



## Orion Minerals

ASX/JSE RELEASE: 23 April 2024

# March 2024 Quarterly Activities Report

## HIGHLIGHTS

- ▶ Orion's transition into a mine developer and operator at its flagship **Prieska Copper Zinc Mine (PCZM)** is advancing with pleasing results. A complete site-based, skilled operating team has been recruited, key mine infrastructure and services have been established and trial mining is progressing well, with copper ore being stockpiled on surface.
- ▶ **Trial Mining:** The Supergene orebody was intersected at the 99m Level after more than 80m of waste development was completed from the historical 105m Level haulage. Ground conditions have proven to be very competent, allowing for both the north and south ore drives to advance with 4.5m x 4.5m development dimensions, rather than the initial conservative 3.0m x 3.0m design. A combined total of 53m was developed along ore strike (north and south ore drives), exposing ore as per the Mineral Resource model.
- ▶ Initial surface and underground **electrical reticulation** installations were established during the Quarter, including the installation of an 11kV surface overhead powerline, as well as surface and underground transformers and motor control centres.
- ▶ Eskom approved contractors for construction of the dedicated 15MVA Cuprum electrical sub-station upgrade have mobilised to site and construction has commenced, with scheduled commissioning expected in the next quarter.
- ▶ The installation of the **mine dewatering** infrastructure is progressing as scheduled and will be completed towards the end of Q2 CY2024. Mine dewatering will commence early in Q3 CY2024, when the 15MVA power feed upgrade comes online.
- ▶ Trial mining and construction data is being used to produce the **Updated Feasibility Study** on the accelerated development strategy and staged ramp-up at PCZM. The report is on track for completion around mid-CY2024.
- ▶ At the **Okiep Copper Project (OCP)**, Orion achieved an important milestone during the Quarter, with the acquisition of 12,156ha of surface rights, including 5,687ha covering the New Okiep Mining (**NOM**) mining right. This acquisition allowed drilling to commence that will provide additional Mineral Resource confirmation, geotechnical and metallurgical zonation information that will materially enhance the **Bankable Feasibility Study (BFS)**.
- ▶ Drilling commenced at NOM in February 2024, with three diamond core holes drilled at Flat Mine East and two diamond core holes drilled at Flat Mine South during the Quarter.
- ▶ A zone of spectacular high grade copper mineralisation previously reported by Goldfields was confirmed at Flat Mine East with an intersection of 49m at 4.87% Cu.
- ▶ The enhanced Flat Mines BFS is on track for completion around mid-CY2024.
- ▶ At the **Jacomynspan Project (JMP)**, discussions are advancing with electric vehicle manufacturers as potential end-users of the metal vapour powder products to be produced using the innovative metal vapour refining technology.

## EXECUTIVE SUMMARY

### REVIEW OF OPERATIONS

Orion Minerals Limited (ASX/JSE: ORN) is a dual listed, diversified, international base metals company which is developing three complementary base metals production hubs in South Africa's Northern Cape Province, a richly endowed mineral province and well-established mining jurisdiction.

Orion is building a high-quality pipeline of critical metals assets to supply the demands created by the global clean energy transition. The Company has set itself the aspirational corporate objective of achieving first copper sales from its development projects in 2025 and ramping-up copper production to more than 50ktpa by the end of the decade.

The Company is prioritising the development of projects capable of meeting the growing demand for key critical metals – copper, zinc and nickel – that have strong market fundamentals resulting from declining global supply, falling ore grades at major mines and the backlog of investment in exploration and development of new mines. The demand for these metals is experiencing growth principally due to clean energy technologies that makes these metals critical to a low-carbon future.

Orion's flagship project is the fully permitted Prieska Copper Zinc Mine (**PCZM**) with a Mineral Resource for PCZM, reported and classified in accordance with the JORC Code (2012), of 31Mt grading 1.2% Cu and 3.6% Zn including the near surface high grade +105 Block with 2.3Mt at 1.7% Cu and 1.6% Zn, containing 38,000t of copper and 35,000t of zinc in oxide and sulphide mineralisation (refer ASX/JSE release 25 July 2023).

The +105m Block has been identified as an attractive early mining opportunity focused on the high-grade sulphide mineralisation of 1.3Mt with a grade of 2.4% Cu and 2.1% Zn for 30,000t contained copper and 27,000t of contained zinc (refer ASX/JSE release 25 July 2023) that can be accessed from existing underground development.

Orion advanced in its transition of becoming a mine developer and operator at PCZM, during the Quarter. The Company successfully completed the recruiting and establishment of a complete skilled, site-based operating team. Installation of key mining infrastructure and services were completed and trial mining got underway. Ore was crushed and sampled on surface for assaying in the site laboratory and 12,380 tonnes of ore was stockpiled for future processing.

Trial mining is delivering pleasing results and is succeeding in its objective of de-risking the project by providing proof of proposed mining methods. Most importantly, the mining geotechnical conditions have been found to meet the most positive expectations, allowing for efficient mechanised mining of near surface ore with access from established declines, service shafts and ventilation holings. The sulphide mineralisation intersected in development drives is confirming the geometry and mineralisation as modelled.

Funding for PCZM trial mining and updated BFS studies is being sourced through drawdowns from the combined total ~\$33m (ZAR370m) Industrial Development Corporation (**IDC**) and Triple Flag Precious Metals Corp. (with its subsidiaries, **Triple Flag**) funding facilities.

Trial mining began with the footwall drive clearing to access the existing 143m Level draw points in order to assess the near ore geotechnical conditions at that level and to sample the material remaining in draw points. This was followed by development drilling and blasting from the 105m Level development drive towards the supergene Crown Pillar orebody at the 99m Level. A total of 82m of ramp development (4.5m wide x 4.5m high) was completed and the supergene sulphide orebody was intersected in late January 2024.

The footwall access ramp traversed a span of approximately 9m of a phlogopite schist horizon. This zone constitutes the weakest geotechnical zone that will be mined in the early mining project and mining conditions encountered here determine future mining layouts and efficiencies. The standard 1.8m split sets roof support is upgraded to 1.8m resin bolts and mesh in the phlogopite zone, providing adequate roof and sidewall support to continue mining at the optimum 4.5m x 4.5m dimensions with unaffected face advance rates.

The rock conditions along the 99m Level supergene sulphide ore drive have also proven to be very competent and the original conservative planning drive dimensions of 3.0m high by 3.0m wide were increased to 4.5m x 4.5m while keeping the same roof support regimen that was used for the waste development drive. A combined total of 53m has been developed along the ore strike (north and south ore drives) during the Quarter. The orebody widths along strike have been tested with short crosscuts and confirmed to be 6-12m horizontal width as predicted in the Mineral Resource model.

Air leg drilled raises with 2m high x 2m wide dimensions to test the up-dip ore conditions and the transition to the oxide horizon at an anticipated 60m level have commenced.

At surface, the underground material is stockpiled according to geological classification before crushing to -40mm and sub-sampling. The bulk sampling plant, sample preparation (pulverising) and XRF analysis laboratory was commissioned in March 2024.

Bulk samples of ore are metallurgically tested to confirm optimum concentrator plant configuration and estimate recovery performance.

The data being gathered will feed into the Early Production Plan and revised Life of Mine Feasibility Study, which is on-track for completion around mid-CY2024. This study will build on and enhance the already very positive 2020 BFS by adding an early production portion to the operating plan.

Orion is advancing the development of a second production hub, initially based on the Flat Mines area at the Okiep Copper Project (**OCP**), while also conducting exploration programs to increase the Mineral Resource and Reserve base to underpin a larger-scale, longer-term operation.

Orion's New Okiep Mining Company Pty Ltd (**NOM**) holds a Mining Right covering the Flat Mines area with a JORC defined Mineral Resource of 9.4Mt with a grade of 1.34% Cu containing 126,000t of copper (refer ASX/JSE release 28 August 2023).

The Company is upgrading the previous owners scoping Study that was reviewed by Orion in 2021 (refer ASX/JSE release 3 May 2021) and finalising the Bankable Feasibility Study for the Flat Mines area, with ongoing review by independent experts appointed by the debt advisor. The BFS studies are meeting all material expectations of the Scoping Study and confirm a robust foundation project with strong growth potential.

Orion achieved an important milestone in January 2024 when it acquired 12,156ha of surface rights, including the area which is the focus of the intended initial mining at Flat Mines. As a result, the Company is now able to access sites in a previously closed area, to undertake validation drilling and verify the historical Newmont and Goldfields data that underpinned the Mineral Resource Estimates at the Flat Mines East, North and South deposits and further de-risk the study. This validation drilling is being conducted at the request of the debt advisor's independent technical expert.

Since the eleven hole drilling program commenced in February 2024, three diamond core holes have been drilled at Flat Mine East and two diamond core holes have been drilled at Flat Mine South. At the time of writing of this report results from the first two holes have been received with very pleasing results including an intersection of 49m at 4.87% Cu, which is the highest grade intersection ever drilled at Flat Mines and is the highest grade copper intersection drilled in the Okiep district or anywhere in South Africa in the past 4 decades when most copper exploration was discontinued due to decline in copper prices and a difficult operating environment developed.

The Flat Mines Feasibility Study is materially complete and is only awaiting the results of confirmation/validation drilling before report finalisation, scheduled for completion around mid-CY2024, Orion's third mining project, the Jacomynspan sulphide Ni-Cu-Co-PGE Mining Project (**JMP**), located on an executed Mining Right, is evaluating an exciting opportunity to leverage innovative refining technology specifically directed towards the production of high purity, ultrafine metal products that are critical to the energy transition. The Metal Vapour Refining (**MVR**) technology currently being tested on JMP metal sulphide concentrates presents an exceptional opportunity to maximise metal recovery to high-value products with strong ESG credentials.

