



Orion Minerals

ASX/JSE RELEASE: 31 July 2019

Quarterly Activities Report For Period Ended 30 June 2019

HIGHLIGHTS

- **Prieska Project maiden Ore Reserves declared and Feasibility Studies completed:**
 - Bankable Feasibility Study completed on modern 2.4Mtpa underground and open pit mining operation at the Prieska Project in the Northern Cape region of South Africa.
 - Maiden Probable Ore Reserve¹ of 13.62Mt at 1.1% Cu and 3.2% Zn for 143kt of contained copper and 433kt of contained zinc².
 - Total milled production of 20.8Mt at 1.1% Cu and 3.4% Zn (comprising 65% Probable Ore Reserves and 35% Inferred Mineral Resources³).
 - Robust project economics⁴ with:
 - Undiscounted free cash-flows of AUD1.1 billion pre-tax (AUD819M post-tax);
 - NPV of AUD574M pre-Tax (AUD408M post-tax) at an 8% discount rate;
 - IRR of 38% pre-Tax (33% post-tax);
 - Peak funding requirement of AUD378M;
 - Payback period from first production of 2.9 years; and
 - All-in-sustaining margin of 44%.
 - Outstanding opportunities for mine plan optimisation and extending the known deposit.
- **Post-feasibility study pilot trials, optimisations and operational readiness activities commenced:**
 - Water treatment and mine dewatering field trials commenced with potential to materially improve project capital costs.
 - Enterprise optimisation process commissioned, targeting quantum improvements in project financial performance over and above an already robust Foundation Phase mining plan.
 - Key supply contracts negotiations under way in preparation for project construction approval.
- **Prieska near-mine exploration:**
 - Soil samples collected over 10 of the 14 priority areas selected from the Airborne Electro Magnetic (SkyTEM™) survey covering the near-mine prospecting rights.

¹ The Ore Reserves and Mineral Resources underpinning the Production Target have been prepared by Competent Persons in accordance with the JORC Code 2012.

² Orion confirms it is not aware of any new information or data that materially affects the information included here. 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.

³ There is a low level of geological confidence associated with Inferred Mineral Resources included in the Production Target and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the Production Target or financial forecast information will be realised.

⁴ In compliance with clause 5.1.6.1, all Material Assumptions have been previously disclosed in the announcement to the market of 26 June 2019.

- **Regional exploration program advancing:**
 - Soil sampling and mapping progressing well with 5.7km of strike covered at Kantienpan.
- **Corporate:**
 - Pivotal \$8M Capital Raising and BEE Restructure, accelerating compliance with Mining Charter 3.

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).

Category of Work	Hours Worked	
	Quarter	Financial Year to Date
Exploration	13,617	33,462
Mine Re-Entry	2,801	4,947
Total	16,418	38,409

The Lost Time Injury Frequency Rate (**LTIFR**) per 200,000 hours worked is 0.0 for the Quarter and 0.0 for the financial year to date.

Environmental Management

In April, approval was received for the Electromagnetic Capability plan (**EMC**) for the Prieska Copper-Zinc Project (**Prieska Project**) from the South African Astronomy Management Authority (**AMA**) - the governing body managing the Square Kilometre Array Radio Telescope Project (**SKA**). This EMC details how electromagnetic emissions from electrical and electronic equipment planned for use at the Prieska Project will be managed so as not to interfere with the efficient operation of the SKA radio telescope. This is an important milestone to obtaining full approval from the AMA to conduct mining operations in the region.

Community and Stakeholder Engagement

The Company facilitated the election and appointment of local community representatives onto the Prieska Project Stakeholder Engagement Forum (**SEF**). Public meetings were held in the towns of Prieska, Marydale and Niekerkshoop, where a total of ten representatives were elected. The balance of the SEF membership will comprise representatives from Company management, employees and shareholders, as well as representation from local government departments. The SEF will serve as a platform for representative community interest groups to keep apprised of developments at the Prieska Project. The inaugural meeting of the newly established SEF was held in July 2019.

In April, a community briefing session was held in Copperton to update residents and interested parties on progress with the Prieska Project, and to provide an opportunity for the community to engage with the Company's management team in an informal setting.

The Company held introductory mining familiarisation short-courses during the Quarter, with participation and successful completion by 290 high-school graduates from the Siyathemba Municipal area. The program was aimed at raising public awareness of the mining industry and the employment opportunities the industry creates. The training was facilitated by an accredited service provider, Mathome Training and Development (Pty) Ltd, and participants earned credits towards industry-recognised mining-related qualifications.

During the Quarter, the Company and the Siyathemba Municipality (**Municipality**) progressed formulating the terms of collaborating on water supply infrastructure upgrades and use, with the aim of concluding an agreement before year-end.

The Spatial Planning and Land Use Management Act (**SPLUMA**) application process was initiated this Quarter, with professional land surveys being done. The SPLUMA process will result in town planning permissions being granted to allow residential development within the Prieska town surrounds, for use for the Prieska Project and by the public in general.

Tenement Overview

During the Quarter, the Company continued works on its highly prospective South African projects, where a Bankable Feasibility Study (**BFS**) for the Prieska Project was completed and soil sampling was undertaken at the Near-Mine prospects and regional project, Kantienpan. In the Fraser Range, the Company's joint venture partner, IGO, began a drill program, as follow up testing from recent geophysical surveys that identified a number of targets.

Exploration and Mine Development

Areachap Belt Projects (South Africa)

Prieska Copper-Zinc Project

Project Overview

The Prieska Project remains the focus of the Company's activities and is at an advanced stage, with a maiden Ore Reserve estimate and a BFS having been recently completed on the project (refer ASX release 26 June 2019). The Project covers un-mined dip and strike extensions from a historical underground mining operation, where mineralisation had been delineated through extensive drilling undertaken by previous owners. The Company has digitally captured, validated and modelled all relevant project drilling data available from hard-copy sources, enabling the Company to define targets for both near-surface and deep-seated mineralisation. The near-surface target comprises oxide, supergene and primary sulphide ore to a depth of 100m which is accessible via an initial open pit mine (**+105 Level Target**). The deeper target comprises primary sulphide ore accessible via underground mining (**Deep Sulphide Target**).

The Company's strategy has been to validate and quantify the historically identified targets to a sufficient level of confidence to support a BFS, using infill and verification drilling from surface, and then develop a mining plan to exploit the resource (**Foundation Phase**). Thereafter, the Company intends to continue with extensional exploration, to define the extents of the various targets.

Feasibility Studies and Mining Right Applications

Bankable Feasibility Study

The Bankable Feasibility Study was completed during the Quarter and published on 26 June (refer ASX release 26 June 2019). The key outcomes from the BFS are listed below:

- Undiscounted free cash-flows of AUD1.1 billion pre-tax (AUD819M post-tax).
- NPV of AUD574M pre-Tax (AUD408M post-tax) at an 8% discount rate.
- IRR of 38% pre-Tax (33% post-tax).
- Peak funding requirement of AUD378M.
- Payback period from first production of 2.9 years.
- All-in-sustaining margin of 44%.
- All-in-sustaining unit costs of AUD5,470/t (USD3,773/t) of copper-equivalent⁵ metal sold.
- A maiden Probable Ore Reserve of 13.62Mt at 1.1% Cu and 3.2% Zn for 143kt of contained copper and 433kt of contained zinc⁶.
- Total planned milled production of 20.8Mt at 1.1% Cu and 3.4% Zn (comprising 65% Probable Ore Reserves and 35% Inferred Minerals Resources⁷).

The BFS investigated the commercial viability of an initial ten years of mining operation (**Foundation Phase**). The Foundation Phase would result in the establishment of mine infrastructure and operational capacity that is intended to become the platform for further mining of deposit extensions, and the exploration and mine development of neighbouring prospects.

The Foundation Phase runs for 10 years of run-of-mine production at a design ore processing rate of 2.4Mt/pa. This phase targets the exploitation of those portions of the Prieska Deposit that were upgraded to Indicated and Inferred Mineral Resources from the first surface-based drilling campaign conducted between 2017 and 2018. The Production Target is composed of 65% Probable Ore Reserves and 35% Inferred Mineral Resources, with Ore Reserves predominating during the early stages of the mining plan. The Ore Reserves and Mineral Resources underpinning the Production Target have been prepared by Competent Persons and in accordance with the JORC Code 2012.

