64 : 1</b>	

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance TENEMENT: E.L 11/2000 DATE: 20/09/2002

SECTION LINE 8

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
P 145	74.61	NOT DRILLED							
P 124	74.77	36.88	36.88	211.36	7,794.96	32.00	6.10	1,204.64	7,348.30
P 211	74.86	NOT DRILLED							
P 212	74.55	NOT DRILLED							
P 123	74.55	52.40	52.40	342.99	17,972.68	33.53	19.81	883.19	17,495.99
P 213	74.52	NOT DRILLED							
P146	74.62	NOT DRILLED							
P 214	74.52	NOT DRILLED							
P 147	74.55	NOT DRILLED							
P 215	74.37	NOT DRILLED							
<b>TOTALS</b>			89.28		25,767.63	65.53	25.91		24,844.30
			44.64	288.62		32.77	12.96	958.87	
<b>STRIPPING RATIO</b>								<b>2.5 : 1</b>	

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**
**PROJECT:** Endurance      **TENEMENT:** E.L 11/2000      **DATE:** 20/09/2002

SECTION LINE 9

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
20W / 5	75.60								
P 216	75.90	33.83	33.83	62.30	2,107.61	30.48	4.57	397.00	1,814.29
20W / 4	75.90								
20W / 6	75.80								
20W / 3	75.80								
P 133	75.50	50.60	50.60	108.85	5,507.81	47.24	4.88	856.80	4,181.18
20W / 2	75.60								
P 132	75.50	47.55	48.16	46.70	2,249.07	44.20	3.96	133.59	529.02
P 131	75.50	42.37	42.37	23.38	990.61	41.15	1.52	263.27	400.17
20W / 1	75.70								
A 354	76.32	44.20	44.20						
A 355	76.70	48.46	48.46						
A 356	77.47	45.72	45.72						
A 357	78.46	45.72	45.72						
A 358	79.20	48.16	48.16						
A 359	80.04	33.83	33.83						
A 360	80.30								
A 361	80.90	34.14	34.14						
A 362	81.40	34.14	34.14						
A 363	81.70	33.53	33.53						
<b>TOTALS</b>			84.43		7,615.42	163.07	14.93		6,924.66
			42.22	90.20		40.77	3.73	463.81	
<b>STRIPPING RATIO</b>								<b>10.9 : 1</b>	

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**ALLUVIAL DRILL HOLE RESULT SUMMARY**
**PROJECT:** Endurance      **TENEMENT:** E.L 11/2000      **DATE:** 20/09/2002

SECTION LINE 10

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A 145	75.77	29.26	29.26						
A 146	76.84	33.22	33.22						
A 147	77.14	36.58	36.58						
P 125	76.90	40.50	40.80	22.20	905.76	35.05	4.57	176.00	804.32
A 148	76.50	39.32	39.32						
P 126	76.50	46.94	46.63	133.49	6,224.64	36.58	10.66	577.86	6,159.99
A 149	76.78	40.23	40.23						
P 127	77.40	59.74	53.60	253.92	13,610.11	36.62	19.46	734.74	14,298.04
A 150	77.90	45.72	45.72						
P 128	78.20	53.60	53.60	98.60	5,284.96	41.15	12.49	239.48	2,991.11
A 151	78.30	48.46	48.46						
P 129	78.60	50.30	50.30	34.90	1,755.47	42.67	7.62	201.90	1,538.48
A 152	78.94	46.63	46.63						
P 130	79.00	47.55	47.55	3.71					
A 153	79.10	45.11	45.11						
A 154	80.00	42.37	42.37						
A 155	80.62	41.76	41.76						
A 156	81.10	32.31	32.31						
A 157	81.84	29.87	29.87						
A 158	82.54	33.53	33.53						
A 159	83.03	30.48	30.48						
A 160	80.86	26.82	26.82						
<b>TOTALS</b>			239.78		25,119.71	192.07	54.80		25,791.93
			<b>47.96</b>	<b>163.30</b>		<b>38.41</b>	<b>10.96</b>	<b>470.66</b>	
<b>STRIPPING RATIO</b>								<b>3.50 : 1</b>	

## ALLUVIAL DRILL HOLE RESULT SUMMARY

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

SECTION LINE 11

WESTERN RESOURCE

HOLE NUMBER	R.L. m	BASEMENT	ORIGINAL DATA			RECALCULATION			
			DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G	DEPTH O/B m	DEPTH WASH m	GRADE WASH g / m <sup>3</sup>	WEIGHTED D X G
A190	77.42	28.35	28.35						
A189	78.36	33.53	33.53						
A188	78.52	42.67	42.67						
A187	78.94	42.37	42.37						
A186	79.49	36.27	36.27						
A185	80.68	40.54	40.54						
A184	82.36	45.11	45.11						
A183	83.36	48.77	48.77						
A182	83.48	55.78	55.78						
A181	83.42	46.94	46.94						
A241	83.42	49.99	49.99						
A242	83.42	44.50	44.50						
A243	83.70	30.48	30.48						
A244	84.25	29.26	29.26						
A245	84.40	29.26	29.26						
A246	83.94	28.65	28.65						
A247	84.22	29.26	29.26						
<b>TOTALS</b>			485.55						
			40.46						
<b>STRIPPING RATIO</b>									

