



Orion Minerals

## Orion Minerals Limited

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Investor presentation  
April 2018

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**BFS & intense regional exploration  
underway, delivering results in a proven  
minerals belt**

Developing world class zinc and  
copper deposits



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Certain statements contained in this presentation, including information as to the future financial or operating performance of Orion Minerals Ltd (Orion) and its projects, are forward-looking statements. Such forward-looking statements:

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Orion Minerals

## OVERVIEW

### WHAT WE DO

Orion Minerals is an Australian polymetallic minerals exploration and development company focusing on zinc, copper, nickel, gold and silver, as well as platinum-group metals with projects in South Africa and Australia

Orion's flagship project is the Prieska Project in the Areachap Terrain, Northern Cape, South Africa

The Company has a primary listing on the Australian Securities Exchange (ASX: ORN) and a secondary listing on the Johannesburg Stock Exchange (JSE: ORN)

#### Areachap Projects

Northern Cape,  
South Africa

#### Fraser Range Project

Western Australia,  
Australia

#### Connors Arc Project

Queensland,  
Australia

#### South African Offices:

Kimberley, Northern Cape  
Prieska, Northern Cape

#### Australia Head Office:

Melbourne, Victoria

## BOARD OF DIRECTORS



**DENIS WADDELL**

*Chairman*

- Chartered Accountant
- Extensive experience in corporate finance and management of exploration and mining companies



**ERROL SMART**

*Managing Director & Chief Executive Officer*

- Geologist, with professional registration for JORC purposes
- Over 24 years' industry experience in exploration, mine development and operations



**ALEXANDER HALLER**

*Non-Executive Director*

- Partner of Zachary Capital Management that provides advisory services to private investment companies
- Ex-JP Morgan advisor on corporate mergers and acquisitions



**MARK PALMER**

*Non-Executive Director*

- Investment banker with 12 years' experience working with entities in Australia
- Investment director at Tembo Capital since 2015



**BILL OLIVER**

*Non-Executive Director*

- Geologist with over 15 years' experience in the international resources industry
- Wide ranging exploration expertise in project identification and acquisition



## SENIOR MANAGEMENT



**ERROL  
SMART**

*Managing Director &  
Chief Executive Officer*

- Geologist, with professional registration for JORC purposes
- Over 24 years' industry experience in exploration, mine development and operations



**MARTIN  
BOUWMEESTER**

*Chief Financial Officer  
and Company Secretary*

- Fellow of CPA Australia with over 20 years' experience in exploration, mine development and operations
- Evaluation, funding and development of 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)
- Over 20 years' experience in exploration, mining development and mining operations throughout Africa



**MICHELLE  
JENKINS**

*Executive: Finance &  
Administration*

- Chartered Accountant with over 20 years' experience in exploration and mining, with a BSc Hons (Geology) and a Bachelor of Accounting Science
- Held the role of Chief Financial Officer/ Financial Director 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
- Discovered the Byumba Gold deposit in Rwanda in 2008



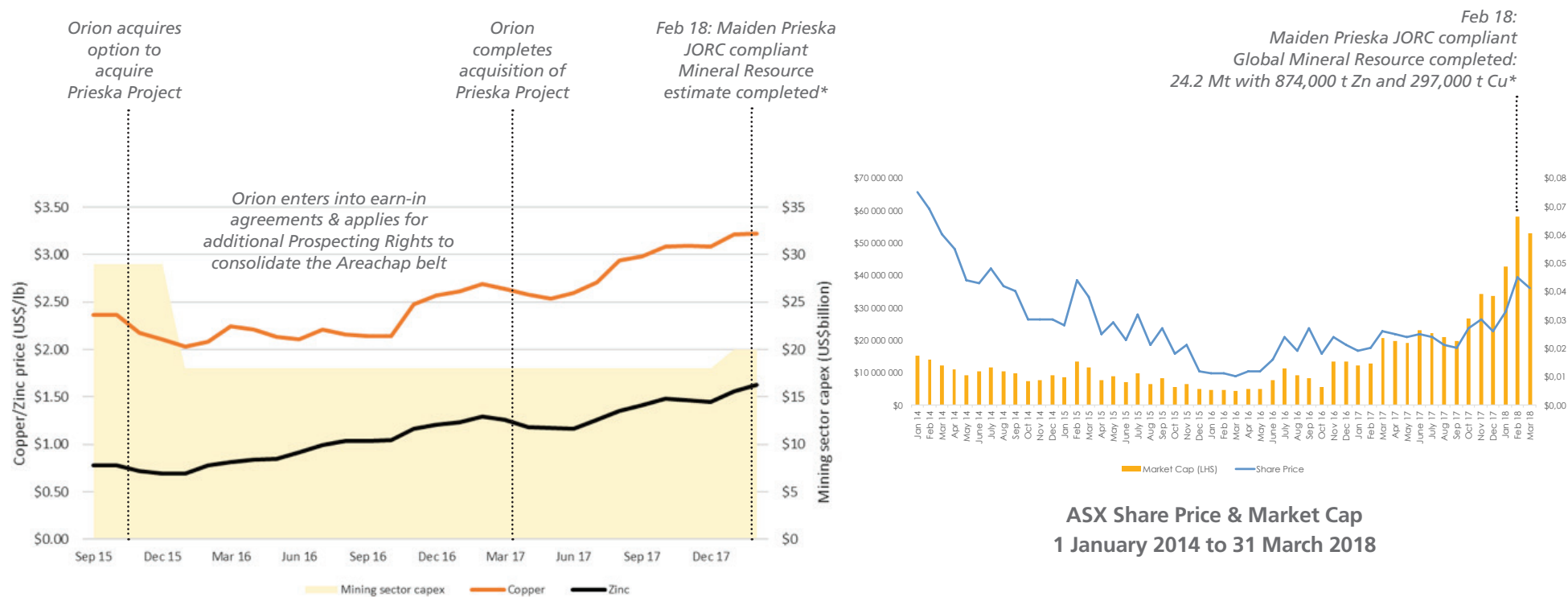
**NELSON  
MOSIAPOA**

*Group Corporate Social  
Responsibility Advisor*

- Founder and Trustee of the Mosiapo Family Trust
- Advanced policy scholar of science and technology and served on the policy unit of the governing party in South Africa prior to the first democratic elections

## CORPORATE STRATEGY & VISION

### Executing a well timed counter cyclic growth strategy

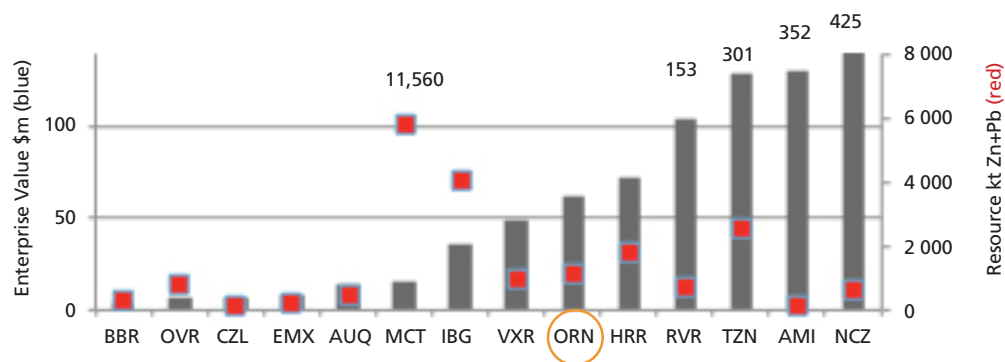


Prieska is an advanced stage, large scale, high grade, zinc-copper project with significant exploration upside