Table 1 summarises the assumptions used in the BFS along with the main production and financial results:

⁵ Method used to determine Cu equivalent Zn grades:

$$1\% \text{ Zn} = \frac{(\text{Zn price} \times \text{Zn payability}) \times (\text{Zn plant recovery})}{(\text{Cu price} \times \text{Cu payability}) \times (\text{Cu plant recovery})} = \frac{(\text{US\$}2,756/\text{t} \times 70.8\%) \times (83.0\%)}{(\text{US\$}6,834/\text{t} \times 98.2\%) \times (82.7\%)} = 0.3\% \text{ Cu}$$

Cu-equivalent grade = Cu grade + 0.3 x Zn grade. For the life of mine: Cu_Eq = 1.1%Cu + (0.3 x 3.35%Zn) = 2.1%Cu_Eq. Metal price assumptions based on CIBC Analyst commodity long-term forecast (29 April 2019). Plant recoveries were obtained from metallurgical test work conducted as part of the feasibility studies. It is Orion's opinion that all metals used in the calculation of metal equivalents have a reasonable potential to be recovered together and sold.

⁶ Ore Reserve reported in ASX release of 25 June 2019: "Prieska Bankable Feasibility Study confirms long-life, high-margin South African copper and zinc mine with strong economics" available to the public on www.orionminerals.com.au/investors/market-news. Competent Person Orion's Ore Reserve: Mr. William Gillespie. Orion confirms it is not aware of any new information or data that materially affects the information included above. For the Ore Reserves, the company confirms that all material assumptions and technical parameters underpinning the estimates in the ASX release of 26 June 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.

⁷ There is a low level of geological confidence associated with Inferred Mineral Resources included in the Production Target and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the Production Target or financial forecast information will be realised.

Table 1: Key BFS Results for the Foundation Phase of the Prieska Copper-Zinc Project. Note that the Study estimation accuracy level is ± 15%

BFS Dashboard					
Price and FX Assumptions	Unit	Value	Financial Performance	Unit	Value
Metal price – Cu	USD/t	6,834	NPV pre-tax (post-tax) @ 8% discount rate	AUD M	574 (408)
Metal price – Zn	USD/t	2,756	IRR pre-tax (post-tax)	%	38% (33%)
Exchange rate	ZAR:USD	14.5 : 1	Payback from first production	years	2.9
Exchange rate	ZAR:AUD	10 : 1	Undiscounted free cash flow pre-tax (post-tax)	AUD M	1,127 (819)
Exchange rate	AUD:USD	1.45 : 1	Peak funding	AUD M	378
Production Metrics	Unit	Value	Project Cost Metrics	Unit	Value
Life of Mine	Years	9.7	Average cash operating unit cost (C1)	AUD/t	80
Treatment plant capacity	Mtpa	2.4	All-in-sustaining cost per unit ROM t	AUD/t	94
ROM Plant Feed – tonnage	kt	20,827	All-in-sustaining cost per unit Cu_Eq t sold ⁸	AUD/t Cu	5,470
ROM Plant Feed – grade - Cu	%	1.10%	All-in-sustaining cost per unit Zn_Eq t sold ⁹	AUD/t Zn	1,582
ROM Plant Feed – grade - Zn	%	3.35%	Price received (net of NSR) - Cu	AUD/t Cu	9,785
Overall Plant Recovery - Cu	%	82.7%	Price received (net of NSR) - Zn	AUD/t Zn	2,830
Overall Plant Recovery - Zn	%	83.0%	All-in-sustaining margin	%	44%
Concentrate tonnage - Cu	kt	790	Operating breakeven grade (Cu_Eq)	%	1.2%
Concentrate tonnage - Zn	kt	1,180			
Concentrate grade – Cu U/G (O-Pit)	%	23.8% (25.6%)			
Concentrate grade – Zn U/G (O-Pit)	%	49.9% (35.5%)			
NSR as % of metal price – Cu U/G (O-Pit)	%	98.7% (91.2%)			
NSR as % of metal price – Zn U/G (O-Pit)	%	71.3% (53.7%)			
			Project Cash Flows	Unit	Value
Metal sold (in concentrates) - Cu	tonnes	189,000	LoM net revenue	AUD M	3,284
Metal sold (in concentrates) - Zn	tonnes	580,000	LoM operating costs (+ Royalty and Tax)	AUD M	1,673
Total Sales as Cu equivalent	tonnes	357,000	Project Start-up Capital Expenditure	AUD M	402
Total Sales as Zn equivalent	tonnes	1,233,000	Sustaining Capital Expenditure	AUD M	83

There is a low level of geological confidence associated with Inferred Mineral Resources included in the Production Target and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the Production Target or financial forecast information will be realised.

Post-Feasibility Study Workstreams

With the BFS now complete, effort is now focussed on pilot-scale field trials of key activities, business plan optimisation work, securing of long-lead time items, formalising key service and supply contracts and developing the Company's Prieska Project execution capacity.

Pilot-scale dewatering system trials - Pilot-scale trials have been commissioned to further test water qualities, refine the proposed pumping system, investigate means of cost-effective water-treatment and to confirm the size and arrangement of evaporator units to be used. Water treatment trials are being conducted first and are due to be completed during Q3 2019. Thereafter evaporator field trials are planned and due to be completed before year-end 2019.

- **Water Treatment.** The water treatment trials will provide engineering data to allow detailed design and costings for treating the accumulated water to a range of water purification specifications. Water treatment would allow offsite discharge and other secondary uses of water to be considered and so reduce the volume of water that needs to be evaporated.

⁸ Refer to footnote 5.

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- A 5m³ per hour, pilot water treatment plant, bespoke for the Prieska Project's water and schedule requirements, has been constructed and commissioned. The plant is a combination chemical treatment, precipitation, ultrafiltration and reverse osmosis (RO) purification plant, configured to allow measurement and testing of key design parameters, (see Figures 1 and 2).

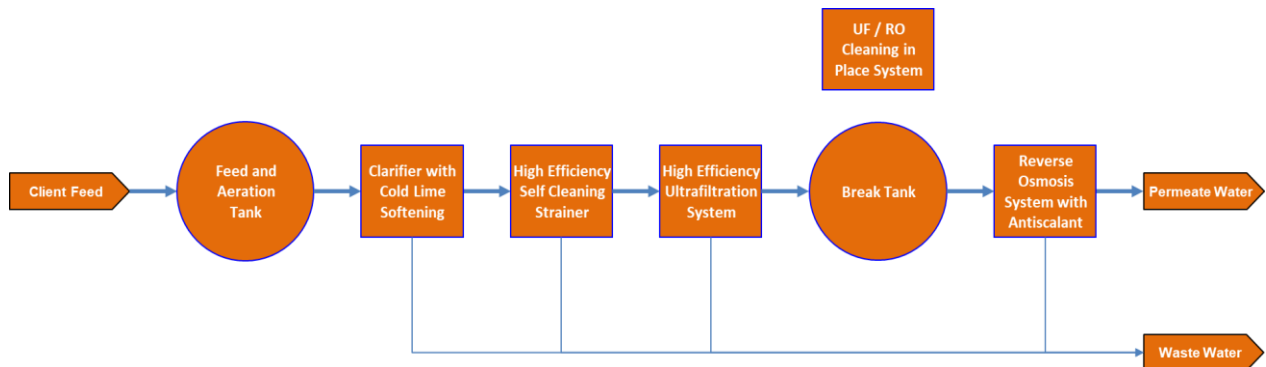


Figure 1: Water treatment plant flowsheet.



Figure 2: (LHS) Water treatment pilot plant mobilisation. (RHS) Commissioning the chemical treatment, ultrafiltration and reverse osmosis components of the pilot water treatment plant, setup to operate at 5m³/hr of feed water.

Successful water treatment would allow offsite discharge and other secondary uses of water to be considered and so reduce the volume of water that needs to be temporarily stored in lined environmental control dams and force evaporated. Reducing the footprint of the lined storage reservoir and the amount of forced evaporation required represents a major target for capital reduction. A combination of optimising placement of plant tailings as backfilling over life of mine, and a reduced requirement for sealed storage and evaporation area could materially reduce the capital cost of the combined tailings storage facility/evaporation dams allowed for in the BFS.

- **Dewatering Pumping System.** The pumping system, supplying the water for the treatment trials, forms part of the field trials. Specialised, self-supporting, flexible hose, supplied by Hose Manufacturers South Africa (Pty) Ltd (**Hose Manufacturers**), is being field tested for the planned Prieska vertical lifts. Hose Manufacturers have developed the Deepset Hose (Boreline 400) able to self-support to a vertical lift of 1,000m. The Prieska Project dewatering assembly uses an 18.5kW borehole pump, attached to 3-inch diameter flexible hose, with a 378m vertical head as a single-lift, (Figure 3). This arrangement is the first such application under trial globally.

