ASX & MEDIA RELEASE

Zenith Minerals Limited
ABN 96 119 397 938

QUARTERLY ACTIVITY REPORT
FOR THE PERIOD ENDING 30th June 2017
HIGHLIGHTS

ASX CODE: ZNC

Exploration / Development
- Kavaklitepe Gold - Turkey
- American Lithium
  - Zacatecas – Mexico
  - San Domingo – USA
  - Burro Creek – USA
  - Wilson Salt Flat – USA
  - Spencer - USA
- Split Rocks Lithium & Gold - Aus
- Develin Creek Copper-Zinc-Gold
- Earaheedy Manganese & Mt Alexander Iron

Details as at 30th June 2016

Issued Shares (ZNC)	189.0 m
Listed Option (ZNCO)	24.0 m
Unlisted options	3.5 m
Mkt. Cap. ($0.11)	A$21m
Cash as at 30th June 17	A$2.0m
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.	6.2%
City Corp Nom	6.2%
Nada Granich	6.1%
Abingdon	4.1%
Miquilini	4.1%

Contact Us

Zenith Minerals Australia Limited
Level 2, 33 Ord Street
WEST PERTH WA 6005

PO Box 1426
WEST PERTH WA 6872

Telephone: (08) 9226 1110
Facsimile: (08) 9481 0411
Email: info@zenithminerals.com.au
Web: www.zenithminerals.com.au

Exploration and Development

Kavaklitepe Gold JV (Turkey)
Programs and budgets finalised, drilling planned to commence early August.

Australian Projects

Split Rocks Lithium-Gold Project - WA
Initial geochemical sampling programs completed at Split Rocks (1715 samples). Project located 10km northwest of Kidman Resources Limited's (ASX:KDR) Earl Grey-Mt Holland lithium deposit and 15km northwest of the Bounty Gold mine. Assay results anticipated mid-August.

Red Mountain Silver-Gold Project – Red Mountain - QLD
Initial reconnaissance field work by Zenith returned highly encouraging silver and gold rock chip sample results up to 114 g/t silver and 0.69 g/t gold. Follow-up mapping and sampling planned.

Waratah Well Lithium-Tantalum Project – Waratah Well - WA
Zone of extensive outcropping pegmatites (3km x 2km), reconnaissance field work by Zenith returned encouraging lithium rock chip sample results up to 0.34% Li_2O as well as widespread, high-grade tantalum up to 1166ppm Ta_2O_5.

Develin Creek Copper-Zinc-Gold-Silver Project-QLD
Surface lithogeochemical sampling to trace the prospective copper-zinc-gold-silver horizons has been completed. Results received and interpretation of data in progress.

American Lithium JV

Zacatecas Lithium Brine Project - Mexico
Shallow auger drill program completed testing for lithium in near surface sediments and brines. Drilling successfully intersects brine in all holes at shallow depths. Assay results anticipated late-August.

Burro Creek Lithium Clay Project – Arizona USA
Metallurgical testwork to date has returned positive results on Burro Creek clay samples, with lithium recoveries to 90% from simple acid leach, and to 75% via calcine-water leach process. Testwork ongoing to assess potential for upgrade by screening and if varying additives in the alternative calcine-water leach approach will further improve recoveries. Results anticipated early-August. In addition, permitting to allow resource drilling to commence is progressing well.

Wilson Salt Flat Lithium Brine Project – Nevada USA
Magnetotellurics (MT) geophysical survey completed with results showing a strong conductive layer in the upper 200 – 300 metres from surface that confirms lithium brine target interpreted from previously reported passive seismic survey and gravity modelling.

Project Generation
The Company continues to assess opportunities for gold, copper and lithium.

ZENITH'S EXPLORATION PROJECTS

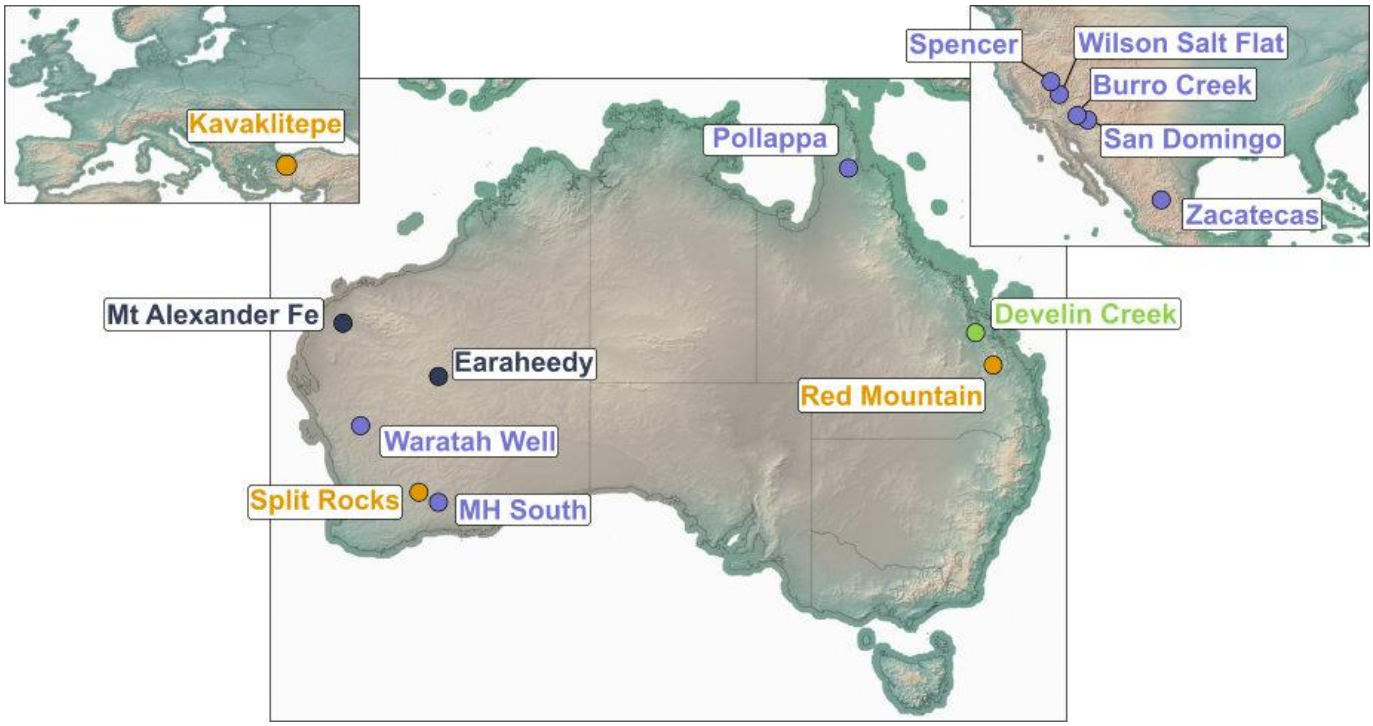

Figure 1: Zenith Project Locations

KAVAKLITEPE GOLD JOINT VENTURE

KAVAKLITEPE GOLD PROJECT – TURKEY (Zenith 30%)

- **Two coherent plus 800 metre long, high order gold in soil anomalies (+50 ppb), with peak soil sample values over 1 g/t gold;**
- **Continuous rock chip of 54.0 metres grading 3.33 g/t gold, including 21.5 metres grading 7.2 g/t gold within the northwest soil anomaly (Kuzey Zone);**
- **Continuous rock chip of 21 metres grading 2.67 g/t gold at the Discovery Zone, and 12 metres @ 2.5 g/t gold at the Guney Zone;**
- **Strong chargeable IP geophysical anomaly identified directly beneath high-grade surface rock chip samples (7.68, 22.7 g/t gold) and gold in soil (up to 6.05 g/t gold) at the Kuzey Zone;**
- **2016 drill results include: 16m @ 4.7 g/t, 9m @ 5.2g/t and 7.8m @ 7.3g/t Au.**

Activities During the Quarter
The 2017 exploration programs and budgets have been finalised by the joint venture partners and field work including drilling is anticipated to commence in August 2017.

During 2016 the maiden short-hole diamond drilling program using a mobile rig was completed at the Kavaklitepe gold project in western Turkey. Zenith considers the 2016 program to have been successful with sulphide-related gold mineralisation being discovered at both the Discovery Zone and Kuzey Zone, and with near surface high-grade oxide and transition gold mineralisation also intersected at Kuzey.

In summary a total of 2558.5m of drilling was completed in twenty-five short diamond drill holes KT-01 to KT-25, & KT-06A at the three target zones: Kuzey, Discovery and Guney during the 2016 exploration campaign.

- Kuzey Zone 11 holes (KT-01 to KT-11, including KT-06A);
- Guney Zone 11 holes (KT-12 to KT-17 & KT-19 to KT-22 & KT-24 to KT-25) and
- Discovery Zone 2 holes (KT-18A and KT-23).

Kuzey Zone

Drilling completed this year has provided an initial wide spaced test of only 360m of the 900m by 250m wide Kuzey Zone gold-in-soil anomaly target (Figure 2).

Drill results previously reported (5th October 2016) from the Kuzey Zone include: hole KT-09; an overall 67.7m gold mineralised zone from 46.2 to end of hole at 113.9m (true width unknown) including several zones of higher grade: **18.7m @ 1.7 g/t Au** from 50.2m, **16.0m @ 4.7 g/t Au** from 82.1m, (including **8.0 m @ 7.1 g/t Au**) and **8.8m @ 1.0 g/t Au** with the drill hole ending in mineralisation at 113.9m and hole KT-08; an overall 76.0m gold mineralised zone from 12.5m to 88.5m including: **13.4m @ 1.0 g/t Au** from 16.1m, **1.5m @ 1.3 g/t Au** from 33.0m, **2.0m @ 3.0 g/t Au** from 48.8m, **9.5m @ 1.2 g/t Au** from 56.8m and **4.0m @ 1.2 g/t Au** from 84.5m depth, hole KT-07; **12.9m @ 1.2 g/t Au** from surface and hole KT-06A; **6.3m @ 3.6 g/t Au** from surface.

These, high-grade, wide, gold intersections in hole KT-09 are particularly significant, as they represent the best sulphide gold mineralisation intersected to date at Kavaklitepe. Mineralisation extends from approximately 35m vertically below surface to a down-hole depth of 113.9m where it remains open (Figure 3). Sulphide gold intersections are down-hole widths as the orientation of that style of mineralisation is currently unknown.

In addition gold mineralisation at the Kuzey Zone remains open to the north and east and is open along strike to the south (Figure 4) where drill holes KT-02, KT03 and KT05 only test a portion of the target zone (80m of width).

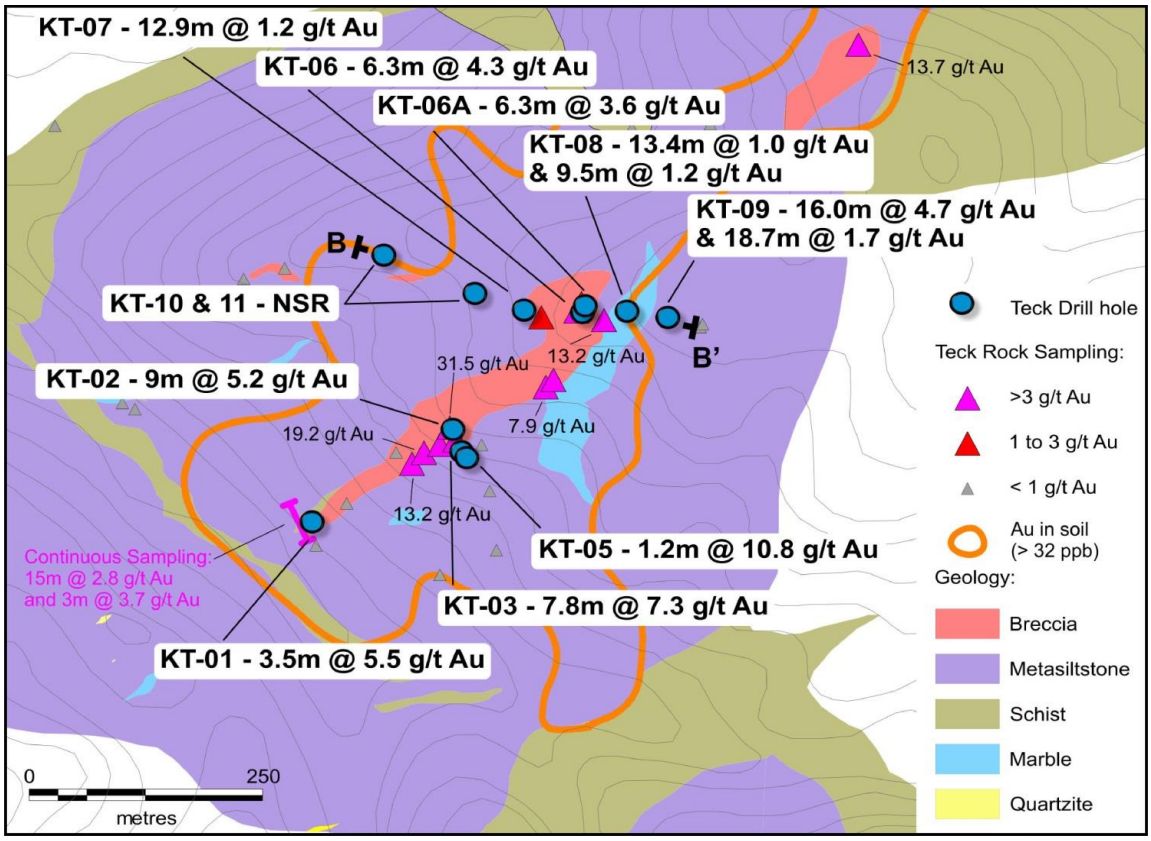

Figure 2: Kavaklitepe Kuzey Zone Drill Hole Locations, Gold Intersections and Location of Cross Sections (B-B')

