



6<sup>th</sup> June 2017

## Excellent Initial Lithium Recoveries to 90% from Burro Creek Clay Project

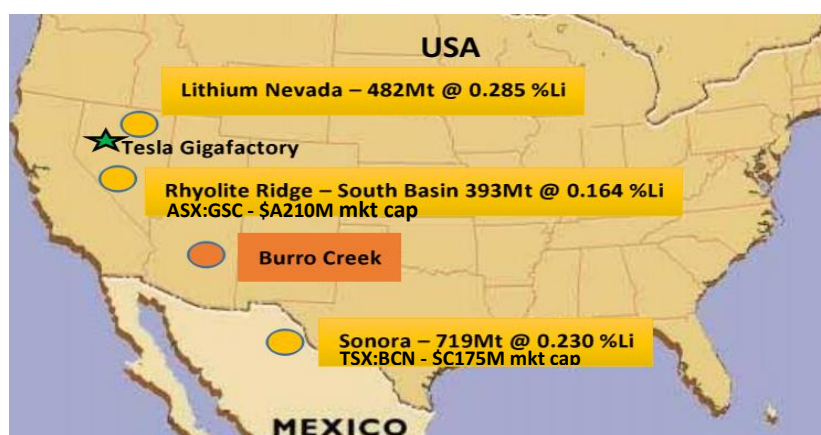
- ◆ Lithium recovery of 90% from Burro Creek clays using simple acid leach, with acid consumption comparable to competitor lithium clay project in Nevada (\**Rhyolite Ridge ASX-GSC*);
- ◆ Initial lithium recoveries up to 75% using an alternate calcine-water leach method similar to that proposed for major competitor lithium clay project in Mexico (\**Sonora TSX-BCN*);
- ◆ Permitting in progress for resource drilling of the Burro Creek lithium clay target;
- ◆ Near surface, thick, flat lying and very extensive clay zone with high-grade assays to 1650 ppm Li.

Zenith Minerals Limited ("Zenith" or "the Company") is very pleased to advise that results of initial, sighter level metallurgical testwork on lithium clays from the Burro Creek project in Arizona (Figure 1), funded by its joint venture partner Bradda Head Ltd have returned highly encouraging lithium recoveries.

Leach testwork was conducted by metallurgical consults JE Litz and Associates LLC in conjunction with Hazen Research Inc at their respective testwork facilities in Colorado. A bulk sample taken from outcropping, lithium bearing clays now confirmed by recent XRD testwork to contain the smectite clay mineral variety saponite-hectorite, was subjected to a number of tests under variable laboratory conditions.

High lithium recoveries of 90% were achieved in three leach tests using sulphuric acid at a temperature of 80°C. Acid consumption was similar to that of raw ore from the Rhyolite Ridge lithium project in Nevada owned by Global Geoscience Limited (ASX:GSC- market capitalisation \$A210 million) as documented in a release dated 1<sup>st</sup> June 2017.

Additional initial testwork using alternate leaching methods as proposed for the Sonora lithium clay project located in Mexico owned by Bacanora Minerals Limited (TSX:BCN - market capitalisation \$C175 million) has also been completed. Calcined clay from Burro Creek with various additives was leached by water and up to 75% lithium recovery has been achieved to date.



\*Lithium Clay Projects – Total Measured, Indicated & Inferred Resources (Sources: BCN- NI-43-101 Report Dec 2015, LAC – TSX Release 22 Jun 2016, GSC – ASX release 10 Oct 2016)