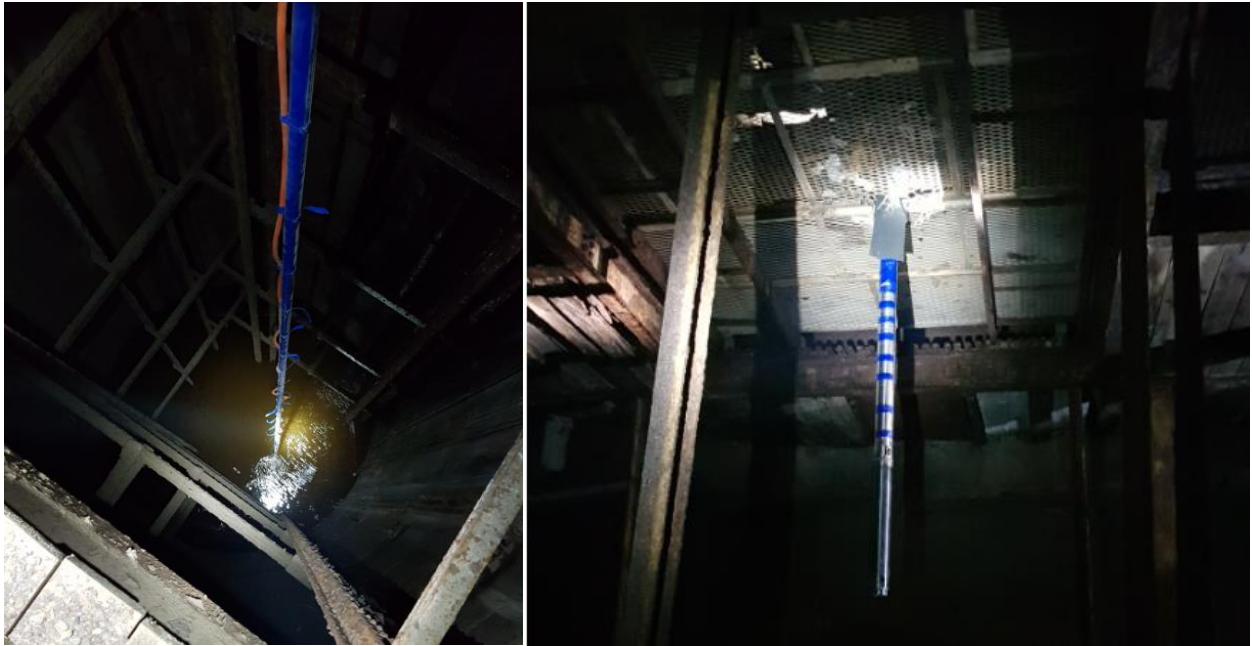


Figure 3: (LHS) Boreline 400 flexible hose suspended in the Hutchings Shaft, with a 378m vertical lift. This is the longest, single-lift pumping setup using self-supporting flexible hose under trial in the world. (RHS) The 18.5kW Vansan submersible bore pump being lowered in the Hutchings Shaft.

- **Evaporator Field Trials.** On completing the water treatment trials, pilot-scale trials of the proposed mechanically assisted evaporation assembly are planned. The BFS assumptions relied on field trials using 15kW evaporator units. Trials using 75kW and 90kW evaporator units are planned. Results from the trials are expected to refine the number of and improve the operating efficiency expected from the evaporation units to be installed.



Figure 4: Feasibility study field trial of effectiveness of a 15kW evaporator at the Prieska Copper Zinc Project. The planned pilot trials aim to test 75kW and 90kW units as the next phase of the program.

Optimisations - Several opportunities to improve the Base Case Plan were identified during the BFS process. Some of these opportunities are now being followed up and are expected to significantly improve the overall project economics and project risk profile. The optimisation process is expected to be completed by Q4 2019, resulting in a refined mining plan, ready for execution and that also incorporates recommendations collected from key service providers and suppliers now being engaged as part of the preparation for project execution. These opportunities being followed up include:

- **the enterprise mapping and optimisation process.** Whittle Consulting (Pty) Ltd (**Whittle**) has developed proprietary software that enables them to map the whole Mine-to-Market value chain and then simultaneously vary key value drivers in the chain until optimal combinations are identified that optimise the whole value chain. Fundamental parameters such as cut-off grades, mining sequence, mining rates, targeted metal recoveries, mill throughput rates, targeted grind sizes, feed blends, product specifications, product logistics routes and variances in metal prices are all considered as one integrated system to derive a series of optimal business scenarios.

This enterprise optimisation process is expected to significantly improve project economics whilst also mapping out key business processes to aid operational control and a better understanding of the real value drivers unique for the Prieska Project business plan. Whittle has a demonstrated track record of having dramatically improved base case plans, with previous projects having achieved in the order of 10% - 30% improvement in net present value (**NPV**) from their base cases.

- **review and refinement of the processing plant flowsheet and layout.** The processing plant layout is being reviewed with the aim of refining and reducing its footprint and simplifying the layout to make the facility more easily operable. Several service providers are being considered to assist with this review.
- **mine design and scheduling refinements.** Mine design layout, sequencing and scheduling refinements continue to be made as part of the enterprise optimisation process.

Negotiation of key supply contracts and securing long lead time items - The negotiations for key supply contracts and to secure long lead time plant and equipment are now being advanced. Activities are being targeted to ensure the project is ready for execution by year-end and to take advantage of potential savings in capital expenditure that can be secured with early down payments for critical items of plant and equipment. Key contracts under consideration include:

- obtaining grid power from the national power utility, Eskom: whilst Eskom has approved the Company to undertake the power connection works as a self-build program, administrative connection charges and power tariffs are yet to be finalised;
- commissioning the next phase of renewable energy supply studies: a collaboration agreement with juwi Renewable South Africa (Pty) Ltd is already in place that provides the framework for advancing the plan to have over 50% of the project power needs supplied from renewable energy sources (refer ASX release 5 March 2019);
- securing water supply infrastructure and tariffs;
- placement of orders or option down-payments for long lead time items: suitable rock hoisting and materials transportation winders, as well as ball mills have been identified that, if secured early, would result in significant improvements in the project execution timeline and the mine construction cost;
- engagement of project management contractors;
- engagement of key workstreams service providers; and
- the marketing of copper and zinc concentrates.

Developing in-house project execution capacity – Various entities are being considered to assist with managing the project execution and supplementing the Orion owner's team responsible for executing the BFS. A detailed project execution strategy is to be formulated, along with preparation of work

package scopes of work and documentation to enable the engagement of key service providers once the project receives construction approval.

Infrastructure Studies

Power Supply – As previously reported, the national power utility, Eskom, has already approved the Company's plan to self-build the upgrade of the nearby Cuprum sub-station in order to be supplied with the required 38 MVA of electric power (refer ASX release 26 June 2019). The Company now awaits Eskom's proposed power connection costs. An application was also submitted to Eskom for immediate access to 15MVA of temporary power from the Cuprum sub-station. This power would be used during the Project's construction period prior to the 38 MVA connection becoming available. Confirmation of this temporary connection is expected during Q3 2019.

Mining Right Applications

Post the end of the June Quarter, on 3 July 2019, the Repli Environmental Authorisation was granted by the Department of Mineral Resources. In accordance with the National Appeal Regulations, the Company has notified all registered Interested and Affected Parties of their right to appeal this decision, within 20 days of being notified. Any such appeal must be lodged directly to the Department of Environmental Affairs. At the time of writing, the Company was not aware of any appeal having been lodged. The Repli Mining Right grant is expected during Q3 2019. The approval for the Vardocube Environmental Application and Mining Right is also expected later this calendar year.

Deep Sulphide Resource

A re-assessment of the Inferred Mineral Resources Cu 117kt at 1.14% and Zn 417kt at 4.08%¹⁰ (making up 36% of the estimated Deep Sulphide Resource) was undertaken during the Quarter to determine the most efficient way to upgrade these resources to an Indicated Mineral Resource level of confidence. A drilling program was formulated and will be included to the exploration drilling campaign planned to test potential extensions of the Deep Sulphide Resource (Figure 5).

