



Orion Minerals

ASX/JSE: ORN

A NEW-GENERATION AFRICAN BASE METALS MINE DEVELOPER

Developing a 21st century zinc-copper mine
at Prieska, Northern Cape Province

Errol Smart, Managing Director and CEO
Global Investor Roadshow
November 2018

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Orion Minerals

FINDING, PLANNING AND BUILDING THE **MINES OF THE FUTURE**

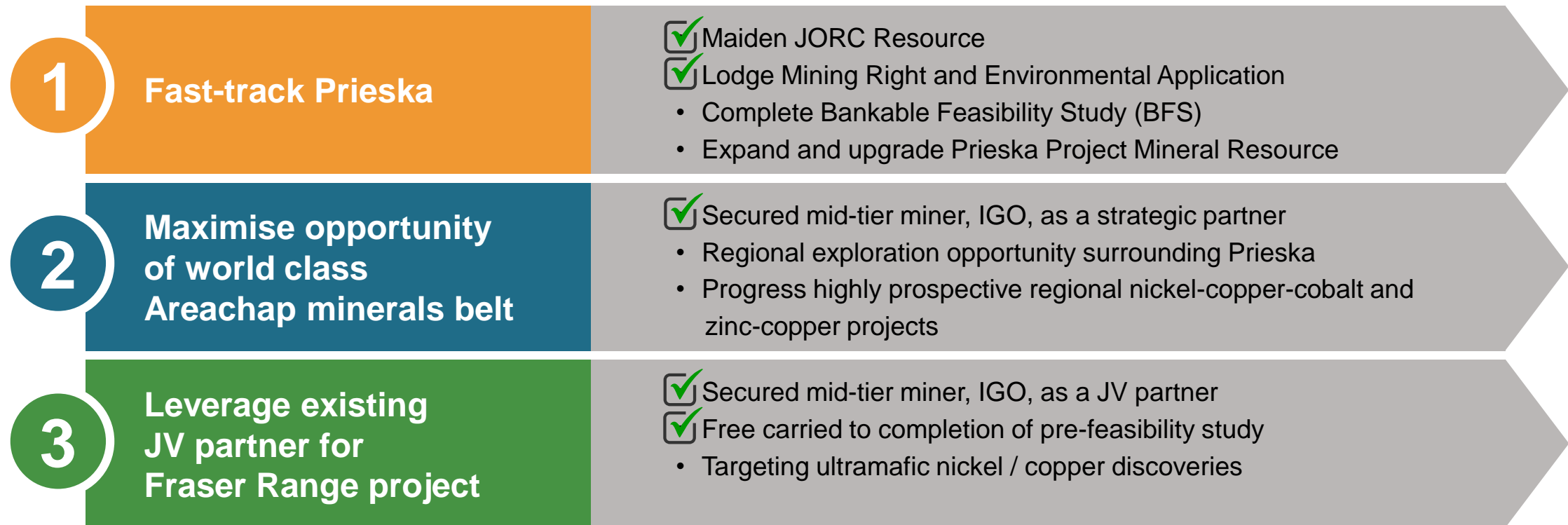
Starting with a 'clean sheet',
Orion is seizing the moment with
un-paralleled opportunity to break
from legacy to build modern mines in South Africa



CORPORATE STRATEGY



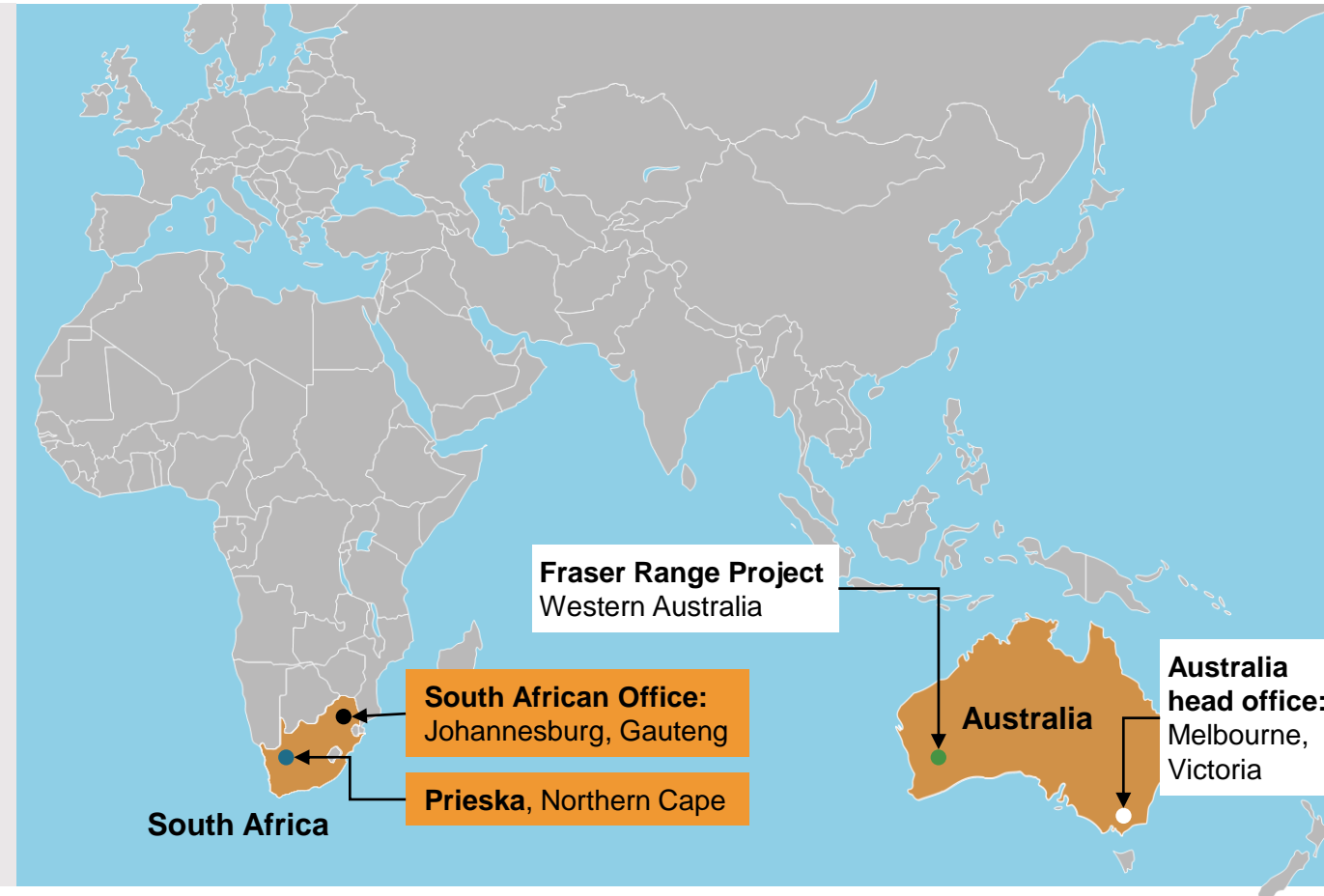
Orion Minerals is a polymetallic minerals exploration and development company focusing on zinc, copper, nickel, gold and silver as well as platinum group metals in South Africa and Australia.



A GROWTH-ORIENTED GLOBAL BASE METALS COMPANY



- ASX and JSE listed
- Flagship Prieska VMS Zinc-Copper Project, Northern Cape Province
- Redevelopment strategy within footprint of historical mine well-advanced:
 - **Updated JORC Resource and Scoping Study mid-December 2018**
 - **BFS – Q2 2019**
- Extensive near-mine and regional exploration programs underway – new satellite VMS discovery
- Strong community relationships and engagement programs
- Strategic shareholder support – Tembo Capital, Independence Group
- Highly experienced board and management team



CORPORATE STRUCTURE



Capital structure summary

Shares on issue	1,874M
Options on issue	209M
Market capitalisation (2.3cps (ASX)) ¹	\$43M
Bridge loan (12% interest, 31 December '18 term) ²	\$0.6M
Convertible notes (2.6cps convert, 12% coupon, Mar '19 maturity) ³	\$6.0M
AASMF loan ³	\$1.6M
AASMF preference shares ³	\$2.2M
Cash on hand ⁴	\$6.4M

Significant shareholders	%
Tembo Capital	22.99
Independence Group NL	8.23
Tarney Holdings	5.96
Silja Investment & Alexander Haller ⁵	3.69
Total	40.87

(1) Shares on issue as at 27 Nov'18. Closing price of ORN Shares on the ASX on 27 Nov'18. Closing price of ORN Shares on the JSE on 27 Nov'18 was ZAR0.25.

(2) Orion announced on 18 Aug'17 that it had entered into a loan facility agreement with Tembo Capital, pursuant to which Tembo advanced \$6.0M in funds to Orion (excluding capitalised interest and fees) (**Bridge Loan**). On 23 August 2018 as part of a placement, the Company issued 172.9M shares to Tembo at an issue price of 3.7 cents in consideration for reducing the amount repayable to Tembo under the Bridge Loan by \$6.4M. Refer to ASX releases 18 Aug'17, 15 Nov'17, 31 May'18, 25 Jun'18, 4 Jul'18 and 23 Aug'18 for additional information.

