

AUSTPAC RESOURCES NL
 (ASX Code: APG)

February 2002

Recommendation: Buy @ \$0.08

- Important new technology developed for mineral sands treatment
- Worldwide joint venture deal with Ticor Ltd
- Joint venture deal in India with Ticor and Indian Rare Earths
- Approval expected shortly for new technology demonstration plant

CORPORATE DETAILS

Last Sale Price: \$0.08
 Year High/Low: \$0.16/\$0.08
 Issued Shares: 323.5m
 Market Cap: \$26m
 Avg Month Vol: 4.3m
 Top 20 Shareholders: 20%

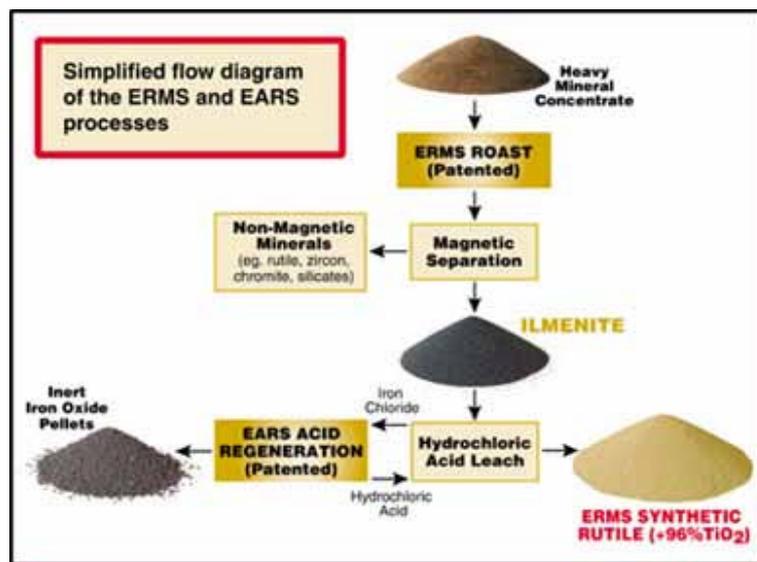

KEY POINTS

- The company is well advanced with Ticor in terms of finalising engineering and costing estimates with respect to the construction of its proposed demonstration synthetic rutile plant in Victoria. We anticipate the results of the study will be available before the end of February 2002. The main objective of the plant will be to demonstrate the suitability and commerciality of Austpac's ERMS and EARS technology with respect to the treatment of Indian heavy mineral sands.
- Austpac, Ticor and its Indian joint venture partner, Indian Rare Earths, have agreed to modify their joint venture agreement to facilitate the construction of the proposed demonstration plant in Victoria, instead of in the Indian state of Orissa. The joint venture will still pursue development of the proposed 100,000 tpa full-scale plant in India, once Austpac's technology has been proven in the pilot plant.
- Austpac is aiming to develop further longer-term opportunities for its technology within India, and is presently evaluating a number of new heavy mineral opportunities. The company is progressing discussions with several Indian companies with the aim of utilising its ERMS and EARS technology to exploit India's high-grade heavy mineral deposits, which account for around 20% of the world's ilmenite resources.

COMPANY BACKGROUND & OVERVIEW OF ERMS & EARS TECHNOLOGY

After beginning its corporate life as a gold explorer, Austpac's focus since 1995 has been solely on the development and refinement of its patented ERMS and EARS mineral sands processing technologies. Austpac has developed two proprietary processes that have direct application to the mineral sands/titanium dioxide industry. The first is ERMS, which stands for *Enhanced Roasting and Magnetic Separation*, whilst the second is EARS, which stands for *Enhanced Acid Regeneration System*. The technologies have tremendous potential, have been developed in-house, and are patented and exclusive to Austpac.

These two technologies are designed to produce high-grade synthetic rutile, which is used as a primary feedstock in the chloride process, which in turn is used to manufacture titanium dioxide pigment. Titanium dioxide (TiO_2) pigment is the brilliant white pigment used in the paint and plastics industries and to a lesser extent in the paper industry. TiO_2 pigments are superior to all other alternatives and are highly sought by paint and other manufacturers throughout the world. *Through utilisation of the ERMS and EARS processes, high-grade synthetic rutile can be manufactured from any ilmenite type.* The global TiO_2 pigment market has grown over the last 20 years by 3% p.a. and is now worth around US\$8 billion annually.



The chloride process, a more environmentally friendly process than the older sulfate process, currently produces more than 60% of the world's TiO_2 pigment. It however requires a feedstock with a high TiO_2 content (generally $>85\%$). Most natural sources of high TiO_2 minerals such as rutile are now exhausted, so chlorinatable feedstock is manufactured from ilmenite, a common mineral generally containing around 50% TiO_2 . Upgrading can be achieved either by electro-smelting, which produces titania slag, or by chemical processing to produce the $>90\%$ TiO_2 material known as synthetic rutile. This where Austpac's ERMS process comes in.

