



## Orion Minerals

ASX/JSE RELEASE: 31 January 2019

# Quarterly Activities Report For Period Ended 31 December 2018

## HIGHLIGHTS

- **Prieska Project resource definition drilling completed and Mineral Resources Estimate updated:**
  - Resource drilling of the Deep Sulphide Target on both the Repli and Vardocube Prospecting Rights completed.
  - Mineral Resource estimation for both the Deep Sulphide and +105m Level Targets updated in December 2018.
  - Total Deep Sulphide Mineral Resource of 28.73Mt at 3.8% Zn and 1.2% Cu.
  - Total +105m Level Mineral Resource of 1.76Mt at 2.0% Zn and 1.5% Cu.
  - Total global combined Mineral Resource of 30.49Mt grading at 3.7% Zn and 1.2% Cu.
- **Feasibility studies reach significant milestones:**
  - Scoping Study completed, confirming commercial robustness of concepts being applied in the ongoing feasibility study.
  - Feasibility study mine planning and design progressed to detailed stage.
  - National power utility approved bulk power supply infrastructure designs.
  - Expressions of Interest received for zinc and copper concentrates offtake.
- **Ayoba Satellite VMS discovery, and airborne electromagnetic (SkyTEM™) survey completed on near-mine exploration:**
  - Discovery hole at Ayoba intersected 9.50m of massive sulphide mineralisation grading 0.93% Zn and 0.63% Cu, including 1.50m at 4.98% Zn and 0.89% Cu.
  - SkyTEM™ survey completed over near-mine Prospecting Right.
- **Regional Ni-Cu-Co exploration program advanced:**
  - Down-hole Time Domain Electro Magnetic survey at Rok Optel completed.
  - Phase 1 drilling at the Rok Optel Ni-Cu Target completed.
  - Field mapping at Rok Optel and over other SkyTEM™ anomalies continued.
  - Confirmation of Newmont mapping done over Rok Optel south.
- **Regional VMS exploration on the Masiqame Prospecting Right continues:**
  - Two fixed-loop electromagnetic surveys were completed, and conductors detected.
  - Mapping over the Kantienpan and Bokspits Prospects in progress.
- **Safety, environment and community engagement ongoing:**
  - Zero lost-time injuries for 35,600 hours worked for the Quarter at the Prieska Project.
  - Career Day Expo reaches 700 school students from local communities.
- **Following Quarter end, Tembo Capital extends new \$3.6M Loan Facility to advance the Prieska Project and maturity date of Convertible Notes extended to 30 September 2019.**

## Operations Report

Orion Minerals Limited (**Company** or **Orion**) strives to achieve a sustainable balance between intense operational effort and maintaining a strong focus on social responsibility.

## Health and Safety, Environmental Management and Community Engagement

### Health and Safety

No lost-time injuries were reported during the Quarter.

**Table 1: Hours worked at the Areachap Projects (South Africa).**

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| Category of Work | Hours Worked  |                        |
|------------------|---------------|------------------------|
|                  | Quarter       | Financial Year to Date |
| Exploration      | 33,529        | 162,500                |
| Mine Re-Entry    | 2,112         | 4,492                  |
| <b>Total</b>     | <b>35,641</b> | <b>166,992</b>         |

The lost-time injury frequency Rate (**LTIFR**) per 200,000 hours worked was 0.0 across all work areas for both the Quarter and the financial year to date. Scheduled inspections by the Occupational Medical Practitioner confirmed exemplary work conditions at all Company work places. Emphasis for the period was on ensuring all work sites were well-secured and kept in a safe manner, given the shutdowns of field operations during the December holiday period.

### Environmental Management

Proactive and cooperative engagement with statutory authorities continued, with representatives from the Department of Mineral Resources (**DMR**) invited and hosted on a familiarisation visit of the Prieska Zinc-Copper Project (**Prieska Project**). Advice on improving hydrocarbon management received from the authorities on the visit was incorporated into general work practices.

### Community and Stakeholder Engagement

The Company recognises that as part of establishing the Prieska Project, early implementation of training and mining familiarisation programs is beneficial in preparing local communities to be able to participate in employment and business opportunities to be created by the development of the Prieska Project. As such, the Company has kept local communities regularly informed and has supported various social development initiatives, despite the Prieska Project still being in the planning phases.

Progress updates, to the Siyathemba community relating to the Prieska Project, continued, with the Company's CEO, Errol Smart, holding a public information session in the town of Prieska in October. The event was attended by several hundred people, representing a broad cross-section of community interest groups.

In October, the Company, in collaboration with Sonnedix / Mulilo, who operate a renewable energy plant adjacent to the Prieska Project, hosted a career day expo in the town of Prieska. Approximately 700 high school students had the opportunity to interact with private businesses, government institutions and tertiary education institutions.

The Company also initiated investigations into the provision of free, introductory, part-time short familiarisation courses, covering the functions of underground mining, machine operation, trade and engineering skills, technical services, administration and finance. The appointment of appropriate training service providers, content and the identification of suitable training venues are in progress, with courses scheduled to commence by Q2 2019.

Collaborations between the Company and the Siyathemba Municipality, formalised through a Memorandum of Understanding, focused this Quarter, on water infrastructure upgrades and residential development to accommodate the Prieska Project plans. Drafting of the water supply agreement, incorporating water tariffs and specific scopes of work for water infrastructure upgrades, continued. The Company identified a 50-hectare area of open land adjacent to an existing suburb in Prieska, suitable for siting the proposed mine residential area. Discussions with the Municipality and various technical services providers have been initiated to facilitate obtaining permissions for residential development.

To bring some seasonal cheer to the most vulnerable and neglected members of the Siyathemba Municipality, the Company identified rural schools, the elderly and the homeless to be recipients of Christmas gifts.

Over 200 children, attending the Bloukrantz and Saamstaan Farm Schools (farm schools located in the rural surrounds of Prieska) received Christmas gift packs and Company sponsored prizes for various academic achievements. The elderly residents of Silver Kroon House, in Marydale, and Huis du Toit, in Prieska, were presented with gift packs containing parasols, to afford protection against the harsh Northern Cape summer sun. Homeless families, comprising mostly women and children, who take shelter in an abandoned primary school (Ineatia Home for the Homeless) also received gift packs containing essential groceries, parasols and confectionery.

## Exploration and Mine Development

### Areachap Belt Projects (South Africa)

#### **Prieska Zinc-Copper Project**

The Company completed an intensive drilling campaign at the Deep Sulphide Target of the Prieska Project and updated both Mineral Resources of the Deep Sulphide Target and the +105m Level Target (Open Pit). The updated Deep Sulphide Mineral Resource was used to support a scoping study that assessed the commercial viability of an initial phase of underground mining operations. This work, along with other key studies, will be used as the basis of a Bankable Feasibility Study (**BFS**), which the Company is on track to complete in Q2 2019.

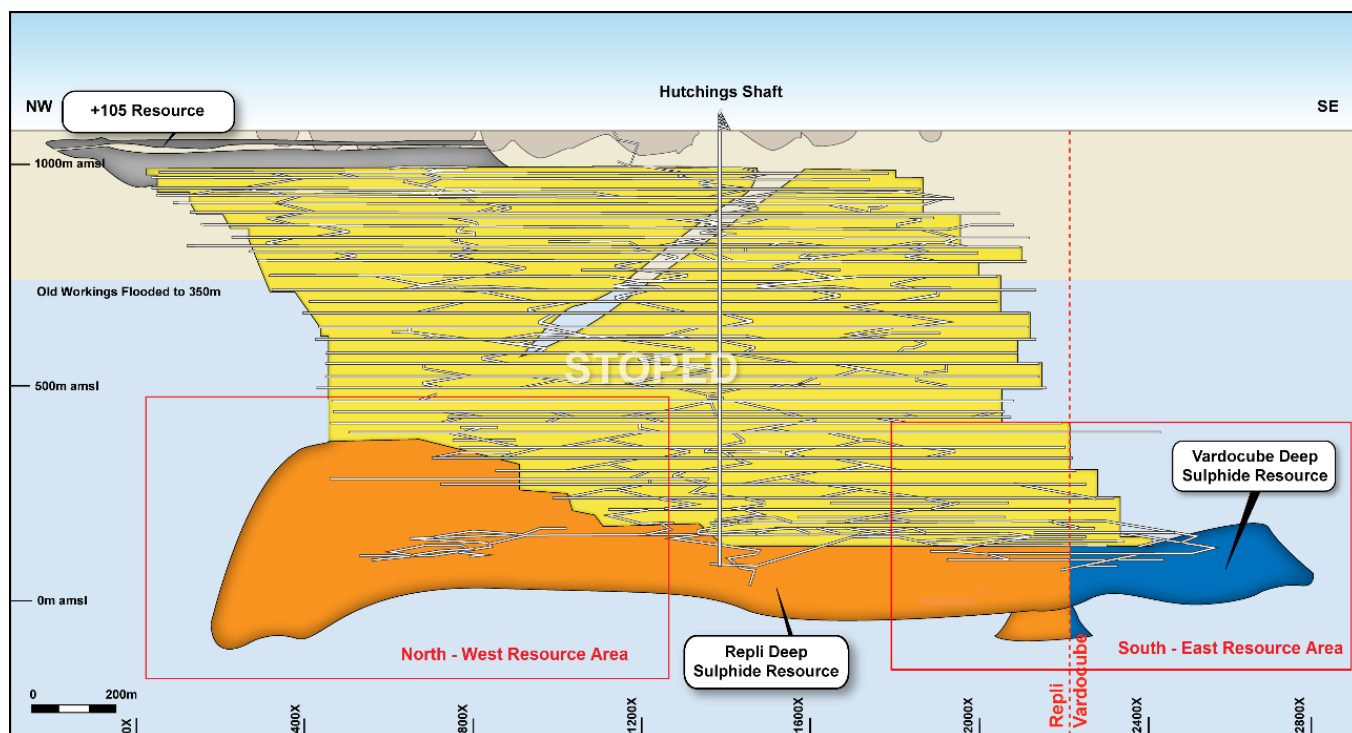
#### **Project Overview**

The Prieska Project remains the focus of the Company's activities and is at an advanced stage of Feasibility Studies. The Prieska Project covers un-mined dip and strike extensions from a historical underground mining operation. Mineralisation was delineated by extensive drilling undertaken by previous owners. The Company has digitally captured, validated and modelled all relevant project drilling data available from hard-copy sources. This work has enabled the Company to define targets for both near-surface and deep-seated mineralisation. The near-surface target comprises oxide, supergene and primary sulphide material to a depth of 100m which is potentially accessible via an initial open pit (**+105m Level Target**). The deeper target comprises primary sulphide mineralisation and is potentially accessible via underground mining (**Deep Sulphide Target**).

The Company's strategy has been to initially validate and quantify the historically-identified targets to a sufficient level of confidence to support a bankable study, using infill and verification drilling from surface (Initial Phase). Thereafter, the Company intends to continue with extensional exploration, to define the extents of the various targets.

#### **Deep Sulphide Target drilling**

During the Quarter, the Company completed the Deep Sulphide Target Mineral Resource drill program with one drilling rig at the south-eastern Vardocube Prospecting Right, and another at the north-western Repli Prospecting Right (Figure 1). A total of 85,304m has now been drilled by the Company into the Deep Sulphide Target.



**Figure 1: Longitudinal projection of the Prieska Project showing the Repli and Vardocube Resource Areas.**

For the Quarter, a total of 345.34m of diamond drilling was completed, of which 125.96m was drilled on the Vardocube Prospecting Right and 219.38m on the Repli Prospecting Right. The Company's drill program aimed to provide statistical validation of historical drill data available for the Deep Sulphide Target, as well as to in-fill data points required for optimal drill spacing to allow classification of the Mineral Resource in accordance with the JORC Code (2012). Drilling has also tested new targets and extended the known mineralisation outside of the historical drill grid.

The Deep Sulphide Resource drilling indicated that the mineralisation is not closed off and potential exists to increase the Resource with additional drilling (refer ASX releases 5 November 2018 and 15 October 2018). One hole, testing the up-side potential in the south-eastern part of the Deep Sulphide Target, on the Vardocube Prospecting Right, was started during the Quarter.

### Mineral Resource Estimation and Reporting

The Mineral Resource estimation of the Deep Sulphide Target prepared by Z\* on both the Repli and Vardocube Prospecting Rights, using drill data available as at 31 December 2018, was completed during the Quarter (refer ASX release 18 December 2018)<sup>1</sup> (Table 2).

<sup>1</sup> Mineral Resource reported in ASX release of 18 December 2018: "Landmark Resource Upgrade Sets Strong Foundation" available to the public on [www.orionminerals.com.au/investors/market-news](http://www.orionminerals.com.au/investors/market-news). Competent Person Orion's exploration: Mr. Errol Smart. Competent Person: Orion's Mineral Resource: Mr. Sean Duggan. Orion confirms it is not aware of any new information or data that materially affects the information included above. For the Mineral Resources, the company confirms that all material assumptions and technical parameters underpinning the estimates in the ASX release of 18 December 2018 continue to apply and have not materially changed. Orion confirms that the form and context in which the Competent Person's findings are presented here have not materially changed.

**Table 2: Global Indicated and Inferred Mineral Resource Statement for the Deep Sulphide Target of the Prieska Project.**

| License             | Classification | Tonnes            | Zn (tonnes)      | Zn (%)     | Cu (tonnes)    | Cu (%)     |
|---------------------|----------------|-------------------|------------------|------------|----------------|------------|
| Repli               | Indicated      | 15,052,000        | 510,000          | 3.38       | 170,000        | 1.15       |
|                     | Inferred       | 6,998,000         | 270,000          | 3.9        | 80,000         | 1.1        |
|                     | <b>Total</b>   | <b>22,050,000</b> | <b>779,000</b>   | <b>3.5</b> | <b>249,000</b> | <b>1.1</b> |
| Vardocube           | Indicated      | 3,455,000         | 158,000          | 4.57       | 44,000         | 1.27       |
|                     | Inferred       | 3,221,000         | 147,000          | 4.6        | 41,000         | 1.3        |
|                     | <b>Total</b>   | <b>6,676,000</b>  | <b>305,000</b>   | <b>4.6</b> | <b>85,000</b>  | <b>1.3</b> |
| Deep Sulphide Total | Indicated      | 18,507,000        | 667,000          | 3.60       | 217,000        | 1.17       |
|                     | Inferred       | 10,219,000        | 417,000          | 4.1        | 117,000        | 1.1        |
|                     | <b>Total</b>   | <b>28,726,000</b> | <b>1,084,000</b> | <b>3.8</b> | <b>334,000</b> | <b>1.2</b> |

**Note:** Deep Sulphide Resource bottom cut-off = 4% Equivalent Zn. Mineral Resources stated at zero % cut off. Tonnes are rounded to thousands, which may result in rounding errors.