(3) Refer to the Company's Annual Financial Accounts for period ending 30 June 2018 for information related to the Convertible Notes, along with the Preference Shares Agreement (ZAR15.75M) and a Loan Agreement (ZAR14.25M) that Repli Trading No 27 (Pty) Ltd (a 73.33% owned subsidiary of Agama Exploration & Mining (Pty) Ltd) has entered into with Anglo American Sefa Mining Fund. Balances shown are as at 30 Sep'18.

(4) Company's cash balance at 30 Sep'18.

(5) Mr Alexander Haller is deemed to have a relevant interest in securities held by Silja.

BOARD OF DIRECTORS



Denis Waddell

Chairman

Denis is a Chartered Accountant with extensive experience in corporate finance and management of exploration and mining companies.



Errol Smart

Managing Director & Chief Executive Officer

Errol is a Geologist, with professional registration for JORC purposes. He has more than 28 years' industry experience in exploration, mine development and operations. He is also the Chairman of the Junior and Emerging Miners Forum of the Minerals Council South Africa.



Alexander Haller

Non-Executive Director

Alexander is a Partner at Zachary Capital Management, which provides advisory services to private investment companies. He is an ex-JP Morgan advisor on corporate mergers and acquisitions.



Mark Palmer

Non-Executive Director

Mark is an investment banker with 12 years' experience working with entities in Australia. He has been Investment Director at Tembo Capital since 2015.



Michael Hulmes

Non-Executive Director

Michael has 30 years' experience in the mining industry. He has extensive experience in zinc, copper, gold and nickel mining operations.

SENIOR MANAGEMENT



Errol Smart

*Managing Director &
Chief Executive Officer*

Errol is a Geologist, with professional registration for JORC purposes. He has more than 28 years' industry experience in exploration, mine development and operations. He is also the Chairman of the Junior and Emerging Miners Forum of the Minerals Council South Africa.

Martin Bouwmeester

*Chief Financial Officer &
Company Secretary*

Fellow of CPA Australia with over 20 years' experience in exploration, mine development and Operations. Key member of the team which evaluated, funded and developed the Fosterville Gold Mine.

Walter Shamu

Chief Operating Officer

Mining engineer with a B.Eng (Mining Engineering) and Masters in Engineering (Rock Mechanics), as well as LLB (Law). He has more than 20 years' experience in exploration, mining development and mining operations throughout Africa.

Michelle Jenkins

*Executive: Finance &
Administration*

Chartered Accountant with more than 20 years' experience in exploration and mining, with a BSc Hons (Geology) and a Bachelor of Accounting Science. Has held role of CFO/FD with a number of exploration and mining companies throughout Africa.

Louw van Schalkwyk

Executive: Exploration

Geologist with over 30 years' experience with major South African mining houses. Part of the team that discovered the 60Mt Gamsberg East Zinc deposit in the Northern Cape. Also discovered the Byumba Gold deposit in Rwanda in 2008.

Nelson Mosiapoa

*Group Corporate Social
Responsibility Advisor*

Founder and trustee of the Mosiapoa Family Trust. Policy scholar of science and technology; served on the policy unit of the governing party in South Africa prior to the first democratic elections.

2018: A TRANSFORMATIONAL YEAR FOR ORION



- ✓ Maiden Inferred Resource of **29.4Mt at 3.8% Zn, 1.2% Cu***
- ✓ Mining Right Application lodged April 2018
- ✓ ~85,000m in-fill drilling program completed
- ✓ Updated Resource expected mid-December 2018
- ✓ Substantial progress with Bankable Feasibility Study
- ✓ Preliminary mine design and schedule completed
- ✓ Metallurgical test work confirms targeted recoveries, with production of saleable Zn and Cu concentrates
- ✓ Significant progress with supply agreements, product logistics
- ✓ Major near-mine and regional exploration program delivering
- ✓ \$23m raised during the year to support drilling and progress the BFS
- ✓ Independence Group increased its stake to 8.23% – collaborative working relationship

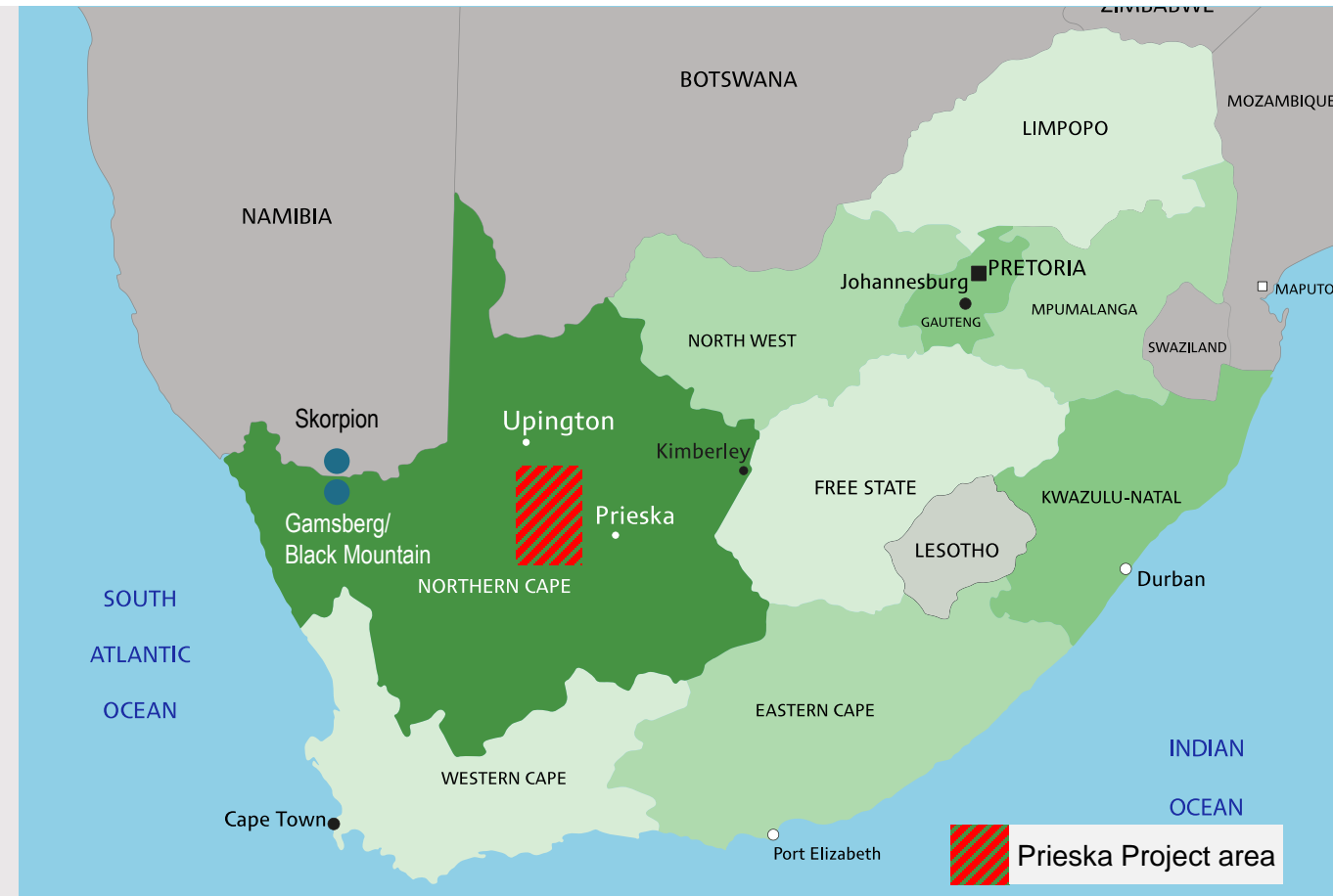
* refer ASX release 9 April 2018

PRIESKA: REAWAKENING A GLOBAL VMS GIANT



- Located in Northern Cape Province, 270km south-west of regional capital, Kimberley
- Historically mined by AngloVaal between 1971 and 1991
- Recorded historical production of 1Mt of Zn and 430kt of Cu from 46.8Mt of sulphide ore milled
- World-class orebody – recorded as a top-30 global VMS deposit
- Extensive infrastructure in place
- Proven metallurgical process with ability to produce premium concentrates

* Source: Prieska Copper Mines Annual Report 1970.