## UPSIDE VALUE POTENTIAL

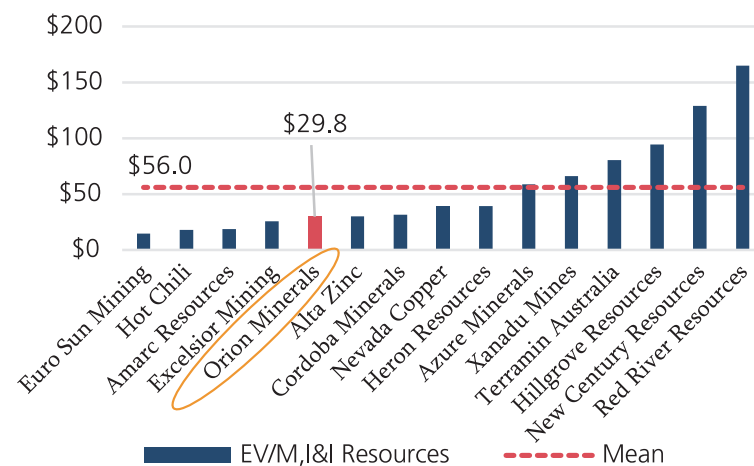
### EV & Resource (ZN+Pb cont)



Euroz Securities Ltd – Orion Minerals Ltd (Initiation of Coverage 1 March 2018)

All information and advice is confidential and for the private information of the person to whom it is provided and is provided without any responsibility or liability on any account whatsoever on the part of Euroz Securities Limited or any member or employee thereof.

### EV/Zinc equivalent\* Mineral Resources for Orion Minerals versus comparable pre-production base metal peers



Hannam and Partners – Orion Minerals Equity Research (7 March 2018)

Source: SNL, H&P estimates. Notes: \* Zinc equivalent resource is calculated as <metal> content in ore multiplied by <metal> price per tonne divided by zinc price per tonne. M, I&I Resources are quoted inclusive of Reserves.

## ORION'S 3 PHASE ASPIRATIONAL STRATEGY AND TIMELINE



- Orion Board approval to commence Bankable Feasibility Study (BFS) in July 2017 with target completion in Q4 2018
  - Deep sulphide resource and +105 Target maiden JORC compliant Mineral Resource completed; resource upgrade targeted Q2 2018

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

- Mining Right and Environmental Authorisation applications submitted in April 2018
- Regional exploration expected to ramp up in 2018

Milestone Activities	Q3 CY17	Q4 CY17	Q1 CY18	Q2 CY18	Q3 CY18	Q4 CY18	Project Approval	Q1 CY19	Q2 CY19	Q3 CY19	Q4 CY19	Q1 CY20	Q2 CY20	Q3 CY20	Q4 CY20	CY2021	CY2022	
Maiden Mineral Resources Estimates				ASX/JSE Releases 8 Feb & 9 April 2018														
Mining Right Application						Submitted 6 April 2018		Anticipated Grant of Mining Right										
Environmental Authorisation Application (EA)						Submitted 6 April 2018		Anticipated Grant of EA										
Bankable Feasibility Studies																		
Project Construction																		
Ore Production - Open Pit																		
Ore Production - Underground																		



## MINING RIGHT APPLICATION PROCESS – STATUTORY TIMELINES



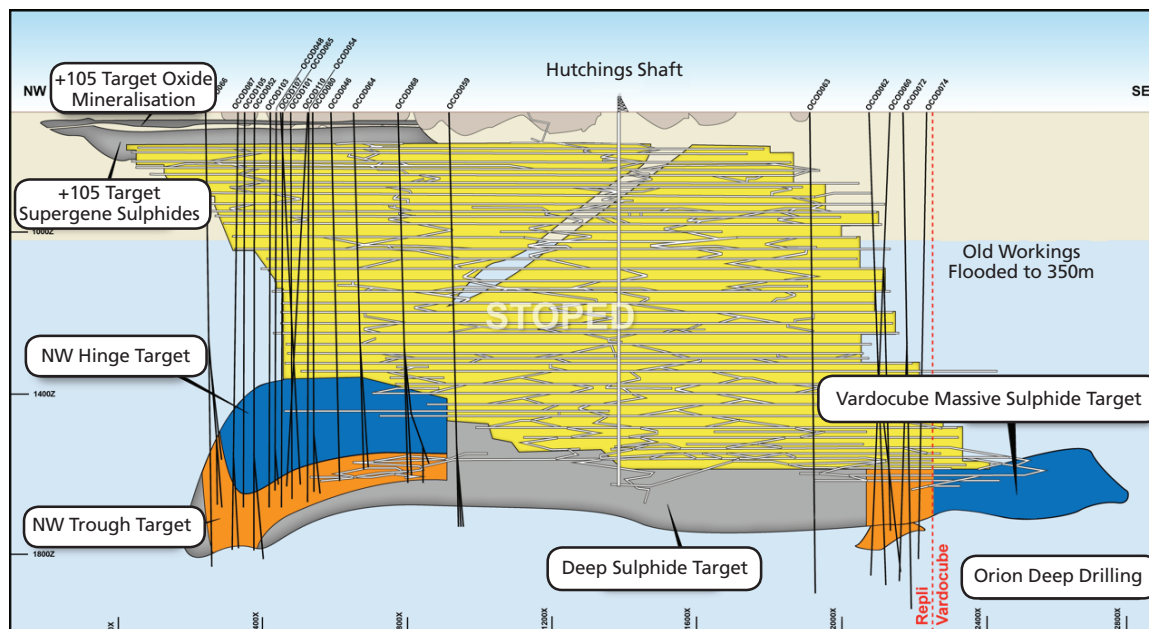
## PRIESKA PROJECT – MAIDEN JORC MINERAL RESOURCE EXCEEDS EXPECTATIONS

**Total Mineral Resource of 29.4Mt**  
**containing 1,126,000 tonnes Zn @ 3.8%**  
**and 365,000 tonnes Cu @ 1.2%** (based on  
drilling results available as at 31 Dec 2017)\*

Drilling is ongoing, with the objective of  
achieving an upgrade in the classification of  
a substantial portion of the total  
Mineral Resource and to test the currently  
open extensions of the deposit

The total Mineral Resource is located on  
the Repli and recently obtained Vardocube  
Prospecting Rights