Since the first +105m Mineral Resource announcement (refer ASX release 8 February 2018), the geological wireframe and resource estimate has been updated to include additional drill data and refinements to modelling of metallurgical zonation to re-evaluate the model (refer ASX release 15 January 2019)<sup>2</sup> (Table 3).

**Table 3: Global Indicated and Inferred Mineral Resource Statement for the +105m Level Target of the Prieska Project.**

| Classification           | Mineralised Zone | Tonnes           | Zn (tonnes)   | Zn (%)      | Cu (tonnes)   | Cu (%)      |
|--------------------------|------------------|------------------|---------------|-------------|---------------|-------------|
| Indicated                | Supergene        | 624,000          | 19,000        | 3.05        | 10,000        | 1.54        |
|                          | <b>Total</b>     | <b>624,000</b>   | <b>19,000</b> | <b>3.05</b> | <b>10,000</b> | <b>1.54</b> |
| Inferred                 | Oxide            | 511,000          | 4,000         | 0.9         | 3,000         | 0.6         |
|                          | Supergene        | 627,000          | 11,000        | 1.8         | 14,000        | 2.2         |
|                          | <b>Total</b>     | <b>1,138,000</b> | <b>16,000</b> | <b>1.4</b>  | <b>17,000</b> | <b>1.5</b>  |
| <b>+105m Grand Total</b> |                  | <b>1,762,000</b> | <b>35,000</b> | <b>2.0</b>  | <b>27,000</b> | <b>1.5</b>  |

**Note:** +105m Level Mineral Resource bottom cut-off = 0.3% Cu. Mineral Resources stated at zero % cut-off. Tonnes are rounded to thousands, which may result in rounding errors.

The total Mineral Resource comprising Indicated and Inferred Resources of 30.49M tonnes grading at 3.7% Zn and 1.2% Cu (refer ASX release 15 January 2019)<sup>2</sup> (Table 4) and the Scoping Study which confirmed a robust Phase 1 development for the Prieska Project (refer ASX release 19 December 2018) will be incorporated in the BFS due for completion in Q2 2019.

<sup>2</sup> Mineral Resource reported in ASX release of 15 January 2019: "Prieska Total Mineral Resource Exceeds 30Mt @ 3.7% Zn and 1.2% Cu Following Updated Open Pit Resource" available to the public on [www.orionminerals.com.au/investors/market-news](http://www.orionminerals.com.au/investors/market-news). Competent Person Orion's exploration: Mr. Errol Smart. Competent Person: Orion's Mineral Resource: Mr. Sean Duggan. Orion confirms it is not aware of any new information or data that materially affects the information included above. For the Mineral Resources, the company confirms that all material assumptions and technical parameters underpinning the estimates in the ASX release of 16 January 2019 continue to apply and have not materially changed. Orion confirms that the form and context in which the Competent Person's findings are presented here have not materially changed.

**Table 4: Global Mineral Resource for the combined +105m and Deep Sulphide Targets of the Prieska Project.**

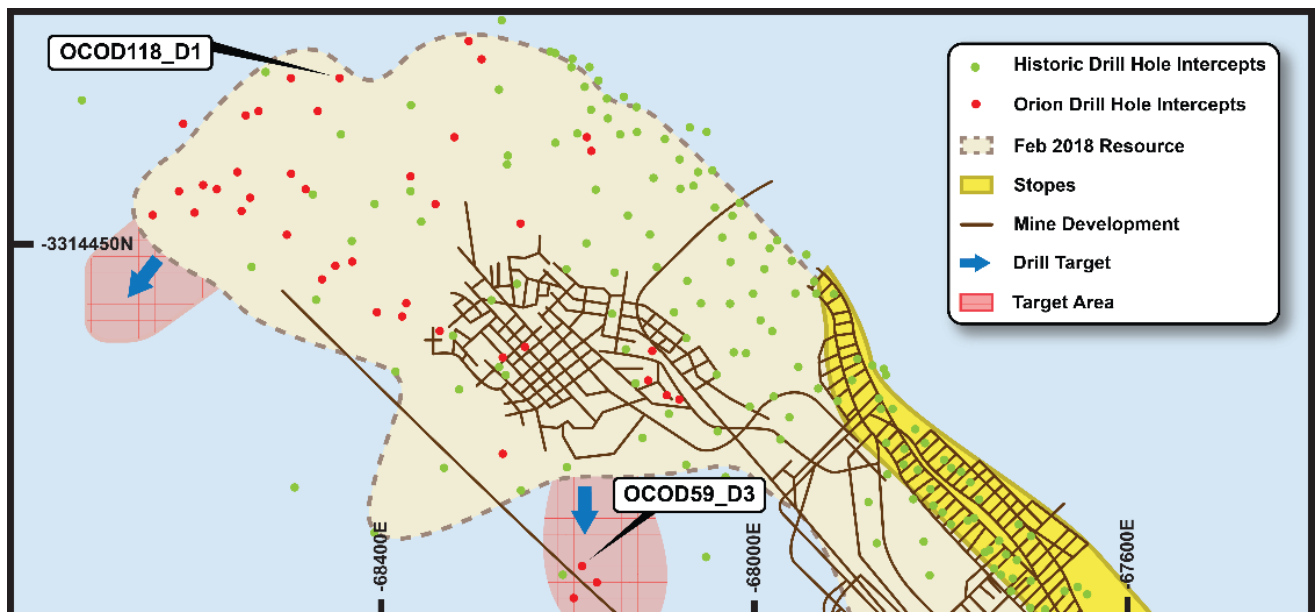
| Resource               | Classification | Tonnes            | Zn (tonnes)      | Zn (%)     | Cu (tonnes)    | Cu (%)     |
|------------------------|----------------|-------------------|------------------|------------|----------------|------------|
| Deep Sulphide Resource | Indicated      | 18,507,000        | 667,000          | 3.60       | 217,000        | 1.17       |
|                        | Inferred       | 10,219,000        | 417,000          | 4.1        | 117,000        | 1.1        |
| + 105m Resource        | Indicated      | 624,000           | 19,000           | 3.05       | 10,000         | 1.54       |
|                        | Inferred       | 1,138,000         | 16,000           | 1.4        | 17,000         | 1.4        |
| <b>Total</b>           | Indicated      | 19,131,000        | 686,000          | 3.59       | 227,000        | 1.18       |
| <b>Total</b>           | Inferred       | 11,357,000        | 433,000          | 3.8        | 134,000        | 1.2        |
| <b>Grand Total</b>     |                | <b>30,488,000</b> | <b>1,119,000</b> | <b>3.7</b> | <b>361,000</b> | <b>1.2</b> |

**Note:** Deep Sulphide Resource bottom cut-off = 4% Equivalent Zn; +105m Level Mineral Resource bottom cut-off = 0.3% Cu. Mineral Resources stated at zero % cut-off. Tonnes are rounded to thousands, which may result in rounding errors.

### Down-hole Time Domain Electro Magnetic surveys

Down-hole Time Domain Electro Magnetic (**DHTDEM**) surveys were undertaken in drill-holes OCOD059\_D3, OCOD118\_D1, OCOD123\_D2 and OCOD137\_D2 at the Deep Sulphide Target to assess whether there are any off-hole conductors indicating the extension off the known mineralisation (Figures 2 and 3).

Modelling of the DHTDEM data is to be finalised.



**Figure 2: Plan-view of the North-West Resource Area of the Prieska Project, showing drill-holes surveyed by DTHEM.**

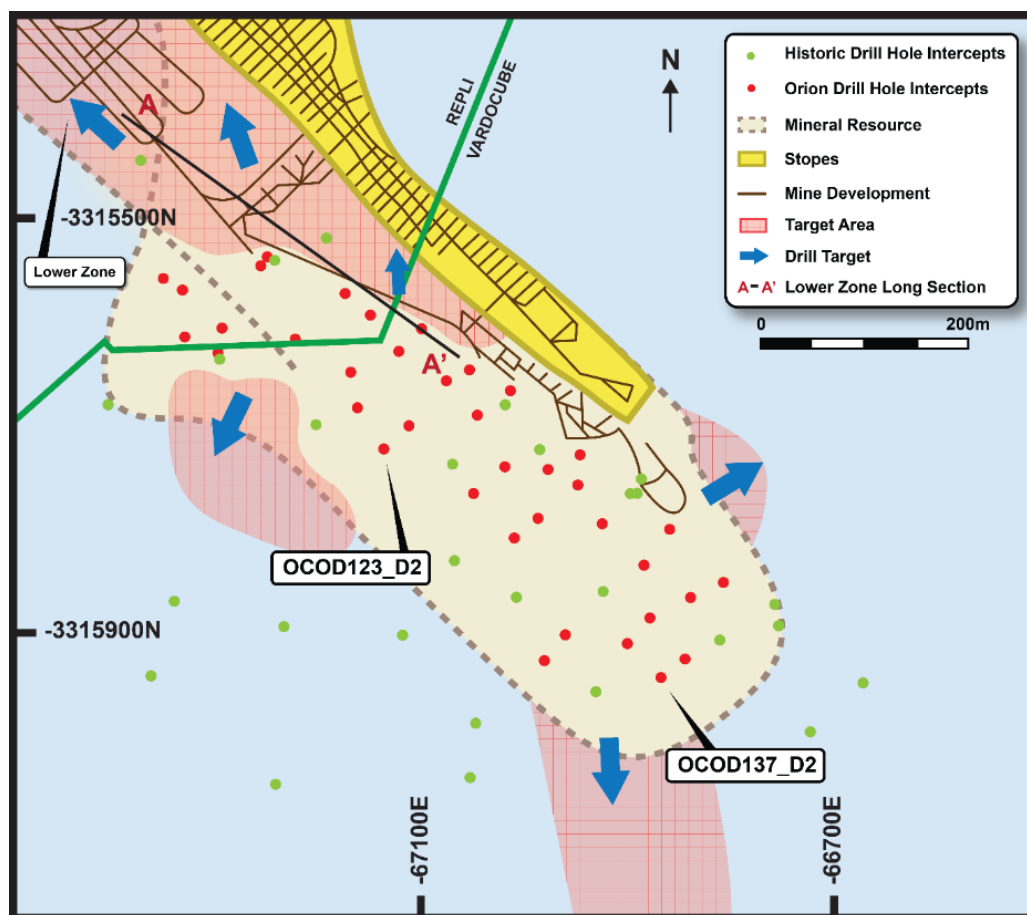


Figure 3: Plan-view of the South-East Resource Area of the Prieska Project, showing drill-holes surveyed by DTHERM.

### Barite Potential Studies

Mineralogical work, as part of the metallurgical study of the BFS of the Prieska Project, indicates 6% - 8% contained barite in the mineralisation, which if recovered as a by-product could add to the revenue of the mine. As a result of the analytical method (ICP-OES with Aqua-Regia digest) used at the Prieska Project, which does not dissolve all the Ba in barite ( $\text{BaSO}_4$ ), Ba analyses in the geological database are underestimated values. A study to accurately determine the Ba content and to identify and quantify the minerals that hosts the Ba was therefore undertaken during the Quarter. Thirty pulp samples of the Deep Sulphides were sent to UIS Analytical Services for fused disk XRF analyses and SJT MetMin carried out mineralogical work using Quantitative X-ray diffraction (XRD) analysis on 15 of those samples. The study is expected to be completed during Q1 of 2019.

### Feasibility Studies and Mining Right Applications

#### Scoping Study

A scoping study investigating the economic viability of an initial ten-year phase (Phase 1) of exploitation of the Prieska deposit was completed during the Quarter, (refer ASX release 19 December 2018). Notable results were:

- Initial 10-year mining scenario supported by 64% of Indicated Mineral Resources, extracting 75% of a combined underground Mineral Resource of 28.73Mt at 3.77% zinc and 1.16% copper.
- 2.4Mtpa run-of-mine material processed, producing about 70kt to 80kt of zinc and 22kt of copper in concentrates per annum.
- 43% all-in-sustaining margin, with all-in-unit costs of AUD 1,701/t (USD 1,215/t) zinc equivalent metal sold.
- Estimated AUD 130M annual free cash flow after-tax at steady-state.

- AUD 400M to AUD 440M pre-tax NPV at 12.5% discount rate and approximately 38% pre-tax IRR.
- Payback period of less than 3 years from first production.
- Approximately AUD 300M to AUD 330M peak funding to setup the infrastructural foundation for future expansion.

The initial phase contemplated in the scoping study involves underground mining to extract portions of the updated Mineral Resources (refer ASX release 18 December 2018). No open pit mining or extraction of remnant pillars was considered for Phase 1. The scoping study results confirm the commercial robustness of the concepts being advanced in the BFS which is on track for completion by Q2 2019, Table 5.