Figure 1: Burro Creek – Location Map with Comparable Projects

### Corporate Details

ASX: ZNC

Issued Shares (ZNC) 189 M

Listed options (ZNCO) 24 M

Unlisted options 3.5M

Mkt. Cap. (\$0.09) A\$17 M

Cash A\$2.2 M

Debt Nil

### Directors

**Michael Clifford:**  
Managing Director

**Mike Joyce:**  
Non Exec Chairman

**Stan Macdonald:**  
Non Exec Director

**Julian Goldsworthy:**  
Non Exec Director

### Major Shareholders

HSBC Custody. Nom. 6.6%

City Corp Nom 6.2%

Nada Granich 6.1%

Abingdon 4.1%

Miquilini 4.1%

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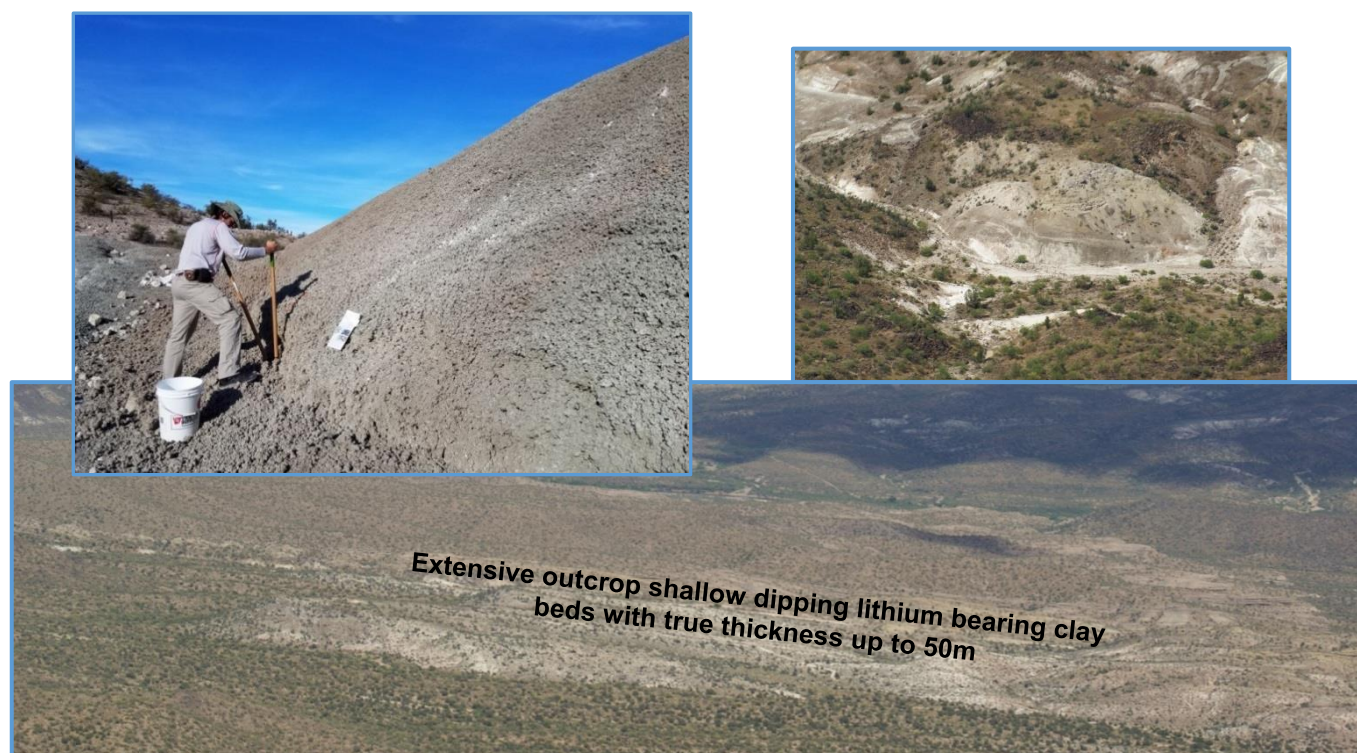
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This initial metallurgical testwork provides strong encouragement to proceed with more detailed assessment of the Burro Creek project. Ongoing metallurgical testwork is continuing assessing both acid leaching and calcining-water leaching to determine the optimal lithium extraction approach for the Burro Creek clays. It is noted that testwork to date has been carried out only on surface samples that may or may not be representative of deeper clays or the overall grade of the Burro Creek deposit.

The Company considers that trenching and wide-spaced drill testing would likely lead to rapid resource definition. Trench and drill program designs have been completed and permits are in preparation to be submitted to the State of Arizona in mid 2017. The trench and drill programs will also provide definitive samples for future more detailed metallurgical testwork.



**Figure 2: Aerial Views of the Burro Creek Project and Close up of Sampling Lithium Rich Clay Beds**

## Background on the Burro Creek Project Arizona

On the 10<sup>th</sup> November the Company announced that it had secured an exclusive option to acquire a 100% interest in the Burro Creek lithium clay project located in central western Arizona, USA. Located in an active mining district, Freeport McMoRan's operating Bagdad porphyry copper mine is located 10km from the Burro Creek project.