Resource remains open on dip and strike



**Global Mineral Resource For Prieska Project - Repli Trading No 27 (Pty) Ltd & Vardocube (Pty) Ltd**

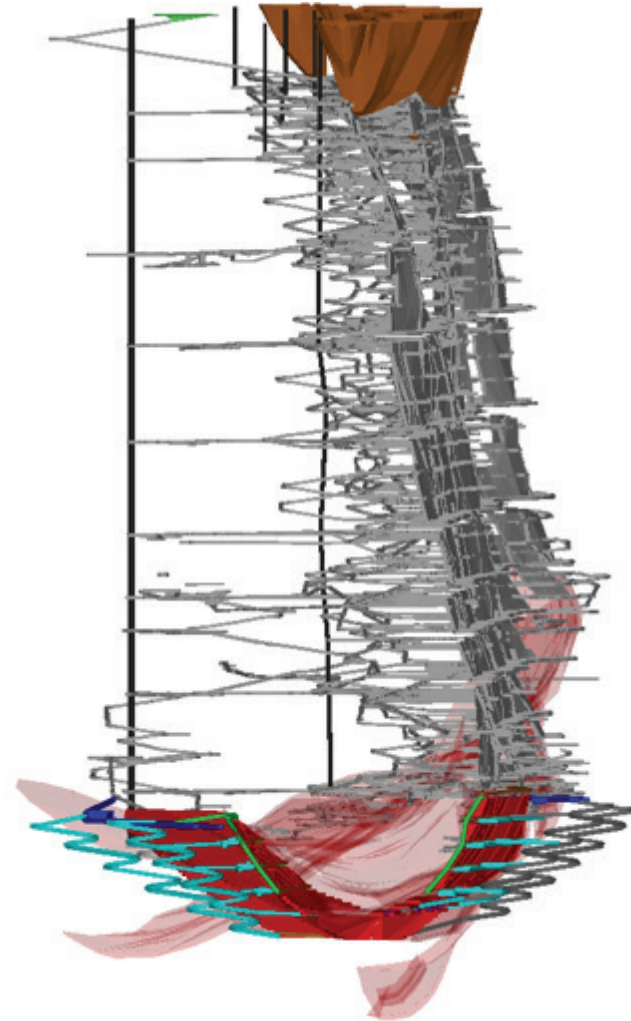
Classification		Tonnes	Zn		Cu		Ag		Au	
			Metal Tonnes	Grade (%)	Metal Tonnes	Grade (%)	Metal Ounces	Grade (g/t)	Metal Ounces	Grade (g/t)
Deep Sulphide Repli	Inferred	22,600,000	839,000	3.7	266,000	1.2	6,904,000	9.5	153,000	0.2
Deep Sulphide Vardocube	Inferred	5,200,000	253,000	4.9	67,000	1.3	1,627,000	9.7	35,000	0.2
+105 Supergene Repli	Indicated	1,200,000	32,000	2.6	30,000	2.4	348,000	8.7	9,000	0.2
+105 Oxide Repli	Inferred	300,000	2,000	0.9	2,000	0.6	17,000	1.8	1,000	0.1
Total Global		29,400,000	1,126,000	3.8	365,000	1.2	8,896,000	9.4	198,000	0.2

*Note All Resources Stated at Zero Cut-off. All masses rounded to thousands which may result in rounding errors*



## DEVELOPMENT PLAN FOR THE PRIESKA PROJECT: LEVERAGE EXTENSIVE EXISTING INFRASTRUCTURE

- Primary shafts and underground decline roadways in place to access deepest remaining targets
- Sealed access roads to project site
- 48km via bitumen road to existing rail siding
- 175MW operational solar power plants in the area
  - additional 675MW have been approved, with further 300MW pending authorisation
  - 4 HV regional lines linked to national electricity grid
- 800km rail link to major, bulk commodity and deep water port at Saldanha Bay
- Bulk water pipeline supplies site
  - sourced from Orange River with all year pumping capacity
- Good contractors accommodation available in the private village of Copperton, ~3km from project site
- Low regional environmental sensitivity
  - existing disturbed/rehabilitated mine footprint

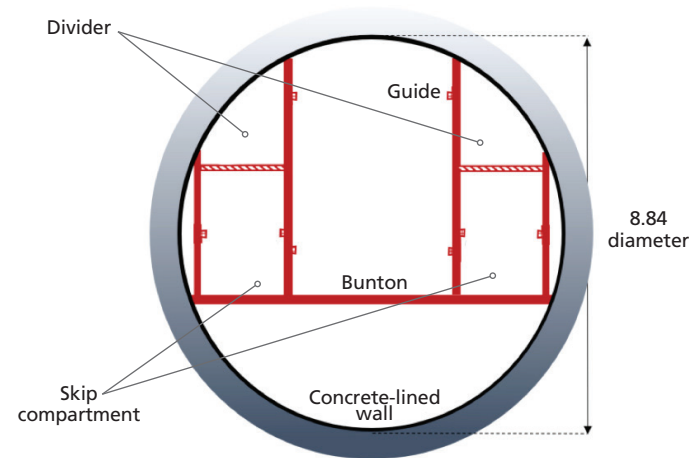


## DETAILED ENGINEERING APPRAISAL CONFIRMS INTEGRITY OF KEY INSTALLATIONS AT PRIESKA PROJECT - SIGNIFICANT CAPITAL COST AND TIME SAVING

### Shaft barrel, lining and steelwork structurally sound



*Plan view photograph of Hutchings Shaft*



*Plan view schematic of Hutchings Shaft*

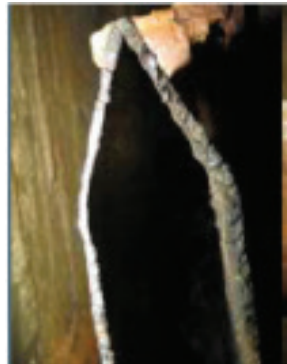
### Decline roadways and haulages in good condition and accessible



*Surface portal access*



*Underground buntion divider steel thickness*



*Section through retrieved underground buntion divider steel thickness*



*Location of removed section from underground buntion*



*Existing underground haulage*



## ORION'S METALLURGICAL TEST WORK CONFIRMING EXPECTATIONS AT THE PRIESKA PROJECT

### SCOUTING PHASE

*Confirm amenability to flotation*

Test Description		Test Head Grade		Total Recovered to Concentrate			Combined Tails		
		Cu (%)	Zn (%)	Mass (%)	Cu Rec. (%)	Zn Rec. (%)	Mass (%)	Cu (%)	Zn (%)
Cu-Rich Deeps	Rougher	2.41	2.79	37	93.5	93.4	63	0.25	0.29
Zn-Rich Deeps	Rougher	1.47	6.48	34	94.1	96.9	66	0.13	0.30
Supergene	Rougher-Cleaner	1.53	8.87	17	92.0	92.8	83	0.19	0.94

Test Description		Copper Concentrate				Zinc Concentrate			
		Cu Rec. (%)	Cu Grade (%)	Zn Rec. (%)	Zn Grade (%)	Cu Rec. (%)	Cu Grade (%)	Zn Rec. (%)	Zn Grade (%)
Cu-Rich Deeps	Rougher	89.5	12.0	22.2	3.4	4.0	0.5	71.2	10.3
Zn-Rich Deeps	Rougher	88.9	8.6	10.4	4.4	5.2	0.4	86.6	30.5
Supergene	Rougher-Cleaner	-	-	-	-	89.7	8.0	91.2	47.2

- Confirms amenability of Copperton deposit to concentration by froth flotation
- Greater than 92% of metal reports to concentrate
- Deeps (hypogene) samples differentiate easily in first stage rougher float

*refer ASX release 15 November 2017*

### FLOWSHEET DEVELOPMENT

*Confirm differential concentrates*

Test Description		Test Head Grade		Cu Circuit Recovery		Zn Circuit Recovery		Combined Tails	
		Cu (%)	Zn (%)	"Cu Rec.	Cu Rec. (%)	Zn Rec. (%)	Mass (%)	Cu (%)	Zn (%)
Low Fe Samples (<20% Fe)									
NW+SE Deeps Blend	Open Circuit Cleaner	0.9	4.6	83.1	1.9	93.2	10.8	0.1	0.3
Supergene Blend	Open Circuit Cleaner	2.1	3.7	73.7	7.3	88.1	20.2	0.2	0.2