**Table 5: Key Scoping Study Results for Phase 1 of the Prieska Zinc-Copper Project. Note that the overall Study accuracy level is ±35%.**

| Price and FX Assumptions          | Unit    | Estimated Value    | Financial Performance                        | Unit     | Estimated Value |
|-----------------------------------|---------|--------------------|----------------------------------------------|----------|-----------------|
| Metal price – Cu (USD3.00/lb)     | USD/t   | 6,614 <sup>3</sup> | NPV (pre-tax) @12.5% discount rate           | AUD m    | 400 – 440       |
| Metal price – Zn (USD1.30/lb)     | USD/t   | 2,866 <sup>3</sup> | IRR (pre-tax)                                | %        | 38%             |
| Exchange rate                     | ZAR:USD | 14 : 1             | Payback from first production                | years    | 3               |
| Exchange rate                     | ZAR:AUD | 10 : 1             | Undiscounted free cash flow (pre-tax)        | AUD bn   | 1.2 – 1.3       |
| Exchange rate                     | AUD:USD | 1.4 : 1            | Peak funding                                 | AUD m    | 300 – 330       |
| Production Metrics                | Unit    | Estimated Value    | Project Cost Metrics                         | Unit     | Estimated Value |
| Life of Mine (Phase 1)            | years   | 10                 | Average cash operating unit cost (C1)        | AUD/t    | 83              |
| Treatment plant capacity          | ktpa    | 2,400              | All-in-sustaining cost per unit ROM †        | AUD/t    | 100             |
| Phase 1 tonnage - ROM             | mt      | 22                 | All-in-sustaining cost per unit Zn eq † sold | AUD/t Zn | 1,701           |
| Phase 1 tonnage - processed       | mt      | 22                 | All-in-sustaining cost per unit Cu eq † sold | AUD/t Cu | 4,949           |
| Concentrate tonnage - Zn          | mt      | 1.4                | Price received (net of NSR) - Zn             | AUD/t Zn | 2,982           |
| Concentrate tonnage - Cu          | mt      | 0.9                | Price received (net of NSR) - Cu             | AUD/t Cu | 8,677           |
| Concentrate grade - Zn            | %       | 50.0%              | All-in-sustaining margin                     | %        | 43%             |
| Concentrate grade - Cu            | %       | 24.0%              | Operating breakeven grade (Zn eq)            | %        | 4.1%            |
| NSR as % of metal price - Zn      | %       | 74.3%              |                                              |          |                 |
| NSR as % of metal price - Cu      | %       | 93.7%              |                                              |          |                 |
|                                   |         |                    | Project Cash Flows                           | Unit     | Estimated Value |
| Metal sold (in concentrates) - Zn | kt      | 686                | LoM net revenue                              | AUD m    | 3,457           |
| Metal sold (in concentrates) - Cu | kt      | 206                | LoM operating costs                          | AUD m    | 1,740           |
| Total sales as Zn equivalent      | kt      | 1,285              | Project start-up capital expenditure         | AUD m    | 360 - 390       |
| Total sales as Cu equivalent      | kt      | 442                | Sustaining capital expenditure               | AUD m    | 65 - 75         |

#### BFS Mine Design

Following the release of the updated Deeps Resource estimate and scoping study in late December 2018, preliminary mine designs are now being updated and finalised. Tunnel layouts, level spacings and the mix of long hole stoping (LHS) and drift-and-fill underground mining methods are being adjusted and improved, in line with the new Mineral Resource. Mining strategies have been revisited and some production areas are being redesigned to eliminate the need for trucking (ore-pass infrastructure will be installed). This will reduce the overall trucking fleet as well as the associated ventilation requirements and so is expected to improve operating costs.

Labour numbers for the mining production teams and fleet maintenance crews have been refined and will be finalised once accurate fleet numbers are determined at the conclusion of the mine planning process.

<sup>3</sup> Guided by Afriforesight (Pty) Ltd long-term consensus forecast as of August 2018.

Investigations into automation and the use of data intelligence systems also took place during the Quarter. Various products are available in the market that are designed to increase machine utilisation and productivity via automatic drilling and autonomous operating modes. At this stage, the Company's strategy is to investigate all available options and consider the appropriate levels of automation and telemetry which will enhance the Project's business case without placing undue risk on the operation. It is likely that a phased approach to the installation of automation will be carried out as production ramps up during the early years of the Project.

#### Ore processing investigations

Test work undertaken during the quarter focused on replacing the Sodium Cyanide (**NaCN**) reagent with Sodium Meta-Bisulphite (**SMBS**). NaCN is used to depress zinc in the copper flotation stream, hence allowing for better copper recoveries into a concentrate. The use of SMBS instead of NaCN can potentially eliminate the need for a NaCN detoxification plant. Preliminary indications are that SMBS is effective in the copper stream and further optimisation is required in the zinc stream. Final results of the test work are due during Q1 2019.

Outstanding metallurgical test results include the results from test work conducted on samples obtained from the last cores to become available from the drilling campaign in the Vardocube resource area. These results are expected to confirm that the south-eastern extent of the deposit has the same metallurgical characteristics as the rest of the deposit. To date, metal recovery test results have ranged from 80% to 94% for zinc and between 80% to 86% for copper. The concentrates produced from the test work have assayed metal concentrate grades ranging from 45% to 54% zinc and between 20% to 26% copper. The final set of numbers for these metrics are expected to be within these ranges.

#### Infrastructure Studies

**Power Supply** – The design and construction methodology for the 132kV feeder bay at the Cuprum Substation was presented to the Eskom Technical Evaluation Forum (**TEF**) in early December 2018. Verbal approval was given to proceed with final detailed design and construction, with formal written approval expected during Q1 2019. The Company has pre-emptively commissioned detailed engineering design work for the mine substation which will step down the 132kV from the Cuprum sub-station to 11kV for the mine electrical reticulation. This detailed design, along with the approval from the Eskom TEF, means that, when appropriate, the Company is in a position to proceeding with ordering long-lead items (primarily transformers) to meet the planned construction schedule for bulk power delivery to the Project site.

**Water Supply** – As reported last Quarter, a Memorandum of Understanding was signed with the Siyathemba Municipality regarding the Company's access to long-term water supply from the Prieska Water Works. Discussions are continuing towards finalising the detailed arrangements however, sufficient information is available at this stage to include pricing and capital costs in the BFS.

#### Product Logistics and Marketing

The option to truck zinc and copper concentrates in side tippers to the Kimberley rail siding (300km from site) was used as the base case Scoping Study option due to this rail hub's readily available facilities and firm rail timetable. The alternative option of trucking concentrate to the nearby Groveput rail siding (48km from site) will continue to be studied as an improvement on the base case. From Kimberley or Groveput, concentrates will be loaded into shipping containers and railed to Coega (near Port Elizabeth), with Richards' Bay and Durban remaining as alternative ports if required.

Transportable Moisture Content (**TML**) tests have been completed indicating that the Prieska concentrates specifications are well within TML levels suitable for safe transportation.

Expressions of interest for concentrate sales were sent out to potential concentrate customers during the Quarter and assessment of proposals is in progress.

### Mining Right Applications

All applicable documents for the Repli Mining Right have been submitted and the environmental authorisation is anticipated to be granted during Q1 2019, following which the Mining Right approval is expected during Q2 2019.

The Mining Right for the Vardocube section of the Prieska Project is progressing and public comments from the draft (environmental) Scoping Report that was issued during the Quarter have been received. Where necessary, relevant responses from the Company have been included in the final Environmental Impact Report (**EIR**) along with updated specialist studies for the Vardocube section of the Project. The final EIR, including the Environmental Management Program, will be submitted to the DMR this coming Quarter, with approvals expected during Q3 2019.

### **Near Mine Projects**

The near-mine projects are those projects within prospecting rights held by Repli, Repli (Doonies Pan), Vardocube and Bartotrax (Figure 4). Apart from the giant Prieska Deposit, five smaller deposits occur on the near-mine project areas. These include Annex, explored by Anglovaal between 1969 and 1981, as well as three deposits on Kielder (Doonies Pan) referred to as the PK1, PK3 and PK6 deposits, explored by Newmont SA between 1976 and 1979. Exploration targets currently defined on the near-mine project area include the north-western and south-eastern strike extent of the Prieska Deposit, the western and eastern strike extent of the Annex Deposit and the Magazine Antiform (Figure 5). A SkyTEM™ and magnetic survey over the Near Mine Project area was completed in December 2018.

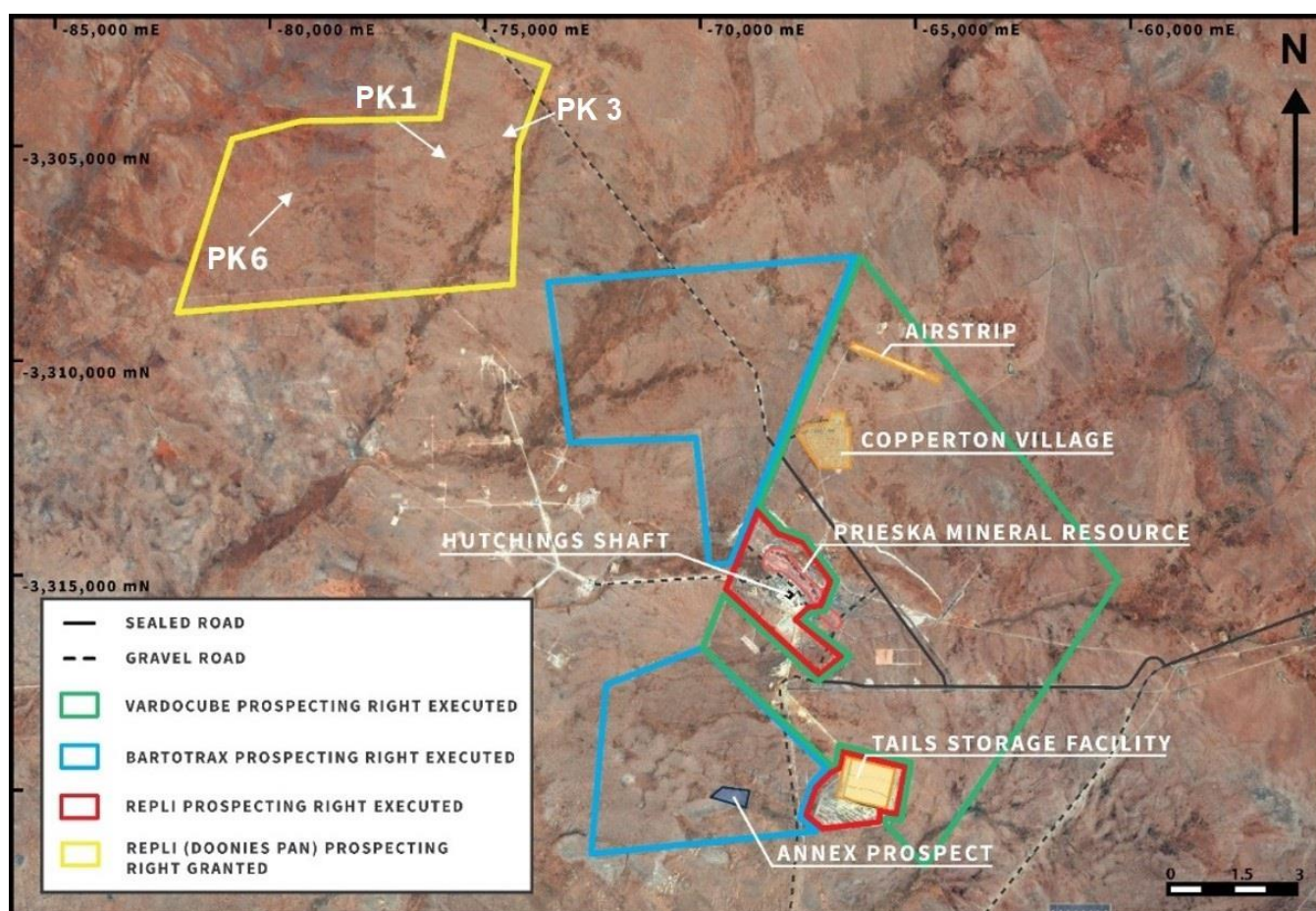
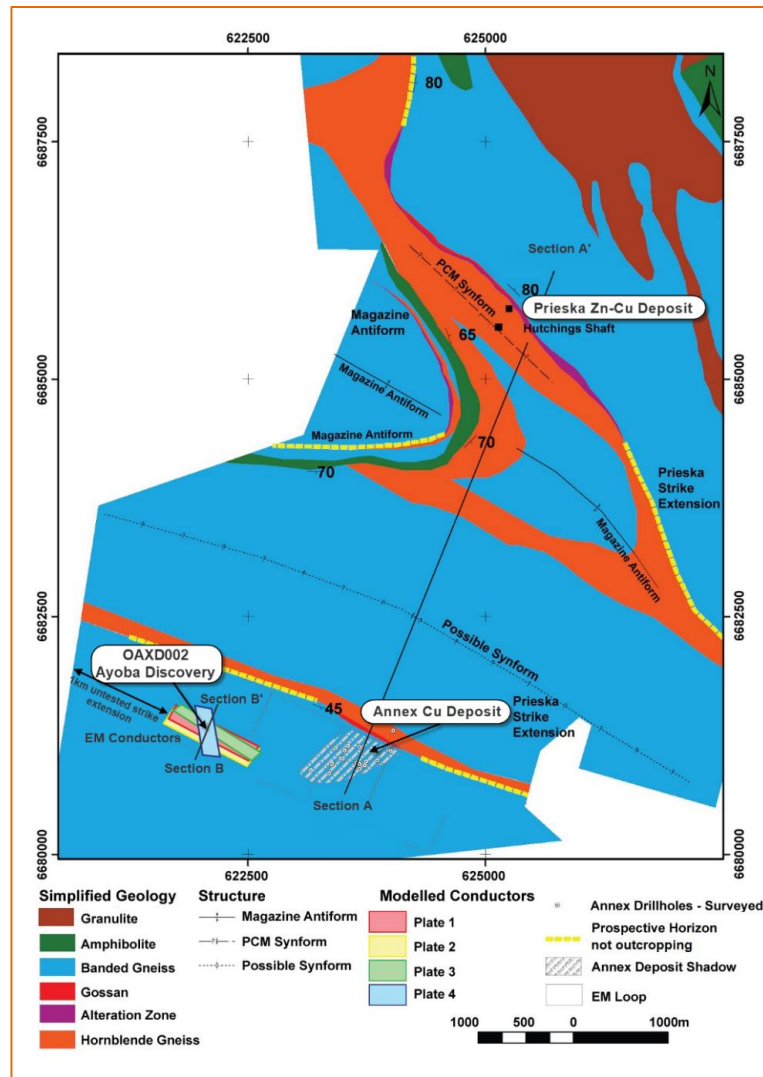


Figure 4: Surface plan showing the prospecting rights over and adjacent to the Prieska Project, and the location of the Annex and Kielder (PK1, PK3 and PK6) Deposits.



**Figure 5: Geological plan showing Near Mine prospective horizons, the location of the Annex Deposit and the EM conductor to the west of Annex where the Ayoba discovery was made.**

## Annex – Exploration Program

Drill hole OAXD001, planned to intersect the Annex Deposit to verify historical drill data and to obtain samples of the host rock and mineralisation (refer ASX release 18 September 2018), was completed at 349.45m, having been drilled 178.90m during the Quarter (Figures 6 and 7).

The hole was planned to intersect the mineralised horizon in an area where a historic longitudinal projection of the mineralisation indicates relative thick and high-grade copper mineralisation (refer ASX release 18 September 2018) (Figure 6). OAXD001 intersected 0.90m of coarse disseminated mineralisation grading 1.50% Cu, 0.19% Zn, 0.07g/t Au and 3g/t Ag from a down-hole depth of 253m. Although the mineralisation was narrower and lower grade than expected, the hole provides information on the stratigraphy of an area where there are hardly any outcrops and where little historic geological information and no historic core is available to the Company.