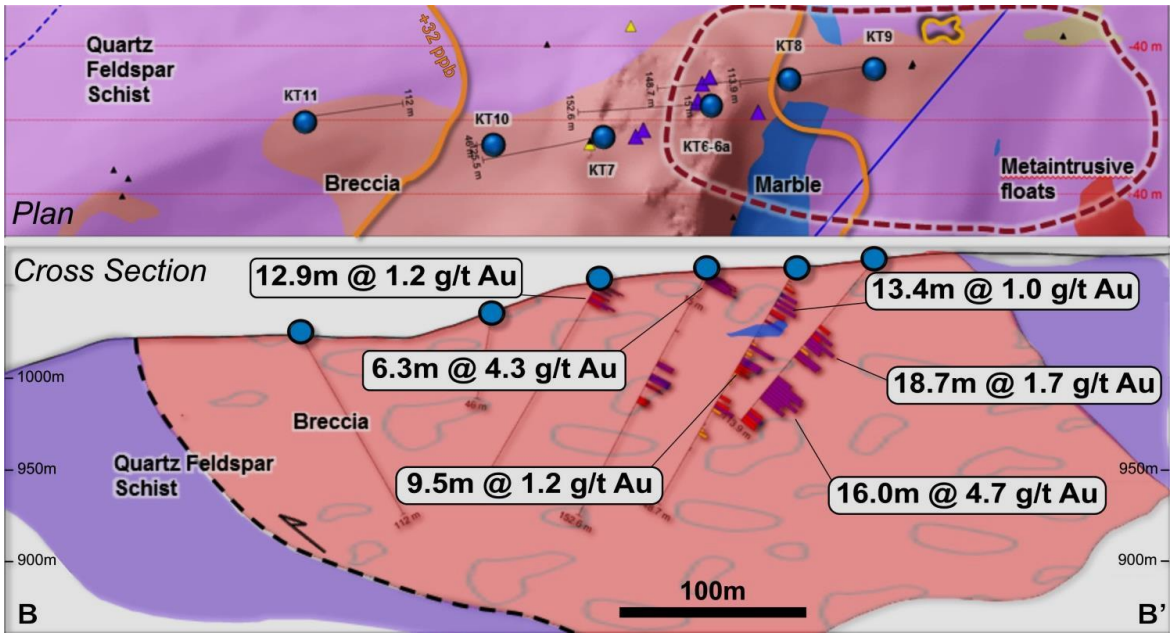

Figure 3: Kavaklitepe Kuzey Zone Cross Section (B-B')

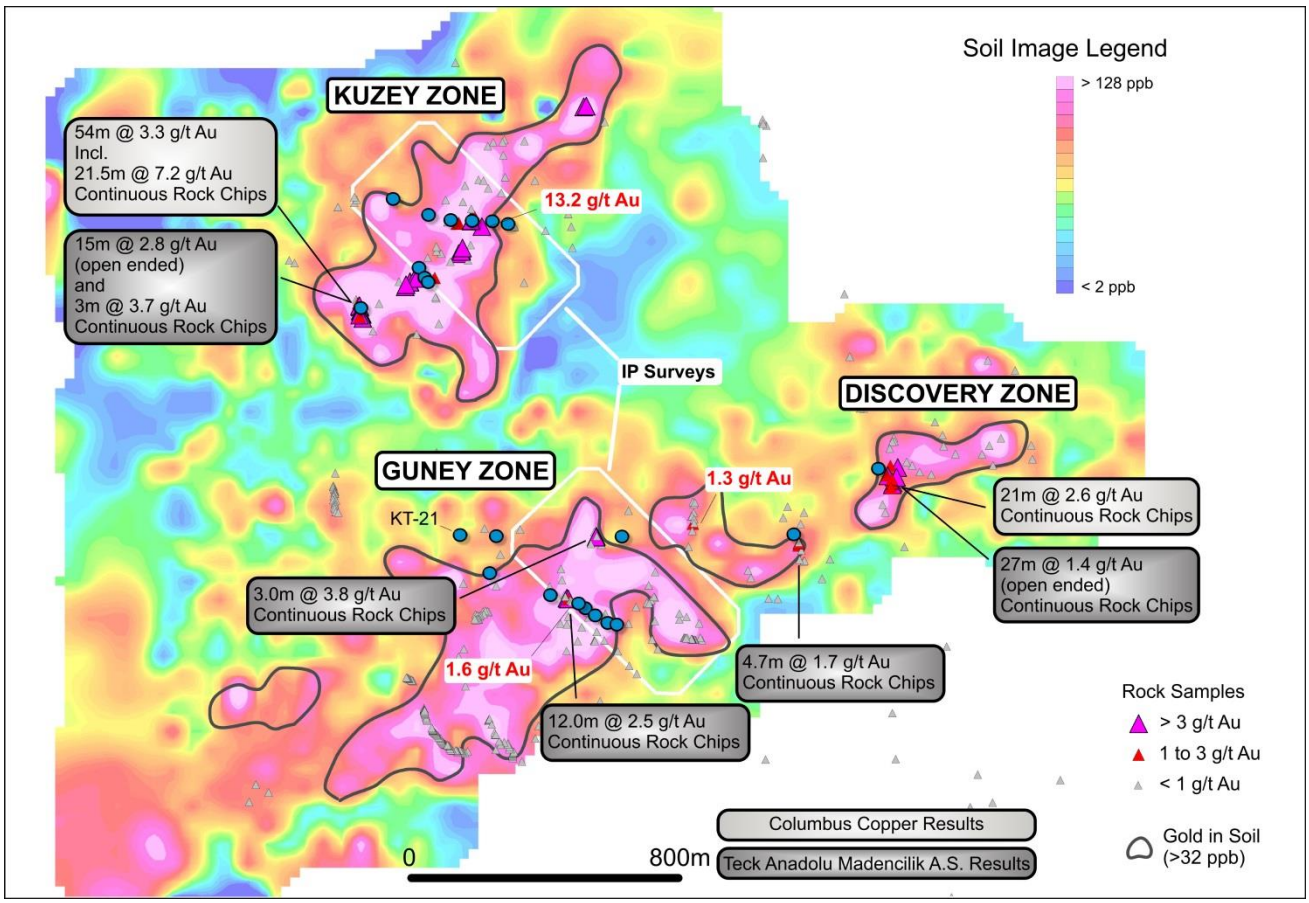

Figure 4: Plan Showing Kavaklitepe Project Gold Geochemistry

Near surface oxide and transition gold mineralisation is interpreted to occur as a flat lying zone extending over the full 360m length that has been drill tested to date. Better intersections that are considered close to true width of high-grade, near surface, gold mineralisation (previously reported) include:

- KT-01; **3.5m @ 5.5 g/t Au** from surface ;

- KT-02; **9.0m @ 5.2 g/t Au** from surface ;
- KT-03; **7.8m @ 7.3 g/t Au** from 3.3m depth ;
- KT-05; **1.2m @ 10.8 g/t Au** from 14.7m (as part of a 16.9m mineralised zone with lower core recovery)
- KT-06; **6.3m @ 4.3 g/t Au** from surface and a zone from 58.4m to 73.7m depth including 2.9m @ 1.1 g/t Au and 7.7m @ 1.2 g/t Au;
- KT-06A ; 6.3m @ 3.6 g/t Au from surface;
- KT-07 ; 12.9m @ 1.2 g/t Au from surface;

Reporting cut-off criteria and associated JORC tables are included in ASX release dated 22nd December 2016.

Discovery Zone

Gold mineralisation was intersected at the Discovery Zone in a single drill hole test (KT-18A) over a 23.5m interval from 22.5m to 46.0m depth with results including: 9**.4m @ 1.5 g/t Au and 3.5m @ 2.1 g/t Au** (true width intervals). The near surface gold mineralisation dips to the northwest and is 60m down dip of previously reported continuous roadside surface sample results that include: **21.0m @ 2.7 g/t Au and 27.0m @ 1.4 g/t Au** (Figures 5 & 6). The roadside sampling was conducted as an initial test of the 400m long gold-in-soil anomaly at the Discovery Zone.

The new Discovery Zone gold mineralisation remains open to the northeast and southwest and is open down dip. A second drill hole (KT-23) has now been completed 275m southwest along strike where surface rock chip samples returned up to 2.4g/t Au, intersecting 1.3m @ 1.3 g/t Au within a 17.9m wide altered zone from 17.5m to 35.4m with associated anomalous silver, arsenic and antimony.

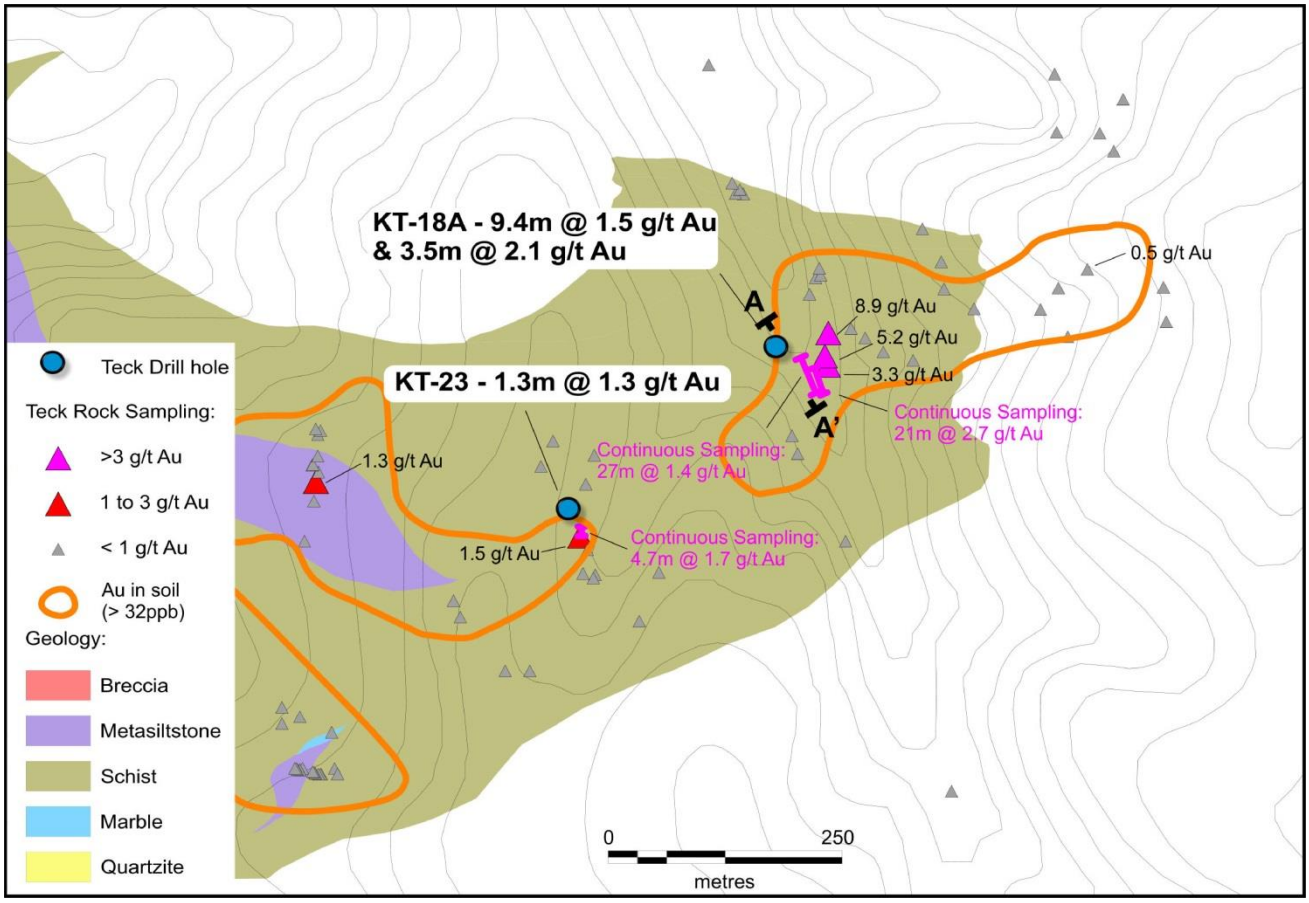

Figure 5: Kavaklitepe Discovery Zone Drill Hole Locations, Gold Intersections and Location of Cross Section (A-A')

These new drill results at the Discovery Zone extend and support high-grade, near surface gold intersections previously reported over +360m strike at the Kuzey Zone located 1.3km to the northwest.