Test Description		First Pass Copper Concentrate				First Pass Zinc Concentrate			
		"Cu Rec.	Cu Grade (%)	Zn Rec. (%)	Zn Grade (%)	Zn Rec. (%)	Zn Grade (%)	Cu Rec. (%)	Cu Grade (%)
Low Fe Samples (<20% Fe)									
NW+SE Deeps Blend*	Open Circuit Cleaner	82.1	26.7	1.7	2.8	80.1	50.0	6.1	0.8
Supergene Blend	Open Circuit Cleaner	66.2	33.4	4.7	4.1	70.9	35.6	19.6	5.6

*\* Estimated grades using XRF-ICP correlation - ICP results pending*

- Flowsheet achieves differential flotation for Supergene and Deeps zones
- Preliminary marketable concentrates achieved using only open-circuit testing
- Deeps (hypogene) samples differentiate easily in first stage rougher float

*\*refer ASX release 1 March 2018*

### OPTIMISED CONCENTRATES VARIABILITY TESTING

*Best priced products*

#### WAY FORWARD - Test Description and Deliverables

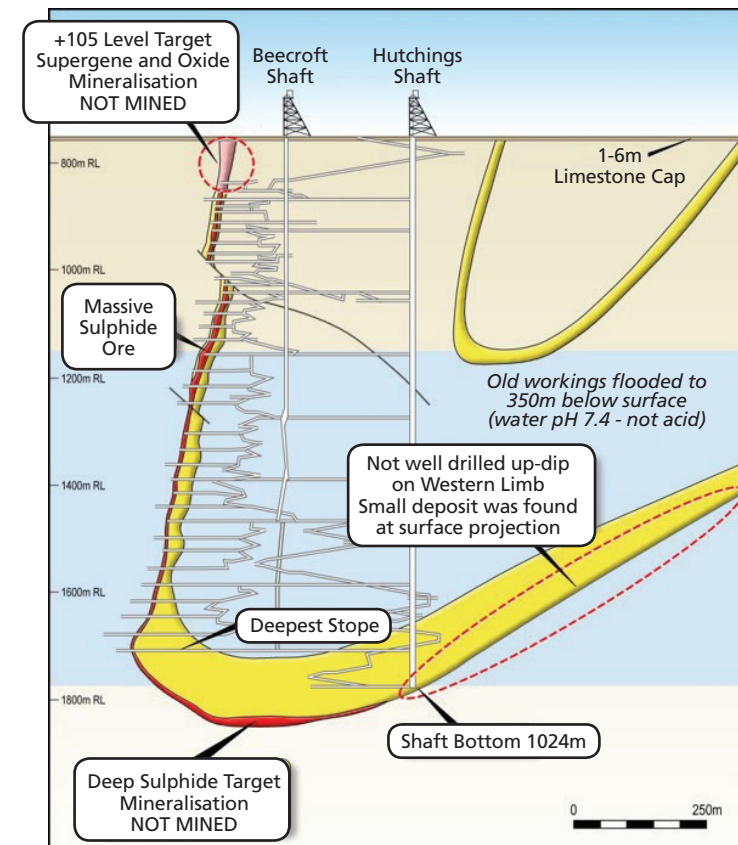
- Lock-cycle tests to produce optimised concentrate grades and metal recoveries
- Targeting >85% metal recoveries at concentrate grades of +27% copper and +50% zinc
- Variability testwork to confirm whole deposit response within design parameters
- Process optimisation option studies to investigate pre-concentration
- Detailed cost estimations for feasibility study financial modelling

## MINE PLAN FOR PRIESKA PROJECT BFS

- BFS scheduled for completion in Q4 2018
  - DRA appointed as lead BFS consultant
  - ABS Africa appointed to manage EIA studies to comply with leading international standards to support project finance
- Key BFS technical project parameters include
  - Construction of 1.2mtpa throughput flotation plant to produce Zn and Cu concentrates
  - Confirm optimal sequence of open pit feed for consistency in ore presentation through oxide and high grade supergene zones
  - Confirm suitability of using drift-and-fill and longhole stoping for the mining of deep sulphide mineralisation to minimise dilution
  - Use of underground water for process & dust suppression
  - Dewatering underground while mining open pit
  - Closed, zero-discharge environmental strategy
- Mining Right and EA applications submitted 6 April 2018



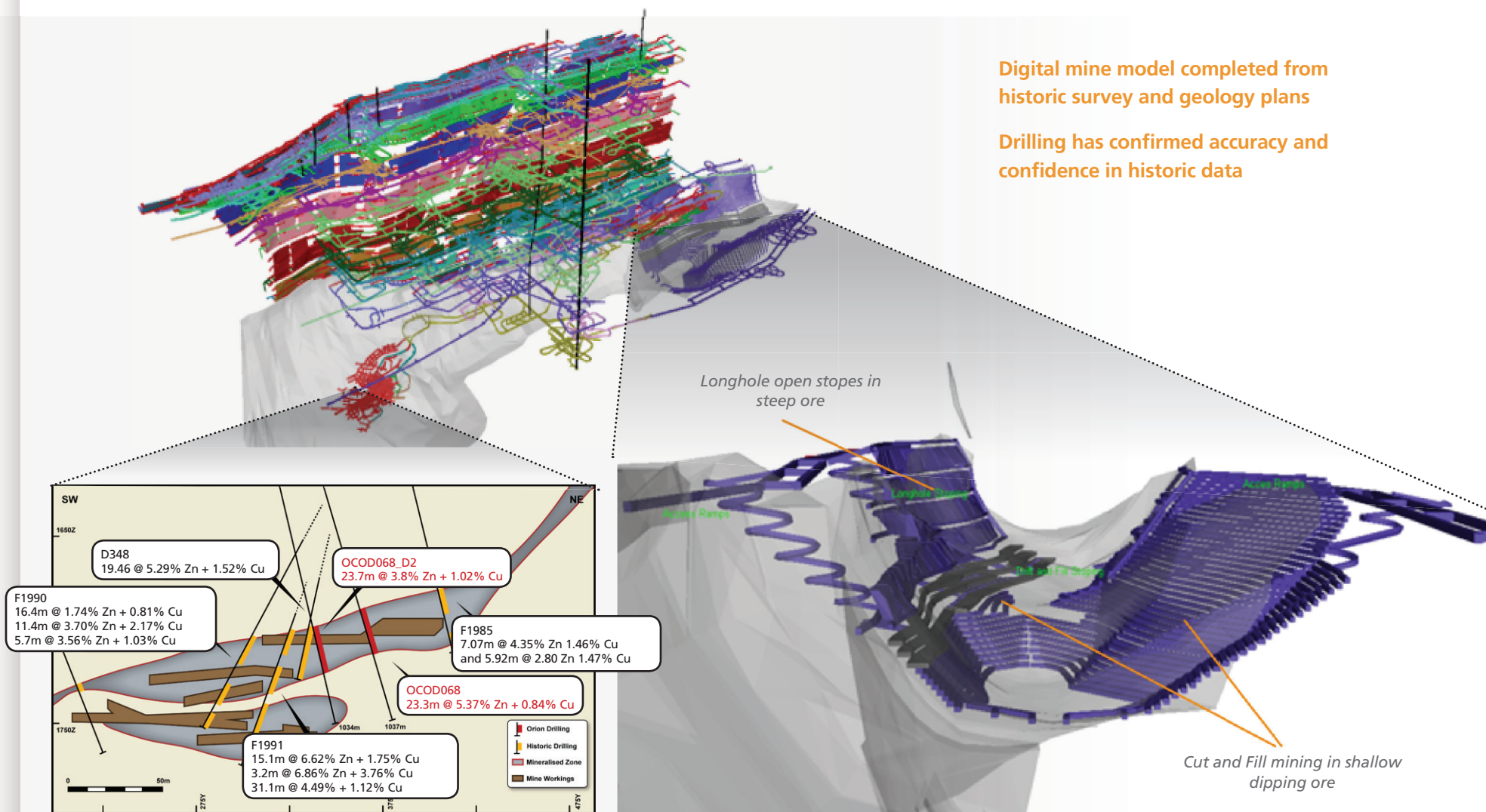
### Prieska target mineralisation and existing mine infrastructure