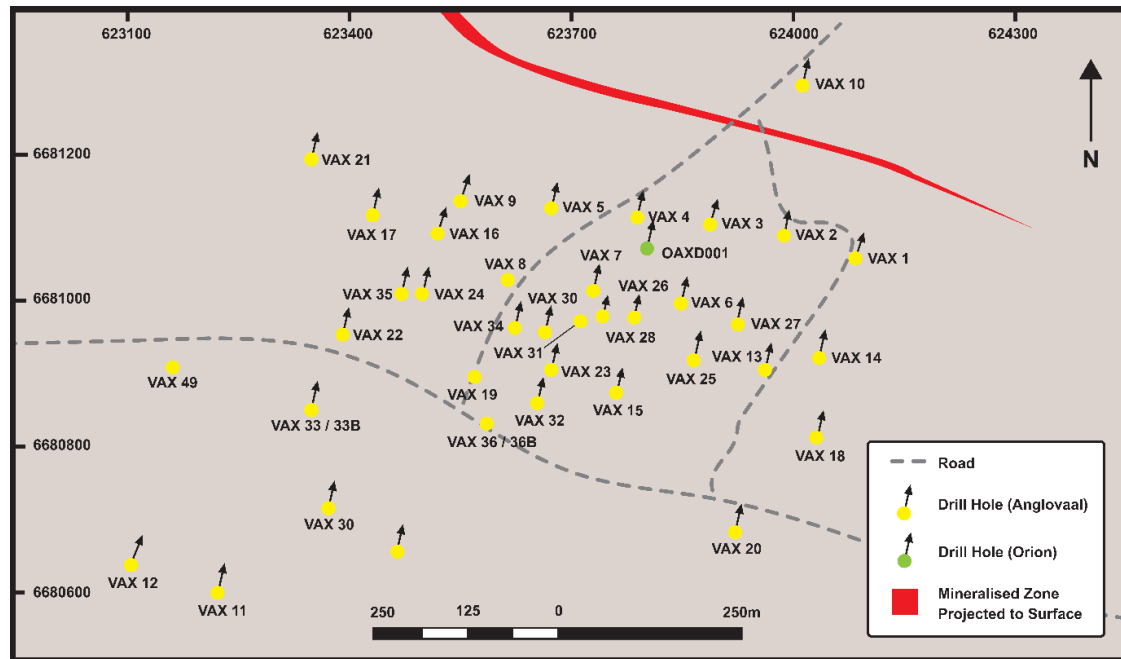


Figure 6: Plan showing the Company's and historic (Anglovaal) drill hole collars and trace of the sub-outcrop of sulphide mineralisation at Annex (Source: Anglovaal Exploration report).

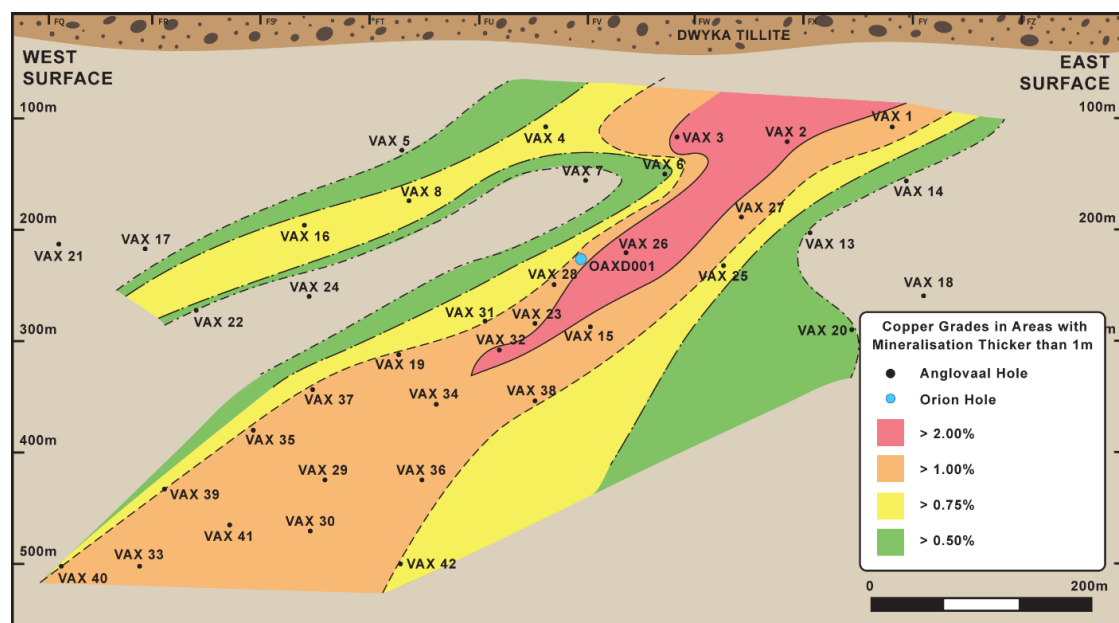


Figure 7: Longitudinal section and grade-contoured drill intersections (Anglovaal) for copper at Annex, showing the Company's drill hole OAXD001 intersection point (Source: Anglovaal Exploration report).

## Ayoba Discovery

During the Quarter, a new copper-zinc bearing massive sulphide body at the Ayoba Target, located 5.3km south-southwest of the Company's Hutchings Shaft at the Prieska Project and 1.6km west and along strike of known copper mineralisation at Annex (Figure 5) (refer ASX release 28 November 2018). The discovery hole OAXD002 testing a Fixed Loop Transient Electro Magnetic plate (**FLTEM**) (refer ASX releases 28 November 2018 and 18 September 2018) intersected 9.50m of massive sulphide mineralisation at 0.93% Zn, 0.63% Cu, 0.22g/t Au and 2g/t Ag from a down-hole depth of 654.50m (Figure 8) (refer ASX release 16

January 2019). This mineralisation includes a 1.5m high grade Zn zone of 4.98% Zn, 0.89% Cu, 0.26% Au and 3g/t Ag from a down-hole depth of 654.50m. Drill-hole OAXD002\_D1, a deflection drilled from OAXD002, confirmed the massive sulphide mineralisation up-dip of OAXD002. The hole intersected 7.13m of massive sulphide mineralisation at 1.44% Zn, 0.66% Cu, 0.34g/t Au and 2g/t Ag from a down-hole depth of 654.87m (Figure 8) (refer ASX release 16 January 2019). A 0.88m intersection with high Zn grading at 11.20% Zn, 0.89% Cu, 0.35g/t Au and 4g/t Ag, which correlates with the high Zn in OAXD002, was intersected from a down-hole depth of 654.87m.

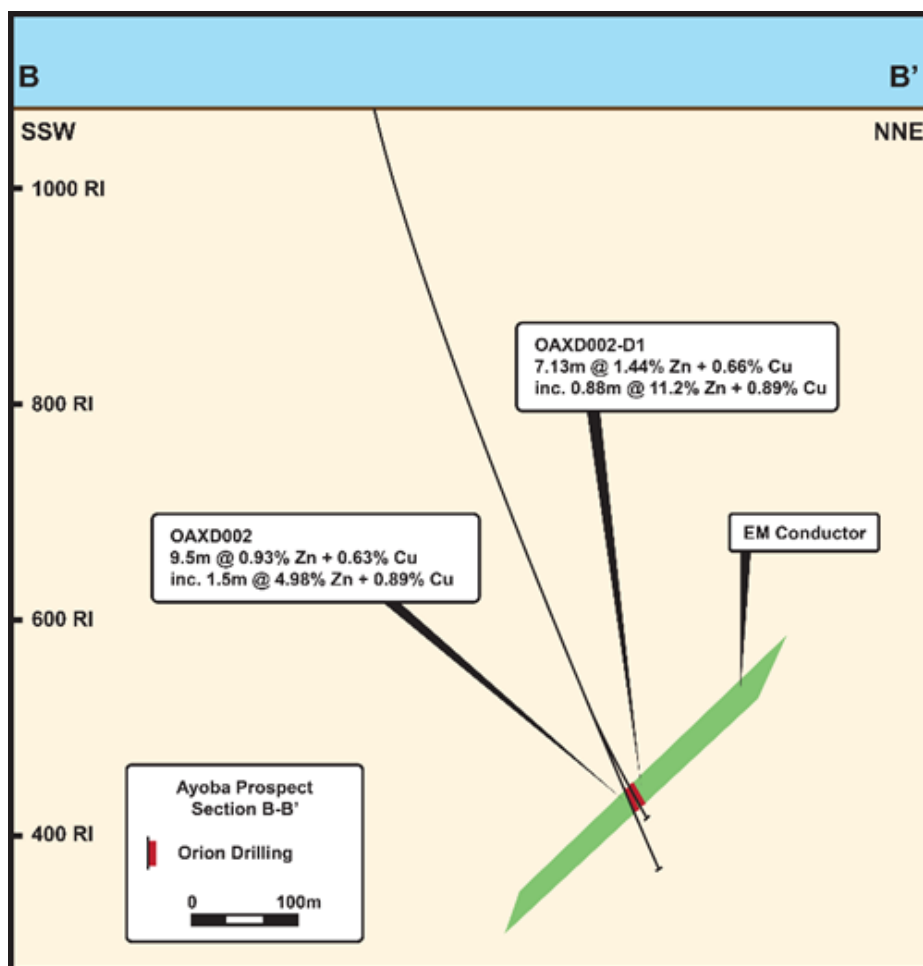


Figure 8: Section through holes OAXD002 and OAXD002-D1 showing the mineralisation intersected at the Ayoba Target.

The modelled FLTEM conductor at Ayoba, tested by holes OAXD002 and OAXD002-D1, has a strike length of 1.1km and extends down-dip to at least 800m below surface and vertical depth to the top of the conductor is 500m (Figure 8) (refer ASX release 28 November 2018). Beyond this conductor the key stratigraphic horizon remains untested by geophysics or drilling for another 1,000m along strike to the western tenement boundary (Figure 9). Approximately 1km west-northwest of the Ayoba FLTEM anomaly, the newly acquired magnetic data from the SkyTEM™ survey identified a fold closure in the target stratigraphy (refer ASX 16 January 2019). Duplication of the target stratigraphy in the fold closure offers an excellent target for follow-up work and the ground EM survey should be extended to cover this fold closure (Figure 9).

Additional FLTEM surveys and drilling is planned to explore the lateral and depth extensions of the mineralisation.

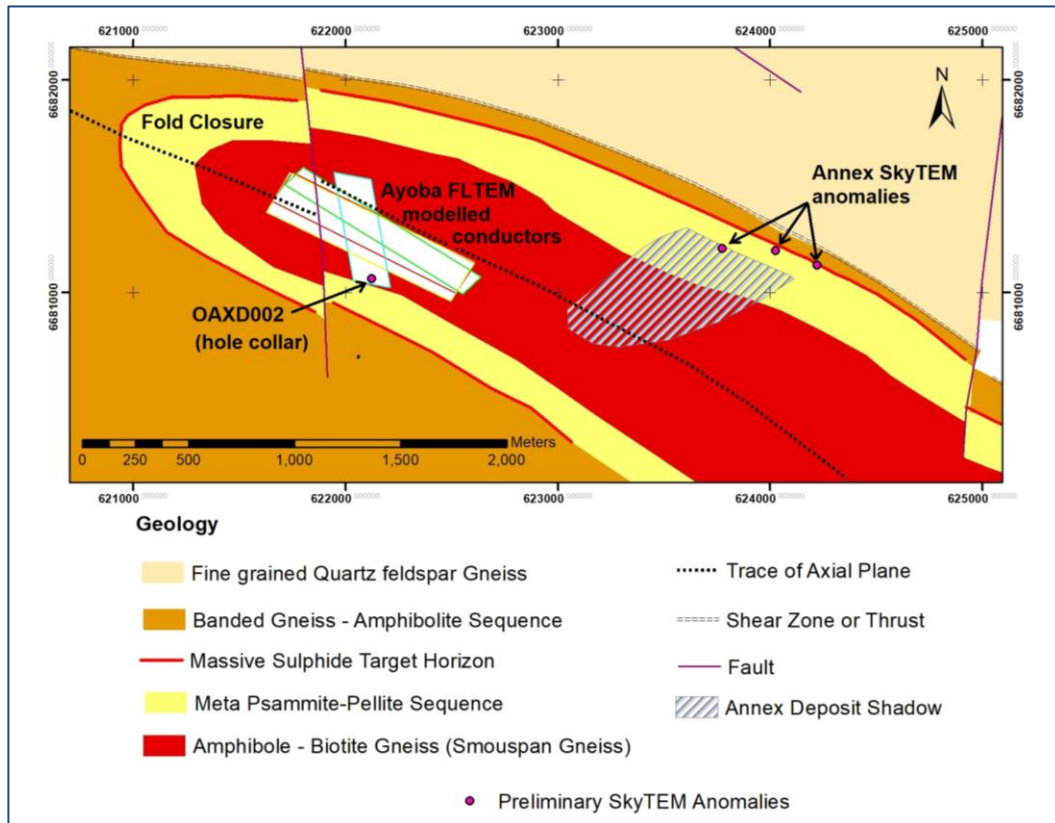


Figure 9: Section through holes OAXD002 and OAXD002\_D1 showing the mineralisation intersected at the Ayoba Target.

### SkyTEM™ Survey

A SkyTEM™ survey over the Repli, Repli (Doonies Pan), Vardocube and Bartotrax Prospecting permits, covering 148km<sup>2</sup>, was completed on 9 December 2018 (Figures 9 and 10) (refer ASX release 16 January 2019). The survey was flown with the highly innovative SkyTEM™ 312 high power technology for deep target imaging. This high-power system, with a peak moment up to 1,000,000 NIA, is optimised to provide an exceptional depth of investigation, due to the high moment mode with high current and low base frequency of 12.5Hz.

Several AEM anomalies were identified during a preliminary review of the data by the Company's Perth-based geophysical consultants, Southern Geoscience Consultants (Figure 11). Due to the high-level of noise from the Prieska Mine infrastructure, tailings dam, pipelines, Eskom sub-station, solar power plant and power lines, the data requires extensive processing to mask the cultural feature noise in order to detect the subtle geological source conductors being targeted.

The preliminary results of the AEM data show subdued AEM response over both the main Prieska Deposit, where cultural features provide a high noise effect, and the Ayoba Target. Modelling of the FLTEM data at Ayoba showed a conductor with a low conductance of 100S to 150S (Siemens) correlating well with the intersected mineralisation, that is pyrite dominated, with minor pyrrhotite that is unlikely to yield strong conductance (refer ASX release 28 November 2018). Final processing of the data is in progress and is expected by end January 2019.

