MINERAL HOLDINGS AUSTRALIA PTY., LIMITED

ASSESSMENT

GREAT NORTHERN PLAINS PROJECT

NORTH EAST TASMANIA

PREPARED FOR:

Mineral Holdings Australia Pty., Limited

DATE PREPARED:

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PREPARED BY:

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EXECUTIVE SUMMARY

Mineral Holdings Australia Pty., Limited have, over the past fifteen years, aggregated together, under exploration tenement tenure, a tract of country encompassing what possibly constitutes the largest remaining un-worked, economic alluvial tin deposit in Australia.

The deposits, located in northeastern Tasmania, are centred on the alluvial train now represented by the Ringarooma River and its tributaries and a large marine area offshore in Bass Strait. Included within the tenements are the major marine and terrestrial alluvial deposits of the Lower Ringarooma River including Aberfoyle, Delta, McGregor's, Taylor's, Wanex, Scotia and Great Northern Plains Project areas that encompass resources and deposits having the potential to yield a total resource of around 23,000 tonnes of cassiterite concentrate. Included within this area of prospectivity are drilled resources of some 41.8 million cubic metres at average grades of around 199 grams/cubic meter of cassiterite.

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Elsewhere within the Mineral Holdings tenements significant drilled resources have been defined offshore and at the Monarch, Endurance and Pioneer project areas, and at the Dorset Flats and Wyniford River. Other highly prospective areas have been defined in the St Helens region, and in the Weld and George River alluvial systems.

Over the past two years Mineral Holdings have continued to assess the resource base of several of the tenements and in particular the major resources contained within the Great Northern Plains. As a result of those works Mineral Holdings have confirmed, that in addition to the cassiterite, the alluvial deposits also contain a significant assemblage of valuable accessory minerals, specifically, zircon, rutile, chromiferous ilmenite and gold. Recent test work has substantiated the presence of a significant pale to mid blue gem sapphire component. Previously reported Ta / Nb results have also been confirmed and the presence of tantalite locked in cassiterite and possibly as free discrete particles in magnetic fractions of the tin concentrates has also helped enhance the value of the deposits.

The prospectivity of the project, over and above the known resource base, can be further defined and enhanced by a thorough and ongoing assessment of the massive database of information available within the Mineral Holdings and Mineral Resources Tasmania archival systems. Subject to further work the author is of the opinion that the deposits have the potential to yield a resource base of in the order of 60,000 to 100,000 tonnes of tin concentrate.

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LIST OF PLANS

1 INTRODUCTION

This report is intended to provide an alternative geological view of the general setting of the cassiterite bearing deposits of the Great Northern Plain (GNP). In preparing the data I have looked closely at the regional setting and more specifically how the geomorphology of northeastern Tasmania during post Triassic times has controlled the location, emplacement and overall grades of the cassiterite bearing deposits. Previously described as alluvial, the blanket type deposits of the GNP are almost certainly of estuarine origin while the peripheral zones such as the "Eastern" and perhaps "Braithwaites" zones exhibit features of strand line or reworked near-shore marine deposits. Gravel based deposits such as the Delta and Wanex may represent local stream system deposition adjacent to basement topographic highs along the fringing shoreline of the marine embayment.

Since the work by Macarthur in 1995 Mineral Holdings have closely studied the mineral content of the deposits and established that a significant and valuable suite of accessory minerals accompanies the cassiterite. Given the highly mineralized country distal to the GNP, the Blue Tier and Mt Cameron granite massifs and the widespread Tertiary basaltic flows of the Ringarooma Valley a complex suite of heavy minerals is to be expected. Unfortunately, most previous studies and programs have concentrated on only the cassiterite content of the alluvial deposits, although limited analytical results for Zr, TiO_2, Au, Ta, Nb and REO's are available.

A vast amount of drilling, in excess of 1,500 holes, has been undertaken in the area north from the Scotia and Lochaber workings near Gladstone to Bowlers Lagoon some 2 km inland from the present shoreline of Ringarooma Bay. See Figure 2. Mineral Holdings has made a concerted effort to locate and acquire as much of the drilling data as possible and has, in fact, located drill logs dating back to 1906. Unfortunately the variety of drill techniques, variable sample processing techniques, highly variable reporting techniques and a change from Imperial to Metric systems make interpretation of much of the data time consuming and difficult.

The work by Santos / Hellyer in the mid 1980's, by Wanex and by Amdex during the same period have delineated significant cassiterite bearing deposits in the area from Scotia to near the sea at Bowlers Lagoon. Drilling offshore in Ringarooma Bay has confirmed that the onshore deposits in fact continue into the offshore marine environment and in total are represented by a 300 million m^3 cassiterite bearing alluvial / estuarine / offshore resource base.

This report deals primarily with the deposits located on the GNP, those deposits covered by the 1980's Santos / Hellyer and Mines Departmental drilling.

2 LOCATION

The Great Northern Plain resource area is located in northeastern Tasmania in the Gladstone District approximately 90 kilometres north east of the northern City of Launceston. More specifically the cassiterite bearing estuarine and alluvial deposits are located immediately north of Gladstone and north and east of the Ringarooma River

FIGURE 1 : LOCATION PLAN

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3 TENURE

Mineral Holdings currently holds four mining tenements encompassing the GNP resource and a further tenement application covering the Scotia Lead, specifically these are:

i EXPLORATION LICENCE No. 19 / 1993

Date of Grant	10 / 04 / 1993
Date of Expiry	04 / 04 / 2002
Area	52 sq. km.

ii RETENTION LICENCE No. 15 / 1987

Date of Grant	29 / 05 / 1998
Date of Expiry	30 / 05 / 2003
Area	6 sq. km.

iii RETENTION LICENCE No. 23 / 1987

Date of Grant	29 / 05 / 1998
Date of Expiry	30 / 05 / 2003
Area	7 sq. km

iv EXPLORATION LICENCE No 38 / 1997

Date of Grant	03 / 03 / 1998
Date of Expiry	06 / 03 / 2003
Area	4 sq. km.

v EXPLORATION LICENCE APPLICATION 32 / 2001

Area	42 sq. km.

4 GEOLOGICAL HISTORY

The following notes have been derived from previous work by Nye, 1932, Rattigan, 1958, Yim, 1991 and recent communication from D. Duncan and are intended as a broad, but by no means complete, background to the formation of the cassiterite bearing alluvial and estuarine deposits.

The history of the region commenced in the Permo-Traissic with the unroofing, and commencement of erosion of, the cassiterite bearing granitic rocks of the Blue Tier and Scottsdale Batholiths.

The Late Jurassic saw a period of uplift accompanied by the intrusion of extensive dolerite sheets followed by widespread and intense erosion. Deep weathering during this period assisted in liberation of heavy minerals from the granitic hosts.

The Middle Eocene period saw the commencement of volcanic activity along the Blue Tier with the extrusion of the Older Basaltic flows. It is likely that these were emplaced along stream systems incised into the pre-Eocene granitic land surface. Subsequent or contemporaneous uplift and a humid tropical climatic regimen resulted in rapid erosion of the basalts resulting in the introduction of a zircospilic suite of heavy minerals into the basal sediments of the deep lead deposits. Cassiterite rich pre-Eocene leads may still exist beneath the remnants of these flows.