Initial surface sampling by the Company of the lithium clay exposures (reported 10th November 2016) returned results including: 20m @ 818ppm Li, 5m @ 1090ppm Li and 15m @ 930ppm Li & 50m @ 785 ppm Li.

Follow-up sampling results were announced to the market on the 13<sup>th</sup> January 2017. Results from that follow-up program returned generally higher-grade lithium results over greater widths (Figure 3).

- Results from composite channel sampling of zones where the full clay thickness is exposed in the field included: 33.6m @ 980ppm Li; whilst,
- Zones where lithium bearing clay zones are not fully exposed and are locally obscured by transported rubble and alluvium included: 15m @ 1427ppm Li and 15m @ 920ppm Li; 2.5m @ 1300ppm Li, 3.5m @

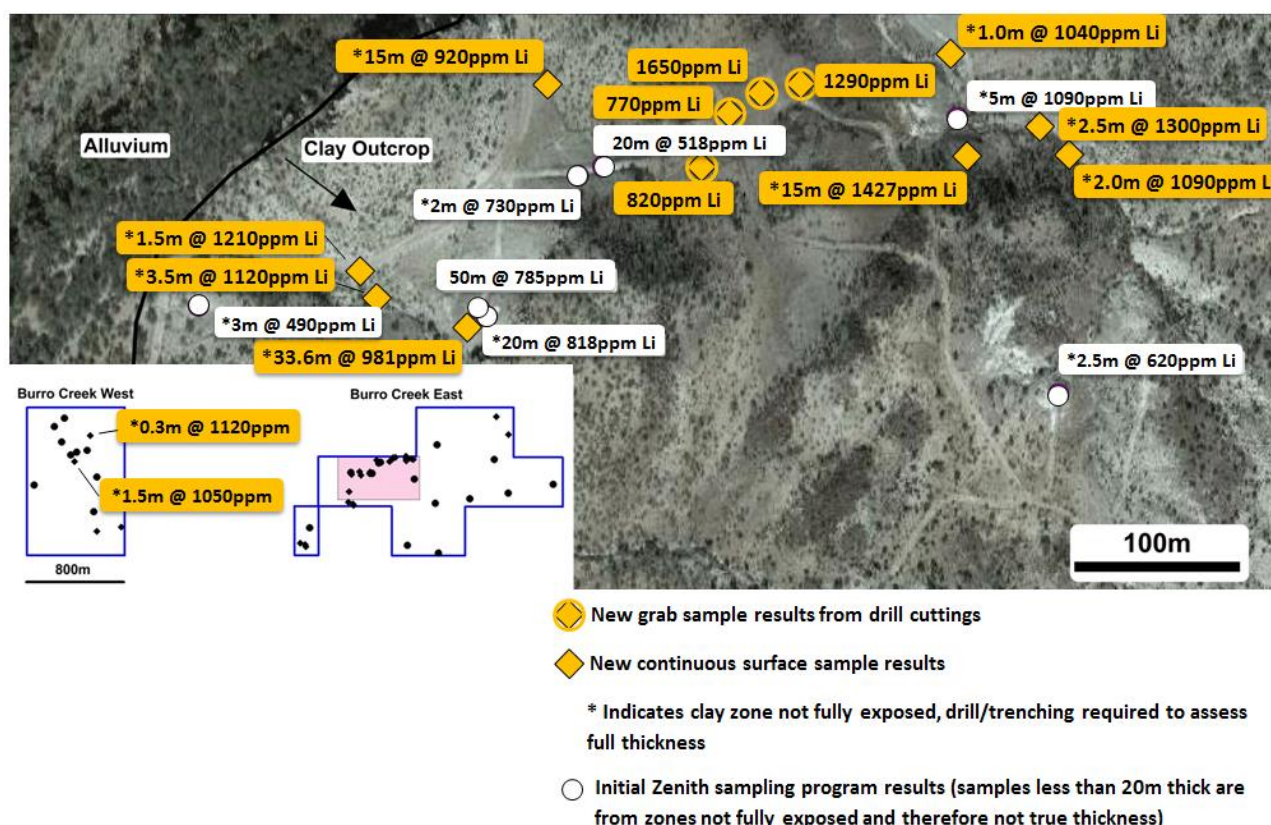




1120ppm Li and 1.5m @ 1210ppm Li. These results represent only a portion of the lithium clay horizon and drilling or trenching is required to test the full thickness of the lithium bearing units; and

- Grab samples of relict drill spoil from shallow holes drilled during a small, historical program to test the clay for industrial purposes returned results including: 1650ppm Li and 1290ppm Li. Encouragingly these are among the highest grades returned from Zenith's sampling to date and may indicate that surface sampling is understating the true lithium grade. True widths for these zones are unknown and follow-up drilling is required.
- A trial geophysical survey using passive seismic technique supports Zenith's geological interpretation of extensive flat lying, near surface lithium bearing clays.