## PRIESKA PROJECT BFS: MINE PLANNING IN PROGRESS

Digital mine model completed from  
historic survey and geology plans

Drilling has confirmed accuracy and  
confidence in historic data



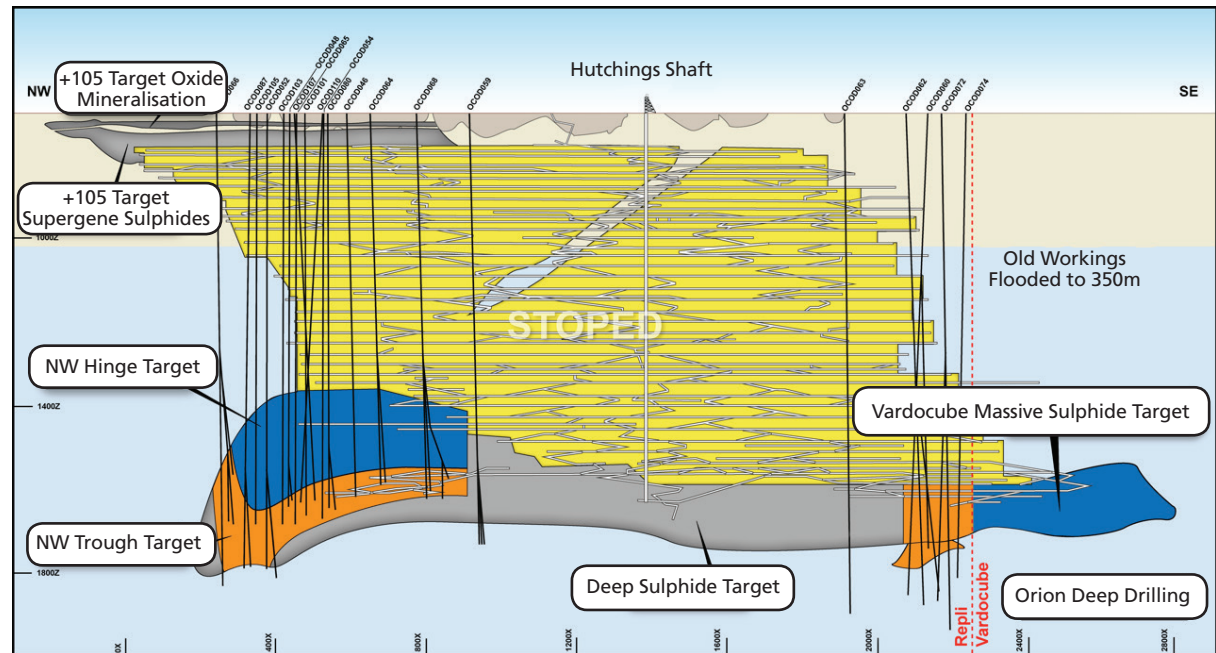


## PRIESKA PROJECT BFS: EXPANDED DEEP SULPHIDE MINERAL RESOURCE

Drill rigs remain active on surface



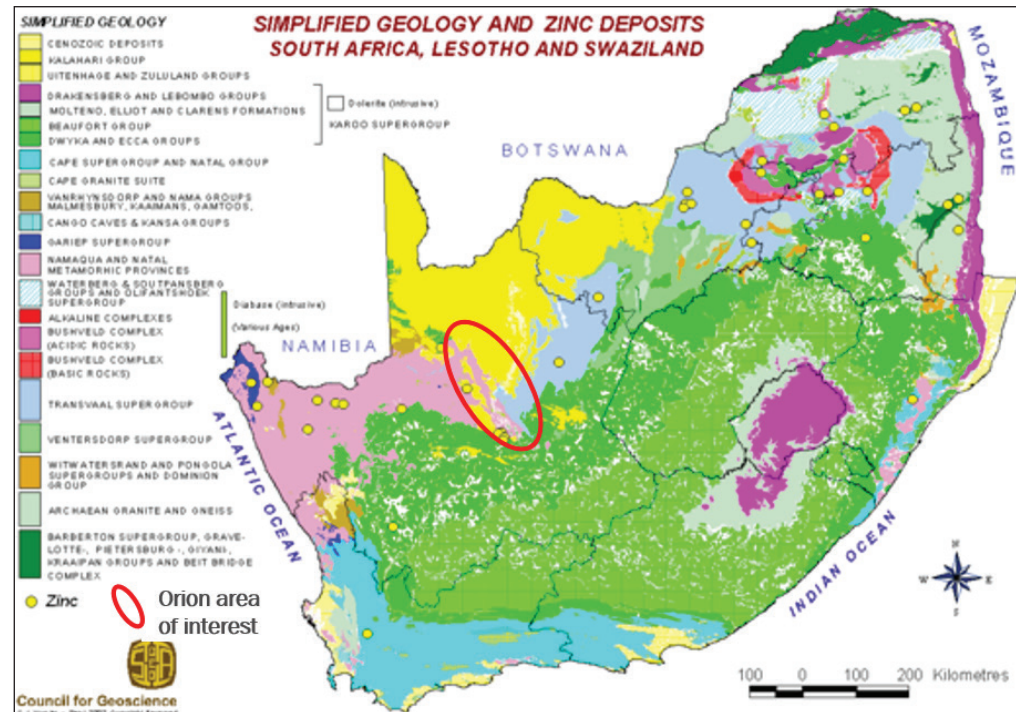
Long section with current drilling and historical development



- Dual focused drilling program
  - Continue with infill drilling to achieve drill density for resource category upgrade
  - Targeting dip and strike extensions of historically identified mineralisation with step-out drilling