Pre-Middle Eocene alluvial deposits were mixed and reworked with these younger basalt derived sediments giving rise to extensive flood plain alluvial deposits across the northern plains and southwards towards the present site of St Helens. No source vents for these rocks have as yet been located. The Mid Eocene to Late Oligocene appears to have been the dominant erosional and alluvial depositional period.

The Middle Miocene saw a second period of basaltic volcanism with extensive lava flows down many of the larger valleys in the region. These caused the diversion of the generally north west flowing streams of the Blue Tier; Black Creek, Cascade River, Main Creek, Weld River and the Wyniford River and the capture of those streams by the Ringarooma River. The capture of those streams created a broad shallow lake in the Mount Cameron Basin (south of the present mountain, the Dorset Flats), subsequently the lake overflowed into the sea via Garfield Creek and the Musselroe River.

During the post Oligocene a period of uplift and/or marine regression resulted in the lateritization and silicification of much of the land surface and probably saw the commencement of the deep incision of some streams into the Tertiary conglomeratic land surface (Scotia Lead). Subsequent rises in sea level saw the development of broad marine embayments at Boobyalla and in the lower Ringarooma River area and the development of cassiterite bearing blanket type deposits derived from proximal cassiterite bearing alluvial deposits, from some proximal cassiterite bearing hard-rock deposits and from larger streams such as the Scotia Lead. There appears to have been some form of marine concentration possibly by wave action in shallow waters or by current movement during periods of heavy terrestrial flood outflow. Locally around this marine embayment marine processes appear to have resulted in the development of some cassiterite bearing strand line deposits.

The capture of the tributary of the Musselroe River in this Post Oligocene period saw the development of the modern Ringarooma River and the reworking of many of the alluvial cassiterite bearing deposits proximal to the stream. It is unclear if this period saw the river add to the sediment pile in the marine embayment or if the embayment was even active during this time.

5 THE MINERAL ASSEMBLAGE

The long period of formation of the estuarine and alluvial deposits has resulted in the heavy mineral content being derived from four source hosts, specifically:

i GRANITE SOURCED ASSEMBLAGE:

The most dominant mineral in the deposits is cassiterite. It occurs primarily in the pebble, cobble and boulder beds in the basal sections or more rarely in more coarse-grained lenses higher in the sediment profile. The cassiterite is considered to be derived from the granitic rocks, greisens, pegmatite's and granite derived quartz veins. Mineragraphic studies indicate the presence of bornite, chalcopyrite, bismuthinite, pyrite and rarely tantalite and wolframite locked in cassiterite grains. Also granite derived are zircon, rutile, ilmenite, tantalite / columbite and the REO's monazite / xenotime.

ii OLDER BASALT ASSEMBLAGE:

The presence of black spinel (blackjack of the old miners) is indicative of the influence of the Older Basalts. While spinel is more typical of the older alluvial deposits protracted erosional and alluvial depositional cycles have reworked spinel and its zircospilic associate minerals including sapphire into many of the younger alluvial deposits. Sapphire, spinel and zircon are the most abundant heavy minerals derived from these rocks and recent work by Mineral Holdings indicates that both zircon and sapphire are significant components in the GNP resource areas. The presence of spinel invariably signals the presence of sapphire and coarse zircon.

iii YOUNGER BASALT ASSEMBLAGE:

Not significant in economic terms, typically olivine, minor zircon, magnetite and possibly ilmenite. It should be noted however that spinel, a chrome pleonaste has been reported from crystalline nodules in basalts at the Brisies Mine near Derby and thus the younger volcanics may also be a source of sapphire.

iv MATHINNA BED ASSEMBLAGE:

Gold has been reported as a regular component of the alluvial deposits and was consistently recovered by the Dorset Dredge at grades of around 10 mg/m^3. Locally higher grades have been reported and Mineral Holdings has recovered more coarse-grained angular gold in locally derived quartz vein clast-rich sediments at Taylor's Workings on the southern edge of the GNP

6 GREAT NORTHERN PLAINS RESOURCES

6.1 THE SETTING

These deposits were originally considered to be of alluvial derivation. Nye in 1932 was the first to recognise the marine nature of the deposits and more importantly that the local setting was far from simple and probably involved true marine estuarine conditions as well as some near-shore or shoreline swamp deposits and a series of strand line sand deposits.

The presence of marine shells at Monarch and at the Aberfoyle Workings supports a marine environment. Nye reported the presence of carbonaceous silt, coalified wood fragments and peaty zones from many of the old drill holes. Coalified wood and authigenic pyrite recovered from bulk samples at Taylor's Workings during recent work by Mineral Holdings supports Nye's observations. Thick sand zones around the McGregor's Workings and in recent pits excavated in the Wanex area support the reported presence of beach sand strand-line deposits that locally may be enriched in heavy minerals.

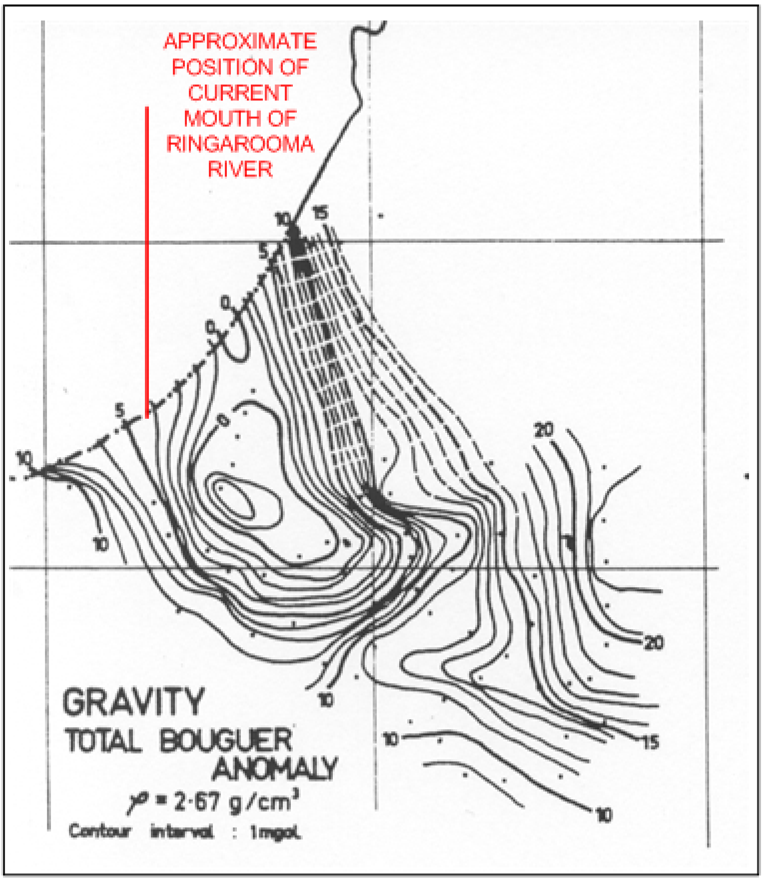


FIGURE 3: BOUGUER GRAVITY MAP

After Shell 1981

In 1981 Shell conducted regional gravity and magnetic surveys over a broad area from Boobyalla River to Gladstone. The results of the gravity survey are most significant as they clearly outline a broad and relatively deep marine embayment in the GNP area. See Figure 3. The gravity low zone corresponds very closely to the drill defined resource that turns northward from a general northwesterly directional trend to cross the coast well east of the present mouth of the Ringarooma River.

