

# Contents

Chairman's Review	2
Summary	3
Directors' Report on Technology and Mineral Sands	4
Schedule of Tenements	12
Financial Statements	13
Directors' Report	14
Corporate Governance Statement	18
Statements of Financial Performance	20
Statements of Financial Position	20
Statements of Cash Flows	21
Notes to the Financial Statements	21
Directors' Declaration	37
Auditors' Report	38
Additional Stock Exchange Information	39

# Chairman's Review

The financial year 2001-2002, although promising well at the outset, did not produce the results we expected in terms of the corporate development of Austpac. We endured a disappointing and frustrating period which was further exacerbated by difficult share market conditions for raising new capital.

Improvements to the pilot plant at Newcastle continued to be implemented progressively throughout the year, and our testwork indicated that we can expect further reductions in the capital and operating costs for our ERMS and EARS processes. The plant remains well occupied with test programs for customers as well as for important process and product development projects for the Company.

In 2000 the AusRutile Joint Venture proposed to build a 10,000 tonnes per annum (tpa) ERMS/EARS synthetic rutile plant at Chatrapur in the state of Orissa. The failure of India's Foreign Investment and Promotions Board to grant approval for this proposal within a reasonable economic timeframe caused both Austpac and Ticor to re-assess the project. This resulted in the decision to replace the 10,000 tpa demonstration plant with a 100,000 tpa plant under a new AusRutile agreement in the future.

The original Austpac-Ticor Joint Venture was terminated in September 2002 and replaced by a non-exclusive arrangement as described later in this report. Austpac is now free to use its technologies on new projects with new joint venture partners, and this is underway.

Austpac's suite of technologies has been brought to readiness for commercialisation over the past several years and, importantly for the Company, with minimum expenditure outlay. The achievements are the result of persistence by the Directors, Management and our small but very capable staff. These efforts have been made possible by the dedication and faith of shareholders and particularly a small group of committed major shareholders.

Whilst small placements and short term financing tranches have served us in the past, they have limited the rate and breadth of the Company's technological development – the core of our business. Notwithstanding this, our technologies have reached the point where they are ready for application in a commercial plant.

The Board and Management are fully committed to find an appropriate major strategic partner on terms of clear benefit to both parties – we have a lot to offer the right group.



A. L. Paton  
Chairman

# Summary

## for the year ended June 2002

Austpac's ERMS roasting technology will be used to upgrade ilmenite from the Ginkgo heavy mineral deposit in southwestern NSW under a licence agreement with BeMaX Resources N.L.

Austpac and Ticor have signed a new, non-exclusive technology licence agreement that replaces the exclusive world-wide agreement signed in 2000. In future, should Ticor initiate a project anywhere in the world that uses the ERMS SR Process, they will fund all expenditure until the completion of a bankable feasibility study. If the project is developed, Austpac will be offered a 10% carried interest and have the option to contribute to a further 20% interest, potentially giving Austpac 30% of Ticor's share of that project.

Following the Indian Government's failure to approve the development of a 10,000 tpa ERMS SR plant in Orissa, Austpac and Ticor have renegotiated their relationship in the AusRutile Project. Under the new agreement, Austpac will not now be liable to repay Ticor for any previous expenditure, and Ticor will fund all ongoing expenditure on the project. In the event that a decision is made to proceed with the construction of a plant with at least 100,000 tpa capacity, Austpac will retain a 7.4% carried interest and has the option to contribute a further 14.8% interest, giving Austpac a potential 22.2% direct share of the AusRutile Project.

Austpac is now free to use its technologies with other parties and has initiated discussions with a view to developing an ERMS synthetic rutile plant with an annual capacity of around 30,000 tpa.

Austpac's roasting system of inter-linked multiple fluid beds, as installed at our pilot plant in Newcastle, is unique in Australia and provides the most cost effective roasting plant for piloting applications available to the mineral sands industry anywhere in the world.

During the year, Ticor funded a drilling program to test for coarse grained heavy mineral sands within E.L. 4521, near Horsham, Victoria, but no significant minerals were encountered. Upon the completion of this program Ticor withdrew from the licence and Austpac now holds 100% of the area. E.L. 4521 contains the very large, fine grained WIM 150 deposit.

Despite the extremely fine nature of the WIM 150 ilmenite, we have produced and agglomerated at bench scale a synthetic rutile containing more than 95% TiO<sub>2</sub> with low chrome and low radio-nucleides. It is expected that a commercially acceptable product will be realised as our processing of WIM 150 minerals continues to be progressed.

