



ASX & MEDIA RELEASE

Zenith  
Minerals  
Limited

ABN 96 119 397 938

## QUARTERLY ACTIVITY REPORT FOR THE PERIOD ENDING 31<sup>st</sup> DECEMBER 2019

**ASX CODE: ZNC**

### Exploration / Development

Split Rocks Gold & Lithium – Aus

Red Mountain – Gold-Silver Aus

Laramie REE – Wyoming USA

Develin Creek Copper-Zinc-Gold

American Lithium JV

Kavaklitepe Gold JV- Turkey

Earaheedy Zinc JV

### Details as at 31<sup>st</sup> Dec 2019

Issued Shares (ZNC) 240.5 m

Unlisted options 4.15 m

Mkt. Cap. (\$0.06) A\$13 m

Cash at 31st Dec 2019 \$1.58 m

Debt Nil

### Directors

Michael Clifford Managing Director

Mike Joyce Non Exec Chairman

Stan Macdonald Non Exec Director

Julian Goldsworthy Non Exec Director

Graham Riley Non Exec Director

### Major Shareholders

HSBC Custody. Nom. 12%

J P Morgan 6.1%

Nada Granich 5.5%

Miquilini 4.4%

Abingdon 4.2%

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## HIGHLIGHTS

- Drill testing at Split Rocks – WA returns:
  - 11m @ 2.08g/t Au from 59m depth incl 6m @ 3.32 g/t Au, and 5m @ 3.23 g/t Au from 8mMineralization remains open & untested along strike and down-dip.
- Discovery of shallow, flat-lying sandstone hosted zinc-lead mineralisation at Earaheedy JV WA in 2 prospects 10km apart. Results include:
  - 11m @ 4.13% Zn+Pb, 12.8 g/t Ag from 61m.
- Infill geochemical program at Red Mountain gold project – QLD defines robust drill target with new high-grade soil results up to 1300ppb Au (1.3 g/t Au) supporting previous results of 2210 ppb Au (2.2g/t Au).
- Consistent, strong REE surface mineralisation identified at the Laramie project - USA, including:
  - 80m @ 0.40% TREO, 137m @ 0.37% TREO & 332m @ 0.26% TREO.
- Technical review identifies new gold target at Kavaklitepe JV project – Turkey.

## NEXT QUARTER

- Drilling recommenced in January at Split Rocks gold project – WA.
- Drilling planned – Red Mountain gold project – QLD.
- Rare earth element (REE) metallurgical test work in progress.



## SUMMARY OF ACTIVITIES AND RESULTS

### ***Split Rocks Gold & Lithium Project – WA (ZNC 100%)***

Zenith's initial 16-hole drill program of approximately 2000m successfully confirmed bedrock gold targets beneath the currently operating Dulcie Heap Leach Gold Project (DHLGO) - held by a 3rd party. As previously reported gold mineralisation (>0.5 g/t Au) was successfully intersected in 12 of Zenith's initial 16 wide spaced drill holes (ASX release 28th October 2019). Following a detailed assessment of the mineralised drill chips additional 1m resampling was completed with new assay results expanding two of the previously reported gold mineralised intervals in holes ZDRC022 and ZDRC017 as announced on the 24<sup>th</sup> Jan 2020:

- o ZDRC022: 11m @ 2.08 g/t Au from 59m depth, incl. 6m @ 3.32 g/t Au and
- o ZDRC017: 4m @ 2.05 g/t Au from 30 m depth, in addition to other previously reported results of:
- o ZDRC020: 5m @ 3.23 g/t Au from 8m depth,
- o ZDRC021: 5m @ 2.04 g/t Au from 34m depth incl. 2m @ 3.94 g/t Au.

Gold mineralisation intersected to date and reported here-in is interpreted to be close to true width intersections. Mineralisation is hosted within quartz veined and sericite altered mafic volcanic rocks and remains open and untested along strike and down dip with evidence of multiple stacked lodes. Drilling recommenced in January to test along strike and down-dip potential. Project further expanded with acquisition of 2 new licences (ASX release 14 Oct 2019) including new gold and lithium targets and Wrathchild iron ore target.

### ***Laramie REE Project – Wyoming USA (ZNC 100%)***

As announced to the ASX on the 7<sup>th</sup> Oct 2019, initial rock grab sampling and mapping by Zenith in three key areas 2 to 3km apart returned up to 0.60% total rare earth oxides (TREO). Follow-up sampling included nine systematic rock chip sample traverses by Zenith with five traverses across portions of the north of the initial sampling area and four across the southern zone. All nine traverses returned consistent, strong REE mineralisation along their entire lengths (ASX Release 11<sup>th</sup> Nov 2019), including: 80m @ 0.40% TREO, 60m @ 0.39% TREO, 40m @ 0.35% TREO, 60m @ 0.37% TREO, 137m @ 0.37% TREO, 332m @ 0.26% TREO, 72m @ 0.33% TREO, 60m @ 0.34% TREO and 17m @ 0.24% TREO.

Initial petrographic analyses confirm REEs occur predominantly as the mineral allanite. Allanite crystals observed are generally relatively coarse grained (0.4mm to 2.5mm) with distinct mineral grains indicating potential for easy liberation from the syenite host rock. Initial metallurgical test work commenced in early January 2020 to assess the rare earth liberation characteristics of the mineralised rock as Zenith considers ease of processing to be a key to the future of this project.

### ***Red Mountain Gold – QLD (ZNC 100%)***

Results were received from an infill geochemical program completed to define the limits of the high-grade western gold zone outlining a robust drill target. New high-grade soil results up to 1300ppb Au (1.3 g/t Au) supporting previous results of 2210 ppb Au (2.2g/t Au) 1600ppb Au, 550ppb Au and 320ppb Au define a 450m x 50m >100ppb Au gold soil anomaly, with the southern end of the anomaly grading >500ppb (0.5 g/t Au) over 150m of strike. The high-grade surface gold results form a core to a much larger zone of gold anomalism (>10ppb Au) extending over an area 1200m x 150m on the western margin of the Red Mountain felsic volcanic breccia system (ZNC ASX Release 25<sup>th</sup> Nov 2019).

Drill testing is planned, approximately 10 holes @ 100m depth each to test the key geochemical-geological and geophysical targets.

### ***Earaheedy Zinc JV – WA (ZNC 25% free carry to BFS)***

Zenith Minerals (ASX: ZNC) joint venture partner Rumble Resources (ASX: RTR) completed RC drilling on the Earraheedy Project with results highlighting two large-scale (large tonnage) Zn–Pb discoveries (refer to ZNC & RTR announcements dated 23<sup>rd</sup> January 2020).

Discoveries of shallow flat lying sandstone hosted Zn – Pb mineralisation at 2 prospects some 10km apart. Chinook Prospect: \*11m @ 4.13% Zn + Pb, 12.8 g/t Ag from 61m (EHRC019) within 22m @ 2.52% Zn + Pb from 53m. Magazine Prospect: 11m @ 2.05% Zn + Pb, 3.2 g/t Ag from 70m (EHRC003)

Rumble outlined a shallow Exploration Target<sup>^</sup> at the Earraheedy Project of 40Mt to 100Mt at 3.5% Zn-Pb to 4.5% Zn-Pb based on recent drilling results, geological understanding of the mineralisation geometry, continuity of mineralisation and regional geology, highlighting the potential for Earraheedy to be a world class Tier 1 base metal province. (*The potential quantity and grade of the Exploration Target is conceptual in nature, there has been*

insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource. Refer to further details on page 6 of the ZNC-RTR announcement dated 23<sup>rd</sup> January 2020).

#### **Kavaklitepe Gold JV – Turkey (ZNC 23%)**

A detailed review of the 2019 results highlighted the potential for continuous near flat lying gold mineralisation beneath a sequence of near surface barren metavolcanic rocks between the Kuzey and Discovery Gold Zones, located approximately 1km apart.

A program of 5 diamond drill holes (and 12 contingent holes) of approximately 300m depth each are planned to be completed in early to mid-2020 to test for the potential of gold mineralization between the Kuzey Zone and Discovery Zone beneath a sequence of interpreted flat-lying barren metavolcanics rocks. Zenith believes that if the proposed drill program is successful in its aims then it could have a significant impact on the project's potential.

#### **Vivash Iron – WA (Optioned to RTX)**

Drilling completed during the quarter by Rio Tinto Exploration (RTX) with best intersection 14m @ 55.9%Fe in detritals. 3D geological modelling, reconnaissance planned, potentially leading to follow-up drilling.

#### **American Lithium JV**

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 7<sup>th</sup> March 2017) to jointly unlock the potential of Zenith's USA and Mexican lithium project portfolio. Bradda Head must spend US\$5 million on the joint venture projects before Feb 2021 or the projects will be returned to Zenith.

#### **Corporate**

The Company raised \$1.663 million by way of a non-renounceable rights issue to existing shareholders via the issue of 30,245,335 ordinary ZNC shares.

Zenith currently retains a total of 4,509,947 ASX:RTR shares

## **ZENITH'S EXPLORATION PROJECTS**

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

- 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 189Mt @ 1.5% Li<sub>2</sub>O (KDR ASX Release 19<sup>th</sup> Mar 2018).
- RC drill testing of the Dulcie lithium pegmatite target confirmed thick pegmatite bodies containing broad anomalous levels of lithium including: 79m @ 284ppm Li<sub>2</sub>O with a peak value of 1m @ 1072ppm Li<sub>2</sub>O. Pegmatite body remains open to the north and west (ZNC ASX release 14 Aug 2018).
- Soil sampling defined 7 lithium anomalies to date, of which 5 have had preliminary shallow drill tests.
- Significant gold mineralisation at the Dulcie Prospect includes: 5m @ 2.51 g/t gold including 1m @ 8.79 g/t gold & 2m @ 6.54g/t gold, ZNC ASX Release 5<sup>th</sup> June 2018 – follow-up drilling to be completed.
- Option on bedrock gold & lithium rights over adjoining Dulcie Heap Leach Operation. High-grade historic drill results include: 6.0m @ 16.91 g/t Au, 2.0m @ 32.73 g/t Au, 2.0m @ 16.5 g/t Au, 2.0m @ 15.40 g/t Au, 5.0m @ 4.73 g/t Au, 4.0m @ 4.90 g/t Au & 9.0m @ 2.10g/t Au. Several high-priority drill targets for follow-up.
- Zenith's initial 16-hole drill program of approximately 2000m successfully confirmed bedrock gold targets beneath the currently operating Dulcie Heap Leach Gold Project (DHLGO) - held by a 3rd party. Better results include: 10m @ 2.20 g/t Au from 60m including 6m @ 3.32 g/t Au, 5m @ 3.23 g/t Au from 8m plus 4m @ 1.48 g/t Au from 44m and 1m @ 3.79 g/t Au from 124m, 5m @ 2.04 g/t Au from 34m including 2m @ 3.94 g/t Au and 2m @ 2.56 g/t Au from 32m (ZNC ASX Release 28th Oct 19).
- Highly encouraging initial reconnaissance surface sample results up to 0.39% Li<sub>2</sub>O from pegmatite bodies on the recently optioned Dulcie Heap Leach Gold Operation tenure.



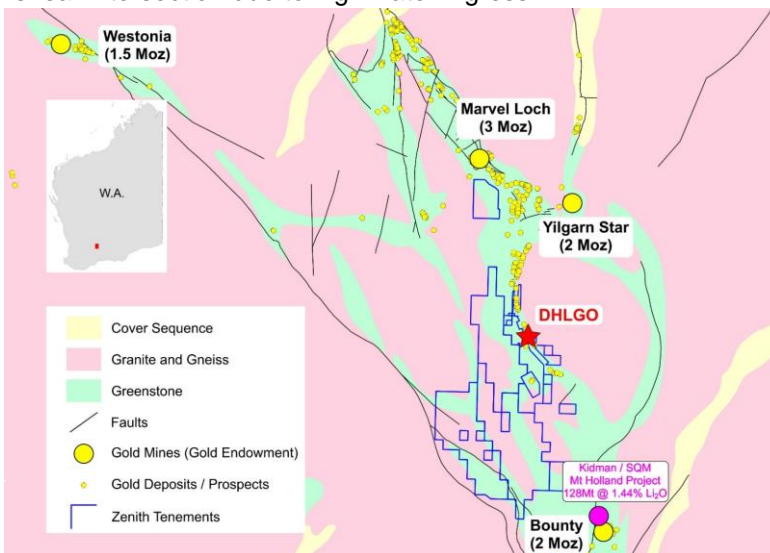
## Activities During the Quarter

A 16-hole RC drilling program was completed in September - October 2019 at the Split Rock project – WA (Figure 1). The initial drill program of approximately 2000m successfully confirmed bedrock gold targets beneath the currently operating Dulcie Heap Leach Gold Operation (DHLGO) - held by a 3<sup>rd</sup> party\*. In addition, the Company reported on the 24th Jan 2020 that further 1m resample assay results from that initial drill program expanded two of the previously reported gold mineralised intervals in holes ZDRC022 and ZDRC017.