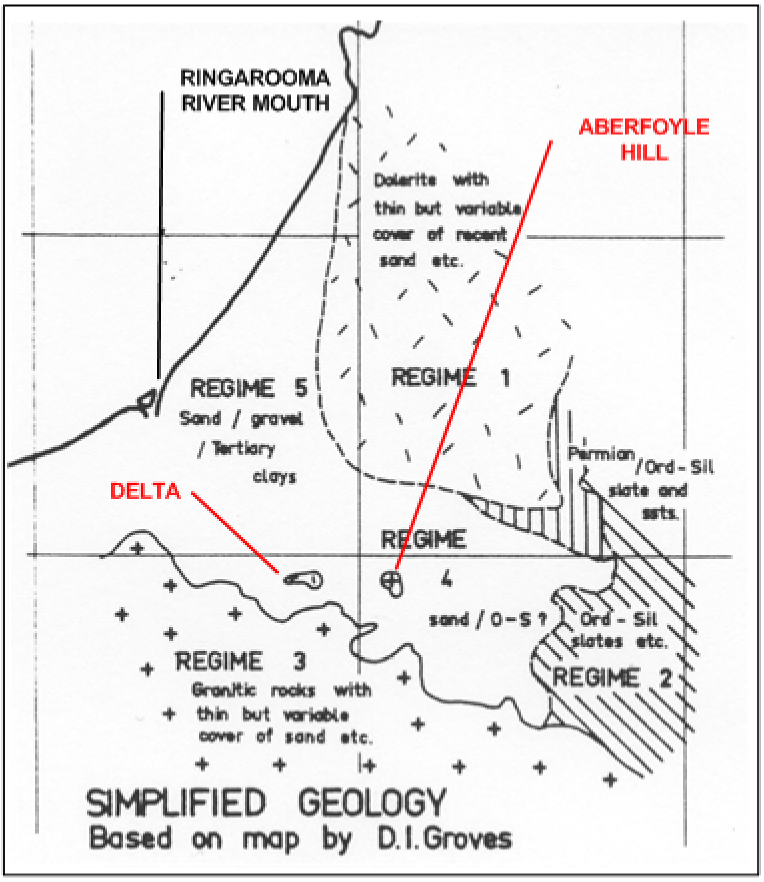


FIGURE 4: GENERALIZED GEOLOGICAL MAP

After Shell 1981

In the generalized geological map accompanying the gravity survey map, Figure 4, the full extent of the Tertiary marine basin is clearly depicted. Local basement highs within the main basin correspond to Delta Hill and Aberfoyle Hill. The current Ringarooma River flows between these two features. The edge of the actual marine embayment as depicted on the gravity map corresponds closely to the zone of higher basement depicted on the large resource plan, Figure 5.

6.2 THE RESOURCES

The assessment produced by Nick Macarthur in 1995 assumed that the resource would be exploited by dredging although he did consider a number of possible dry mining scenarios. At no time did he attempt to dissect the resource into its various components although he did comment that he felt that barren overburden could be economically pre-stripped from the deposit. In this report I have attempted to dissect the resource into its geological and mining components specifically the upper zones of non, or sub-economic, sandy clays and pebbly beds that have here been referred to as "Overburden" and the basal, economic, gravel and boulder beds, cassiterite and heavy mineral bearing, here referred to as "Ore". The resource figures quoted by Macarthur are "Top to Bottom", that is they include barren overburden and accordingly the grades are diluted by thick overburden intervals. Further Macarthur has reported all grades in terms of metallic tin, not SnO_2.

The highest grades quoted by Macarthur of 136 g/m^3 Sn were derived using a 90 g/m^3 cut-off and clearly included barren overburden. A grade of 136 g/m^3 is sub-economic at current tin prices.

The most reliable data available are the Santos / Hellyer and Preussag drilling and the most recent of the Mines Department drill programs. While at this time we have been unable to locate volume data in relation to sample intervals from the Santos / Hellyer and some of the Mines holes there is sufficient confidence in those data to enable a number of significant conclusions to be drawn. Recalculation of the resource base includes tabulation of the Santos / Hellyer, Pruessag and Mines Department data, those data appear as Appendices 10.1 and 10.2**.**

No effort has been made here to define the type of resource however it appears to fall within the current "Indicated" category of the JORC of the AusIMM. Confirmatory recalculation is recommended.

The resource is subdivided onto three sections, the reader is referred to Figure 5 in which boundaries and other significant features are depicted.

Specifically the resource encompasses:

A MAIN ZONE

Quoted as containing 34.7 million m^3 of gravel wash at an average grade of 195.4 gm/m^3 SnO_2 (70% concentrate) at a cut-off of 100 g/m^3 SnO_2. (6,780 tonnes SnO_2).

This resource is overlain by 73.9 million m^3 of overburden.

"Overburden To Ore Ratio" 2.13 : 1

B BRAITHWAITES ZONE

Quoted as containing 5.52 million m^3 of gravel wash at an average grade of 244.4 gm/m^3 SnO_2 (70% concentrate) at a cut-off of 100 g/m^3 SnO_2. (1,349 tonnes SnO_2).

This resource is overlain by 13.2 million m^3 of overburden.

"Overburden To Ore Ratio" 2.4 : 1

C EASTERN STRAND ZONE

Quoted as containing 1.6 million m^3 of gravel wash at an average grade of 121.9 gm/m^3 SnO_2 (70% concentrate) at a cut-off of 100 g/m^3 SnO_2. (195 tonnes SnO_2).

This resource is overlain by 3.04 million m^3 of overburden.

"Overburden To Ore Ratio" 1.9 : 1

A comparison of the Macarthur and these figures appears as Table 1

TABLE 1

COMPARISON OF RESOURCE CALCULATIONS

ZONE	**MACARTHUR** 90 g/m^3 cut-off Sn Overburden In		**CURRENT** 100 g/m^3 SnO_2 cut-off Overburden Out	
FOSTERS	15.0 X 10^6 m^3	143.5	34.7 x 10^6	**195.4**
BRAITHWAITES	3.6 x 10^6 m^3	107.6	5.52 x 10^6	**244.4**
EASTERN			1.6 x 10^6	**121.9**
TOTAL	**18.6 x 10^6 m^3**	**136.6** ***(173.5 SnO2)***	**41.8 x 10^6**	**199.1**

6.3 THE ACCESSORY MINERAL ASSEMBLAGE

The above resource figures do not take into account the value within this resource volume of the accessory mineral component. Included in that component are zircon, rutile, ilmenite (chromiferous), gold, sapphire and tantalite / columbite. There is a monazite fraction that has not been included in the calculation, the very high Yttrium analytical results in the REO fractions appears to indicate that both xenotime and monazite may be present.

The problem in trying to determine the value of the various accessory mineral lies in the variety of techniques used to produce concentrates during drilling. In most old programs drill samples were first passed over a rocker cradle and the resulting concentrate then hand panned to high grade. Experience suggests that this method of processing would have resulted in the loss of all the sapphire and most of the zircon, rutile, ilmenite and REO's, that is the minerals with an SG of around 4.4. Cassiterite, tantalite and gold would report regularly to the high grade panned concentrates. This procedure was basically carried on throughout most of the programs including that of Santos / Hellyer so that analyses for Zr and TiO_2 probably represent only a fraction of that contained in the original sample.

i ZIRCON – RUTILE - ILMENITE

In only one instance, Holes 20 and 20A of the Santos / Hellyer program, has any attempt been made to quantify the accessory mineral content. In this case the group redrilled beside a conventional 6” Churn Drill Hole using a 36” Calweld Drill. The latter hole was bulk sampled. The resulting samples analysed for Sn, Zr and TiO_2 are considered representative of the values in the raw wash and vary dramatically from the results obtained by conventional hand processing techniques. The results appear as Table 2.