PRIESKA: HIGH-QUALITY ZINC-COPPER RESOURCE WITH SIGNIFICANT UPSIDE



- Development strategy targeting un-mined dip and strike extensions of historical underground mine
- Vast historical drilling database digitally captured, validated and modelled
 - near-surface oxide, supergene and primary sulphide material in +105 Level Target (open pit)
 - 84,959m of in-fill drilling completed focused on Deep Sulphide Target
- Updated Resource in progress: on track for mid-December 2018
- Key target areas identified for future drilling to grow the Resource
- Newly-identified gold-rich lens highlights potential for additional mineralisation

MAIDEN JORC RESOURCE*

29.4Mt at 3.8% Zn
1.2% Cu
containing 1.126Mt of Zn and
365,000t of Cu

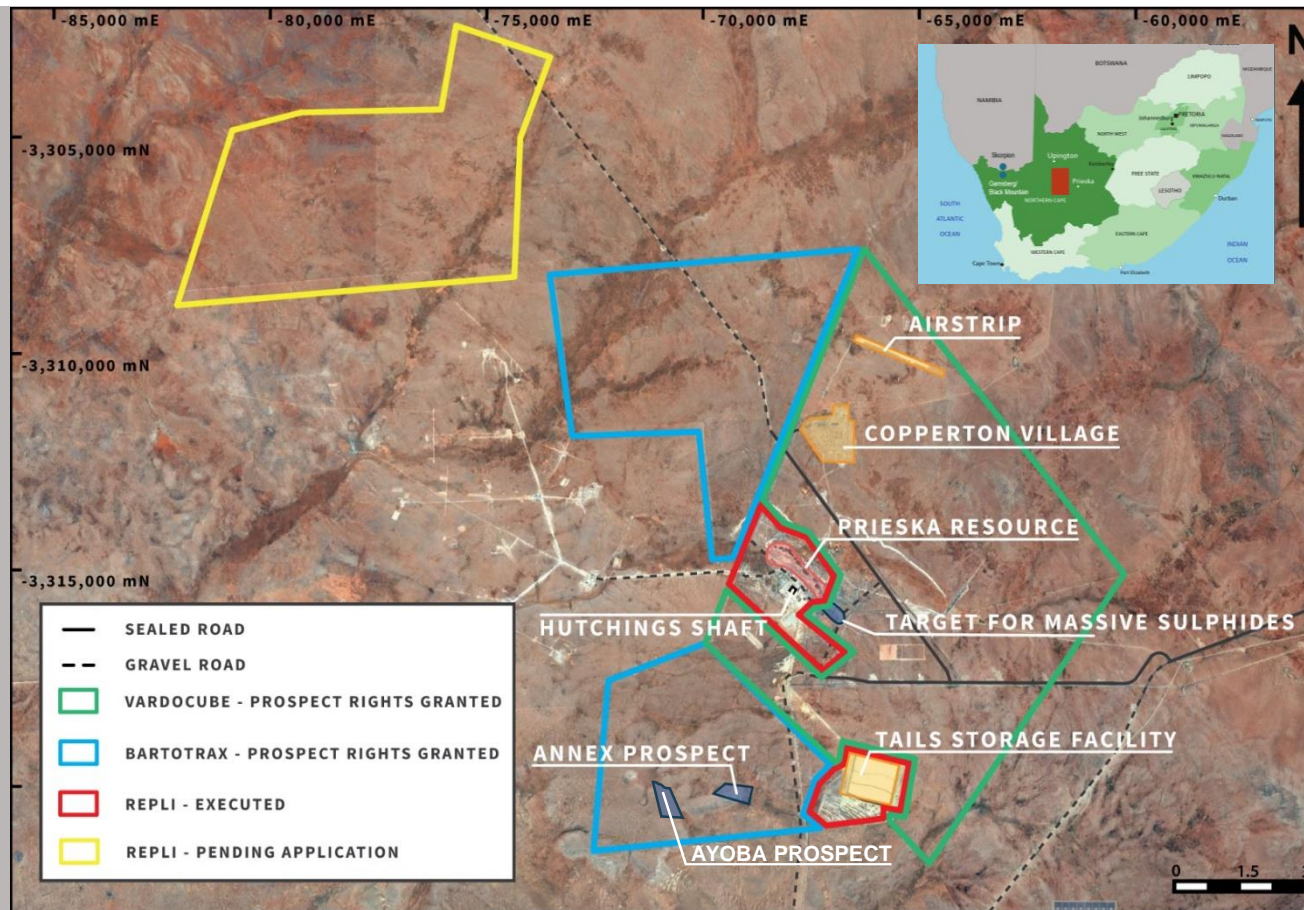
PRIESKA: DEVELOPING A NEW MINE IN THE FOOTPRINT OF AN OLD ONE



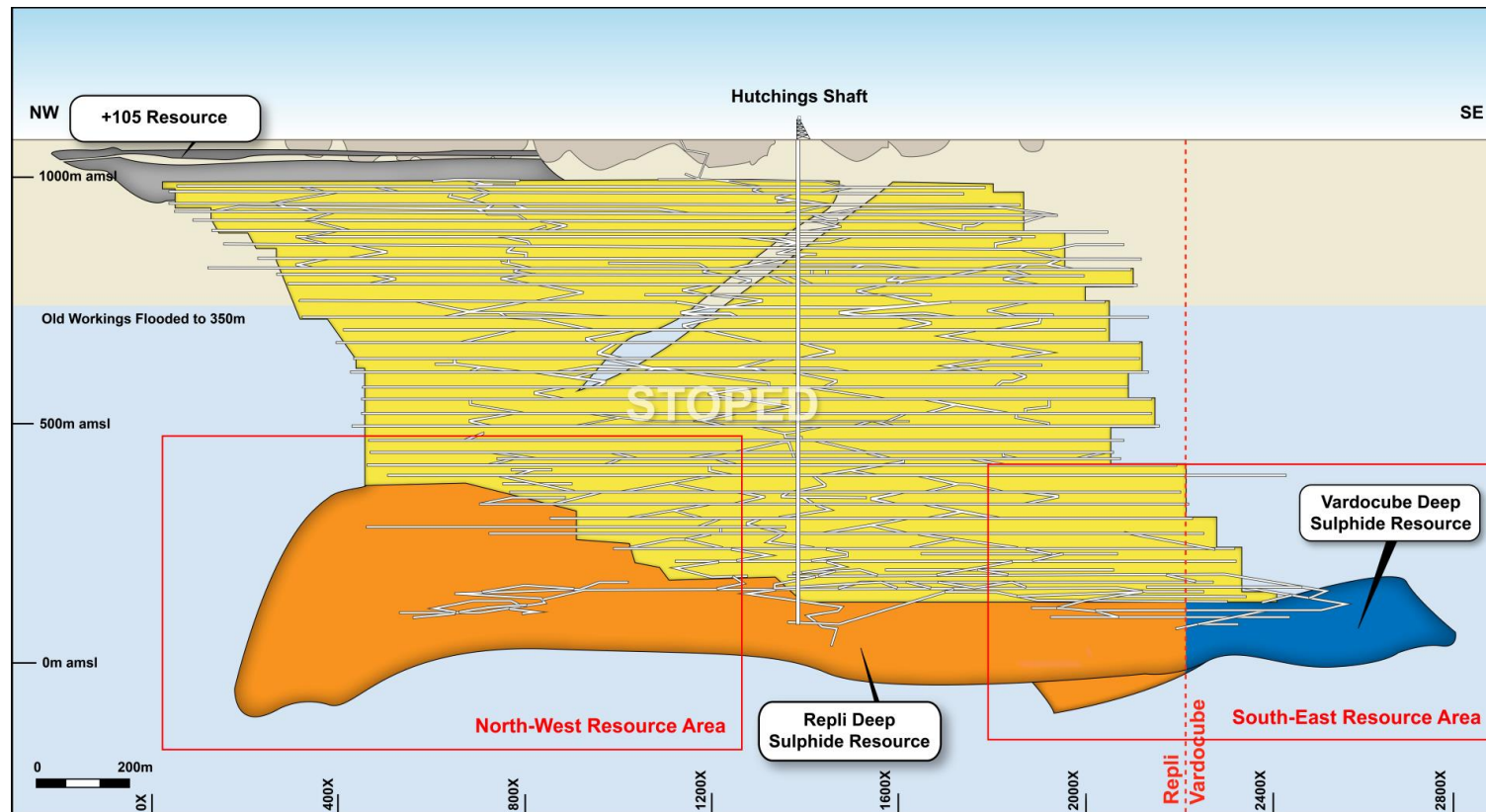
- Established mining region, yet least populous region of South Africa
- Region with “distressed, ex-mining communities” brings opportunity to make a meaningful difference
- Several leading global mining houses operating in the region
 - A key focal point of Vedanta Resources’ global zinc business
- Key infrastructure in place:
 - Primary shafts and underground decline roadways
 - Sealed access roads, 48km via bitumen road to existing rail siding
 - 175MW operational solar power plants with expansion capacity
 - 800km rail link to major bulk commodity and deep-water ports
 - Bulk water pipeline supplies to site
 - Accommodation facilities in private village of Copperton, ~3km from site