Assay results expanded two of the previously reported gold mineralised intervals in holes ZDRC022 and ZDRC017:

- **ZDRC022: 11m @ 2.08 g/t Au from 59m depth, incl. 6m @ 3.32 g/t Au and**
- **ZDRC017: 4m @ 2.05 g/t Au from 30 m depth, in addition to other previously reported results of:**
- **ZDRC020: 5m @ 3.23 g/t Au from 8m depth,**
- **ZDRC021: 5m @ 2.04 g/t Au from 34m depth incl. 2m @ 3.94 g/t Au,**

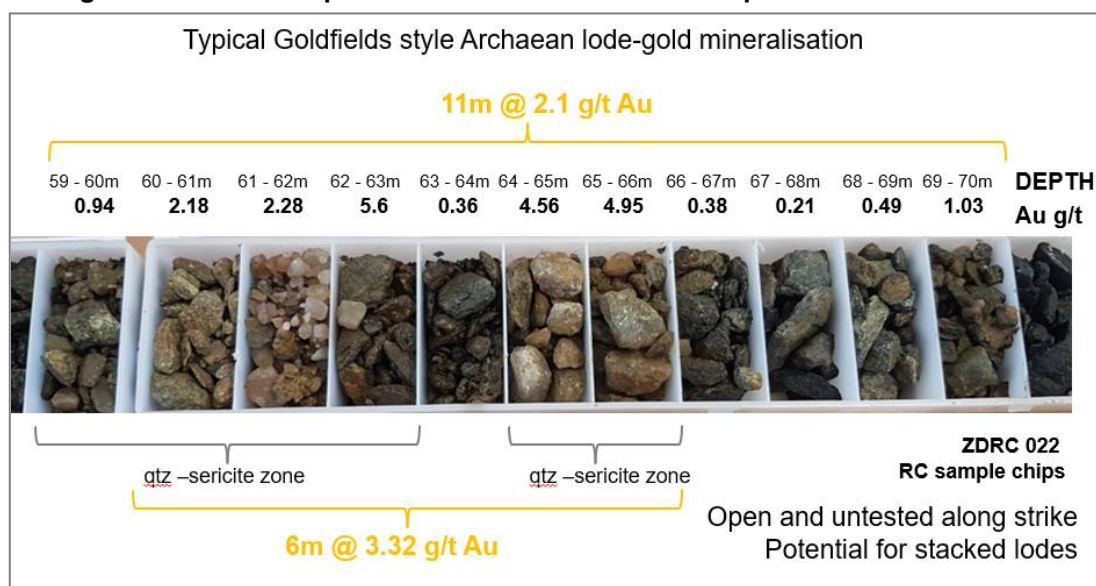
The intersection in hole ZDRC022 is particularly noteworthy as this hole was a redrill of hole ZDRC017, which was abandoned at 32m depth in mineralisation having hit a cavity that is likely old underground workings (figure 2). Additionally, drill holes ZDRC022 & ZDRC018 did not reach their respective ultimate target depths to test the BIF – shear intersection due to high water ingress.



**Figure 1- DHLGO Prospect and Split Rocks Project Location Map Showing Regional Gold Endowment**

\*The Company has an exclusive right to explore the DHLGO project for bedrock gold mineralisation beneath the large laterite rich gold cap currently being mined and treated on leases located contiguous with Zenith's Split Rocks project licences, located in the Forrestania greenstone belt, Western Australia (Figure 1).

**Figure 2: RC Drill Chips for Drill Hole ZDRC022 - Example of Gold Mineralisation**

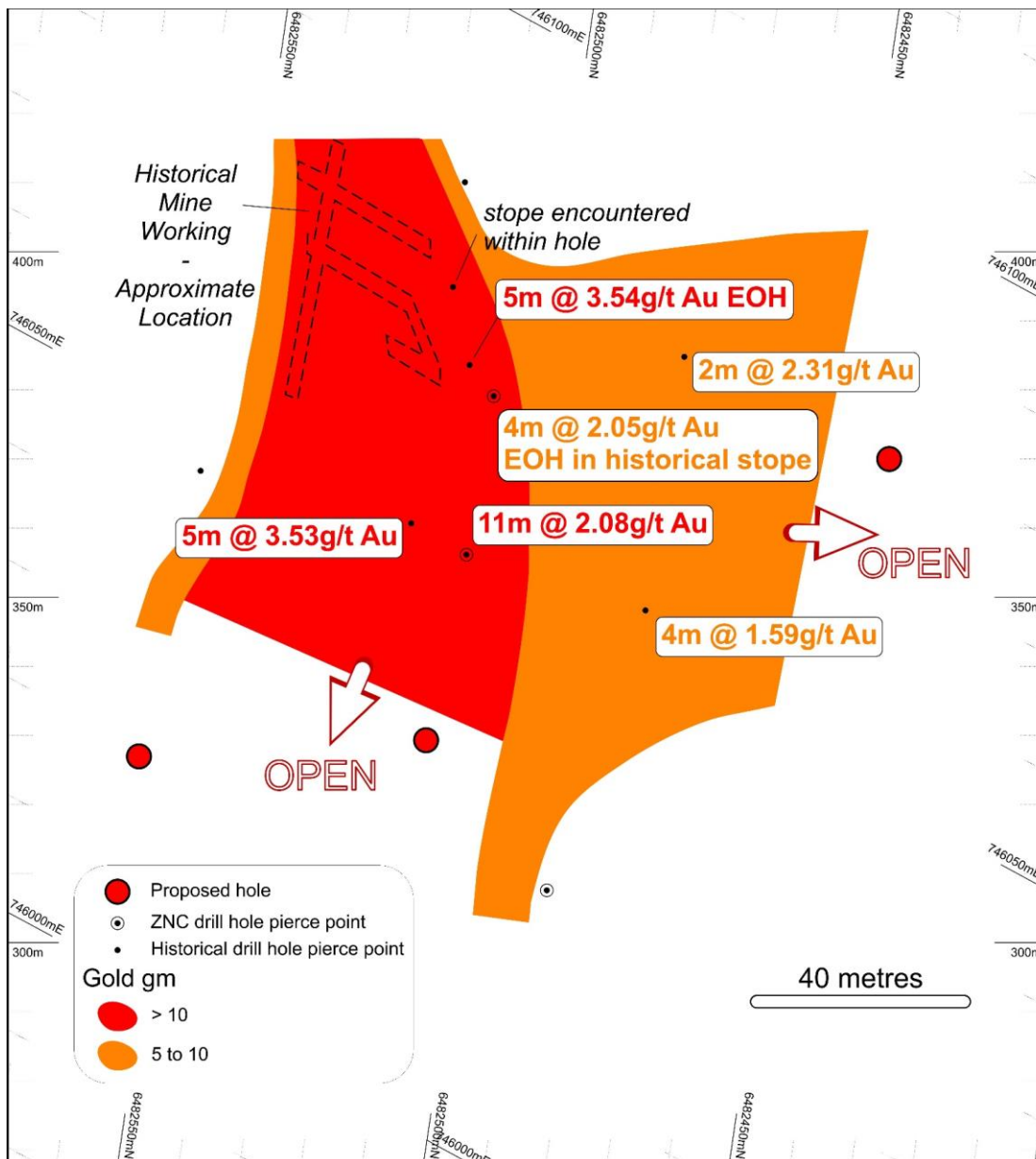


Gold mineralisation intersected to date and reported here-in is interpreted to be close to true width intersections. Mineralisation is hosted within quartz veined and sericite altered mafic volcanic rocks (Figure 3) and remains open and untested along strike and down dip with evidence of multiple stacked lodes.

Historical exploration reports on the area of the DHLGO leases highlight that high-grade gold mineralisation is predominantly hosted by moderately west dipping BIF units. High-grade historic drill results include: **6.0m @ 16.91 g/t Au, 2.0m @ 32.73 g/t Au, 2.0m @ 16.5 g/t Au, 2.0m @ 15.40 g/t Au, 5.0m @ 4.73 g/t Au, 4.0m @ 4.90 g/t Au and 9.0m @ 2.20g/t Au**, presenting several high-priority target zones for follow-up by Zenith. Historic holes were drilled either vertical or at  $-60^{\circ}$  east. Assuming moderate west dipping gold mineralisation then the intersection widths will be close to true widths, however there is insufficient drill density to be confident that all gold zones are dipping west and therefore caution must be applied regarding the widths of reported gold zones.

Most historic drill holes have only focused on the near surface laterite rich gold zone with the average drill hole depth for the project area only 19.7m (1,777 historic shallow holes).

**Figure 3: DHLGO – Lower Zone - Longitudinal Projection of Gold Metal Content (gm = gram \* metres) with Planned ZNC Follow-up Drill Holes**



## Background on Split Rocks

Zenith has been exploring its 100% owned Split Rocks project with landholdings of approximately 650 sqkm in the Forrestania greenstone belt. This emerging lithium district is host to SQM-Kidman's Mt Holland/Earl Grey lithium deposit containing 189Mt @ 1.5% Li<sub>2</sub>O (KDR:ASX Release 19<sup>th</sup> Mar 2018), refer to Figure 4.

Surface sampling by Zenith returned high lithium values up to 0.39% Li<sub>2</sub>O returned from a small pegmatite outcropping beneath surface laterite at the DHGO as announced to the ASX on the 13<sup>th</sup> May 2019. Two holes were drilled to provide an initial first pass assessment of this lithium target. A relatively thin pegmatite was intersected with assays for lithium and associated elements to come.

The area drill tested is located immediately east of Zenith's Dulcie lithium target, where drilling by Zenith has confirmed thick pegmatite bodies (up to 79m downhole widths) – containing broad anomalous levels of lithium throughout 79m @ 284ppm Li<sub>2</sub>O with a peak value of 1m @ 1072ppm Li<sub>2</sub>O.

An initial review of historical data for 2 new licences (acquisition announced to ASX 14 Oct 2019,) and Zenith's immediately adjoining existing tenure has highlighted extensions to known lithium and gold prospectivity and identified iron ore potential, with new targets including:

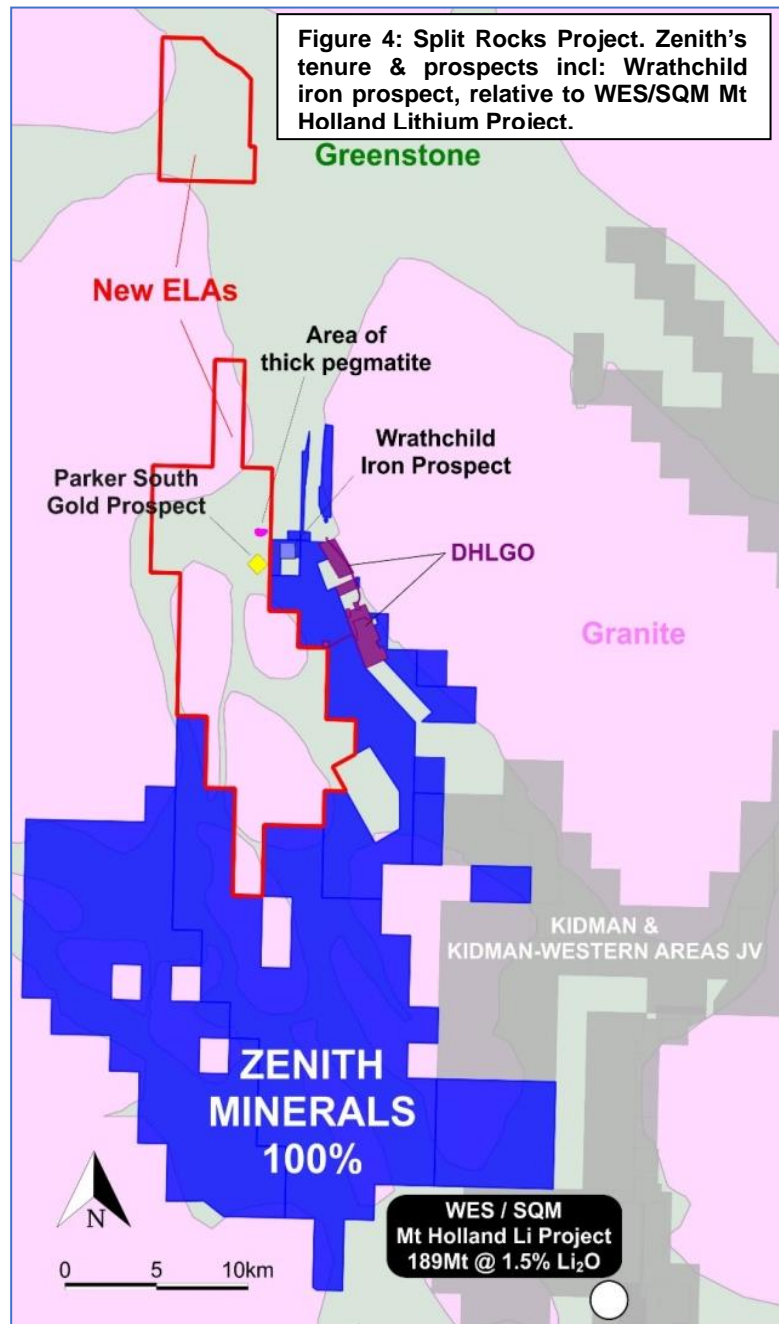
- o **Lithium - Thick pegmatites (up to 65m true width) recorded in logs of historical (1980's) drill holes have not been analysed for lithium and associated elements;**

- o **Gold - Parker South gold prospect has drill intersections incl. 10m @ 0.78g/t Au from 4m depth and 8m @ 1.42 g/t Au from 2m depth.** A gold re-assaying campaign completed by Zenith during the quarter on historic iron ore drill samples returned similar tenor results including: 4m @ 0.57 g/t Au from 72m depth and 11m @ 0.64 g/t Au from 21m depth. Further work is required to test these zones at depth.

- o **Iron Ore - Wrathchild iron ore prospect ~15 km south of the Parker Range iron project which was recently purchased by Mineral Resources Ltd (ASX-MIN) for \$20 million cash plus royalty<sup>1</sup>. Wrathchild drilled with only 12 RC holes over approximately 1km strike of hematite enriched Banded Iron Formation (BIF) outcrop, best intersections include: 13m @ 56.9% Fe incl. 9m @ 58% Fe, and 27m @ 54.2% Fe incl. 12m @ 55.9% Fe.**

## Planned Programs at Split Rocks

Follow-up gold drilling in progress, results expected Feb 2020.