At JMP, planning for a trial mining program to support pilot scale metallurgical test work programs is progressing well. Laboratory scale test work to confirm the amenability of the JMP sulphide concentrate to MVR technology is delivering promising results and discussions with European funding institutions and electric vehicle manufacturers to partner in this exciting project are progressing.

Orion strives at all times to achieve a sustainable balance between intense operational effort and maintaining a strong focus on safety, environment and community.

## HEALTH AND SAFETY, ENVIRONMENTAL, SOCIAL AND GOVERNANCE

### Health and Safety

No injuries were recorded during the Quarter. The hours worked for the Quarter and the 2024 financial year to date are shown in the table below:

**Table 1: Hours worked at Orion's Areachap and Okiep Copper Projects (South Africa).**

Category of Work	Hours Worked	
	Quarter	FY2024 YTD Total
Exploration	10,474	19,629
Surface	15,428	39,534
Underground	32,695	70,241
Contractors	36,486	64,048
<b>Total</b>	<b>95,083</b>	<b>193,452</b>

The Lost-Time Injury Frequency Rate (**LTIFR**) per 200,000 hours worked is **0.0** for the March Quarter.

At the end of the Quarter, the team celebrated 1,682 days without a Lost Time Injury (**LTI**).

### Community and Stakeholder Engagement

#### Orion surpasses local community employment targets

PCZM is proud to have achieved 54% local community representation at the current employment level. As at the end of the Quarter, a total of 94 community members were employed at PCZM, out of a total on-site complement of 173. Local employees from the communities of Prieska, Marydale, Vanwyksvlei and Niekerkshoop continue to fill various roles within the operation.

### Environmental Management

Making positive contributions to the state of the natural environment, reducing pollution, and ensuring negligible contamination from operational activities are central to Orion's business model and part of our commitment to delivering the highest level of environmental compliance while managing and monitoring the environmental impacts of our activities throughout the exploration and mining lifecycle.

There were no environmental incidents recorded during the Quarter.



### **PCZM Water Use Licence Amendment**

During the Quarter, formal notification was received from the Department of Water and Sanitation (**DWS**) of the grant, in December 2023, of key amendments to the Integrated Water Use Licence (**IWUL**) for PCZM.

### **NOM Water Use Licence**

The application for IWUL for Okiep is progressing to completion and grant is considered imminent. The Flat Mines project will then be fully permitted and can progress to construction.



**Photo 1: Trial Mining at PCZM. Geotechnical conditions in this 50-year-old excavation allow large stable excavations for mechanised mining.**

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**Photo 2: Underground Inspection of very good geotechnical conditions underground at Flat Mine North, New Okiep Mining (NOM).**

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## ORION MINERALS' OPERATIONS

### PRIESKA COPPER ZINC MINE (PCZM) DEVELOPMENT AND EXPLORATION

#### Critical Focus Items

During the Quarter, significant progress was made in support of trial mining and dewatering at PCZM, including:

- The +105m Level Supergene orebody was intersected after approximately 82m of footwall ramp development was completed from the historical 105m Level haulage. From here, 4.5m x 4.5m tunnels have been developed along ore strike in both a northerly and southerly direction;
- Power Plant Electrical Technologies (**PPE Technologies**), the appointed electrical EPC contractor, completed the installation of surface and underground electrical infrastructure. This included the installation of the 11kV overhead powerline;
- Services to the underground workings (ventilation, water, electricity and compressed air) are powered by the 11kV overhead powerline and the underground electricity feed is via the Marais Shaft;
- The long-lead electrical items for the construction of the 15MVA Eskom grid connection sub-station expansion have been ordered and the Eskom-approved construction contractor mobilised to site. Power tie-in for the dedicated 15MVA facility is planned for early Q3 CY2024;
- Installation of the mine dewatering pumps and piping infrastructure commenced and is on schedule for completion in time for the 15MVA electrical tie-in; and
- Importantly the connection of the 15MVA will also allow for application to Eskom for exemption from load shedding and will provide adequate uninterrupted power for the complete early mining and production plan.

#### Dewatering

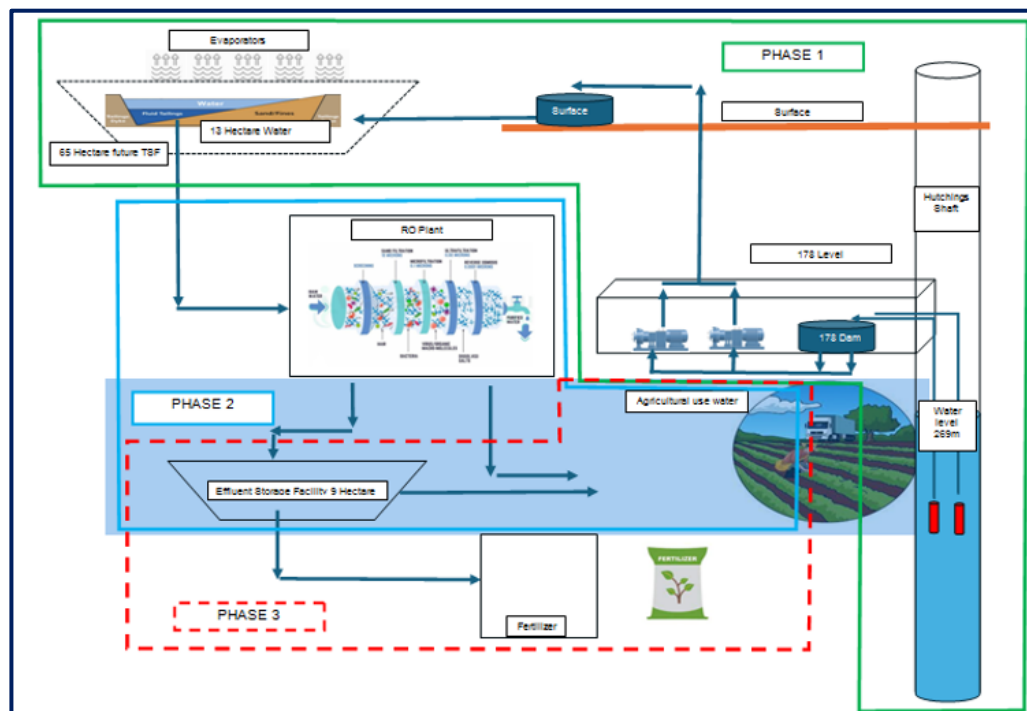
The underground water depth is currently approximately 267m below surface, with primary dewatering to commence once sufficient electrical power becomes available and a water storage facility has been constructed on surface.

Installation of the dewatering infrastructure began in January 2024 on the 178m Level, with the pump foundations, installation of the multi-stage pumps, steel piping and the electrical reticulation. Installation of the two submersible pumps at 300m below the 178m Level in the main Hutchings Shaft is scheduled for early Q2 CY2024. These submersible pumps will be installed with 3m lengths of steel pipes using a winch on the 178m Level.



Photo 3: Underground 178m Level Multi-Stage Pumps.

Different water treatment and purification methods were evaluated based on CAPEX and OPEX intensity, executability, timelines and compliance with the PCZM water use licence specifications. The most suitable solution has continued to be the construction of an interim single-lined 13ha water storage facility for dewatering. Investigations are currently underway to determine the most economical dam wall construction material.



**Figure 1: Underground Dewatering and Water Treatment.**

Mine dewatering and water treatment is planned to progress in two phases with a possible third phase to follow later in the program.

#### Phase 1

Focusing on volume reduction through evaporation (included in the PCZM BFS20) at the water storage dam, where the remaining concentrated brine will then be temporarily stored in the 13ha single-lined impoundment facility. The optimal location of the storage facility within the footprint of the approved 65ha tailings storage facility (TSF) is being determined through a surface drilling program that will determine calcrete depth and suitability as embankment construction material.

#### Phase 2

Reverse Osmosis water treatment will follow at a later stage, being less time sensitive. It will reduce the volume of brine for storage and will focus on producing agricultural quality water for host community agriculture projects. Concentrated brine will be stored in the planned 9ha effluent storage facility (ESF) as approved in the water use license.

#### Phase 3

The future treatment of brine stored in the effluent storage facility, to recover agri-minerals and fertiliser, may be part of a potential joint venture with specialists in this industry and possibly with local partners. This is an opportunity that may be exploited in the future.

Experienced TSF engineering group, ECO Elementum Engineering, has been contracted to design the 13ha dewatering storage facility. The design will allow for a seamless transition into the future paddocked 65ha TSF, to accept flotation tailings when the processing plant comes online. The footprint has been optimised for the planned dewatering rates and will make use of evaporators to concentrate the salts in storage. Construction of the storage facility will commence in April 2024 and will be progressed utilising a staged approach with lined paddocks.



The early dewatering program is on track to complete installation of dewatering infrastructure to allow for pumping at a rate of 100m<sup>3</sup>/hr initially in Q3 CY2024, building up to 500m<sup>3</sup>/hr towards the end of CY2024. The current design plans to completely dewater the mine in 36 months.

### **Power Reticulation**

The engineering design of the 15MVA electricity supply point sub-station upgrade was approved by Eskom in October 2023. The sub-station upgrade work has started and the project remains on track for 15MVA going live in early Q3 CY2024.

PCZM partnered with PPE Technologies as EPC contractor for the surface and underground electrical reticulation work. The priority installations were completed in December 2023, with the remainder scheduled for completion during April 2024.