TABLE 2

COMPARISON OF RESULTS HOLE 20 AND 20A

Results Hole 20 in Italics, results Hole 20A in Bold

INTERVAL	VALUES IN g/m^3						VALUES mg/m^3	
	Sn 20	**Sn 20A**	*Zr 20*	**Zr 20A**	*TiO_2 20*	**TiO_2 20A**	*Au 20*	**Au 20A**
0 – 2	*1.4*	**1.6**		**48**		**129**	*0*	**0**
2 – 4	*2.0*	**0.4**	*1*	**18**	*2*	**27**	*0*	**0.25**
4 – 6	*1.1*	**1.6**		**72**		**118**	*0*	**0**
6 – 8	*1.3*	**1.8**		**83**		**187**	*0*	**0**
8 – 10	*1.6*	**2.5**		**57**		**131**	*0*	**0**
10 – 12	*3.4*	**2.7**		**47**		**116**	*0*	**0**
12 – 14	*3.9*	**5.3**		**43**		**86**	*0*	**0**
14 – 16	*4.8*	**41.2**		**52**		**64**	*0*	**0**
16 – 18	*5.3*	**41.0**	*12*	**38**	*4*	**46**	*0*	**0**
18 – 20	*8.1*	**29.9**		**148**		**133**	*0*	**0**
20 – 22	*3.8*	**21.4**		**160**		**89**	*0*	**0**
22 – 24	*24.4*	**185.5**		**137**		**82**	*0*	**0.99**
24 – 25	*120.6*		*24*		*12*		*0*	
24 – 26		**114.3**		**85**		**34**		**0**
26 – 28		**11.5**		**25**		**25**		**0**
28 - 29		**25.6**		**70**		**60**		**0**

These results appear to contradict results of recent bulk sampling along the fringes of the GNP at Aberfoyle and Taylor's Workings where rutile grades were effectively double those of zircon and overall both grades were a factor of 5 to 10 times lower than those reported in Table 2. This discrepancy is probably due to:

- The very different settings, Hole 20 / 20A were located in the central blanket estuarine area where a limited number of concentrating processes were operating while the bulk samples were collected from the near-shore environment where a variety of concentrating factors were probably in play.
- Recent bulk sampling utilised a small trommel, jig and sluice unit. The jigs were ragged with steel shot in order to improve cassiterite recovery. That practice will see the preferential discharge of much of the finer grained light SG heavies across the jig to tailings and across the sluice to tails.

The only analyses conducted for Zr, TiO_2 (rutile), gold, Ta and Nb were those conducted by Santos / Hellyer and more recently by Mineral Holdings.

Based on these results it can be reasonably assumed that the cassiterite-bearing zone, the "Ore" zone contains:

- ZrO_2 grades averaging between 50 and 200 g/m^3;
- TiO_2 as rutile averaging 100 g/m^3; and
- Chromiferous ilmenite averaging 100 g/m^3.

ii TANTALITE

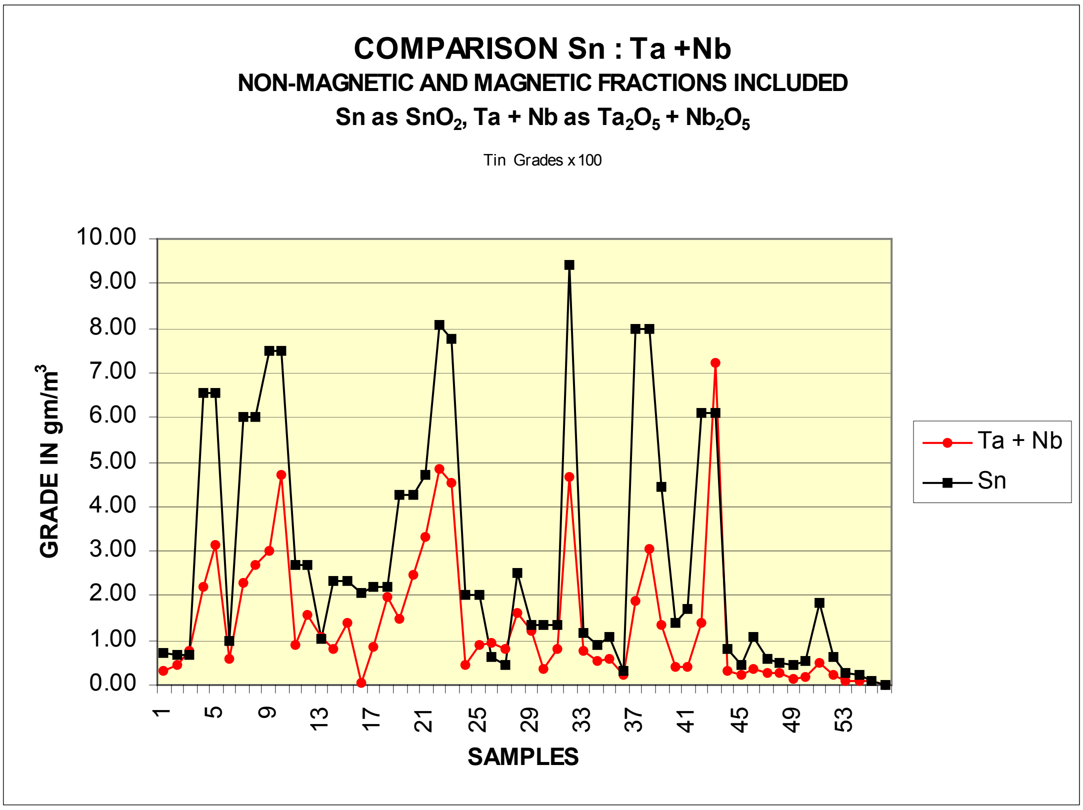
The presence of tantalite and columbite as Ta / Nb in tin concentrates derived from granitic rocks of Australia is well documented and Ta / Nb regularly report to tin slags resulting from smelting of these concentrates. Of interest in the GNP deposits are the values for Ta / Nb reporting to the two magnetics fractions, fractions which were thought would contain negligible cassiterite, certainly not in sufficient quantities to report the high Ta and Nb values recorded by Hellyer.

Santos / Hellyer conducted analyses for Ta and Nb on some 56 concentrates derived from their drilling programs. A plot of the results for Sn : Ta + Nb appears as Graph 1. This clearly shows, as one would expect, that there is a very strong relationship between high Sn and High Ta + Nb.