## LARAMIE REE PROJECT

- New 100% owned Laramie Rare Earths (REE) Project secured via leasing and staking in Wyoming USA:
- Zenith surface rock sampling has returned widespread TREO (Total Rare Earth Oxide) grades up to 0.54% in two initial sampling areas 3km apart with strong values of high-value neodymium, praseodymium and dysprosium;
- Applications lodged first in time for State and Federal lands covering the most promising areas from recent Zenith sampling;
- REE's are reported to occur predominantly as the mineral allanite hosted by clinopyroxene and hornblende syenites within a late stage 30 sqkm monzonitic pluton that is the youngest and most highly differentiated part of a very large anorthosite complex, providing Zenith with the opportunity to define a very large-scale exploration target once initial follow-up work is completed;
- REE's listed as critical minerals in USA report "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals 1". Strong Federal Government support to secure USA domestic REE supply.
- Wyoming is home to multiple existing major mining operations and the project area has excellent existing road and rail infrastructure; and
- Consistent, widespread, strong REE surface mineralisation identified at the Laramie project - USA, including: 80m @ 0.40% TREO, 137m @ 0.37% TREO & 332m @ 0.26% TREO.
- Initial petrographic analyses confirm REEs occur predominantly as the mineral allanite. Allanite crystals observed are generally relatively coarse grained (0.4mm to 2.5mm) with distinct mineral grains indicating potential for easy liberation from the syenite host rock.

### Activities During the Quarter

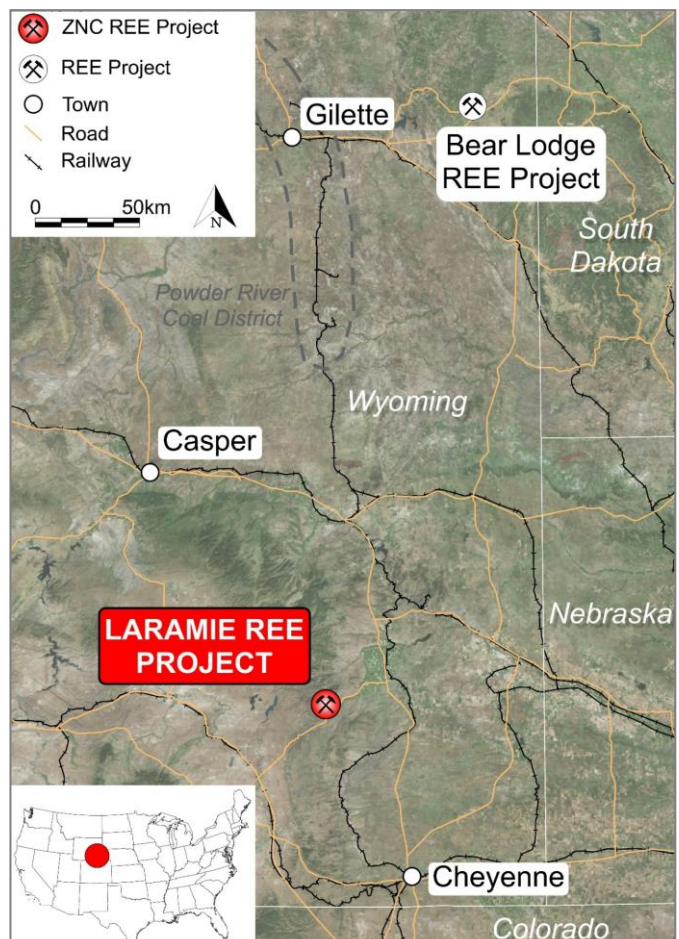
As announced to the ASX on the 17<sup>th</sup> Oct 2019, initial rock grab sampling and mapping by Zenith in three key areas 2 to 3km apart returned up to 0.60% total rare earth oxides (TREO). Follow-up sampling included nine systematic rock chip sample traverses by Zenith with five traverses across portions of the north of the initial sampling area and four across the southern zone. All nine traverses returned consistent, strong REE mineralisation along their entire lengths (ASX Release 11<sup>th</sup> Nov 2019), including: 80m @ 0.40% TREO, 60m @ 0.39% TREO, 40m @ 0.35% TREO, 60m @ 0.37% TREO, 137m @ 0.37% TREO, 332m @ 0.26% TREO, 72m @ 0.33% TREO, 60m @ 0.34% TREO and 17m @ 0.24% TREO.

Initial petrographic analyses confirm REEs occur predominantly as the mineral allanite. Allanite crystals observed are generally relatively coarse grained (0.4mm to 2.5mm) with distinct mineral grains indicating potential for easy liberation from the syenite host rock.

### Background

Zenith recently secured federal lode claims and state lease applications over the Laramie REE Project located in central Wyoming USA, as announced to the ASX 17th Oct 2019. Wyoming is home to multiple existing major mining operations (coal and uranium) and has local engineering and construction companies capable of supporting mine project development.

The project area has excellent existing infrastructure being located 3km from the national road network, 30km to interstate and 35km to rail, in addition Wyoming has



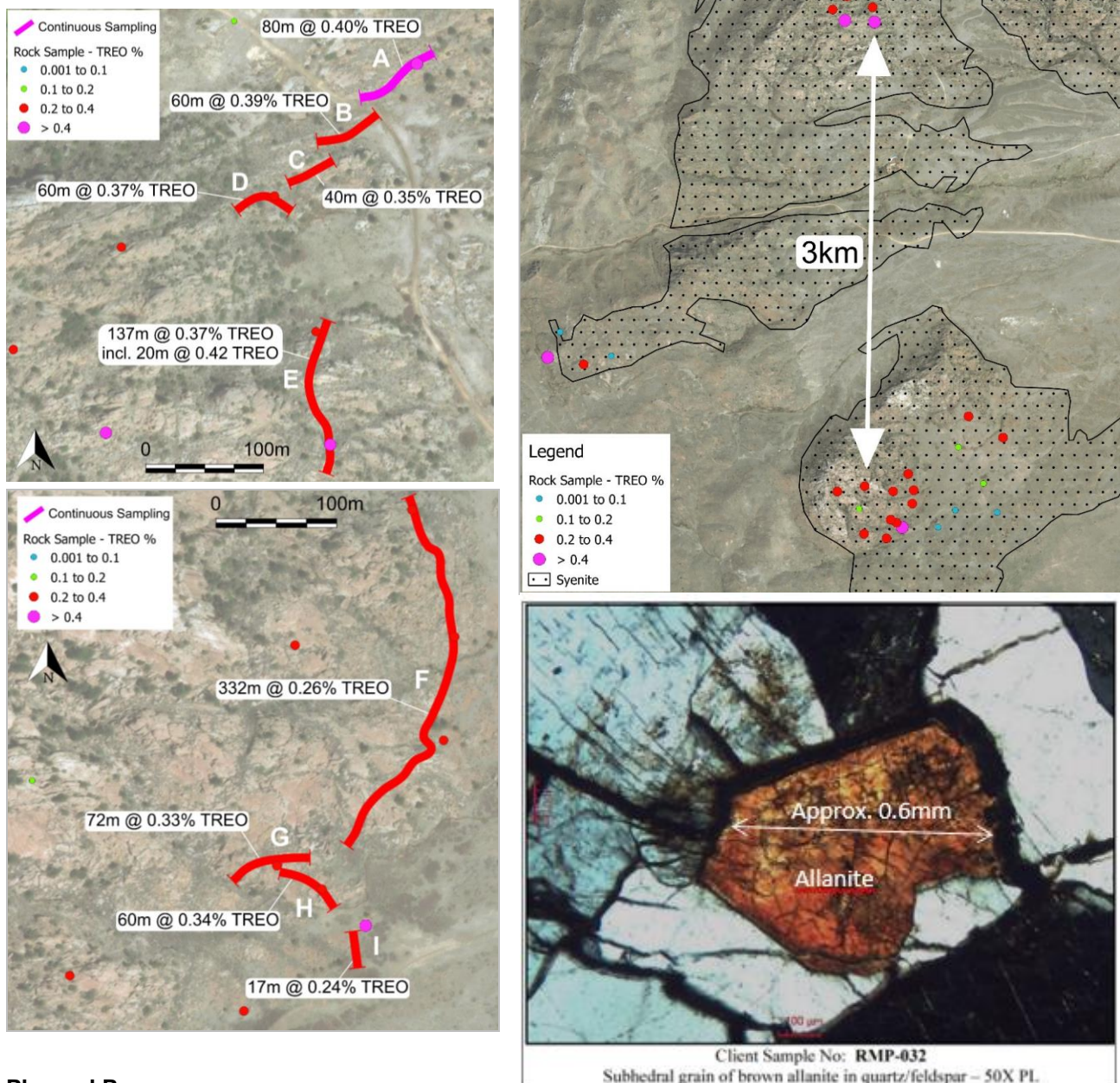


abundant low-cost commercial electricity. Rare Element Resources (OTCQB: REEMF) are currently assessing the advanced Bear Lodge REE project in north east Wyoming.

The Laramie REE Project occurs within the Laramie Anorthosite Complex a Proterozoic massif consisting of three anorthositic intrusions, three syenitic to monzonitic intrusions and several smaller intrusions of leucogabbro and ferrodiorite.

REE's are reported to occur at the Laramie REE project predominantly as the mineral allanite hosted by clinopyroxene and hornblende syenites that are part of a very large differentiated Laramie anorthosite complex, providing Zenith with the opportunity to define a very large-scale exploration target once initial follow-up work is completed.

**Figure 5: Laramie REE Project – Geochemical Results & Photomicrograph of Allanite REE Crystal**



### Planned Programs

Initial metallurgical test work commenced in early January 2020 to assess the rare earth liberation characteristics of the mineralised rock as Zenith considers ease of processing to be a key to the future of this project. Results are expected in February 2020.



## 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 7<sup>th</sup> March 2017) to jointly unlock the potential of Zenith's USA and Mexican lithium project portfolio.

Bradda Head must spend US\$5 million on the joint venture projects before Feb 2021 or the projects will be returned to Zenith.



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

- Widespread, near surface lithium results were intersected in the maiden drill program at the Burro Creek project including: 22.9 metres @ 1088ppm lithium and 2.94% potassium from 4.68m depth, and 24.4 metres @ 1361ppm lithium and 3.23% potassium from 19.8m depth (ZNC – ASX Release 19<sup>th</sup> June 2018).
- Depending on the cut-off grade used the lithium mineralised portion of the clay averages 23 to 54 metres in thickness, whilst recent testwork indicates a bulk density of 1.6 to 1.8 g/cm<sup>3</sup>.
- Drilling to date has tested only a small portion of the total project area that has recently been expanded by staking claims to the west;
- Mapping and sampling in the western claim area returned further widespread, high-grade lithium clays at surface with two new areas identified each equal in size to the zone of lithium mineralisation discovered in the current drill program;
- Maiden Inferred Mineral Resource estimate of 42.6 million tonnes @ 818 ppm Li (lithium) and 3.3% K (potassium) using a lower cut-off grade of 300 ppm Li for the near surface lithium clay mineralisation at the Burro Creek East area (as announced to ASX on 12th Aug 2019).
- Exploration Target\* of between 20 to 60 Mt of material grading between 600 and 1,000 ppm Li for the Burro Creek East area only (as announced to ASX on 12th Aug 2019).
- Metallurgical testwork has returned positive results.

*\*The potential quantities and grades are conceptual in nature and there has been insufficient exploration to date to define a Mineral Resource. It is not certain that further exploration will result in the determination of a Mineral Resource under the "Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves, the JORC Code" (JORC 2012). The Exploration Target is not being reported as part of any Mineral Resource or Ore Reserve.*

### Activities During the Quarter

The Burro Creek East property was increased in acreage by 250%, a significant increase to the Company's land position in Arizona.

A Maiden Inferred Mineral Resource estimate of 42.6 million tonnes @ 818 ppm Li (lithium) and 3.3% K (potassium) using a lower cut-off grade of 300 ppm Li for the near surface lithium clay mineralisation at the Burro Creek East area was announced to ASX on 12th Aug 2019. In addition, an updated Exploration Target\* of between 20 to 60 Mt of material grading between 600 and 1,000 ppm Li for the Burro Creek East area only was also announced to ASX on 12th Aug 2019.

### Planned Activities

Resource extension drilling

## WILSON SALT FLAT LITHIUM BRINE PROJECT – NEVADA USA

- Sampling by Zenith returned up to 192ppm lithium from salt lake surface;
- 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.
- Fully permitting for drill testing.

#### Activities During the Quarter

Nil this quarter.

#### Planned Activities

An initial 2-hole drilling program has been permitted to test structural and stratigraphic targets identified by geophysical surveys. Given success with these preliminary exploratory drill holes in finding brine aquifers and lithium, additional holes would be placed to expand on the information relating to basin hydrogeology, leading to resource estimation. Drilling planned to commence following Bradda Head planned re-listing on AIM.