PRIESKA: STATE-OF-THE-ART 21st CENTURY MINE IN THE MAKING



PRIESKA: HIGH-QUALITY ZINC-COPPER RESOURCE WITH SIGNIFICANT UPSIDE



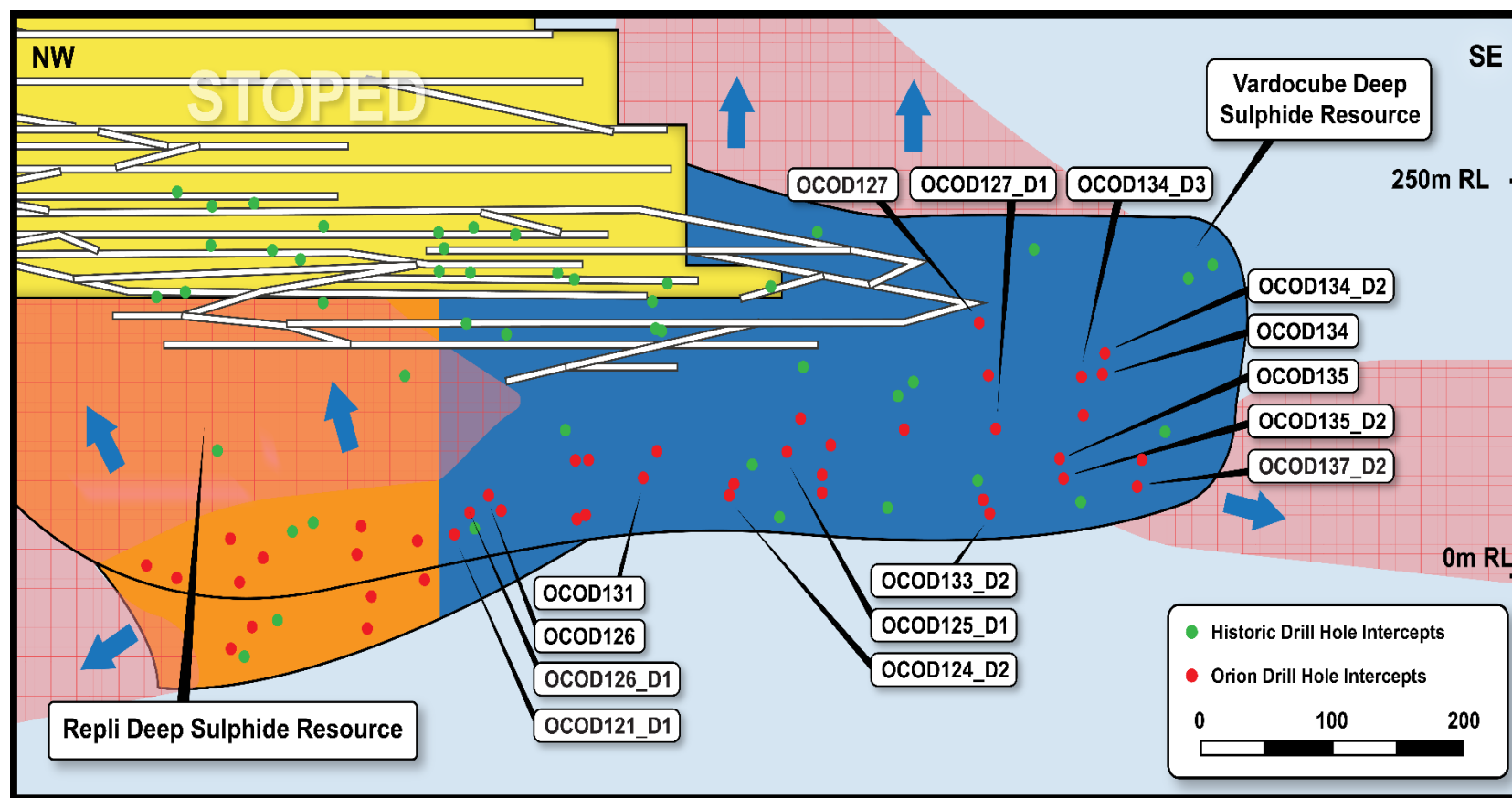
Total Mineral Resource of 29.4Mt
containing 1,126,000t Zn @ 3.8% &
365,000t Cu @ 1.2% (based on drilling results-
31 Dec 2017)*

- Drilling completed, to upgrade classification of substantial portion of total Mineral Resource
- Total Mineral Resource located on Repli and recently-obtained Vardocube prospecting rights
- Resource remains open on dip and strike

Longitudinal projection showing the **Repli and Vardocube Deep Sulphide Resource areas**, representing the unmined dip and strike extensions of the historical Prieska mine

* refer ASX releases 4 April 2018, 9 April 2018 and 16 July 2018

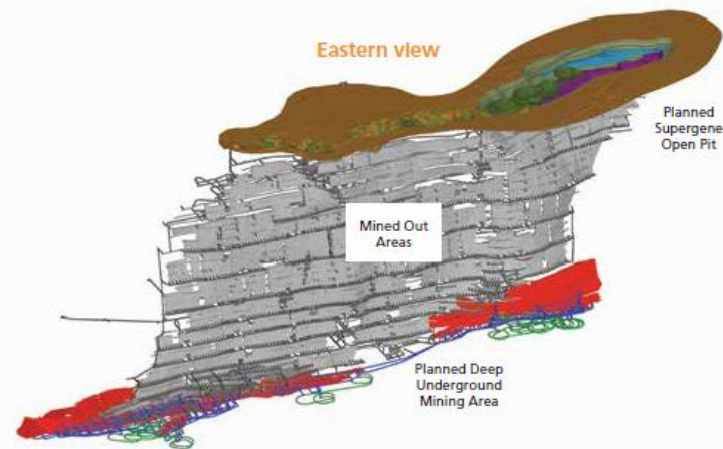
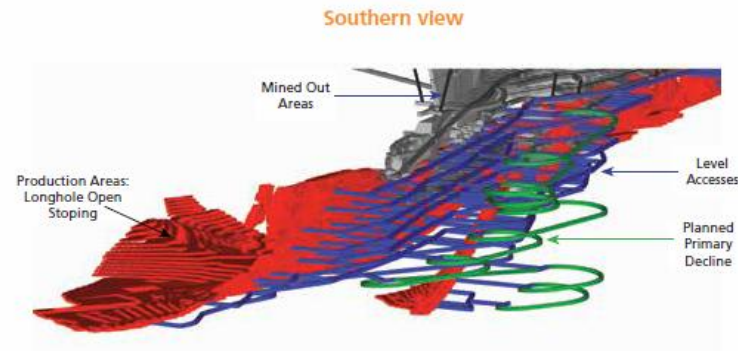
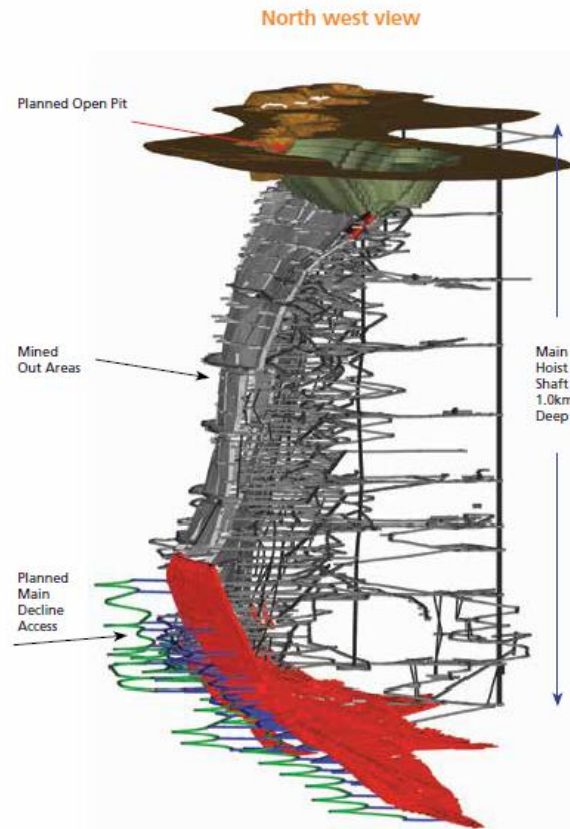
PRIESKA: HIGH-QUALITY ZINC-COPPER RESOURCE WITH SIGNIFICANT UPSIDE



Longitudinal projection showing the **Repli Deep Sulphide Resource**, including priority target areas for resource extension drilling

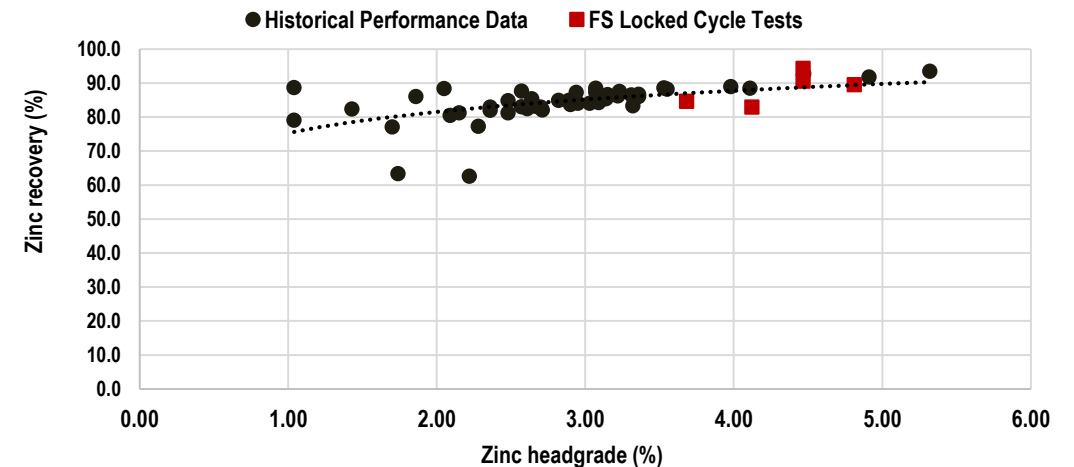
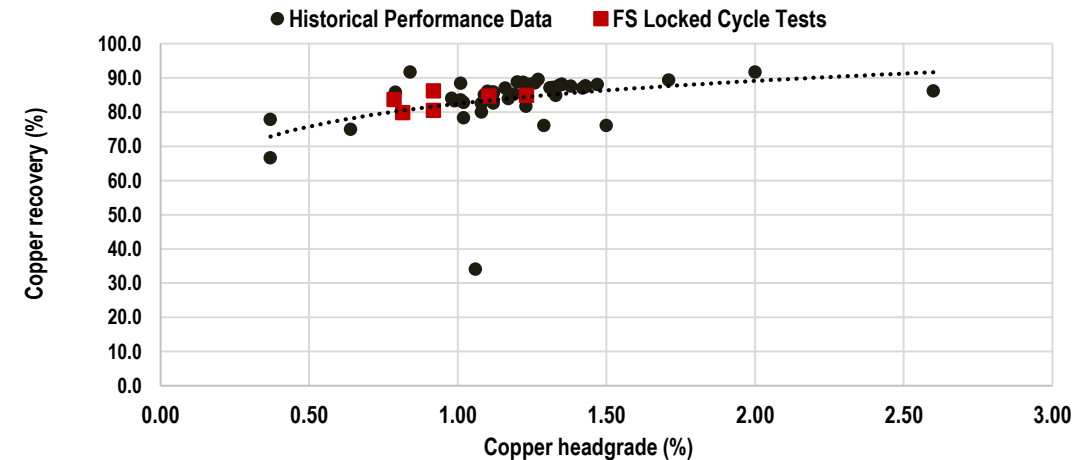
refer ASX release 5 November 2018

