

**AUSTPAC RESOURCES NL**
**UPDATE**
**Recommendation:**

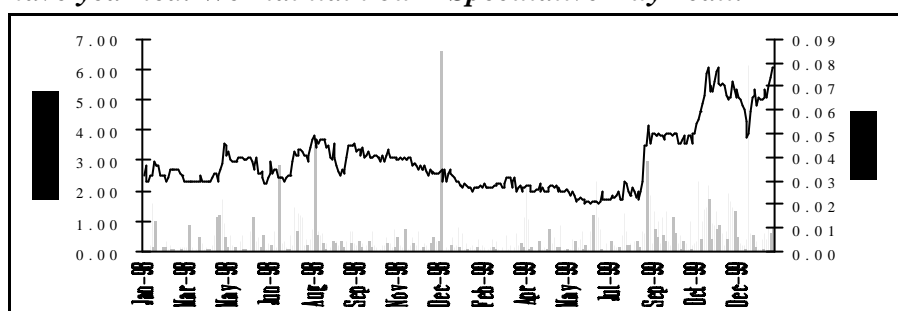
Speculative Buy

**Price: \$0.08**
**Date: 15<sup>th</sup> Jan, 2000**
**Capital Profile**

ASX Code: APG  
 Sector: Junior  
 Issued Capital: 310.4 million  
 Market Cap: \$24.8 million  
 Cash: \$0.1 million  
 Options: None  
 Major Share: GIO – 4.4%  
 C Leech- 3.2%

**Analyst: Mark Taylor**

*Austpac is now placed on the threshold of a very exciting future. The company achieved a significant milestone in August last year with the signing of the definitive JV with Indian Rare Earths Limited for the first commercial ERMS pilot plant in India. Most significantly, Austpac is now at advanced stage negotiations for involvement by a major corporation in the development and funding of the technologies in India. Success on this front could spell the company-making breakthrough for which shareholders have yearned. We maintain our “Speculative Buy” call.*


**KEY POINTS**

- In our December 1998 report, we stated that maximum return for Austpac shareholders would be achieved by the company participating in new synthetic rutile developments using its proprietary ERMS and EARS technologies. Negotiations were underway with Indian Rare Earths Limited (IRE) to form a JV to build the first ERMS synthetic rutile plant at IRE's facilities in Orissa State, India. We were pleased to see that in August 1999, the parties signed a definitive agreement forming a new JV company and that agreement had been reached on the commercial parameters for the development and operation of a 10,000tpa start-up plant adjacent to the existing OSCOM facilities. The timetable now calls for commencement of construction in mid 2000 and first production in late 2001 approximately 12 months behind the original schedule. A successful commissioning could see construction of a larger 100,000tpa plant, followed by ERMS and EARS plants at other greenfields sites and very substantial cashflow to Austpac.
- However, as is well known, Austpac has long survived in a hand-to-mouth fashion and even after recent small capital raisings, cash is tight and alternative funding crucial. The company is presently at advanced stage negotiations to obtain funding for the IRE joint venture project. A successful conclusion to the negotiations will alleviate short-term funding concerns and could launch Austpac into a new league.
- We feel Austpac is now on the threshold of a major breakthrough. The combination of ERMS and EARS technologies represents a quantum leap in the treatment of ilmenites. Acceptance of the technology and its incorporation into the vast array of presently untreatable mineral sand deposits equates to enormous blue sky for the company. However, a timely conclusion to funding requirements is now most important to the success of Austpac.

**The Board**
**Alfred Paton (Chairman)**

An engineer with 50 years experience. Currently Chairman of Centennial Coal, Oldfield Holdings and Auiron Energy Limited, Deputy Chairman of Asia Pacific Specialty Chemicals and a Director of Care Australia. Formerly MD and then Chairman of Placer Pacific and Kidston Gold.

**Michael Turbott (Managing Director)**

A geologist, formerly a Director and Vice President of Kennecott Explorations (Aus), and directed programmes that led to the discovery of Lihir gold deposit and the acquisition of Gordonstone Coal mine.

**Harold H Hines**

Mr Hines has 50 years experience in operations, development, management and consulting in the Mineral Sands and alluvial mining industry. He is currently MD of the Mineral Sands Consultancy.