Drilling at the **Guney Zone** has been technically difficult with seven drill holes KT-12 to KT-17, KT-19 & KT-24 completed as a section across the central portion of the prospect. The drilling intersecting a thick, flat-lying, massive

sequence of calc-silicate rocks which contained multiple underground cavities up to 4 metres deep that caused several holes to fail at shallow depths and provided locally only very poor diamond drill core sample recoveries. Hole KT-12 returned **1.2m @ 1.4g/t Au** from 12.5m and 1.3m @ 0.6g/t Au from 17.2m before being abandoned in a cavity. The massive calc-silicate rock sequence is not considered a preferred host to gold mineralisation. In contrast drill hole KT-21 drilled on the northern part of the prospect (Figure 6) intersected a wide zone (30.7 m) of silicified and altered breccia crosscutting a meta-siltstone rock sequence from 54.9m to 85.6m with associated higher concentrations of trace elements arsenic, antimony and silver more similar to those returning significant gold intersections at the Kuzey and Discovery zones. Follow-up along strike of this zone will be a priority exploration target in 2017.

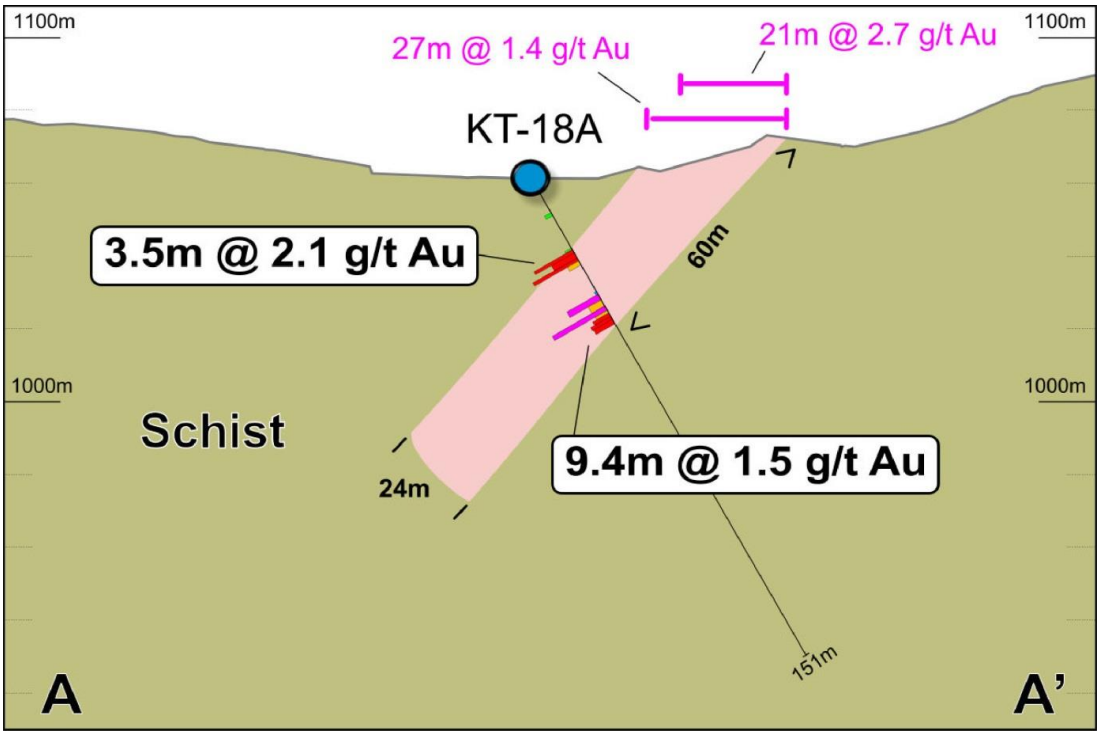

Figure 6: Kavaklitepe Discovery Zone Cross Section (A-A')

Planned Programs at Kavaklitepe
The 2017 exploration programs and budgets have been finalised by the joint venture partners and field work including drilling is anticipated to commence early August 2017.

Background on the Kavaklitepe Project
Columbus Copper discovered mineralization at Kavaklitepe in 2013 by following up a stream sediment anomaly to a stream bed outcrop that returned 5.2 g/t Au. Subsequently a small trench in a nearby road cut returned 2.6 g/t Au over 21.0 metres of exposure. About 1.4 kilometres northwest from the discovery outcrop four samples from a gold bearing breccia zone returned 28.2 g/t, 21.7 g/t, 6.7 g/t and 3.6 g/t Au respectively (Columbus Copper release March 1, 2013). Further rock sampling along a road bank in this zone confirmed the presence of high-grade gold mineralization returning 54 metres of continuous rock chips with an average grade of 3.3 g/t Au (no gold grade cut-off applied), including 21.5m grading 7.2 g/t Au. A total of 2,127 soil samples were also collected on the Property in 50 metre x 50 metre and 100 metre x 100 metre grids covering an area of approximately 11 square kilometres, of which 176 samples returned gold grades higher than 50 ppb, 112 - higher than 100 ppb and 40 - higher than 250 ppb with 9 of these samples containing more than 1000 ppb (1 g/t) Au. The soil sampling outlined a potentially mineralized zone measuring 850 metres by 250 metres and continuing for another 800 metres to the southwest. There are strong, coincident arsenic and antimony anomalies.

Kavaklitepe Joint Venture
Teck Anadolu Madencilik A.S. ("Teck"), a Turkish subsidiary of Teck Resources Limited, has earned a 70% interest in the Kavaklitepe gold project from Zenith by spending US$700,000 in property expenditures including a minimum of 1500m of drilling. Both companies may continue to explore or develop the property by contributing their pro-rata costs or they may elect to dilute their interests according to a standard industry formula. If Zenith reduces its equity below 10% then the remaining interest is converted to a 5% net profit interest royalty.

AMERICAN LITHIUM JOINT VENTURE

The American Lithium Joint Venture includes a US$5 million farm-in deal with a private company controlled by prominent UK investor Jim Mellon (Bradda Head Ltd) (ASX Release 7th March 2017) to jointly unlock the potential of Zenith's USA and Mexican lithium project portfolio.

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 its' outstanding lithium project portfolio including: lithium brine, lithium pegmatite and lithium clay targets.

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.

ZACATECAS LITHIUM PROJECT – MEXICO

- **Tenure (26,000 acres) over extensive system of salt lakes within emerging lithium brine district in central Mexico;**
- **Lithium brines to 2.1% lithium reported in regional sampling program conducted by the Mexican Federal Government from solar evaporation ponds for salt production on adjacent salt lake (10km west of Zenith's new tenure).**
- **Results confirm lithium enriched source brines are present in the district, as well as demonstrating that concentration of lithium by traditional solar evaporation methods is possible: Four water samples returned 1.2%, 1.4%, 1.4% and 2.1% lithium, these very high-grade lithium brines are similar to post-concentration brine feedstock to lithium brine production facilities;**
- **Systematic surface geochemical sampling by Zenith on salt pans covering the Company's new Zacatecas tenure returned highly anomalous lithium in surface sediments up to 1046ppm - comparable to and higher than those from competitor lithium brine projects in Mexico and the USA;**
- **An initial 11 hole shallow auger drilling program completed (27m maximum hole depth), results awaited;**
- **Electrical geophysical surveying to test for presence and depth of subsurface brines to precede deeper drill testing.**

Activities During the Quarter

A program of shallow drilling has been completed at the Zacatecas Lithium Project in central Mexico (ASX Release on the 26th June 2017). The aim of the short hole auger drill program was to provide an initial test for lithium in near surface brines and sediments of the San Juan salt pans where recent systematic, infill sampling returned highly encouraging surface sediment results up to 1046ppm lithium in the top 1 metre. As previously advised (ASX Release 24th May 2017) the surface sampling program has outlined a large 4km by 2km strong lithium anomaly (values greater than 300ppm lithium) on the San Juan concession. The drill program consisted of 11 short drill holes (27m maximum hole depth - across the 2km x 4km surface lithium anomaly) from which sediment samples were collected as the hole was drilled. Upon completion of each drill hole slotted casing was inserted allowing for the sampling of sub-surface brines. Encouragingly all drill holes interested brine at depths ranging from 5 metres to 15 metres. The holes intersected clay and sand horizons with salt and gypsum, basement was not reached in any of the holes.

Shallow Auger Drilling at San Juan Project

Brine Sampling at San Juan Project

A delay in shipping appropriate quality assurance and quality control, blanks and certified lithium reference material into Mexico has resulted in a corresponding delay in submitting both the brine and sediment samples to the laboratory for analysis. It is anticipated that the samples will be dispatched to the laboratory before the end of July. Sediment sample assays will be available approximately 3 weeks thereafter, whilst brine analyses will take approximately 4 weeks.

Background on the Zactecas Lithium Brine Project

The Company announced (ASX release 17th January 2017) that it has staked new 100% owned concessions (totalling 26,440 acres) over a new lithium brine exploration project in central Mexico. The region is generally known for its large scale silver mines and has excellent infrastructure.

Three areas; San Juan, San Vicente and Illescas (covering a total of 26,440 acres) have been applied for with Zenith to hold 100% interest through a Mexican subsidiary. Lithium brines to 2.1% lithium have been taken from small scale, salt production solar evaporation ponds on an adjacent salt lake located 10km west of Zenith's new tenure. The samples were taken as part of a water and surface sediment sampling program conducted by the Mexican Federal Government - Mineral Resource Council. These results confirm lithium enriched source brines are present in the Zacatecas district, as well as demonstrating that concentration of lithium by traditional solar evaporation methods is possible.

Systematic surface geochemical sampling by Zenith on salt pans covering the Company's new Zacatecas tenure returned highly anomalous lithium in surface sediments up to 1046ppm - comparable to and higher than those from competitor lithium brine projects in Mexico and the USA.

The conceptual deposit model for Zenith's new Zacatecas lithium brine project is adapted from the known deposits being exploited by other companies in the USA, Chile, Bolivia and Argentina. Water-bearing formations or aquifer types range from deep volcano-sedimentary units within the valley-fill sequence that are saturated in lithium-enriched brine such as at Albemarle's Clayton Valley operation in Nevada USA to near-surface salt lakes and ponds in the south American lithium operations. Existing lithium brine operations have lithium resource grades ranging from 102 milligrams per litre (mg/l) to 1409 mg/l this is roughly equivalent to 80 to 1100ppm lithium. In most cases the lithium brine is pumped into surface ponds and the lithium is concentrated to percent levels by solar evaporation before final treatment in a processing plant to produce lithium carbonate or similar products commonly used by battery manufacturers.

The Zacactecas lithium brine project within the closed El Barril aquifer, with its thick sequence of Tertiary, Cretaceous, and Quaternary age clastic sediments, ash beds and evaporite deposits is prospective for lithium brines. In addition, low average annual rainfall and very high average annual evaporation rates means that traditional methods of solar evaporation of brines are a viable production method. This is also evidenced in the many artisanal table salt production facilities that exploit the brines on several of the salt lakes within this district.

Planned Programs at Zacatecas

Ground based electrical geophysical surveying to test for presence and depth of subsurface brines to precede deeper drill testing.

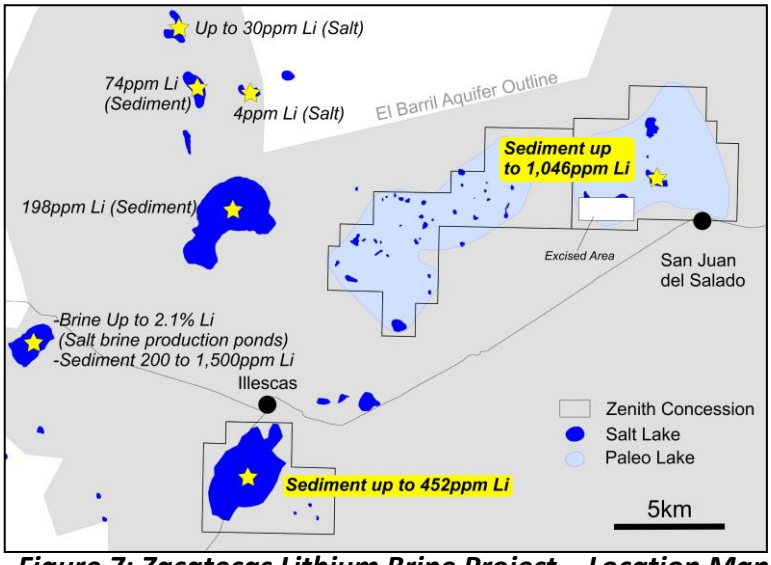

Figure 7: Zacatecas Lithium Brine Project – Location Map

BURRO CREEK LITHIUM CLAY PROJECT – ARIZONA, USA (Option to Earn 100%)

- **Large scale lithium (Li) clay target under exclusive option in Arizona, USA;**
- **Follow-up surface sampling returned high-grade lithium results of widths up to 33.6m metres at 980 ppm Li, and 15m @ 1427 ppm Li. These results are comparable to competitor lithium clay projects in USA and Mexico that are subject to feasibility studies and trial processing plants respectively;**
- **Recent geological mapping and seismic geophysical surveys confirm extensive zones of shallow dipping lithium bearing clay with true thickness up to 50 metres;**
- **Based on the positive outcomes of work completed during the initial due diligence period Zenith has resolved to exercise its option to proceed with the project; and**
- **Ongoing metallurgical testwork has returned positive results on Burro Creek clay samples, with lithium recoveries to 90% from simple acid leach, and to 75% via calcine-water leach process.**
- **Permitting for resource drilling progressing well.**

Activities During the Quarter

Metallurgical testwork during the quarter returned high lithium recoveries of 90% by leaching using a simple sulphuric acid leach at a temperature of 80^0C. 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 1st June 2017.