The lithium bearing clay zone is a near surface, flat lying horizon extending over 1700m by 1000m within the eastern project leases and a further 800m by 600m within the western lease areas. Observations from mapping and sampling programs indicate that the clay horizon generally has a true thickness greater than 30 m where it is exposed in gullies within gently undulating, poorly vegetated hills that comprise the eastern project area. Previous drilling to test the clay quality for industrial uses intersected clay units over thicknesses up to 20m in the western half of the project area, notwithstanding that drilling did not penetrate the full thickness of those clay beds which are up to 50 m thick in outcrop in the eastern area. The Company therefore concludes that there is excellent potential for large tonnages of lithium bearing clay within the Burro Creek project.



**Figure 3: Burro Creek Sample Location and Results Map**  
(Enlargement - East Burro Creek Sample Results)



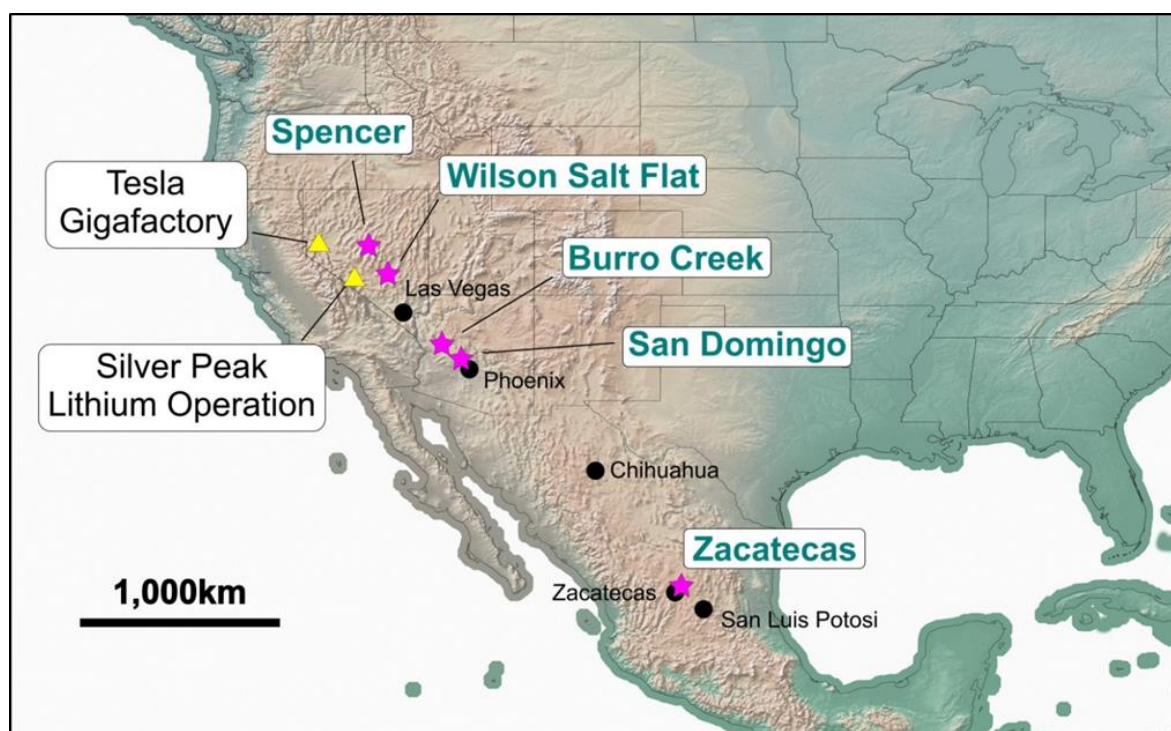
**Table 1: Lithium Clay Project Metrics.**