**Photo 4: Underground 178m Level Electrical Sub-station.**

The interim arrangement to increase the currently available electrical supply to 1MVA was completed in January 2024, with the construction of the 11kV overhead powerline and supporting transformers and electrical switchgear installation. The Medium Voltage (11kV) extension to the underground workings at 105m Level via the old Marais Shaft now powers the trial mining compressors, mining drills and ventilation fans.

The 178m Level dewatering pump station electrical MCC, switchgear, transformer and cable installation are progressing according to schedule and will be operational by the time the 15MVA upgrade comes online in early Q3 CY2024.

### **Exploration**

The review of the interpretation and modelling of the PCZM orebody is ongoing to incorporate the data from trial mining with expected completion in Q2 CY2024.

### **Geology**

At surface, underground material from both the +105m Level supergene sulphide ore drives as well as the 143m Level draw point material is stockpiled according to geological classification for crushing to -40mm and sub-sampling in a bulk sampling plant.



The bulk sampling plant was commissioned in March 2024. Grade determination is being done in a newly constructed mine assay facility with XRF of pulverised samples. Selected sample pulps are dispatched to accredited laboratories for ICP analysis and verification of XRF results.



**Photo 5: Bulk samples of mineralised material dumped separately on surface, await crushing and grade determination stockpiled in six separate stockpiles according to ore category (high, med, low grade and oxide, mixed or supergene sulphide). Image as at 17 April 2024.**

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## **Trial Mining**

P2 Mining (part of Newrak Mining), Orion's appointed contract miner, started the trial mining program with the footwall drive loading to access the 143m Level draw points. This was followed by development drilling and blasting from the 105m Level development drive towards the supergene sulphide Crown Pillar +105 Mineral Resource Block at the 99m Level.

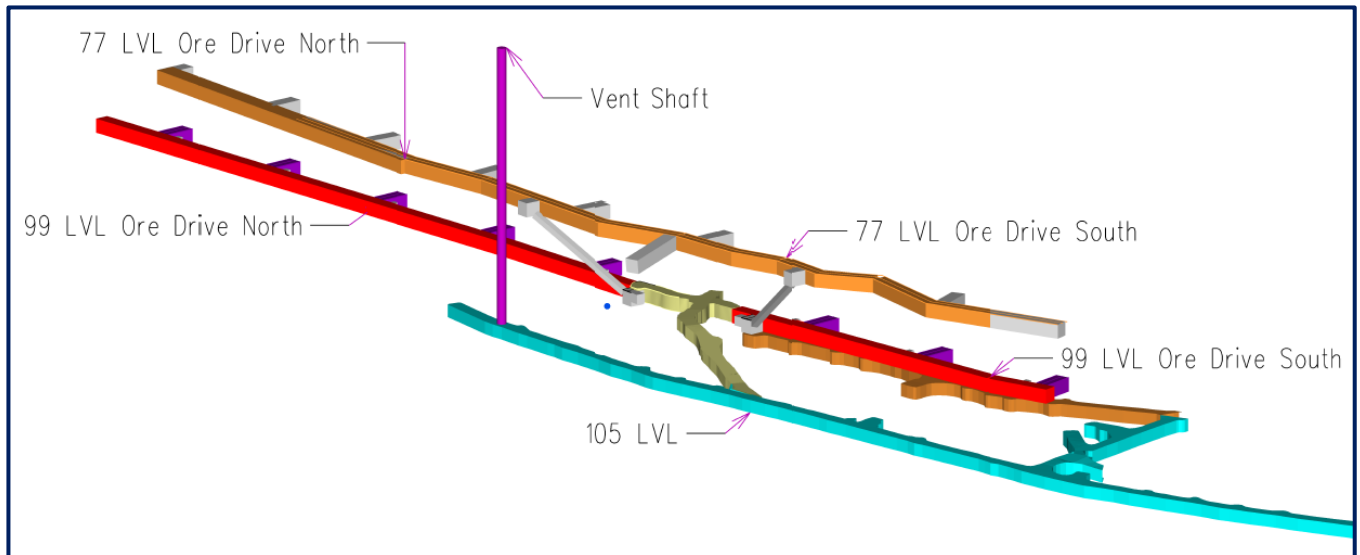
Drilling and blasting of the development cross-cut ramp started in late November 2023 and a total of 82m (4.5m wide x 4.5m high) had been completed to reach the +105 Block in late January 2024.

Before reaching the supergene sulphide zone, the waste drive traversed a span of approximately 9m of geotechnically weaker phlogopite schist without any geotechnical concerns. The standard 1.8m split sets roof support was upgraded to 1.8m resin bolts and mesh, providing adequate roof and sidewall support in the phlogopite schist zone. This weak zone traversed was a key test of the trial mining exercise. By demonstrating that the zone can easily be traversed with standard mining methods with no impact on mining dimensions and advance, the most important bottleneck has been tested and resolved, allowing for appropriate machine selection in order to maximise extraction rates and efficiency.

The rock conditions along the 99m Level drive in the +105 Block supergene sulphide mineralisation have proven to meet the most optimistic expectations with very competent geotechnical conditions demonstrated. The original conservatively planned drive dimensions of 3.0m high and 3.0m wide were increased to 4.5m x 4.5m while keeping the same roof support regimen that was used during the waste development drive.

The deployment of uniform 4.5m x 4.5m tunnelling dimension throughout the mine, in both ore and waste allows for optimised machine selection and flexibility of operational machine scheduling. The 4.5m x 4.5m dimension also allows suitable large haul trucks to operate to achieve the 40,000 tonnes per month production target.

A total of 53m of development in the +105 Block has been completed at the 99m Level to date.



**Figure 2: +105m Level Supergene Trial Mining.**

Development within the mineralisation in both the northerly and southerly directions has progressed very well. The trial mining includes two 2.0m x 2.0m exploration raises to determine the rock conditions in the up-dip area towards the top of the supergene sulphide mineralisation and its contact with the leach zone. The two exploration raises will first be developed up to the 77m Level and then be extended upwards as far as 60m level if rock conditions allow.

The revised trial mining plan was developed to align with the future early mining requirements (40,000t per month mining schedule) with considerations regarding ventilation, mining method, machine access and access to services. Early mining is planned to be retreat stoping, from the north towards the south. This will include a development drive on the 120m Level below from where both hypogene sulphide and supergene sulphide material will be retrieved from ore passes and hauled to surface with underground dumper trucks.

The mining method for the southern portion of the supergene sulphide +105 Resource Block is expected to also be retreat stoping at the start, possibly changing to include backfill as the orebody extends further to the south.

Initial trial mining development rates were hampered by poor drill rig availability as well as loadshedding by the state utility, Eskom. The original older model double boom Sandvik DD321, has been replaced with a newer single boom Sandvik DD210 machine resulting in an improvement in machine availability and in development rates. A 600kVA generator with step-up transformer was sourced and installed to support the primary mining activities throughout loadshedding for the next three months until the tie-in to the upgraded dedicated 15MVA Cuprum sub-station is completed. At that time, the mine will become eligible for loadshedding exemption.

More than 4,000t of 143m Level draw point oxide and sulphide material has been stockpiled (Photo 5) on surface since October 2023. The material is stored according to geological classification for future treatment in a crushing and sub-sampling plant, with grade determination in the newly constructed mine laboratory.





**Photo 6: 143m Level draw point loading.**

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**Photo 7: Mine Planning.**

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Trial mining is testing the conventional load-haul-dump arrangement as well as an alternative underground mining method using continuous loaders matched with bi-directional trucks at the 120m Level waste and ore drives. The learnings and efficiency improvements will feed into the revised mining BFS, together with draw point sampling results from the 143m, 201m and 259m Levels that will evaluate the quality of broken material remaining in old stopes in the upper areas of the underground workings and provide access to sill pillars for sampling and evaluation of extractability.

### **Mining Fleet for Trial Mining Phase**

The mining fleet of vehicles and machinery is shown in the table below:

Item	Description	Quantity
LHD	Aard 5.t	2
Dump Trucks	14 t low profile Fermel	2
Drill Rig	Sandvik DD210	1
Continuous Loader	ITC120N	1
Bi-directional drive Dump Trucks	20t Paus ITC 10	2

### **Metallurgical Process Re-evaluation and Early Concentrator Plant Design**

#### **PCZM Supergene Ore Test Work**

Supergene sulphide flotation testing was carried out at Maelgwyn Metallurgical laboratory (**Maelgwyn**) in Gauteng, South Africa. The testing involves using a bulk flotation process to produce a concentrate containing both copper and zinc. This combined concentrate was then subjected to regrinding and separation by flotation to yield separate copper and zinc concentrates.

