

## **NEW HEAVY MINERAL SAND VENTURE**

**Broken Hill Prospecting Limited is pleased to announce lodgement of five Exploration Licence Applications to explore for heavy mineral sand deposits in the Murray Basin, south of Broken Hill, NSW (Figure 1).**

### **Highlights**

- **Applications include substantial heavy mineral sand ('HMS') prospects**
- **Five ELAs cover 858km<sup>2</sup>, located south of Broken Hill**
- **Targets are fine-grained, bulk tonnage titanium and zirconium sands**
- **20 prospects, several with considerable zones of HMS**
- **Recent improvements in mineral separation and processing of fine-grained sand may benefit future development**
- **Sulphuric acid produced from planned cobalt-pyrite processing at BPL's Thackaringa project may play a role in upgrading titanium product**
- **Lodged by Broken Hill Minerals Pty Ltd (100% owned subsidiary of BPL)**

### **Summary**

Broken Hill Prospecting Limited (ASX code BPL) has identified an opportunity to acquire numerous known heavy mineral sand ('HMS') prospects in the extensive Murray Basin of south western NSW. These could add considerable value to BPL and provide important synergies for any future development of BPL's cobalt-pyrite deposits and associated chemical industries based on sulphuric acid production.

BPL has reviewed historical mineral sand exploration in NSW with a view to establishing a foothold in the HMS industry where emerging technology is making significant advances in processing and recovery of titanium (Ti) and zirconium (Zr) minerals (ilmenite, rutile, leucoxene and zircon) from fine-grained, large-tonnage HMS deposits.

Cristal Mining currently operates two mineral sands mines (Ginkgo and Snapper) in the NSW Murray Basin and a mineral separation plant at Broken Hill. According to Cristal's December 2013 quarter report these produced 163,479 tonnes of ilmenite and sales revenues of AUD309 million during 2013. The NSW Department of Planning & Environment recently approved Cristal Mining's application to construct and operate a new Murray Basin mining operation (Atlas-Campaspe Mineral Sands Project).

BPL has identified five areas which contain 20 known HMS prospects all of which have been discovered and drill tested by other mineral explorers (including Iluka Resources Ltd, Bemax

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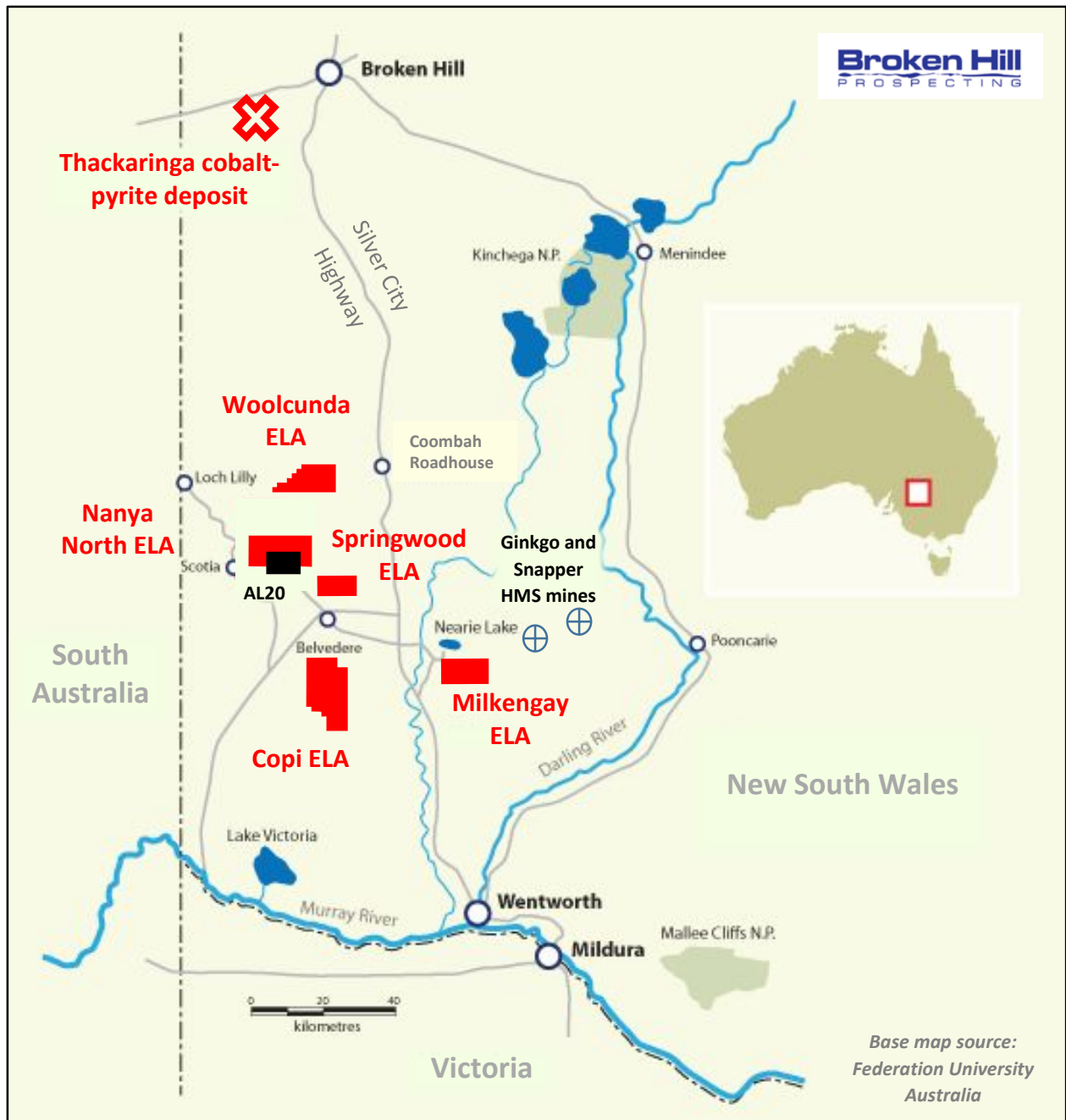