### SAN DOMINGO LITHIUM PEGMATITE PROJECT – ARIZONA USA

- Abundant lithium bearing pegmatite dykes within Zenith's claims over an area 9km by 1.5km;
- Initial continuous rock chip sampling returned very encouraging results up to 5m @ 1.97% Li<sub>2</sub>O including 2.4m @ 2.49% Li<sub>2</sub>O within 14.1m zone @ 1.02%Li<sub>2</sub>O from spodumene rich pegmatites;
- In the SW of the project area select grab samples returned high-grade lithium from pegmatite dykes of 5.8% and 8.0% Li<sub>2</sub>O. Systematic composite rock chip sampling of more strongly weathered spodumene rich pegmatite returned: 2.9m @ 0.86% Li<sub>2</sub>O, 2.8m @ 0.69% Li<sub>2</sub>O, 3m @ 0.71% Li<sub>2</sub>O, and 3m @ 0.56% Li<sub>2</sub>O, the latter two samples are part of a near true width zone of 12.7m @ 0.45% Li<sub>2</sub>O;
- 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

Nil this quarter.

#### Planned Programs

Initial drill testing of the western San Domingo claim lithium pegmatite targets followed by drilling of the central and eastern pegmatite targets is planned.

### 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

Nil this quarter

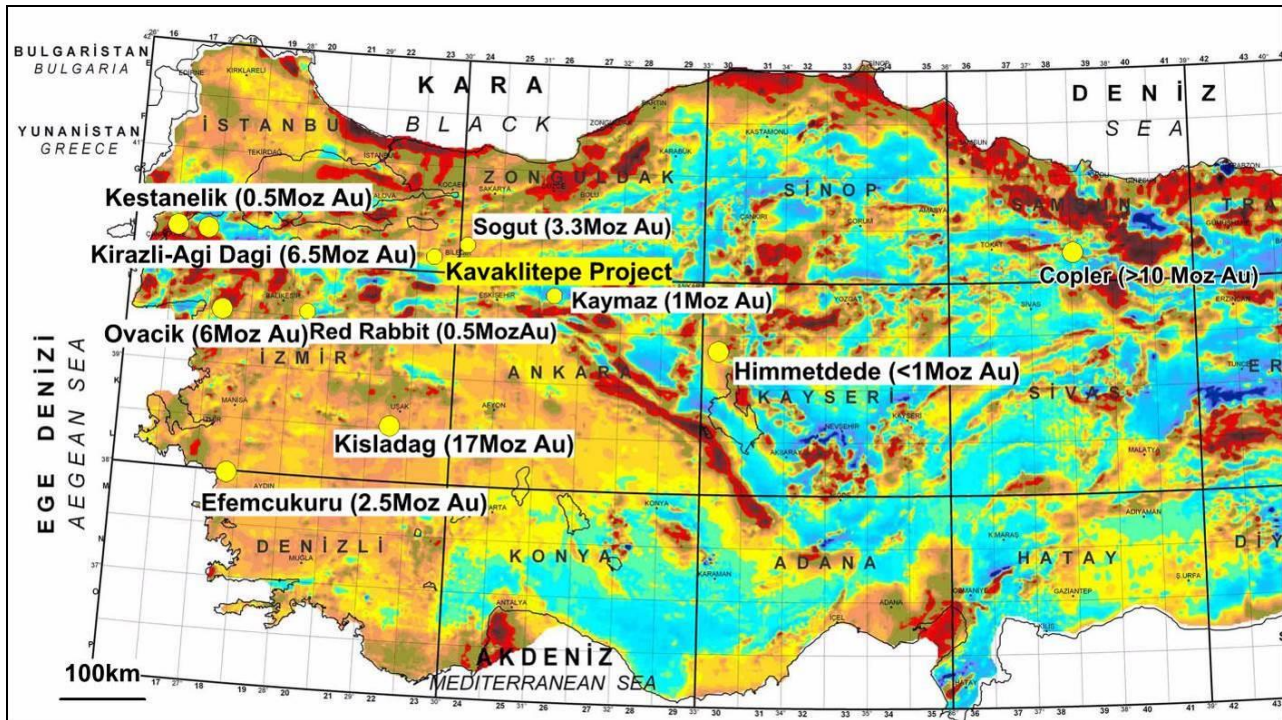
#### Planned Activities

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

### LITHIUM OIL BRINE PROJECT – PENNSYLVANIA USA

Initial and as yet incomplete leasing of private oil field brine rights in Pennsylvania has been undertaken in an area where previous sampling of two historic oil wells located approximately 6 km apart returned significant lithium. The oil wells have been capped and shut-in and will require re-opening using a suitable oil field drill rig to allow confirmation sampling.

## KAVAKLITEPE GOLD JOINT VENTURE



*Kavaklitepe Project Location and Regional Gold Endowment (Image is Total Magnetic Intensity)*

### KAVAKLITEPE GOLD PROJECT – TURKEY (Zenith 23%-diluting)

- Two coherent plus 800-metre-long, high order gold in soil anomalies (+50 ppb), with peak soil sample values over 1 g/t gold;
- Kuzey Zone Drill results include: 20m @ 15.6 g/t Au, 16m @ 4.7 g/t Au, 21m @ 3.29 g/t Au, 14m @ 6.09 g/t Au, 16m @ 4.7 g/t, 9m @ 5.2g/t and 7.8m @ 7.3g/t gold, and continuous surface rock chip results include: 54.0m @ 3.33 g/t gold, 10m @ 12.2 g/t Au; 44m @ 3.37 g/t Au, 15m @ 10.10 g/t Au and 6.5m @ 5.18 g/t Au;
- Discovery Zone drill results include: KT- 42: 8.0m @ 0.74 g/t Au, KT-43: 8.0m @ 1.20 g/t Au and KT-44: 8.0m @ 1.26 g/t Au.

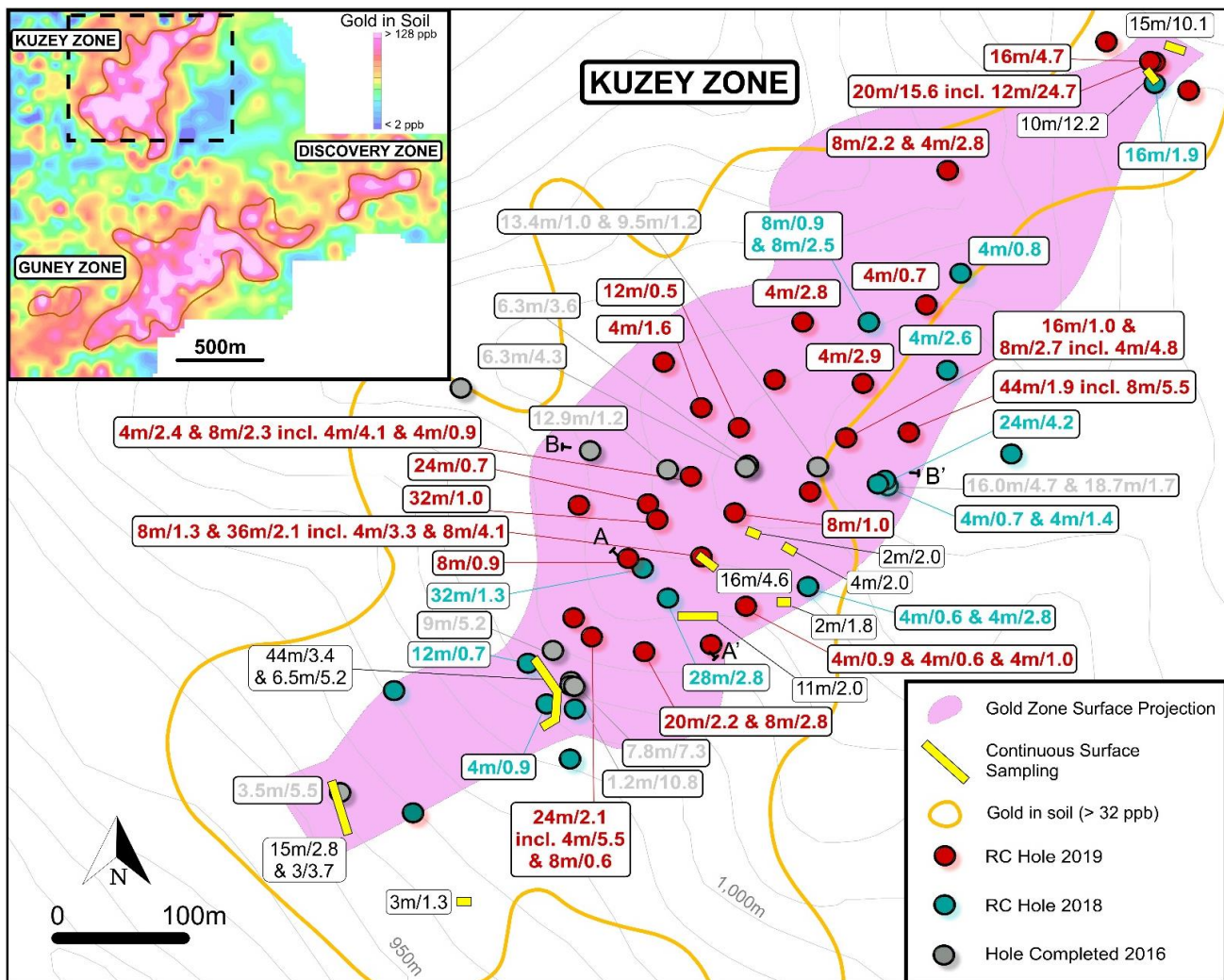
#### Activities During the Quarter

Work completed included a detailed review of the 2019 results and follow-up program design for 2020. The review highlighted the potential for continuous near flat lying gold mineralisation beneath a sequence of near surface barren metavolcanic rocks between the Kuzey and Discovery Gold Zones, located approximately 1km apart.

#### Planned Activities

A program of 5 diamond drill holes (and 12 contingent holes) of approximately 300m depth each are planned to be completed in early to mid-2020 to test for the potential of gold mineralization between the Kuzey Zone and Discovery Zone beneath a sequence of interpreted flat-lying barren metavolcanics rocks. Zenith believes that if the proposed drill program is successful in its aims then it could have a significant impact on the project's potential.





**Figure 6: Kavaklitepe Kuzey Zone Drill Hole Locations, Gold Intersections & Location of Cross Sections (A-A' & B-B') – (Legend: 20m/15.6 is 20.0m @ 15.6 g/t Au)**

## Background

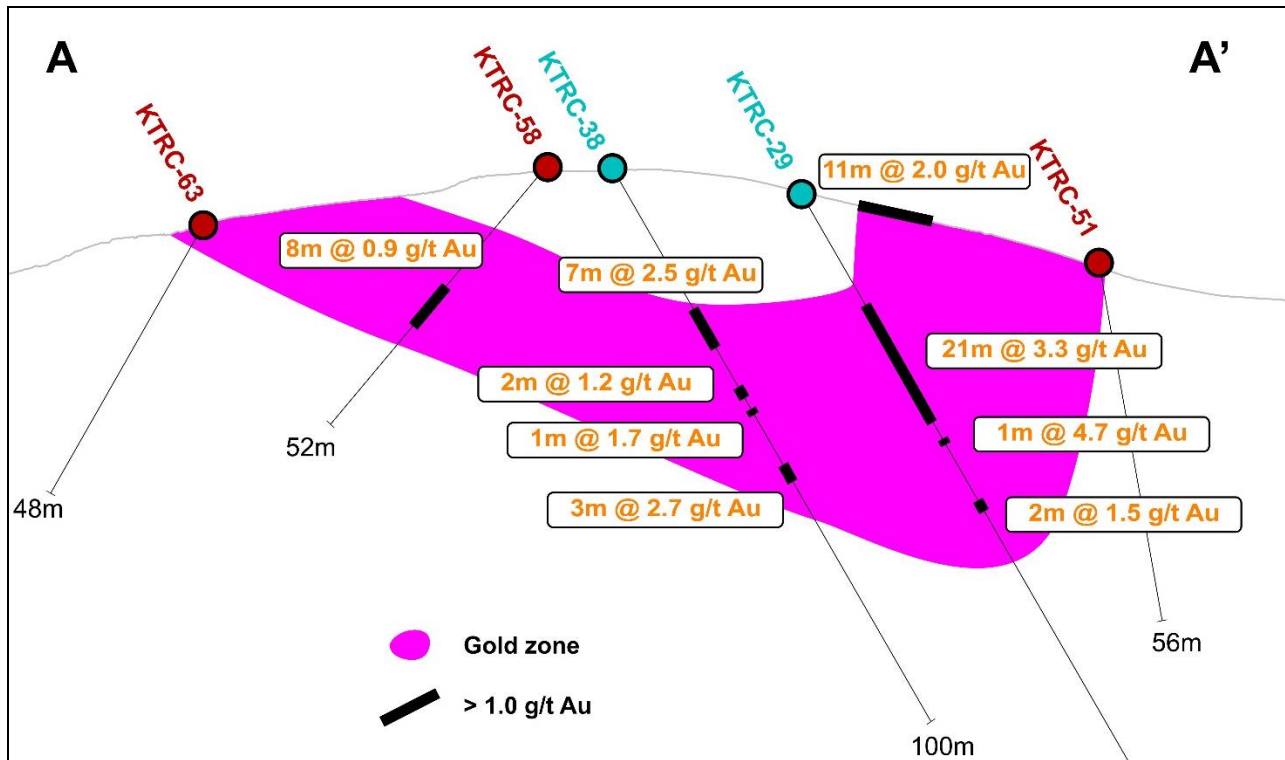
Exploration and evaluation of the Kavaklitepe gold project is managed by Teck Anadolu Madencilik Sanayi v. Ticaret A.S. ("Teck"), a Turkish affiliate of Teck Resources Limited through the Turkish joint venture company Kavak Madencilik A.S. partly owned by Zenith Minerals Limited.