Additional initial testwork using a water leach after calcining 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.

Background on the Burro Creek Lithium Clay Project

On the 10th 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.

Surface sampling by the Company of the lithium clay exposures (ASX releases 10th November 2016 & 13th January 2017) returned results up to 33.6m @ 980ppm Li whilst grab samples of relict drill spoil from shallow holes completed during a small, historical program to test the clay for industrial purposes returned results including: 1650ppm Li and 1290ppm Li. The lithium bearing clay zone is a near surface, flat lying horizon, with a true thickness greater than 30 metres, indicating excellent potential for large tonnages of lithium bearing clay within the Burro Creek project.

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.

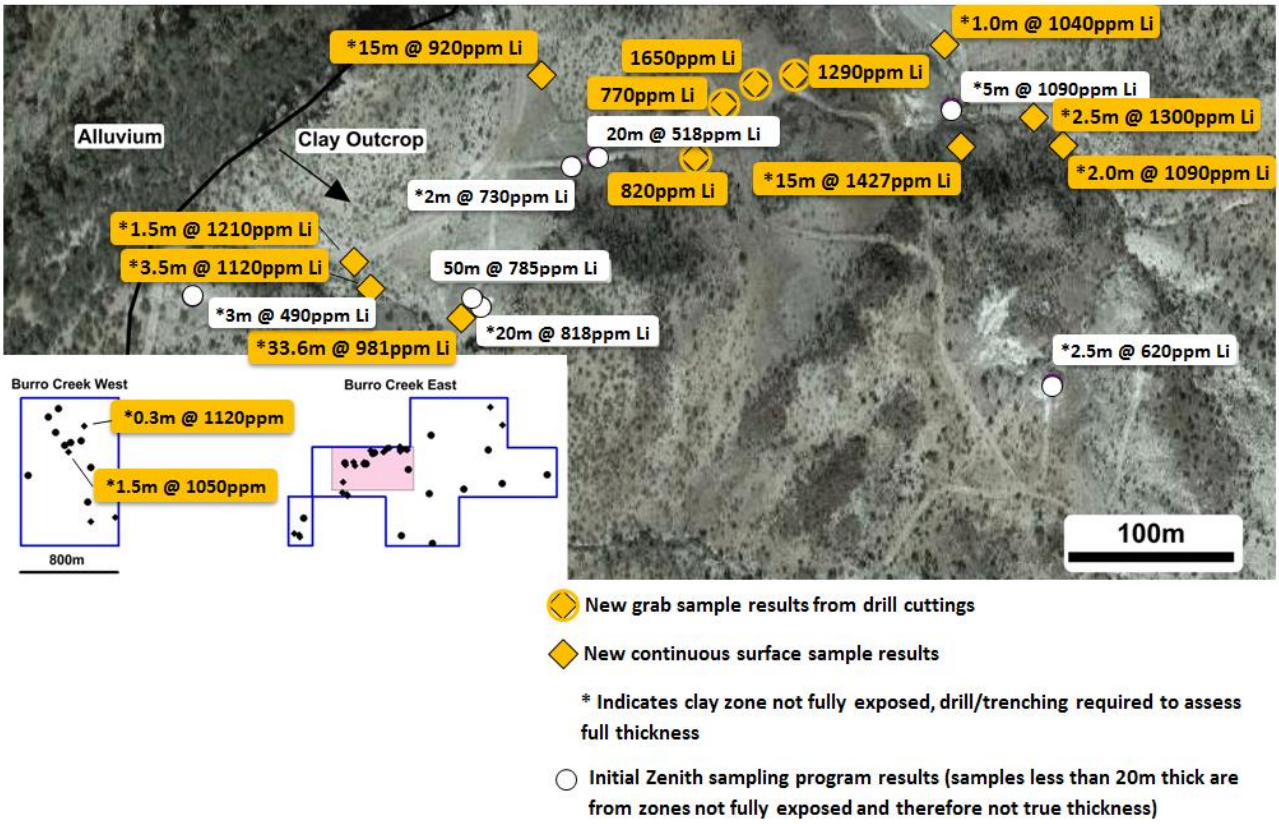

Figure 8: Burro Creek Sample Location and Results Map (Enlargement - East Burro Creek Sample Results)

Planned Activities

Permitting to allow resource drilling to commence is progressing well whilst, ongoing metallurgical testwork will assess if:

- lithium reports to various clay size fractions. This may enable lower grade portions of the clay to be discarded through screening , resulting in lower reagent consumption; and
- further variations to additives in the calcine-water leach approach will improve overall lithium recovery.

WILSON SALT FLAT LITHIUM BRINE PROJECT – NEVADA USA

- **Initial reconnaissance sampling by Zenith returned up to 192ppm lithium from the surface of a salt lake;**
- **The high-grade lithium surface sample results are coincident with gravity low anomalies reflecting basin sedimentary sequences that potentially host lithium brines.**
- **Both aeromagnetic and gravity modelling indicate complex basement geology indicative of major faults capable of channelling and focusing lithium enriched geothermal fluids; and**
- **Ground based magnetotelluric (MT) geophysical surveys indicates conductive layer in upper 200 – 300m below surface, representing a lithium brine drill target.**

Activities During the Quarter

During the quarter An MT geophysical survey has now been completed by geophysical consultants Zonge with results just received showing a strong conductive layer in the upper 200 – 300 metres from surface (ASX Release 27th July 2017) that confirms the lithium brine target interpreted from the previously reported passive seismic survey and gravity modelling (Figure 9).

.

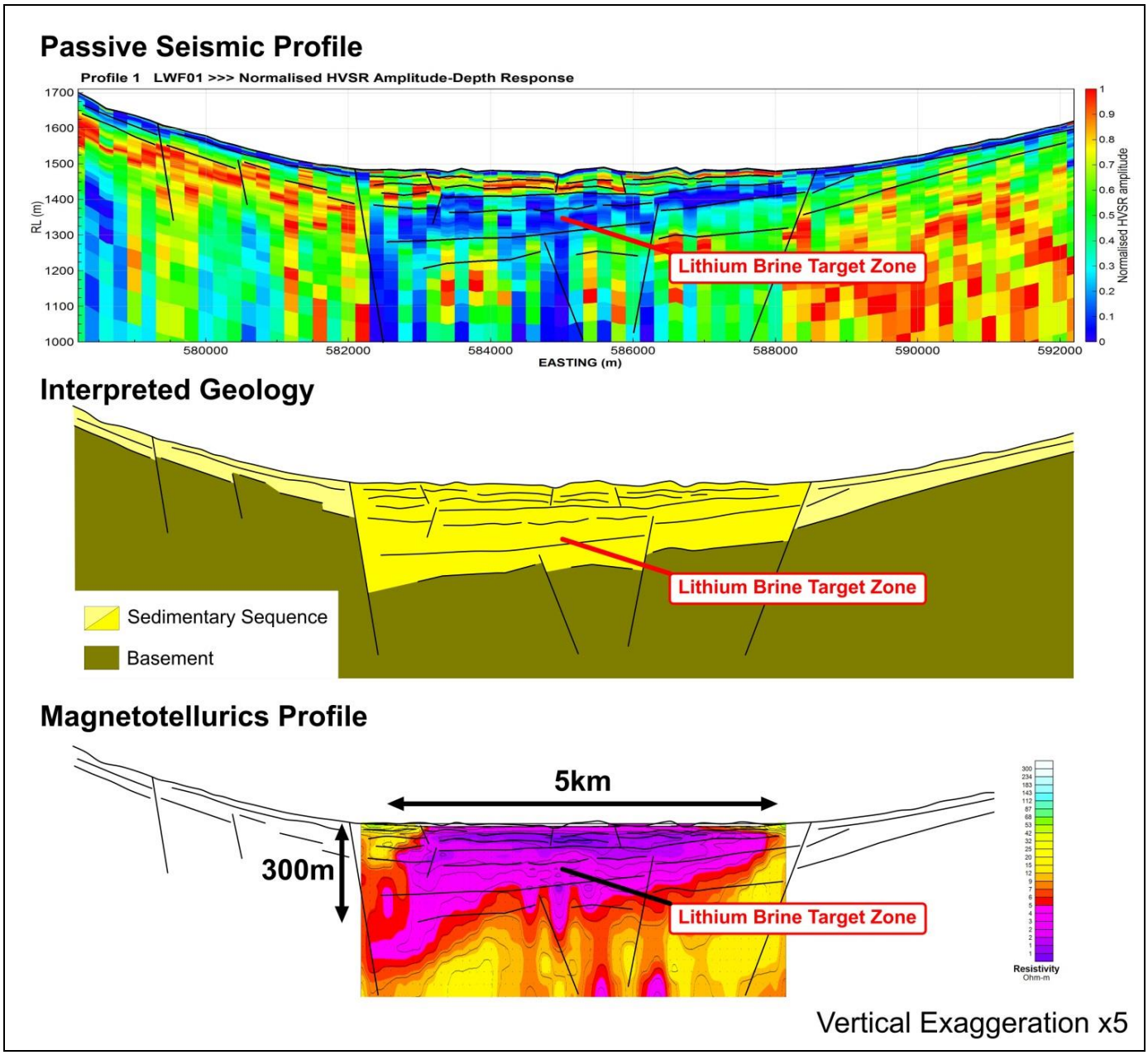

Figure 9: Wilson Salt Flat Composite Cross Section Including New Magnetotellurics Profile (bottom) Showing Strong Conductive Anomaly (purple zone) confirms the Lithium Brine Target Zone

Background on the Wilson Salt Flat Lithium Brine Project

The Wilson Salt Flat Project is located in Nye County, Nevada 140km east from the lithium production area of Silver Peak- Clayton Valley. The Project is 100% owned by Zenolith and is located in the Railroad Basin. The property is comprised of 168 unpatented placer claims in a single claim block totalling 3,360 acres that were located in November 2016 to encompass highly anomalous lithium in surface sediment samples up to 192ppm lithium coincident with a salt lake and discrete gravity low interpreted to be a closed basin (Figure 10).

During December 2016 Zenith completed a passive seismic geophysical survey that confirmed the presence of a thick, sedimentary sequence bounded by basin margin faults. The geophysical modelling identified structures and architecture that are consistent with the lithium-bearing brine deposit models identified in the nearby Clayton Valley lithium production area.