PRIESKA: ADVANCED UNDERGROUND MINE DESIGNS



PRIESKA: WELL-UNDERSTOOD METALLURGY, GOOD QUALITY CONCENTRATES

- Extensive locked-cycle metallurgical test work program completed
- Confirms metallurgical continuity across Deep Sulphide Zone
- No material metallurgical zonation issues encountered
- Excellent copper and zinc recoveries, in line with historical mine performance
- Ability to produce high-quality, differentiated copper and zinc metal concentrates
- Process plant design in progress
- Potential to use safer and more environmentally friendly froth-flotation chemical reagents, with added benefit of delivering cost reductions



refer ASX release 22 October 2018

PRIESKA: TIMELINE TO DEVELOPMENT

1

Complete Prieska Project BFS

- Orion Board approval to start BFS in July 2017 with target completion in Q2 2019
- Deep Sulphide Resource and +105 Target maiden JORC compliant Mineral Resource completed; resource upgrade targeted Q4 2018

2

Expand and upgrade Prieska Project resource

- In parallel to BFS, Orion will progress key commercial work streams
- Concentrate marketing; project finance capacity and optimal structure

3

Execute exploration program on highly prospective prospecting rights

- Mining Right and Environmental Authorisation applications submitted in April 2018
- Historical operational data
- Regional exploration ramped up in 2018

	CY17		CY18				CY19					CY20						
Milestone activities	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Project Approval	Q4	Q1	Q2	Q3	Q4	C2021	C2022	
Maiden Mineral Resources estimates			ASX/JSE releases 8 Feb & 9 April 2018															
Mining Right application				Submitted 6 April 2018			Anticipated Grant of Mining Right											
Mineral Resource upgrade																		
Bankable Feasibility Studies																		
Project construction																		
Ore production																		

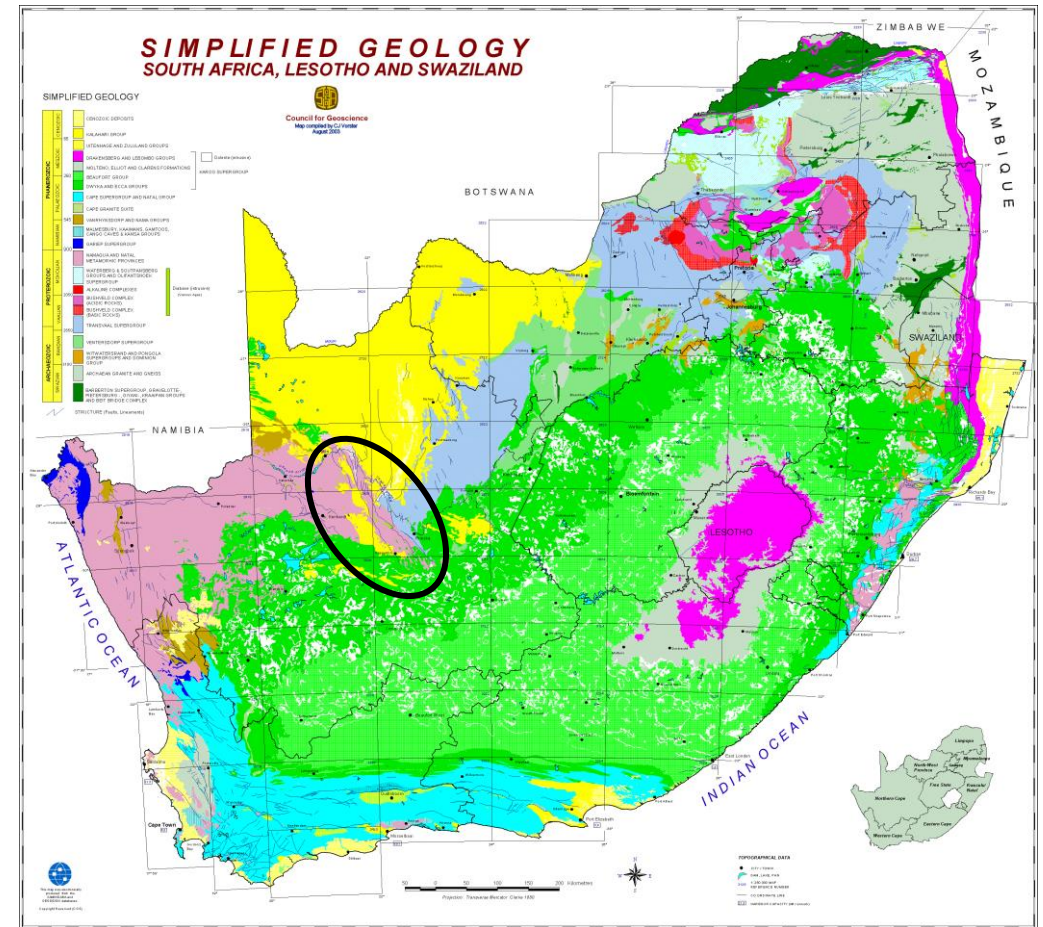
COMMUNITY ENGAGEMENT – DOING IT RIGHT FROM THE BEGINNING

- Community liaison office opened in Prieska
- MoU signed with Siyathemba Local Municipality to cooperate on key community development initiatives:
 - Water infrastructure
 - Residential development
 - Environment
- Educational seminar for SMMEs and NGOs
- Internet café established to give local community access to internet and supply chain training
- Supply Chain Network portal to stimulate economic growth through enterprise development
- Enterprise development initiatives being investigated & progressed



A DOMINANT LAND-HOLDING IN AN UNDER-EXPLORED BELT

- Highly prospective yet under-explored mineral province
- 22 identified VMS occurrences historically confirmed by major mining houses
- Reputed to have the highest concentration of zinc on the African continent¹:
 - Large-scale sediment-hosted deposits classified as Broken Hill, SEDEX and VMS
 - >40Mt of contained zinc
- Several known intrusive Ni-Cu-PGE occurrences with limited modern exploration
- Potential for discovery of high-grade Ni-Cu deposits