Newcrest has farmed into E.L. 4521 to explore for gold and copper in the basement rocks which underlie the heavy mineral bearing sediments at Horsham. Newcrest will fund this program until a decision to mine, at which time Austpac will hold a 10% contributing interest in any resulting mine, or may elect to revert to a 2% Net Smelter Return royalty on production.

# Directors' Report

## on Technology and Mineral Sands

Austpac's ERMS and EARS processes for adding significant value to primary titanium ore can be reviewed on our website ([www.austpacresources.com](http://www.austpacresources.com)).

- **ERMS** is a roasting process which magnetises ilmenite and makes it amenable to leaching in hydrochloric acid. Magnetised ilmenite can then be easily separated from deleterious gangue minerals such as chromite.
- **EARS** is a process to regenerate hydrochloric acid from waste iron chloride liquors produced by leaching ilmenite.
- The **ERMS SR Process** combines the ERMS and EARS processes in a number of innovative but well-proven process steps to produce a very high grade synthetic rutile from any type of ilmenite. The ERMS SR Process is the most environmentally friendly process for the production of synthetic rutile.

Ilmenite, which is composed of iron oxide and titanium dioxide, is initially ERMS roasted to convert the titanium component into the insoluble rutile form. It is then rapidly leached at atmospheric pressure in strong hydrochloric acid to remove the iron, leaving a network of rutile crystals in the former ilmenite grain. This 'synthetic' rutile is then washed, filtered and heated (calcined) to make the final saleable product. The iron chloride liquors are then processed in an EARS plant to regenerate the strong acid, leaving benign iron oxide pellets that can be sold to a steel plant or disposed of as inert landfill.

The ERMS SR Process has the unique advantage of producing a very high grade product (typically 96% to 98% TiO<sub>2</sub>), significantly higher grade than other commercially available synthetic rutiles. An ERMS SR plant is less capital intensive than plants employing other processes. Furthermore, the EARS process regenerates all of the acid used in leaching, to produce strong acid (typically 25% w/w HCl while other processes produce 18% w/w HCl). This makes the leaching step significantly faster and therefore more cost effective than other acid leach processes.



John Winter logs pressure readings to verify fluid bed roaster performance

### ERMS and EARS Technologies

During the year Austpac continued to expand and develop the facilities at its pilot plant on Kooragang Island in Newcastle. The 100mm diameter batch fluid bed roaster is routinely used for initial assessment of ores to set the parameters for continuous runs. This unit also establishes the base line for full scale plant performance, known as the *standard reference test*. Three continuous fluid bed roasters (250mm, 400mm and 500mm bed diameter) can be operated individually or in series, using solid, liquid or gaseous fuels, which provides a great deal of flexibility to the roasting operations.

Further versatility was added late this year in the form of another 250mm bed

diameter roaster on the third level of the pilot plant. This roaster is employed as a gasifier to convert coal to reducing gases for specific operations which require low temperature conditions. The overall exhaust gases from ERMS roasting are monitored during testwork. For final proving test runs, off-gases have been collected and assessed on a continuous on-line basis by an independent environmental research laboratory specialising in this activity. This ensures compliance with environmental standards. A new after-burner efficiently recovers all the energy in the plant for preheating and eliminates emissions of reducing gases. It represents a critical component of a full scale plant, ensuring that plant performance is optimal, and is therefore a valuable element for pilot studies.

**Austpac's system of inter-linked multiple fluid beds is unique in Australia and provides the most cost effective plant in the world for piloting applications available to the mineral sands industry.**

The leaching of roasted ilmenite to remove iron can be undertaken in batches in specially designed vessels which assist leaching and minimise particle breakdown. Many tonnes of ERMS SR have been produced by batch leaching proving it is a reliable technique for the production of high grade product.

During the year the Company's engineers designed a continuous leaching system and an application for a world-wide patent has been lodged. A cold model of the system has been successfully tested at Newcastle and the engineering drawings have been completed for a unit capable of treating 300kg per hour of roasted ilmenite. We aim to construct and test this system at the pilot plant within the next six months. Once proven, our continuous leaching process will offer significant reductions in capital and operating costs compared with the batch systems used by other synthetic rutile processes. The ERMS SR Process will



*Environmental consultants, HRL Technology, sample flue gases for analysis. The continuous sampling takes place prior to the final gas cleaning unit*

be the only continuous synthetic rutile production process in the world.