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## Summary Recap of Austpac's ERMS and EARS Technologies

ERMS: Enhanced Roasting and Magnetic Separation, and  
 EARS: Enhanced Acid Regeneration System

Austpac has developed two proprietary processes which have direct application to the separation of ilmenite from mineral sands and the production of synthetic rutile from ilmenite. Synthetic rutile is the premium feedstock for the manufacture of titanium dioxide (TiO<sub>2</sub>) pigment and titanium metal. Over 3Mt of TiO<sub>2</sub> pigment are sold annually, with a market value of more than US\$6 billion. ERMS roasting more effectively magnetises ilmenite than comparable methods so it can be easily separated from other minerals. It achieves this through a patented fuel to air ratio process in the roast which allows a skin of magnetite to form around the ilmenite grains. In addition, an ERMS roast results in micro fracturing conditioning of the ilmenite for subsequent rapid atmospheric leaching with hydrochloric acid. The EARS acid regeneration system, re-converts iron chloride (a by-product of the acid leaching process) into hydrochloric acid at significantly less cost than alternative acid regeneration systems. The patentable aspect of EARS is the feeding of solid FeCl<sub>2</sub> into the fluid bed roaster which allows the use of solid (eg coal), liquid or gaseous fuel. Other acid regeneration systems can only use gas or oil fuel because the FeCl<sub>2</sub> is in liquid form.

An ERMS plant should be cheaper to build and could be expected to operate at a lower cost. The system is faster and results in a higher grade and more valuable end product than alternative processes. In addition, solid fuel can be used and the leach does not require pressure. The EARS acid regeneration system is up to 50% cheaper to build and operate than alternative methods. The combination of these two powerful techniques equates to a substantial leap in the treatability of ilmenites. ERMS has been successfully trialed on over 50 different ilmenites and has huge potential around the world to make non-economic ilmenites viable. Alternative technologies are either restricted to higher grade (+57% TiO<sub>2</sub>) ilmenites or are complex and cumbersome requiring pressure leaching.

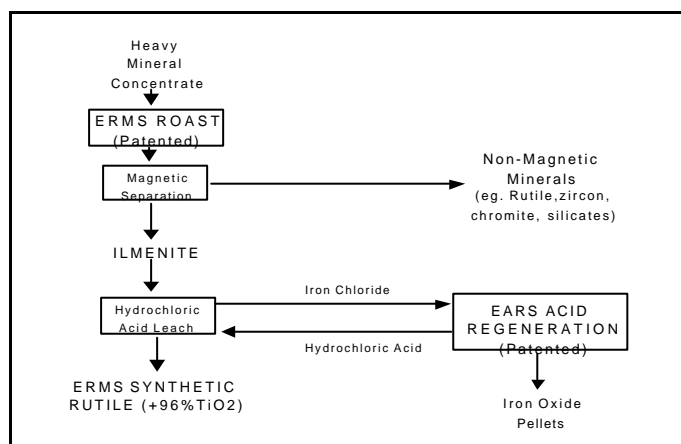
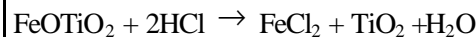
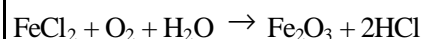


Fig 1. Simplified ERMS and EARS Flow Diagram

Reaction for the liberation of the rutile (TiO<sub>2</sub>) from the ilmenite during leaching in hydrochloric acid:



The reaction for recovering the acid is as follows:



Under the EARS this is achieved in a fluid bed roaster

Fig 2. Chemical Reactions in the Leaching Process

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### Indian Rare Earths JV Update

Austpac has long considered that the maximum return for the company would be achieved by participating in new synthetic rutile developments using the ERMS and EARS processes. Indian Rare Earths (IRE), a Indian government owned agency, controls almost 10% of the world's known ilmenite resources on the East Coast of India. However, they are too low in grade to use the well-known Becher synthetic rutile technology. IRE's Orissa Sands Complex (OSCOM) is producing about 150,000 tonnes of ilmenite in excess of the needs of an existing Benilite plant, which is not operating at full capacity. In addition, the acid regeneration plant is producing sufficient acid for 25,000 tonnes of synthetic rutile, again excess to OSCOM's needs. Austpac recognised the opportunity that this represented some years ago and has recently signed a definitive JV agreement with IRE to construct a plant based on the ERMS and EARS technologies.