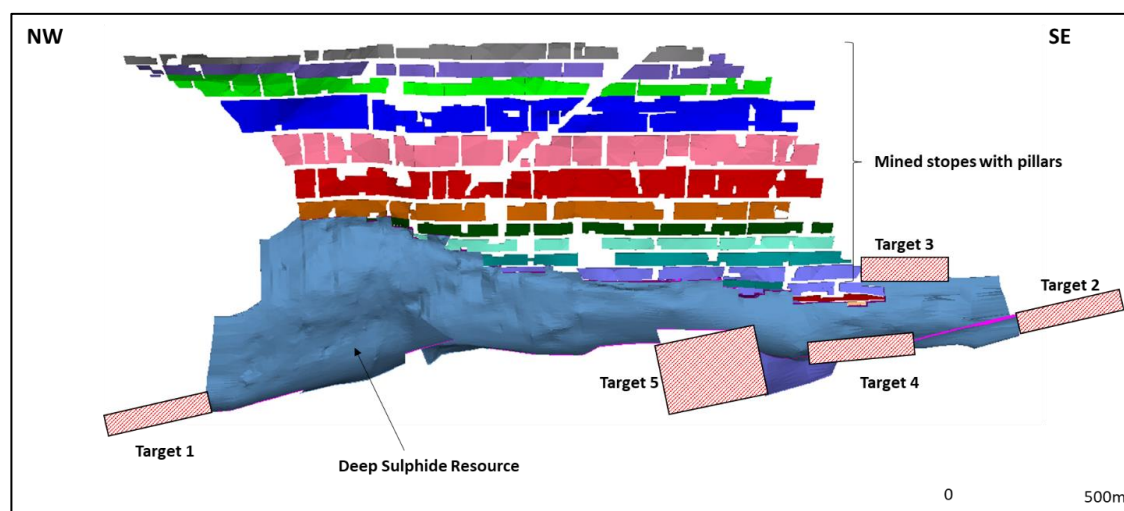


Figure 5: Longitudinal section of the Deep Sulphide Mineral Resource showing potential extensions to the Deep Sulphide Mineral Resource.

¹⁰ Mineral Resource reported in ASX release of 15 January 2019: "Prieska Total 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. 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 15 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.

Drill planning was carried out in consultation with mineral resource consultants Z-Star and is based on geological knowledge of the Deep Sulphide Deposit and data distribution. Initial drilling will test areas within the Inferred Mineral Resource considering the mine plan, minimum mining widths and cut-off grades. Focus of the initial phases of drilling will be on the south-eastern section of the deposit as drill targets promise thicker and higher-grade mineralisation as compared to the north-western section (Figure 6). Drilling will be conducted from underground drill platforms from the existing exploration drives and will commence upon completion of dewatering and quipping of these levels (Figure 7).

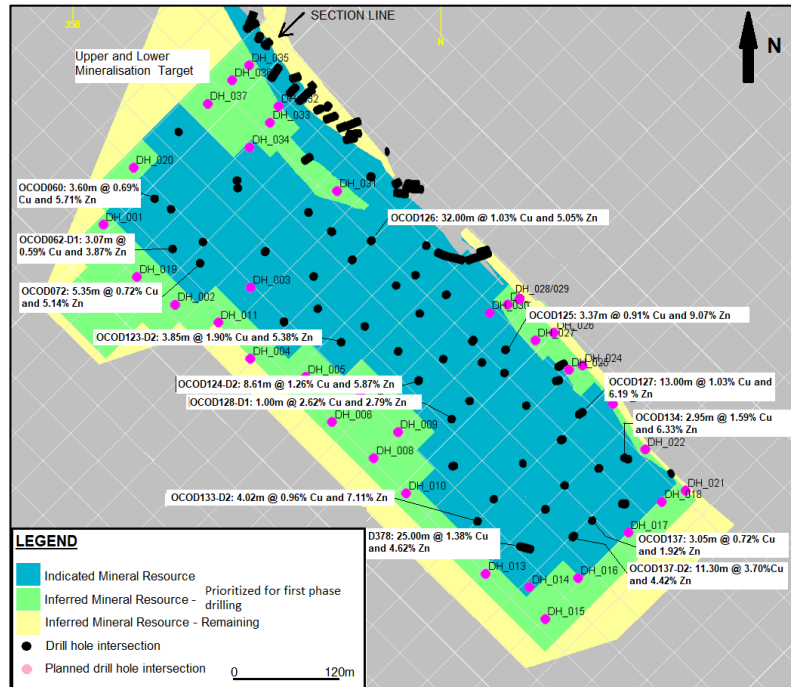


Figure 6: Plan-view showing planned drill hole intersections and Orion drill results around the edges of the Indicated Resource in the south-eastern section of the Deep Sulphide Resource.

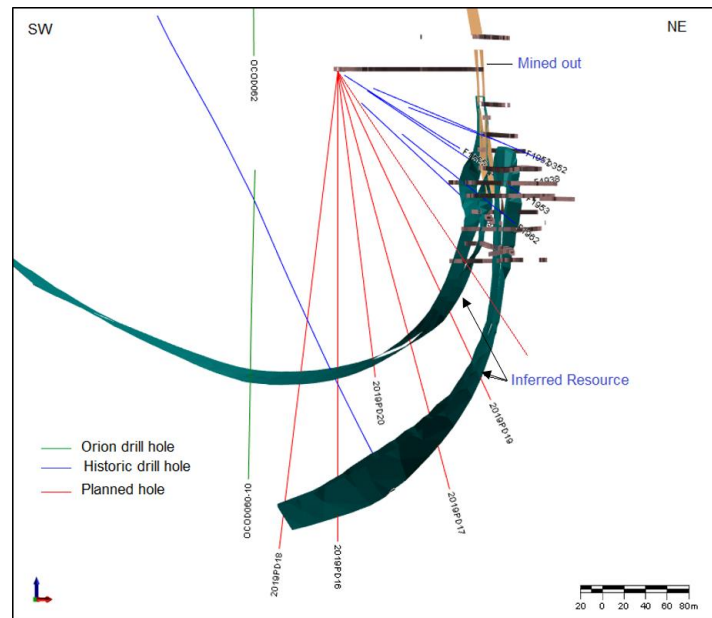


Figure 7: Cross-section AB as indicated on Figure 6, showing planned underground drilling designed to test the upper and lower mineralised zones.

+ 105 Mineral Resource

Only 50% of the current Supergene Sulphide Resource in the +105 Mineral Resource estimate falls within the Indicated Resource category, being Cu 10kt at 1.54% and Zn 19kt at 3.05%¹¹. A lack of data in the southwestern portion resulted in this part of the Mineral Resource being classified at an Inferred level of confidence (Figure 8). The Company plans to upgrade this Inferred Mineral Resource to an Indicated level by infill drilling from the existing +105 level underground mine development. Figure 8 shows the distribution of the different resource categories in the +105 Mineral Resource with existing and planned drill hole intersections. Figure 9 illustrates the planned drilling from the +105m Level.

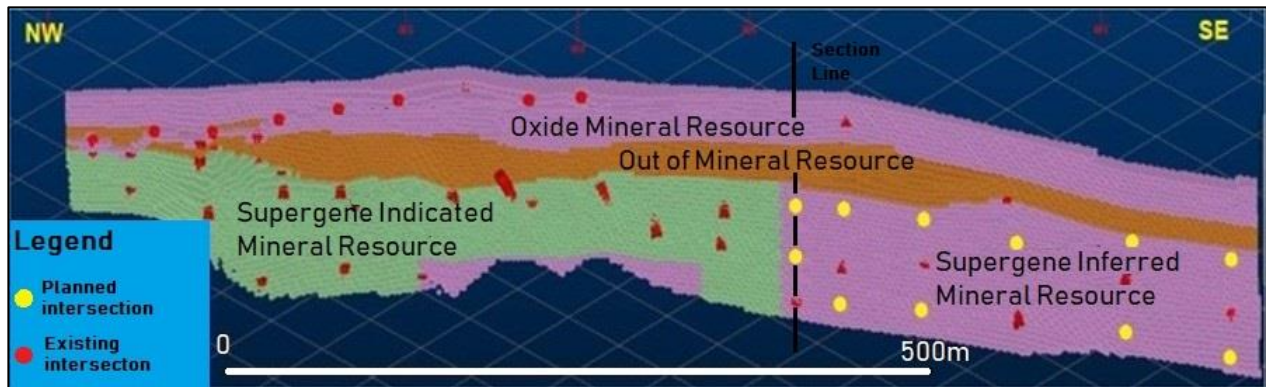


Figure 8: Supergene +105 Inferred Mineral Resource map showing planned underground drilling.

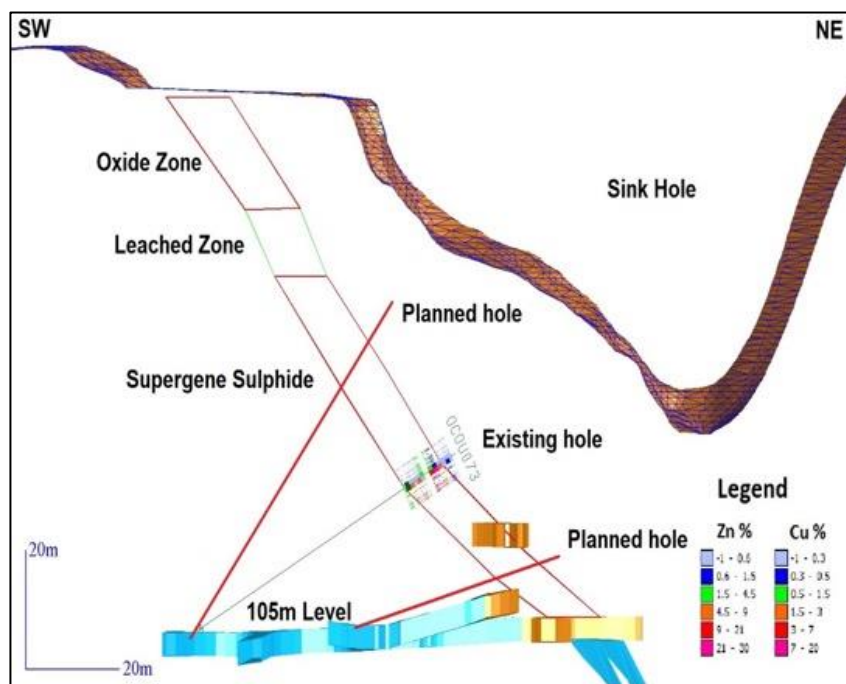


Figure 9: Cross-section showing planned infill drilling on the +105 Inferred Mineral Resource.