GRAPH 1

COMPARISON OF Sn : Ta + Nb

All Samples Analysed

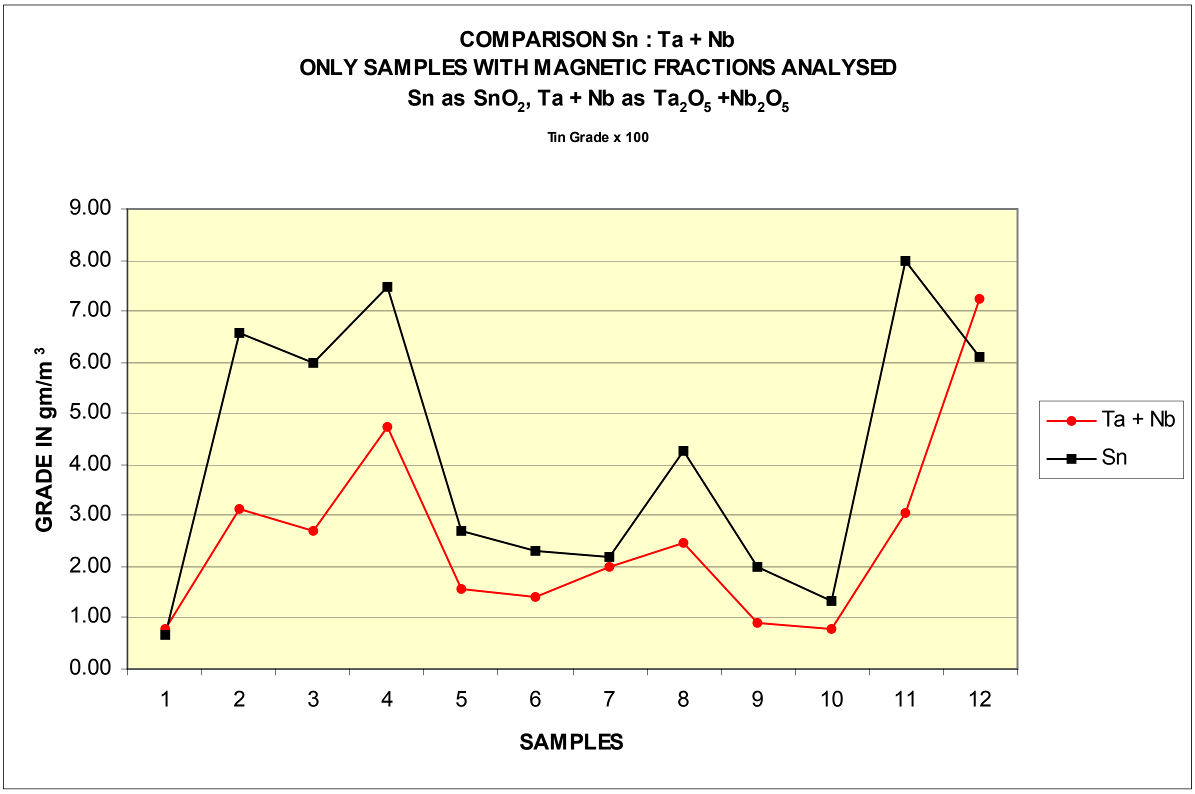


Santos / Hellyer reported analyses of two distinct magnetic fractions (MA3 and MA4) from 13 of the concentrate samples. Graph 2 illustrates the relationship of Sn in the Non-Magnetic fraction to the Ta + Nb reporting to the Magnetic fraction. This is not an ideal comparison in light of recent analytical work by Mineral Holdings as it assumes that there is no cassiterite reporting to the Magnetic fractions.

Recent analytical work by Mineral Holdings has involved the analysis of both the Non-Magnetic and Magnetic fractions for Sn, Ta and Nb, and while sample populations are small there are some apparent trends emerging.

GRAPH 2

MAGNETIC FRACTIONS Sn : Ta + Nb



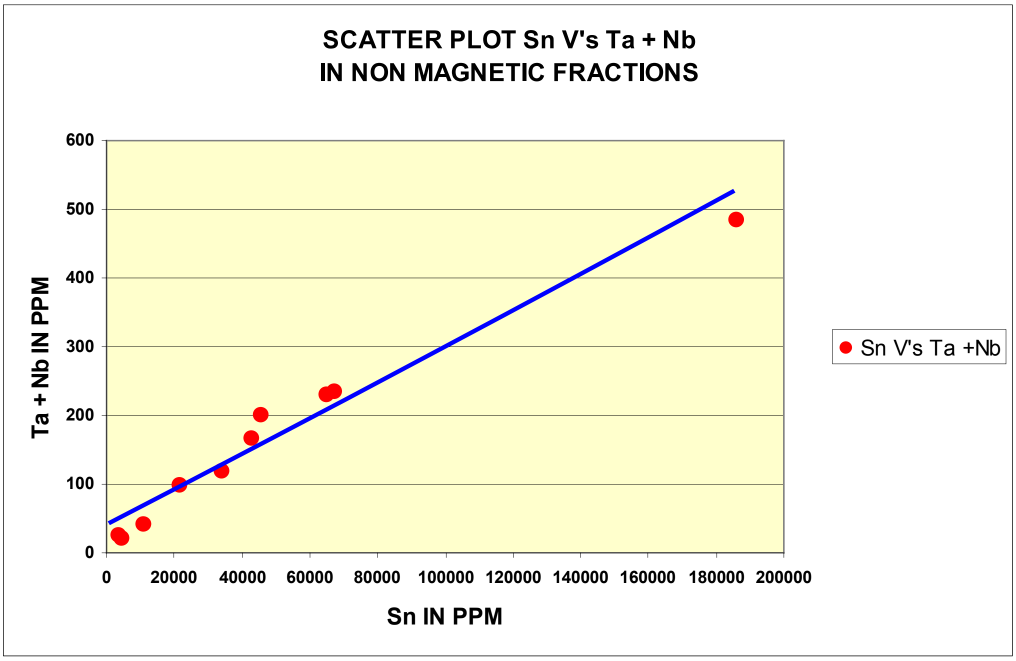
Graphical plots of the relationship of Sn to Ta + Nb in both fractions appears as Graphs 3 and 4. In Graph 3, the Non-Magnetic fraction, it can be seen that there is a reasonable straight-line relationship between Sn and Ta + Nb, as Sn values increase so do the values for Ta + Nb. A simple frequency count plot of these data does not indicate the development of a distinct population in fact there is a marked skewing of results. The ratio of Sn to Ta + Nb is in the order of 260 : 1.

The graphical plot of the Magnetic fractions is very significant, there is no apparent straight-line relationship in fact two distinct populations are apparent. A low-end population shown bordered by the blue dashed line in which the ratio of Sn : Ta + Nb is 13 : 1 and a second population in which the ratio is around 28 : 1, double the first. A frequency count plot of these data indicates two populations a lower normal plot and a second upper end Sn plot.