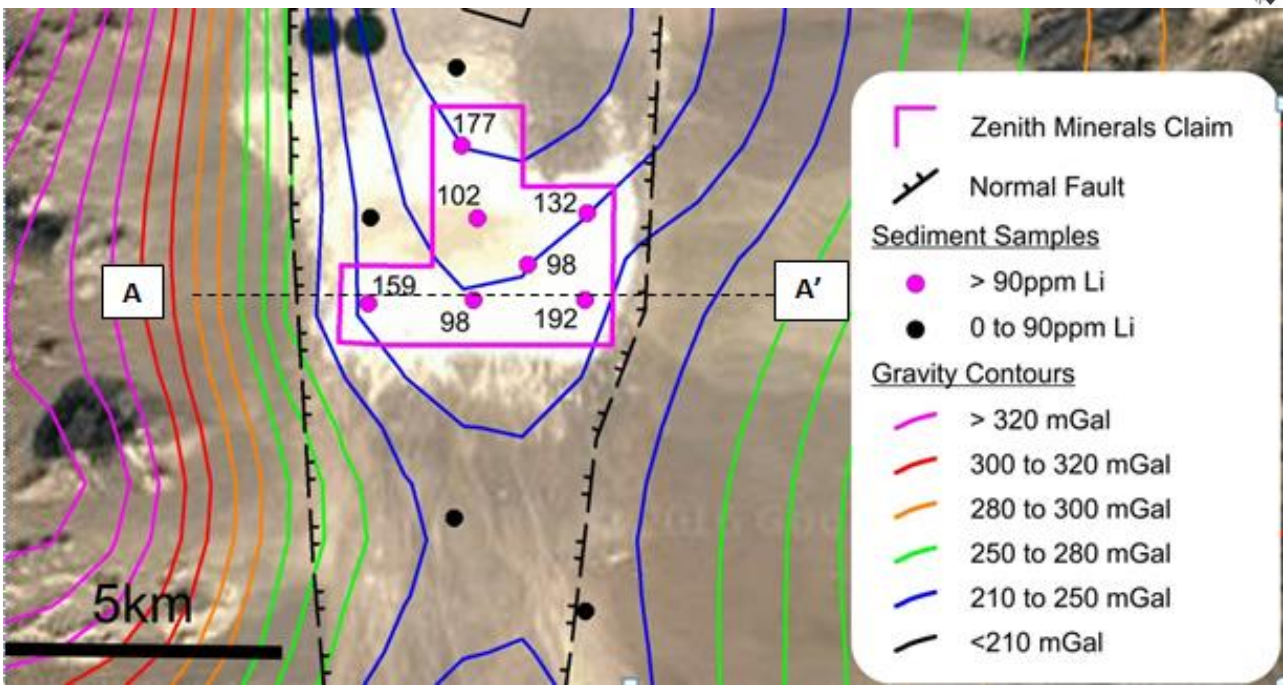

Figure 10: Wilson Salt Flat Project - Initial Surface Geochemical Results on Google Earth Image, overlain by Gravity Contours, Major Interpreted Fault Structures

The conceptual deposit model for Zenith's Wilson Salt Flat Project is adapted from the known deposits being exploited by Albemarle Corporation at Clayton Valley, where six different water-bearing formations or aquifer types have been identified. These are specific volcano-sedimentary units within the valley-fill sequence that are either saturated in lithium-enriched brine or contain salt or clay minerals with anomalously high concentrations of lithium. In addition, recent lithium brine drilling success by Pure Energy Minerals (TSX-V:PE) in the south of Clayton Valley provides an additional lithium brine host architecture model, whereby basin margin faults along the eastern boundary have a strong control on the host sequences and entrained lithium brines.

The geologic setting within the closed Great Basin, with its thick sequence of Quaternary age clastic sediments, ash beds and evaporate deposits is prospective for lithium brines. The geologic formations that compose the surrounding mountain ranges, specifically certain Tertiary-age volcanic formations, contain anomalous concentrations of lithium and are considered one likely source of lithium in brines and sedimentary layers similar to those in the Clayton Valley area.

Planned Activities

An initial drilling program will require permits through the United States Bureau of Land Management (USBLM) and the State of Nevada. An initial one to two dril holes will be designed to test specific structural and stratigraphic targets identified by the geophysical surveys. Given success with these preliminary exploratory drill holes in finding brine aquifers and anomalous lithium contents, additional holes would be placed to expand on the information relating to basin hydrogeology, leading to resource estimation.

SAN DOMINGO LITHIUM PEGMATITE PROJECT – ARIZONA USA

- **Abundant known lithium bearing pegmatite dykes within Zenith's claims stretching over an area 9km by 1.5km;**
- **Initial continuous rock chip sampling by Zenith's consultants has returned very encouraging results up to 5m @ 1.97% Li_2O including 2.4m @ 2.49% Li_2O within 14.1m zone @ 1.02%Li_2O from spodumene rich pegmatites; and**
- **Lithium as spodumene and amblygonite concentrates along with tantalum was produced from pegmatites within the district during the period 1947 – 1952.**

Activities During the Quarter
No field work this quarter.

Background on San Domingo Project
During mid-2016 (16th June 2016) a wholly owned subsidiary of Zenith Minerals secured a 100% interest in a new lithium exploration project in Arizona, USA. The project covers a 9km by 1.5km lithium-bearing pegmatite dyke swarm that intrudes Proterozoic mafic gneiss host rocks that are in turn locally overlain by Tertiary age volcanic and sedimentary rocks (Figure 8).

Initial mapping and sampling by Zenith's consultants to date has identified 10 lithium bearing pegmatite dykes ranging in outcrop size up to 60m in width and up to 600m in length within the area subject to Zenith's tenements. First phase continuous rock chip sampling conducted within the new applications has returned very encouraging results up to 5m @ 1.97% Li_2O including 2.4m @ 2.49% Li_2O from a 14.1m zone grading 1.02% Li_2O, and sampling of Lithia King workings returned up to 1.44% Li_2O over a 3 metre composite. A further 3 lithium bearing pegmatite dykes are known to occur at least partly within small claims that are believed to be excised from the land recently applied for by Zenith.

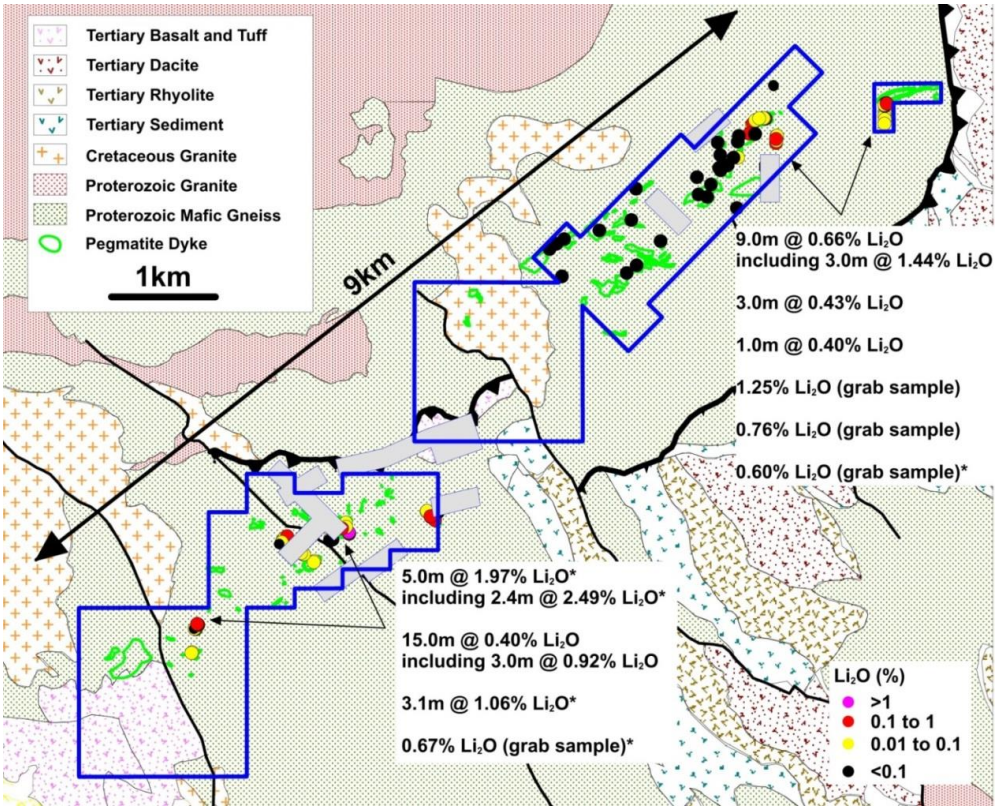

Figure 11: San Domingo Lithium Project- Surface Rock Sampling Results
*(Blue box – outline of Zenith claims and lease applications, Grey boxes - approximate area of excised claims, * indicates sample close to boundary of excised claim with poorly constrained location)*

The pegmatite dykes show clear zonation, with lithium enrichment within the inner ''core'' zones. Historical records refer to spodumene crystals up to 11 feet long at the Lithia King pegmatite (held by Zenith).

Lithium (as spodumene and amblygonite concentrates) along with tantalum was produced from small scale mining of the pegmatites within the district during the period 1947 – 1952, historic production of lithium from two small scale mines within Zenith's claims produced amblygonite concentrates grading from 7.4 to 8.5% Li_2O (Arizona Bureau of Mines Bulletin 1952). However the area has been subject to sparse systematic exploration for lithium. No drilling for lithium appears to have been completed since the early 1950s when diamond drilling on 4 of the pegmatite bodies and associated minor surface and underground exploration is mentioned in historical documents. Very little detail on this work has been sighted by the Company, other than partial results from one drillhole and anecdotal information mentioning "..considerable thicknesses of spodumene-bearing pegmatite.." penetrated in several other holes reported by a 3rd party. Since hole locations, sampling details and assay methodology are not known the Company considers the results not to be reportable under the JORC Code. A third party reference to a 1980-82 exploration program for tantalum and niobium does not mention lithium analyses.

Planned Programs
The Company will conduct additional mapping and sampling prior to planned drill testing. Understanding the size, shape and zoning of the pegmatites, along with distribution, weathering and alteration of lithium bearing minerals will be a focus of Zenith's future exploration of the district. Mapping and sampling by Zenith and past academic research has noted that surface weathering and alteration of the spodumene crystals occurs in the district, locally reducing their lithium content, at least in the near surface.

The Company advises that there is some uncertainty over the locality of several of the excised claims and the Company is awaiting notification from the US Bureau of Land Management as to the exact position of those claims, which may require survey monuments to be reinstated. So that Zenith does not transgress onto 3rd party claims in the meantime, the Company will focus its immediate exploration activities targeting lithium pegmatites that are away from the excised claim boundaries.

SPENCER LITHIUM BRINE PROJECT – NEVADA, USA

- **Initial reconnaissance sampling by Zenith returned up to 550ppm lithium in surface sediments - comparable to and higher than those from competitor lithium brine projects in the USA;**
- **The high-grade lithium surface sample results are coincident with gravity low anomalies reflecting basin sedimentary sequences that potentially host lithium brines.**
- **Local geothermal springs indicate active circulating hot waters capable of leaching lithium whilst both aeromagnetic and gravity modelling indicate complex basement geology indicative of major faults capable of channelling and focusing lithium enriched geothermal fluids; and**
- **Infill surface sampling and ground based geophysical surveys are planned prior to drill testing.**

Activities During the Quarter
No field work this quarter.

Background on the Spencer Lithium Brine Project
The Spencer Project is located in Lander County, Nevada near the lithium production area of Silver Peak-Clayton Valley. The Project is 100% owned by Zenolith (USA) Inc ("Zenolith") a wholly owned subsidiary of Zenith Minerals Limited, and is located in the North Smoky Basin northwest of White Mountain. The property is comprised of 146 unpatented placer claims in two claim blocks totalling 2,920 acres that were located in November 2016 to encompass highly anomalous lithium in surface sediments and water samples, in close proximity to the Spencer hot spring that lies on the eastern margin of the North Smoky Valley basin, coincident with inferred major basin margin faults.

Initial surface sediment samples taken from the salt lake surface by Zenolith are enriched in lithium up to 550ppm (ASX Release 6th December 2016) supporting the hypothesis of lithium brines being present in the sub-surface.

The conceptual target model is the same as that described for the Wilson Salt Flat lithium brine project.

Planned Activities
Infill surface sampling and electrical geophysical surveys followed by drilling are the next steps in exploration of the Spencer project.

AUSTRALIAN EXPLORATION PROJECTS

SPLIT ROCKS LITHIUM & GOLD PROJECT – WA (Zenith 100%)

- **100% owned exploration licences covering ~500sqkm of the Forrestania Greenstone Belt which hosts the new Earl Grey lithium pegmatite discovery and 15km northwest of the Bounty Gold mine;**
- **A review of previous exploration activity has to date found the majority of exploration focused solely on gold exploration despite the prevalence of mapped pegmatites in the belt.**
- **Zenith's geologists believe that the Split Rock project is prospective for lithium and gold mineralisation; and**
- **Initial surface sampling program collected 1715 samples - assays results are awaited.**

Activities During the Quarter

Systematic geochemical sampling programs for lithium and gold as outlined in ASX Release 19th June 2017 have now been completed on two recently granted exploration licences that form part of Zenith's 100% owned Split Rocks project located 10km northwest of Kidman Resources Limited's (ASX:KDR) Earl Grey-Mt Holland lithium deposit and 15km northwest of the Bounty Gold mine in Western Australia (Figure 12). A total of 1715 surface geochemical samples were collected and will be dispatched to the laboratory this week for analysis.

The field programs focused on the central and western portions of the greenstone belt testing areas where no previous exploration has been conducted as well as infilling and extending gold – arsenic surface geochemical anomalies identified in a comprehensive review of historic exploration data.

A total of 1715 surface geochemical samples were collected and will be dispatched to the laboratory this week for analysis. Results for laboratory gold analysis are expected in approximately 3 weeks, whilst lithium and multi-element analysis will be completed once the laboratory pulps are returned to the Company.