The Becher and Benilite synthetic rutile processes, which are currently used by feedstock manufacturers, produce a waste product of fine iron oxide, in the form of black or red mud. The ERMS SR Process produces benign iron oxide pellets, mainly in the form of magnetite, which can be sold to the steel or shot-blasting industries, or safely disposed of as inert landfill. ERMS SR is therefore more environmentally friendly than the other processes.

**Both our synthetic rutile and acid regeneration technologies have been operated at the pilot plant for extended periods and we are confident that they both can be readily scaled up to a commercial operation.**

During the year the pilot plant was operated to further refine design data for the AusRutile project in India. Testwork has also been conducted on substantial ore shipments for BeMaX Resources N.L., as discussed in a later section. In addition, work has been undertaken on ilmenites from the Murray Basin, Eastern Australia, Africa, India and other deposits elsewhere in the world. This included the removal of chromite and other deleterious gangue



*John Winter monitors the operation of the low temperature roaster and the efficiency of the after-burner*

minerals from ilmenite concentrates, the modification of the chemical properties of ilmenite to improve product acceptability

and the production of synthetic rutile samples. We have also undertaken work on mineral separation, treatment and agglomeration of fine grained heavy minerals from the WIM 150 mineral sand deposit in Victoria. These activities are described in the relevant sections later in this report.



*Location of Orissa Sands Complex (OSCOM)*

### India

The heavy mineral sands resources of India are among the largest and highest grade in the world. The Indian Government estimates that 20% of the world's ilmenite occurs in India, over 80% of which is located in the states of Orissa, Andhra Pradesh and Tamil Nadu. East Coast ilmenites generally contain 50-52%  $TiO_2$ , and while they are suitable for  $TiO_2$  manufacture using the sulfate process, they require upgrading before they can be used in the chloride process.

*Austpac's ERMS SR Process is ideally suited for upgrading Indian ilmenites.*

### AusRutile Joint Venture

Indian Rare Earths Limited (IRE) is an Indian Government undertaking estab-



*Synthetic Rutile produced by Austpac from the Orissa deposit – grade is 97.5 % TiO<sub>2</sub>*

lished in 1950 and is India's largest mineral sand producer. IRE's largest facility is the Orissa Sands Complex (OSCOM), where it is mining a world-class heavy mineral sand deposit near Chatrapur in the southeast of the state. OSCOM has the capacity to produce 200,000 tonnes per year of ilmenite concentrate. In the late 1990s Austpac demonstrated to IRE that the ERMS and EARS technologies were able to produce a synthetic rutile containing over 97% TiO<sub>2</sub> from OSCOM ilmenite.

An Indian company, AusRutile India Private Limited, was established in August 1999 in which Austpac held a 74% interest and IRE a 26% interest. This joint venture aimed at constructing a small ERMS synthetic rutile plant adjacent to OSCOM's ilmenite production facilities at Chatrapur.

In October 2000 the IRE Board agreed to allow Ticor to join the project, with Austpac and Ticor each holding a 37% interest in AusRutile and IRE holding a 26% interest. The objective of the AusRutile Joint Venture was to construct a 10,000 tpa ERMS SR plant, fed with ilmenite purchased from OSCOM. This plant would demonstrate the technologies and provide commercial parcels to potential customers for pigment plant trials prior to entering into supply contracts. It was envisaged that once this was achieved the project would be expanded to a large synthetic rutile facility producing at least 100,000 tpa.

During 2001, in a \$2.5 million program funded by Ticor, Austpac undertook

definitive testwork on a bulk sample of Orissa ilmenite to establish operating conditions and confirm process reliability. Ausenco Limited of Brisbane completed the detailed design and costing of the 10,000 tpa plant, and an environmental assessment was completed for the OSCOM site.

However, the AusRutile Joint Venture was unable to obtain approvals for the 10,000 tpa demonstration plant from the Central Government's Foreign Investment Promotions Board, despite strong support from the Orissa State Government, and the project was suspended.

Austpac firmly believes the large high grade heavy mineral resource could support a world-class ilmenite upgrading project. Austpac and Ticor are progressing discussions with IRE to form a new AusRutile Joint Venture. The proposed new agreement between the three parties will encompass a feasibility study and the possible development of a 100,000 tpa synthetic rutile plant at Chatrapur.