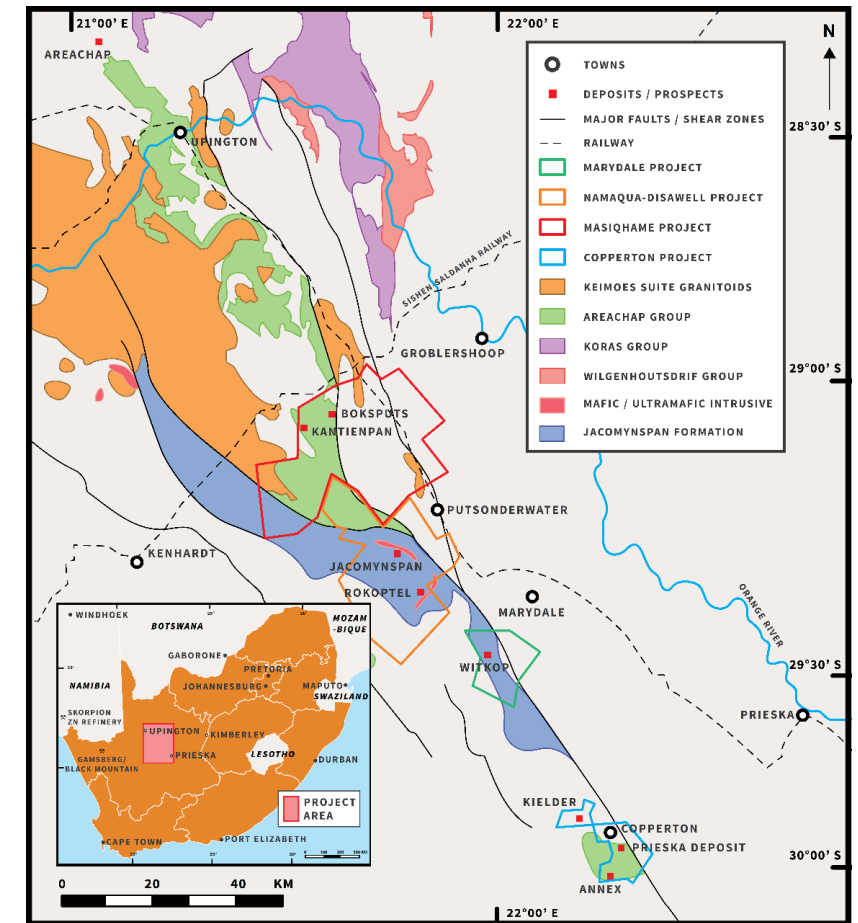


¹ Source: Vedanta Capital Markets Day presentation, March 2015

MAJOR CONSOLIDATION PLAY IN A PROVEN MINERAL DISTRICT

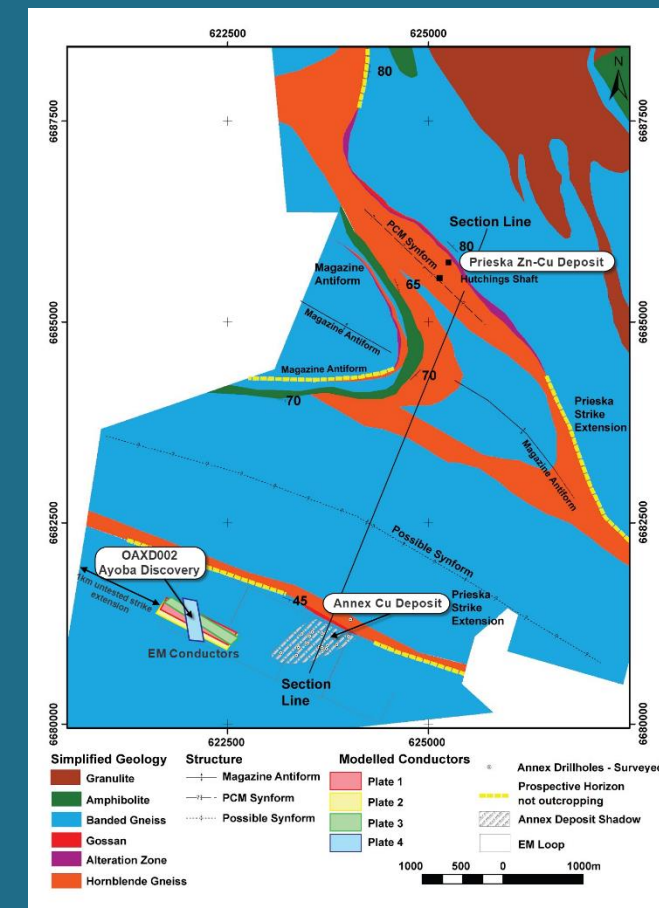
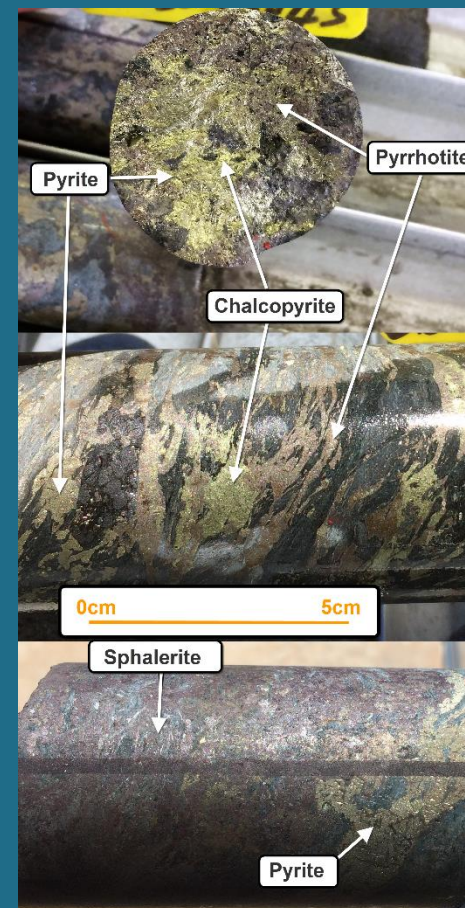


- Large consolidated land package secured by Orion in 2015 – 1,790km²
- Consolidated under single owner for first time
- No major exploration activity for past 30 years
- Application of modern exploration techniques presents significant opportunity
- Collaborative exploration agreement in place with Independence Group
- Three superimposed geological events produce an exceptional metals province:
 - Prieska – near-mine exploration around one of the world's top-30 VMS deposits
 - Mafic intrusive analogous to the Fraser Range in WA
 - Late-stage granites and pegmatites intrude, with lithium and REE deposits



POTENTIAL TO DEFINE A MAJOR **NEW VMS CAMP**

- Significant emerging VMS discovery at Ayoba, 5.3km south-west of Prieska
- First hole drilled in Orion's Near-Mine Exploration Program intersected 10.6m zone of copper-zinc bearing sulphides, including 5.2m of massive sulphides
- Mineralisation and associated alteration typical of VMS
- Discovery hole tested an EM plate with a 1.1km strike and 450m dip extent
- First new VMS discovery in the Areachap Belt for the past 36 years
- Validates Orion's exploration methodology targeting a cluster of VMS deposits around Prieska



EXCEPTIONAL OPPORTUNITY FOR HIGH-GRADE NICKEL SULPHIDES

Targets centred around the **JACOMYNSPAN – ROK OPTEL CORRIDOR** (8 INTRUSIONS)

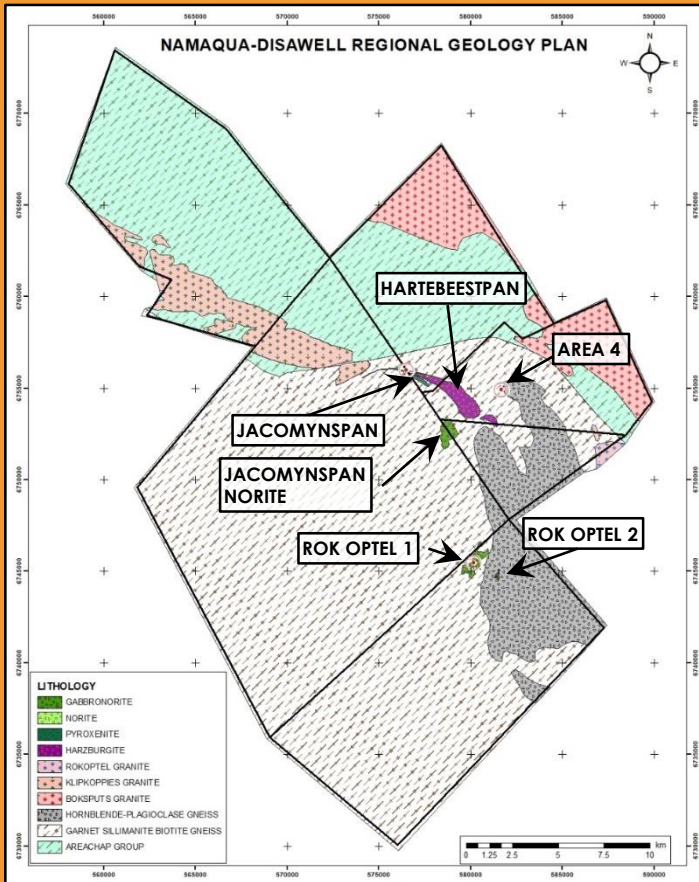
JACOMYNSPAN INITIAL RESOURCE 6.8Mt containing
39,480t nickel, 22,800t copper, 1,800t cobalt

ROK OPTEL hosts thick PGE-mineralised zones associated with massive Ni-Cu sulphide



Rok Optel Intrusion, DDH OROD001, intermediate (top) and high tenor (middle and bottom) semi-massive sulphide veins within five stacked sills

refer ASX releases 8 March 2018 and 30 July 2018



SOUTH AFRICA: A CHANGING MINING LANDSCAPE

- Despite turmoil in 2017, the rule of law prevailed
- President Ramaphosa appointed in February 2018
- New Minister of Mineral Resources, Gwede Mantashe, appointed
- New Mining Charter significantly improved on various drafts and for juniors and explorers and represented an improvement on previous charters
- Remaining concerns being addressed, particularly the recognition of continuing consequences of past BEE transactions for transfers and renewals
- Significant investment drive by President, with mining a key focus area
- DMR clean-up: expediting permitting, closure of problematic offices and removal of certain corrupt officials
- Relationships between industry and government, particularly DMR, much improved
- Voices of junior and emerging miners being heard for the first time in decades



SOUTH AFRICA: THE OPPORTUNITY FOR A NEW-GENERATION MINING COMPANY

- JSE is the world's 18th largest stock exchange by market cap
 - **505 listed companies and +800 securities**
 - **Aggregate market cap: US\$988 billion**
 - **41% liquidity**
 - **More than R767 billion (A\$76.3b) raised in the last 5 years**
- Orion is one of 31 mining companies listed on JSE
 - **Total sector value of R482 billion (A\$48b)**
- Strong appetite from capital markets and banking sector to back new mine developments
- New Mining Charter has provided greater certainty and clarity on future mining investment
- The Minerals Council (which represents >75% of all mining companies) has accepted the Charter as a proactive policy document
- As a new entrant, Orion is well-positioned to comply with Mining Charter and avoid legacy issues faced by older, established mines
- **Orion ideally placed to access South African capital markets to fund the Prieska development following completion of the BFS**