Figure 1. Location map of heavy mineral sand Exploration Licence Application areas (solid red) under application by Broken Hill Minerals Pty Ltd. Broken Hill Prospecting Limited's Thackaringa cobalt-pyrite deposits are located 25 kilometers south west of Broken Hill (red cross).

Resources Ltd (now Cristal Mining) and Westralian Sands Ltd). All of the prospects have been explored and drill tested for HM by other companies and several have been shown to be of considerable size.

Broken Hill Minerals Pty Ltd, a wholly owned subsidiary of BPL, has applied for five Exploration Licences ('ELA') (group 10, mineral sands) covering 858 square kilometres and including 20 HMS prospects (Table 1, Figure 1).

*Table 1. Summary of mineral sand EL Applications (Group 10 minerals).*

ELA	area		HMS Prospects
	units	km <sup>2</sup>	
Nanya North	40	116	Massidon, Strand A, Strand B, Nanya 1, Plain Tank
Woolcunda	59	171	Magic, Mazar, Woolcunda
Springwood	32	93	Springwood
Milkengay	65	188	N226(N265), N264, 500, Milkengay
Copi	100	290	Copi, Bulli, Circus, Wemba, Tarawi, Yabbi and Nulla
<b>totals</b>	<b>296</b>	<b>858</b>	

Processing of ilmenite separates from HMS may require substantial quantities of sulphuric acid (sulphate process), a chemical which will likely be produced during any future processing of cobalt-pyrite ore from BPL's 100%-owned Thackaringa project, located 25 kilometres to the south west of Broken Hill (Figure 1). Sulphuric acid could assist in the future upgrade of ilmenite (USD170-200/ton) to titanium pigment which recently traded above USD2,000/ton.

## Nanya North ELA

Five separate mineral sands deposits have been reported during previous exploration in the Nanya ELA. Several gypsite occurrences have also been recorded, although it is unlikely that these will have future commercial value (gypsite is a variety of gypsum (CaSO<sub>4</sub>·2H<sub>2</sub>O) consisting of dirt and sand).

### MASSIDON PROSPECT

The Massidon deposit is a large tonnage low-grade, medium-grained HMS deposit which has been explored by Bemax Resources. Bemax interpreted Massidon as an offshore, or lower beach, marine deposit which is geologically consistent over large areas and can be evaluated by wide spaced drilling. Part of the deposit is located within AL20 (Assessment Lease AL20 held by Peregrine Mineral Sands Pty Ltd (a subsidiary of Cristal)), which borders the Nanya North ELA (Figure 1).

The NSW Department of Trade and Investment (Resources and Energy) has located the center of the Massidon deposit outside the northern boundary of AL20 and within the Nanya North ELA. BPL considers that a considerable portion of the deposit is likely to extend into the application area.

An estimation of the size of the substantial Massidon HMS deposit was announced by Bemax Resources on 7 December, 2006 together with details on the composition and geology of the deposit. Changes to ASX reporting guidelines do not allow BPL to report the Bemax results or resource estimate but the information can be located on the ASX website at: <http://www.asx.com.au/asxpdf/20061207/pdf/31000s7m52x1br.pdf>

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At Massidon, the overburden depths are variable and dependent on topography. In some areas the HMS horizon occurs at surface.

#### *OTHER PROSPECTS*

Several other prospects occur within the Nanya North ELA, and it is unclear if these are extensions to the Massidon HMS mineralisation or separate deposits. Strand A, Strand B, Nanya 1, and Plain Tank mineral sands prospects have been described and drill tested by previous explorers.

## **Woolcunda ELA**

The Woolcunda ELA is located approximately 100 kilometres south of Broken Hill and about 10 kilometres west of the Silver City Highway (Figure 1). Three HMS prospects are known in the application area.