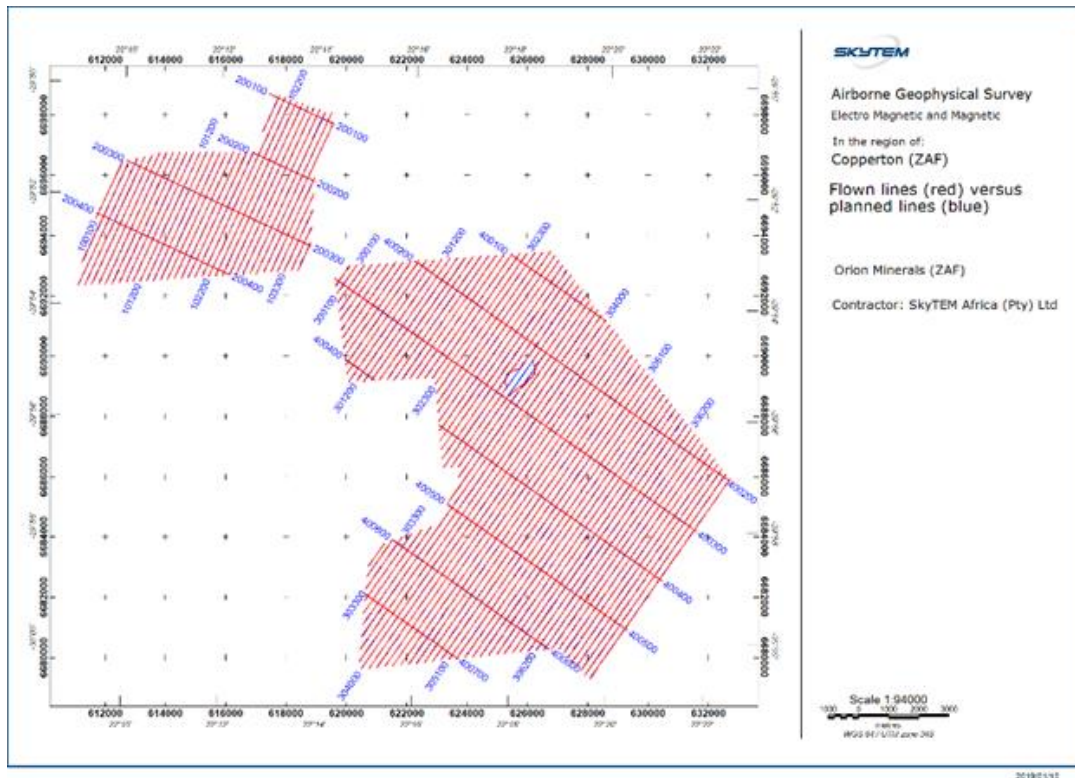


Figure 10: Plan showing the flight lines of the SkyTEM™ survey over the Repli, Repli (Doonies Pan), Vardocube and Bartotrax Prospecting Right areas.

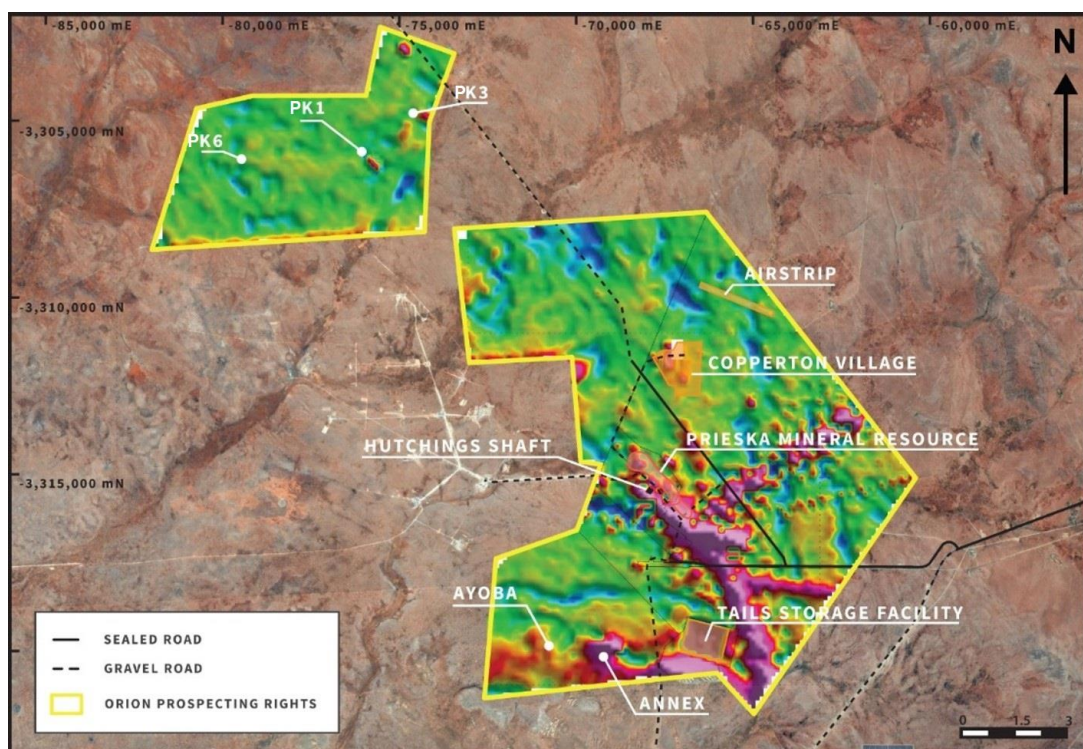


Figure 11: Preliminary results of SkyTEM™ survey showing CH30Z response and location of known deposits at Prieska, Annex, Doonies Pan (PK1, PK3 and PK6) and the Ayoba discovery.

## Regional Exploration (South Africa)

### Overview of Regional Activity

The Company maintains a substantial and prospective land-holding in the Areachap Belt (Figure 12), and exploration programs on regional VMS and Ni-Cu-Co-PGE projects have been accelerated during the Quarter. The Areachap Belt is analogous to other Proterozoic Mobile Belts hosting major VMS and magmatic Ni-Cu-Co-PGE deposits.

VMS deposits almost always occur as “clusters” associated with volcanic spreading centres, with four such centres having been identified in the Areachap Belt. The Company is currently prospecting for VMS deposits on its near-mine projects and on the Masiqhame Prospecting Rights (Figure 12). The Kantienpan and Bokspits Zinc-Copper Deposits are currently the two most prominent deposits on the Masiqhame Prospecting Right.

Similarly, world-class nickel deposits tend to also occur in clusters both on prospect and regional scales. Within these intrusive centres, a small number of the intrusions tend to host the best mineralisation, depending upon the intrusion magma-flow dynamics and timing of magmatic sulphide immiscibility and transport. Several mafic intrusive bodies with nickel and other associated mineral occurrences are known to exist on the Namaqua-Disawell Prospecting Rights (Figure 12). The setting of mineralisation has been confirmed to be analogous to other orogenic-hosted, deep-seated magma conduit complexes such as Kabanga (Tanzania), Nova (Australia), Ntaka Hill (Tanzania), Akelikongo (Uganda), and Limoeiro (Brazil). Conduit style mineralisation is currently the top priority global target for magmatic Ni-Cu-PGE sulphide exploration.

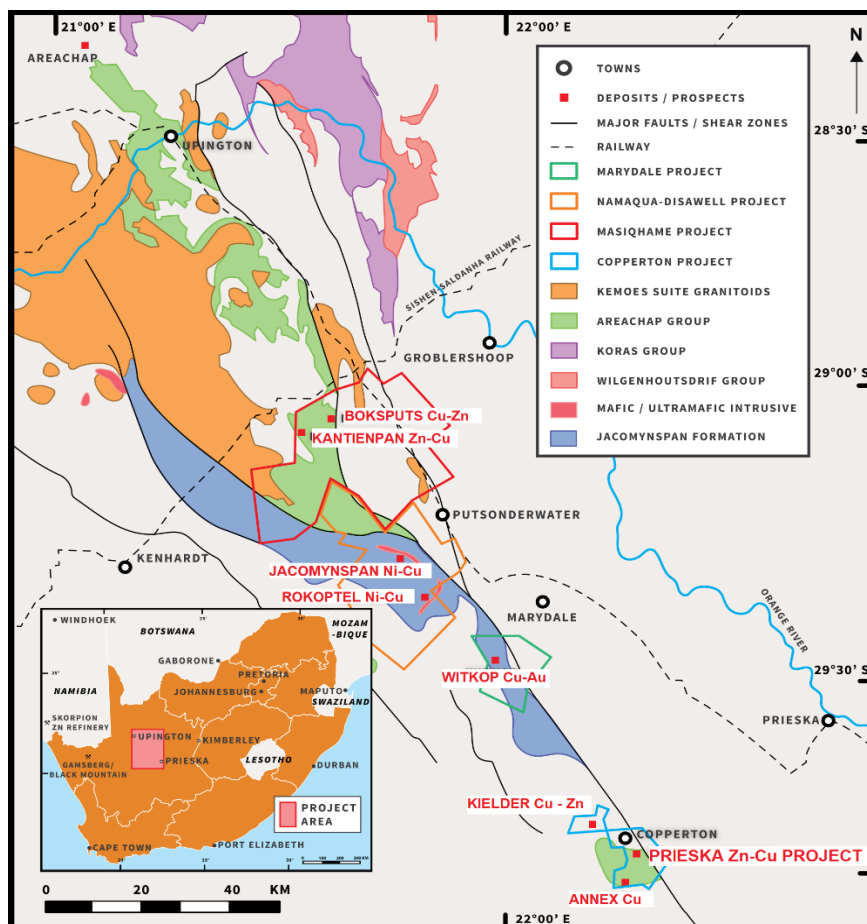


Figure 12: Regional geology map of the Areachap Belt showing prospecting rights held by or currently under option to, the Company, and noted mineral occurrences as per published data from South African Council for Geoscience.

Electro Magnetic (**EM**) geophysical methods are the primary tool for discovery of massive magmatic Ni-Cu-Co-PGE deposits. Due to the complexity of these intrusions, an innovative approach to exploration is required to resolve the locations of economic mineralisation. This entails usage of airborne, ground, and down-hole surveying systems. Regional exploration on the Masiqhame and Namaqua-Disawell Prospecting Rights continued. Field mapping and interpretation of drill information and geochemical data is currently underway. Modern EM methods have advanced a great deal since the last systematic exploration took place in the Areachap Belt, and the Company stands to benefit from its approach in using the latest EM techniques in its regional exploration program.

## **Namaqua Disawell Project Area**

### Overview

The Jacomynspan Deposit (Figure 13) was discovered by Anglo American Prospecting Services (**AAPS**) with drilling carried out along a 4km strike length. Resource drilling was carried out to a depth of 900m over 1.3km of the strike by AAPS. Disseminated nickel-sulphide mineralisation was intersected with widths varying between 30m to 70m (refer ASX release 14 July 2016). Two other Ni-Cu deposits, Area 4 and Rok Optel, were investigated during the 1970s by AAPS, Newmont, Phelps Dodge and Hoch Metals.

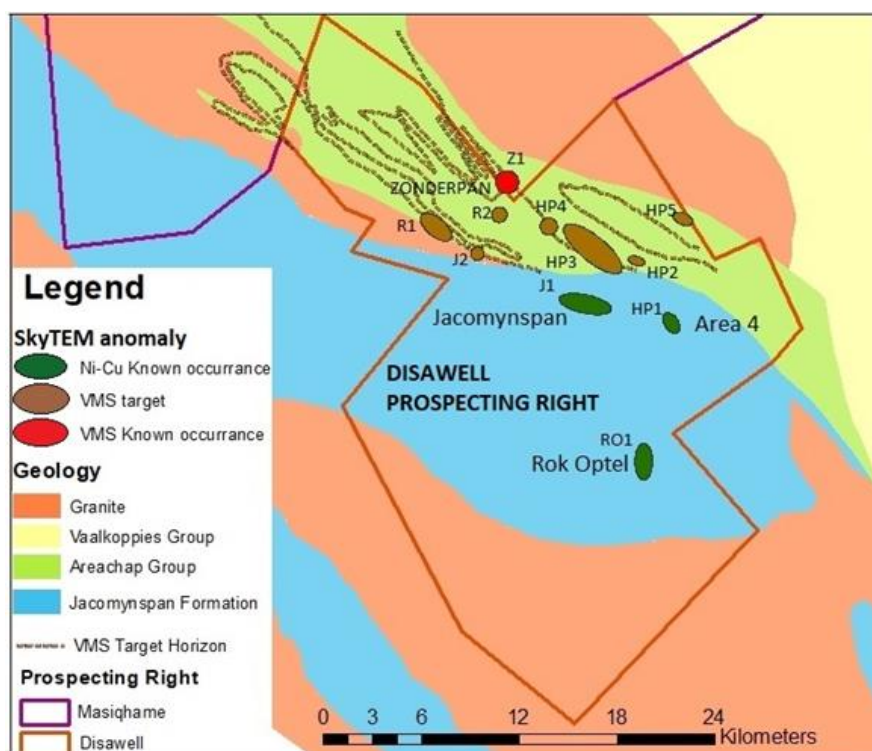
The Company believes a substantial exploration opportunity exists within the project area to search for higher-grade, massive and semi-massive accumulations of nickel-bearing sulphides, analogous to the Kabanga Deposit (Tanzania) and the Nova-Bollinger Deposit (Fraser Range Province of Western Australia).

Work during this Quarter within the project area focused on the Rok Optel Prospect (Figure 13), with the following work being completed:

- Two diamond drill-holes (OROD003 and OROD004) at the Rok Optel Prospect were completed. A total of 789m was drilled during the Quarter. Assay results were received and accepted for drill hole OROD003. Although assay results of OROD004 were received, quality assurance issues are still being verified with the laboratory.
- A down-hole EM survey was completed in drill hole OROD002, indicating an off-hole conductor, which was tested with hole OROD004.
- A focused field mapping program at Rok Optel to assess the validity of the Newmont mapping data and to characterise, contextualise and understand the geology has been undertaken. This has better contextualised the intrusions and provided control for interpretation of the drill results.

Ongoing work includes:

- Mapping over SkyTEM™ anomalies.
- Mapping of the area between Jacomynspan and Rok Optel to further define the geology of that area.