With respect to the ERMS process, ilmenite is initially roasted to prepare it for leaching by ensuring the TiO₂ is in the insoluble rutile form. The ilmenite is then rapidly leached at atmospheric pressure in strong hydrochloric acid to remove the iron, with the resultant 'synthetic rutile' then being washed, filtered and dried to produce a final 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.

MAJOR ADVANTAGES OF AUSTPAC'S ERMS AND EARS TECHNOLOGY

- ❑ When combined, Austpac's ERMS & EARS technologies can produce the world's highest quality synthetic rutile (>96% TiO₂), at a claimed cost advantage as high as 25%.
- ❑ The ERMS roasting process more effectively magnetises ilmenite than comparable methods, so it can be easily separated from other minerals.
- ❑ The EARS acid regeneration system reconverts iron chloride (a by-product of the acid leaching process) into hydrochloric acid at a significantly lower cost than the alternative methods, whilst a plant is also up to 50% cheaper to build.
- ❑ Both technologies are environmentally friendly and the end-products are free of the radioactive issues associated with alternate technologies.
- ❑ The successful treatment of ilmenite samples from over 60 deposits indicates that ERMS and EARS are the only technologies able to reliably process any type of ilmenite anywhere in the world. *ERMS and EARS are potentially the most significant and efficient mineral sand technologies available in the world.*

PROGRESS ON COMMERCIAL DEVELOPMENT OF AUSTPAC'S TECHNOLOGIES

Austpac is pursuing commercial development of its ERMS and EARS technology on two fronts, through joint venture deals in India, and in the Murray Basin of southeastern Australia.

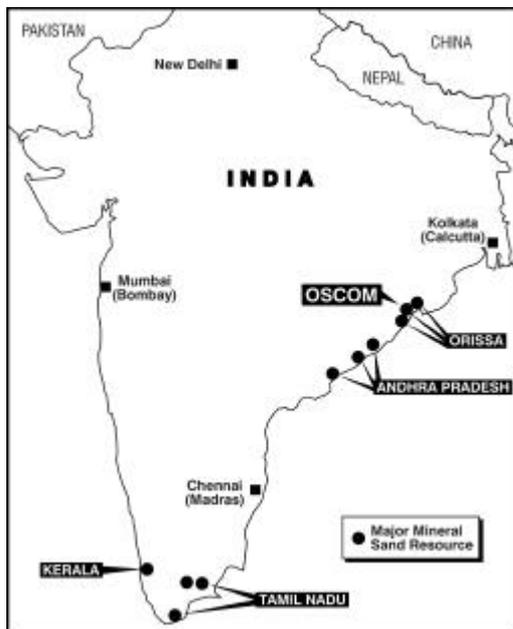
i. India

Austpac entered into an agreement in 1998 with Indian Rare Earths Limited (IRE), the government entity that controls all mineral sand developments in India. The agreement involved the investigation of establishing an ERMS synthetic rutile plant in India, to be known as the AusRutile Project. IRE became interested in the ERMS process in 1997 when Austpac demonstrated that the technology could produce high-grade synthetic rutile from ilmenite sourced from three substantial deposits on India's east coast. The deposits have an aggregate resource base of more than 120 million tonnes of economically viable ilmenite, representing approximately 8% of the world's known resources. They have the potential to support annual production of 500,000 tonnes of synthetic rutile for more than 70 years.

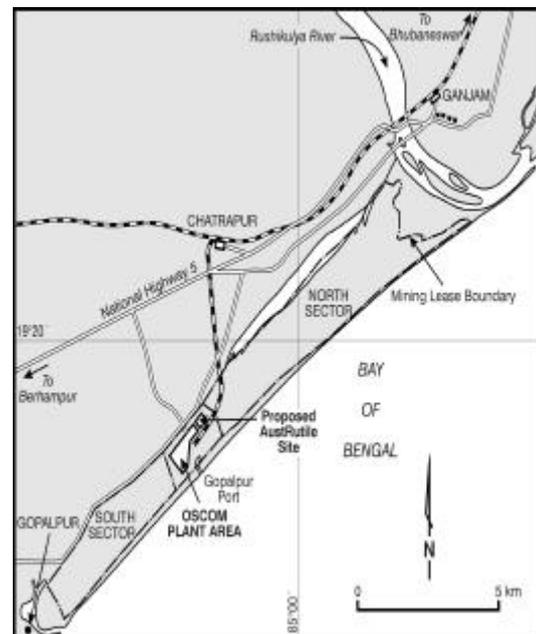
Following further lengthy negotiations, Auspac entered into a worldwide joint venture agreement with Ticor Ltd during 2000 that allows development of the AusRutile Project and give Auspac and Ticor an equal 37% share in the newly formed AusRutile India joint venture company, which will hold the partners' 74% project stake, with IRE retaining 26%. As part of the deal, Ticor will provide loan funds for Auspac's share of project development, if Auspac so chooses.