**APPENDIX II - RESOURCE CALCULATION SHEETS**

## ORE RESOURCE CALCULATION SHEET

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

OVERBURDEN INCLUSIVE

WESTERN RESOURCE

SECTION NUMBER	ORIGINAL DATA						
	AVERAGE	SEPARATION m	SECTIONAL AREA m <sup>2</sup>	AVERAGE GRADE g / m <sup>3</sup>	WEIGHTED A X G	VOLUME m <sup>3</sup>	WEIGHTED GRADE g / m <sup>3</sup>
0			0.00	226.54	0.00		
0 - 1	Average	60		226.54		132,000	29,903,280
1			6,600	226.54	1,495,164		
1 - 2	Average	260		262.91		1,783,173	468,819,739
2			7,120	296.63	2,112,006		
2 - 3	Average	177		241.75		1,282,741	310,097,791
3			7,375	188.76	1,392,105		
3 - 4	Average	122		137.92		912,287	125,821,957
4			7,581	88.46	670,615		
4 - 5W	Average	60		240.70		414,908	99,868,397
5W			6,270	240.70	1,509,189		
5W - 6	Average	40		145.96		331,508	48,387,946
6			10,485	187.54	1,966,357		
6 - 7	Average	100		349.10		1,038,735	362,621,460
7			10,290	513.72	5,286,179		
7 - 8	Average	150		423.05		1,284,030	543,212,575
8			6,940	288.62	2,003,023		
8 - 9	Average	180		187.24		1,276,998	239,108,529
9			7,250	90.20	653,950		
9 - 10	Average	150		132.59		1,288,947	170,907,490
10			10,010	163.30	1,634,633		
10 - 11	Average	150		163.30		500,500	81,731,650
11			0	163.30	0.00		
TOTAL							2,480,480,814
AVERAGES				242.10		10,245,828	

CONTAINED TIN CONCENTRATE

2,480 tonnes

PREVIOUS RESOURCE

250.4

6,775,399

CONTAINED TIN CONCENTRATE

1,697

tonnes

## ORE RESOURCE CALCULATION SHEET

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

OVERBURDEN ONLY

WESTERN RESOURCE

SECTION NUMBER	RECALCULATED DATA						
	AVERAGE	SEPARATION m	SECTIONAL AREA m <sup>2</sup>	AVERAGE GRADE g / m <sup>3</sup>	WEIGHTED A X G	VOLUME m <sup>3</sup>	WEIGHTED GRADE g / m <sup>3</sup>
0			0.00				
0 - 1	Average	60				107,000	
1			5,350				
1 - 2	Average	260				1,428,534	
2			5,640				
2 - 3	Average	177				1,003,144	
3			5,695				
3 - 4	Average	122				752,352	
4			6,651				
4 - 5W	Average	60				328,868	
5W			5,270				
5W - 6	Average	40				318,018	
6			9,325				
6 - 7	Average	100				839,595	
7			7,500				
7 - 8	Average	150				958,425	
8			5,340				
8 - 9	Average	180				1,063,891	
9			6,500				
9 - 10	Average	150				1,102,923	
10			8,240				
10 - 11	Average	150				412,000	
11			0				
TOTAL							
AVERAGES						8,314,751	

## ORE RESOURCE CALCULATION SHEET

PROJECT: Endurance

TENEMENT: E.L 11/2000

DATE: 20/09/2002

WASH ONLY

WESTERN RESOURCE

SECTION NUMBER	RECALCULATED DATA						
	AVERAGE	SEPARATION m	SECTIONAL AREA m <sup>2</sup>	AVERAGE GRADE g / m <sup>3</sup>	WEIGHTED A X G	VOLUME m <sup>3</sup>	WEIGHTED GRADE g / m <sup>3</sup>
0			0.00	1,158.17	0.00		
0 - 1	Average	60		226.54		25,000	5,663,500
1			1,250	1,158.17	1,447,713		
1 - 2	Average	260		1,313.52		354,479	465,616,225
2			1,480	1,444.73	2,138,200		
2 - 3	Average	177		1,257.11		279,473	351,329,070
3			1,680	1,091.83	1,834,274		
3 - 4	Average	122		930.56		156,972	146,071,952
4			930	639.24	594,493		
4 - 5W	Average	60		1,223.30		57,887	70,813,545
5W			1,000	1,444.17	1,444,170		
5W - 6	Average	40		938.08		43,160	40,487,772
6			1,160	1,177.66	1,366,086		
6 - 7	Average	100		1,462.59		191,633	280,281,590
7			2,790	1,581.06	4,411,157		
7 - 8	Average	150		1,354.29		325,141	440,336,278
8			1,600	958.87	1,534,192		
8 - 9	Average	180		800.87		206,727	165,561,658
9			750	463.81	347,858		
9 - 10	Average	150		468.62		183,609	86,042,899
10			1,770	470.66	833,068		
10 - 11	Average	150		163.30		88,500	14,452,050
11			0	470.66	0.00		
TOTAL							2,066,656,538
AVERAGES				1,080.56		1,912,581	

CONTAINED TIN CONCENTRATE

2,067 tonnes

PREVIOUS RESOURCE

250.4

6,775,399

CONTAINED TIN CONCENTRATE

1,697 tonnes