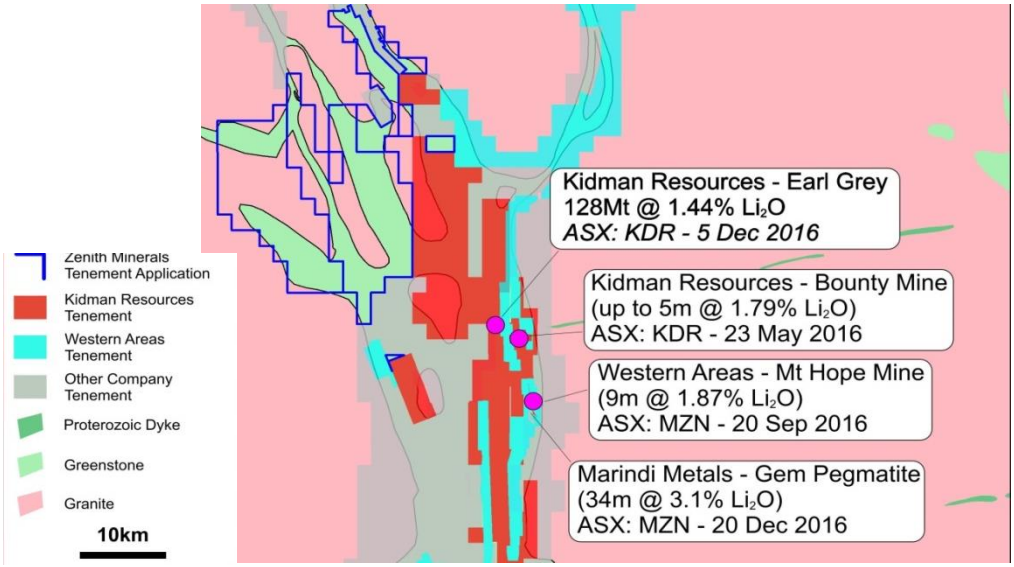

Figure 12: Split Rocks Project and Tenure

Background on the Split Rocks Lithium & Gold Project

The 100% owned Split Rocks Project covers a large portion (total area ~500sqkm) of the Forrestania Greenstone Belt of Western Australia. This emerging lithium district is host to the new Earl Grey lithium deposit containing 128Mt @ 1.44% Li_2O (KDR ASX Release 5th Dec 2016) – Figure 12.

Zenith's northern Split Rocks exploration licences are located 10km northwest of the new Earl Grey lithium pegmatite discovery whilst exploration licence applications in the southern portion of the Forrestania Greenstone belt are located 2km west and 5km northwest, respectively, of the South Iron Cap Lithium Prospect where resampling by Western Areas (ASX:WSA) of historic nickel drilling has returned results including 50m @ 0.95% Li_2O.

The Company notes that the majority of previous exploration activity reviewed to date covering the new exploration licence applications is surface based focused solely on nickel exploration and only limited fresh rock drilling programs, with no evidence of any lithium analyses during past exploration programs. However, several historic exploration drill holes documented in open file reports did intersect pegmatites in areas within Zenith's applications and along strike adding significantly to their lithium prospectivity. Sampling of residual surface spoil samples from selected historic drill holes has to date only returned weakly anomalous lithium results, however additional sampling is warranted given that there are abundant pegmatite dykes, many of which are now being shown to be lithium (spodumene) rich within the Forrestania Greenstone Belt.

Planned Programs at Split Rocks
Awaiting surface sample assay results. Drilling planned to test any new lithium or gold targets generated from the surface sampling programs.

DEVELIN CREEK COPPER-ZINC-GOLD-SILVER PROJECT – QUEENSLAND (Zenith 100%)

- **Inferred Mineral Resource (JORC 2012) of: 2.57Mt @ 1.76% copper, 2.01% zinc, 0.24g/t gold and 9.6g/t silver (2.62% CuEq) released to ASX on the 15th February 2015.**
- **Mineralisation remains open at all 3 massive sulphide deposits, with upside to resource grades with Zenith RC hole twinning previous 1993 percussion hole returning significantly higher copper, zinc, gold and silver grades (300% to 700% higher);**
- **Initial metallurgical testwork results show positive first stage "rougher" recoveries of 90%;**
- **Highly prospective host rock extends for up to 50km north - south in Develin Creek tenure;**
- **Ongoing systematic soil geochemical programs proven a successful, initial screening tool;**
- **Drilling planned to test new targets**

Activities During the Quarter
Surface lithogeochemical sampling to trace the prospective copper-zinc-gold-silver horizons at Develin Creek has recently been completed. Results were received this week and interpretation of the data is in progress. It is anticipated that new targets generated from this research work will be drill tested later this year in conjunction with a twin-hole program to assess potential under-call of the grades of the main Sulphide City resource.

Planned Activities
- Ongoing program to expand geochemical coverage over priority host rock horizons within the highly prospective tenure surrounding the Develin Creek deposits; and
- Drill testing Wilsons South target, Sulphide City twin hole drilling program to test historic drilling assay under-call and provide metallurgical samples.

Background on Develin Creek Project
Located 80km north-west of Rockhampton in Central Queensland, the Develin Creek base metals project hosts several copper-zinc-gold-silver volcanic hosted massive sulphide deposits and covers an extensive belt of underexplored prospective host rocks. The existing Inferred Mineral Resource (JORC 2012) of: 2.57Mt @ 1.76% copper, 2.01% zinc, 0.24g/t gold and 9.6g/t silver (2.62% CuEq) (ASX release 15th February 2015) comprises massive sulphide, stringer and breccia style copper-zinc-gold-silver deposits, hosted by basalts.
The Develin Creek deposits are of a style similar to those currently being mined by Sandfire Resources NL at DeGrussa and Independence Group NL at Jaguar-Bentley, which are both located in Western Australia. These types of deposits typically occur in clusters making them attractive exploration targets.

Drilling completed to date by Zenith at the Sulphide City deposit has returned results including: 5m @ 2.45% copper, 2.14% zinc, 0.4 g/t gold and 30.7 g/t silver and 3m @ 2.63% copper, 0.88% zinc, 0.5 g/t gold and 36.7 g/t silver supporting results from a diamond drill hole completed in 2011 that returned an intersection of 13.2 metres @ 3.3% copper, 4.0% zinc and 0.4g/t gold.

Massive bedded copper-zinc sulphide mineralisation remains open at depth beyond the main Scorpion deposit to the north and north-east, whilst bedded massive sulphide remains open ended to the northwest of the Sulphide City deposit (Figure 13). Incremental resource extensions are likely to the immediate north of the Window resource.

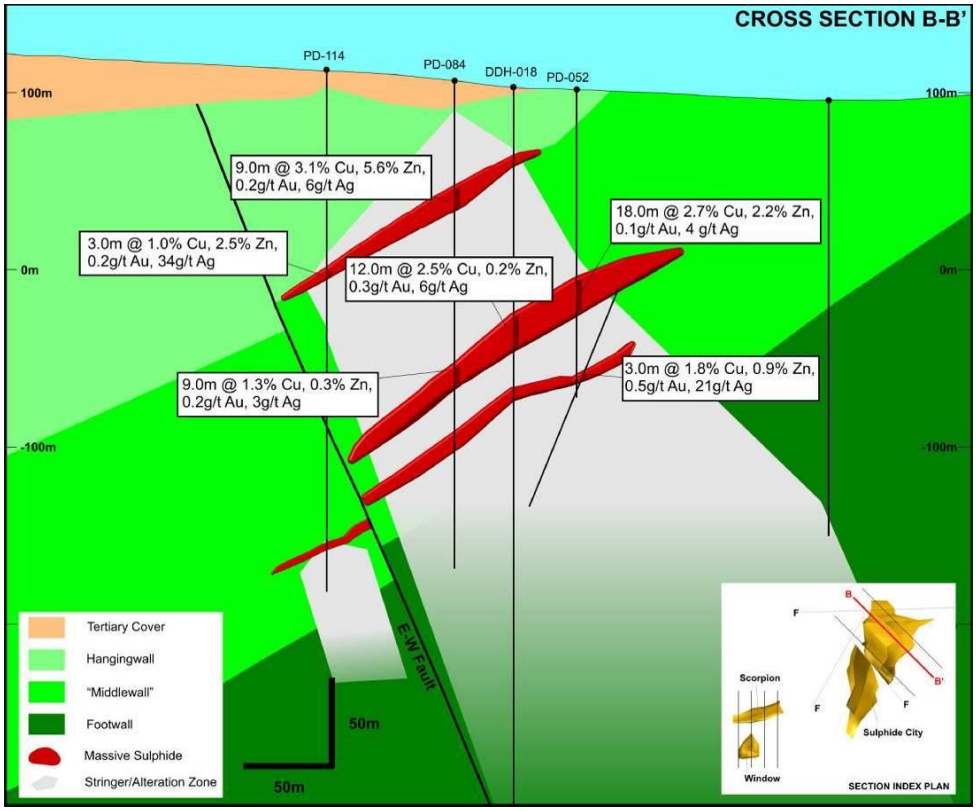

Figure 13: Sulphide City Deposit – Cross Sections

In addition a Zenith RC hole completed in the drill program twinned a 1993 percussion drill hole as the older hole appeared to have anomalously low results compared to the more recent diamond drill holes and other older 1993 diamond drill hole results further to the north. Zenith's new hole returned significantly higher copper, zinc, gold and silver grades (3x copper, 5x zinc, 5x gold and 7x silver) for the equivalent drilled interval. Results from the newer twin hole replaced the older drill hole results allowing a zone of continuous high-grade copper to be defined through the core of the Sulphide City deposit.

The Sulphide City mineralisation consists of stockwork, disseminated and massive sulphide mineralisation. The main Sulphide City lens, outlined with a 1% copper equivalent cut-off, has a horizontal projection of about 400m x 150m. The lens varies from 2.5m to 29m in thickness, generally dips 25-30° west-northwest and has been intersected at depths between 80m and 200m. Better historic drill intersections (previously reported) include:

- DDH-016 14.5m @ 0.6% Cu and 4.3% Zn (includes 2.5m @ 12.0% Zn)
- DDH-044 11.3m @ 2.1% Cu, 5.9% Zn, 16g/t Ag & 1.21g/t Au
- PD-052 15.0m @ 3.1% Cu, 2.3% Zn

The Scorpion deposit, 500m south-west of the Sulphide City deposit occurs in a 400m x 200m zone in altered volcanic rocks. The sulphide body, 2.5m – 9.5m thick consists of brecciated massive sulphides and grades up to 6% Cu, 9% Zn, 43g/t Ag and 1g/t Au. Better historic drill results (previously reported) include:

- DDH-001 21.6m @ 2.5% Cu, 1.5% Zn, 13g/t Ag & 0.5g/t Au (includes 16.2m @ 3.2% Cu, 1.6% Zn)
- DDH-002 31.6m @ 1.5% Cu, 1.5% Zn, 15g/t Ag & 0.3g/t Au (includes 16.7m @ 2.1% Cu, 2.0% Zn)
- PD-007 44.0m @ 1.6% Cu, 1.0% Zn, 8g/t Ag & 0.3g/t Au (includes 25.0m @ 2.6% Cu, 1.2% Zn)

The highly weathered Window mineralisation consists of a ~40m thick sub-horizontal supergene blanket of copper mineralisation at 50m depth within a wider zone of stringer style mineralisation. The location and style of mineralisation indicates that the Window Deposit may be the partially eroded footwall stringer zone to the nearby Scorpion massive sulphide lenses. Better historic drilling results from Window (previously reported) include:

- PD-012 84.0m @ 0.8% Cu (includes 48.0m @ 1.2%)

Wilsons South Prospect
In the Wilsons area, located 30km south of the known Develin Creek copper-zinc-gold-silver deposits Zenith's geochemical sampling program defined a 1000 metre by 500 metre, coincident copper-zinc soil anomaly overlying the Wilsons Copper Prospect where samples of gossans (up to 2.7% copper and 0.4% zinc) were mapped. Based on mapping and historical drilling Zenith's geologists interpret the Wilsons Prospect to represent the footwall stringer or feeder position typically observed below copper-zinc massive sulphide bodies.

In addition to identifying the known prospect at Wilsons, the soil sampling defined a prospective corridor 2000 metres by 750 metres continuing to the south which overlies a discrete EM conductor defined by a HeliTEM geophysical survey. The coincident soil anomaly and EM conductor at Wilsons South are located at higher topographic elevations directly along geological strike from the Wilsons prospect and are therefore considered to be an attractive drill target as preservation of the copper-zinc massive sulphide bodies are considered likely.

Regional Targets
Within the Develin Creek project area, Zenith believes that there is good potential to discover new massive sulphide copper-zinc mineralisation, in the extensive landholdings totalling 300km^2. Zenith controls over 50km of strike length of prospective volcanic host rock sequence.

To date approximately 11,100 soil samples have been collected and analysed by Zenith as part of a systematic geochemical surveying program. Historically there has been little to no systematic geochemical soil sampling over much of the prospective target horizons, and thus Zenith's ongoing sampling program is the first to provide effective regional geochemical coverage over key portions of the target area.

RED MOUNTAIN GOLD-SILVER PROJECT – QLD (Zenith 100%)

- **Initial reconnaissance field work by Zenith returned highly encouraging silver and gold rock chip sample results up to 114 g/t silver and 0.69 g/t gold;**
- **1km long, high-order (>100 ppb) silver soil geochemical anomaly confirmed with results up to 1 g/t silver. Open ended silver soil anomaly provides target scale and immediate follow-up opportunity;**
- **Follow-up mapping and sampling to define the extents of the gold-silver mineralisation is planned along with trenching to test the true thickness of the poorly exposed gold-silver zones and to track mineralisation where it extends beneath shallow soil cover to the southwest.**

Activities During the Quarter
Mapping in an area dominated by soil with minor sporadic rock outcrop identified discrete 2 to 3 metre wide manganese and iron rich fracture vein stockwork zones hosted in rhyolite and granodiorite with minor quartz. Rock chip sampling from these zones returned highly encouraging silver and gold rock chip sample results up to 114g/t silver and 0.69 g/t gold in association with anomalous copper, lead, zinc, barium, cobalt (up to 0.1%), antimony and bismuth. A total of 7 rock samples were collected, all results are shown on Figure 14.