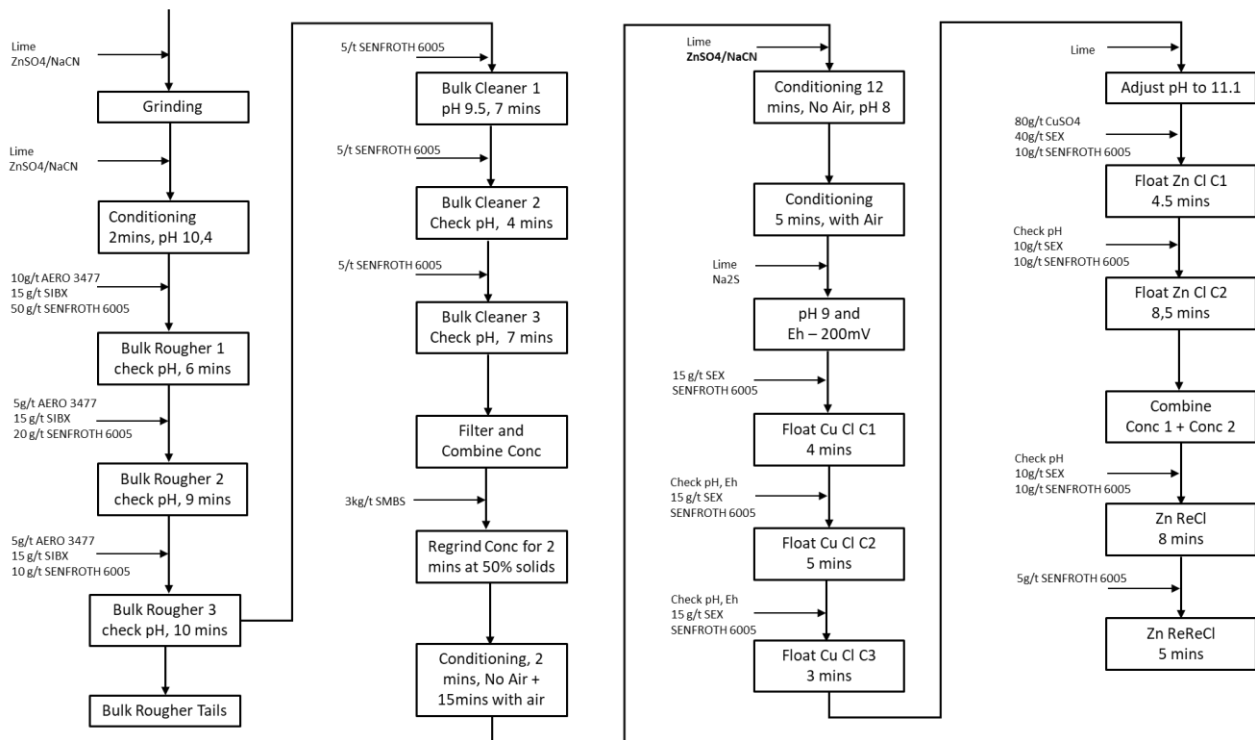
Orion is also collaborating with Brisbane Met Lab in Australia to expedite the development of a method for extracting separate copper and zinc concentrates from supergene ores.

Future test work at Maelgwyn and Brisbane Met Lab in Q2 CY2024 will focus on the following:

- Assessment of alternative reagents suite to minimise dissolution of secondary copper sulphides;
- Application of iron filings during milling to cement copper ions; and
- Maintain high pH during the test to avoid leaching of secondary sulphides.

Freshly mined supergene sulphide material from the trial mining project has now become available for the further scheduled test work.





**Figure 3: Metallurgical test work flowsheet for supergene ore.**

### PCZM Oxide Resource Test Work

The PCZM Mineral Resource contains 1.5Mt of easily accessible oxide material (refer ASX/JSE release 25 July 2023). The objective of this study was to evaluate the possibility of extracting these oxide Resources through acid leaching.

Samples of oxide mineralisation from draw points at +143m Level and Crown Pillar at +105m Level are being subjected to leaching tests to determine the recovery of copper and zinc. The test work is being completed at CM Solutions Laboratories in Johannesburg.

Sequential leach tests indicate that both samples consist of a combination of oxide and sulphide minerals.

The test results indicate the need for a leaching reagent that can extract both copper and zinc oxides and sulphides. Glycine technology, a proven leaching method for both oxide and sulphide minerals, will be examined at a conceptual level on PCZM mineralised material in Q2 CY2024.

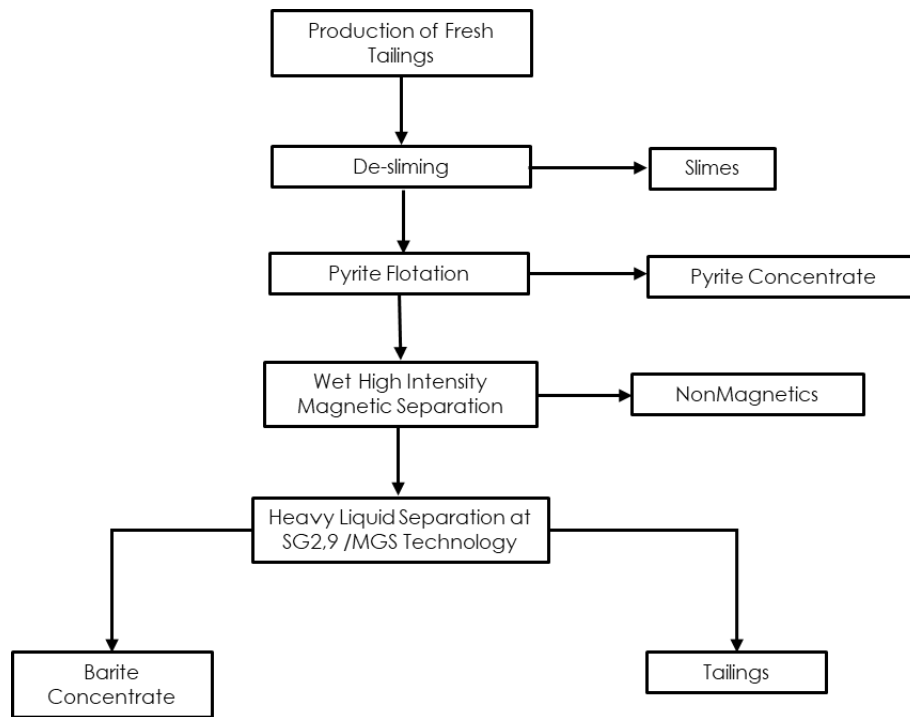
### Barite and Pyrite for Sulphur Recovery Test Work

There are 40Mt of historical tailings at PCZM and more will be generated from the new processing plant. These tailings contain barite, a potentially valuable by-product which is widely used in oil & gas well drilling muds, as well as in other industrial and medical applications.

The objective of this test work was to evaluate the upgrade and recovery of barite using multi-gravity separator (MGS) technology. Barite exists as ultra fines in the tailings and the MGS technology is well suited for the recovery of ultra fines.

### Further Test Work Planned

MGS technology has the potential to deliver improved results. Therefore, the gravity separation test work will be repeated with a fresh sample as detailed below.



**Figure 4: Barite test work scheme.**

## Human Resources

During the Quarter, various people-centric activities have taken place. These included:

- A Resident Engineer was appointed, provided through P2 Mining on a contract basis;
- Geo tolerance training has been provided for relevant individuals on site; and
- Consultation sessions were facilitated focussing on discussing site specific working hours and discipline specific shift work arrangements. The consultations were held to align the various teams with the mining production requirements in an effort to increase efficiency, while aligning with legislative requirements. The consultations concluded with an agreement between the Company and the affected individuals, where the envisioned principles were implemented.

## Community and Stakeholder Engagement

### PCZM surpasses local community employment targets

PCZM is proud to have achieved 54% local community representation at the current employment level. As at the end of the Quarter, a total of 94 community members were employed at PCZM, out of a total on-site complement of 173. Local employees, from the communities of Prieska, Marydale, Vanwyksvlei and Niekerkshoop, continue to fill various roles at the operation.

Orion continues to work towards achieving the targets that are captured in its Community Participation Framework, which was developed at PCZM. The framework was developed through a year-long series of in-person meetings with representatives from local businesses and resident groups. It commits Orion to proactively encourage host community involvement in its operations through targets of 50% for employment, 30% for the procurement of goods and services and 40% for sub-contracting opportunities.

The first of its type among junior mining companies operating in South Africa, the framework is a model for community engagement and participation. It also provides a template that will be implemented at OCP in the Nama-Khoi municipal area.

During the Quarter, the ten community members from the Siyathemba and Vanwyksvlei continued with their six-month learnership program at the Murray & Roberts Training Centre in Carletonville.

### Community Relations and Engagement

Routine community engagement continued during the Quarter. The Orion Siyathemba Stakeholder Engagement Forum conducted a meeting in February 2024 to provide an update on Orion's activities and the trial mining program currently underway at PCZM.

Orion, who sponsored host community member Chederick Van Wyk as a 2020 SA Olympic team member, was in attendance to cheer on the participants at the Sonskyn Intermediate School's Athletics Day in Marydale in February 2024.

Chederick (in the foreground) gave the youngsters invaluable advice on running technique.