Under the original Austpac-Ticor 50-50 Joint Venture signed in July 2000, Ticor funded Austpac's share of the AusRutile project as a loan. In September 2002, Austpac and Ticor entered into a new agreement for the AusRutile project, whereby Austpac is no longer liable for past expenditure, and Ticor will fund all ongoing expenditures. In the event that a decision is made to proceed with project construction, Austpac will retain a 7.4%



*Ernie Walpole conducts calcining tests on SR product*

commercial interest and have the option to contribute to an additional 14.8% interest in the AusRutile project.

Austpac looks forward to continued involvement in the AusRutile project under these new arrangements.

### Revised Austpac-Ticor Agreement

In September 2002, Austpac and Ticor signed a non-exclusive Technology Licence and Permitted Project Exploitation Agreement to replace the July 2000 agreement for the exclusive world-wide use of the ERMS/EARS synthetic rutile process (the ERMS SR Process). The new technology licence with Ticor covers "permitted projects", which are defined as new projects that use the ERMS SR Process and are initiated in the future by Ticor anywhere in the world.

In return for the licence to use the technology, Ticor will fund all project expenditure until the completion of a bankable feasibility study on each permitted project. At the time that Ticor commits to development of a permitted project, Austpac will be offered a 10% carried interest and the option to contribute to a further 20% interest in Ticor's share of the project. This will give the Company the opportunity to participate in any of Ticor's future synthetic rutile projects that use the ERMS SR Process.

### New Projects

Austpac is now free to use its technology with other parties and is progressing negotiations with a view to developing an ERMS synthetic rutile plant with an annual capacity of around 30,000 tpa.

A plant of this size will establish the market for high grade synthetic rutile, and demonstrate the technology at a commercial scale, thereby underpinning the financing of a large scale project of at least 100,000 tpa capacity.

In July 2002, Austpac informed the market of negotiations with a North American corporation in relation to a new joint venture involving the establishment of an ERMS/EARS synthetic rutile plant adjacent to an international mineral sand development. Austpac's interest in the joint venture will be fully financed and the mineral sand project has the potential to support a major synthetic rutile facility. Representatives of the corporation have visited the Kooragang Island facility where some preliminary testwork on ilmenite from the resource is planned.

The final terms of the agreement will be announced when these negotiations are completed, as they are subject to confidentiality undertakings. Austpac continues to assess the merits of this opportunity to ensure it provides appropriate return on the Company's investment in technology development.

### Murray Basin

Recent mineral sand exploration in Australia has seen a dramatic increase in known reserves in the Murray Basin. This resource delineation focused on coarse grained strand lines and considerable success has been achieved by Murray Basin Titanium Pty Ltd, Basin Minerals Limited, BeMaX Resources N.L., Iluka Resources Limited and Southern Titanium N.L. The consolidation of ownership of these resources is likely to accelerate the development of these resources, and this should be of direct benefit to Austpac as our technology is the best available to process Murray Basin ilmenite.

Large, flat sheet-like heavy mineral deposits, the 'WIM-type' deposits, also occur in the Murray Basin, and they contain tens of millions of tonnes of fine grained heavy minerals. Using conventional technology, it has been difficult to economically recover the heavy mineral suite from the fine grained deposits. Austpac has been undertaking testwork on material from the WIM 150



deposit to overcome this problem, as described later in this report.

### Chrome Removal from Ilmenite Concentrates

All ilmenite concentrates from the Murray Basin contain chromite, a contaminant which restricts market acceptance. These ilmenites are readily amenable to upgrading using Austpac's technologies.

Austpac has previously conducted a program of testwork for Murray Basin Titanium Pty Ltd aimed at improving the commercial acceptability of ilmenite from the Wemen deposit. The work was undertaken at our Newcastle pilot plant, and demonstrated that Austpac's ERMS technology can produce a high  $TiO_2$ , low chrome ilmenite, suitable for high quality pigment production by both the sulfate and chloride processes.

Throughout the year under review, Austpac undertook testwork for BeMaX Resources N.L. to reduce chrome in ilmenite concentrates from the large Ginkgo heavy mineral deposit in the Pooncarie area of the Murray Basin. A large sample (in excess of 1.5 tonnes) of Ginkgo ilmenite grading 60%  $TiO_2$  and 1.3%  $Cr_2O_3$  was evaluated using continuous low temperature fluid bed roasting. Magnetic separation of the roasted ilmenite successfully reduced the less magnetic chrome-bearing minerals, and produced a commercially attractive final ilmenite product. Further testwork is planned for October 2002 to complete the optimisation of the final plant design, with the objective of producing an ilmenite concentrate containing over 64%  $TiO_2$  and less than 0.4%  $Cr_2O_3$ .

