

# Orion Minerals Limited

Investor Presentation March 2018



Orion Minerals

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

*Developing world class zinc and copper deposits*

# Disclaimer and Forward Looking Statements



- 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:
  - *are necessarily based upon a number of estimates and assumptions that, while considered reasonable by Orion Minerals Ltd, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies;*
  - *involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements; and*
  - *may include, among other things, statements regarding targets, estimates and assumptions in respect of metal production and prices, operating costs and results, capital expenditures, mineral reserves and mineral resources and anticipated grades and recovery rates, and are or may be based on assumptions and estimates related to future technical, economic, market, political, social and other conditions.*
- Orion disclaims any intent or obligation to update publicly any forward-looking statements whether as a result of new information, future events or results or otherwise.
- The words 'believe', 'expect', 'anticipate', 'indicate', 'contemplate', 'target', 'plan', 'intends', 'continue', 'budget', 'estimate', 'may', 'will', 'schedule' and similar expressions identify forward-looking statements.
- All forward-looking statements made in this presentation are qualified by the foregoing cautionary statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.
- All information in respect of Exploration Results and other technical information should be read in conjunction with the Competent Person Statements at the end of this presentation
- To the maximum extent permitted by law, Orion and any of its related bodies corporate and affiliates and their officers, employees, agents, associates and advisers:
  - *disclaim any obligations or undertaking to release any updates or revisions to the information to reflect any change in expectations or assumptions;*
  - *do not make any representation or warranty, express or implied, as to the accuracy, reliability or completeness of the information in this presentation, or likelihood of fulfilment of any forward-looking statement or any event or results expressed or implied in any forward-looking statement; and*
  - *disclaim all responsibility and liability for these forward-looking statements (including, without limitation, liability for negligence).*
- Nothing contained in this presentation constitutes investment, legal, tax or other advice. The information does not take into account the investment objectives, financial situation or particular needs of any recipient. Before making an investment decision, each recipient of this presentation should make its own assessment and take independent professional advice in relation to the information and any action taken on the basis of this presentation.

# Orion Minerals - Overview



Orion Minerals

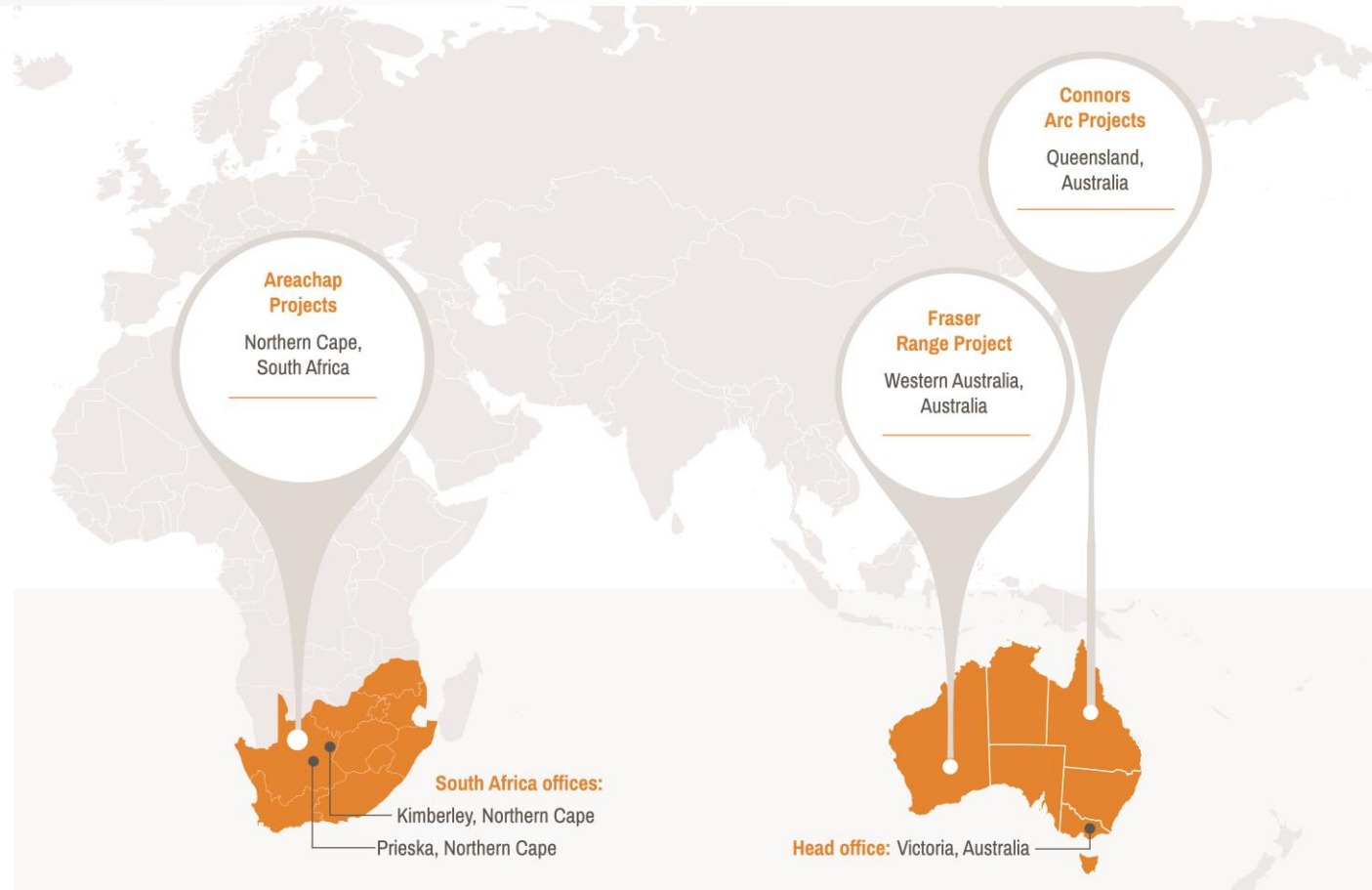
## What we do

Orion Minerals is an Australian 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 Stock Exchange (ASX: ORN) and a secondary listing on the Johannesburg Stock Exchange (JSE: ORN).

Orion is considering an additional listing on the LSE during H2 2018 to access UK and European capital markets.



# Board of Directors



Orion Minerals



**Denis Waddell**  
*Chairman*

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



**Errol Smart**  
*MD & CEO*

- Geologist, with professional registration for JORC purposes
- +24 years industry experience in exploration, mine development and operation



**Alexander Haller**  
*Non-Executive Director*

- Partner of Zachary Capital Management that provides advisory services to private investment companies
- Ex-JPMorgan 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 Team



Orion Minerals



**Errol Smart**  
MD & CEO

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



**Martin Bouwmeester**  
Chief Financial Officer  
and Company  
Secretary

- Fellow of CPA Australia with over 20 years' resources industry experience in exploration, mine development and operation
- Evaluation, funding and development at the Fosterville Gold Mine



**Walter Shamu**  
Executive: Mining &  
Development

- Mining engineer with a B.Eng (Mining Engineering) and Masters in Engineering (Rock Mechanics), as well as LLB (Law)
- Over 20 years' experience on exploration projects, mine 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 Mosiapoa 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