¹¹ Mineral Resource reported in ASX release of 15 January 2019: "Prieska Total 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. 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 15 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.

A total of 770 meters of drilling is planned for 11 drill holes. Utilising two drill rigs, the drill program can be completed within three months from start date.

Near-Mine Projects

The near-mine projects are those projects within prospecting rights held by Repli, Repli (Doonies Pan), Vardocube and Bartotrax (Figure 6). VMS deposits worldwide tend to occur in clusters, and 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, and three deposits on Doonies Pan (Kielder) explored by Newmont South Africa between 1976 and 1979, referred to as the PK1, PK3 and PK6 Deposits (Figure 10).

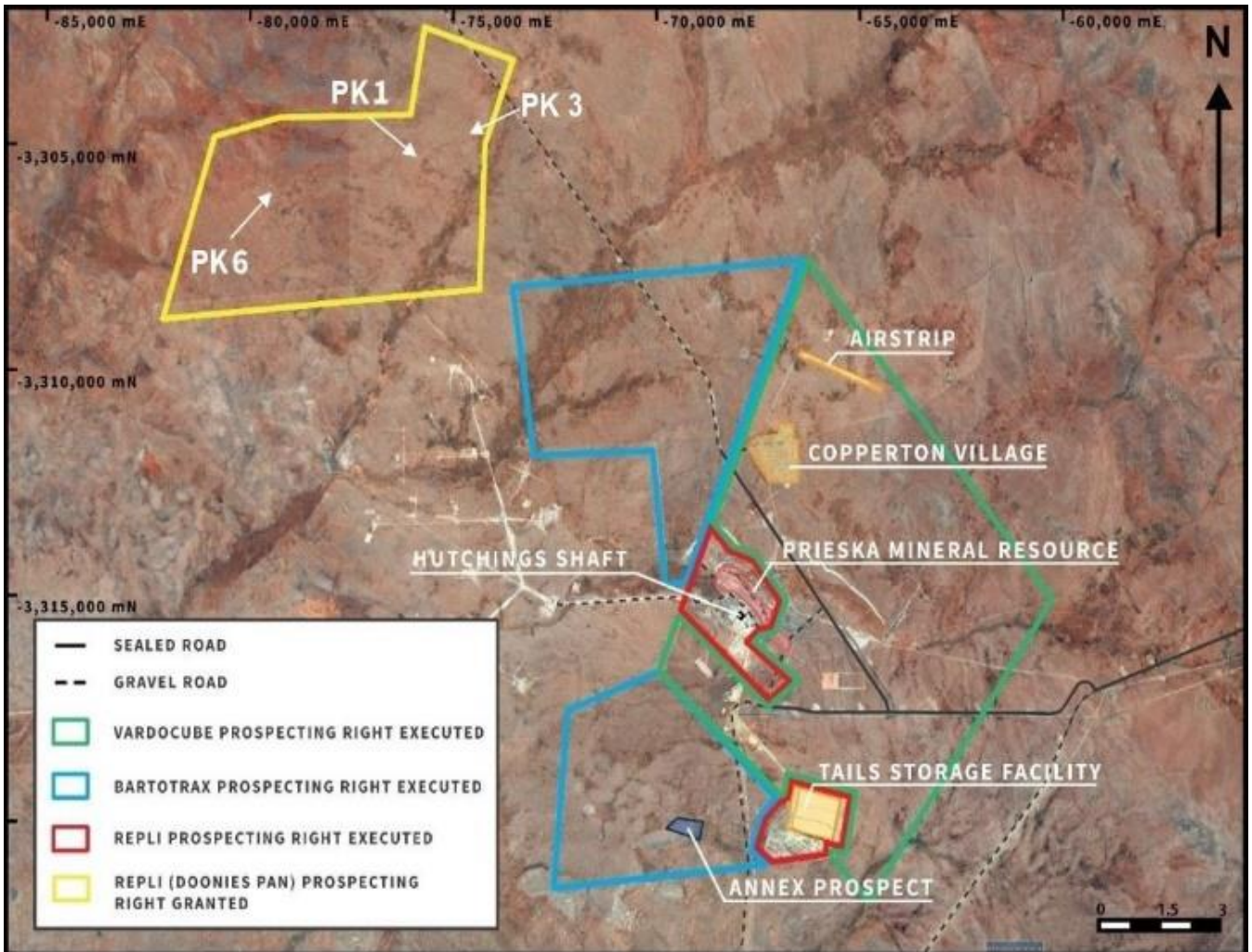


Figure 10: Surface plan showing the prospecting rights over and adjacent to the Prieska Project, and the location of the Annex and Kielder (PK1, PK3 and PK6) deposits.

The geological map of the Near Mine Area has been updated by integrating the new SkyTEM™ airborne magnetic data and field mapping (refer ASX release 16 January 2019) (Figure 11). The current interpretation suggests the prospective horizon to be developed over some 20km on the north-western and south-eastern strike extent of the Prieska Deposit, the western and eastern strike extent of the Annex Deposit, the Ayoba Discovery and in the Magazine Antiform. In addition to this target horizon, several SkyTEM™ (AEM) anomalies were identified for follow-up work (refer ASX release 25 February 2019). Soil sampling over the AEM anomalies is in progress.

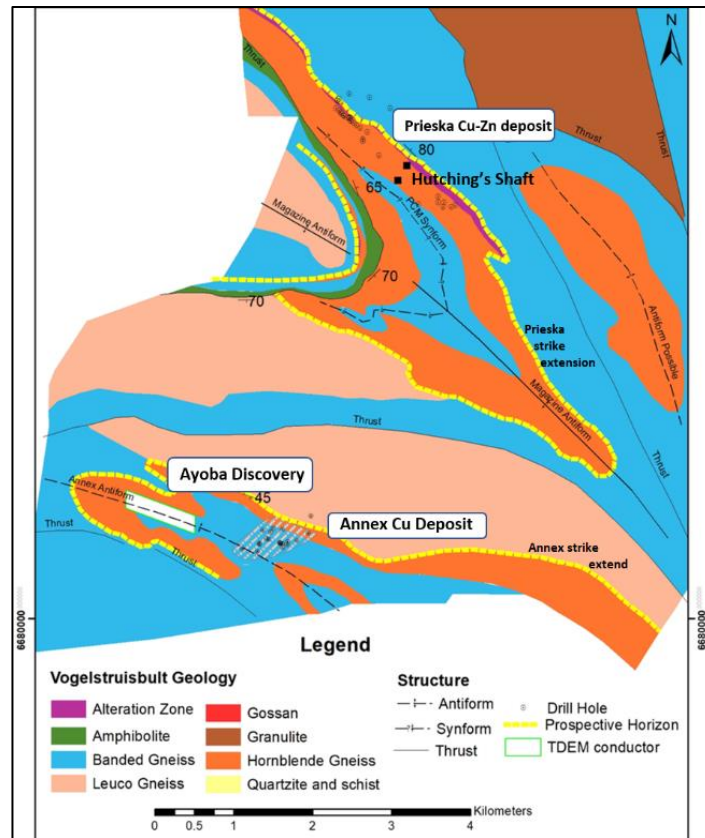


Figure 11: Updated geological plan showing near-mine prospective horizons based on surface geology and aeromagnetic data.

Soil Sampling

During the Quarter, soil samples were collected (Figure 12). The samples are currently being screened to -80 micron and analysed using a handheld XRF analyser. Sample results will be incorporated in the prioritisation of the AEM anomalies prior to ground Time Domain Electromagnetic surveys and diamond drilling.