GRAPH 3

GRAPHICAL PLOT OF MINERAL HOLDINGS DATA

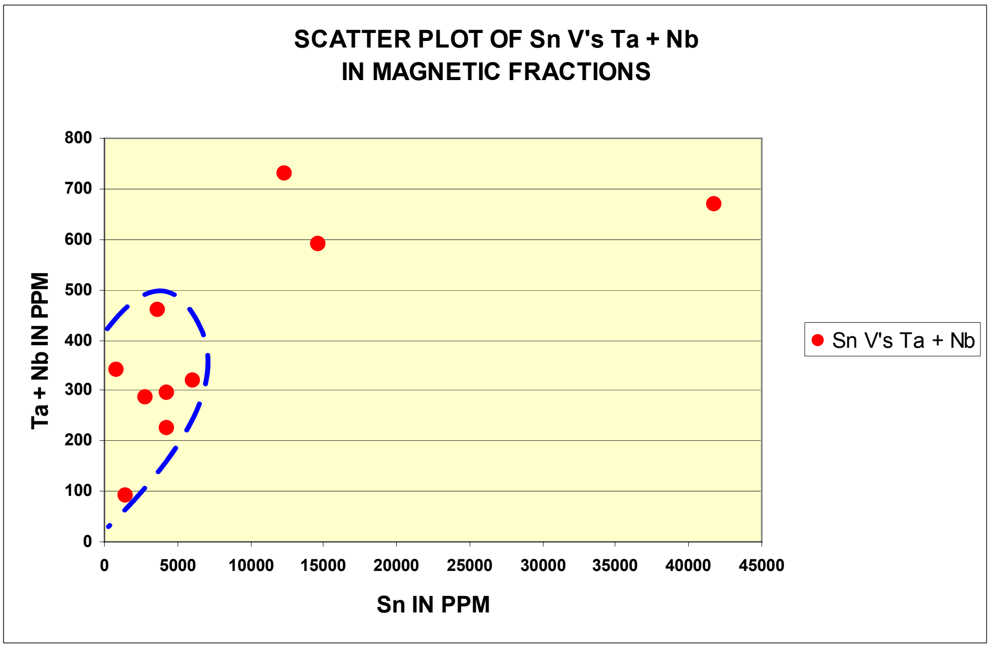
NON-MAGNETIC FRACTIONS



GRAPH 4

GRAPHICAL PLOT OF MINERAL HOLDINGS DATA

MAGNETIC FRACTION



A number of explanations of these phenomena can be postulated, specifically:

- The direct relationship between Sn and Ta + Nb in the Non-Magnetic fractions appears to indicate that the Ta + Nb are in fact contained within the cassiterite. Mineragraphic studies support such a statement with discrete tantalite crystals being observed locked in cassiterite;
- The dual population and lack of any marked straight line relationship between Sn and Ta + Nb in the Magnetic fractions appears to indicate that:
  - At least some of the Ta + Nb occurs locked in the cassiterite and possibly in sufficient amounts to render the cassiterite slightly magnetic;
  - A second population of Ta + Nb possibly occurs as discrete free grains in the higher-grade concentrates.

Other alternative explanations do exist, specifically Ta and Nb occur as lattice elements in tourmaline that reports to both fractions, this does not however explain the excellent relationship between Sn and Ta + Nb in the Non Magnetic fraction. While minor tourmaline is observed in Sn concentrates there does not appear to be sufficient quantities of that mineral present to contribute such high Ta + Nb analytical values.

To few samples have been analysed to obtain a trend and average grade for Ta / Nb however grades of between 0.3 and 7.3 g/m^3 of Ta_2O_5 + Nb_2O_5 are recorded in the Santos / Hellyer data at ratios closely approximating the composition of tantalite – columbite. A ratio of 170 : 1 of Sn : Ta + Nb would suggest that at an average resource grade of 200 g/m^3 SnO_2 the resource also contains tantalite at grades of around 1.2 g/m^3.

The results obtained by Mineral Holdings are lower than those reported by Santos / Hellyer however they were collected from the fringe areas of the embayment in areas where the cassiterite is observed to be more coarse grained. This may reflect that comminution in the embayment resulted in more liberation of the Ta + Nb from the cassiterite grains.

iii GOLD

Fine-grained gold was regularly recovered during the operations of the Dorset Dredge both at the Dorset Flats north of Pioneer and in more recent times along the Ringarooma River north of Gladstone and adjoining the GNP.

Gold is reported to have been regularly recovered at grades of between 3 and 13 mg/m^3 and from specimen material observed in the hands of local miners who worked on the Dredge at least 20% of the more coarse grained material (the +3mm fraction) was scavenged from jig beds during cleanout.

Santos / Hellyer reported Au analytical results and while those results indicate a very erratic distribution the method of hand concentration of samples generally limits the full recovery of very fine gold. John Volker the last Manager of the Dredge reports that Storeys Creek Tin exploration and pre-mining drilling crews never worried about trying to recover gold as it was safely assumed and confirmed by the operation that the wash contained around 10mg/m^3 of recoverable free gold.

The GNP resource base represents a deposit derived by reworking of older Tertiary alluvial deposits such as those dredged in the Dorset Flats and parts of Black Duck Lead along the Ringarooma River. It is proposed that the resource contains gold grades of between 3 and 13 mg/m^3, probably averaging around 10 mg/m^3.

iv SAPPHIRE

For many years the sapphire component of the alluvial deposits has been no more than of academic interest. During the period 1999 to 2001 Mineral Holdings greatly expanded the database relating to the sapphire component of the alluvial deposits.

With its SG down in the low 4 range along side zircon and rutile, it is not ideally suited to recovery in conventional tin mining operations of the north east and most, if not all, was lost across sluice and jig beds along with the zircon, rutile, ilmenite and other lighter accessory mineral fractions. A good example of such behaviour can be seen at the current Shane Summers tin mine near Pioneer where heavily ragged jig beds preferentially discharge the sapphire, zircon and rutile to tailings. This results in the recovery of very high-grade tin concentrates (+76% SnO_2) to the detriment of other mineral.

Mention is made in the Santos / Hellyer logs of the presence of sapphire, such occurrences are invariably accompanied by the Older Basaltic zircospilic suite of minerals, black spinel, zircon, magnetite, ilmenite, etc. Recent work by Mineral Holdings suggests a sapphire component of around 1 g/m^3 of which some 20% is of fine blue gem colour.

At these grades sapphire becomes a very significant heavy mineral component of the resource base. It is important to note that only the +2mm gem material is considered saleable. The bulk of the stone observed during recent testing was in the 2 to 3 mm size fraction.

It is important to stress that the type of concentration techniques used during past drilling campaigns and even during recent test work do not favour high recoveries of heavy minerals in the SG. 4 to 4.5 range and thus the grades reported here might in fact be well below the actual grades contained inn the resource.

The value of this heavy mineral component lies in the ability of the operator to recover and process the high-end cornflower blue stone.

v RARE EARTH OXIDES

Monazite regularly reports to the heavy mineral fraction of the concentrates although hand processing and heavily ragged jigging processes often result in it being discarded into tailings. Studies of tin concentrates indicate no residual radioactivity attributable to the REO’s. As a rule concentrates are cleaned to remove all but very minor amounts of REO’s. High Y analyses may indicate that both monazite and xenotime are present.

The hot and humid tropical conditions postulated to have occurred in the Eocene to Oligocene period were conducive to deep weathering of the felspar rich granitic rocks and were probably responsible in part for the thick clayey profiles observed throughout the GNP and adjoining areas. It is now well documented that the REO elements become soluble in certain tropical regimes and that they report as soluble REO elements into the clays. Five clay samples were submitted for REE analysis, the results of that work appears as Table 3. These results are significant in that the levels of Nd, Pr, Sm, Yb and Gd are higher than would be expected in monazite and may reflect that ionic absorption into the clay lattice has occurred.

It should be noted that sample M108 was from the Monarch Project area and is not considered to be related to the GNP alluvial deposits. The other four samples were from the Delta – Aberfoyle area at the shallow margin of the deeper estuarine basin.