RC drilling in early 2019 was completed to determine the continuity, size and tenor of gold mineralisation intersected during the 2016 maiden short-hole diamond drilling program (KT-01 to KT-25) and the 2018 RC drill program (KTRC-26 to KTRC-40) at the Kavaklitepe gold project in western Turkey. Zenith considers the 2016 & 2018 programs 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.

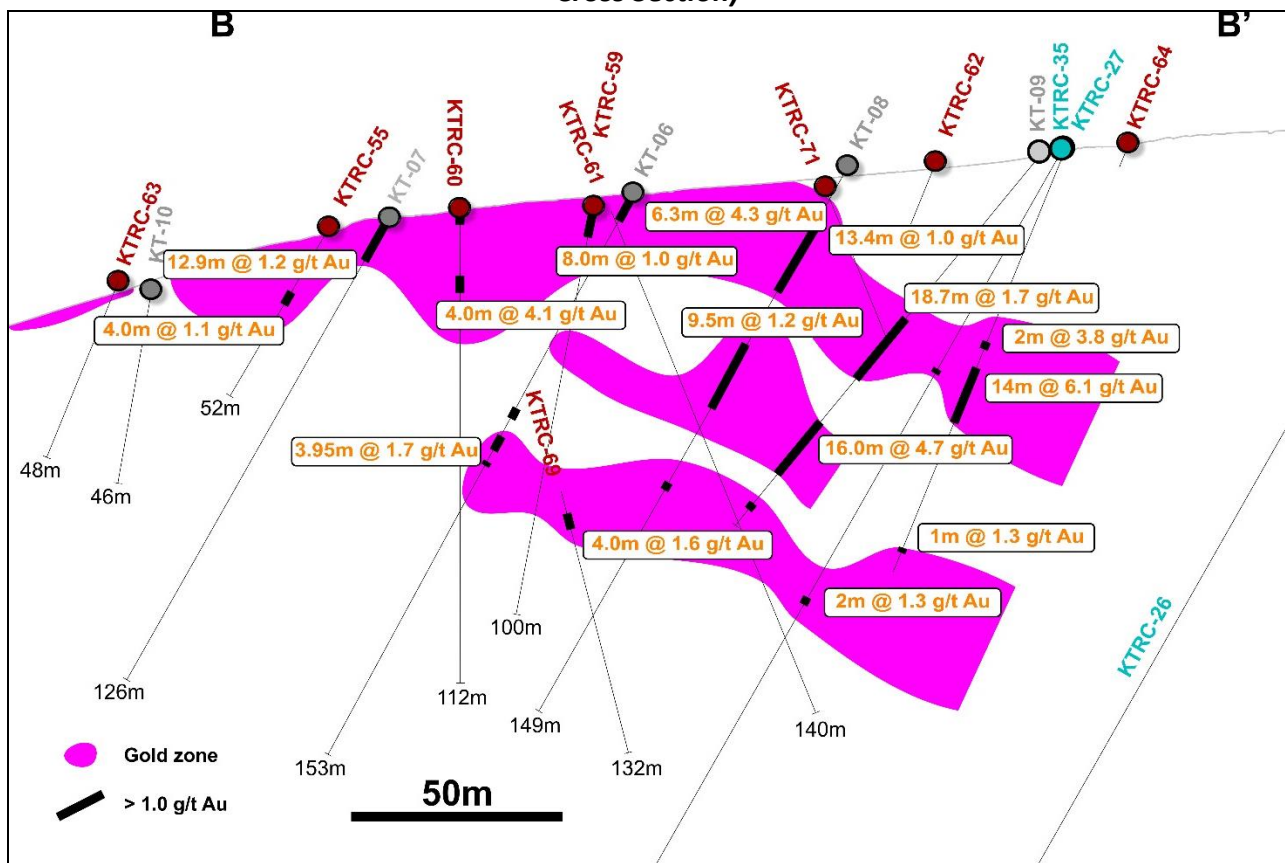
## Kuzey Zone

Drilling completed in 2016 (11 holes (KT-01 to KT-11, including KT-06A) provided an initial wide spaced test of only 360m of the 900m by 250m wide Kuzey Zone gold-in-soil anomaly target (Figures 6 - 9). Near surface oxide and transition gold mineralisation is interpreted to occur as a flat lying zone extending over the full 900m length of the prospect.

Better intersections from the 2016 drill program 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, KT-06A ; 6.3m @ 3.6 g/t Au from surface and KT-07 ; 12.9m @ 1.2 g/t Au from surface.



**Figure 7: Kavaklitepe Kuzey Zone Preliminary Cross Section A-A'– (Refer to Figure 1 for Location of Cross Section)**



**Figure 8: Kavaklitepe Kuzey Zone Preliminary Cross Section B-B'– (Refer to Figure 1 for Location of Cross Section)**

Deeper 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, and 9.5m @ 1.2 g/t Au from 56.8m.

RC drill testing in late 2018 (KTRC-26 to KTRC-40) returned thick high-grade gold intersections at the Kuzey zone including: 21m @ 3.29 g/t Au within 26m @ 2.89 g/t, 14m @ 6.09 g/t Au and 8m @ 2.29 g/t Au (ZNC ASX Release 11th December 2018 and 23rd April 2019).

In addition, continuous rock chip sampling at the Kuzey Prospect has previously returned wide zones of high-grade gold mineralisation at surface, including: 54.0m @ 3.33 g/t Au (including 21.5m @ 7.2 g/t Au) and 44.0m @ 3.37 g/t Au (ZNC ASX Release 23rd April 2019).

A 3700m, 2019 RC drill program operated and funded by JV partner Teck Anadolu Madencilik Sanayi v. Ticaret A.S. ("Teck") a Turkish subsidiary of Teck Resources Limited, commenced in late-April 2019 and was designed to follow-up on results from the 2016 & 2018 drilling and surface sampling programs.

Initial 4 metre composite assay results from follow-up drill testing were received in mid-2019 (refer to Zenith ASX release dated 20<sup>th</sup> June 2019).

Based on preliminary 4 metre composite results the drill program successfully defined gold mineralisation over the length of the 900 metre long Kuzey Prospect (north prospect) with indications of more than one high-grade shoot. Kuzey infill results from drill holes KT-51 to KT-78) include: KT-77: **20.0m @ 15.60 g/t Au, including 12.0m @ 24.67 g/t Au**, KT-78: **16.0m @ 4.72 g/t Au, including 8.0m @ 7.99 g/t Au**, KT-64: **44.0m @ 1.90 g/t Au, including 8.0m @ 5.50 g/t Au**, KT-56: **24.0m @ 2.14 g/t Au; including 4.0m @ 5.45 g/t Au**, and KT-53: **36.0m @ 2.06g/t Au, including 8.0m @ 4.14 g/t Au**, (Figures 6, 7, 8 & 9). These drill intersections are interpreted to be close to true thickness of the gold mineralisation. Continuous rock chip sampling along drill access tracks at Kuzey returned 16.0m @ 4.6 g/t Au and 4.0m @ 3.73 g/t Au (Figure 9). Kuzey is one of three gold mineralised zones within the Kavaklitepe Project, the others being Discovery and Guney.

### Discovery and Guney Zones

In 2016 drilling at the Discovery Zone (2 holes (KT-18A and KT-23) intersected gold mineralisation 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 (Figure 9). The roadside sampling was conducted as an initial test of the 400m long gold-in-soil anomaly at the Discovery Zone.

Drilling at the Guney Zone (2016 - 11 holes (KT-12 to KT-17 & KT-19 to KT-22 & KT-24 to KT-25) has been technically difficult, 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 @ 1.4 g/t Au from 12.5m and 1.3m @ 0.6 g/t Au from 17.2m before being abandoned in a cavity and drill hole KT-21 drilled on the northern part of the prospect 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 RC Drilling at the Guney Prospect in mid-2019 (drill holes KT-47 to KT-50) returned a maximum of 8.0m @ 0.28g/t Au from surface in drill hole KT-49.

RC drilling undertaken in 2019 at the Discovery and Guney Zones (Figure 9) was completed to follow-up on the previous drill results as well as test bedrock targets where rock traverse sampling along drill access tracks in 2018 returned gold results, including: 8m @ 1.77 g/t Au, 8m @ 1.74 g/t Au, including 4m @ 3.17 g/t Au (ZNC ASX release 23rd April 2019), supported by new sampling completed in 2019 detailed in this release, including: 8.0m @ 1.28 g/t Au, 4.0m @ 3.17 g/t Au and 4.0m @ 1.81 g/t Au.

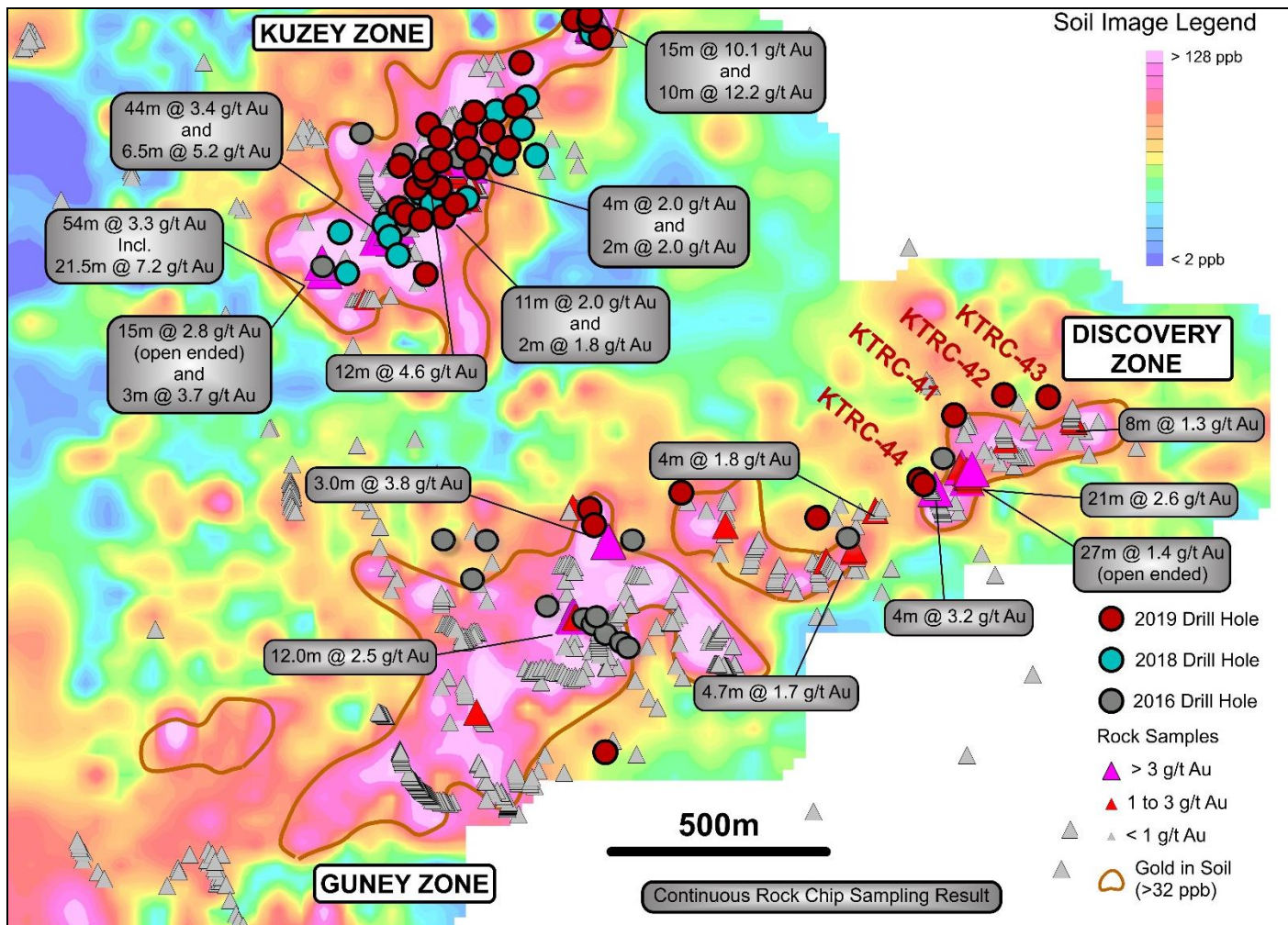


Drilling at the Discovery Prospect in mid-2019 (drill holes KT-41 to KT-46) shows consistent, shallow west dipping gold mineralisation over a strike length of 600 metres. Discovery zone drill results include: **KT- 42: 8.0m @ 0.74 g/t Au, KT-43: 8.0m @ 1.20 g/t Au and KT-44: 8.0m @ 1.26 g/t Au** (Figure 9). These drill intersections are also interpreted to be close to true thickness of the gold mineralisation. In addition, further continuous rock chip sampling along drill access tracks at Discovery returned **8.0m @ 1.28 g/t Au, 4.0m @ 3.17 g/t Au and 4.0m @ 1.81 g/t Au** (Figure 9).

Gold mineralisation at Kavaklitepe is hosted in fault zone breccias and shear zones that are both subparallel to and cross-cut foliation in the host shales and schists in association with arsenic and antimony.

Preliminary scoping level metallurgical test program results received for one composite fresh rock sample, grading 3.40 g/t Au taken from the Kuzey Zone indicates gold is refractory. Diagnostic leach testing indicates approximately 19.2% of the gold is free milling, combined with oxidising via roasting yielded overall gold extraction of 70.1%. Additional leach testing of fine ground samples would be necessary to determine the liberation characteristics and the amount of extractable gold in the fine fraction of the sample.