BeMaX plans to incorporate Austpac's roasting process into the ilmenite circuit of its mineral separation plant in the Murray Basin.

In April 2002, Austpac and BeMaX reached agreement on the commercial



*Austpac staff demonstrate the benefits of ERMS roasting to delegates at the April 2002 Mineral Sands Conference held in Mildura.*

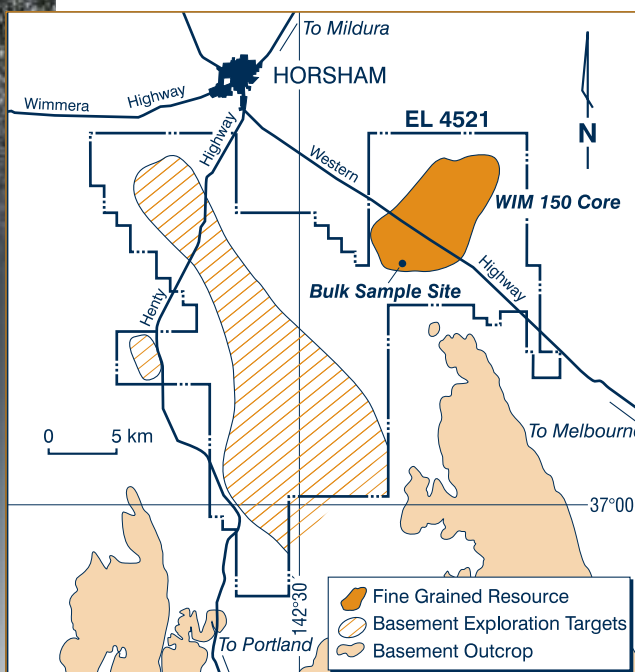
terms for the use of Austpac's ilmenite roasting technology to produce a high  $TiO_2$ , low chrome ilmenite from Ginkgo concentrate. This is the first commercial agreement for the use of the ERMS roast, and while the terms are confidential, it is beneficial for both Austpac and BeMaX.

The agreement also covers the construction and commissioning of the ilmenite roasting and separation plant. Austpac will participate in a consortium led by Ausenco Limited, which will provide the detailed engineering design and commissioning support for the roasting and magnetic separation plant planned by BeMaX.

Austpac believes that acceptance of ERMS technology will see several roasters built to treat the ilmenite from other Murray Basin resources, in accordance with individual technology fee agreements.

### Synthetic Rutile Plant in the Murray Basin

With the Wemen deposit in production and advanced feasibility studies underway for other defined resources, ilmenite production in the Murray Basin is predicted to reach a level sufficient to justify investment in a large scale synthetic rutile complex.



Map of Exploration Licence 4521 showing location of WIM 150 resource and target areas for copper-gold exploration

Austpac has already confirmed through pilot plant work at Newcastle that the ERMS SR Process is ideally suited to the upgrading of Murray Basin ilmenites. These ilmenites are generally not amenable to traditional Becher synthetic rutile technology, as used in Western Australia.

A number of potential plant locations within the broader Murray Basin region have been examined, as well as raw material supply options (including ilmenite, coal or other energy sources and water), infrastructure and Government incentives. Preliminary discussions have been held with several companies with resources in the Basin with a view to synthetic rutile production. However, the establishment of a large scale synthetic rutile plant requires the availability of feedstock, and this cannot occur until large scale mining operations are established in the region.

Austpac is participating in the steering committee of the Victorian Mineral Sands Action Plan. This group will determine the strategies and actions required by the Government to assist the establishment

of a sustainable mineral sands industry in Victoria. We believe that Austpac's synthetic rutile technologies will play an important role in these developments.

### Exploration Licence 4521, Horsham, Victoria

Exploration Licence 4521 was granted to Austpac Resources N.L. and Ticor Limited on 1 December 2000 for a period of two years. This period was subsequently extended by the Department of Natural Resources and Environment to five years. The licence covers the WIM 150 deposit within which the 'WIM 150 Core' comprises a Measured Resource of 452 million tonnes containing 5.9% heavy minerals. Austpac and Ticor also lodged an application, E.L.A. 4532, to cover all Crown Land, excluding roads and road reserves, within the same area as E.L. 4521.

In August 2002 Ticor withdrew from the E.L. 4521 and E.L.A. 4532. Austpac now holds a 100% interest in the tenements.