TABLE 3
RARE EARTH ELEMENT ANALYSES
CLAY SAMPLES – NORTH EAST TASMANIA
Results in ppm

	ELEMENT	SAMPLE NUMBER	SAMPLE NUMBER	SAMPLE NUMBER	SAMPLE NUMBER	SAMPLE NUMBER
		027	038	050	068	M108
LOCATION						Monarch
DESCRIPTION		M/Morill	M/Morill	M/Morill	Kaolinite	Smectite
	Ce	22.00	89.00	29.50	62.00	91.00
	Dy	2.20	7.00	6.00	2.90	4.00
	Er	1.25	3.30	3.60	1.50	2.00
	Eu	0.64	2.50	1.20	0.95	0.47
	Gd	1.65	6.50	3.80	2.90	4.40
	Ho	0.43	1.25	1.25	0.49	0.68
	La	7.50	25.00	7.00	17.50	24.50
	Lu	0.22	0.44	0.64	0.26	0.37
	Nd	10.50	44.50	15.00	25.50	38.00
	Pr	2.60	10.50	3.50	6.50	10.00
	Sm	2.30	10.00	4.40	5.00	8.50
	Tb	0.29	1.10	0.78	0.44	0.71
	Tm	0.20	0.50	0.65	0.25	0.40
	Yb	1.40	3.40	4.50	1.70	2.60
TOTAL		53.18	204 99	81.82	127.89	187.63

7 GENERAL COMMENTS

While the previous text provides some updated background on the GNP resource base the study of the old drilling and geological data has raised a number of interesting possibilities. The reader is referred to Figure 5 for details of the Santos / Hellyer. Preussag, Departmental and other drilling. It should be noted that this is no where near all the drilling carried out in the region and that the area shaded grey has also been drilled in some detail, locations and logs of that drilling are not available at this time.

A review of the data raises the following points, specifically:

i The “Main” resource averages around 1 km in width and thus is not considered to represent a stream based alluvial deposit. The “Main” zone is considered to be a blanket style marine estuarine deposit bounded in the east by rapidly rising dolerite basement and in the west by a subtle 2 to 5 metre rise in the basement of the basin.

ii The “Main” resource is open to the north and in fact runs continuously, under the shoreline dune deposits north of Bowlers Lagoon, into the offshore marine deposits.

iii There is some evidence to suggest that a low basement rise in the vicinity of Bowlers Lagoon causes the resource to split into two arms that coalesce again offshore.

iv Some 25% of the Santos / Hellyer drill holes failed to reach basement. This is significant in so far as most of those holes were located within the central portion of the lead or at critical points along the margins. The drilling to basement of all these holes would have resulted in considerable increases in both volume and grade.

v The western boundary was previously depicted as a quite sinuous line. There is ample evidence to suggest that the western boundary is in fact far more regular as now depicted. Evidence to support such an assumption is:

- The regular gradual gravity gradient depicted in Figure 3, considered to represent a gradual shallowing of basement;
- At location “A” there is no evidence to suggest that the boundary does not continue as now depicted, further drilling would be required along Line BL 5 to locate the exact cut-off point.;

- At location "B" Hole BL 8/00 was abandoned and did not test the margin area, Line BL 9 needs to be extended; and
- At location "C" there is evidence to suggest that there is a small basement high barren of mineralization midway along Lines BL13 and BL 14 and that the main resource is continuous around that feature. Hole P12 confirms the presence of economic grades west of the end of Line BL 14.

vi The "Main Zone" appears to terminate in the south east against a zone of higher basement defined by, Tertiary outcrop at Delta and at Aberfoyle Hill (marked as **"Postulated High Basement")** and a zone of shallow basement in the north western corner of McGregors Workings. Thick sandy deposits at McGregor's are considered to be sandy strandline deposits.

vii The eastern boundary of the deposit is somewhat more complex and is defined by rapidly rising doleritic rocks. The sharp directional change from north to north west within Block C1 and C2 reflects the dolerite basement trend just east of that location. There is strong evidence to suggest that the eastern edge of the "Main" deposit at locations "D", "E" and "F" is more regular as now indicated.

viii There is evidence to suggest that a reworked strand-line deposit has been developed immediately adjacent to the dolerite basement in the east, the "Eastern Zone". At that point the dolerite basement rises rapidly and it is postulated that a dominant wave action from the west has resulted in reworking of the deposits along the eastern flank of the embayment against a hard doleritic shoreline.

ix There is evidence to suggest that a connection exists between the "Main" and "Braithwaites Zone" roughly between Hole P1 and CDH 8.

x The Scotia (Scoloch) Lead enters the GNP roughly as depicted. It appears that "Braithwaites Zone" may in fact be a shoreline outwash, deltaic type deposit, derived from the Scotia Lead. This is supported by the presence of a series of bounding basement highs probably representing the edges of a deeply incised braided stream system.

xi The lack of drilling in the Chimneys Area, location "G" and in the adjoining Delta Zone is puzzling and there is a distinct possibility that further drilling will expand the resource into that area.

xii At this time we have not located the Wanex, Burmah Malay, Dorset Dredge and other drilling in the shaded zone on the map. Studies are still in progress. This area appears to have been part of the embayment in earlier periods of higher water levels. Beach sands, authigenic pyrite, coal and shells support that supposition. Some marine reworking is evident in these areas however as sea levels dropped, there appears to have been the development of some recent drainage imposed onto the Tertiary sediments. The Delta and Wanex deposits have the appearance of stream systems running northward across a steeply dipping Tertiary sediment pile into the embayment, large silcrete boulders contained in these deposits support such interpretation.

xiii An inspection of McGregor's workings indicates that they were not developed to basement and that they were for the most part terminated in sands and clayey sands of the upper zone of the estuarine deposits. Falling basement, thickening overburden, the inability to remove sluiced tails and loss of water head were probably the cause of works being stopped rather than any decrease in tin grade.

xiv Coarser than usual angular gold and angular cassiterite locked on quartz particles at Aberfoyle and Taylor's appears to indicate some localized shedding from basement highs probably consisting of both Mathinna Beds and granitic rocks. Localised enrichment can be expected.

Much work remains to be carried out around the fringes of the GNP embayment and within the resource itself where considerable volumes of cassiterite bearing alluvium remain to be fully defined. The Scotia Lead requires reassessment and a study of the other Tertiary deposits now exposed along the edge of the present valley of the Ringarooma River is considered to be warranted.

The economic value of the accessory heavy mineral components should not be discounted. At current tin prices grades of in excess of 150 g/m^3 are probably economic. The recovery of saleable accessory minerals such as zircon, rutile, ilmenite, gold, tantalite and sapphire at grades indicated in the previous text would increase the value of the resource base by a factor of up to 2 to 3 times. Refer Appendix 10.3.