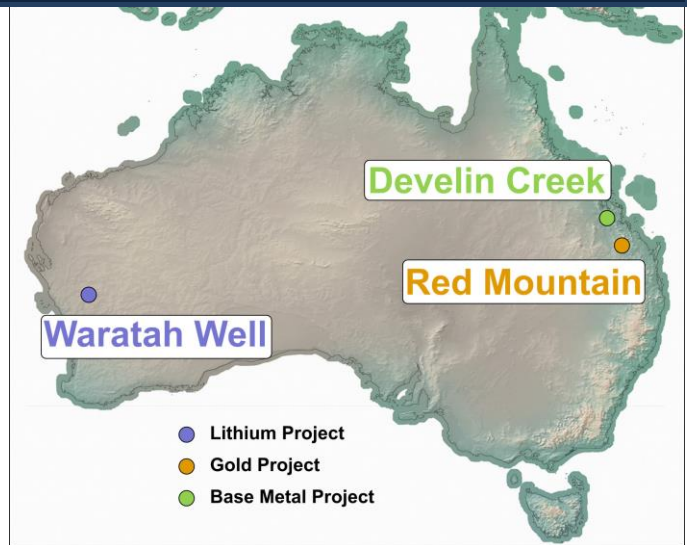
Individual 1 metre samples of the 4-metre composite gold mineralised intervals from the mid-2019 RC drill program have not yet been provided to Zenith.



**Figure 9: Plan Showing Kavaklitepe Project Gold Geochemistry & Location of Drill Holes in Discovery Zone with Significant Drill Results**

## OTHER AUSTRALIAN EXPLORATION PROJECTS

The Company is continuing to explore projects that possess strong technical merit. The Company's focus is advancing its project portfolio of high-quality lithium, gold and base metals projects.



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

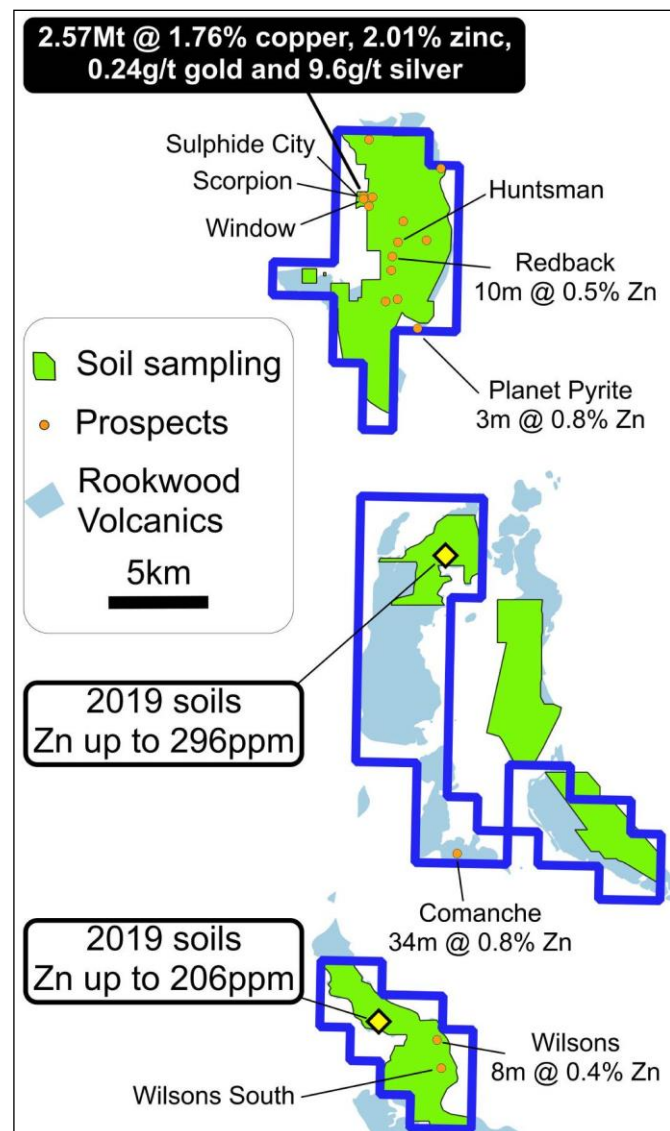
- Inferred Mineral Resource (JORC 2012) of: 2.57Mt @ 1.76% copper, 2.01% zinc, 0.24g/t gold and 9.6g/t silver (2.62% CuEq) released to ASX on the 15<sup>th</sup> February 2015.
- Upside to resource grades with Zenith RC hole twinning previous 1993 percussion hole returning significantly higher copper, 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;
- Further systematic regional soil sampling is planned.

#### Activities During the Quarter

Surface samples were shipped to Perth for analysis.

#### Planned Activities

Completion of analysis of geochemical samples collected during the quarter from the prospective Rookwood volcanic rock sequences (Figure 10).



**Figure 10: Develin Creek Prospects and New Geochemical Anomalies**



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

- Work by Zenith has returned highly encouraging silver and gold rock chip sample results up to 114 g/t silver and 2.01 g/t gold;
- Large (2km by 1.5km) zoned soil anomaly, peak gold soil result of 2.2 g/t Au & peak silver value 2.1 g/t Ag;
- Multiple medium strength chargeability (10mv/v) anomalies, likely to be caused by the presence of sub-surface disseminated sulphides or clay alteration zones, coincident with the margins of the recently mapped felsic volcanic breccia complex
- Red Mountain host rocks, alteration and geochemical association like that at nearby operating Mt Rawdon gold mine, providing a potential geological model to assist targeting;
- Mineralisation hosted in felsic volcanic sequence that has not been previously recognized in this area.

### Activities During the Quarter

The Company's 100% owned Red Mountain gold-silver project is in central Queensland within ~100km of operating gold mines at Cracow and Mount Rawdon (Figure 11).

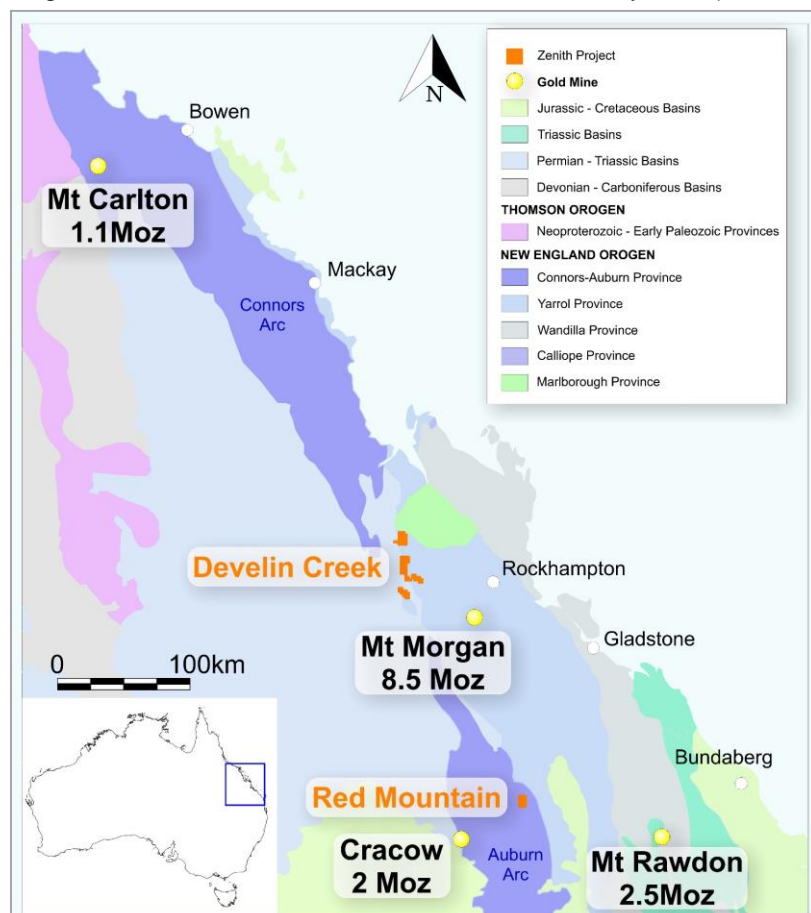
A geophysical survey completed in October 2019 by consulting group Planetary Geophysics at Red Mountain defined multiple medium strength chargeability (10mv/v) anomalies, likely to be caused by the presence of sub-surface disseminated sulphides or clay alteration zones, coincident with the margins of the felsic volcanic breccia complex (Figure 12) as announced to the ASX on 25<sup>th</sup> Oct 2019.

Results were received from an infill geochemical program completed to define the limits of the high-grade western gold zone outlining a robust drill target. New high-grade soil results up to 1300ppb Au (1.3 g/t Au) supporting previous results of 2210 ppb Au (2.2g/t Au) 1600ppb Au, 550ppb Au and 320ppb Au define a 450m x 50m >100ppb Au gold soil anomaly, with the southern end of the anomaly grading >500ppb (0.5 g/t Au) over 150m of strike. The high-grade surface gold results form a core to a much larger zone of gold anomalism (>10ppb Au) extending over an area 1200m x 150m on the western margin of the Red Mountain felsic volcanic breccia system (ASX Release 25<sup>th</sup> Nov 2019).

### Background on Red Mountain

A zone of gold and silver mineralisation was discovered by Zenith in mid-2017 (ZNC ASX Release 25<sup>th</sup> July 2017). The maiden exploration program in 2017 at Red Mountain returned rock chip sample results up to 0.69 g/t gold and 114g/t silver. Further field work by Zenith to follow-up these results returned highly encouraging gold and silver rock chip sample results up to 2.01 g/t gold and 52.5 g/t silver about 800 metres north of the best results from 2017 sampling. In addition, systematic geochemical sampling outlined a large 2km by 1.5km zoned soil anomaly with peak soil gold result of 2.2 g/t Au, refer to ZNC ASX release 24<sup>th</sup> Sep 2019.

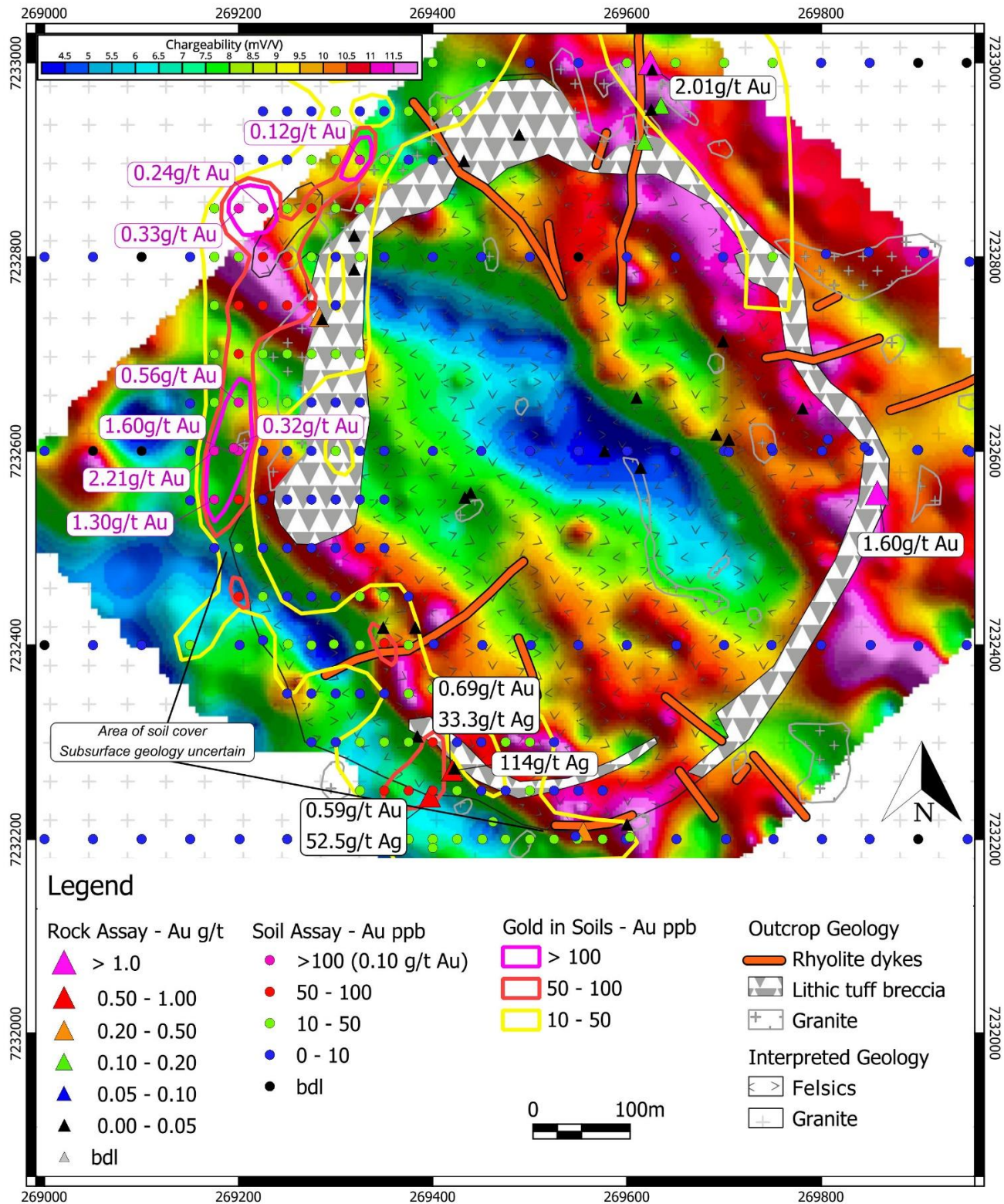
**Figure 11: Red Mountain Project – Location Map**





### Planned Activities

Drill testing is planned, approximately 10 holes @ 100m depth each to test the key geochemical-geological and geophysical targets.