## EXPLORATION: THE REGIONAL POTENTIAL OF THE NORTHERN CAPE DISTRICT

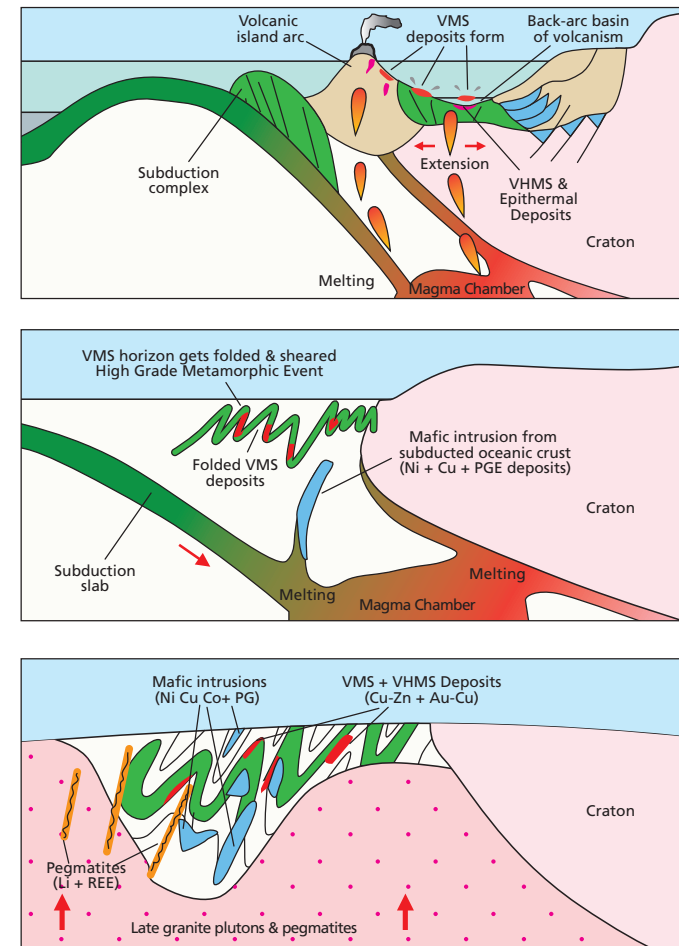
- Orion has established a commanding landholding and exploration position in the Areachap belt and is expected to play a major role in this emerging minerals district
- It is an established mining region without the social challenges common in South African mining regions
  - Local stakeholder engagement in progress
- Presence of leading global mining houses and robust institutions
- Vedanta Resources is established and is growing its globally significant zinc business in Southern Africa
  - Gamsberg and Black Mountain mines and Skorpion refinery are the cornerstone assets which underpin Vedanta's regional operations
- The region is reputed to have the highest concentration of zinc on the African continent<sup>1</sup>
  - Large-scale sediment hosted deposits classified as Broken-Hill, Sedex and Volcanogenic Massive Sulphide (VMS) types
  - > 40mt of contained zinc
  - It has been reported that significant potential exists in the region



## EXPLORATION: AREACHAP - A HIGHLY PROSPECTIVE BASE METALS BELT

- The Areachap terrain is within a tectonic/mobile belt on the western margin of the Kaapvaal Craton and has subsequently been intensely altered and tectonised
  - The Areachap Group is a heterogeneous assemblage of metavolcanic and metasedimentary gneisses exposed intermittently for 280km on the easternmost margin of the Namaqua Province
  - It represents a Proterozoic volcanic island arc resulting from the subduction of oceanic crust underneath the Kaapvaal Craton
  - Important recognition of Prieska project area widely acknowledged as a “giant VMS” deposit
  - Geological conditions allow formation of giant VMS deposits of regional scale
  - Giant VMS deposits typically have several large satellites
- 22 identified VMS occurrences historically confirmed within the prospective Areachap terrane by major mining houses
- Several known intrusive Ni-Cu-PGE occurrences with limited modern exploration for this style of mineralisation
  - Potential for discovery of large low grade Ni-Cu deposits
  - Significant advances in technology have resulted in improved target generation methodology

Three superimposed geological events produce exceptional exploration potential

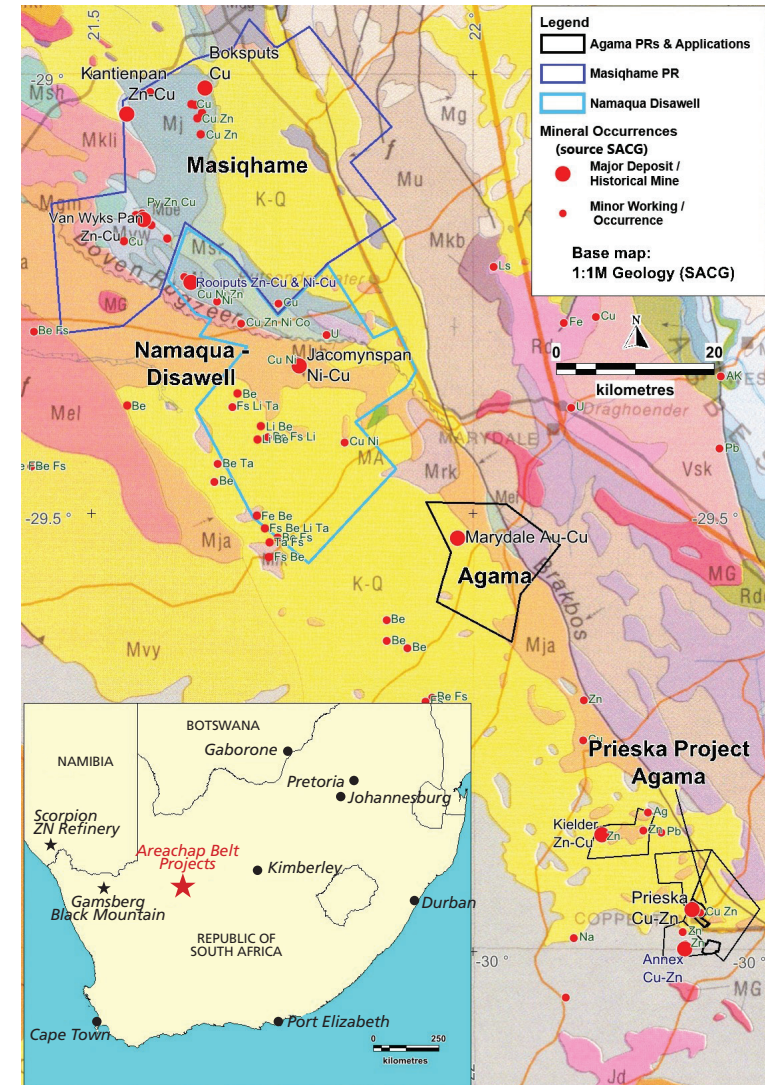






## EXPLORATION: MAJOR CONSOLIDATION PLAY IN A PROVEN MINERALISED DISTRICT

- Orion acted at the bottom of cycle in 2015 and secured a large consolidated land package (1,790 km<sup>2</sup>)
  - Prieska Project acquired
  - This highly prospective region has been consolidated under a single owner for the first time
- No major exploration activity over the past 30 years
  - Application of modern exploration techniques presents a significant opportunity for target generation and testing
  - Many identified mineral occurrences not drilled and most targets remain open on dip and strike
- Three superimposed geological events produce an exceptional metals province
  - Prieska deposit recorded as one of world's 30 largest VMS deposits with 22 other occurrences on Orion's prospecting rights
  - Mafic intrusive analogous in tectonic style and time to the Fraser Range, WA with Ni-Cu deposits intruding pre-existing VMS & Volcanogenic Hydrothermal Massive Sulphides (VHMS)
  - Late stage granites and pegmatites intrude, with Li and REE deposits