#### *MAGIC PROSPECT*

The Magic Prospect is characterised by an ilmenite dominated heavy mineral assemblage within the Loxton-Parilla Sand Unit. Westralian Sands investigated the Magic Prospect and described a mineralised HMS strand as being open to the north-west with the potential to be a large, near-surface ilmenite resource. Future drilling by BPL could aim to up-grade the deposit to Inferred Resource status.

#### *WOOLCUNDA PROSPECT*

The Woolcunda Prospect is located approximately 5 kilometres to the north of Magic. This mineralised zone was also identified by Westralian Sands and will require shallow drill testing to determine strike extent and size.

## **Springwood ELA**

The Springwood prospect is located 12 kilometres south-east of Nanya North ELA (Figure 1). HMS has been described by several exploration companies. Because the mineralisation has a poor mineral assemblage, previous explorers have considered that the Springwood mineralisation was unlikely to be economic.

Several company exploration reports described considerable HM content at Springwood although they provided no breakdown of mineral types. The deposit is quite fine-grained and may have formed in a distal, off-shore setting rather than as a strandline. No information on overburden or deposit size has been located but heavy minerals occur within very fine-grained sands up to 20 metres thick.

Improved spiral sand separation technology may enhance the economics of the Springwood HMS if grade and size are found to be encouraging.

## **Milkengay ELA**

HMS prospects N226(264), 500 and N265 are located ten kilometres south of the Nearie Lake Nature reserve and about 20 kilometres south west of Cristal Mining's Ginkgo and Snapper HMS mines (Figure 1). All have relatively low ilmenite content and are thin deposits, however both gold and platinum showings occur in the sand.

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Milkengay Lake is located about 8 kilometres west of N265 and contains a celestite/strontianite strontium prospect.

## **Copi ELA**

The Copi ELA is located about 150 kilometres south of Broken Hill. Within the Copi ELA an extensive zone of clean, white and yellow, medium to fine grained sand (Loxton-Parilla Sand) has considerable disseminated heavy mineral content (0.1-1% HM). Also, a fine-grained, well sorted, marine sand containing heavy minerals underlies the Loxton-Parilla Sand, and in this unit typically contains HM contents of up to 6%. Numerous HMS prospects have been reported by previous companies and these include Tarawi, Circus, Bully, Copi North, Nulla, Yabbie, and Copi South. All have been investigated by drilling and all contain HMS mineralisation.

## **Planned Exploration Activities**

BPL will advance research and data compilation on each of the 20 prospects within the five exploration licence application areas. When granted, BPL plans to undertake shallow rotary drill testing along grids that cover the highest priority target areas. This work will use conventional drilling equipment, and most holes are likely to be less than 30 metres depth.

Sampling and assessment of drilled intervals will take care to evaluate the fine grained HMS fractions as well as the more conventional coarser grained strand zones. Previous work by other companies in most of the ELA areas has located considerable volumes of fine-grained HMS as well as narrower zones of coarse sands with appreciable ilmenite, rutile and zircon content.

BPL's planned future work will give preference to evaluation of bulk tonnage targets and will consider recent technological developments which may enhance processing of relatively fine grained HMS.

## **Comments**

BPL's Managing Director Dr Ian Pringle commented:

*"The applications for 100% ownership of substantial tenements covering titanium and zirconium mineral sands south of Broken Hill is a huge step forward for the Company. The project will complement BPL's large cobalt-pyrite deposits and our vision of developing into a significant strategic metal producer."*

*"Recent advances in technology have provided lower cost and competitive processing options for fine-grained heavy mineral sands, and these have opened up an opportunity to take a fresh look at some known HMS deposits. Currently depressed Ti and Zr prices have provided the opportunity for BPL to apply for areas of substantial mineralisation, previously assessed by large exploration companies over several decades."*

*"Located south of Broken Hill, with access provided by the Silver City Highway, any new HMS development would likely be a considerable boost to the Broken Hill economy."*

*"Some of the ilmenite separated from HMS mining could be amenable to upgrade to titanium pigment using sulphuric acid. BPL is evaluating opportunities to establish a sulphuric acid"*

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industry associated with cobalt recovery from the company's Thackaringa cobalt deposits. The acid could also play a significant role in value adding any titanium production.”

Yours faithfully,



Ian J Pringle  
(Managing Director)

**Competent Person Statement**

*Exploration activities and results contained in this notice are based on information compiled by Dr Ian Pringle, a Member of the Australasian Institute of Mining and Metallurgy. Dr Pringle is the Managing Director of Broken Hill Prospecting Ltd and also a Director of Ian J Pringle & Associates Pty Ltd, a consultancy company in minerals exploration. He has sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). This information was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. The Potential is conceptual. More drilling is required to further define it and there is no certainty that this will result in a Mineral Resource. Dr Pringle has consented to the inclusion in this report of the matters based on his information in the form and context in which it appears.*

**For further information contact:**

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