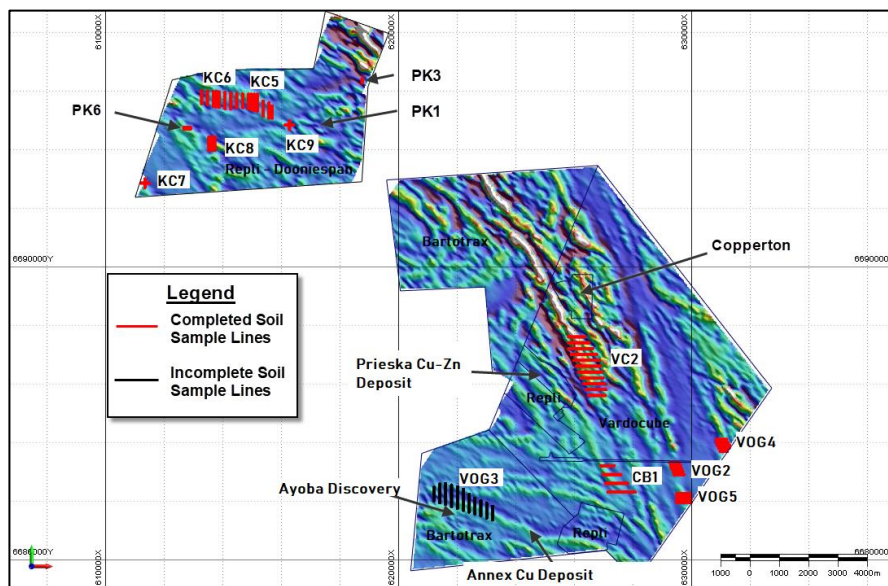


Figure 12: Aeromagnetic maps covering the Near Mine Prospecting Rights with soil sample surveys completed and in progress plotted.

Regional Exploration (South Africa)

Overview of Regional Activity

The Company maintains a substantial and prospective land holding in the Areachap Belt (Figure 13). 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 in clusters or “districts” associated with volcanic spreading centres, with four such centres having been identified in the Areachap Belt. In addition to the Near Mine Project, the Company is also prospecting for VMS deposits on the Masiqhame Prospecting Right (Figure 13). The Kantienpan and Bokspuits Zinc-Copper Deposits are the two most prominent known VMS deposits on the Masiqhame Prospecting Right.

Similarly, world-class nickel deposits tend to also occur in clusters both on prospect and regional scale. 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 associated metals are known on the Namaqua-Disawell Prospecting Rights (Figure 13). 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.

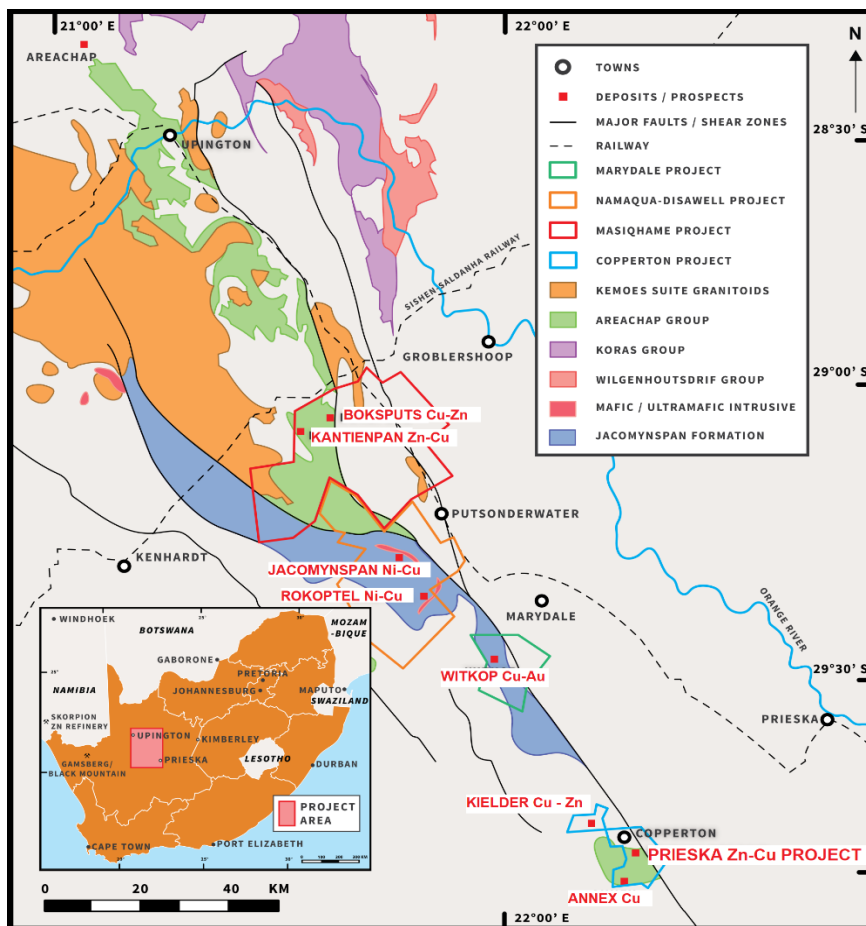


Figure 13: Regional geology map of the Areachap Belt showing prospecting rights held by, or currently under option to, the Company, and noted mineral occurrences as per published data from South African Council for Geoscience.

Namaqua Disawell Project Area

Overview

The Jacomynspan Deposit (Figure 14) was discovered by Anglo American Prospecting Services (**AAPS**) in 1971. Resource drilling was carried out to a depth of 900m over 1.3km strike distance by AAPS, with disseminated nickel-sulphide mineralisation having been intersected with widths varying between 30 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. Subsequent and prior to the Company obtaining the prospecting and mining rights, various companies including Anglovaal, Glencor, Gold Fields and Namaqua Nickel explored the area. African Nickel and the Company conducted Airborne Electromagnetic (AEM) Surveys over the Prospecting Right (refer ASX release 1 February 2018). The Company followed up a number of AEM anomalies with ground Time Domain Electromagnetic surveys and prioritised the Rok Optel and Area 4 prospects for follow-up work (refer ASX release 3 July 2018). The Company drilled four diamond drill holes at Rok Optel while the Area 4 targets still remain to be tested (refer ASX release 24 October 2018).

Area 4 Soil Sampling

Infill soil sampling on the Area 4 grid as part of an orientation survey and preparation for future surveys were carried out during the Quarter (Figure 14). Two hundred samples were collected bringing the sample line spacing over the prospect down to 120m with a sample spacing of 20m (Figure 15).

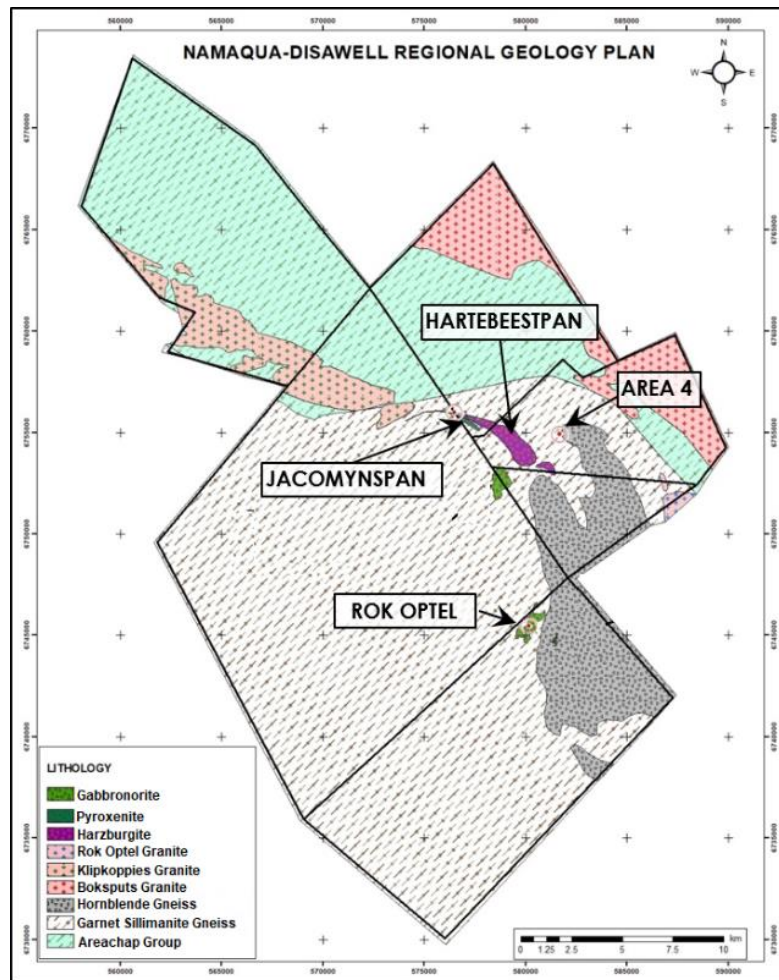


Figure 14: Simplified geology map of the Namaqua – Disawell Prospecting Rights showing the localities of known Ni-Cu prospects.