## EXPLORATION: ORION VMS STRATEGY

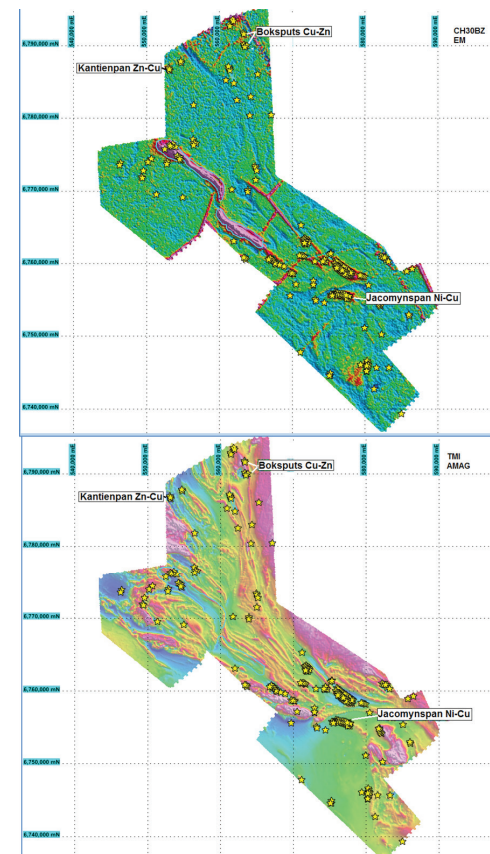
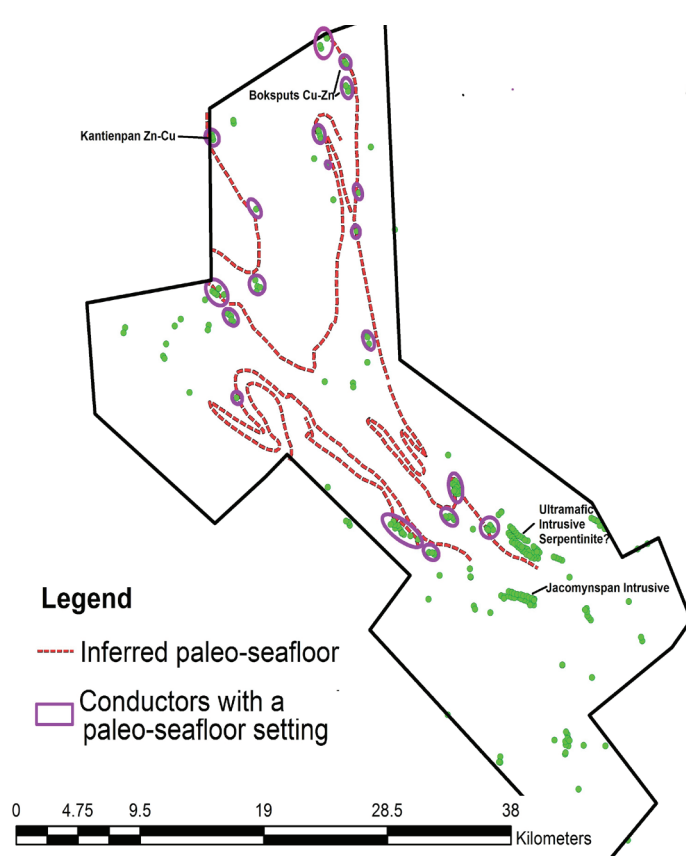
- The Prieska Zn-Cu deposit is of exceptional scale – ranked a “giant”
- VMS’s tend to form in clusters or camps
- To form an exhalative deposit of this quality requires a long quiescent period in a marine, volcanogenic environment
- This quiescence is likely to be of regional scale
- The sea floor unconformity is a key stratigraphic target horizon
- Exploration is driven by stratigraphic mapping
- Litho-geochemistry provides key alteration mapping
- Geophysics to trace massive sulphides is the primary exploration tool
  - Electromagnetics
  - Magnetics
  - Gravity





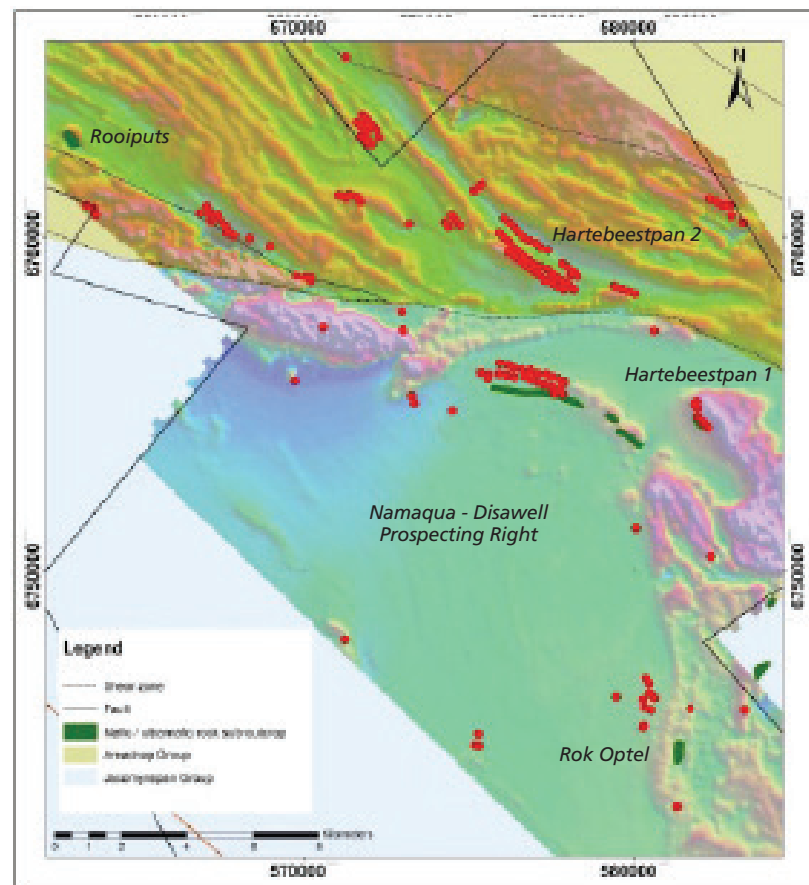


## Follow up on SkyTEM survey underway



## EXPLORATION: GEOLOGICAL MODELLING CONFIRMS COMPELLING TARGETS SURROUNDING THE JACOMYNSPAN NI-CU-CO-PGE INTRUSIVE

- The Jacomynspan Intrusive Complex has important characteristics in common with major Ni-Cu occurrences such as Voisey's Bay, Kabanga and Nova-Bollinger
- A recently completed airborne EM and magnetic survey has identified several high priority targets for follow up work
- The geophysical targets are centred around a maiden JORC Mineral Resource of 6.8Mt containing 39,480 tonnes Ni; 22,800 tonnes Cu and 1,800 tonnes of Co at a 0.4% Ni cut-off with grades of 0.57% Ni, 0.33% Cu and 0.03% Co, drilled between 1971 and 2012
- Detailed re-appraisal applying geochemistry and re-logging of magmatic features has made important findings in support of a compelling exploration opportunity



Interpreted conductors (red dots) from recent SkyTEM survey, interpreted as potential ultramafic intrusive nickel sulphide targets

## CSR: CREATING A BETTER FUTURE – LOCAL ECONOMIC DEVELOPMENT

### ORION IS A CATALYST FOR SOCIO-ECONOMIC DEVELOPMENT

- Community Liaison office opened in Prieska
- MoU signed with Siyathemba Local Municipality to cooperate with Orion on community development initiatives
- Internet café established in 2017 to give the local community access to internet facility and supply chain training