**Photo 8: Former Olympian, Chederick Van Wyk, with students from Sonskyn Intermediate School.**

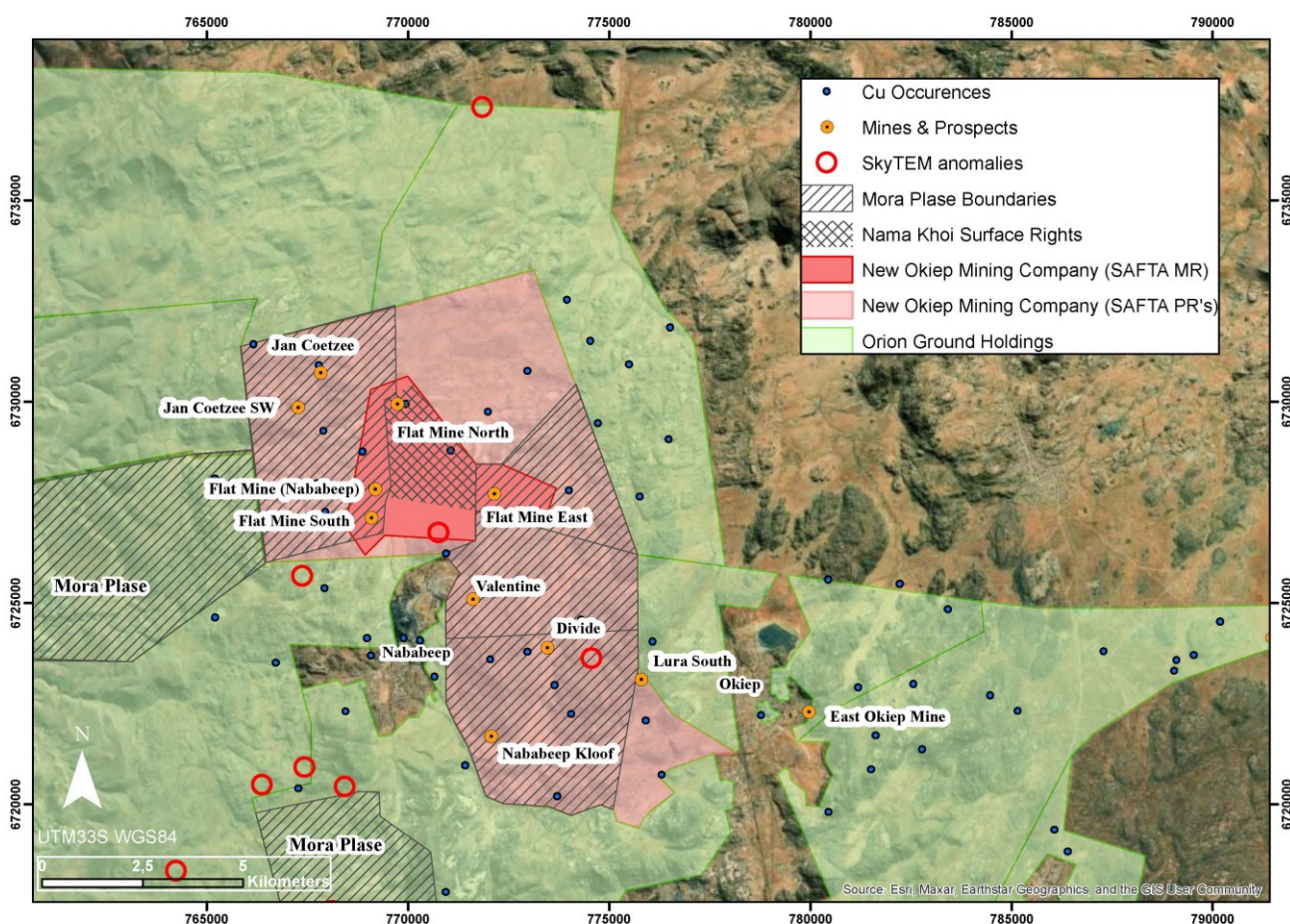


## OKIEP COPPER PROJECT (OCP) DEVELOPMENT AND EXPLORATION

### Feasibility Study Report

The Mineral Corporation (TMC), who act as Independent Experts appointed by the debt advisor, has requested limited, validation drilling to confirm the Resource classification of the project area as defined by the Competent Person who signed off on the Resource Statement. Historical exploration data from work completed by the previous owners, Newmont and Goldfields, has been largely validated to satisfaction at Flat Mine North. However, a lack of surface access prevented the completion of twin-drilling by the previous owners or Orion to validate historical data at the Flat Mine East and South prospects.

During January 2024, Orion acquired 12,156ha of land (Figure 5) from Mora Plase (Pty) Ltd, that includes the majority of the Flat Mine Project area (refer ASX/JSE release 23 January 2024). This has opened up access for the mobilisation of core drilling rigs to the Flat Mine East and Flat Mine South deposits.



**Figure 5: Location of the Flat Mines Project and surface rights holding on Farm Nababeep 134.**

Drilling commenced at Flat Mine East in early February 2024 and at Flat Mine South in mid-March 2024, with approximately 5,800m drilling scheduled for completion by the end of May 2024. Final analytical results are expected to be available two to three weeks thereafter. Core from all holes is 3D oriented to enable the provision of detailed geotechnical information that was not recorded by Newmont or Goldfields due to their local operating experience and their decision that strong geotechnical conditions did not warrant additional reporting or evaluation.

The Flat Mines Bankable Feasibility Study is scheduled for completion around mid-CY2024.



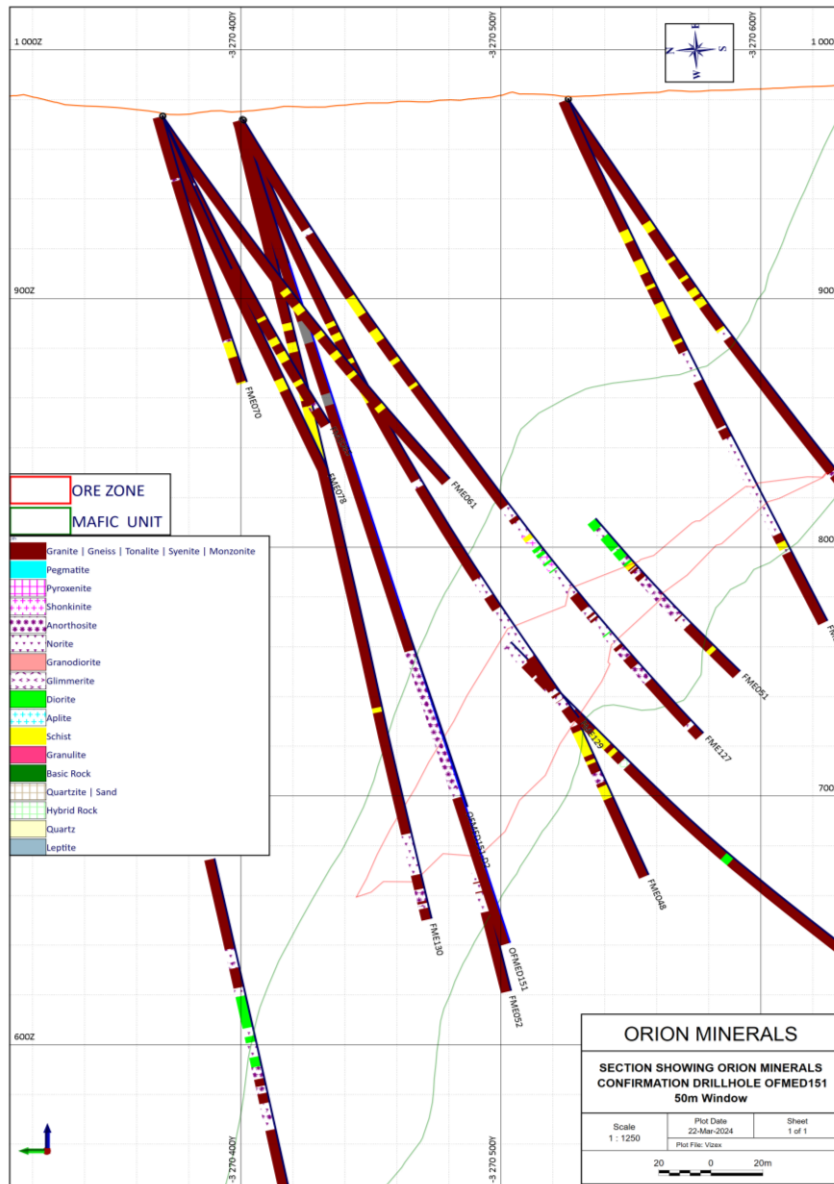
Deflections drilled from the primary exploration holes will yield whole-core samples through the entire mineralised zone of the deposits to support metallurgical test work. These large samples will be fully representative of each deposit to be mined. The test work will include XRF-sensor-based ore sorting, crushing, milling and flotation.



**Photo 9: Discovery Drilling rigs - active at Flat Mine East.**

The table below details the holes and metres drilled at Flat Mine East and Flat Mine South during the Quarter.

Prospect	Total Metres Drilled	Drilling Type	Holes Drilled	Holes Completed to date
Flat Mine East	1,057.47	Diamond Core	3	1
Flat Mine South	200.98	Diamond Core	2	0



**Figure 5: Section view of confirmation drill hole OFMED151 on a 50m window.**

### Significant copper mineralisation, in line with expectations

At the time of writing of this report results from the first two holes have been received and reported (ASX/JSE release 22 April 2024) with very pleasing results including an intersection of 49m at 4.87% Cu, which is the highest grade intersection ever drilled at Flat Mines and is the highest grade copper intersection drilled in the Okiep district or anywhere in South Africa in the past 4 decades when most copper exploration was discontinued due to decline in copper prices and a difficult operating environment developed.

Importantly the hole confirms the very high-grade nature of the mineralisation in this zone of Flat Mine East.

**Table 2: Comparison of % Cu grades and widths for OFMED153 and nearest neighbour holes FME035, FME037 and FME124.**

Hole ID	From (m)	To (m)	Including internal waste			Internal Waste (m) ( $\leq 0.5\%$ Cu)	Internal Waste % Cu	Excluding Internal Waste		Distance from OFMED153 (m)
			Intersection Width (m)	Average % Cu	Max % Cu			Mineralised Material (m) ( $\geq 0.5\%$ Cu)	Average % Cu	
OFMED153	231.00	280.00	49.00	4.89	22.80	9.27	0.06	39.73	6.03	---
FME035	250.52	309.62	59.10	3.55	16.74	25.91	0.07	33.19	6.32	13.00
FME037	305.26	312.64	7.38	5.51	11.10	---	---	7.38	5.51	30.00
FME124	223.00	249.50	26.50	3.02	8.28	---	---	26.50	3.02	45.00

## Environmental Management

### Water Use Licence Application

The Integrated Water Use Licence Application (**IWULA**) was submitted to the DWS early in September 2023 and a certificate of receipt was received. The Application is progressing through the Department and Orion has responded to queries and clarifications. It is understood that the only remaining requirement of DWS is to complete the review by its Civil Engineering Department, which is responsible for the approval of the TSF design. Approval of the IWULA by DWS is now anticipated in Q2 CY2024.