8 PROSPECTIVITY

While the outline depicted in Figure 5 appears to indicate a well-defined and closed resource that is certainly not the case and there is excellent prospectivity for expansion of the current resource base. Prospective expansion of the resource is indicated in the following areas, specifically:

i The resource is open to the north between Line BL1 and the present coastline of Ringarooma Bay a distance of approximately 2 km. Extrapolation from the resource as depicted in Block B1 would indicate that a further resource area measuring 2000 x 750 x 6.7 metres occurs in this region, that is a further 10.05 million m^3 at grades of around 180 g/m^3. (1,809 tonnes of concentrate).

ii The western boundary of the resource has not been accurately defined, further drilling is required at the following locations, specifically:

- Between Line SB and BL 3;
- Location "A", the extension of Line BL 5;
- The zone between Lines BL 6 and BL 13 where all lines end with holes in ore or not to basement;
- The extension of Line BL 14 towards Hole P 12; and
- The southwestern section between Delta and the Main Resource.

iii Some 25% of the holes drilled within the Main Resource were not drilled to basement; completion of drilling in those areas will see an increase in both volume and grade.

iv All the data relating to the zone marked on the plan, "Deltas Zone", is old Burmah Malay information, no recent drilling has been undertaken within this zone. The eastern boundary is defined by only three holes spread 300 to 500 meters apart. Extension in both depth and area can be expected.

v Area "G" is lightly drilled, only four holes in an area of approximately 40 hectares. Further drilling is warranted.

vi No drilling appears to have been conducted to the north east of the Main Resource, that is the area south and east of Bowlers Lagoon. There is some evidence to suggest (Gravity) that the main resource may split at around Line BL 2 with one arm running west of the lagoon and another running to the northeast.

vii The possible strand line deposit, the Eastern Resource" is currently poorly defined by only three holes; the area is open in width and to the north and southeast around the edge of the dolerite basement (old shoreline).

viii An extensive un-drilled area is located in the area marked with the "Braithwaites" label on Figure 5. It has been postulated that the Scotia Lead **may** run below the area marked "H" into the Main Resource near the label. Over 100 hectares remains to be tested in this zone.

ix The full extent of Braithwaites Resource is yet to be tested nor has its relationship to the Scotia – Scoloch Lead been determined.

x The exact boundaries of the Delta, Aberfoyle, McGregor's and Wanex Resources contained in the grey shaded area have not been fully investigated nor has old data been reviewed. Evidence suggests that McGregor's Workings ceased with the pit still in upper sandy layers and that the main cassiterite bearing zone remains in place below those sands.

xi The Scotia Lead itself remains to be reassessed and the resource base recalculated taking into account both "Overburden" and "Ore" zones.

xii In addition to the resource base depicted on Figure 5 Mineral Holdings also holds tenure to extensive offshore resources and a large area of prospective country along the Ringarooma River between Delta and Gladstone.

9 CONCLUSIONS

The reassessment of the GNP resource has involved a dissection of the old drilling results, in particular those of Santos / Hellyer, Pruessag and the Mines Department and a review of the general geological setting.

The recognition that the resource is not contained within a sinuous, irregular alluvial stream channel but occurs as a broad and more regular blanket type estuarine deposit has resulted in a substantial increase in overall resource volume. Removal of barren overburden from the resource base has resulted in a substantial increase in average grade.

The assessment has resulted in a recalculation of the resource that is now quoted to contain:

41.8 million m^3 at an average grade of 199.1 gm/m^3 of 70% SnO_2 concentrate.

This equates to an overall contained SnO_2 concentrate of 8,322 tonnes, a 2.3 x increase from the 2,540.8 tonnes Sn Metal (3,608 tonnes of cassiterite concentrate) quoted by Macarthur in 1995.

In addition to the cassiterite content Mineral Holdings have now identified a significant accessory mineral component including zircon, rutile, ilmenite, gold, tantalite and sapphire. The effect of including these minerals into the resource base value is to increase the value per cubic meter from around Aust \$1.00 / m^3, the tin component, to in excess of Aust \$3.60 / m^3.

It should be noted however that in those calculations sapphire contributes 54.9% of the mineral value while tin, zircon, rutile, ilmenite and gold contribute 39.6% and tantalum / niobium 5.5%. Given the current world tin price of about US \$4,000 / tonne for tin metal, the break-even grade of the deposit is considered to be around 220 g/m^3 or Aust \$1.20 / m^3. At these levels, the current \$1.44/m^3 value excluding the sapphire component, the current resource grade is some 17% above break-even grade. Including the tantalite credits raises that to 27% above break-even. See Appendix 10.3 for detailed breakdown of the various mineral components of the resource.

In addition to the resource quoted above there is excellent prospectivity to increase the resource base beyond the 8,324 tonnes quoted previously. To bring the prospective zones to a resource status will require the diligent application of research, exploration drilling and further resource delineation. Inclusion of prospective resource areas could well increase the overall content of contained Tin (SnO_2) concentrate on the GNP to in the order of 23,000 tonnes.

Specifically these increases, around 14,400 tonnes of tin concentrate, could be achieved by exploration and inclusion of the following into the resource base:

- Northern extension to the coast, 1,809 tonnes;
- Peripheral zones to main resource, 1,700 tonnes;
- New drilling within the embayment zone, 2,000 tonnes;
- Eastern Lead, 500 tonnes;
- Scoloch – Scotia Lead, 3,900 tonnes;
- Aberfoyle, Taylor's, McGregor's, Delta and Wanex, 2,500 tonnes;
- Ringarooma River Areas, 1,500 tonnes;
- Dotards, 400 tonnes

In addition Mineral Holdings also hold tenure to prospective areas, some of which contain drill proven resources, as follows:

- Monarch, 1,062 tonnes;
- Endurance, 2,188 tonnes;
- Pioneer, 1,800 tonnes;
- Wyniford River, 700 tonnes;
- Middle Ringarooma, 190 tonnes;
- Dorset Flats and Eastern Leads, 1,050 tonnes;

Ongoing acquisition and assessment of old data and a continuing ongoing exploration program are considered essential if the overall prospectivity of the resource base is to be achieved. When amalgamated with the offshore areas and the other resources proximal to the GNP a total resource of in the order of between 90,000 to110, 000 tonnes of tin concentrate is indicated.

10 APPENDICES

10.1 PREUSSAG DRILL DATA SHEETS

10.2 GNP DRILLING DATA SHEETS

10.3 RESOURCE VALUE ASSESSSMENT

Average grades of the various components of the resource assumed to be:

- 70% SnO_2 199.1 g/m^3
- ZrO_2 100 g/m^3
- TiO_2 (Rutile) 100 g/m^3
- Ilmenite 100 g/m^3
- Gold 10 mg/m^3
- Tantalite 1.2 g/m^3
- Sapphire 1.0 g/m^3
  (Gem 0.2g/m^3)

Selected Commodity Prices:

- Tin metal US $3,500 / ton
  (Equivalent to Aust $5,000 / tonne for 70% Concentrate or $0.005/gram.
- Zircon as ZrO_2 US $500 / ton
  (Equivalent to Aust $0.001 / gram)
- Rutile as TiO_2 US $500 / ton
  (Equivalent to Aust $0.001 / gram)
- Ilmenite US $300.00 / ton
  (Equivalent to Aust $0.0006 / gram)
- Gold US $280.00 / ounce
  (Equivalent to Aust $18.00 / gram)
- Tantalite US $60.00 / pound
  (Equivalent to Aust $0.17 / gram)
- Sapphire Aust $10.00 / gram for gem

Value of raw wash in terms of Aust $ / m^3

▪	Tin	$1.00
▪	Zircon	0.10
▪	Rutile	0.10
▪	Ilmenite	0.06
▪	Gold	0.18
▪	Tantalite	0.20
▪	Sapphire gem only	2.00
	TOTAL VALUE / M^3	**$3.64**