Soil samples taken by Zenith confirmed an area of anomalous silver soil geochemistry which now outlines an open-ended, high-grade (>100 ppb) silver anomaly with individual soil results up to 1 g/t silver that provides target scale and an immediate follow-up opportunity (Figure 14).

Planned Activities
The Zenith team is highly encouraged by the initial discovery of gold and silver at Red Mountain. Follow-up mapping and sampling to define the extents of the gold-silver mineralisation is planned along with trenching to test the true thickness of the poorly exposed gold-silver zones and to track mineralisation where it extends beneath shallow soil cover to the southwest.

Background on Red Mountain Project
The Red Mountain project in central Queensland (Figure 15) was applied for following a review of previous exploration activity in the area which reported highly anomalous cobalt and manganese in surface samples.

Based on the initial site visit and preliminary evidence, the geological setting and geochemical association at Red Mountain is indicative of a gold-silver "carbonate-base metal gold epithermal" system. According to Corbett (2002)

this group of deposits represents the most prolific gold producers in the SW Pacific rim, examples include the Porgera Gold Mine and Mt Muro Gold Mine.

The Red Mountain project is close to the low sulphidation epithermal gold deposit Cracow – owned by Evolution Mining and porphyry deposits such as the Whitewash Deposit porphyry copper-molybdenum deposit owned by Aeon Metals Limited. Project tenue is situated on grazing country with excellent access.

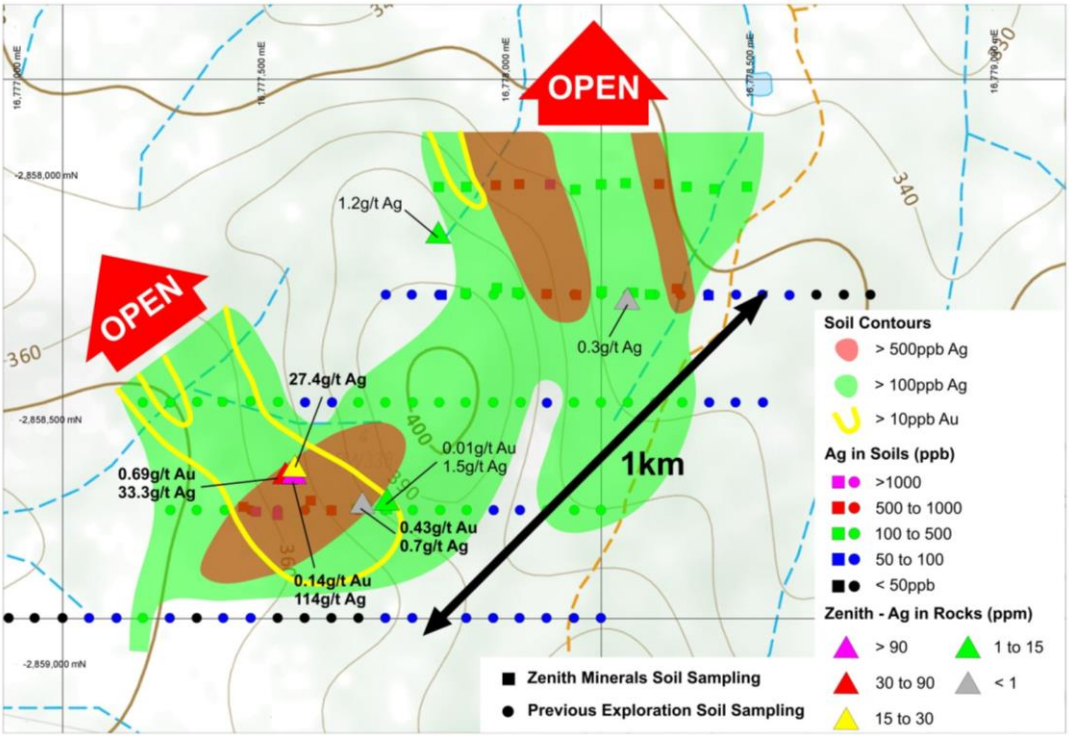

Figure 14: Prospect Map Showing Gold & Silver Rock Results and Silver Soil Results

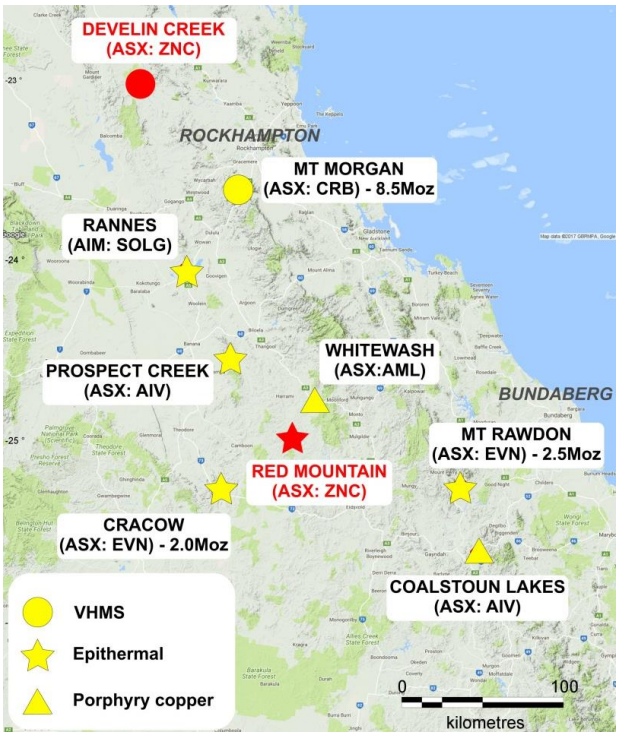

Figure 15: Red Mountain Project – Location Map
(Showing mineral deposits with past production plus current published resources)

WARATAH WELL LITHIUM-TANTALUM PROJECT – WA (Zenith 100%)

- **Warratah Well Project covers area of extensive outcropping pegmatites (3km x 2km) in north east of tenure - no reported previous exploration for lithium;**
- **Reconnaissance field work by Zenith returned encouraging lithium rock chip sample results up to 0.34% Li_2O as well as widespread, high-grade tantalum up to 1166ppm Ta_2O_5;**
- **In addition, a review of previous exploration identified a large, unexplained, discrete, high-order arsenic anomaly in the southwest of the tenure. Follow-up by Zenith's field team identified zone of anomalous copper –zinc in association with gossanous sub-crop indicative of a volcanogenic massive sulphide exploration target;**
- **Additional surface sampling completed by Zenith and samples will be dispatched to the laboratory this week.**

Activities During the Quarter

Reconnaissance field work completed during the quarter by Zenith to assess the pegmatite dykes and sills has returned encouraging lithium rock chip sample results (23 samples) up to 0.34% Li_2O as well as widespread, high-grade tantalum up to 1166ppm Ta_2O_5 (ASX Release 29th July 2017). Individual pegmatite bodies range in thickness from 0.5 metres to 20 metres and generally dip shallowly to the northeast at between 50 and 600. Tantalum results range from 30ppm to a maximum of 1166ppm Ta_2O_5, with 10 samples in excess of 200ppm Ta_2O_5 whilst lithium results are generally lower with only two samples returning greater than 0.2%Li_2O. Preliminary assessment appears to indicate that the higher lithium results are from mica rich pegmatites, whilst the tantalum mineral species is not yet known.

In addition, a review of previous exploration has identified a large, unexplained, discrete, high-order arsenic anomaly in the southwest of the tenure. Follow-up by Zenith's field team identified a zone of anomalous copper (up to 471ppm Cu), zinc (487ppm Zn) and arsenic (up to 1050ppm As) in surface lag and gossanous sub-crop indicative of a volcanogenic massive sulphide exploration target. The target area lies 45km north along strike from Doray Minerals Limited (ASX:DRM) Deflector gold-copper mine and 75km northwest of the Golden Grove copper-zinc-gold mine (Figure 16).

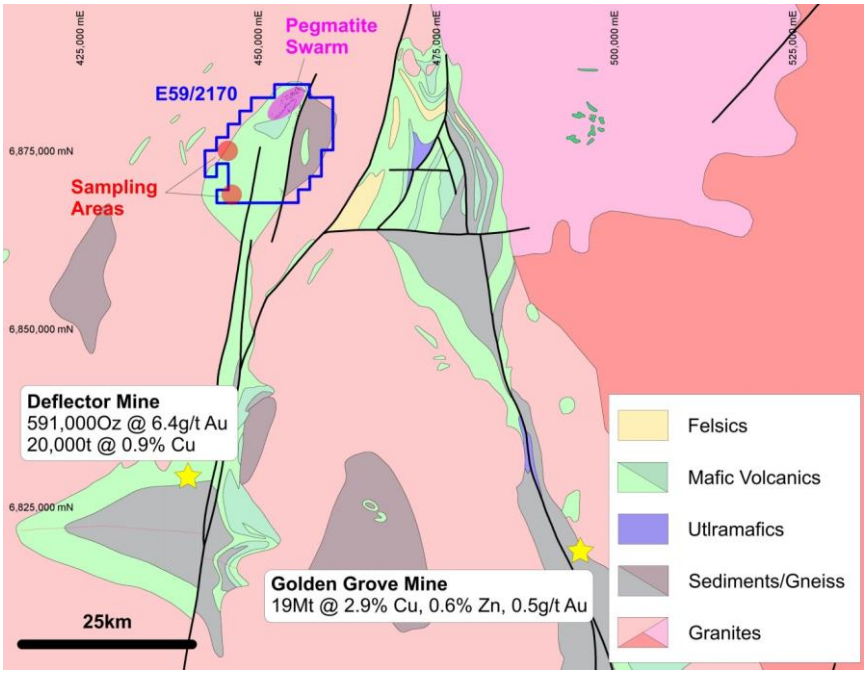

Figure 16: Warratah Well Project (E59/2170) – Regional geological Setting and Location of Targets (Deflector resource DRM website accessed 24-07-17 & Golden Grove resource - MMG 2014)

Additional surface sampling has completed by Zenith to outline the extents of the copper-zinc-arsenic rich zone and samples will be dispatched to the laboratory this week.

Planned Activities
Further work is planned to assess the zonation of lithium and tantalum to determine if drill testing is warranted.

Background on Waratah Well Project
Zenith's 100% owned exploration licence in central west Western Australia - Warratah Well Project covers area of extensive outcropping pegmatites (3km x 2km) in the northeast of the project area. A review of previous explorer's reports indicates no lithium exploration activity has been conducted in the area.

POLLAPPA LITHIUM PROJECT – QLD (Zenith 100%)

- **Two 100% owned tenements covering 333 square kilometres (40km of strike) of lithium prospective rocks in north Queensland - Pollappa Project;**
- **Area targeted using in-house Company methodology to assess the lithium fertility of host rock sequence and granites Australia wide;**
- **Highly anomalous lithium values grading: 0.50% Li_2O, 0.48% Li_2O, 0.46% Li_2O and 0.40% Li_2O from Holroyd Group metamorphic rock samples, located centrally within the new application areas;**
- **Majority of previous exploration focused solely on base metals and gold exploration despite the description of mapped pegmatites and lepidolite occurrence in the belt; and**
- **Zenith's geologists believe that the area is prospective for lithium mineralisation.**

Activities During the Quarter
Native Title/Heritage access agreements executed, 1 exploration permit for minerals (EPM) granted, awaiting grant of second EPM.

Planned Activities
Zenith's geologists believe that the new application area is prospective for lithium mineralisation. Following completion of the review of past exploration, initial surface mapping and sampling is planned prior to drill testing.

Background on Pollappa Project
Large area (333 square kilometres) of 100% owned exploration permit for minerals applications (EPMA's) in north Queensland, Pollappa Lithium Project (ASX Release 15th September 2016). An initial area was applied for in early July 2016 following the recognition by the Company that the region contained lithium-enriched granites (Kintore Supersuite) and lithium-mineralised rocks with samples returning highly anomalous lithium values grading: 0.50% Li_2O, 0.48% Li_2O, 0.46% Li_2O and 0.40% Li_2O, from schist samples (not pegmatites) ascribed to the Holroyd Group metamorphic rocks. Those samples were documented in an Australian Federal Government geochemical sampling database of 50,000 records that were assessed by the Company as part of its Australia wide lithium project generation study.