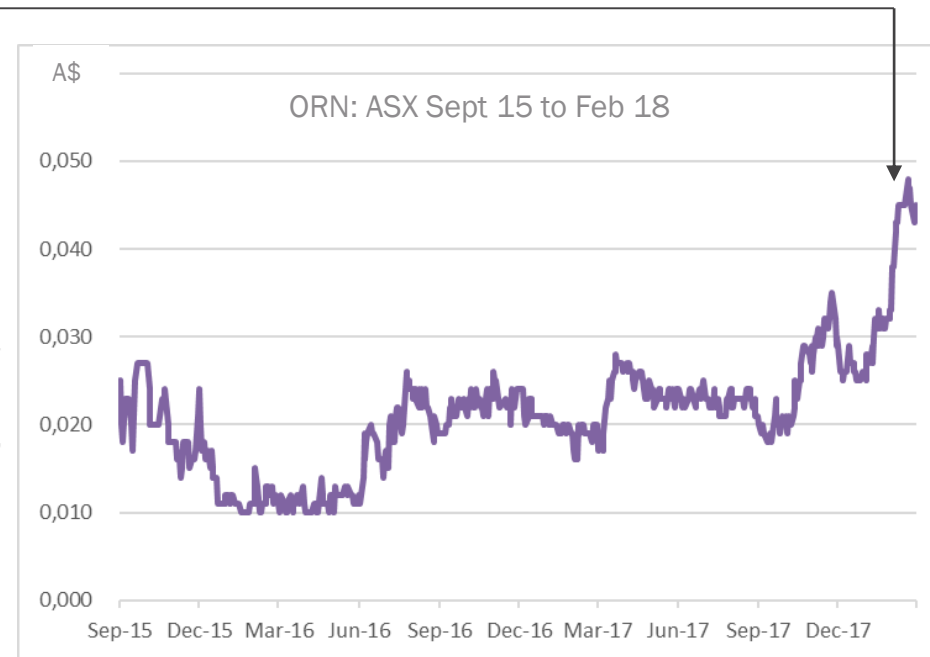
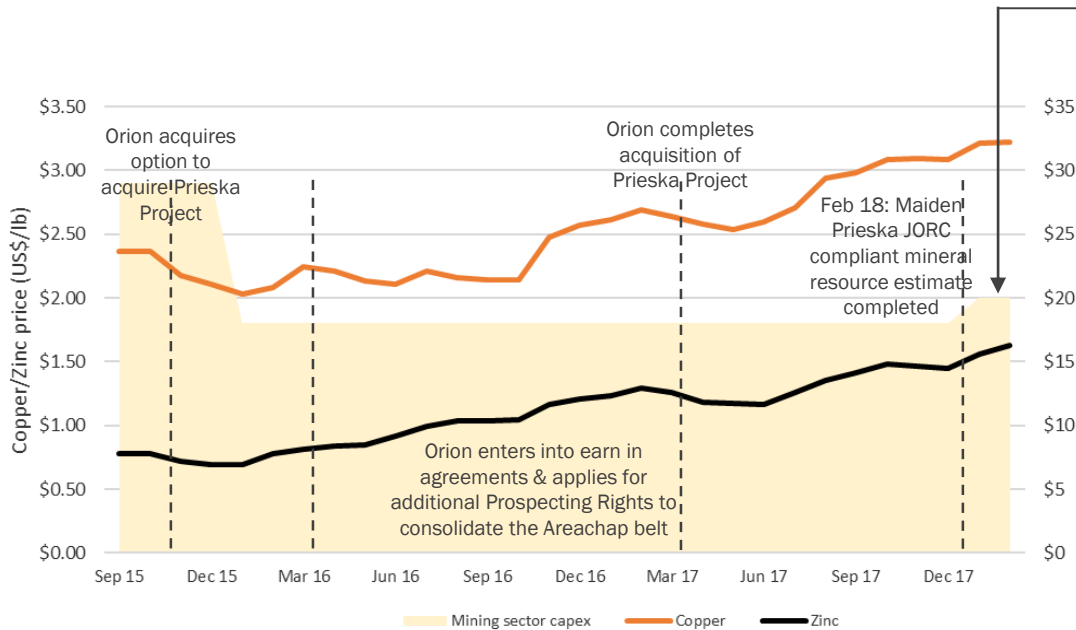


**Marcus Birch**  
Commercial &  
Business Support  
Manager

- BSc Hons (Geology) and BCom
- Over 25 years' experience in the mining and minerals exploration industry
- Established and managed logistical aspects of exploration projects across Africa, Australia and South America

## Executing a well timed counter cyclic growth strategy

## Maiden Prieska JORC Compliant Global Mineral Resource Completed: 24.2 Mt with 874,000 t Zn and 297,000 t Cu\*

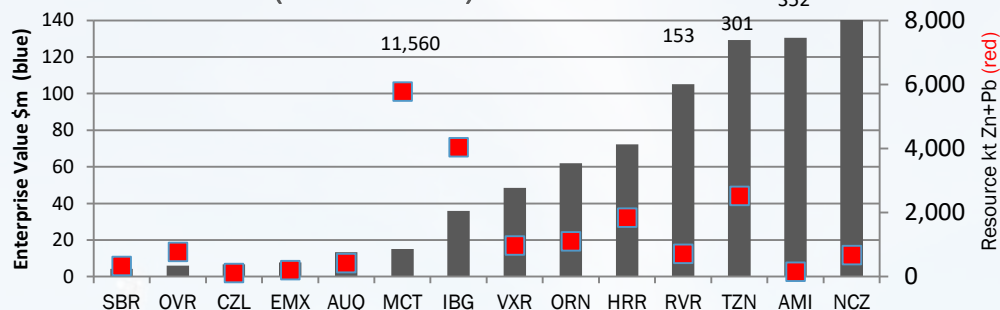


\*refer ASX release 8 February 2018

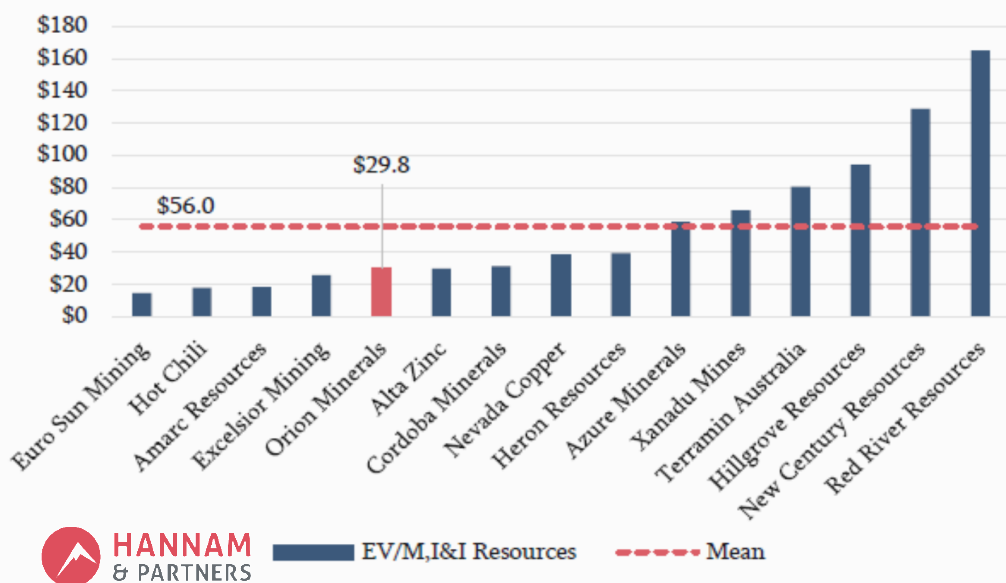
Prieska is an advanced stage, large scale, high grade, zinc – copper project with superb exploration upside

# Upside Value Potential

## EV & Resource (Zn+Pb cont)



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



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.