Initial plans for the construction of a demonstration plant as a precursor to a full-scale integrated ERMS and EARS facility, have been revised by the joint venture. Instead, Auspac and Ticor propose construction of the demonstration plant in Victoria, although its main purpose will be to show the capability of Auspac's technology to treat and upgrade Indian feedstock. Furthermore, the joint venture still intends to undertake development of a full-scale operation at Orissa, which will comprise a mine, mineral separation plant and an integrated ERMS and EARS synthetic rutile plant. The first Indian plant will have a capacity of 100,000 tpa, although the joint venture reserves the right to double planned throughput. Such an operation would have access to the high-grade heavy mineral deposit at Chatrapur. We understand that this revised arrangement will be incorporated into a formal agreement during the first quarter of 2002. We are hopeful that this will also facilitate final Indian government approval for the project in the very near future.

Location of Orissa Sands Complex



Location of proposed AusRutile SR plant



Upon successful demonstration of the plant, a +200,000 tpa synthetic rutile plant is planned at an estimated capital cost of US\$130 million, of which Auspac's share would be US\$48 million. This plant would generate forecast annual revenues of US\$96 million and pre-tax cashflows of US\$52 million, of which Auspac's share would be US\$19 million (A\$37 million). We estimate a high internal rate of return of greater than 30%, with capital payback in under three years. Auspac has also recently held discussions with

a number of Indian companies regarding participation in new Indian mineral sands projects through the application of the company's ERMS and EARS technologies. We understand that these projects are still at the formative stage and details are in commercial confidence.

ii. Murray Basin, southeastern Australia

Mineral sands activity in the Murray Basin of eastern Australia has undergone a resurgence in recent years, primarily as a result of the discovery of more economically viable, coarser-grained deposits. These are probably the last significant resource of premium ilmenite in Australia and could attract a significant price premium. When traditional magnetic separation is used to process the sands, the resulting ilmenite generally contains >1% Cr₂O₃, which means that the concentrate is either unsaleable (Cr₂O₃ < 0.4% is required), or at best cannot command a premium price. Austpac has undertaken ERMS testwork on behalf of numerous Murray Basin exploration companies and its technology has proven to be highly effective in reducing the chrome content of the concentrate to acceptable levels. Austpac's aim is to licence its technology to these emerging producers, which in turn could generate significant returns over the medium-to-longer terms.

During November 2001, Austpac and Ticor announced the investigation into the viability of establishing an integrated ERMS and EARS synthetic rutile plant in Australia. This plant had originally been intended for construction in India, as part of the AusRutile joint venture with Indian Rare Earths. The engineering and costing estimates for the Australian plant are believed to be almost complete, with several potential locations in Victoria being examined. The initial plant will not only process Indian ilmenites, but also ilmenites from the Murray Basin and will have a capacity of around 5,000 tpa. It is planned to run this plant for a period of two years.

This will ensure that Austpac and Ticor are positioned to rapidly implement a full-scale plant once the technologies are shown to be 'bankable' and sales commitments are obtained for product. We anticipate that a demonstration plant of this type could have a capital cost of around \$10 - \$15 million, depending on its ultimate location, with the full cost being funded by Ticor. Rapid government approval could see a potential project go-ahead in the first half of 2002.

Another recent advance has been the refinement of roasting and separation techniques for ilmenite from BeMax Resources' Ginkgo deposit. BeMax is one of the Murray Basin's emerging producers, and has provided a 500kg ilmenite concentrate sample for testwork at Austpac's pilot plant at Kooragang Island in Newcastle. Austpac has developed a new low temperature roast (LTR) to remove deleterious minerals such as chromite, which complements the company's ERMS high temperature roast (HTR). LTR provides flexibility to produce suitable feedstock for both chloride and sulphate route pigment. Ausenco has been commissioned to complete design, capital and operating cost estimates for a 100,000 tpa HTR and/or LTR plant, under an agreement between BeMax and Austpac. Negotiations for the use of the technology are underway.

DIRECTORS' PROFILE

Alfred Paton, Chairman: Engineering background, with more than 50 years' business experience. Formerly Managing Director and Chairman of Placer Pacific and Kidston Gold Mines, and a Director of Placer Dome. He is currently Chairman of AuIron Energy.

Michael Turbott, Managing Director: Exploration background, with 30 years' mining experience. Formerly a Director and Vice President of Kennecott Explorations (Australia) and Chairman of Denham Coal Associates and a Director of Denham Coal Management.

Harold Hines: More than 50 years' experience in operations, development, management and consulting in the mineral sands and alluvial mining industry. Managing Director of International Mineral Developments, which provides mine planning, construction and commissioning services.

Terry Cuthbertson: Extensive international corporate experience, particularly with respect to India. Former senior partner with KPMG Corporate Advisory Services and Group Finance Director with Tech Pacific. He is currently Chairman of Telco Australia Ltd.

RECOMMENDATION

Through increased participation in various types of mineral sands deals, Austpac has confirmed its participation as a key emerging player in the mineral sands industry. The company is positioned at a very exciting stage, with the emergence of excellent short- and long-term business opportunities. In India alone, Austpac appears set to become a significant player for at least the next 20 years. Austpac is also at the forefront of developments in the Murray Basin, with its profile growing as the market better appreciates the significance of its technologies. We maintain our Buy recommendation on the company.

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February 13th, 2002