

## Quarterly newsletter - February 2014



University of NSW study team examining the soil profile at the Thackaringa Cobalt Project.

### Dear Shareholder and Broken Hill Prospecting Supporter,

2014 is promising to be an eventful and rewarding year for Broken Hill Prospecting ('BPL'), and in this newsletter I summarise some interesting history, recent news and planned activities that affect BPL. Both sulphuric acid and cobalt will form a very significant part of the Company's future, and I am confident that during the year there will be significant advances for both these important future co-products from BPL's pyrite deposits.

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## University of NSW cobalt research

Emma Cohen has commenced her research study entitled "The Effect of Deep Weathering on Cobaltiferous Pyrite: A Case Study on the Thackaringa Cobalt Deposits, NSW".

In December Emma undertook field work for her BSc thesis at the University of NSW. The study

included soil and gossan sampling (see photos) and is examining the mobility of cobalt during weathering.

Emma's work will have important implications for BPL's ongoing exploration for secondary, redeposited cobalt mineralisation.



Emma Cohen and field party examine regolith samples on the slopes of Pyrite Hill, one of the project's large cobalt deposits.

## Broken Hill Chemical Ltd has a new website

A new website (<http://broken-hillchemical.com>) to promote chemical opportunities from sulphuric acid production from future processing of cobalt-pyrite ore has been established. Because of recent interest in both future sulphuric acid and cobalt production from

Chinese-based groups, the website includes a Mandarin translation.



## BPL's business model to form basis of MBA studies

The Australian Graduate School of Management, University of NSW (AGSM) will use our Broken Hill Chemical business model as a case study for a small team of graduate students as part of their MBA course. The study will commence in

early 2014 and take several months to complete. Results of the work will assist Broken Hill Prospecting with valuable data and insight for strategic planning of a new start-up sulphuric acid business.

## Broken Hill miner, Perilya, accepts takeover offer by China's Zhongjin Lingnan

The Chinese zinc miner, Zhongjin Lingnan, already a substantial shareholder of Perilya (53.4%), has offered to buy remaining shares in Perilya at \$0.35 in a \$269.3 million deal. Perilya's Broken Hill Operations, which

include the Potosi/Silver Peak Mine, saw significant improvement during the middle of 2013 with a 7% increase in combined zinc and lead metal production for Q2/2013 (29,058 tonnes of combined zinc and lead).

## Geoscience Australia Report lists cobalt near top of critical commodities

Several countries have developed risk lists of metals and minerals that are considered to be critical, and cobalt is ranked highly on each. A study undertaken by Geoscience Australia in late 2013 (R.G. Skirrow et al.) has also placed cobalt in the top seven world critical commodities. In the report, the level of criticality of a commodity reflects the combination of risk of supply and the importance of the particular commodity. The report describes Australia's mineral deposits that are known to, or may contain, significant quantities of cobalt and other critical commodities.

## Critical Minerals in the US

A bipartisan US Senate group has introduced the Critical Mineral Acts, which promote everything from minerals research to more efficient permitting and minerals education. The bill aims to help restore the US as a global leader in critical minerals production, create jobs and strengthen national security. Senator Mark Udall of Colorado, who helped introduce the bill, noted that: "Every gram of these rare elements, like lithium and cobalt, is essential to our nation's ability to win the global economic race"

## Port Pirie smelter review

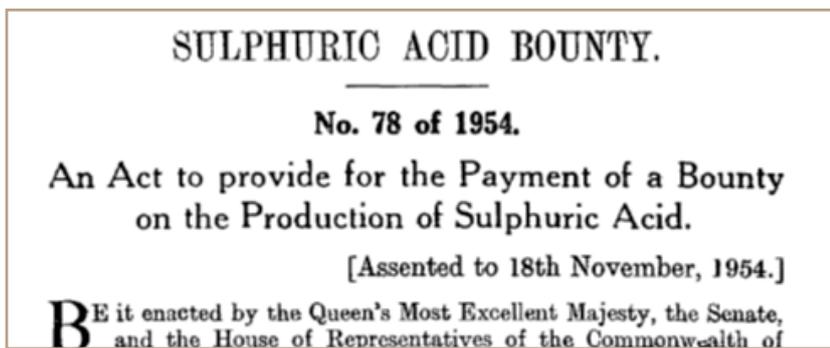
In late October, Nyrstar announced results of a redevelopment study to transform its Port Pirie lead plant in South Australia. The Port Pirie overhaul is likely to cost EUR280 million (AUD406m) and is expected to de-bottleneck smelting operations, add fuming capacity and increase minor metals extraction. The plant upgrade will include a new oxidation furnace and is expected to be commissioned in early 2016.

## Sulphuric acid bounty in 1960

In order to encourage mining of pyrite for production of sulphuric acid, the Commonwealth paid a bounty via the Sulphuric Acid Bounty Act, 1954 and the Pyrites Bounty Act, 1960. Only two mines were established in Australia specifically to mine pyrite ore (Brukunga, SA and the King Mine at Norseman, WA). In the late

1960's cheaper sources of sulphur became available, mainly due to Canada's refining of 'sour natural gas'.

The government withdrew the pyrite subsidy on 31 May 1972, and both pyrite mines ceased mining operations on the same day.