	Sh Price	Mkt Cap	Cash	Debt	EV	Zn+Pb Resource	Zn+Pb cont	EV/t Zn+Pb	Ownership	Description
	\$/sh	\$m	\$m	\$m	\$m	mt grade	kt	\$/t	%	
SBR	0.017	4	0	0.6	5	16.0 2.1%	336	14	100%	Border deposit, Namibia
OVR	0.013	7	1	0	6	12.6 6.2%	779	8	100%	Yukon, Canada, Glencore & Macq shareholders, in permitting.
CZL	0.011	10	1	0	9	1.0 14.0%	112	83	80%	Aiming to transition to small scale producer in CY'18. Located in Mexico
EMX	0.008	9	1	0	8	3.3 6.1%	201	39	100%	Gorno, Italy, modest resource aiming for further exploration success.
AUQ	0.025	16	2	0	13	26.0 3.3%	429	31	50%	Khnaiguiyah, Saudi, Ore reserve, project stalled due to dispute with local partner
MCT	0.037	20	4	0	17	170 6.8%	5,780	3	100%	Admiral Bay, Kimberley, WA, deep 1,300m,
IBG	0.062	40	2	0	38	70.8 5.7%	4,036	10	100%	Citronen, Greenland, Mining Licence under appl'n
ORN	0.015	63	4	3.5	62	24.0 6.3%	1,108	50	73%	BFS due on Prieska in Oct'18. Potential production of 40kt of Zn and 15kt of Cu pa.
VXR	0.016	58	2	0	56	26.4 3.7%	977	57	100%	Pilbara, WA (Whim Ck & Sulphur Springs), Optimisation study underway
HRR	0.775	187	109	0	78	21.7 8.5%	1,840	43	100%	Woodlawn, NSW, combined Underground & Tailings resources. Under construction
RVR	0.360	174	23	0	121	5.5 13.0%	715	169	100%	In production at modest scale of ~22kt of Zn @ <US\$0.20/lb payable in QLD
TZN	0.145	271	0	30	129	68.0 5.7%	2,519	51	65%	Tala Hamza, Algeria, DFS completed, development pending,
AMI	0.380	325	52	83	135	2.4 6.6%	158	855	100%	Hera, NSW, value in Au 4.1g/t, Pb+Zn by-product. Just acquired Peak gold mine
NCZ	1.390	474	53	0	135	77.0 3.1%	676	199	100%	Century tailings retreatment. Full production expected Oct'18

\*note for ORN we convert Cu tonnes to Zn equivalent

### Euroz securities Limited

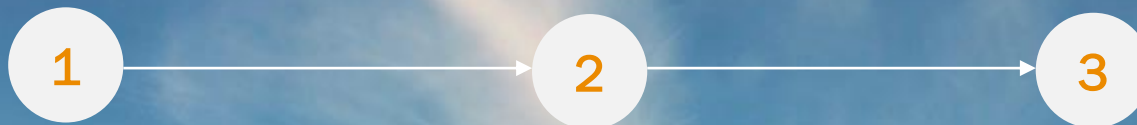
All information and advice is confidential and for the private information of the person to whom it is provided and is provided without any responsibility or liability on any account whatsoever on part of Euroz Securities Limited or any member or employee thereof.



# Orion's 3 Phase Aspirational Strategy and Timeline



Orion Minerals



1  
Complete the Prieska Project BFS

2  
Expand and upgrade the Prieska Project resource

3  
Execute exploration program on highly prospective Prospecting Rights

Milestone Activities	Q3 CY17	Q4 CY17	Q1 CY18	Q2 CY18	Q3 CY18	Q4 CY18		Q1 CY19	Q2 CY19	Q3 CY19	Q4 CY19	Q1 CY20	Q2 CY20	Q3 CY20	Q4 CY20	CY 2021	CY 2022	
Resources Estimate (+105 Level Target)	█	█					Project Approval											
Resources Estimate (Deep Sulphide Target)																		
Environmental Impact Assessment	█	█	█															
Mining Right Application																		
Bankable Feasibility Studies	█	█	█	█	█	█												
Project Construction									█	█	█	█	█	█	█	█		
Ore Production - Open Pit															█	█	█	█
Ore Production - Underground																		█

- 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 Impact Assessment (EIA) to be submitted in Q1 CY2018
- Regional exploration ramp up in 2018