#### *History of Austpac's IRE Agreement:-*

- As early as 1996, Austpac introduced its technologies to IRE who then commenced a technical review of ERMS and EARS.
- In January 1997, Austpac and IRE signed a Memorandum of Understanding to investigate the technical and economic feasibility of using the ERMS process to produce high-grade synthetic rutile from Indian ilmenite.
- By 1998, testwork at Austpac's pilot plant in Newcastle demonstrated that a >96% TiO<sub>2</sub> synthetic rutile could be produced from Chatrapur (OSCOM) ilmenite.
- In August 1998, IRE and Austpac agreed to examine the feasibility of using the existing ilmenite production and acid regeneration facilities at OSCOM to support a 10,000tpa ERMS synthetic rutile plant. A pre-feasibility study was completed in December 1998.
- By April 1999, Austpac and IRE had reached agreement on the commercial parameters for the development and operation of a 10,000tpa start-up plant adjacent to the existing OSCOM facilities.
- In August 1999, the parties signed a definitive JV agreement with Austpac and IRE holding interests of 74% and 26% respectively in a new JV company AusRutile India Pvt. Limited (AusRutile). AusRutile will construct the plant with Austpac managing.

#### *Construction Timetable*

Subject to financing and all necessary approvals being in place, construction of the plant could commence by mid 2000 with production commencing approximately 15 months later in the second half of 2001. Austpac has recently completed definitive testwork and Brisbane based Ausenco Limited has been commissioned to undertake a site-specific study to finalise plant layout and capital cost. A final report is expected in the second quarter of this year, however, assuming a capex requirement of US\$5 million, Austpac will need to raise approximately A\$5.7 million for its share of project finance plus additional working capital. The project could generate an A\$1.6m after tax cashflow for Austpac giving a 4 year payback. However, upon successful demonstration of the 10ktpa ERMS plant, the plan is to build an ERMS and EARS plant with a capacity of at least 100ktpa. Capex for the larger plant is estimated at US\$50 million due to the need to incorporate the EARS acid regeneration component. A 100ktpa project could generate revenues of US\$50 million and after tax cashflows of US\$14.7 million. A successful outcome could then see construction of additional synthetic rutile plants incorporating ERMS and EARS technologies at greenfields sites elsewhere in India.

**Table 1. Summary Financials for OSCOM ERMS Synthetic Rutile Plants**

ECONOMIC MODEL 10Ktpa ERMS SR PLANT, INDIA		ECONOMIC MODEL 100Ktpa ERMS SR PLANT, INDIA	
Capex	US\$5.3 million	Capex	US\$50 million
Revenue	US\$5.0 million	Revenue	US\$50 million
OPEX	US\$3.6 million	OPEX	US\$30 million
EBITDA	US\$1.4 million	EBITDA	US\$20 million
After Tax IRR	>15% (Ungeared)	After Tax IRR	>40% (Ungeared)

*\* Note: These figures are Austpac's internal estimates. Ausenco is presently completing a detailed site-specific study to finalise capital costs.*

**Corporate*****Rothschild Joint Venture***

Austpac has successfully replaced the ERMS R&D syndication with a Joint Venture with Rothschild. This gives Austpac a 90% direct ownership in the ERMS and EARS technologies. The simplification of the structure and improved equity position are a positive for the company.

***Funding***

Austpac has recently completed a number of small capital raisings including a placement of 5m shares in November at 4¢ raising \$200,000 and another of 3m shares in December at 5¢ raising \$150,000. Of this, the company has approximately \$100,000 in cash remaining and accounts payable and provisions in excess of \$1.0 million. Ignoring the substantial amount of capital to move to the construction phase, Austpac will require further significant capital injections in the immediate future just to survive. Austpac has stated that it is at an advanced stage of negotiations to obtain funding for the IRE joint venture project, with one group presently undertaking due diligence on site in India. We believe that a successful outcome to these negotiations, securing the necessary funding, would launch the company into a new league with significant share price re-rating associated with the blue sky that the ERMS and EARS technologies represent. ***However, failure to secure this funding could place severe pressure on the company. It is this situation in particular which necessitates the "Speculative Call" in our recommendation and a risk of which potential and existing shareholders should be aware.***

**Iscor Licences**

After collaboration at Austpac's testing facilities in Newcastle, including a \$670,000 pilot plant testing programme in September 1997, Austpac granted Iscor licences to use The ERMS and EARS technologies at Iscor's Empangeni Heavy Minerals Project. Austpac will receive a series of payments, the nature of which is subject to a confidentiality agreement, upon start-up of project. We have crudely estimated that the net present value of a royalty stream on a 250,000 tonne titania slag project could be worth between \$7-10 million. Project start-up was expected by mid 1999, however has been deferred pending completion of an ongoing feasibility study. No development decision has as yet been made, although Iscor chairman Hans Smith has said that an announcement on a decision to mine titanium sands is expected with its interim results in early March.

**Global Potential**

Potential for worldwide application of the ERMS/EARS technologies could improve significantly following the securing of funding for the Indian ERMS synthetic rutile plant.