### Beneficiation of WIM 150 Titanium Minerals

In 2001 Austpac excavated a bulk sample from the mineralised sand horizon in the southern portion of the WIM 150 deposit. The bulk sample pit was rehabilitated this year for future use by the landowner as a farm dam. Parcels of WIM 150 ore have been progressively shipped to the Kooragang Island pilot plant for sample preparation and magnetic separation of a predominantly ilmenite concentrate. Other samples were shipped to Roche MT's facilities in Queensland for separation by spirals, tables and WHIMS. A series of bench scale roasting and leaching tests have been undertaken, yielding progressively better quality synthetic rutile products.

Despite the extremely fine nature of WIM 150 ilmenite, we have produced a synthetic rutile containing more than 95%  $TiO_2$  and

very low levels of chrome, radio-nucleides and other deleterious elements.

Synthetic rutile made from WIM 150 is too fine to be used by the chloride process to make  $TiO_2$  pigment. Austpac has successfully agglomerated at bench scale this fine grained material to produce acceptably sized, hard synthetic rutile pellets, without using a binder. We believe it will be possible to increase the  $TiO_2$  levels and commercially agglomerate the synthetic rutile product as we optimise our process. This work is part of an ongoing program aimed at developing a commercially viable process to treat WIM 150 heavy minerals.

### Exploration for Strand Line Deposits at Horsham

Exploration Licence 4521 is bound to the west and south by tenements containing the Bondi, Bondi East, Echo and Acapulco strand lines. These deposits were discovered by Basin Minerals Limited, which was recently acquired by Iluka Resources Limited. They are medium to coarse grained strand line deposits (median grain size 150 microns), differing markedly from the fine grained 'WIM' resources (median grain size 45 microns). During October 2001 to May 2002, a program of 485 reverse circulation drillholes tested the western and southern portions of E.L. 4521 for shallow strand line



WIM 150 synthetic rutile produced by Austpac from WHIMS ilmenite concentrate



Austpac's WIM 150 bulk sample site now reclaimed as a farm dam

heavy minerals. It was concluded that while such deposits probably existed within the area, they have since been eroded and removed from the area.

Upon completion of the strand line exploration program, Tigor withdrew from the joint venture. Austpac subsequently relinquished just over one third of the area and now owns 100% of the tenements which cover 614km<sup>2</sup> in area.

### Exploration for Copper-Gold Deposits at Horsham

In September 2002 Newcrest Operations Limited agreed to explore for copper and gold within Exploration Licence 4521. The exploration program will be conducted under the Horsham Joint Venture. It targets volcanic complexes in the basement rocks beneath the sediments which host the coarse grained strand lines and the fine grained WIM-type heavy mineral deposits.

Newcrest will sole fund the Horsham Joint Venture through to a decision to construct a mine. Austpac will then hold a 10% contributing interest in any resulting mine, or may elect to revert to a 2% Net Smelter Return royalty on production.

The initial exploration program will comprise approximately 100 holes drilled



*Drilling along road reserves within E.L. 4521 during coarse HM exploration in 2001. Newcrest will employ a similar system in December 2002*

through the veneer of sediments into the basement rocks to delineate the intrusive and extrusive volcanic complexes. These volcanics have the potential to host large porphyry-style copper-gold deposits similar to those being mined by Newcrest at Cadia-Ridgeway in NSW.

The volcanic complexes are outlined by Government regional aeromagnetic and gravity surveys and are described in Government geological reports. They were further defined by the detailed aeromagnetic survey commissioned by

Austpac in 2001 during the search for coarse grained heavy mineral strand lines within E.L. 4521.

Altered pyritised volcanics were encountered in several of the holes that reached the basement during the strand line exploration drilling program. The cover sediments, which appear to be 25-50m thick within E.L. 4521, have deterred previous explorers from investigating these targets. Newcrest is expected to commence drilling during the fourth quarter of 2002.

## Schedule of Mining Tenements Victoria

NATURE OF TITLE	Exploration Licence 4521	Exploration Licence Application 4532
AREA	614 km <sup>2</sup>	614 km <sup>2</sup>
NAME	Horsham	Horsham
STATUS	Granted 1/12/00 for 5 years	Application pending processing under the Native Title Act.
REGISTERED HOLDER	Austpac Resources N.L.	Austpac Resources N.L.
BENEFICIAL INTERESTS OF AUSTPAC RESOURCES N.L. GROUP	100% (Newcrest Mining earning 90% interest in copper-gold mining opportunities)	100% (Newcrest Mining earning 90% interest in copper-gold mining opportunities)