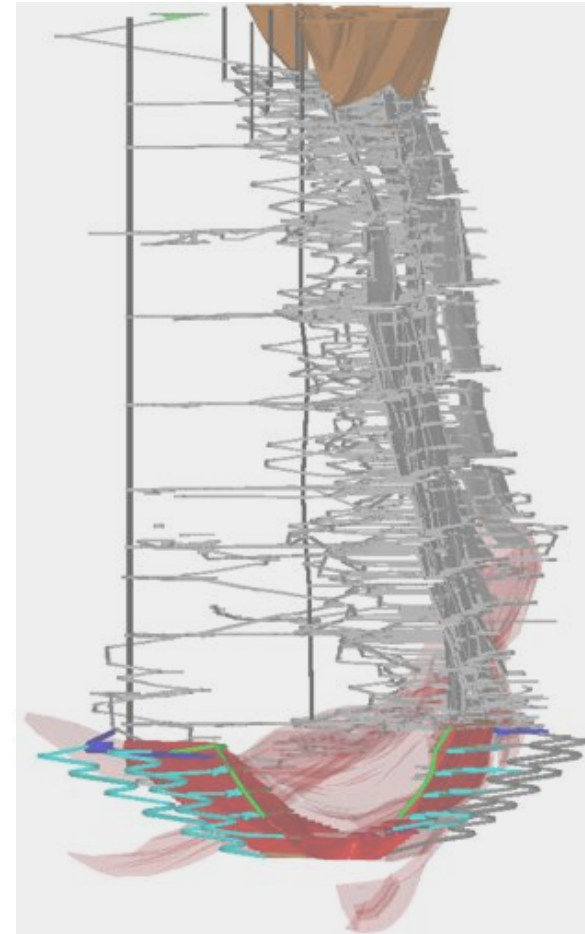


## Development plan for the Prieska Project : Leverage extensive existing infrastructure



Orion Minerals

- 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

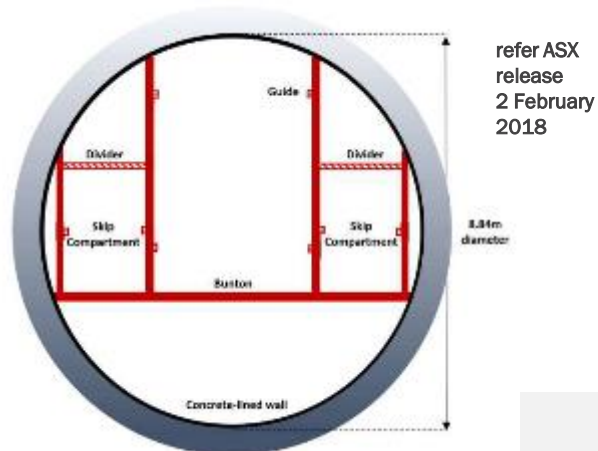


Orion Minerals

## 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

# Prieska Project – Maiden JORC Mineral Resource exceeds expectations



Orion Minerals

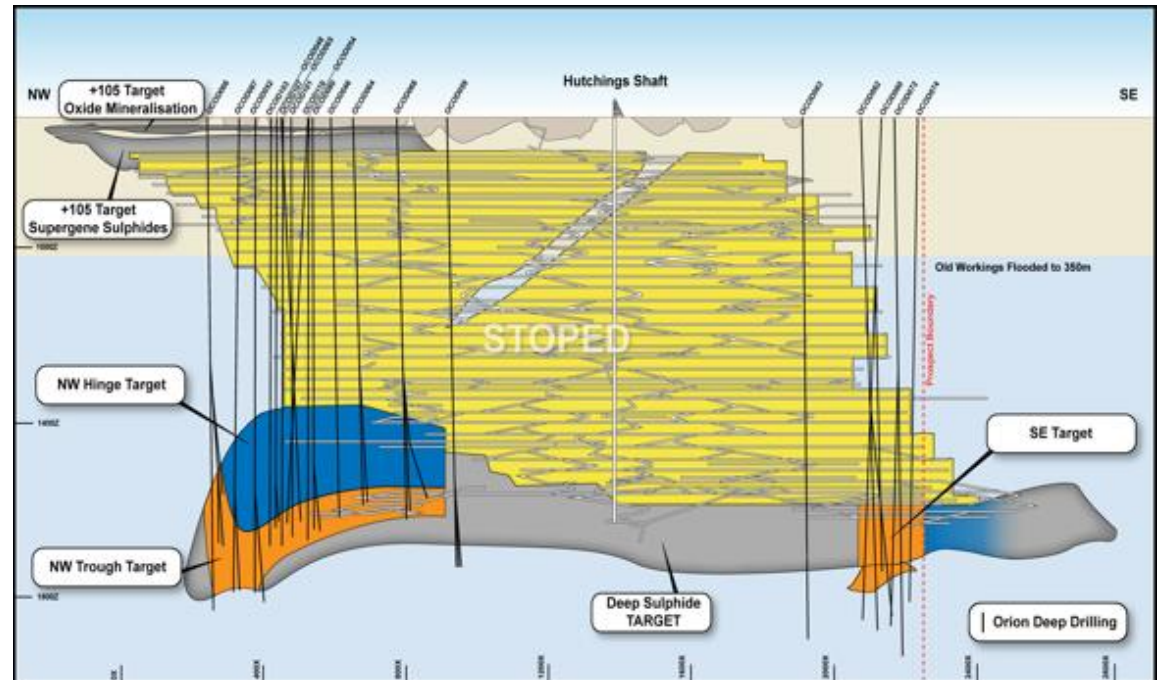
**Maiden Global Mineral Resource of 24.2Mt containing 874,000 tonnes Zn and 297,000 tonnes Cu** (based on drilling results available as at 31 Dec 2017, refer appendix attached)

7 additional intersections are now reported and 6 further holes nearing completion prior to release of Indicated Mineral Resource estimate

The Global Mineral Resource is located on the Repli Prospecting Right and accounts for ~ 70% of the primary target area

Grant of southern extension Prospecting Right is imminent and will trigger drilling of the remaining 30% of initial target

*Resource remains open on dip and strike*



refer ASX release 8 February 2018

# Orion's metallurgical test work confirming expectations at the Prieska Project



## Summary of recent metallurgical test work results

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 Deep	Rougher	1.47	6.48	34	94.1	96.9	66	0.13	0.30
Zn-Rich 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 Deep	Rougher	88.9	8.6	10.4	4.4	5.2	0.4	86.6	30.5
Zn-Rich Supergene	Rougher-Cleaner	-	-	-	-	89.7	8.0	91.2	47.2

Current test work on drill core confirms performance expectations based on production history

\* The above test work confirms ability to achieve high recoveries with froth flotation

\* Test work continues to determine optimised recoveries and re-cleaner flotation to produce high grade concentrates