**Figure 12: Red Mountain Soil and Rock Results with Geological Outlines over IP Chargeability Image**

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

- Waratah Well Project covers area of extensive outcropping LCT pegmatites (3km x 2km) in area where no reported previous exploration for lithium;
- Widespread, high-grade tantalum up to 1166ppm Ta<sub>2</sub>O<sub>5</sub> and lithium up to 1.75% Li<sub>2</sub>O (ZNC ASX release - 27/04/18);
- Initial tantalum deportment study confirms the potential for a marketable tantalum product;
- Conceptual lithium target beneath tantalum bearing pegmatites.

### Activities During the Quarter

Nil this quarter.

### Planned Activities

The Company is progressing towards completion of a transaction with a 3<sup>rd</sup> party partner to progress the evaluation and potential development of this lithium-tantalum opportunity.

## OTHER JOINT VENTURES & OPTIONS ON ZENITH PROPERTIES

The Company has continued to implement its strategy of being an exploration project generator. Projects are either advanced by the Company's experienced team applying innovative exploration techniques or by partners which have the technical and financial capability, depending on how the Board believes shareholders' best interests are served.

In addition to the Kavaklitepe and American Lithium JV's, the Company has two Australian projects being funded under option by partners:

- Earahedy Zinc and
- Vivash Iron.



## EARAHEEDY ZINC PROJECT – WA (Zenith 25% free carry to a BFS, ASX: RTR 75%)

- Wide spaced drilling defined stratiform zinc and lead mineralisation over 20km of strike within carbonate sediments of the Earahedy Basin in Western Australia.
- Historical drilling intercepted high-grade zinc up to 18.6% within an intersection 3.3m @ 11.2% Zn, and 0.93% Pb from 150m. Other drill-holes include 2m @ 8.23% Zn and 2.77% Pb from 103m.
- Newly recognized sandstone hosted Zn-Pb mineralisation discovery: 11m @ 4.13% Zn+Pb from 61m depth (ASX Release 23<sup>rd</sup> Jan 2020).
- RC drilling following up the Chinook and Magazine discoveries; and broad spaced RC drilling to scope the 20km's of potential strike, working toward confirming the Exploration Target.

### Activities During the Quarter

Zenith Minerals (ASX: ZNC) joint venture partner Rumble Resources (ASX: RTR) completed RC drilling on the Earahedy Project (E69/3464) with results highlighting two large-scale (large tonnage), flat lying, shallow sandstone hosted Zn-Pb discoveries (refer to ZNC & RTR announcements dated 23<sup>rd</sup> January 2020).

Zenith holds a 25% interest in the Earaaheedy Joint Venture with Rumble, with Zenith's interest free carried until completion of a Bankable Feasibility Study. In addition, Zenith currently retains a total of 4,509,947 RTR shares received as consideration from Rumble.

The Earaaheedy option agreement with Rumble was initially announced to ASX on 12th October 2017, and Rumble last year exercised its option to acquire 75% interest (ASX release 21st October 2019).

The RC drilling programme comprised of 19 drill holes (1518m total) targeting the interpreted up-dip position of the prospective unconformity related basal sandstone sub-basin. No previous drilling has tested this position.

The two areas tested are some 10km apart. The drilling tested along strike on 500m hole spacing. Drill holes were vertical, ranging from 60 to 108m depth.

### Chinook Prospect

- Shallow flat lying sandstone hosted Zn – Pb mineralisation discovery: **\*11m @ 4.13% Zn + Pb, 12.8 g/t Ag from 61m (EHRC019) within \*22m @ 2.52% Zn + Pb from 53m**
- Strong continuity of mineralisation.
- RC drilling on 500m spacing.
- Historic RC drill hole (500m NE of EHRC019) returned **\*7m @ 3.42% Zn + Pb from 60m.**
- Flattening of the mineralised sandstone unconformity highlights the scope for large-scale, shallow and continuous Zn–Pb mineralisation.
- Silver consistent with Zn – Pb mineralisation. Nearby historic diamond drilling returned: **4m @ 559 g/t Ag and 2m @ 149 g/t Ag.**
- Mineralisation is completely open up-dip and along strike.

### Magazine Prospect (10km southeast of Chinook Prospect)

- Shallow flat lying unconformity related sandstone hosted Zn – Pb mineralisation discovery returned: **\*11m @ 2.05% Zn + Pb, 3.2 g/t Ag from 70m (EHRC003)**
- Strong continuity of Zn Pb mineralisation.
- RC drill hole spacing 400 – 600m apart.
- Historic RC drill hole (440m NE of EHRC003) returned **\*11m @ 3.5% Zn + Pb from 103m**
- The sandstone hosting Zn – Pb has flattened with a slight (<5° NE) dip allowing scope for large-scale, shallow and continuous mineralisation.
- Mineralisation is open up-dip, to the northwest and partly open to the southeast.

*\*indicates true width of mineralisation*

Rumble outlined a shallow Exploration Target<sup>^</sup> at the Earaaheedy Project of 40Mt to 100Mt at 3.5% Zn-Pb to 4.5% Zn-Pb based on recent drilling results, geological understanding of the mineralisation geometry, continuity of mineralisation and regional geology, highlighting the potential for Earaaheedy to be a world class Tier 1 base metal province.

<sup>^</sup>The potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource. Refer to further details on page 6 of the ZNC-RTR announcement dated 23<sup>rd</sup> January 2020.

### Planned Activities

RC drilling following up the Chinook and Magazine discoveries; and broad spaced RC drilling to scope the 20km's of potential strike, working toward confirming the Exploration Target.

## VIVASH GORGE IRON PROJECT – WA (ZENITH 100%, OPTION TO RTX)

- The Vivash Gorge project covers areas of prospective Brockman and Marra Mamba iron formations along strike of Rio Tinto Iron Ore's Brockman 4 operating iron ore mine in the Pilbara region of Western Australia.
- During the quarter RTX completed a 9-hole RC drill programme totalling 588m to test for mineralised Brockman Iron Formation.



### Activities During the Quarter

RTX completed a 9-hole RC drill programme totalling 588m to test for mineralised Brockman Iron Formation at the Vivash Gorge Iron Project. One drill hole intersected 14m of detrital mineralisation grading 55.9%Fe whilst the best bedrock intersection within the Whaleback Shale Member returned 6m @ 56.3%Fe (Refer to JORC Table appended to this Quarterly Report for further details).

### Planned Activities

- 3D modelling of Vivash Gorge area
- Field reconnaissance to assess other Brockman and Marra Mamba targets in the tenement
- Potential drill campaign depending on outcome of reconnaissance

### Background on Vivash Gorge Iron Project

The Vivash Gorge Iron Project (exploration licence E47/3071) is situated approximately 80km west of Tom Price in the Pilbara region of Western Australia. The project covers approximately 8km of strike of prospective Brockman and Marra Mamba iron formations along trend of Rio Tinto Iron Ore's Brockman 4 operating iron ore mine.

### Option Terms

Refer to Vivash Gorge transaction terms provided in ASX Release dated 31<sup>st</sup> October 2019.

## MINERAL RESOURCES IN RETENTION

The Company has secured retention licences over the Earaheedy Manganese deposits. The retention licence/status allows Zenith to hold the Mineral Resources but negates any ongoing Department of Mines statutory annual expenditure requirements for those licences for an extended period.



### EARAHEEDY MANGANESE PROJECT – WA (Zenith 100%)

Manganese Mineral Resources at Red Lake and Lockeridge are retained under retention licences pending an improvement in market conditions. Refer to the Company's website [www.zenithminerals.com.au](http://www.zenithminerals.com.au) for further details. The Company is progressing towards completion of a transaction with a 3rd party partner to progress the potential development of this manganese opportunity.

## ROYALTIES & PRODUCTION PAYMENTS

### MT ALEXANDER IRON PROJECT – WA

Zenith completed the sale of its 100% owned Mt Alexander magnetite iron project located in Western Australia to a private Australian company in June 2019. In addition to the initial consideration Zenith will receive ten annual payments of \$250,000 each (total \$2.5 million) once the project reaches commercial production, for a total consideration of \$2.75 million (ZNC ASX release dated 26<sup>th</sup> June 2019).

## NEW OPPORTUNITIES

Nil this quarter.

## CORPORATE

On the 28<sup>th</sup> October 2019 the Company announced a capital raising by way of an Entitlement Offer to existing shareholders. A total of 30,245,335 ordinary ZNC shares were issued during the quarter raising \$1,663k.

On 25<sup>th</sup> November 2019, Zenith Minerals Limited (ASX: ZNC) advised ASX the issue of 3,950,000 unlisted employee share scheme options exercisable at \$0.087 each expiring on 24th November 2022.

On 29<sup>th</sup> November 2019, Zenith Minerals Limited (ASX: ZNC) advised ASX that 2,500,000 unlisted employee share scheme options (ASX Class/Code ZNCAC) exercisable at \$0.161 each expired on 29 November 2019.

On 18<sup>th</sup> October 2019, 3,846,153 Rumble Resource Shares (ASX Code: RTR) were issued to ZNC for the acquisition of 75% of the Earraheedy project for a non-cash consideration of \$350,000 (\$0.091 per share). This increases the total number of RTR shares held by Zenith to 4,509,947.

## 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 the Mineral Resource Estimate and Exploration Target at Burro Creek East is based on information compiled by Martin Pittuck, who is a Chartered Engineer with the Institute of Materials Minerals and Mining and an employee of SRK Consulting (UK) Limited. Mr Pittuck 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 Pittuck consents to the inclusion of excerpts from the SRK report in this ASX release in the form and context in which they appear.*

**Authorised for release by the Zenith Minerals Limited Board of Directors**

**Zenith Minerals Limited**

**31<sup>st</sup> January 2020**

**For further information contact;**

**Directors Michael Clifford or Mike Joyce**

**Phone 08 9226 1110**

**Vivash Gorge – JORC Table 1**  
**SECTION 1 SAMPLING TECHNIQUES AND DATA**

Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>• Samples for geological logging and assay are collected via drilling.</li> <li>• Reverse circulation drilling utilises a rotary cone splitter beneath a cyclone return system to obtain a primary and secondary sample, with particular attention on samples collected being of comparable weights. The splitter produces two 8% samples ('A' and 'B') and one 84% reject sample. Primary 'A' sample was collected at 2 m intervals through 8% blades from the outer cone of rotary cone splitter.</li> <li>• Density assigned via script based on all Pilbara averages. No twinned diamond core.</li> <li>• Mineralisation is determined by a combination of geological logging and geochemical assay results.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>• The 2019 drill program was drilled vertically.</li> <li>• Reverse circulation drilling utilises 140 mm diameter face sampling bit with sample shroud, attached to pneumatic piston hammer used to penetrate ground and deliver sample up 6 m drill rod inner tubes (4 m starter rod) through to the cyclone and rotary cone splitter.</li> <li>• Wet drilling for all holes.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>• No direct recovery measurements of reverse circulation samples are performed. Sample weights are recorded at the laboratory as samples are received and at the rig are qualitatively estimated for loss per drilling interval.</li> <li>• Sample recovery in some friable mineralisation may be reduced; however, it is unlikely to have a material impact on the reported assays for those intervals.</li> <li>• Thorough analysis of duplicate sample performance does not indicate any chemical bias as a result of inequalities in samples weights.</li> </ul>
Logging	<ul style="list-style-type: none"> <li>• All drill holes are geologically logged utilising standard Rio Tinto Iron Ore Material Type Classification Scheme (RTIO MTCS) logging codes and entered into the acQuire™ database package on field Toughbook laptops.</li> <li>• Internal training and validation of logging includes RTIO MTCS identification and calibration workshops, peer reviews and validation of logging verses assay results.</li> <li>• Geological logging is performed on 2 m intervals for all reverse circulation drilling.</li> <li>• Magnetic Susceptibility readings are taken using a Kappameter for each interval.</li> <li>• Drillholes were geophysically logged using down hole geophysical tools to record gamma trace.</li> </ul>
Sub-sampling techniques and sample preparation	<p>Sub-sampling techniques:</p> <ul style="list-style-type: none"> <li>• Reverse circulation drilling was sampled at 2 m intervals. Sub sampling was carried out using a rotary cone splitter beneath a cyclone return system, producing approximate splits of: <ul style="list-style-type: none"> <li>◦ 'A' Split – Analytical sample – 8%</li> <li>◦ 'B' Split – Retention sample – 8%</li> <li>◦ Bulk Reject – 84%.</li> </ul> </li> </ul> <p>Sub-sampling techniques:</p> <ul style="list-style-type: none"> <li>• 'A' split sample dried at 105° C.</li> <li>• Sample crushed to -3 mm using Boyd Crusher and split using a linear and rotary sample divider to capture 1 – 2.5 kg samples.</li> <li>• Robotic and Manual LM5 used to pulverise total sample (1 – 2.5 kg) to 90% of weight passing 150 micrometers (µm) sieve.</li> <li>• A 100 gram sub sample collected for analysis.</li> </ul>