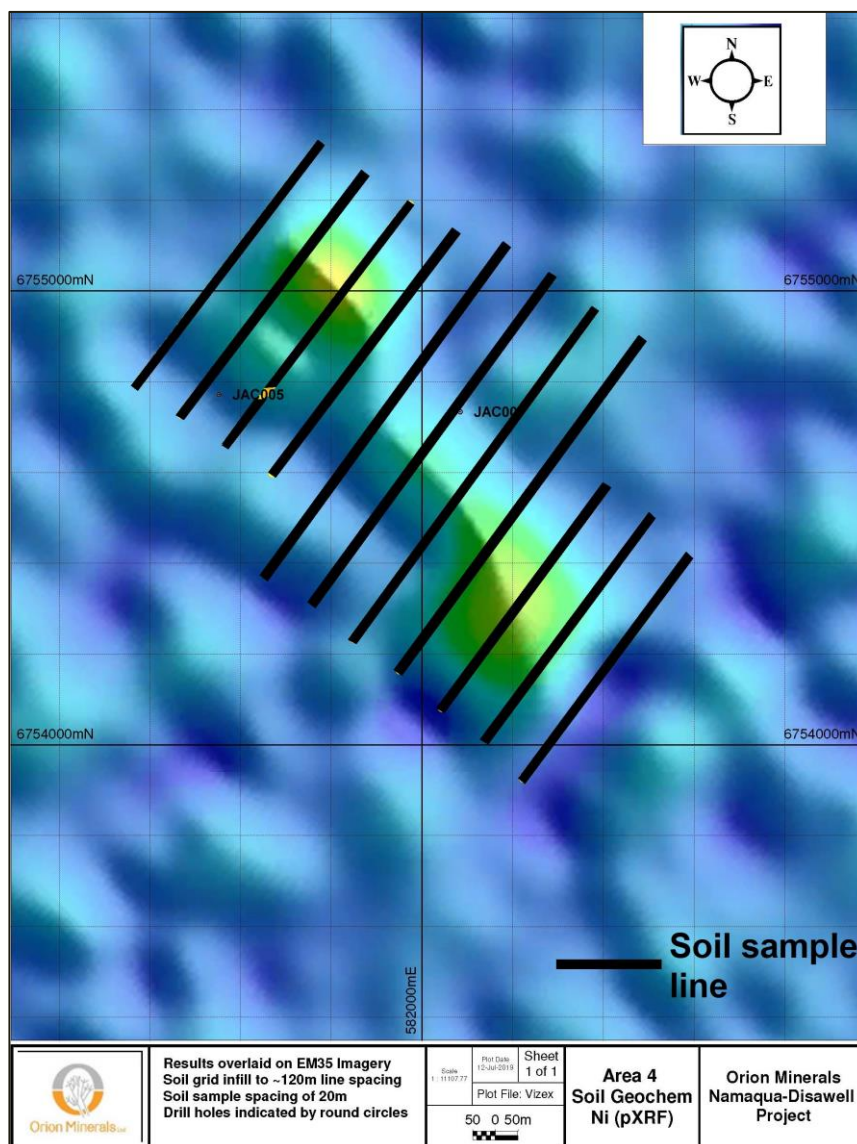


Figure 15: Soil sampling survey over Area 4 overlain on an AEM image.

Masiqhame Project Area

Contiguous to the north of the Namaqua-Disawell Project, this project is defined in terms of the Masiqhame tenement holding and includes the Kantienpan and Bokspuits Zn-Cu VMS deposits. With its known VMS deposits, numerous Cu-Zn mineral occurrences and regional geological setting, the area offers potential for new VMS Zn-Cu and magmatic Ni-sulphide discoveries. It is common for VMS districts to have small Zn-Cu deposits clustering close to a large deposit where on the Masiqhame Prospecting Right, the larger deposit is still to be discovered.

Soil sampling and mapping was undertaken during the Quarter. The soil samples were collected over and along the strike of the Kantienpan Deposit and following the interpreted paleo-seafloor setting (Figure 16) (refer ASX release 1 February 2018). The survey currently covers 5.7km of strike length. Screening and analysis of the samples are ongoing.

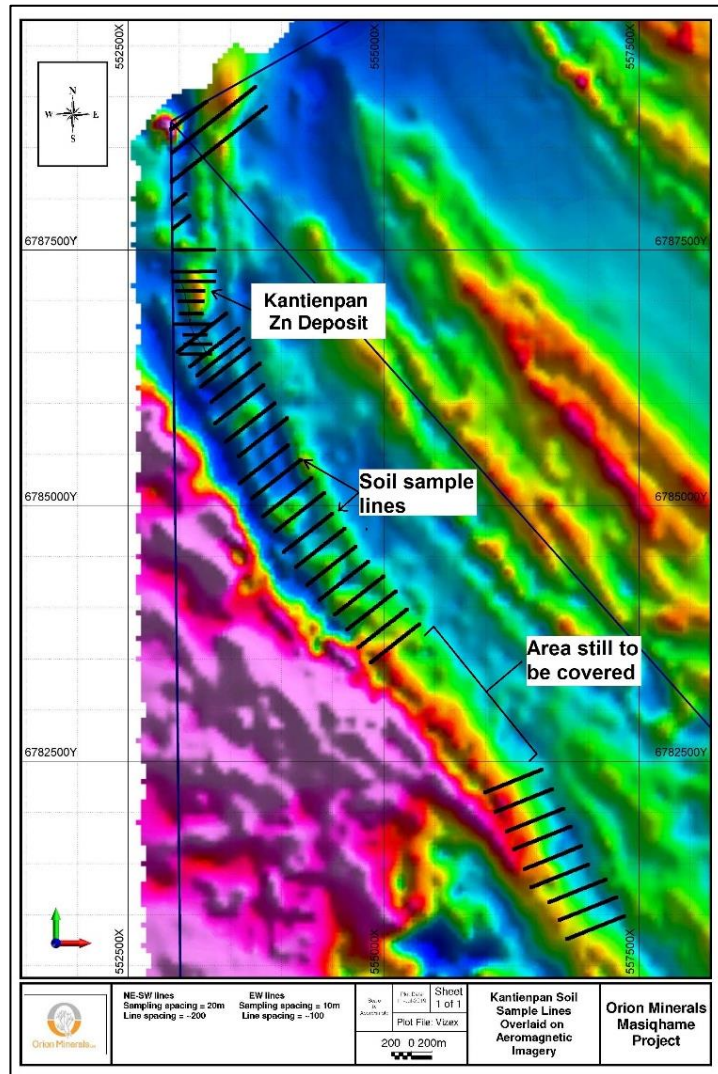


Figure 16: Aeromagnetic map showing soil sampling completed over and along strike of the Kantiapan Zn deposit.

Marydale Gold-Copper Project (Witkop)

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 carried out during the Quarter on the Marydale Gold-Copper Project.

Australian Projects

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 into via a Joint Venture Agreement (**JVA**, refer ASX release 10 March 2017).

Orion has been informed by IGO that a drilling program has commenced to test two high priority targets selected on the basis of ground geophysics and geochemistry carried out by IGO. The projects being prioritised for drill testing are North West Passage for intrusive hosted Ni-Cu and Pike Prospect where potential exists for both Ni-Cu Intrusive mineralisation and VMS Cu-Zn mineralisation.

Walhalla Gold and Polymetals Project (Victoria)

On 11 August 2015 the Company announced to the ASX that it had entered into a sale agreement with Centennial Mining Ltd (**Centennial**) for Centennial to acquire the Company's Walhalla Project mining licence 5487 (**MIN 5487**). The original sale agreement contained a number of conditions that were required to be satisfied before the transfer of MIN 5487 could be effected. For various reasons, these conditions are unlikely to be satisfied and Centennial, acting through its Administrators, are not contending that Centennial has any right, title or interest in MIN 5487 or that the original sale agreement remains on foot. As a consequence, MIN 5487 remains under the ownership and control of the Company.

Tenement Table

Tenement	Project	Ownership Interest	Change in Quarter	Joint Venture Partner
South Africa				
NC30/5/1/1/2/10445PR	PCM	73.33%	---	---
NC30/5/1/2/2/10244PR	Marydale	73.33%	---	---
NC30/5/1/1/2/11841PR	Vardocube	70.00%	---	---
NC30/5/1/1/2/11850PR	Bartotrax	74.00%	---	---
NC30/5/1/1/2/11840MR	Donnies Pan	73.33%	---	---
NC30/5/1/1/2/10032MR	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%	---	Disawell (Pty) Ltd
NC30/5/1/1/2/12292PR	Masiqhame	49.00%	---	Masiqhame 855 (Pty) Ltd
Western Australia				
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
Victoria				
MIN5487	Walhalla	100%	---	---
EL5340	Walhalla	0%	Relinquished	---
EL5348	Walhalla	0%	Relinquished	---

Corporate

Cash and Finance

Cash on hand at the end of the Quarter was \$1.4M. On 19 July 2019, \$1.2M of the \$3.35M Tranche 2 of the recent Placement was received. The balance of Tranche 2 funds, being \$2.15M, are expected to be received shortly. (see Placement details below).