Project	Owner	Market Cap <sup>5</sup>	Lithium Clay Thickness	Lithium Grade (ppm)	Depth of Mineralisation
Burro Creek - Arizona	Under option to Zenith (ASX:ZNC)	A\$17M	30m – 50m?, full thickness not exposed	50m @ 785, 33.7m @ 981, 15m @ 1427, 2.5m @ 1300, (1 surface samples only)	0 - ? mapping indicates clay units are likely to be at shallow depths
Lithium Nevada (Kings Valley)	Lithium Americas (TSX:LAC)	C\$291M	0m - 90m typically 30m	2600 – 3200 <sup>2</sup>	0 – 200m
Sonora - Mexico	Bacanora Minerals Limited (TSX:BCN)	C\$175M	10 – 50m each unit	800 - 4300 <sup>3</sup>	0 – 400m
Rhyolite Ridge - Nevada	Under option to Global Geoscience Limited (ASX:GSC)	A\$210M	50m – 75m	1640 <sup>4</sup>	0 – 420m

<sup>1</sup>True width limited composite surface sampling by Zenith, <sup>2</sup>Range of lithium grades from inferred, indicated & measured resources, <sup>3</sup>Range of lithium grades from inferred & indicated resources, <sup>4</sup>Average grade of inferred resource. <sup>5</sup>as at June 2017.

## American Lithium Portfolio

Zenith has assembled an outstanding 100% owned lithium project portfolio over the past 6 - 12 months, including lithium brine, lithium pegmatite and lithium clay targets in the USA and Mexico.



**Location Map - Zenith's USA & Mexico Lithium Projects**

Lithium projects worldwide are of three types: brines, pegmatites and clays. The major lithium brine operations are located in South America (Chile, Argentina and Bolivia), China and Nevada, USA. Traditionally lithium brines are extracted from salt lakes into surface ponds where they are concentrated by solar evaporation and then fed into a processing facility with output as lithium carbonate for sale to battery manufacturers. Zenith's Mexican and Nevada lithium projects are lithium brine plays. Zenith's **Spencer** and **Wilson Salt Flat** brine projects in Nevada, USA are close to both Tesla's Gigafactory and to Albermarle Corporation's Silver Peak-Clayton Valley lithium brine operation, the only operational lithium project in the USA. Zenith's three new concessions:



Illescas, San Juan and San Vicente make up the **Zacatecas** lithium brine project in the emerging lithium brine district of San Luis Potosi State, Mexico.

Lithium pegmatite projects are exploited as traditional hard rock open pit mines (eg Australia's Greenbushes Mine) where concentrates of the primary lithium mineral spodumene are sold to third party processors who convert the concentrates to lithium compounds suitable for use by battery manufacturers. Zenith's **San Domingo** project in Arizona contains abundant spodumene bearing lithium pegmatites over 9 km strike.

Zenith's **Burro Creek** lithium clay project in Arizona is comparable to other lithium clay projects in the USA and Mexico subject to resource and development studies (e.g: Sonora project (Banacora –TSX).

Zenith's Nevada, Arizona and Mexico lithium projects are perfectly positioned to provide future supply to the growing USA domestic lithium battery market. Tesla Corporation has commenced construction of its lithium battery manufacturing facility (Gigafactory) outside Reno Nevada, whilst Faraday has set aside land in the Las Vegas industrial park for its battery plant.

## Activities on the American Lithium Portfolio

Field programs in Mexico and Arizona funded by Bradda Head are underway, and the JV will shortly start lithium exploration activities. Initial activities on the projects include:

- Electrical geophysical surveys at San Vicente and San Juan lithium brine projects at Zacatecas in Mexico, as prerequisites to drill testing, along with preparation for drilling, including community and landholder liaison;
- Ongoing sighter metallurgical testwork at Burro Creek lithium clay project in Arizona, which has shown encouraging initial results. Further more definitive work is in progress to determine the options for the extraction of lithium & potassium;
- Burro Creek state lease permitting for trenching and resource drilling and associated state lease renewal – as prerequisites to planned trenching & resource drilling; and
- An electrical geophysical survey at the Wilson Salt Flat lithium brine project in Nevada to determine the presence of brine and its depth, as a prerequisite to drill testing.

The aim of these initial work programs is to advance four of the lithium projects to drill ready status by end June 2017.