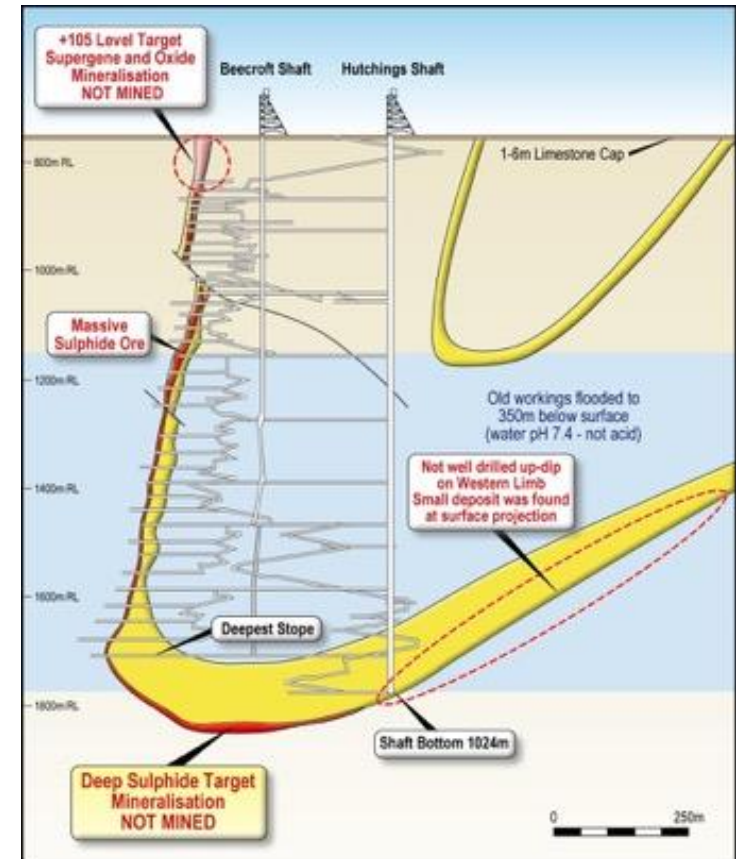
refer ASX release 15 November 2017

# 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 EIA applications to be submitted in Q1 2018

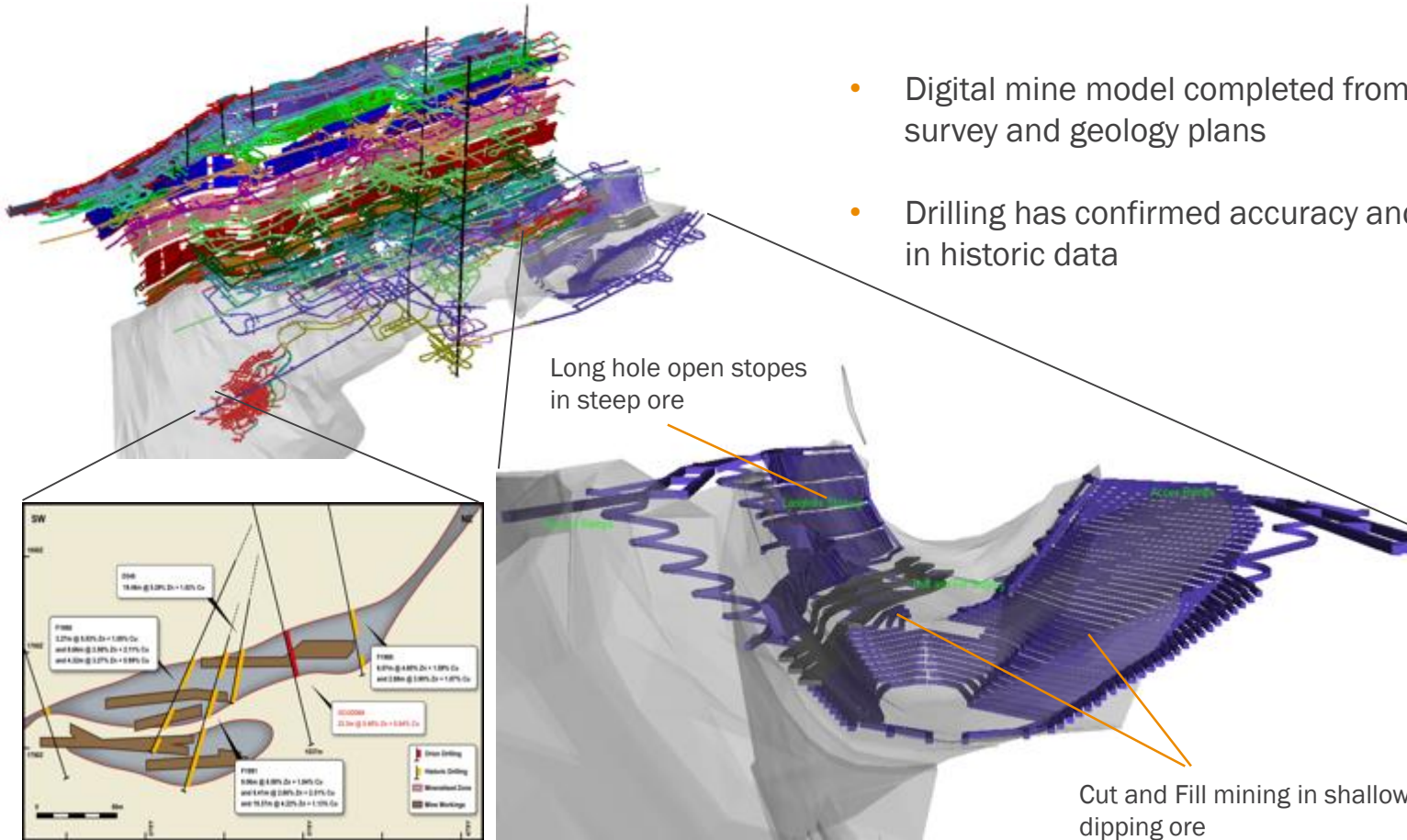


Prieska target mineralisation and existing mine infrastructure



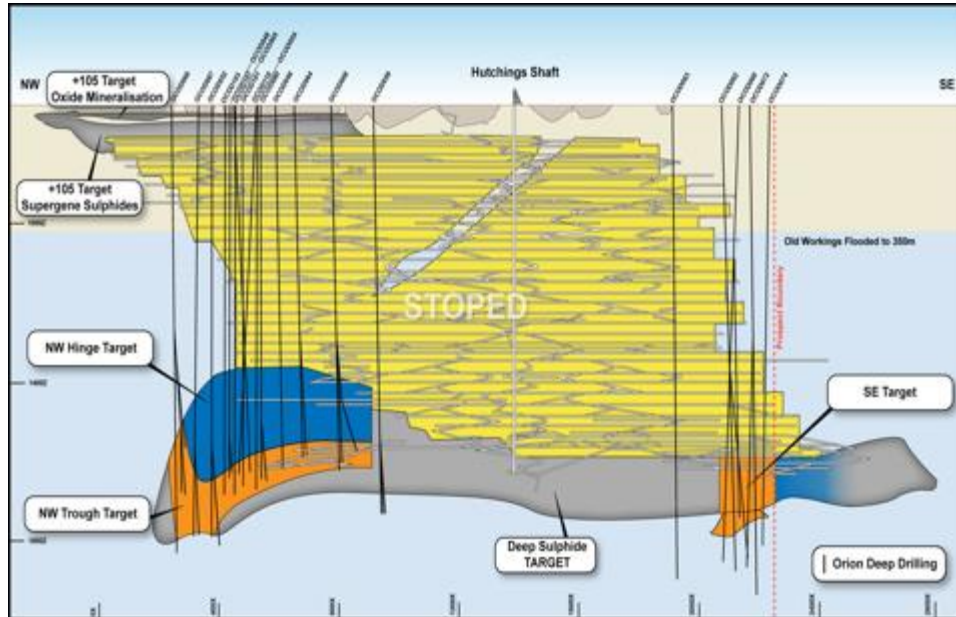
# Prieska Project BFS: Mine planning in progress

- 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

Long section with current drilling and historical development



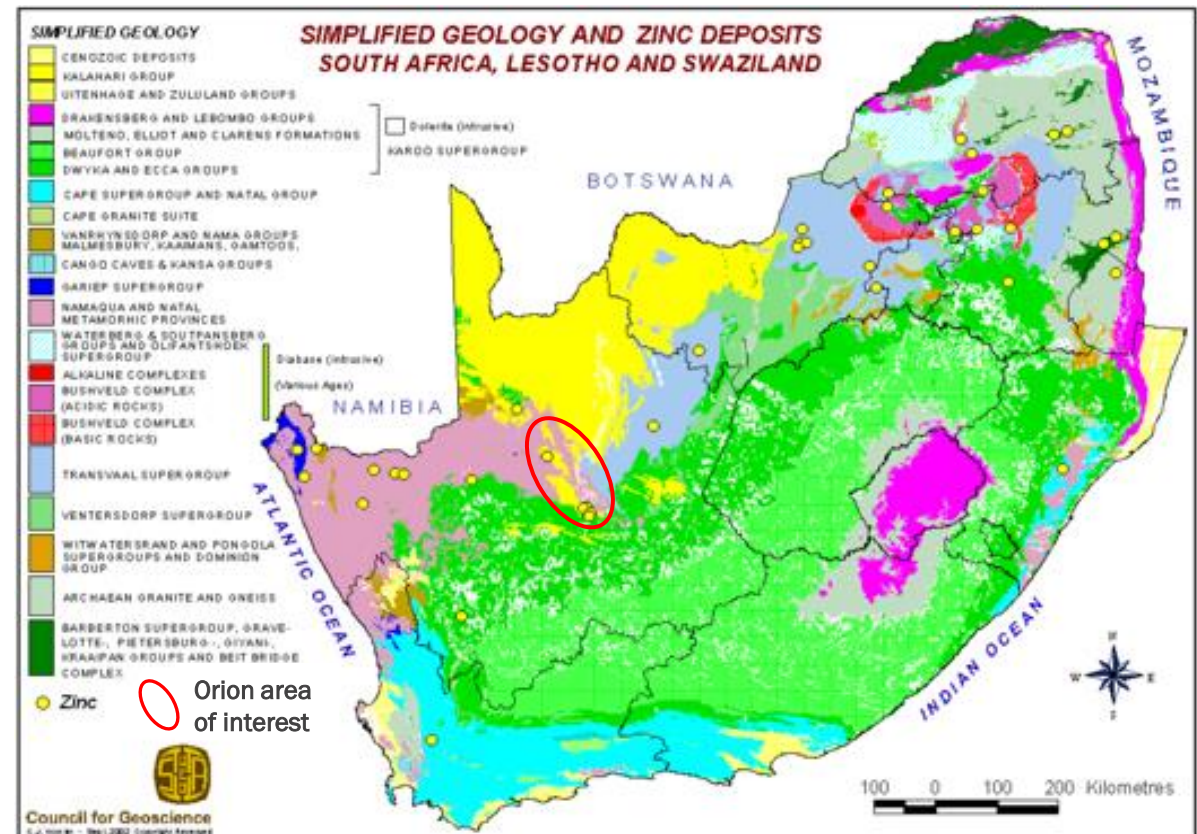
- Dual focused drilling program
  - Continue with infill drilling to achieve drill density for resource category upgrade
  - Targeting dip and strike extensions of historically identified mineralisation with step-out drilling

# Exploration: The regional potential of the Northern Cape district



Orion Minerals

- Established mining region without the social challenges common in the South African gold, coal and platinum 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
- Region has 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
  - Vedanta has flagged a belief that significant potential exists in the region
- Orion has established a commanding landholding and exploration position in the Areachap belt and is set to play a major role in this emerging minerals district