## Continuing unrest in the DR Congo

In December, the DRC government signed a peace deal with the M23 rebel movement however, on-going violence in Katanga has led the UN to estimate that there are now 400,000 displaced people in the province. Since October, more than 700 houses have been destroyed by militia groups to punish locals who rallied behind government forces during fighting in late 2013. The militias are seeking the independence of Katanga, claiming that the province, which has most of the country's copper and cobalt resources, has been contributing higher revenue than other areas.

During late December, Congolese

security forces repelled a wave of attacks in the capital, Kinshasa, in gun battles that left more than 70 assailants and three troops dead. Rebels, stormed the state television station, the international airport and the military headquarters. In early January another 26 people were killed in a battle between government and rebel forces in the DRC's second city Lubumbashi.

According to the 2014 Cobalt Market Review and Forecast (Merchant Research & Consulting Ltd) the DR Congo accounted for 54.5% of global cobalt production in 2012.

## DR Congo delays ban on export of copper and cobalt concentrates

A DRC government ban on exports of cobalt and copper concentrates has been reset for 31 December, 2014, according to a government notice on 28 December last year. The decision was taken in response to insufficient electricity supplies. The ban, which had been due for implementation at the start of 2014, had already been delayed from July 2013, and was replaced with increased taxes. The Government is using higher taxes and threats of export bans to encourage homeland growth of metal processing industries.

According to The SNL Financial report on the DRC by Jax Jacobson, published late last year, the country hosts an estimated US\$24 trillion in resources and is the third-largest producer of diamonds in the world. Copper and cobalt reserves in the country are massive, "some say the DRC holds a quarter of global copper reserves and a third of worldwide cobalt deposits" and is the source of large deposits of gold, zinc and coltan, used in electronics.

## London Metals Exchange (LME) favoured by large cobalt producer

Freeport-McMoRan Copper & Gold Inc. announced in October that it has switched from the decade-long industry standard for cobalt pricing data to London Metal Exchange (LME) pricing data for its \$US200 million worth annual cobalt sales. Freeport is attracted by the improving trading volumes on the LME and probably also by the aspect of transparency and lack of manipulation. According to Freeport's 2012 annual report, the company made about \$US195 million from the annual sale of over 11,000 tonnes of cobalt, nearly 15% of world annual global output.

## Cobalt oxide link to future renewable energy

Cobalt oxide nanoparticles work as a catalyst to split water into hydrogen and oxygen, recent research at the University of Houston has found. The process is rapid and uses sunlight, potentially creating a clean and renewable source of energy.

Photocatalytic water-splitting experiments have been undertaken since the 1970s, but this is the first to use cobalt oxide and the first to use neutral water under visible light at a high energy conversion efficiency without co-catalysts or sacrificial chemicals.

The process has potential as a source of renewable fuel, but with a solar-to-hydrogen efficiency rate of around 5%, the conversion rate is still too low to be commercially viable.



Outcrop sampling on Pyrite Hill, one of the project's large cobalt deposits.

## Boost for cobalt batteries

Tesla Motors recently announced plans to build a lithium-ion battery factory that would likely be the biggest in the world, with production comparable to the combined total of all current world lithium-ion battery production.

Securing adequate supplies of battery cells has been one of the biggest challenges for the electric car-maker. Tesla uses lithium cobalt batteries, the same kind used in most laptops.



Tesla's Model S electric car's lithium cobalt battery pack

## BPL features in Mining Chronicle

The Mining Chronicle newspaper of Perth is preparing a feature on Broken Hill Prospecting for the February 2014 edition. The feature will provide a summary of the cobalt-pyrite deposit and focus on the proposed chemical industry and sulphuric acid

production. BPL is planning to widely promote the Company's activities at investment seminars and by conference presentations during 2014 including the Broken Hill Resources Investment Symposium between 25-28 May.

## Planning a new chemical business

BPL continues to seek a partner to assist in building a modern sulphuric acid plant to use feedstock of cobaltiferous pyrite concentrate produced from the Company's Broken Hill deposits. Cobalt produced from a proposed acid making process, together with hematite iron and feldspar and energy co-products, would likely contribute significant future value.

Numerous industries require sulphuric acid for processing. These include developing mineral

sand (ilmenite) processing, rare earth metals deposits, phosphate fertiliser resources, nickel, copper, and uranium mining and many chemical industries.

BPL's cobaltiferous pyrite deposits are particularly well suited to acid production as they contain negligible deleterious metals, are very large and are well located for cost effective open-cut development.

I look forward to further announcements as our work

## Learn about the sulphuric acid industry

The 7th Australasian sulphuric acid workshop will be held in Adelaide between 24-27 March (venue Stamford Grand Adelaide Hotel, Glenelg). The workshop will consist of presentations, insightful producing plant presentations, maintenance panel discussions, a keynote address on the global sulphuric acid market for 2014 and beyond, and networking opportunities. Professionals from the phosphate, metallurgical/smelting and acid regeneration industries from around the world will attend. View more information or register at [www.acidworkshop.com](http://www.acidworkshop.com).

## BPL receives R&D Tax refund formed

In December, BPL received a research and development (R&D) Tax offset amount of \$344,973.60. This was from the company's 2013 Research & Development Tax Incentive Schedule for the year ended 30 June 2013, and was calculated with assistance from KPMG.

progresses and invite you to visit our website at [www.bhpl.biz](http://www.bhpl.biz). News and updates are also distributed by twitter. BPL's twitter address is @BH\_PL.

Yours faithfully

Dr Ian Pringle  
Managing Director

### Competent Person and Reporting Statement

Exploration activities and results contained in this report 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 both the December 2004 and December 2012 editions of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). 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.

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