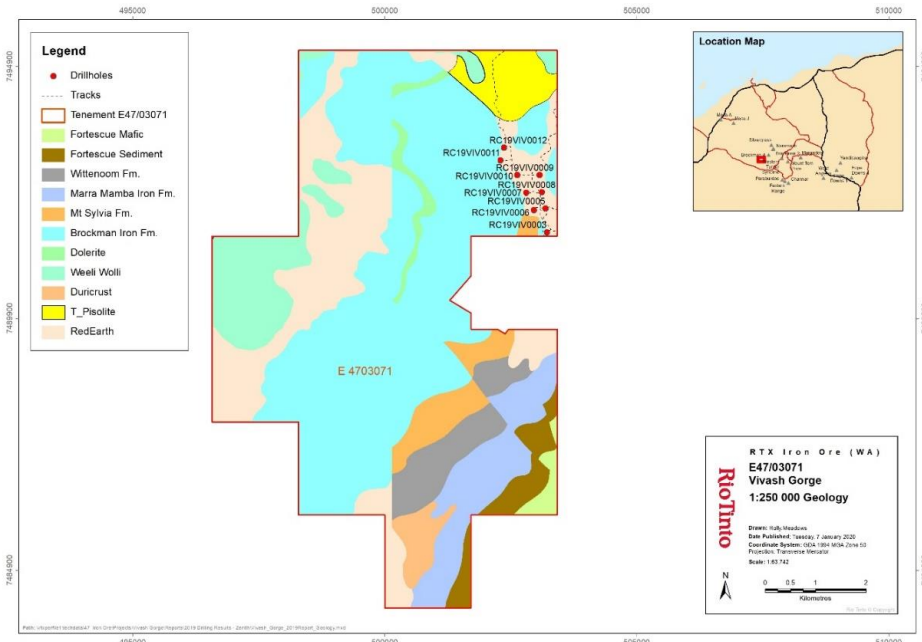
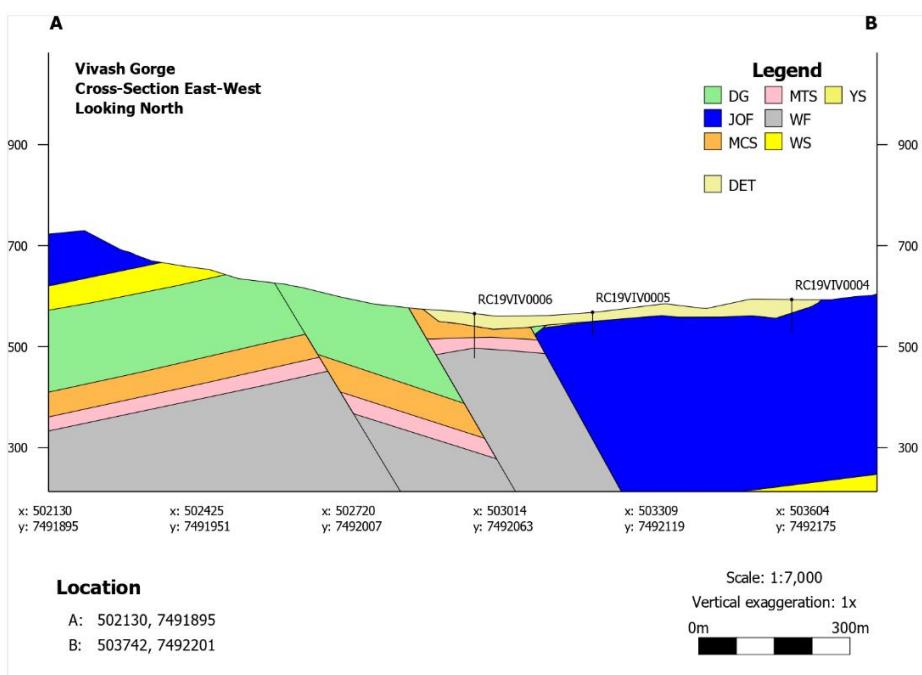


Quality of assay data and laboratory tests	<p>Assay methods:</p> <ul style="list-style-type: none"> <li>Fe, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, Mn, CaO, P, S, MgO, K<sub>2</sub>O, Zn, Pb, Cu, Ba, V, Cr, Cl, As, Ni, Co, Sn, Sr, Zr, Na are assayed using industry standard lithium tetraborate and lithium metaborate fusion and X-Ray Fluorescence (XRF) analytical technique.</li> <li>Loss on Ignition (LOI) is determined using industry standard Thermo-Gravimetric Analyser (TGA) and was measured at three steps of temperatures: 140° - 425° C, 425° - 650° C, 650° - 1000° C.</li> <li>Samples are dispatched to Perth for preparation and analytical testing: <ul style="list-style-type: none"> <li>Samples were submitted to Bureau Veritas Minerals Pty Ltd.</li> </ul> </li> </ul> <p>Quality assurance measures include:</p> <ul style="list-style-type: none"> <li>Insertion of coarse reference standard by Rio Tinto Iron Ore geologists at a rate of one in every 30 samples in mineralised zones and one in every 60 samples in waste zones with a minimum of one standard per drill hole. Reference material is prepared and certified by Rio Tinto Iron Ore following ISO 3082:2009 (Iron Ores – Sampling and sample preparation procedures) and ISO 9516-1:2003 (Iron Ores – Determination of various elements by X-ray fluorescence spectrometry – Part 1: Comprehensive procedure).</li> <li>Coarse reference standards contain a trace of strontium carbonate that is added at the time of preparation for ease of identification.</li> <li>Field duplicates were collected by sacrificing a 'B' split retention sample directly from the rig splitter. Duplicate insertion occurred at a frequency of one in 20. Trace zinc is included in the duplicate sample for later identification.</li> <li>At a frequency of one in 20, -3 mm splits and pulps were collected as laboratory splits and repeats respectively. These sub-samples were analysed at the same time as the original sample to identify grouping, segregation and delimitation errors.</li> <li>Internal laboratory quality assurance and quality control measures involve the use of internal laboratory standards using certified reference material in the form of pulps, blanks and duplicates were inserted in each batch.</li> <li>Analysis of the performance of certified standard and field duplicates has indicated an acceptable level of accuracy and precision with no significant bias.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>No twinned holes of reverse circulation and diamond drill core were used.</li> <li>Field data was logged directly onto field Toughbook laptops using pre-formatted and validated logging templates, with details uploaded to the acQuire™ database on a daily basis.</li> <li>Assay data is returned electronically from the laboratory and uploaded into the acQuire™ database.</li> <li>Assay data were only accepted in the acQuire™ database once the quality control assessment was undertaken utilising the Batch Analysis tool.</li> <li>Written procedures outline the processes of geological logging and data importing, quality assurance and quality control validation and assay importing. A robust, restricted-access database is in place to ensure that any requests to modify existing data go through appropriate channels and approvals, and that changes are tracked by date, time, and user.</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>Drill hole collar reduced level (RL) data is compared to detailed topographic maps and shows that the collar survey data is accurate.</li> <li>Down-hole surveys are conducted on nearly every hole, with the exception of collapsed or otherwise hazardous holes; any significant, unexpected deviations are investigated and validated. Holes greater than 100 m depth are generally surveyed with an in-rod gyro tool.</li> <li>The drill holes were surveyed in Mine Grid of Australia 1994 (MGA94) Zone 50 coordinates using Differential Global Positioning System (DGPS) survey equipment, accurate to 10 cm in both horizontal and vertical directions. Upon receipt of the coordinate data it was validated against the planned drillhole coordinates, and then uploaded to the drillhole database. All holes were picked up by qualified surveyors.</li> </ul>

Data spacing and distribution	<ul style="list-style-type: none"> <li>The drill spacing across the deposit is variable (Refer to Figure 2 and Table 1 in the Exploration Activity report)</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Drilling is vertical. Orientation of stratigraphy is variable around the fault zone</li> <li>Drill holes are arrayed along strike of a fault zone to capture fault related mineralisation</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The sample chain of custody is managed by Rio Tinto Ltd.</li> <li>Analytical samples ('A' splits) are collected by field assistants, placed onto steel sample racks and delivered to Perth by recognised freight service and then to the assay laboratory by a Perth-based courier service. Whilst in storage the samples are kept in a locked yard.</li> <li>Retention samples ('B' splits) are collected and stored in a Rio Tinto owned warehouse in Perth.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>No external audits have been performed specifically on sampling techniques or data.</li> <li>Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques are appropriate.</li> </ul>

## SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>The Vivash Gorge tenement (E47/3071) is located approximately 80km west of the Tom Price Township in the southern section of the Brockman Syncline. The Tenement was granted to Zenith Minerals Limited on 05 October 2016. Rio Tinto Exploration Pty Limited entered into an exploration and option agreement with Zenith Minerals in mid-2018 pursuant to which it became the operator of the Tenement.</li> <li>The reported resource sits within the Puutu Kunti Kurrama and Pinikura Native Title claim.</li> <li>There are small areas of designated archeological or heritage significance scattered throughout the tenement, which have been accounted for (excised) as necessary.</li> </ul>
Exploration done by other parties	<ul style="list-style-type: none"> <li>Previous exploration work was mostly done by Hamersley Iron Pty Ltd by mapping and drilling in the general area. 4 drill holes were drilled in the very southern part of the current tenement targeting Marra Mamba Formation.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>The major Brockman Syncline to the north controls the general strike of the rocks in the Tenement to a NE-SW direction and with a moderate dip of 20-30 degrees.</li> <li>Folding in the region exists as both kilometre scale F2 folds striking E-W and smaller (metre to hundreds of metre wavelength) open to tight folds E-W (F2) or NW-SE (F3) striking axial surfaces.</li> <li>There are three major NW striking faults that exist within the Tenement which have a horizontal displacement of up to 2.5km.</li> <li>The target area for 2019 drilling was along a NW striking fault to test for mineralised Brockman Formation associated with the generation of faults, as seen elsewhere in the region. The Brockman Formation was unmineralised. Some minor intervals of low-grade detrital mineralisation were intersected.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li>9 holes were completed for 588 m</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>No compositing has been performed as samples are collected at 2 m intervals.</li> <li>Cut-off grade for mineralisation was 50% Fe.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>Very little mineralisation was intersected. Detrital mineralisation formed along strike of the adjacent Brockman Formation foothills.</li> </ul>

Diagrams	<ul style="list-style-type: none"> <li>Drill hole collar locations coloured and typical cross sections.</li> </ul>   <p>Interpreted stratigraphy; WS = Whaleback shale Member, DG = Dales Gorge Member, DET = Detritals, JOF = Joffre Member, MCS = McRae Shale Formation, MTS = Mount Silvia Formation, WF = Wittenoom Formation, WW = Weeli Wolli formation</p>
Balanced reporting	<ul style="list-style-type: none"> <li>No further details to report at this stage</li> </ul>
Other substantive exploration data	<ul style="list-style-type: none"> <li>No further details to report at this stage</li> </ul>
Further work	<ul style="list-style-type: none"> <li>3D modelling of Vivash Gorge area</li> <li>Field reconnaissance to assess other Brockman and Marra Mamba targets in the tenement</li> <li>Potential drill campaign depending on outcome of reconnaissance</li> </ul>



## 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

96 119 397 938

### Quarter ended ("current quarter")

31 December 2019

Consolidated statement of cash flows		Current Quarter \$A'000	Year to Date (6 months) \$A'000
<b>1.</b>	<b>Cash flows from operating activities</b>		
1.1	Receipts from customers	38	50
1.2	Payments for		
	(a) exploration & evaluation	(398)	(514)
	(b) development	-	-
	(c) production	-	-
	(d) staff costs	(178)	(320)
	(e) administration and corporate costs	(164)	(349)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	-	-
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)	-	-
<b>1.9</b>	<b>Net cash from / (used in) operating activities</b>	<b>(702)</b>	<b>(1,133)</b>

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

<b>Consolidated statement of cash flows</b>		<b>Current Quarter \$A'000</b>	<b>Year to Date (6 months) \$A'000</b>
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 (provide details if material)	-	-
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>-</b>	<b>(6)</b>

<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of shares	1,663	1,663
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	(22)	(22)
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)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>1,641</b>	<b>1,641</b>

<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	642	1,063
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(702)	(1,133)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	(6)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	1,641	1,641
4.5	Effect of movement in exchange rates on cash held	(6)	10
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>1,575</b>	<b>1,575</b>

<b>5. Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1 Bank balances	1,559	617
5.2 Call deposits	16	25
5.3 Bank overdrafts	-	-
5.4 Other (provide details)	-	-
<b>5.5 Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>1,575</b>	<b>642</b>

**6. Payments to directors of the entity and their associates**

- 6.1 Aggregate amount of payments to these parties included in item 1.2
- 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

**Current quarter  
\$A'000**

137

-

Reimbursement to directors of administration and exploration expenses incurred on behalf of the Company and for the payment of director services.

**7. Payments to related entities of the entity and their associates**

- 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

**Current quarter  
\$A'000**

-

-

**8. Financing facilities available**

*Add notes as necessary for an understanding of the position*

- 8.1 Loan facilities
- 8.2 Credit standby arrangements
- 8.3 Other – Credit Card Facility

**Total facility amount  
at quarter end  
\$A'000**

**Amount drawn at  
quarter end  
\$A'000**

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.




<b>9. Estimated cash outflows for next quarter</b>	<b>\$A'000</b>
9.1 Exploration and evaluation	150
9.2 Development	-
9.3 Production	-
9.4 Staff costs	130
9.5 Administration and corporate costs	70
9.6 Other (provide details if material)	-
<b>9.7 Total estimated cash outflows</b>	<b>350</b>

<b>10. Changes in tenements (items 2.1(b) and 2.2(b) above)</b>	<b>Tenement reference and location</b>	<b>Nature of interest</b>	<b>Interest at beginning of quarter</b>	<b>Interest at end of quarter</b>
10.1 Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	E08/2966 E08/3018 E08/3019 E08/3020		GPP option to earn-in granted by ZNC	0% 0% 0% 0%
10.2 Interests in mining tenements and petroleum tenements acquired or increased	E77/2514 E77/2515		0% 0%	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:  .....

(Director /Company secretary)

Date: 31 January 2020

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.