1. Vedanta Capital Markets Day presentation, March 2015



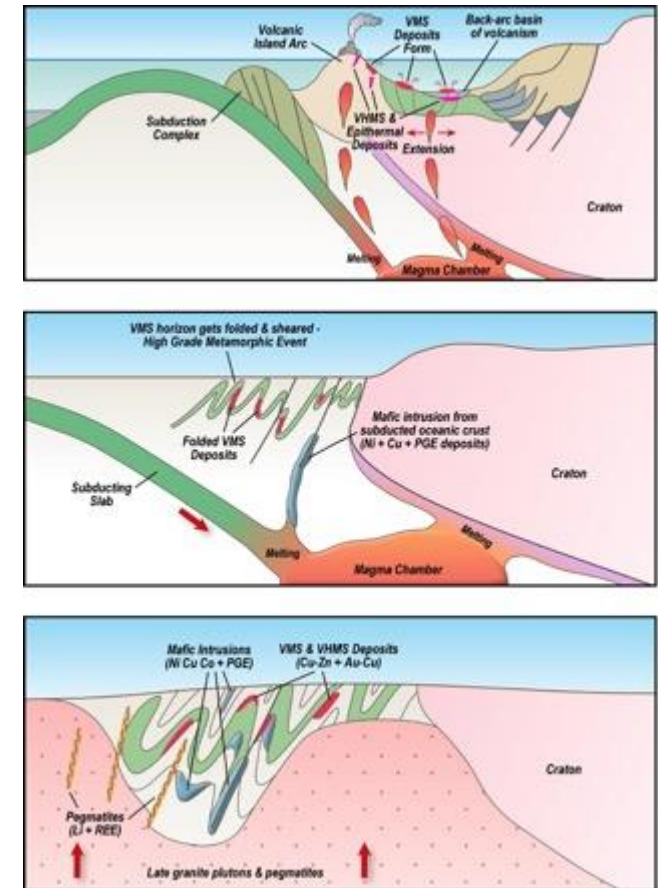
## Exploration: Areachap - a highly prospective base metals belt



Orion Minerals

- The Areachap terrain is within a tectonic/mobile belt on the western margin of the Kaapvaal Craton and has been intensely tectonized and metamorphosed after deposition
  - The Areachap Group is a heterogeneous assemblage of metavolcanic and metasedimentary gneisses exposed intermittently for 280km on the easternmost margin of the Namaqua Province
  - Similar to VMS belts world wide, it represents a Proterozoic volcanic island arc resulting from the subduction of oceanic crust underneath the Kaapvaal Craton
  - Prieska project Zn-Cu widely acknowledged as a “giant VMS” deposit
  - Geological conditions allow formation of giant VMS deposits of regional scale
  - Giant VMS deposits almost always 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 has resulted in improved target generation methodology

Three superimposed geological events produce exceptional exploration potential

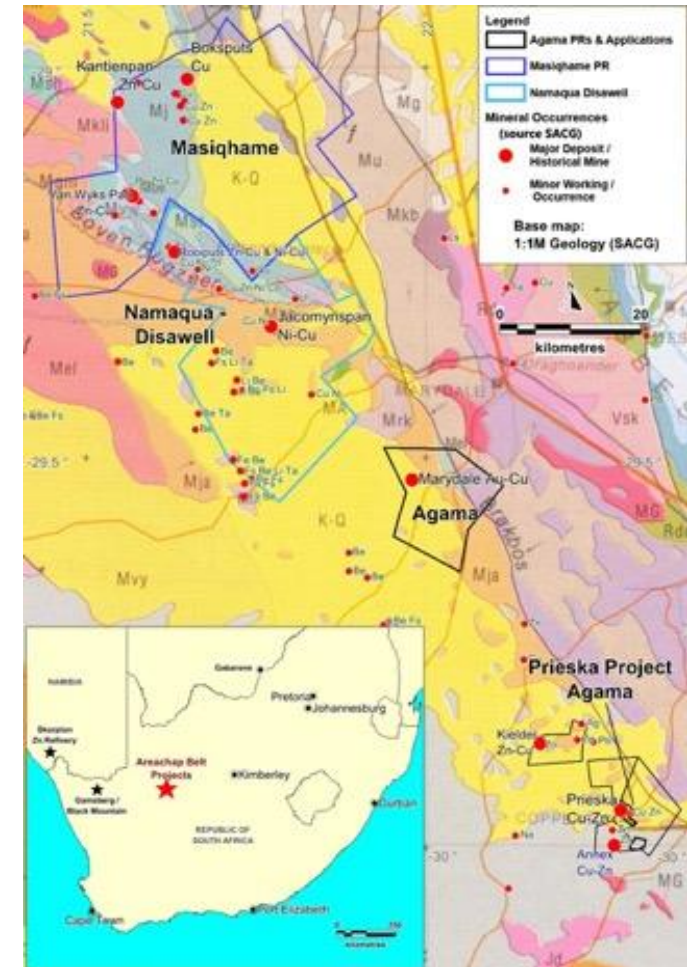


## Exploration: Major consolidation play in a proven mineralised district



Orion Minerals

- Orion acted at bottom of cycle in 2015 and secured a large consolidated land package (1,790 km<sup>2</sup>)
  - Acquired the Prieska Project as the potential company-maker
  - 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 and ability to integrate data presents a significant opportunity for target generation and testing
  - Many identified mineral occurrences not drilled and most targets remain open down dip and along 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 setting and time to the Fraser Range, WA with Ni-Cu deposits intruding pre existing VMS & Volcanogenic Hydrothermal Massive Sulphides
  - Late stage granites and pegmatites, with Li and REE deposits



## Exploration: Orion VMS strategy

- The Prieska Zn-Cu deposit is of exceptional scale – it’s ranked as 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 a key alteration mapping tool
- Geophysics to trace massive sulphides is the primary exploration tool
  - *Electromagnetics*
  - *Magnetics*
  - *Gravity*