## Okiep Project Development

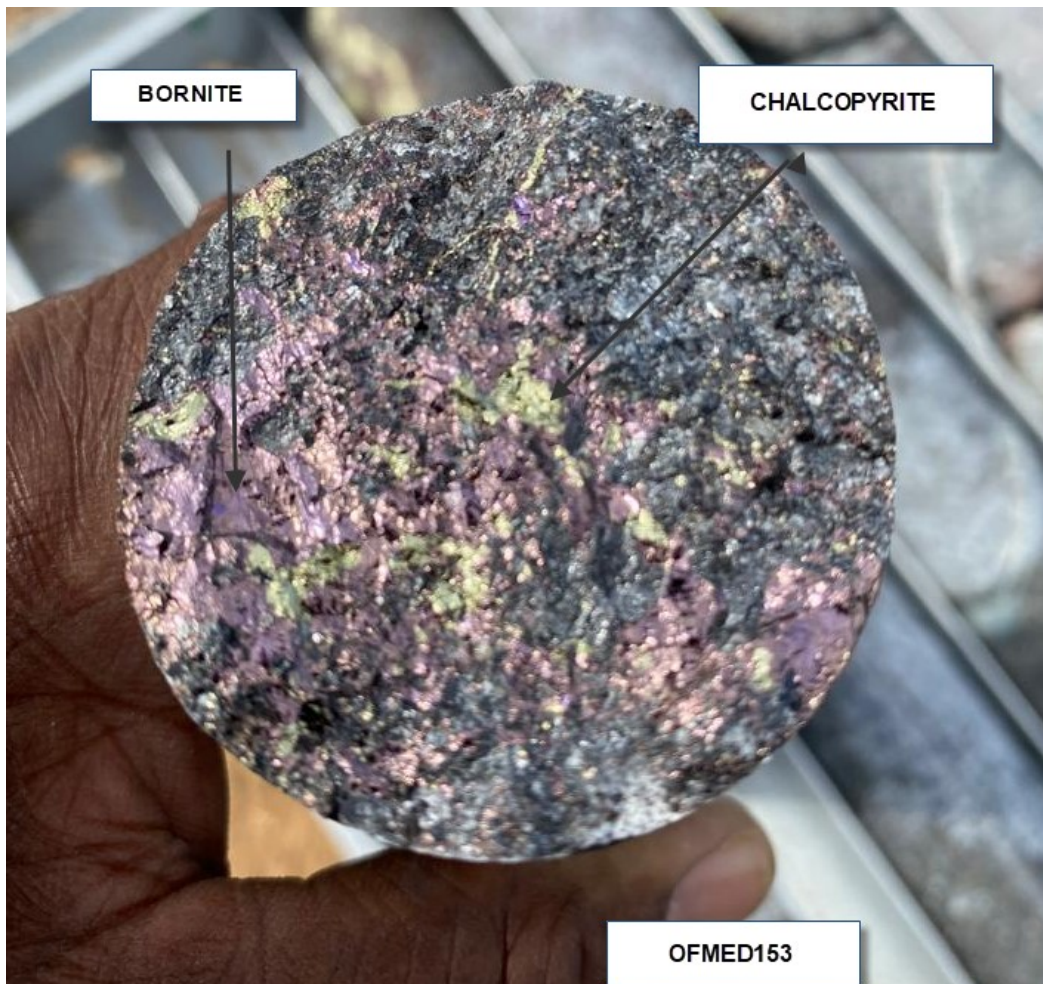
### Metallurgical Processing Plant

Additional drill core from the Flat Mine East, North and South deposits will soon be available for submission for test work to RADOS and Maelgwyn laboratory who undertook previous ore sorting test work on Flat Mines and provided designs for the BFS.

Table 2 demonstrates the importance of ore sorting, by showing that when internal waste is excluded, the grade of the remaining ore is materially increased and tonnage for milling is reduced with potential material impact on the Capex and Opex of the operation.

The results are not expected to precipitate significant changes to the process design, but more accurate determination of reagent consumptions is expected. The Capex and Opex cost estimates for the processing plant will be updated to 2024 values as soon as the outcome of the test work is available.





**Photo 10: Copper mineralisation intersected at Flat Mines in drill hole OFMED153 (assays pending).**

### **Mine Planning**

With the additional drilling being undertaken in the Flat Mine East, North and South deposits, the mineralisation envelopes will be updated by Orion and the Mineral Resource estimates will be updated by Z-star (the nominated independent Competent Person). The mine layouts will be reviewed to accommodate changes of geometry, if any, to the grade block model.

JHK Consulting Mining Engineers were appointed during the Quarter to review the mine design, scheduling, mining productivity, mining costs and to act as the Competent Person for the final BFS document.

### **Infrastructure**

As previously reported, the plan for the provision of power and water to the Flat Mine operations has been finalised and incorporated into the BFS. No further work in this area is currently required.

Rehabilitation of the Nababeep waste-water-works by the Nama Khoi Local Municipality is in progress, with consultants appointed by the Municipality overseeing the work. The required refurbishing works have been put out to tender and the appointment of contractors is imminent.

Construction of power lines for electricity on the mine site has been deferred until the BFS has been finalised. A servitude application for the 11kV powerlines to the mine site has been submitted as part of the SPLUMA (land use rezoning application) which is in process.

Access control to the mining area remains in place.



### Land Access

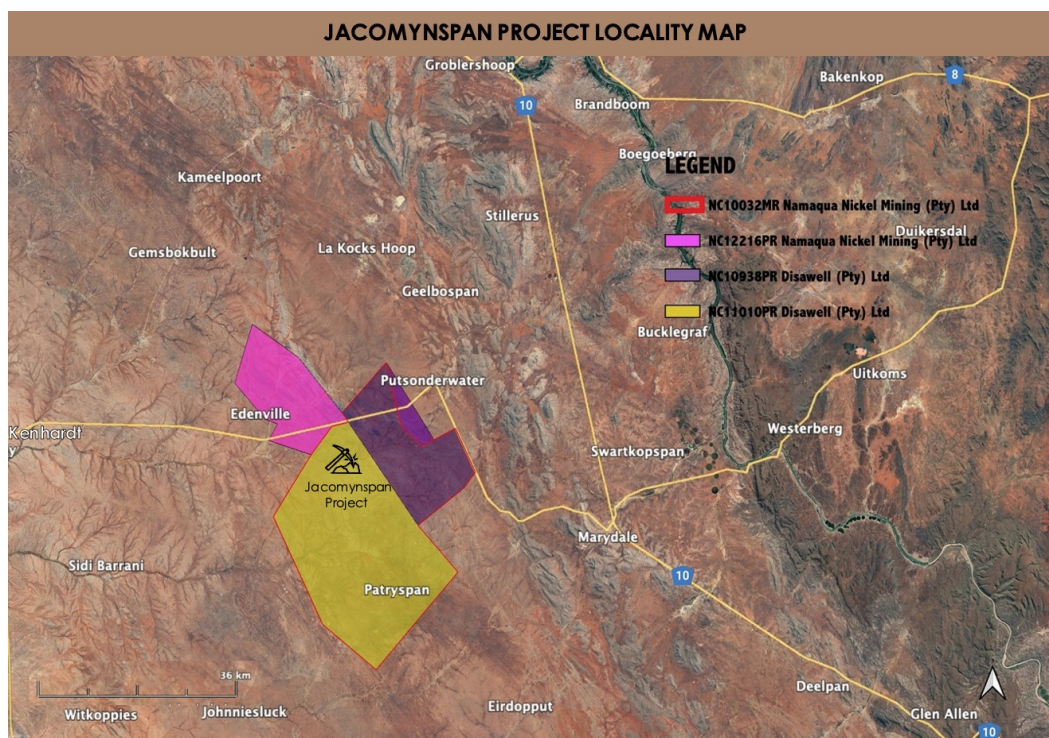
Orion's acquisition of 12,156ha of surface rights means that it has clear access and exclusive use of the surface rights to facilitate the development of the Flat Mines Mining Project (Figure 5).

### New Okiep Mining Company (NOM) Permitting

No material changes in the status of the mining and prospecting rights occurred during the Quarter.

The only outstanding permit preventing the commencement of mine development is the granting of the Water Use Licence by the DWS.

## JACOMYNSPAN Ni-Cu-Co-PGE PROJECT (JMP)



**Figure 7: Jacomynspan Project area map in the Northern Cape, South Africa.**

The JMP Nickel-Copper-PGE Project is Orion's third strategic future metals project alongside PCZM and OCP and has the potential to be a significant metals producer. The Project is located on an executed mining right.