SOUTH AFRICA: THE OPPORTUNITY FOR A NEW-GENERATION MINING COMPANY

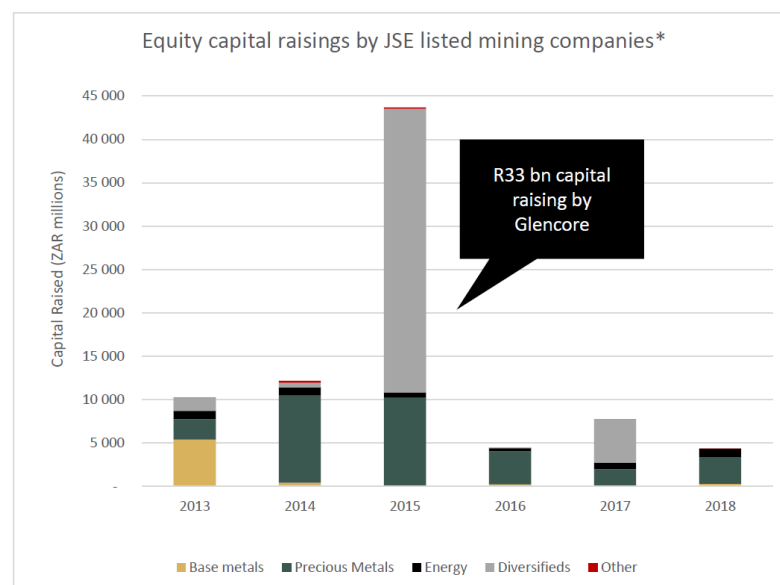


EQUITY CAPITAL MARKETS | CAPITAL RAISING TRENDS IN THE MINING SPACE

Equity capital (including EO and SS) raised on the JSE in the Basic Materials sector over the preceding 5 years was R112.9 billion, with R4.3 billion raised in 2018 to date (as at 22 November 2018).

Over R12 billion of equity capital has been raised in the basic materials sector of the JSE over 2017 and 2018 YTD

The aggregate market capitalisation of all companies listed on the JSE in the basic materials sector was R2.4 trillion as at 22 November 2018



Source: JSE Limited, Questco analysis, Factset

*Note: Includes EO, SS, GI, AI, SI and ROs.

JSE'S SIX LARGEST CAPITAL RAISES IN 2018 (BASIC MATERIALS SECTOR)



R1.3 Billion



R862 million



R517 million



R437 million



R249 million



R242 million

SOUTH AFRICA: THE OPPORTUNITY FOR A NEW-GENERATION MINING COMPANY



EQUITY CAPITAL MARKETS | THE PIC AS AN INVESTOR

The Public Investment Corporation (“**PIC**”) is a South African state owned entity, responsible for investing the South African Government Employees Pension Fund, with over c. R2 trillion of assets under management (“**AUM**”) making it one of Africa’s largest asset managers.

The PIC currently invests in 205 JSE listed companies with its holdings equating to c. R58.8 billion*.

With specific regard to mining companies, the PIC currently invests directly in 9 JSE listed mining companies with its holdings valued at c.R6.4 billion as at 22 November 2018, as set out in the table on the right.

The PIC is invested directly in the following mining companies (and indirectly in many others) – indicating that it remains supportive of the SA mining sector

Company	Market Value (ZAR m)	Holdings (%)
Anglo American Plc	3,990	13.3
BHP Billiton Plc	1,275	3.0
Anglogold Ashanti Ltd	377	9.1
Anglo American Platinum Ltd	310	3.5
Northam Platinum Ltd	170	11.3
African Rainbow Minerals Ltd	142	7.0
Assore Ltd	74	2.4
Lonmin Plc	47	29.2
Merafe Resources Ltd	1	0.5
Total	6,386	

Source: Factset

The PIC generally takes a significant, but less than controlling, shareholding in JSE listed companies

PRIESKA: AN OPPORTUNITY TO BUILD A MINE OF THE FUTURE

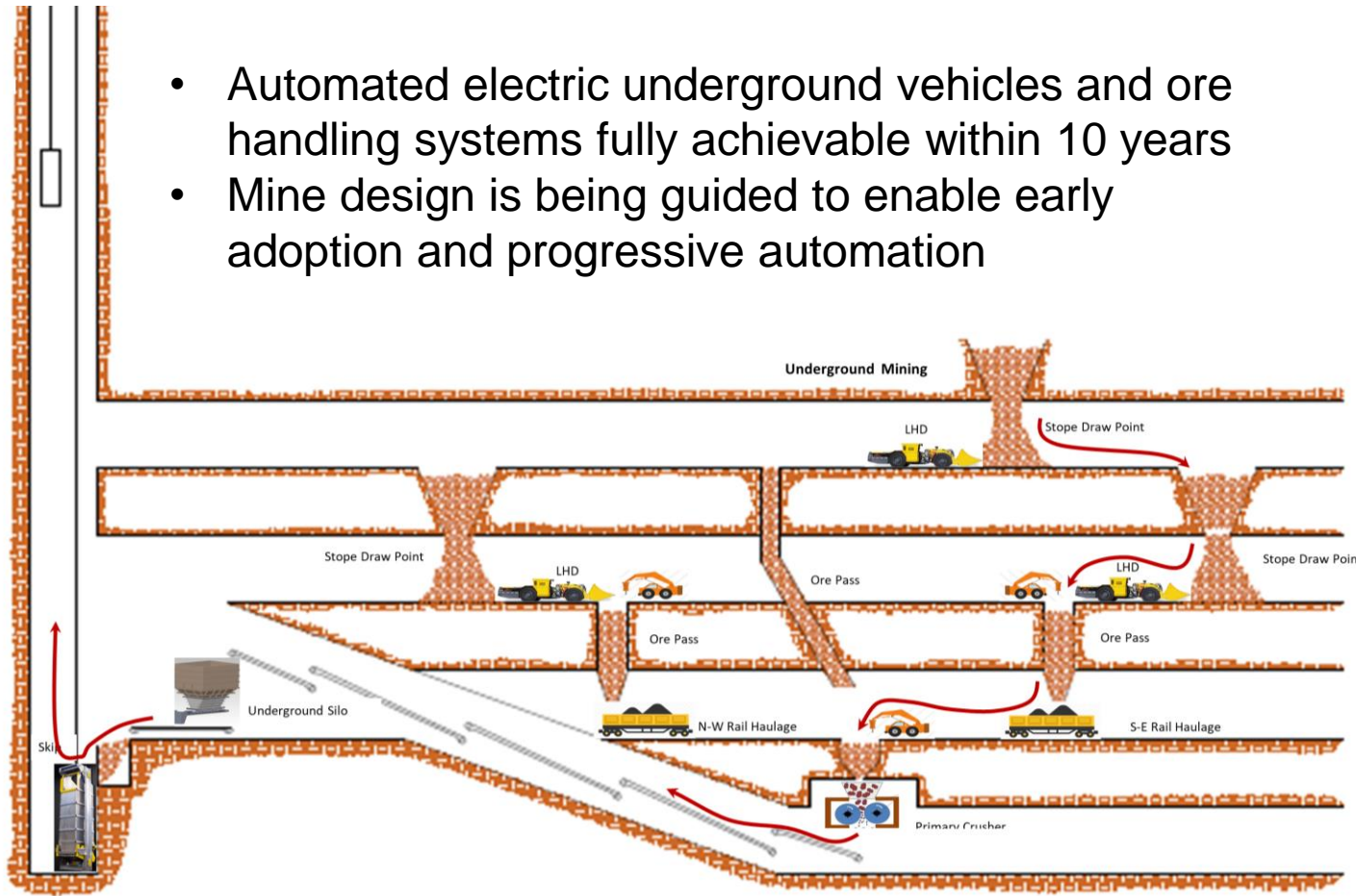


*based on feedback from customers using Guidance automation system - Profit: 50% increased revenue / Safety: 80% safety increase due to reduction in accidents and equipment damage / Productivity: 30% improvement based on increased operations ours, minimised downtime and faster cycle times.

Reported gains by Original Equipment Manufacturers (OEM) from adoption of partial automation amongst their customers across 68 countries

PRIESKA: AN OPPORTUNITY TO BUILD A MINE OF THE FUTURE

- Automated electric underground vehicles and ore handling systems fully achievable within 10 years
- Mine design is being guided to enable early adoption and progressive automation



- Removes personnel from direct exposure to hazardous tasks whilst providing improvements in efficiency, environmental, health and safety and control
- Realistic adoption timeframes, given technologies are already in industrial use