## Transaction Overview

The American lithium transaction with Bradda Head included a cash refund of Zenith's historic expenditure of US\$500,000 (~A\$660,000), US\$5 million (A\$6.6 million) in exploration expenditures over 3 years by Bradda Head to earn 55% project interest, a one off right for Zenith to contribute at 45%, or be free carried at 30% to the end of pre-feasibility studies on two projects. Bradda Head must spend a minimum of US\$500,000 on exploration on the projects and drill at least one project before it can withdraw.

In addition, Jim Mellon and other sophisticated investors completed a concurrent share placement of A\$1.5 million (ASX Release 15th March 2017) comprising 15 million ZNC ordinary shares @ 10c plus one free attaching ZNCO listed option for every 5 shares issued.

Key Zenith personnel will initially dedicate up to 25% of their time to the advancement of the American lithium projects at cost, to ensure seamless progression of the projects and allow transfer of the technical knowledge base. The partners have also agreed to collaborate on any additional lithium projects that either party acquires within the same jurisdictions.

The transaction brings together the financial strength and market contacts of Bradda Head with the strong technical knowledge of the Zenith team and its USA and Mexican associates to advance these exciting lithium projects.

The Board of Zenith will also continue to consider whether shareholders' interests might be best served by the possible future spin out of this now well-funded lithium portfolio, once the projects are more advanced.



### **Competent Persons Statement**

*The information in this report that relates to Exploration Results is based on information compiled by Mr Michael Clifford, who is a Member of the Australian Institute of Geoscientists and an employee of Zenith Minerals Limited. Mr Clifford has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Clifford consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

**6<sup>th</sup> June 2017**

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***Zenith is advancing its project portfolio of high-quality, gold, lithium and base metal projects:***

**Kavaklitepe Gold Project, Turkey (ZNC 30%, Teck 70%)**

- Recent (2013) grass roots gold discovery in Tethyan Belt
- Continuous rock chip sampling to: 54m @ 3.33g/t gold, including 21.5m @ 7.2 g/t gold
- Initial 2016 drill results include: 9 m @ 5.2 g/t Au from surface, 7.8 m @ 7.3 g/t Au from 3.3 m and 16.4m @ 4.7 g/t Au from 82.1m depth

**American Lithium Projects (Bradda Head earning initial 55%)**

**Zacatecas Lithium Brine Project, Mexico**

- New tenure (26,000 acres) staked over extensive system of salt lakes within an emerging lithium brine district at Zacatecas in central Mexico
- Lithium brines to 2.1% lithium reported in sampling conducted by the Mexican Government from solar evaporation ponds for salt production (10km west of Zenith's new tenure).
- Electrical Geophysical surveys planned

**San Domingo Lithium, Arizona USA**

- 9km x 1.5km lithium pegmatite field, initial surface sampling returned: 5m @ 1.97%Li<sub>2</sub>O including 2.4m @ 2.49% Li<sub>2</sub>O - Surface sampling and mapping prior to drill testing

**Spencer & Wilson Salt Flat Lithium Brine Projects, Nevada USA**

- Two lithium brine targets in producing lithium region - Geophysical surveys and infill sampling prior to drill testing

**Burro Creek Lithium, Arizona USA (ZNC option to acquire 100%)**

- Large scale lithium (Li) clay target under exclusive option - Metallurgical testwork to assess ease of extracting lithium, permitting for trenching and drilling in progress

**Australian Projects**

**Develin Creek Copper-Zinc-Silver-Gold, QLD (ZNC 100%)**

- 3 known VHMS massive sulphide deposits - JORC resources, 50km of strike of host rocks.
- 2011 drilling: 13.2m @ 3.3% copper, 4.0% zinc, 30g/t silver & 0.4g/t gold - Drilling planned to extend known deposits, geophysics, geochemistry to detect new targets

**Split Rocks Lithium & Gold, WA (ZNC 100%)**

- New 100% owned exploration licences covering 500km<sup>2</sup> in emerging Forrestania lithium district - Surface sampling to precede drill testing

**Earaheedy Manganese Project, WA (ZNC 100%)**

- New manganese province discovered by ZNC, potential DSO drill intersections (+40%Mn)

**Mt Alexander Iron Ore, WA (ZNC 100%)**

- JORC magnetite Resource 566 Mt @ 30.0% Fe close to West Pilbara coast, 50% of target untested - Seeking development partner/ buyer for iron project