Orion Minerals



# Exploration: Increasing intensity on regional exploration

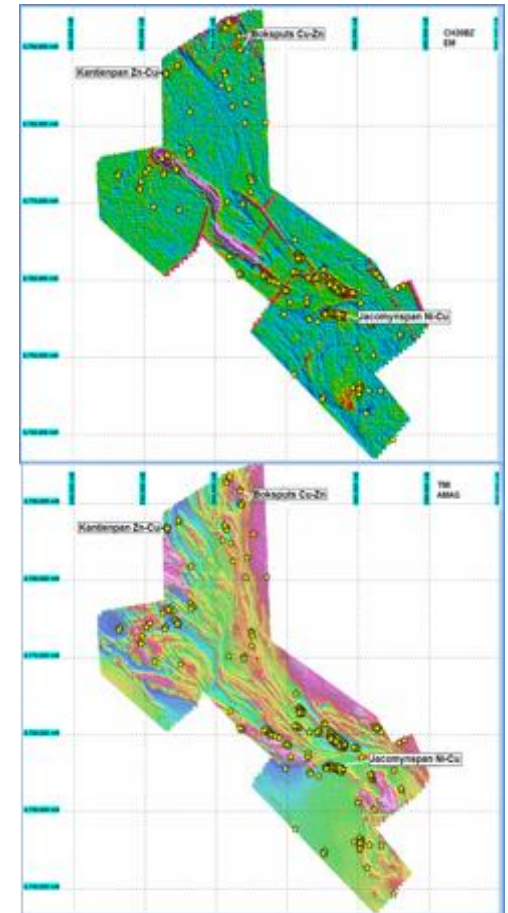
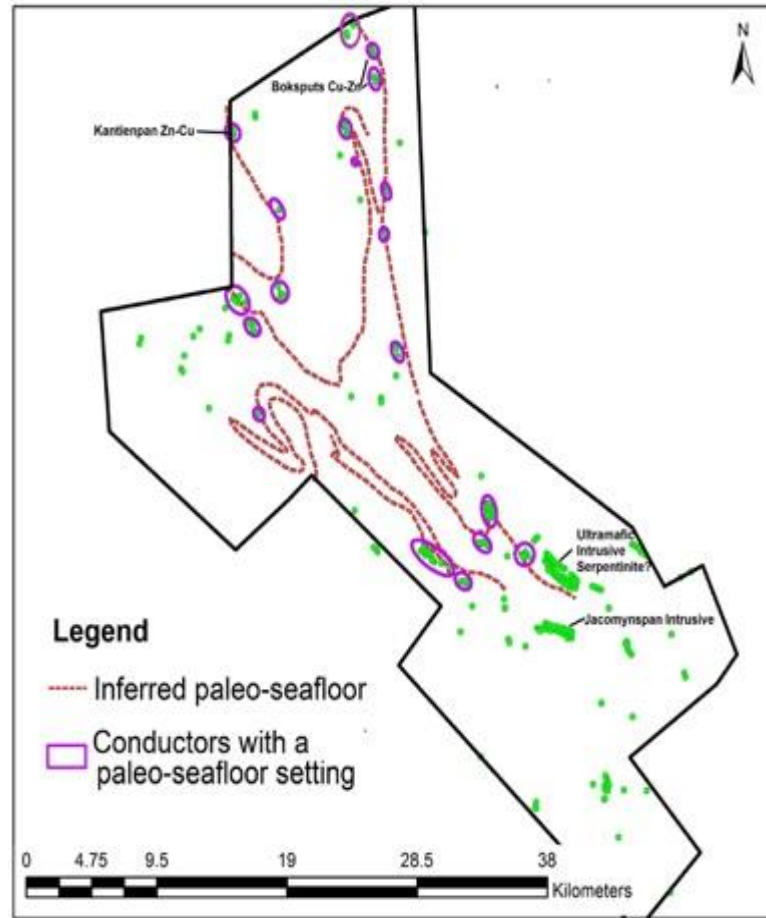
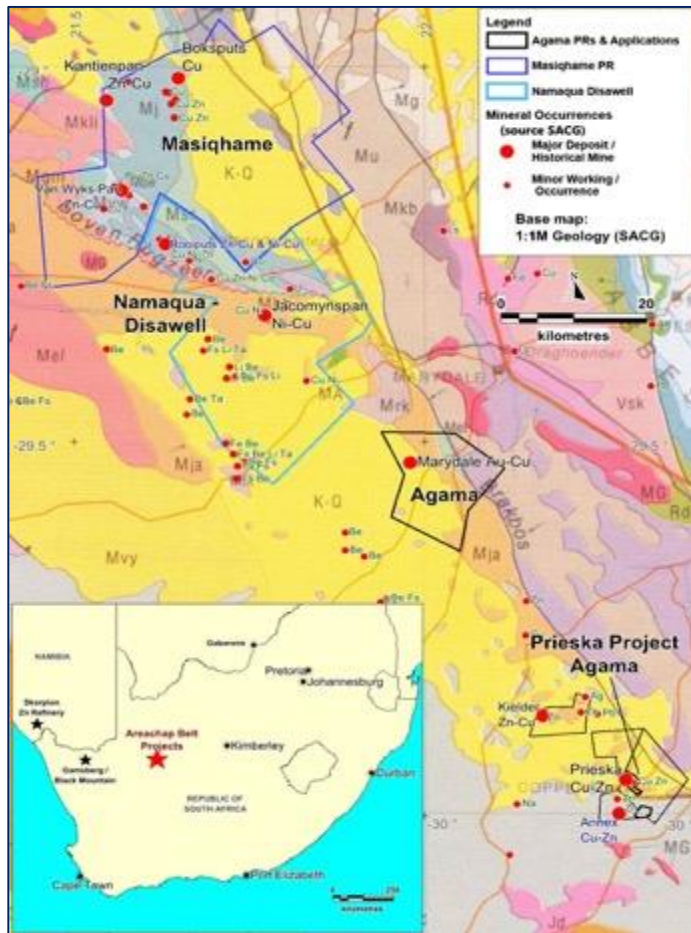


Orion Minerals

962km<sup>2</sup> SkyTEM survey completed January 2018

Follow up on SkyTEM survey underway

refer ASX release 1 February 2018



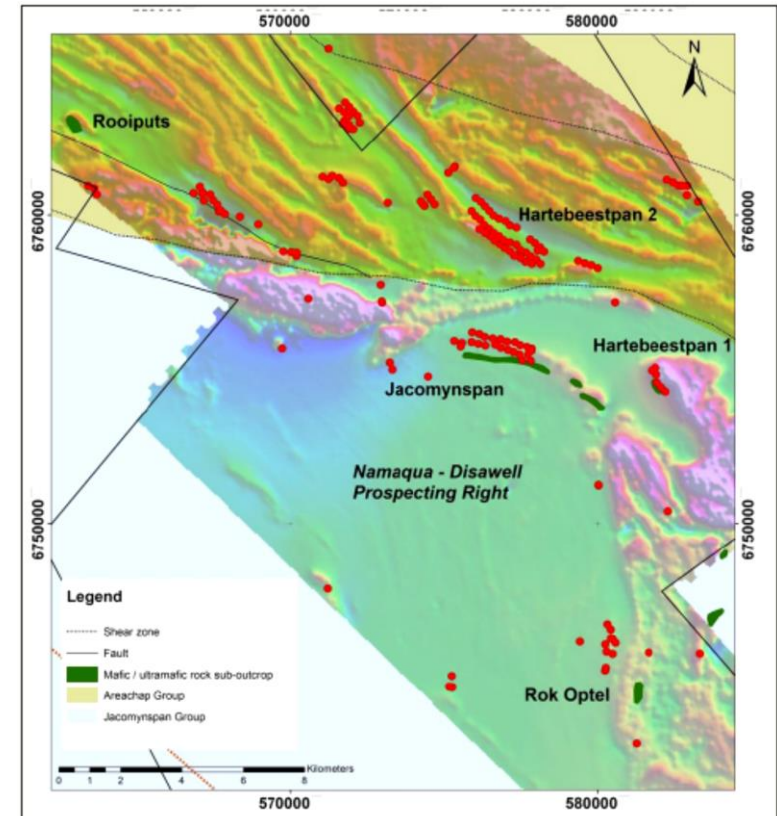
## Exploration: Geological modelling confirms compelling targets surrounding the Jacomynspan Ni-Cu-Co-PGE Intrusive



Orion Minerals

- 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

refer ASX release 8 March 2018



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

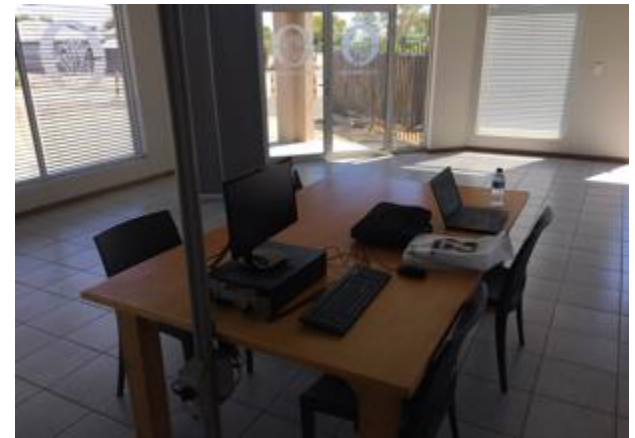
## CSR: Creating a better future – Local Economic Development

Orion is a catalyst for socio-economic development



We strive for :

- \* Sustainability
- \* Focus
- \* Entrepreneurship
- \* Impact



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



Orion Minerals

## Appendices

---



# Orion Corporate Summary



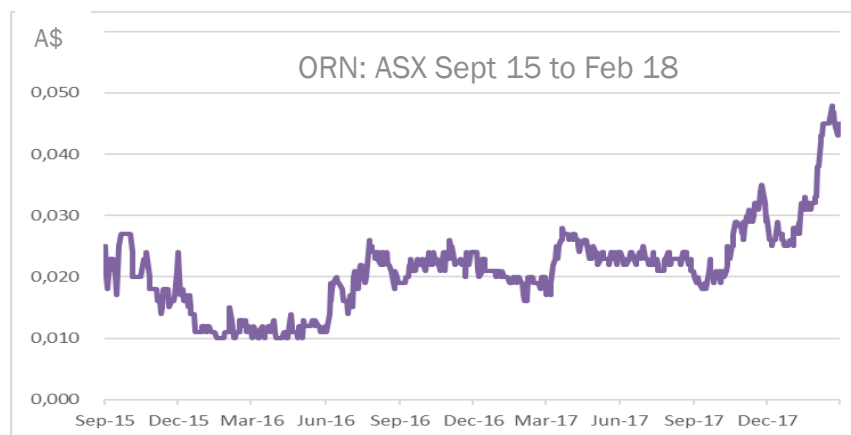
Orion's primary listing is on the ASX.