**WE STRIVE FOR » SUSTAINABILITY » ENTREPRENEURSHIP » IMPACT » FOCUS**





Orion Minerals

## Appendices

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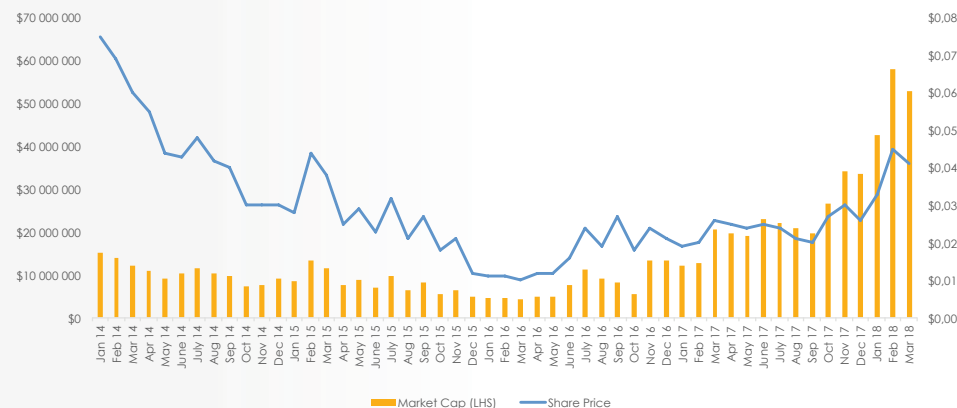
## ORION CORPORATE SUMMARY

ASX primary listing  
JSE secondary listing

Capital Structure Summary	
Shares on Issue	1,290M
Options on Issue	221M
Market Capitalisation (4.6cps (ASX)) <sup>(1)</sup>	A\$59.3M
Bridge Loan (12% interest, 31 May 2018 term) <sup>(2)</sup>	A\$6.0M
Convertible Notes (2.6 cps convert, 12% coupon, March 2019 maturity) <sup>(3)</sup>	A\$6.0M
AASMF Loan <sup>(3)</sup>	A\$1.5M
AASMF Preference Shares <sup>(3)</sup>	A\$2.1M
Cash on hand (at 31 December 2017)	A\$4.6M

Significant Holder Name	%
Tembo Capital	19.99
Tarney Holdings	7.98
Hargreave Hale Ltd	6.46
Silja Investment and Alexander Haller <sup>(4)</sup>	5.36
<b>Significant Holder Total</b>	<b>39.80</b>

ASX Share Price & Market Cap  
1 January 2014 to 31 March 2018



(1) Closing price of ORN Shares on the ASX on 5 April 2018. Closing price of ORN Shares on the JSE on 5 April 2018 was ZAR 0.45

(2) Refer to ASX releases 18 August 2017 and 15 November 2017 for additional information. As at 31 December 2017, \$3.56M had been drawn down against the Bridge Loan

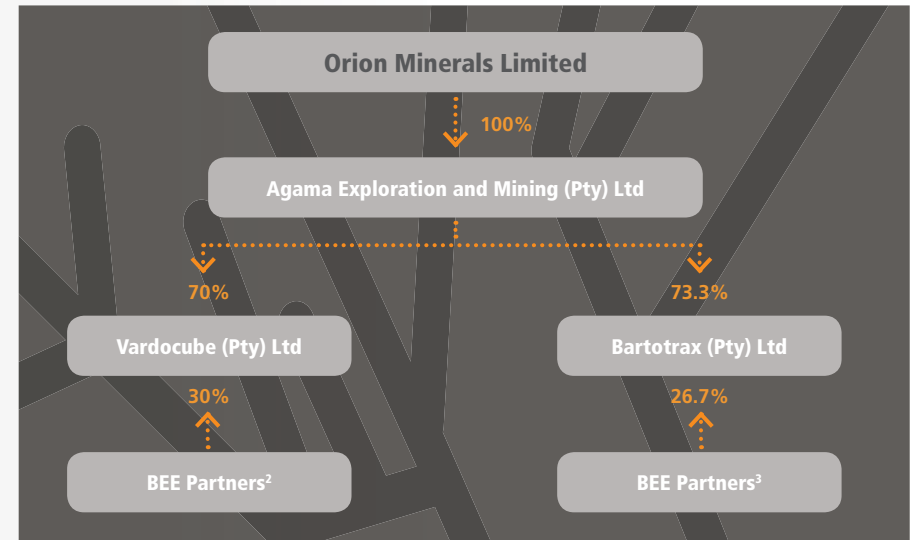
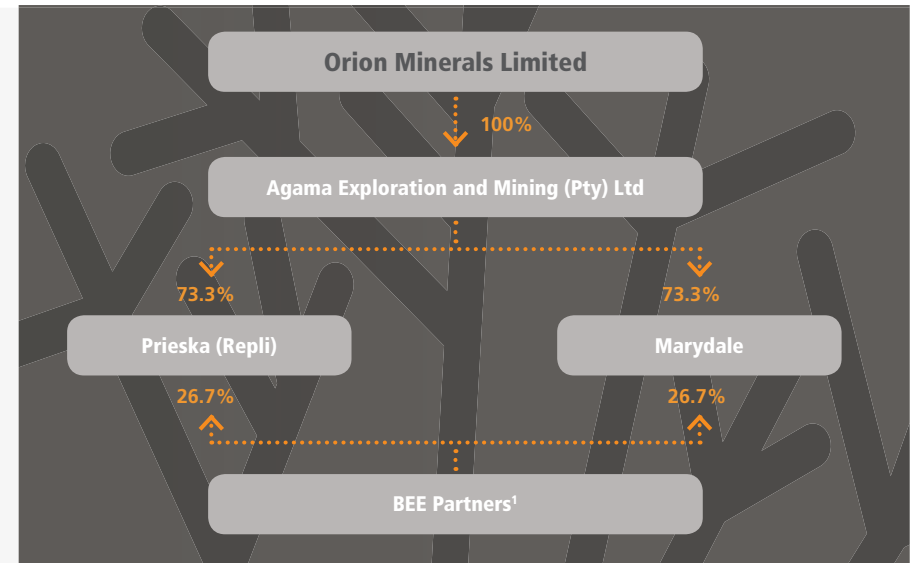
(3) Refer to the Company's December 2017 Interim Financial Report for information related to the Convertible Notes, along with the Preference Shares Agreement (ZAR15.75M) and a Loan Agreement (ZAR14.25M) that Repli Trading No 27 (Pty) Ltd (a 73.33% owned subsidiary of Agama Exploration & Mining (Pty) Ltd) has entered into with Anglo American Sefa Mining Fund

(4) Mr Alexander Haller is deemed to have a relevant interest in securities held by Silja Investment Ltd

## PRIESKA OWNERSHIP STRUCTURE

- Orion acquired Agama Exploration & Mining in March 2017 after extensive due diligence for A\$8.9m\*
- Orion has a 73.3% economic interest in the Prieska and Marydale Projects
- Full compliance with current South African Black Economic Empowerment legislation

\* Refer ASX release 29 March 2017





Orion Minerals





**Orion Minerals**

## Contact us

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**ASX & JSE: ORN**