**Figure 13: Locality Map showing SkyTEM™ anomalies followed up on the Disawell Prospecting Right.**

### Rok Optel Prospect

The Rok Optel Prospect was discovered during the early 1970s and was initially explored by Phelps Dodge and Hochmetals SWA. Mapping, Induced Polarisation (IP) geophysics, and drilling were carried out. The intrusion was interpreted to be a mafic dyke emplaced parallel to the gneiss foliation, striking north to north-north-east and dipping 65° - 75° to the west. Magmatic mineralisation is located at several horizons, as disseminated, coarse patches, and massive stringers associated with coarse-grained feldspathic amphibolite.

### Fixed Loop Time Domain Electro Magnetic (FLTDEM) surveys

The FLTDEM conductors on Rok Optel have conductivities greater than 3000S. The position of these conductors relative to historical drill-holes are shown in Figure 14, and the details of the modelled plates in Table 6. The historical drilling intersected zones of lower conductance on the edges of the newly modelled plates (Figures 15 and 16).

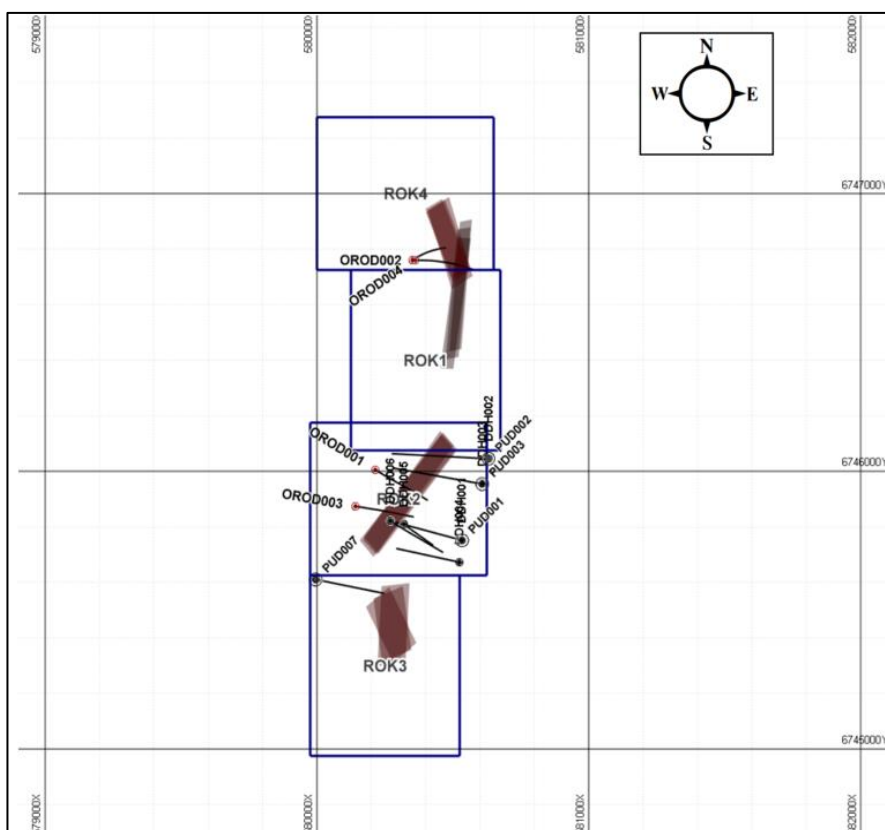


Figure 14: Plan showing FLTDEM grids, conductors and all drill holes on the Rok Optel Prospect.

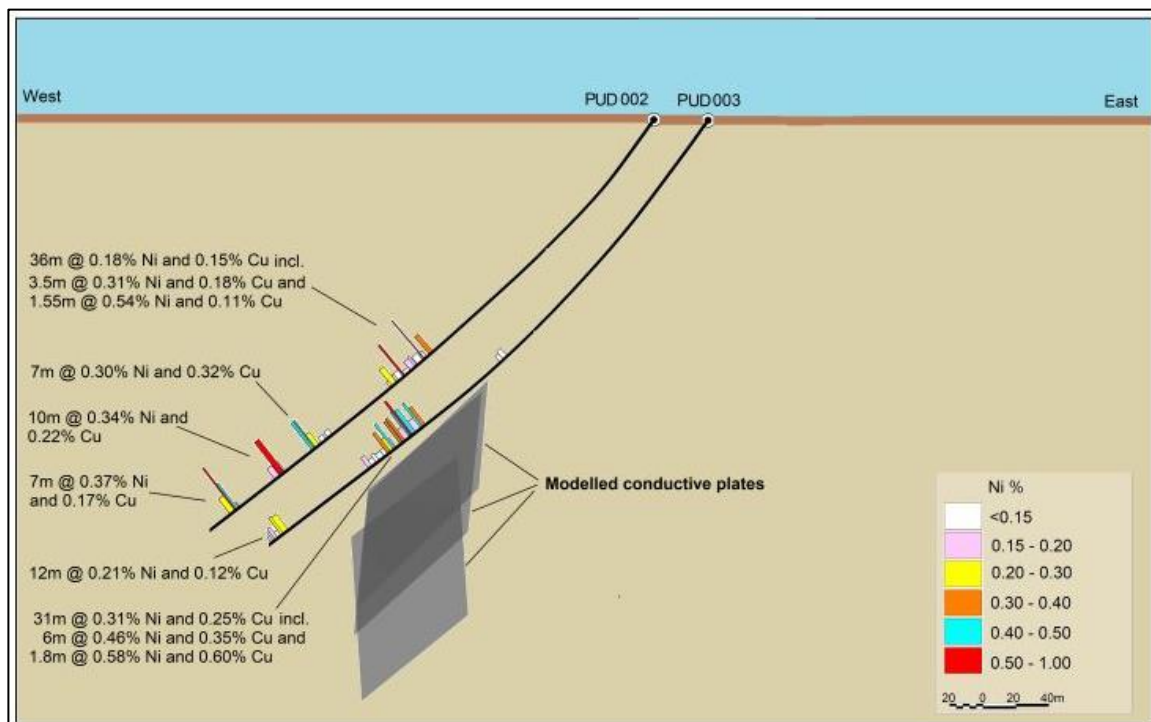


Figure 15: Cross Section through historic holes PUD002 and PUD003 showing the drill hole traces and mineralisation relative to the Company's modelled FLTDEM conductive plates.

**Table 6: FLTDEM plate parameters for the Rok Optel Prospect.**

| Target    | Loop | Plate Dimensions (m) | Plate Conductance (Siemens) | Approximate Plate Depth (m) |
|-----------|------|----------------------|-----------------------------|-----------------------------|
| Rok Optel | ROK1 | 475 x 90             | 2050                        | 230                         |
|           |      | 475 x 90             | 2500                        | 250                         |
|           |      | 475 x 85             | 3600                        | 280                         |
|           | ROK2 | 475 x 100            | 1250                        | 200                         |
|           |      | 500 x 95             | 1700                        | 225                         |
|           |      | 475 x 85             | 2900                        | 275                         |
|           | ROK3 | 130 x 300            | 850                         | 275                         |
|           |      | 135 x 250            | 950                         | 300                         |
|           |      | 120 x 275            | 1250                        | 300                         |
|           | ROK4 | 100 x 330            | 5250                        | 295                         |
|           |      | 90 x 300             | 7200                        | 310                         |
|           |      | 80 x 300             | 9400                        | 320                         |

#### Diamond Drilling

The drill-hole status at 31 December 2018 is summarised in Table 7. Holes OROD003 and OROD004 were completed during Q4 2018.

**Table 7: Rok Optel diamond drill status at 31 December 2018.**

| Drill Hole | X UTM34S | Y UTM34S  | Elevation (m) | Final Depth (m) | Dip (degrees) | Azimuth (degrees) |
|------------|----------|-----------|---------------|-----------------|---------------|-------------------|
| OROD001    | 580,215  | 6,746,005 | 1059          | 412.06          | -60           | 120               |
| OROD002    | 580,360  | 6,749,760 | 1059          | 491.95          | -65           | 90                |
| OROD003    | 580,142  | 6,745,874 | 1,057         | 532.73          | -70           | 102               |
| OROD004    | 580,352  | 6,746,760 | 1,050         | 531.52          | -80           | 47                |

Drill-hole OROD003, testing an off-hole conductor in hole OROD001, intersected several sills of sulphide-bearing mafic to ultramafic intrusive rocks from 89.99m to 530.40m depths. The hole was completed at 532.73m. The intersected mineralisation comprises multiple injected massive sulphide veinlets as well as patchy and net textured sulphide mineralisation varying from 1 to 21cm in width. The highest-grade intersection was over an interval of 0.84m from 397.27m down-hole.

Drill-hole OROD004 aimed to test an off-hole conductor indicated by a DHTDEM survey in drill-hole OROD002, intersecting mafic to ultramafic intrusive rocks over a down-hole width of 164m. A 19m-thick zone of mineralisation, including injected massive sulphide veins and an injected sulphide-host rock breccia, was intersected from 419.00m down-hole. The hole was completed at 531.52m.

#### Down-hole Time Domain Electro Magnetic surveys

A DHTDEM survey was undertaken in drill-hole OROD003 to assess whether there is any off-hole conductance related to intersected mineralisation. Three off-hole conductors with conductance's of 7,500S, 16,000S - 18,000S and 16,000S - 17,000S were identified. The results are shown in Table 8.



### Area 4 Prospect

The Area 4 Prospect (**Area 4**) was surveyed using two FLTDEM grids. Seven plate models of conductance ranging from 350S to 2000S, with smaller dimensions characteristic of semi-massive to massive sulphide mineralisation within or on margins of disseminated sulphide mineralisation, have been modelled (Figures 17 and 18).

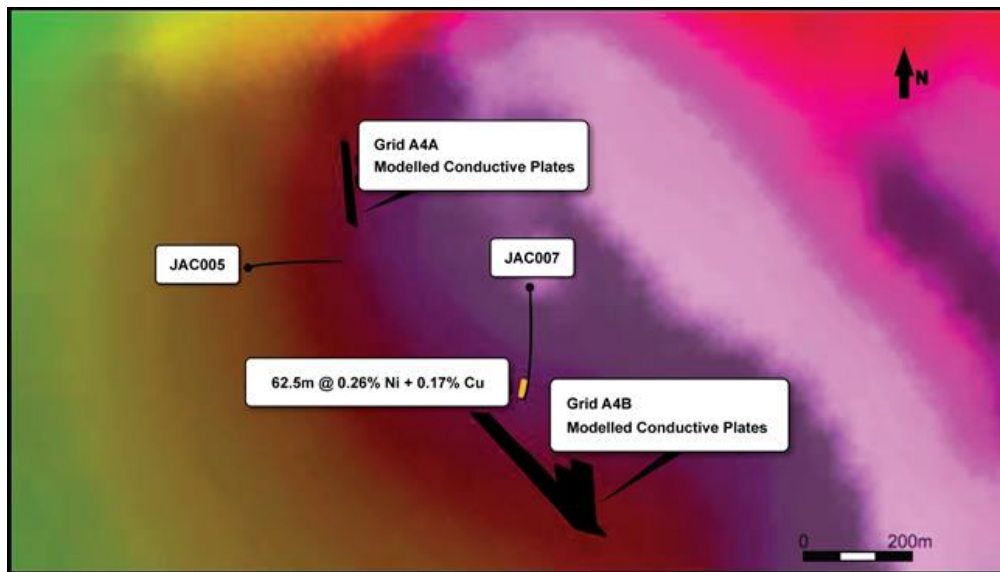


Figure 17: Plan showing EM conductors (black) and historic drill results on Area 4 overlain on an airborne magnetic image.

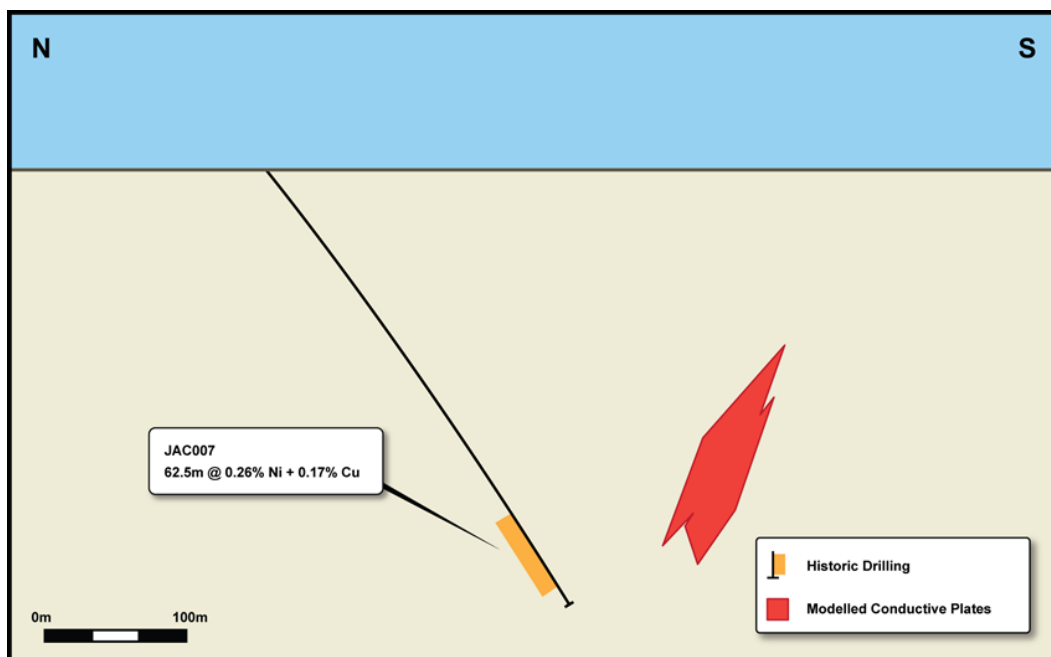


Figure 18: Section looking east through drill hole JAC007 showing the Ni-Cu sulphide intersection and newly detected FLTDEM conductors at Area 4.