Secondary listing of its shares on the Main Board of the Johannesburg Stock Exchange since September 2017.

## Capital Structure Summary

Shares on Issue	1,290M
Options on Issue	221M
Market Capitalisation (4.5cps (ASX)) <sup>(1)</sup>	A\$55.5M
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\$1.4M
AASMF Preference Shares <sup>(3)</sup>	A\$1.6M
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>29.80</b>



1. Closing price of ORN Shares on the ASX on 28 February 2018. Closing price of ORN Shares on the JSE on 28 February 2018 was ZAR 0.42
2. Refer to ASX releases 18 August '17 and 15 November '17 for additional information. As at 31 December 2017, \$3.56M has been drawn down against the Bridge Loan.
3. Refer to the Company's June '17 Annual Financial Report for information related to the Convertible Notes, along with the Redeemable 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.

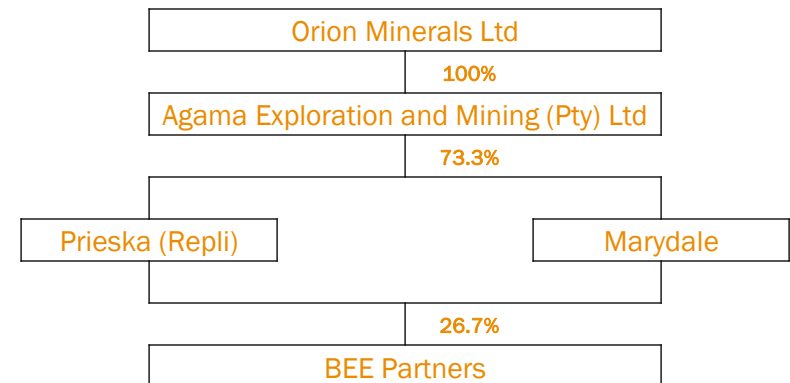


# Prieska Ownership Structure



- Orion acquired option to purchase Agama Exploration & Mining in July 2015
  - Extensive due diligence completed, including technical, regulatory and economic work streams
  - Transaction consideration A\$8.9m\*, completed in March 2017
- Orion has a 73.3% economic interest in the Prieska and Marydale Projects
- Full compliance with prevailing South African Black Economic Empowerment legislation
- BEE partner is empowered at the asset level
- BEE partners: Mosiapo Family Trust, Power Matla (Pty) Ltd

\*Acquisition consideration comprised cash A\$3.3m, ORN shares A\$2.2m (each share having one attaching option), shareholder loan settlement A\$3.4m. Refer to ASX release 29 March 2017



Prieska BEE compliant ownership structure

# Prieska Maiden JORC Resource February 2018



## Global Mineral Resource for Prieska Project - Repli Trading No. 27 (Pty) Ltd Prospecting Right

Classification		Zn			Cu		Au		Ag	
		Tonnes	Metal Tonnes	Grade (%)	Metal Tonnes	Grade (%)	Metal Ounces	Grade (g/t)	Metal Ounces	Grade (g/t)
<b>Deep Sulphide</b>	Inferred	22,649,000	839,000	3.71	266,000	1.17	153,000	0.21	6,904,000	9.48
<b>+105 Supergene</b>	Indicated	1,241,000	32,000	2.57	30,000	2.37	9,000	0.23	348,000	8.73
<b>+105 Oxide</b>	Inferred	272,000	2,000	0.86	2,000	0.63	1,000	0.12	17,000	1.82
<b>Total Global</b>		<b>24,162,000</b>	<b>874,000</b>	<b>3.47</b>	<b>297,000</b>	<b>1.23</b>	<b>163,000</b>	<b>0.21</b>	<b>7,269,000</b>	<b>9.36</b>

Note: All Resources stated at zero Cut-off. All masses rounded to thousands which may result in rounding errors in totals.  
refer ASX release 8 February 2018

# Prieska Project: Deep Sulphides present a high value mining target



## Inferred Mineral Resource for Prieska Project Deep Sulphides

refer ASX release 8 February 2018

Cut-off % <sub>calc</sub> *	Volume (m <sup>3</sup> )	Tonnes	Zn		Cu		Au		Ag	
			Metal Tonnes	Grade (%)	Metal Tonnes	Grade (%)	Metal Ounces	Grade (g/t)	Metal Ounces	Grade (g/t)
0.0	6,560,000	22,649,000	839,000	3.71	266,000	1.17	153,000	0.21	6,904,000	9.48
2.0	6,511,000	22,485,000	838,000	3.73	265,000	1.18	152,000	0.21	6,854,000	9.48
4.0	5,919,000	20,554,000	801,000	3.90	251,000	1.22	139,000	0.21	6,246,000	9.45
6.0	3,214,000	11,269,000	509,000	4.51	158,000	1.40	77,000	0.21	3,499,000	9.52

Cut-off % <sub>calc</sub> *	Volume (m <sup>3</sup> )	Tonnes	Zn		Cu			Total
			Metal Tonnes	Grade (%)	Metal Tonnes	Grade (%)	Cu=Zn_eq (%)	Zn_eq%
0.0	6,560,000	22,649,000	839,000	3.71	266,000	1.17	2.61	6.32
2.0	6,511,000	22,485,000	838,000	3.73	265,000	1.18	2.62	6.35
4.0	5,919,000	20,554,000	801,000	3.90	251,000	1.22	2.72	6.62
6.0	3,214,000	11,269,000	509,000	4.51	158,000	1.40	3.12	7.63

Note: Volumes and masses rounded to thousands, which may result in rounding errors

\*Cut-off %<sub>calc</sub> \* = (Zn% + (2xCu%))

## Summary Table for Zinc Equivalent Calculations

Parameter	Units	Zinc	Copper	Comments
Metal price	US\$/t	3,549	7,011	Kitco.com 31 Jan 2018 NYSE 20h00
Exchange rate US\$:ZAR	US\$/ZAR	11.9	11.9	Exchange rate obtained from XE.com 31 Jan 2018
Metal price	ZAR/t	42,225	83,400	Calculated
Metal recovery - Hypogene material	%	85	85	Historical performance and recent test work
Metal in concentrate sales cost	%	18	8	Concentrate traders' estimate
State Royalty	%	0.50	0.50	Calculated
<b>Effective Revenue per t of metal</b>	<b>ZAR/t</b>	<b>29,108</b>	<b>64,881</b>	Calculated
Copper Equivalent	%	1.00	0.45	
Zinc Equivalent	%	2.23	1.00	

### Notes

Copper and Zinc sales costs include all concentrate transport, metal treatment and refining charges, and the benchmark discount to spot prices paid by smelters, all expressed as an aggregate percentage of the contained metal value at prevailing spot prices. Possible by-product credits for Au, Ag and Pb are uncertain, subject to negotiation and are excluded from this metal equivalent estimate.



Orion Minerals

## Contact Information

---

Orion Minerals Ltd

**Phone:** +61 (0)3 8080 7170

**Email:** [info@orionminerals.com.au](mailto:info@orionminerals.com.au)

**Website:** [www.orionminerals.com.au](http://www.orionminerals.com.au)

ASX & JSE: **ORN**