Capital Raising and BEE ownership re-structure

On 16 April 2019 the Company announced a pivotal \$8M capital raising underpinned by a group of high-profile South African investors as part of a proposed restructure of the Company's Black Economic Empowerment (**BEE**) equity participation at project level, achieving accelerated compliance with the ownership aspects of South African Mining Charter III (**MC3**).

Placement

The \$8.0M capital raising comprises the issue of 200.9M fully paid ordinary share (**Shares**) at an issue price of \$0.04 per Share, together with one free attaching option for every two Shares issued (100.47M options at an exercise price of \$0.05 and an expiry date of 31 October 2019) (**Options**), to be conducted via a placement to sophisticated and professional investors (**Placement**). The Options will not be quoted on the ASX or the Johannesburg Stock Exchange (**JSE**).

The Placement includes approximately \$4M placed to experienced South African BEE entrepreneurs, of which \$2M is being placed to incoming BEE equity investors who will also invest at the Prieska Project level.

The Placement will occur in two stages, being:

- Tranche 1 – 117.23M Shares and 58.61M Options, using the Company's 15% placement capacity under ASX Listing Rule 7.1 to raise \$4.69M. On 23 April 2019, Orion issued 50.63M Shares in the Company at \$0.04 per Share and 25.31M Options, to raise \$2.03M and on 30 April 2019, the Company issued 66.60M Shares in the Company at \$0.04 per Share and 33.30M Options, to raise \$2.66M, finalising Tranche 1 of the Placement; and
- Tranche 2 – 83.71M Shares and 41.85M Options, to raise \$3.35M (which was approved at a general meeting of Orion shareholders held on 7 June 2019).

As part of the Placement, Tembo Capital Mining Fund II LP and its affiliated entities (**Tembo Capital**), continued support of Orion through subscribing for \$2M in Tranche 1 of the Placement. In addition to the support obtained from South African BEE entrepreneurs and Tembo Capital, other key existing shareholders have supported the Placement and the proposed BEE transactions.

Following completion of Tranche 1 of the Placement, the Company obtained shareholder approvals for the Placement at a General Meeting of shareholders held on 7 June 2019. On 19 July 2019, Orion issued 30.0M Shares in the Company at \$0.04 per Share and 15.0M Options, to raise \$1.2M, resulting from a receipt of funds from investors for Tranche 2 commitments. The Company has received commitments for the balance of Tranche 2 (being \$2.15M) and these Shares and Options are expected to be issued shortly.

BEE Restructure

The proposed BEE restructuring transactions entail existing BEE shareholders in Orion's subsidiary, Repli Trading No 27 (Pty) Ltd (**Repli**), which owns the Prieska Project with a Mining Right pending, exchanging their 26.7% holding in Repli for JSE listed Orion Shares. A new BEE company (**BEE HoldCo**) will then acquire a 20% shareholding in Repli, facilitated by way of Orion vendor funding.

The members of BEE HoldCo will have the entitlement to provide their proportionate share of Prieska mine development costs on equal terms with the other shareholders of Repli. Although Repli has five years to implement the BEE ownership obligations to achieve MC3 compliance, the proposed BEE restructuring will satisfy the important ownership component of the MC3 compliance immediately.

The members of BEE HoldCo and Orion have agreed to accelerate the establishment of Employee and Community trusts, each of which will hold a 5% ownership interest in Repli.

New BEE

Orion has entered into a Memorandum of Agreement with the BEE entrepreneurs (comprising Black Star Minerals (Pty) Ltd (**Black Star**) and Kolobe Nala Investment Company (Pty) Ltd (**KNI**)) to establish two BEE HoldCo's, each owned as outlined below:

BEE Entity Name	Ownership of BEE HoldCo	Principals	BEE Status
Black Star	67%	Jowell Tobias Sharon Matthews Johanna Tobias	100% Black owned 75% Black female owned
KNI	33%	Billy Mawasha	100% Black Owned

The establishment of the BEE HoldCo's and the proposed acquisition of the 20% interest in Repli and 20% of Orion's interest in the Jacomynspan Project, is expected to be completed shortly. Details of the terms of the acquisition of the 20% shareholding in Repli and 20% of Orion's interest in the Jacomynspan Project will be released once definitive agreements have been finalised.

BEE HoldCo members have demonstrated their commitment and financial capacity to complete the transaction by agreeing to subscribe for \$2M in the Placement referred to above.

Founding BEE Interests Exchanged for Orion Shares

The founding BEE partners of the Prieska Project have signed agreements with Orion to relinquish their shares in Repli and other Areachap projects in exchange for approximately 135M JSE-listed Orion Shares.

The proposed BEE restructure transactions (relating to both the introduction of the New BEE entrepreneurs and the share exchanges of the founding BEE partners) are subject to conditions that are customary for transactions of this nature, including execution of definitive transaction agreements and applicable board and regulatory approvals.

Anglo American sefa Mining Fund – Preference Share Redemption

On 4 March 2019, the Company announced it had reached agreement with the value-adding South African institutional investor, Anglo American sefa Mining Fund (**AASMF**) to redeem Preference Shares held by AASMF in one of Orion's key project subsidiaries for shares in Orion. Under the agreement, AASMF agreed to the redemption of the Preference Shares, in exchange for Orion Shares, the ASX and JSE listed parent company of Repli (**Share Exchange Agreement**).

Under the terms of the Share Exchange Agreement and following the receipt of Orion shareholder approval at a general meeting held on 7 June 2019, on 7 July 2019, Repli, a 73.33% owned subsidiary of Orion, voluntarily redeemed the Preference Shares in consideration for Orion issuing the Shares to AASMF.

The Company obtained shareholder approval for the issue of Shares under the Share Exchange Agreement at a General Meeting of shareholders held on 7 June 2019 and on 7 July 2019, the Company announced that the issue of Shares to AASMF had been completed.

AASMF subscribed for 15.75M redeemable preference shares in Repli in November 2015 at a subscription price of ZAR1 per redeemable preference share (ZAR15.75M (~A\$1.58M)) (**Preference Shares**) as part of a seed capital investment with the previous owners of the Prieska Project.

In satisfaction of the redemption amount payable by Repli to AASMF of ZAR25.05M (~A\$2.05M), in connection with the voluntary redemption of the Preference Shares by Repli, on 5 July 2019, Orion issued 77.57M Shares to AASMF at a deemed issue price of \$0.0323 per Share.

Appointment of New Non-Executive Directors

During the Quarter, the Company announced the appointment of two highly experienced South African-based mining executives who have specific knowledge and skill in the South African mining industry.

Godfrey Gomwe

Mr Godfrey Gomwe has extensive experience as an executive in the metals and mining industries. He is the former Chief Executive Officer of Anglo American plc.'s Thermal Coal business, where his responsibilities included oversight over Anglo's Manganese interests in joint venture with BHP. Previously Executive Director of Anglo American South Africa until August 2012, his career included roles as Head of Group Business Development Africa, Finance Director and Chief Operating Officer of Anglo American South Africa. Previously, Godfrey was Chairman and Chief Executive of Anglo American Zimbabwe Limited. He also served on a number of Anglo American Operating Boards and Executive Committees including Kumba Iron Ore, Anglo American Platinum, Highveld Steel & Vanadium and Mondi South Africa, the latter two in the capacity of Chairman.

Tom Borman

Mr Tom Borman is a respected and highly experienced global mining executive who served more than 11 years working for the BHP Billiton Group in various senior managerial roles, including that of Chief Financial Officer of an Australian-listed mining company. He also held senior roles in strategy and business development and served as the project manager for the merger integration transaction between BHP Limited and Billiton.

After leaving BHP Billiton in 2006, Mr Borman joined Warrior Coal Investments (Proprietary) Limited, where he formed part of the executive team which established and consolidated the portfolio of assets which became the Optimum Group of companies. Optimum listed on the Johannesburg Stock Exchange in 2010 and was subsequently acquired by Glencore for R8.5 billion in March 2012.

Concurrent with the appointment of Mr Gomwe and Mr Borman, Michael Hulmes stepped down as a non-executive director, due to his increased commitments as an executive in a new role elsewhere. The Directors thank Michael for his significant contribution during the Feasibility Study period and wish him well in his new role.

General Meeting

A 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 7 June 2019. All resolutions put to shareholders at the meeting were carried on a show of hands.