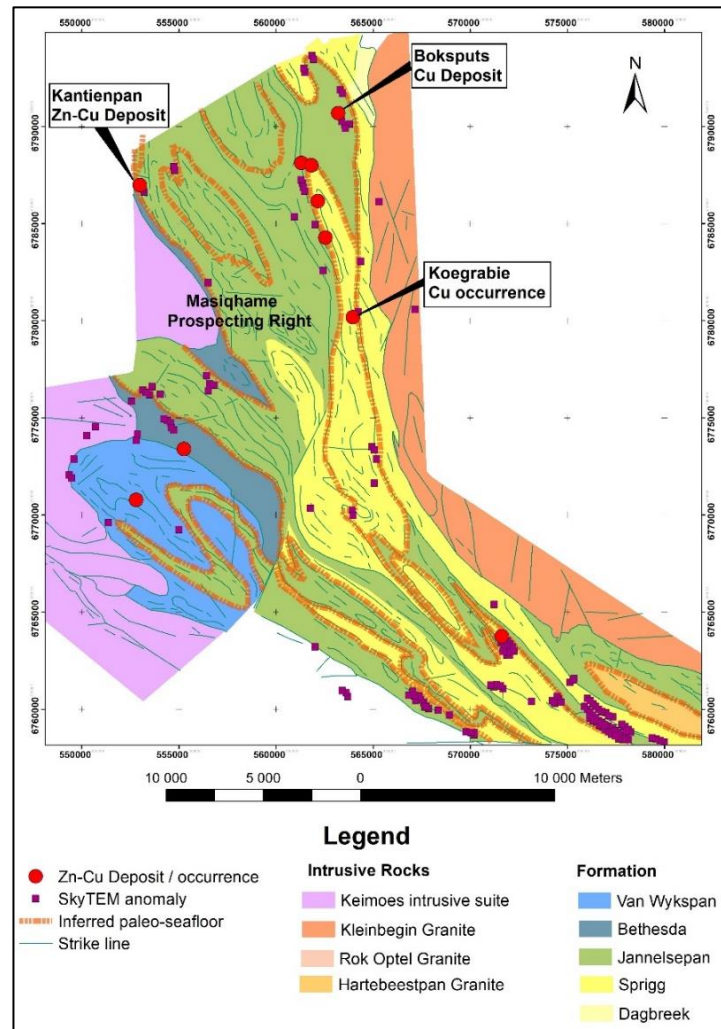
### **Masiqhamé Project Area**

#### Overview

This project is defined in terms of the Masiqhamé tenement holding and includes the Kantienpan and Bokspuits zinc-copper deposits and shows regional potential for hosting VMS zinc-copper and nickel sulphide mineralisation.

### SkyTEM™ anomalies associated with a paleo-sea floor setting

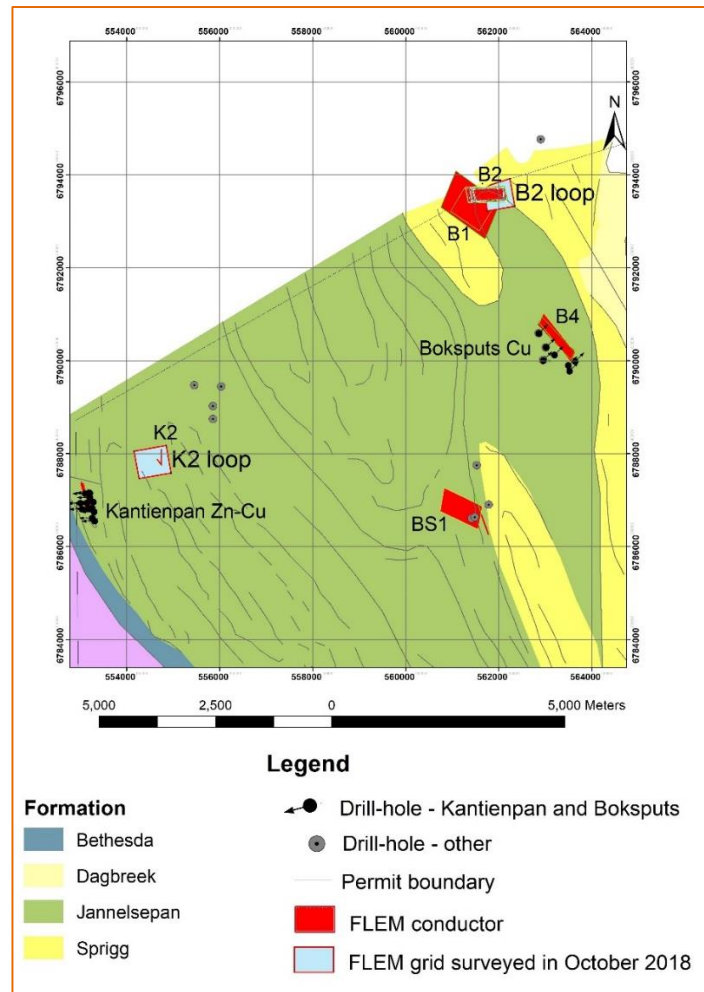
The airborne magnetic data obtained with the SkyTEM™ surveys is superior to any regional airborne magnetic data previously available over the prospecting right and allowed for detailed regional geological interpretations (Figure 19). These interpretations were based on published data and field mapping in conjunction with aeromagnetic data. Using the Kantienpan and Bokspits areas as type localities, a paleo-seafloor setting was identified, and mapped out, using the magnetic data. VMS deposits form on, or close to, the seafloor and as such, the paleo-seafloor became a target horizon for discovering VMS deposits.



**Figure 19: Interpretive geological map of the Masiqhame Prospecting Right showing the inferred paleo-seafloor, known zinc-copper deposits/occurrences and SkyTEM™ anomalies.**

### The Bokspits Area and K2 Anomaly

Geological setting, conductivity, coherency and size of SkyTEM™ anomalies were used as criteria to select VMS targets at Masiqhame and Disawell. Five of the anomalies have now been covered with FLTEM surveys including B1, B2, B4, K2 and BS1, with variances in the anomaly's conductivities varying from weak to strong (Figures 19 and 20, Table 10). The K2 and K3 surveys were completed during October 2018.



**Figure 20: Geological map of the Bokspits-Kantienpan area showing the B2 and K2 FLTEM grids and conductors relative to the Bokspits and Kantienpan Zn-Cu deposits and conductors outlined during Q3 2018.**

**Table 10: Summary off the modelled conductors in the Bokspits area.**

| ID  | Size                                                                          | Depth | Conductance  | Dip  | Geology                                                          |
|-----|-------------------------------------------------------------------------------|-------|--------------|------|------------------------------------------------------------------|
| B1  | 1000 X 1000m                                                                  | 500m  | 3000S        | SW   | Meta psammite / pelite and amphibolite. Minor exhalites present  |
| B2  | 400 X 1000m                                                                   | 350   | 1500 - 2500S | W    | Meta psammite / pelite and amphibolite. Minor exhalites present  |
| B4  | 300 X 1000m<br>plunge NW                                                      | 350m  | 400S         | 60SW | Sand cover. Mag interpretation show associated fold closure      |
| BS1 | 800 X 700m                                                                    | <100m | 40S          | W    | Meta volcano sedimentary package. Thin exhalite horizon present. |
| K2  | Narrow confined conductor plunging N-NNW from shallow depth. Low conductance. |       |              |      |                                                                  |

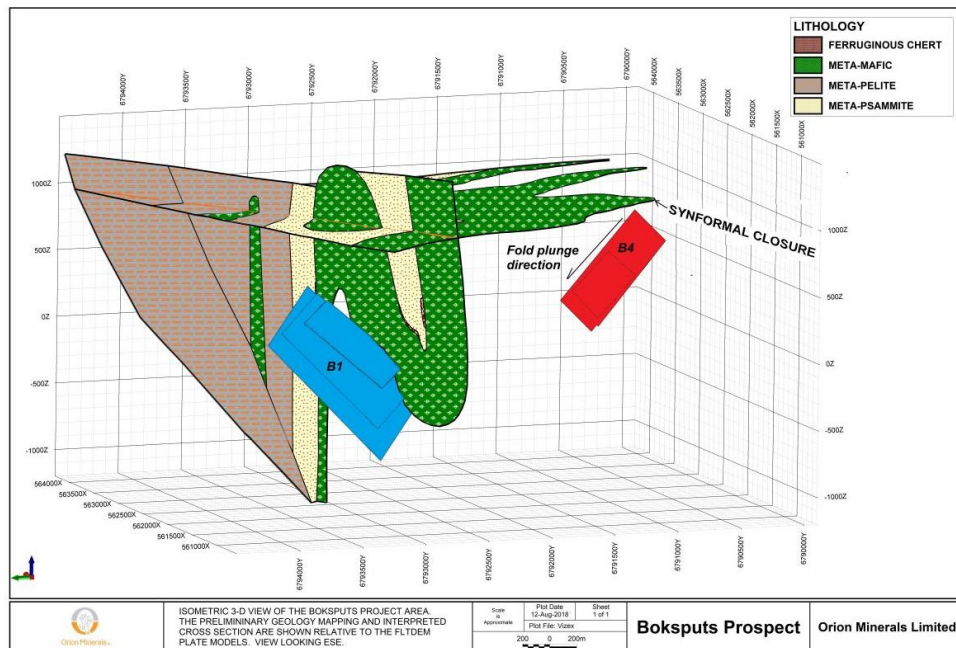
Three of the FLTEM conductors, B1, B2 and B4 offer priority follow-up targets (Figure 20) (refer ASX release 24 September 2018). Mapping and structural interpretations over the B1 target were completed and show the conductor to:

- occur in similar stratigraphic positions to the VMS style mineralisation at Bokspits;
- have a favourable stratigraphic and structural setting, occurring on a prospective contact between amphibolite and meta-psammite sequences (Figure 21); and

- have dimensions that show the causative body to be of relatively large volumes.

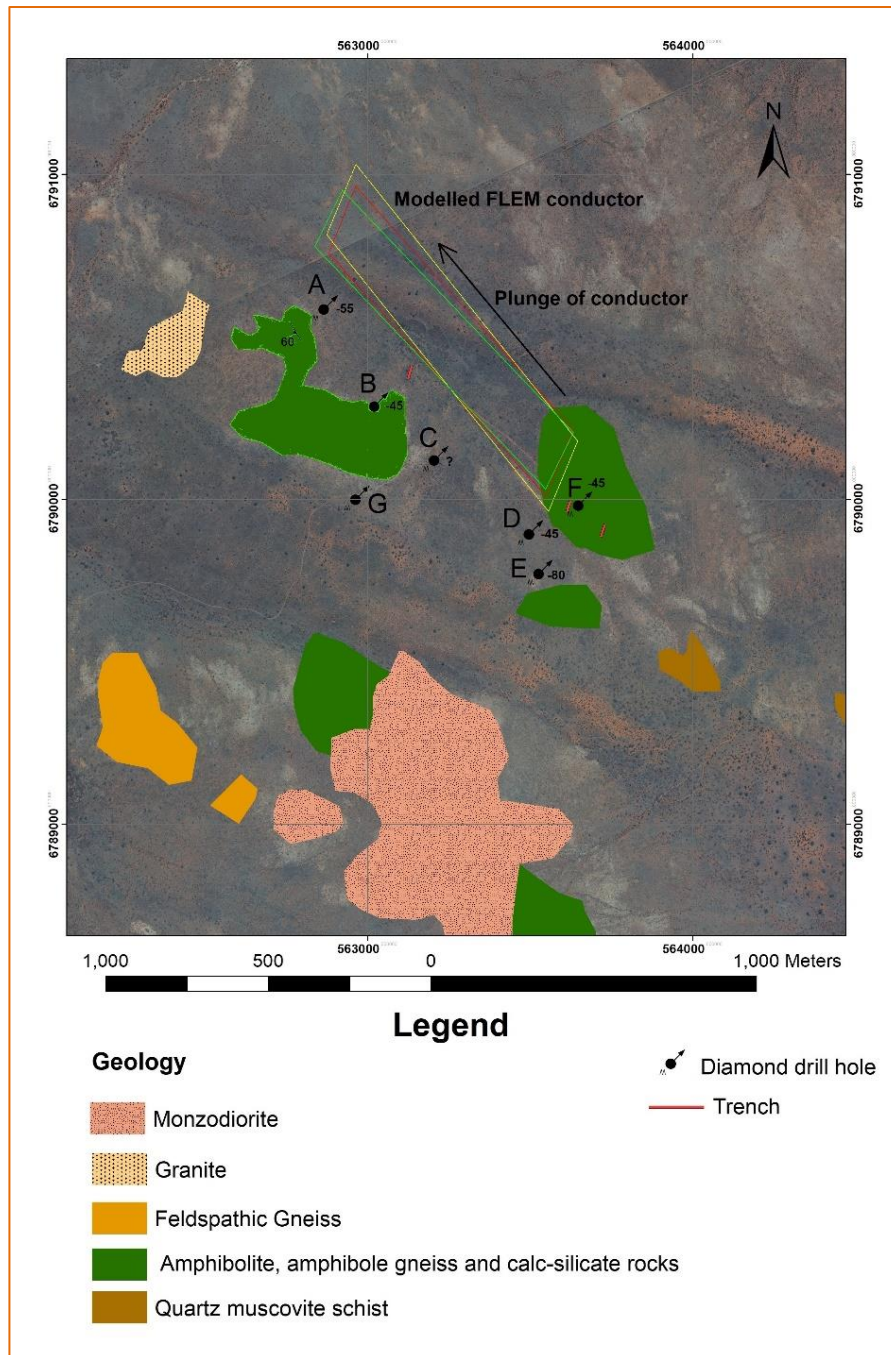
It is doubtful whether IP surveys used in the 1970s could have detected a 500m deep conductor like B1, and no evidence could be found that conductors B1 and B2 were drill tested in the past.

The B2 conductor is offset from the B1 conductor, at shallower depth and of lower conductance.