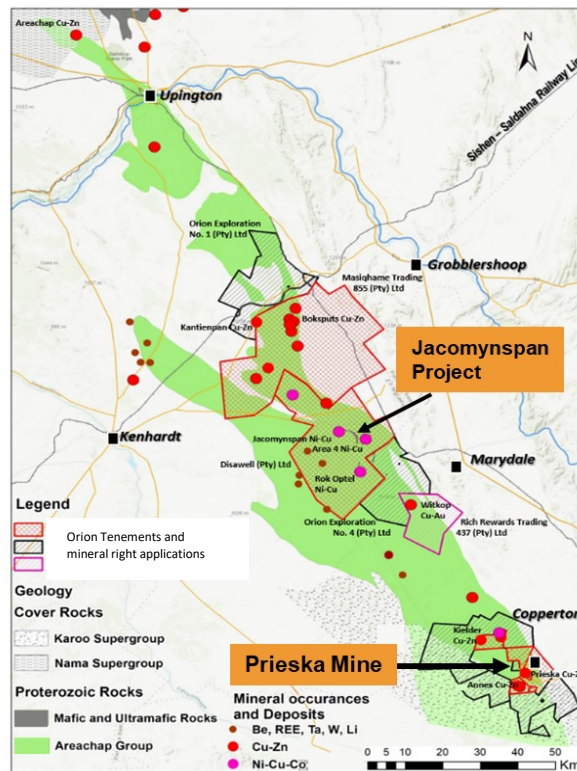


Figure 8: JMP and PCZM location map.

JMP hosts a JORC defined Mineral Resource of 65Mt at 0.28% Ni, 0.19% Cu, 0.02% Co, 0.2g/t 2PGE +Au using a cut-off of 0.2% Ni (refer ASX/JSE release 8 March 2018). The current Mineral Resource extends over less than 1km of strike of a series of outcropping intrusives where wide-spaced scout drilling by Anglovaal, Newmont, African Nickel (ANL) and Orion have revealed a combined 7km strike of identical mineralised outcropping or shallow sub-cropping ultramafic intrusive bodies.

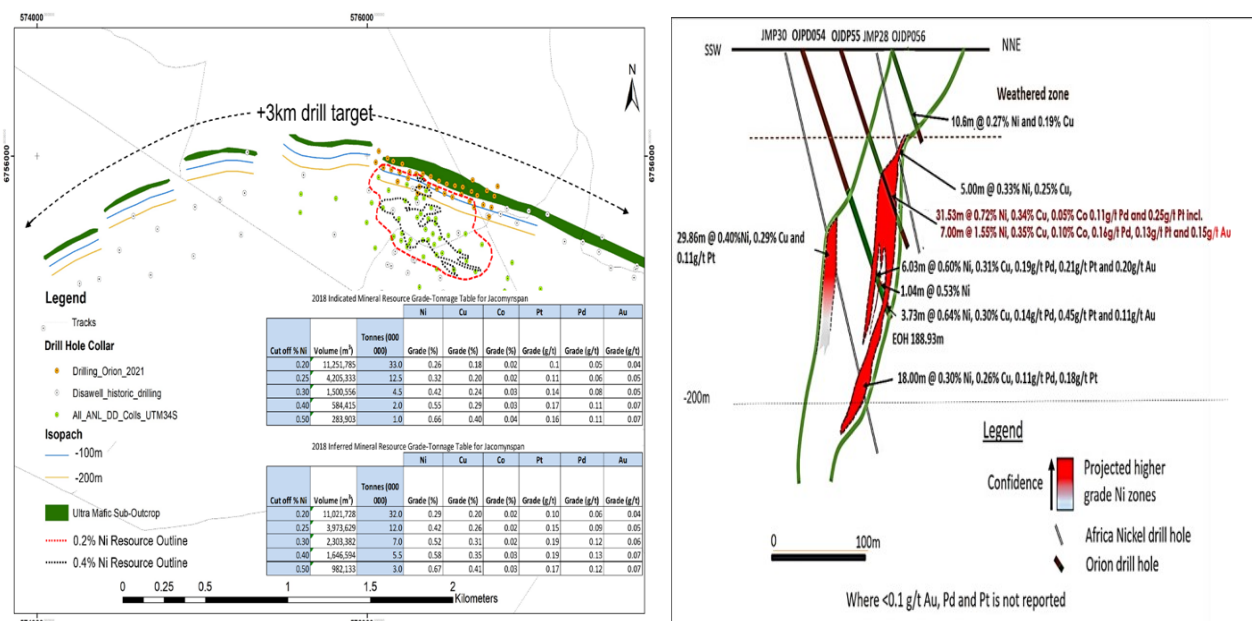


Figure 9: JMP Drill Target Range & Cross Section.

Orion sees compelling potential for a large-scale, near-surface bulk mining operation at JMP, with drilling confirming the presence of shallow sulphide nickel-copper-cobalt-PGE mineralisation within the ultramafic intrusive. This work is being progressed in parallel with an innovative metallurgical test work program to produce battery precursor products and other critical metal micro-powders from JMP material.

During the Quarter, work continued to focus on planning for trial mining. The aim is to generate a sufficiently sized representative bulk sample to test innovative metallurgical refining/battery pre-cursor production at a pilot scale. Orion engaged with a drilling contractor for cost estimates to drill large diameter drill holes to obtain representative material to feed the pilot plant. The concentrated material will be used to determine the design criteria for the MVR plant. Orion maintains an exclusivity agreement with Stratega Metals (Pty) Ltd (**Stratega**) to undertake amenability test work on a 250kg sample of Ni-Cu-Co-PGE-Au concentrates from JMP after the initial laboratory amenability test work returned promising results.

Work is progressing on refining a Feasibility Study based on updating a 2013 Concept Study for the project that forms the basis of the approved mine works program. The current focus of work is on securing an adequate water supply for mining operations including an application for a water use licence to conduct the trial mining operations. In terms of power, Orion has engaged with Eskom who have indicated that the most favourable route for the powerline will be from the newly built Nieuwehoop sub-station. Eskom will be providing a cost estimate for the power line.



**Photo 11: Newly built Nieuwehoop sub-station (near Kenhardt).**

The DMRE visited the JMP site during November 2023. An application for the extension of the commencement date of mining operations was submitted to the DMRE in December 2023. The extension application is to provide Orion with additional time to complete ongoing technical studies and a water use licence application.

### **Stratega Metals Vapour Refining Project**

During the Quarter, a series of 20-50g laboratory tests on chloro-vapour extraction of sulphur and metals commenced. The purpose of this program was to optimise thermodynamic conditions of the metal vapour process and will determine the thermodynamic and kinetic parameters for selective chlorination and extraction, metal gas transfer, distillation and preparation of the metal concentrate for subsequent carbonylation. The targeted outcome is the optimised refining configuration for production of high value products such as pure elemental sulphur, separated high purity metal products and compounds and metal carbonyl powders.



A review by an Independent Expert Chemical Engineer to evaluate and validate the outcome of the test results is underway. The next phase of the amenability test will consist of a larger sample (500g) and will start after the verification of Stage Gate 1 test results review.

Orion and Stratega are advancing discussions with European electric vehicle manufacturers which are potential end-users of the metal vapour powder products. One large European EV manufacturer has accepted Stratega onto its accredited supplier listing and has expressed interest in playing a role in the funding of a vertically integrated mine and refinery facility to produce its metal product requirements. Discussions with this and other EV OEMs continue which also include European strategic funding initiatives from those who have expressed an interest in partnering and funding both mine and refinery development for the project.

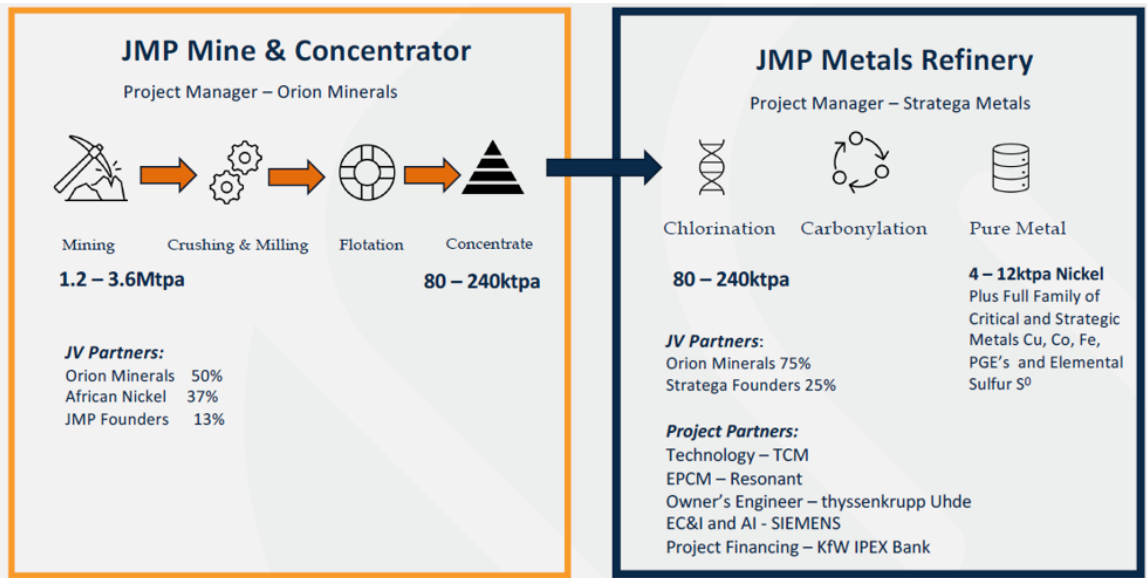


Figure 10: Orion Partners for JMP.



Figure 11: Orion and Stratega Phased Approach for JMP and refinery project.