MT ALEXANDER IRON PROJECT – WA (Zenith 100%)

- **Advantages over other WA magnetite deposits;**
  - **Location close to coast and infrastructure (Well located close to sealed roads, gas pipelines and only 120km from coast near Onslow (Mitsui, Chevron ports)**
  - **Coarser grained = better beneficiation**
  - **Low waste to ore ratio ~ 1:1, provides a good compact mining shape**
- **JORC Inferred Resource of 566Mt @ 30 % Fe is only ~ 50% of target iron formation ("BIF") area. Clear potential to grow resource within significant additional Exploration Target.**

Activities During the Quarter

Nil this quarter.

Background on Mt Alexander Project

The Mount Alexander Project is 120 km from the port of Onslow, and 260 km south west of Karratha in the West Pilbara region of Western Australia, close to the Pilbara coast, the sealed North West Coastal Highway and the Dampier Bunbury gas pipeline.

Zenith discovered magnetite iron mineralisation occurs in a banded iron formation (BIF) associated with a sequence of amphibolite, dolomite, schist and quartzite of Proterozoic age in the northern Gascoyne Province.

In May 2013 the Company announced an Inferred Mineral resource for magnetite iron at Mount Alexander of 535 million tonnes @ 30.0% Fe. This mineral resource was updated and reported in June 2015 to include magnetite iron zones that extend on to an exploration licence acquired post that May 2013 resource estimate. The new Inferred Mineral resource (JORC12) for magnetite iron at Mount Alexander is: **565.7 million tonnes @ 30.0% Fe**. The resource is the total of the 2013 Inferred Mineral Resource (535.1Mt @ 30.0%Fe) and the updated BIF extensions of the central and south west domains (30.6Mt @ 30.0% Fe). Details are included in JORC Code Reporting Criteria Section 2 of the June 2015 Quarterly Report.

Mount Alexander BIF Inferred Mineral Resource estimate as at June 2015							
		Head Grade					
Classification	Tonnes (Mt)	Fe %	SiO_2 %	Al_2O_3 %	LOI %	P %	S %
Inferred	565.7	30.0	48.1	2.2	-0.4	0.1	0.46
	DTR	DTR Concentrate Grade					
	Mass Recovery %	Fe %	SiO_2 %	Al_2O_3 %	LOI %	P %	S %
	24.8	69.9	2.4	0.1	-2.7	0.01	1.1

In addition the Company reported a maiden Inferred Mineral resource estimate for magnetite iron at the Mt Alexander West prospect in June 2015. That Inferred Mineral resource (JORC12) for magnetite iron at Mount Alexander West is: **25.9 million tonnes @ 22.7% Fe.** The resource is classified as Inferred based on confidence in, and continuity of, the results from the drilling campaigns, detailed aeromagnetic data and detailed structural surface mapping. Details are included in JORC Code Reporting Criteria Section 2 of the June 2015 Quarterly Report.

Mount Alexander West BIF Inferred Mineral Resource estimate as at June 2015 (18%Fe cut-off)							
		Head Grade					
Classification	Tonnes (Mt)	Fe %	SiO2 %	Al_2O_3 %	LOI %	P %	S %
Inferred	25.9	22.7	50.0	7.9	0.27	0.35	0.04

Substantial additional potential exists for increased tonnage at both Mt Alexander and Mt Alexander West with only ~55% of target BIF drill tested to date.

Pre-feasibility study elements undertaken aimed at de-risking the project include; finalised Level 1 and Level 2 flora & flora surveys did not identify any major environmental triggers.

The Company has secured retention licences over the Mt Alexander and Mt Alexander West deposits as well as an area adequate to cover key infrastructure that would be required to develop the magnetite iron project. The retention licence/status will allow Zenith to hold the Mineral Resources but negate any ongoing Department of Mines statutory annual expenditure requirements for those licences.

EARAHEEDY MANGANESE PROJECT – WA (Zenith 100%)

Manganese Mineral Resources at Red Lake and Lockeridge are retained under retention licences.

Activities During the Quarter
Retention licence to cover the Blue Cliffs resource area granted.

Planned Activities
The Company noted that manganese production has been suspended at two of Australia's premier manganese operations: Woodie Woodie in Western Australia and Bootu Creek in the Northern Territory. As a direct result of the significant fall in manganese prices the Company reduced its landholdings to key exploration targets and now holds three Mineral Resources under retention licences. These licences allow Zenith to hold the resources but negate any Department of Mines statutory annual expenditure requirements for those projects.

Background on Earaheedy Project
The Proterozoic aged Earaheedy Basin north of Wiluna in Western Australia is a potential new manganese province with similarities to the giant Kalahari manganese field in South Africa. Zenith's priority target is high-grade (>40% Mn) manganese oxide formed by weathering or supergene upgrade of primary mineralisation.

The first DSO grade Mn drill intersections recorded in the Earaheedy Basin were reported by Zenith in 2012 at the Red Lake prospect. Drilling results include; 3m @ 41% Mn (within 5m @ 34.8% Mn from 22m depth), and 3 metres @ 34.8% Mn from 19 metres, including 1m @ 42.3% Mn. Subsequent drill programs defined continuous near surface high-grade manganese at Red Lake. Based on a revised geological interpretation (ASX Release 9th September 2014) the Red Lake resource is: **1.4Mt @ 19.0% Mn** at a 10% Mn cut-off grade with a higher grade component of 0.2Mt @ 30.0% Mn at a 25% Mn cut-off grade as presented in the Table below. The resource is classified under the JORC Code 2012 as Inferred, based on confidence in, and continuity of, the results from the drilling campaigns, and surface mapping.

Red Lake Manganese Mineral Resource Estimate as at August 2014									
Classification	**Reporting Cut-off Grade**	**Tonnes (Mt)**	**Mn %**	**Fe %**	**Si %**	**Al2O3 %**	**P %**	**S %**	**LOI %**
Inferred	25% Mn	0.2	30.0	14.1	13.85	7.9	0.24	0.03	12.1
	20% Mn	0.5	25.1	16.1	17.0	8.9	0.25	0.06	11.9
	15% Mn	1.1	20.8	17.7	20.5	9.3	0.24	0.17	11.5
	10% Mn	1.4	19.0	19.1	20.8	9.6	0.26	0.19	11.4

On the 15th April 2015 Zenith reported an Inferred Mineral Resource (JORC 12) for the near surface oxide portion of the Lockeridge manganese prospect. The maiden estimate is: **2.6Mt @ 20.6% Mn** at a 10%Mn cut-off grade as presented in the Table below. The resource is classified under the JORC Code 2012 as Inferred, based on confidence in, and continuity of, the results from the drilling campaigns, and surface mapping.

Lockeridge Manganese Mineral Resource Estimate as at April 2015									
Classification	**Reporting Cut-off Grade**	**Tonnes (Mt)**	**Mn %**	**Fe %**	**$Si0_2$%**	**Al_2O_3 %**	**P %**	**S %**	**LOI %**
Inferred	20% Mn	1.0	30.2	7.0	18.9	4.1	0.12	0.01	5.7
	15% Mn	1.9	23.4	6.7	25.4	4.7	0.15	0.01	10.4
	10% Mn	2.6	20.6	6.9	27.6	5.1	0.16	0.01	12.0

Note: The Mineral Resource was estimated within constraining wireframe solids based on the specified nominal lower cut-off grade for Mn. The Mineral Resource is quoted from all blocks above the specified Mn cut-off grade %. Differences may occur due to rounding.

OTHER

Nil this quarter.

NEW OPPORTUNITIES

The Company continues to assess opportunities for gold, copper and lithium.

CORPORATE

Nil this quarter

Zenith Minerals Limited **31st July 2017**

For further information contact;

Directors Michael Clifford or Mike Joyce

Phone 08 9226 1110

COMPETENT PERSONS STATEMENTS

The information in this report that relates to Zenith Exploration Results and Exploration Targets is based on information compiled by Mr Michael Clifford, who is a Member of the Australian Institute of Geoscientists and an employee of Zenith. 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.

The information in this Report that relates to in-situ Mineral Resources at the Develin Creek project is based on information compiled by Ms Fleur Muller an employee of Geostat Services Pty Ltd. Ms Muller takes overall responsibility for the Report. She is a Member of the AusIMM and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity she is undertaking, to qualify as a Competent Person in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012 Edition). Ms Muller consents to the inclusion in the report of the matters based on her information in the form and context in which it appears.

The information in this report that relates to Mineral Resources at Zenith's Red Lake Earaheedy project is based on information compiled by Mr Dmitry Pertel, a Competent Person who is a fulltime employee of CSA Global Pty Ltd and a member of the Australian Institute of Geoscientists (AIG). Mr Pertel has sufficient experience 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 Mineral Resources and Ore Reserves". Mr Pertel consents to the inclusion of such information in this report in the form and context in which it appears.

The information in this report that relates to Mineral Resources at Zenith's Lockeridge - Earaheedy project, Mt Alexander project and Mt Alexander West project is based on information compiled by Mr Rodney Michael Joyce, a Competent Person who is a director of the Company and a Member of the AusIMM. Mr Joyce has sufficient experience 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 Mineral Resources and Ore Reserves". Mr Joyce consents to the inclusion of such information in this report in the form and context in which it appears.

The information in this report that relates to Zenith Exploration Targets at Mt Alexander is based on information compiled by R M Joyce, who is a director of the Company and a Member of the AusIMM. Mr Joyce 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 Joyce consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. 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.

+Rule 5.5

Appendix 5B

Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

Name of entity

Zenith Minerals Limited

ABN	**Quarter ended ("current quarter")**
96 119 397 938	30 June 2017

Consolidated statement of cash flows		**Current Quarter $A'000**	**Year to Date (12 months) $A'000**
1.	**Cash flows from operating activities**		
1.1	Receipts from customers	35	54
1.2	Payments for		
	(a) exploration & evaluation	(85)	(691)
	(b) development	-	-
	(c) production	-	-
	(d) staff costs	(116)	(425)
	(e) administration and corporate costs	(96)	(371)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	1	5
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Research and development refunds	-	-
1.8	Other (provide details if material)	-	-
1.9	**Net cash from / (used in) operating activities**	**(261)**	**(1,428)**

2.	**Cash flows from investing activities**		
2.1	Payments to acquire:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	(5)	(301)
	(c) investments	(3)	(3)
	(d) other non-current assets	-	-

Consolidated statement of cash flows		**Current Quarter $A'000**	**Year to Date (12 months) $A'000**
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other: Reimbursement Exploration Costs regarding Farm-in Agreement	662	662
2.6	**Net cash from / (used in) investing activities**	**654**	**358**

3.	**Cash flows from financing activities**		
3.1	Proceeds from issues of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	1,613
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	**Net cash from / (used in) financing activities**	**-**	**1,613**

4.	**Net increase / (decrease) in cash and cash equivalents for the period**		
4.1	Cash and cash equivalents at beginning of period	1,623	1,473
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(261)	(1,428)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	654	358
4.4	Net cash from / (used in) financing activities (item 3.10 above)	0	1,613

Consolidated statement of cash flows		**Current Quarter $A'000**	**Year to Date (12 months) $A'000**
4.5	Effect of movement in exchange rates on cash held	(12)	(12)
4.6	**Cash and cash equivalents at end of period**	**2,004**	**2,004**

5.	**Reconciliation of cash and cash equivalents** at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	**Current quarter $A'000**	**Previous quarter $A'000**
5.1	Bank balances	1,989	1,607
5.2	Call deposits	15	16
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	**Cash and cash equivalents at end of quarter (should equal item 4.6 above)**	**2,004**	**1,623**

6.	**Payments to directors of the entity and their associates**	**Current quarter $A'000**
6.1	Aggregate amount of payments to these parties included in item 1.2	105
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

Reimbursement of administration and exploration expenses incurred on behalf of the Company and fees paid in accordance with service contract to associates of the directors, and for the payment of director services.

7.	**Payments to related entities of the entity and their associates**	**Current quarter $A'000**
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2

8.	**Financing facilities available** *Add notes as necessary for an understanding of the position*	**Total facility amount at quarter end $A'000**	**Amount drawn at quarter end $A'000**
8.1	Loan facilities		
8.2	Credit standby arrangements		
8.3	Other – Credit Card Facility	15	0

8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.

Credit Card Facility with ANZ bank which is secured by a term deposit with a right of set off to the total limit of the credit card facility.

9.	**Estimated cash outflows for next quarter**	**$A'000**
9.1	Exploration and evaluation	200
9.2	Development	-
9.3	Production	-
9.4	Staff costs	100
9.5	Administration and corporate costs	70
9.6	Other (provide details if material)	-
9.7	**Total estimated cash outflows**	**370**

10.	**Changes in tenements (items 2.1(b) and 2.2(b) above)**	**Tenement reference and location**	**Nature of interest**	**Interest at beginning of quarter**	**Interest at end of quarter**
10.1	Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced				
10.2	Interests in mining tenements and petroleum tenements acquired or increased	EPM26384 EPM26301 E59/2170	100% 100% 100%	- - -	100% 100% 100%

Compliance statement

1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.

2 This statement gives a true and fair view of the matters disclosed.

Sign here: ..... Date: 31 July 2017
(~~Director~~ /Company secretary)

Print name: **Melinda Nelmes**

Notes

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.

2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.

3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.