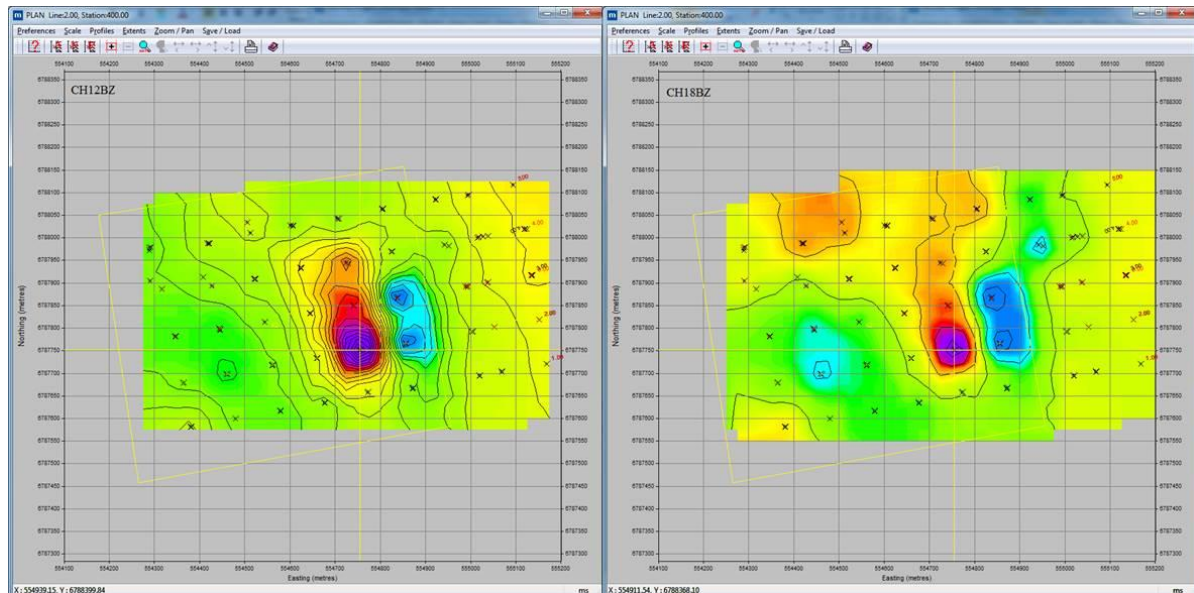
**Figure 21: Three-dimensional view looking south-east and showing the stratigraphic and structural setting of the B1 and B4 conductors at the Bokspits Prospect.**

Conductor B4 occurs in a fold hinge and is orientated parallel to the plunge direction of a tightly overturned syn-formal structure. The structural stratigraphic setting and spatial association with known mineralisation makes the B4 conductor a highly-prospective VMS target (Figures 20 and 21). Recent mapping shows seven diamond drill holes drilled along strike of the conductor (Figure 22). It is known that copper mineralisation was intersected in these holes, but due to the plunge of the conductor, it is doubtful whether these holes fully tested the anomaly. Holes A to D would have intersected the mineralisation at roughly the same depth, with holes A to C being too shallow and D to F missing the conductor (Figure 22). Only drill-hole G would have intersected the conductor if drilled deep enough i.e. in excess of 500m. Currently only the collar positions, azimuth and inclination of these holes are known. Data compilations and field mapping is ongoing.



**Figure 22: Map showing drill hole collars following the strike of the B4 conductor at the Bokspots Prospect.**

The K2 conductor is a near surface feature and appears to plunge shallowly to moderately north - northwest with a steep dip and narrow width but elongated down-dip/down-plunge and is moderately conductive (Figure 23). Reconnaissance field mapping failed to explain the anomaly and more work is required.



**Figure 23: Maps showing the K2 conductor on channels 12 and 18. The hot colours show high conductivity.**

### Kantienpan

As part of characterising the Zn - Cu mineralisation on the Masiqhamé Prospecting Right, and to gain a better understanding of controls on mineralisation at Kantienpan, field mapping was undertaken over the deposit during Q4 2018 (Figure 24). Mapping in the area is ongoing. At this stage the following is concluded from the mapping:

- Mineralisation occurs close to the contact between a kinzigite (meta-pelitic rocks) and mixed unit of quartz-feldspar-amphibole gneiss, calc-silicate rocks and kinzigite.
- It should be possible to map out the stratigraphic position of the Zn-Cu mineralisation, as defined on Kantienpan, on a regional scale.
- The northern limit to the sulphide mineralisation coincides with a fault displacement.

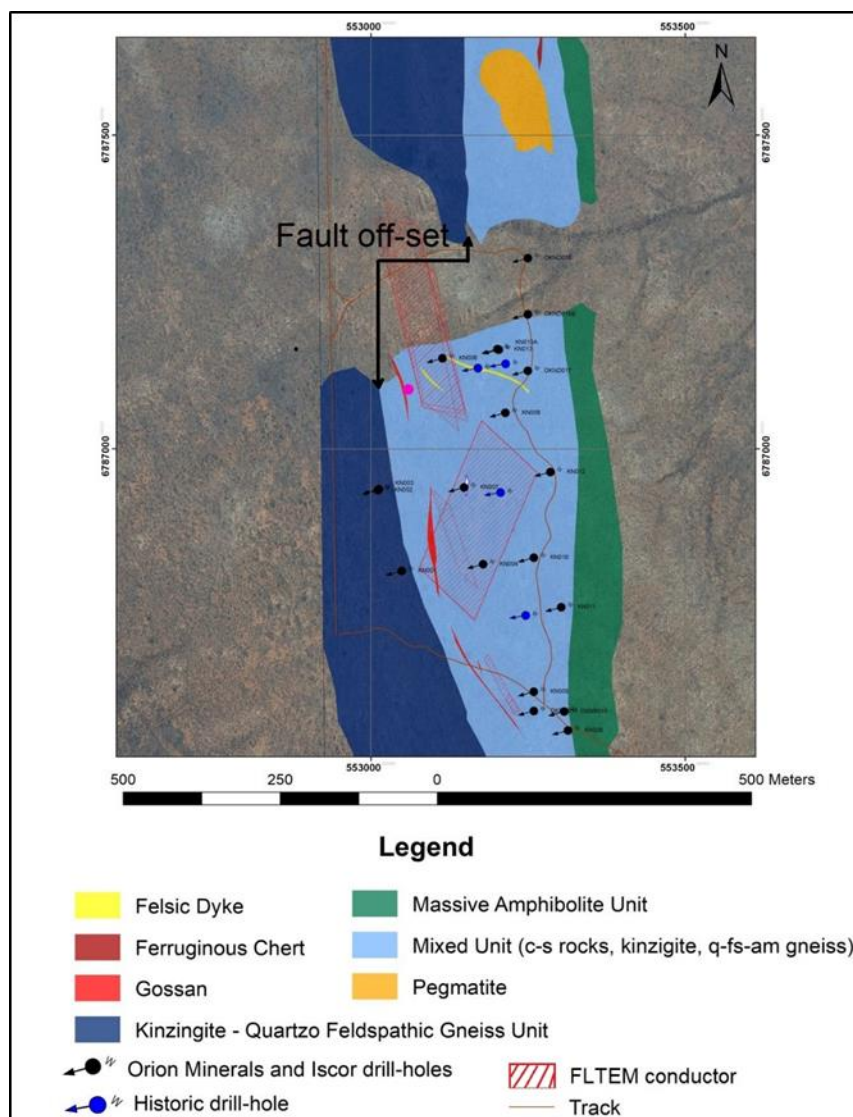


Figure 24: Geological map of the Kantienpan Deposit showing drill-holes, EM conductors and the fault off-set on the northern limit of the mineralisation.

### Marydale Gold-Copper Project (Witkop)

This project includes the known Marydale Gold-Copper Deposit. In addition to the Prieska Project, the Agama transaction gives the Company exploration rights over the Marydale Gold-Copper Project located 60km north of the Prieska Project. No field work was undertaken during the Quarter.

### Australian Projects

#### Connors Arc Epithermal Gold Project (Queensland)

During the Quarter, the sale of the Company's Connors Arc Project to Evolution Mining Limited (**Evolution**) completed, with government approvals obtained and the final payment of \$0.5M received by the Company.

The Company retains a 2% royalty on net smelter returns from the sale of gold recovered and sold by Evolution from the tenements acquired as part of the sale, up to a value of \$5M.

## Fraser Range – Nickel-Copper Projects (Western Australia)

Orion maintains a sizeable tenement package in the Fraser Range Province of Western Australia which Independence Group NL (ASX: IGO) is currently earning in to via a Joint Venture Agreement (**JVA**, refer ASX release 10 March 2017).

As stated in previous Quarterly Reports, IGO has conducted Spectrum Airborne EM surveys and rehabilitated tracks and pads from previous aircore drilling programs. During the Quarter, rehabilitation on E39/1653 was completed and sections E39/1654 and E69/2707 were also rehabilitated.

A desktop review of all EM, magnetic, gravity, aircore and petrographic data, has produced several targets which IGO plan to test in 2019. Drilling on the Company's Fraser Range Joint Venture ground is expected to begin in March 2019, with results due before the end of June 2019.

Under the JVA, IGO is responsible for all exploration on the tenements and provides regular updates to Orion of its activities and results arising from them.

## Walhalla Gold and Polymetals Project (Victoria)

During the Quarter, the Company did not carry out any exploration activity on the Walhalla Project.

### Tenement Schedule

| Tenement                            | Project          | Ownership Interest | Change in Quarter | Joint Venture Partner                                |
|-------------------------------------|------------------|--------------------|-------------------|------------------------------------------------------|
| <b>South Africa</b>                 |                  |                    |                   |                                                      |
| NC30/5/1/1/2/10445PR                | PCM              | 73.33%             |                   | ---                                                  |
| NC30/5/1/1/2/10138MR                | PCM              | 73.33%             | ---               |                                                      |
| NC30/5/1/2/2/10244PR                | Marydale         | 73.33%             | ---               | ---                                                  |
| NC30/5/1/1/2/11841PR <sup>(1)</sup> | Vardocube        | 70.00%             | ---               | ---                                                  |
| NC30/5/1/1/2/11850PR <sup>(1)</sup> | Bartotrax        | 74.00%             | ---               | ---                                                  |
| NC30/5/1/1/2/10032MR <sup>(1)</sup> | Namaqua-Disawell | 18.50%             | ---               | Namaqua Nickel Mining (Pty) Ltd                      |
| NC30/5/1/1/2/10938PR                | Namaqua-Disawell | 18.50%             | ---               | Disawell (Pty) Ltd                                   |
| NC30/5/1/1/2/11010PR                | Namaqua-Disawell | 18.50%             | ---               | Namaqua Nickel Mining (Pty) Ltd                      |
| NC30/5/1/1/2/816PR                  | Masiqhame        | 49.00%             | ---               | Masiqhame 855 (Pty) Ltd                              |
| <b>Western Australia</b>            |                  |                    |                   |                                                      |
| E28/2367                            | Fraser Range     | 30%                | ---               | Independence Group NL                                |
| E28/2378                            | Fraser Range     | 30%                | ---               | Independence Group NL                                |
| E28/2462                            | Fraser Range     | 30%                | ---               | Independence Group NL                                |
| E28/2596                            | Fraser Range     | 30%                | ---               | Independence Group NL                                |
| E39/1653                            | Fraser Range     | 35%                | ---               | Independence Group NL & Geological Resources Pty Ltd |
| E39/1654                            | Fraser Range     | 10%                | ---               | Independence Group NL & NBX Pty Ltd                  |
| E69/2379                            | Fraser Range     | 10%                | ---               | Independence Group NL & Ponton Minerals Pty Ltd      |
| E69/2380                            | Fraser Range     | 10%                | ---               | Independence Group NL & Ponton Minerals Pty Ltd      |
| E69/2707                            | Fraser Range     | 10%                | ---               | Independence Group NL & Ponton Minerals Pty Ltd      |
| <b>Victoria</b>                     |                  |                    |                   |                                                      |
| MIN5487 <sup>(2)</sup>              | Walhalla         | 100%               | ---               | ---                                                  |
| EL5340                              | Walhalla         | 100%               | ---               | ---                                                  |
| EL5348                              | Walhalla         | 100%               | ---               | ---                                                  |

(1) Execution of Mining Right pending.

(2) MIN 5487 has been sold to Centennial Mining Ltd.

## Corporate

### Cash and Finance

Cash on hand at the end of the Quarter was \$2.0M.

### Tembo Loan Agreement

Following Quarter end, on 25 January 2019, the Company announced that Tembo Capital Mining Fund II LP (**Tembo**) has continued its strong support of Orion through providing a new unsecured \$3.6M Bridge Loan Facility (**Loan Facility**).

Under the terms of the Loan Facility, Tembo may at its election, have the balance of the Loan Facility (including capitalised interest and fees) (**Outstanding Amount**) repaid by the issue of ordinary shares in Orion (**Shares**) to Tembo at a deemed issue price of 2.6 cents per Share (subject to receipt of Shareholder approval), being the same conversion price as the 2017 Convertible Notes.

Proceeds from the Loan Facility will be used principally to progress the bankable feasibility study, which is on track for completion in Q2 2019 and to repay the current Bridge Loan (\$0.6M).

The key terms of the Loan Facility are:

- Loan Facility Amount: Up to \$3.6M, available in two tranches. The first tranche is to be in one instalment of \$0.6M to repay all amounts owing under the current Bridge Loan, with further tranches to be in minimum instalments of \$1M each;
- Interest: Capitalised at 12% per annum accrued daily on the amount drawn down;
- Repayment: Tembo may elect for repayment of the Outstanding Amount to be satisfied by the issue of Shares by the Company to Tembo at a deemed issue price of 2.6 cents per Share, subject to receipt of Shareholder approval. The Outstanding Amount must be repaid by 25 January 2020, or if Tembo elects to receive Shares in repayment of the Outstanding Amount in lieu of payment in cash, the date on which the Shares are to be issued to Tembo (or such later date as may be agreed between Tembo and Orion);
- Establishment fee:
  - Cash - capitalised 5% of the Loan Facility Amount, payable on the Repayment date; and
  - Options - 11M unlisted Orion options, exercisable at a price of 3.0 cents per option, expiring on the date which is 5 years after the date of issue of the options, provided that Orion's obligation to issue Shares on exercise of the options is subject to receipt of shareholder approval.
- Security: Loan Facility is unsecured.

### Extension of Maturity Date of Convertible Notes

On 7 February 2017 Orion announced a proposed capital raising through the issue of convertible notes to various sophisticated and professional investors, each with a face value of 2.6 cents (**Convertible Notes**). The Company obtained Shareholder approval for the issue of the Convertible Notes on 13 March 2017 and on 17 March 2017, the Company announced the issue of 232.69M Convertible Notes to the value of \$6.05M (each with a face value of 2.6 cents). Key terms of the Convertible Notes are set out in the Company's ASX release dated 8 March 2017.

In accordance with the Convertible Note terms, the Maturity Date of each Convertible Note was 17 March 2019. In support of the ongoing capital requirements of the Company, in January 2019, the Noteholders approved extension of the Maturity Date from 17 March 2019 to 30 September 2019.

### Annual General Meeting

The Annual General Meeting of shareholders of the Company was held at Clayton Utz, Level 27, QV. 1 Building, 250 St Georges Terrace, Perth, Western Australia on Thursday, 29 November 2018. All resolutions put to shareholders at the meeting were carried on a show of hands.