## Areachap Exploration

Orion's exploration tenements in the Areachap Belt cover an area exceeding 175,000ha. Multiple VMS-style copper-zinc and nickel-copper-cobalt-PGE-gold in ultramafic intrusive targets are known within the tenements, as well as numerous unevaluated targets. Chief among these are:

- The Kantienpan zinc-copper VMS project where Orion has identified a substantial mineralised deposit through drill-testing and will progress this project to pre-feasibility level;
- The Witkop copper-gold project where Orion has completed a preliminary assessment and is in discussions to develop the Project;
- The Bokspuits copper-zinc VMS project where geophysical investigation and preliminary drill-testing warrants additional follow-up exploration; and
- Additional lithium, beryllium and Rare Earth Element (REE) mineralisation potential is being investigated in the Orange River pegmatite swarm, which traverses the Orion tenements.

Exploration work during the Quarter has involved desktop studies including the re-modelling of geological and geophysical datasets to inform target generation and exploration program design for the known mineralisation and the concurrent assessment of as-yet unevaluated targets. Orion is investigating the potential to joint venture or separately fund this significant earlier-stage exploration opportunity.

## Australian Projects

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

The Fraser Range Project is a belt-scale project, highly prospective for high-value magmatic nickel-copper-cobalt sulphide discoveries. The project is a venture with ASX-listed IGO Limited, who is the dominant landholder in the Fraser Range and owns the Nova Operation, which is mining and processing the Nova-Bollinger Ni-Cu-Co sulphide deposit discovered in 2015.

Orion maintains a sizeable tenement package in the Fraser Range under a joint venture with IGO. In terms of the joint venture, IGO is responsible for the exploration of all the tenements while Orion is free carried by IGO through to the first Pre-Feasibility Study. This allows Orion to maintain exposure to ongoing exploration and development of the project, without any ongoing financial commitment.

During the Quarter, no ground exploration activities were undertaken. IGO completed their additional in-depth review of targets identified for prospectivity in the prior Quarter. The review of tenement E28/2596 is expected to be completed in Q2 CY2024.

### Walhalla – Gold and Polymetals Project (Victoria)

While the Walhalla-Woods Point District is best known for gold mining, high-grade copper-nickel and PGE mineralisation also occurs within the belt. Both the gold and copper-nickel-PGE mineralisation within this district are hosted within dykes from the Woods Point Dyke Swarm, a series of ultramafic to felsic dykes occurring over a 75km long north-south belt.

No field or exploration work was carried out on the Walhalla Project during the reporting period.

## Corporate

### Cash and Finance

Cash on hand at the end of the Quarter was \$9.16m. Payments made to related parties and their associates during the Quarter was \$169,000 for director fees and consulting fees, as listed in Section 6 of the Company's Quarterly Cash Flow Report (Appendix 5B).

### PCZM Project Funding

Drawdown of the IDC Convertible Loan is in tranches and is pro rata matched by the drawdown requests that Orion makes under the Triple Flag Funding Arrangement. In February 2024, Orion received ~\$6.31m in cash from the second drawdown of the IDC Convertible Loan Facility and the Triple Flag early Funding Arrangement. At the end of the Quarter ~\$10.22m remains available for drawdown from the funding facilities.

A summary of the material terms of the IDC Convertible Loan definitive agreement was provided in Appendix 1 of the Company's 8 February 2023 ASX/JSE release and a summary of the material terms of the Triple Flag definitive agreements was provided in Appendix 1 of the 13 December 2022 ASX/JSE release.

### Shares Issued

Orion engaged South African adviser Webb Street Capital (Pty) Ltd (**Webb Street**) to provide professional services to the Company in South Africa over recent years, including for the Placement announced on 15 March 2023 (**Services**). Webb Street separately agreed to provide further support to Orion by subscribing for 1,250,000 fully paid ordinary shares in the Company (**Shares**) at an issue price of ZAR20 cents per Share (\$0.017), representing a subscription amount of ZAR250,000 (**Put Option Shares**).

During the Quarter, the Company issued 1,250,000 Put Option Shares to Webb Street, with the subscription price payable by Webb Street offset against fees payable by Orion to Webb Street under the Services engagement agreement. The issue of the Put Option Shares was approved by shareholders at the Company's annual general meeting held on 28 November 2023.

### Director Resignation

On 15 February 2024, the Company announced changes in its Board Composition, which resulted in Mr Philip Kotze stepping down as a Non-Executive Director. Mr Kotze joined the Orion Board as a representative of Clover Alloys Copper Investments Pty Ltd (**Clover Alloys**), which is a 9.2% shareholder in Orion. Orion is progressing possible funding and transaction opportunities with multiple parties including Clover Alloys, in respect of the Company's various projects.

As ongoing discussions with Clover Alloys could put Mr Philip Kotze in a position of conflict, the Orion Board, including Mr Kotze, agreed that it would be preferable if Mr Kotze stepped down from the Orion Board. The Board accepted Mr Kotze's resignation as a director of Orion effective 15 February 2024.

### Appointment of Auditor

During the Quarter, the Company changed auditors, with Mazars Melbourne Assurance Pty Ltd (**Mazars Melbourne**) appointed as the auditor for the Company. Following receipt of ASIC consent for the incumbent auditor, BDO Audit Pty Ltd to resign, Mazars Melbourne agreed to act as the Company's auditor, beginning with the financial year commencing 1 July 2023.

In accordance with section 327C of the Corporations Act 2001, a resolution will be proposed to shareholders at the Company's 2024 Annual General Meeting to ratify the appointment of Mazars Melbourne as the Company's auditor.

### Shares in Lieu of Non-Executive Director Fees

In order to preserve the Company's cash reserves, Non-Executive Directors have elected, subject to obtaining shareholder approval at a general meeting of shareholders (**General Meeting**), to receive a proportion of their Director fees in Shares (**Director Fees Shares**) in lieu of cash.

The deemed issue price at which the Director Fees Shares will be issued (subject to receipt of shareholder approval at the relevant General Meeting) will be \$0.014 (ZAR0.175 cents), being the 10-trading day VWAP of the Shares traded on the ASX and JSE prior to 27 December 2023 (**Deemed Issue Price**). The number of Director Fees Shares to be issued to each Non-Executive Director will be calculated by dividing the value of the Director fees payable to that Director by the Deemed Issue Price.

Each Director may at any time and at their election, alter the proportion of Director fees to be received in Director Fees Shares and such election shall apply from the date that the Company receives the election in writing from the Director. The Director Fees Shares shall be issued in arrears in respect of accrued Director fees, subject to shareholder approval at the relevant General Meeting.

## General Meeting

A General Meeting of shareholders of Orion will be held at the offices of Clayton Utz, Level 27, QV1 Building, 250 St Georges Terrace, Perth, Western Australia on Thursday 23 May 2024, commencing at 3:00pm (Perth time).

## Tenement Table

Tenement	Project	Ownership Interest	Change in Quarter	Joint Venture Partner
<b>South Africa</b>				
NC30/5/1/1/2/11850PR NC30/5/1/1/2/13528PR	Bartotrax	100%	---	---
NC30/5/1/2/2/10138MR	Prieska Copper Zinc Mine	70%	---	---
NC30/5/1/2/2/10146MR	Prieska Copper Zinc Mine	70%	---	---
NC30/5/1/1/2/12257PR	Prieska Near Mine-OE5	100%	---	---
NC30/5/1/1/2/12258PR	Prieska Near Mine-OE5	100%	---	---
NC30/5/1/1/2/12287PR	Prieska Near Mine-OE5	100%	---	---
NC30/5/1/1/2/12405PR	Prieska Near Mine-OE5	100%	---	---
NC30/5/1/1/2/11840PR NC30/5/1/1/2/13752PR	Doonies Pan	70%	---	---
NC30/5/1/2/2/10032MR	Namaqua-Disawell	25%	---	Namaqua Nickel Mining (Pty) Ltd
NC30/5/1/1/2/12216PR	Namaqua-Disawell	25%	---	Namaqua Nickel Mining (Pty) Ltd
NC30/5/1/1/2/10938PR NC30/5/1/1/2/13397PR	Namaqua-Disawell	25%	---	Disawell (Pty) Ltd
NC30/5/1/1/2/11010PR NC30/5/1/1/2/13398PR	Namaqua-Disawell	25%	---	Disawell (Pty) Ltd
NC30/5/1/1/2/12292PR	Masiqhame	50%	---	Masiqhame 855 (Pty) Ltd
NC30/5/1/1/2/12197PR	Bokspuits North	70%	---	---
NC30/5/1/1/2/11125PR NC30/5/1/1/2/13395PR	Okiep	100%	---	---
NC30/5/1/1/2/12357PR	Okiep	100%	---	---
NC30/5/1/1/2/12897PR	Okiep	100%	---	---
NC30/5/1/2/2/10150MR	Okiep	56.25%	---	Industrial Development Corporation of South Africa Limited (IDC)
NC30/5/1/1/2/12850PR	Okiep	56.25%	---	Industrial Development Corporation of South Africa Limited (IDC)
NC30/5/1/1/2/12852PR	Okiep	100%	---	---
NC30/5/1/1/2/12854PR	Okiep	100%	---	---
<b>Western Australia</b>				
E28/2367	Fraser Range	30%	---	IGO Limited
E28/2596	Fraser Range	30%	---	IGO Limited
E39/1653	Fraser Range	35%	---	IGO Limited & Geological Resources Pty Ltd
E39/1654	Fraser Range	10%	---	IGO Limited & NBX Pty Ltd



Tenement	Project	Ownership Interest	Change in Quarter	Joint Venture Partner
<b>Victoria</b>				
EL6069	Walhalla	100%	---	---
EL5042	Walhalla	100%	---	---

This Quarterly Report is authorised by the Board.