WHAT THE CHANGING LANDSCAPE MEANS FOR ORION



Focus on creating meaningful empowerment structures

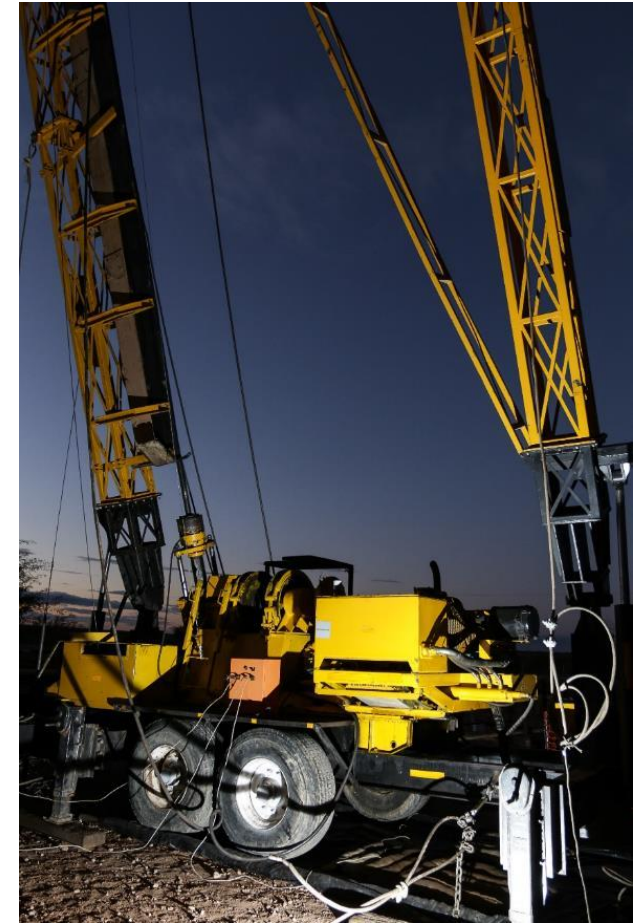
- Exploration free of any BEE or Mining Charter impositions – aims to encourage greenfields exploration
- For Mining Rights, 5 years to achieve 30% BEE ownership:
 - 20% black entrepreneurs
 - 5% employees (non-transferable interest, so effectively only a dividend right)
 - 5% community (these need not be "ordinary shares", can be equivalent dividend participation)
- No 'free carry':
 - Cost/value of transferring "shares" for employees and community to be recovered from future mine cash flows
- Black entrepreneurs' corporate vehicle of 20% - full participation and contribution

Orion is working with existing and new BEE partners to optimise the investment opportunity.

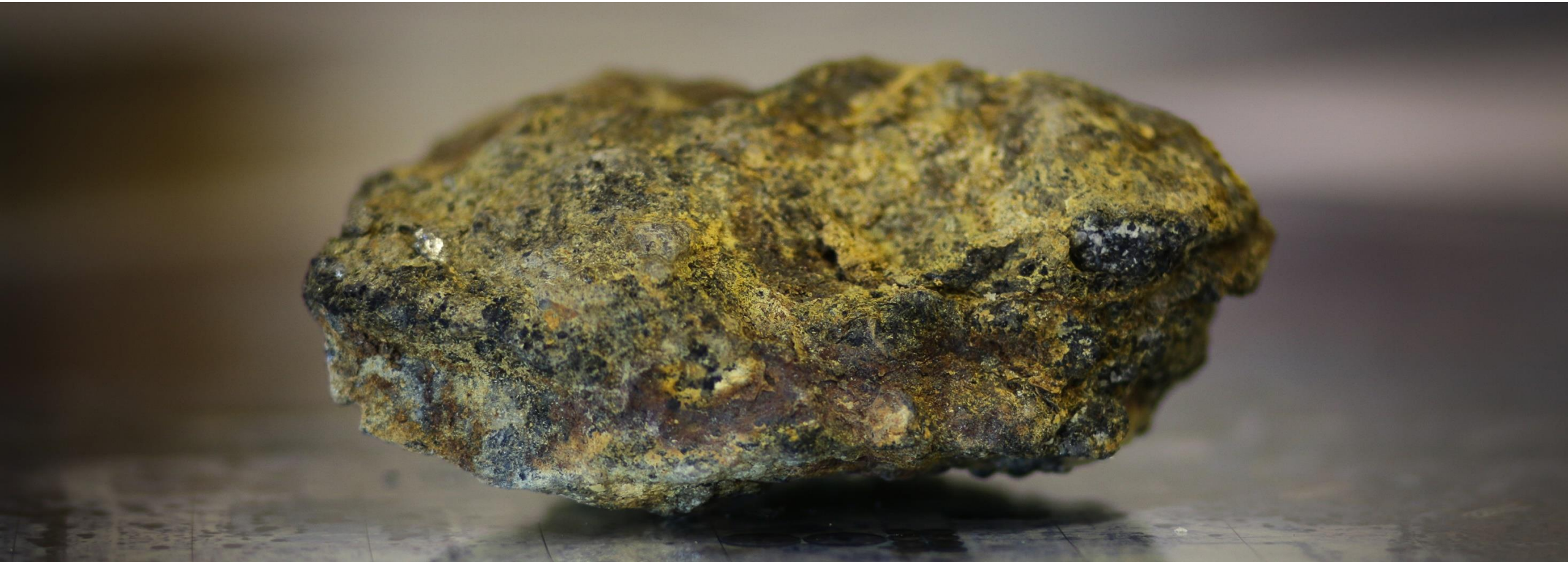
ORION MINERALS: THE INVESTMENT CASE



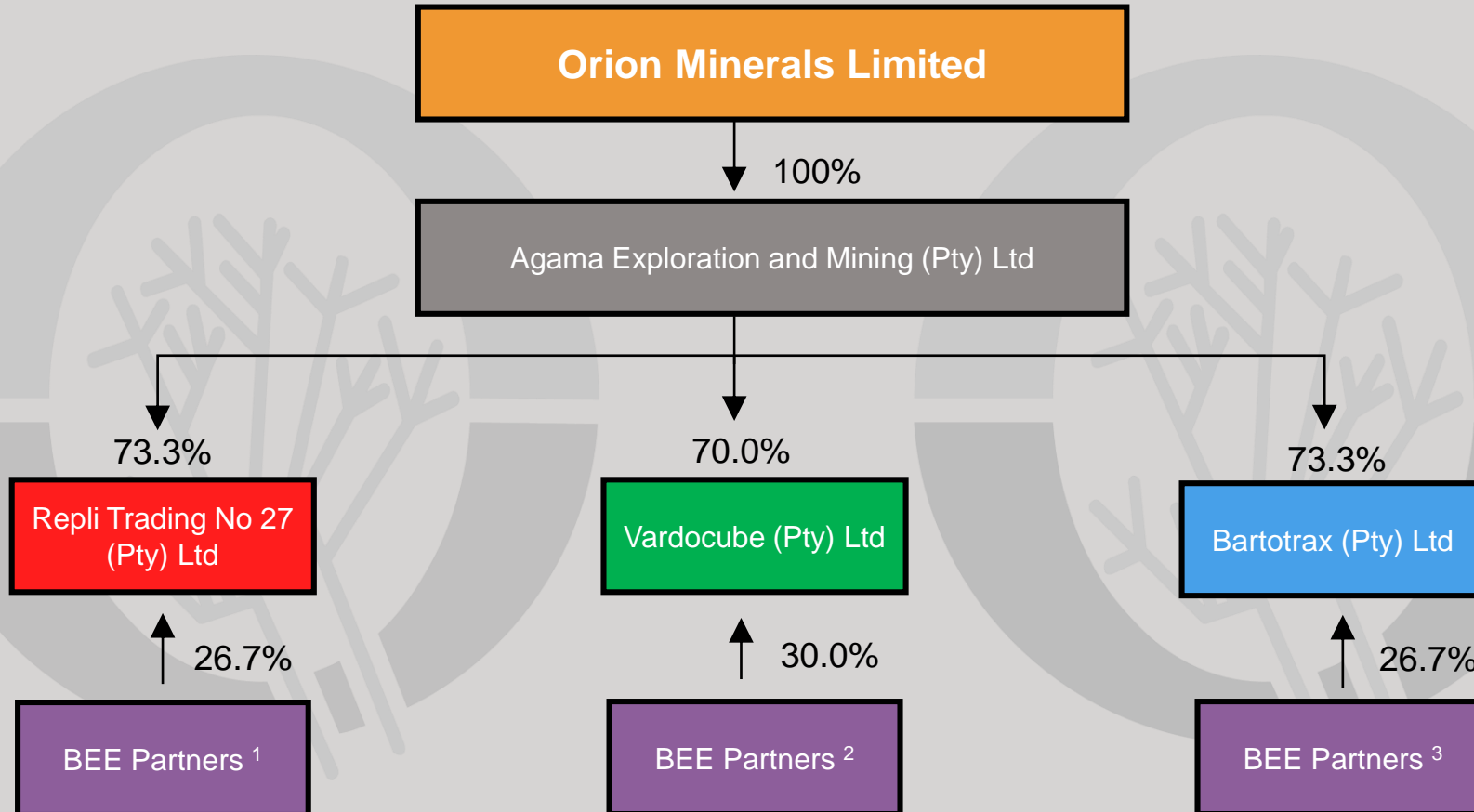
- 'A new mine in the footprint of an old mine':
 - **Updated JORC Resource AND Scoping Study mid-December 2018**
 - **Bankable Feasibility Study Q2 2019**
 - **Significant existing infrastructure in place**
- Large land-holding in Areachap province – proven mineral endowment, major mining companies operating in region
- Extensive near-mine and regional exploration programs underway:
 - **Recent VMS discovery confirms near-mine exploration upside**
- Strong community relationships and engagement program
- Strategic shareholder support – Tembo Capital, Independence Group
- Experienced board and management team with a proven track record



APPENDICES



PRIESKA MINE: CURRENT OWNERSHIP STRUCTURE



1. Mosiapoa Family Trust (15%) and Power Matla (11.67%)
2. Mosiapoa Family Trust (3%) and African Exploration Mining Finance Corporation (27%)
3. Mosiapoa Family Trust (26.67%)



Orion Minerals

ASX/JSE: ORN

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