

# **Orion Minerals**

### **Orion Minerals Limited**

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Investor presentation April 2018

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

Developing world class zinc and copper deposits



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#### **OVERVIEW**

#### WHAT WE DO

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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

> South African Offices: – Kimberley, Northern Cape – Prieska, Northern Cape

> > Australia Head Office: Melbourne, Victoria

Connors Arc Project Queensland, Australia

Fraser Range Project Western Australia, Australia

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#### **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** 

- 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

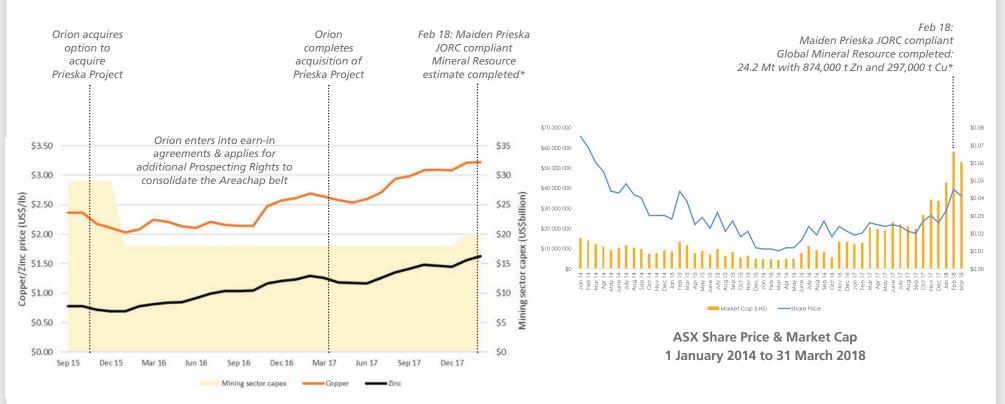
- Founder and Trustee of the Mosiapoa Family Trust
- Advanced policy scholar of science and technology and served on the policy unit of the governing party in South Africa prior to the first democratic elections

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#### **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

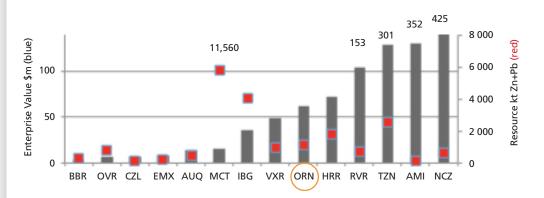
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#### UPSIDE VALUE POTENTIAL

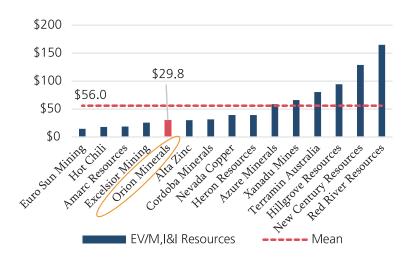
EV & Resource (ZN+Pb cont)



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		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					Submittee 6 April 20			Anticip	pated Gran	t of Mining	Right						
Environmental Authorisation Application (EA)					Submittee 6 April 20		roval	А	nticipated	Grant of E	Δ						
Bankable Feasibility Studies							ct Appi										
Project Construction							Proje										
Ore Production - Open Pit																	
Ore Production - Underground																	



### MINING RIGHT APPLICATION PROCESS – STATUTORY TIMELINES





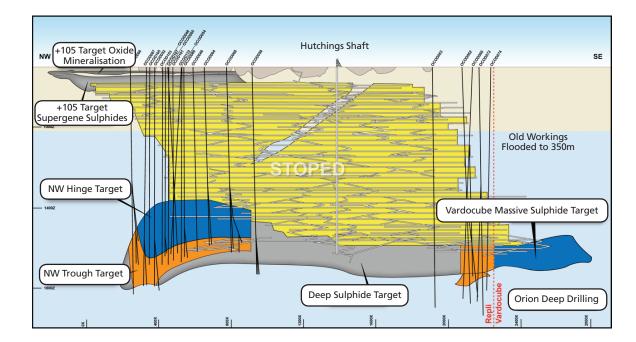
#### PRIESKA PROJECT – MAIDEN JORC MINERAL RESOURCE EXCEEDS EXPECTATIONS

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 Pi	rieska Project -	Repli Trading N	lo 27 (Pty) Ltd	& Vardocube (P	ty) Ltd			
			Z	n	C	u	A	g	Au		
	Classification	Tonnes	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		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

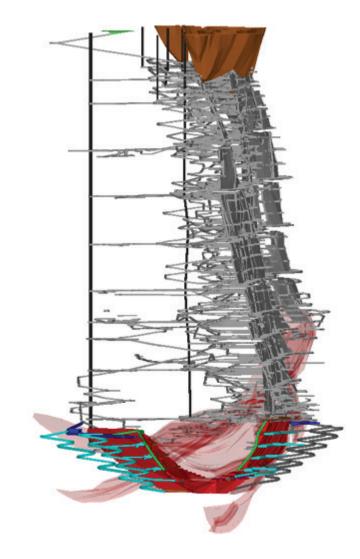
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### DEVELOPMENT PLAN FOR THE PRIESKA PROJECT: LEVERAGE EXTENSIVE EXISTING INFRASTRUCTURE

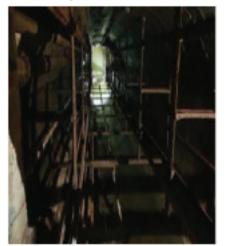
- Primary shafts and underground decline roadways in place to access deepest remaining targets
- Sealed access roads to project site
- 48km via bitumen road to existing rail siding
- 175MW operational solar power plants in the area
  - additional 675MW have been approved, with further 300MW pending authorisation
  - 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



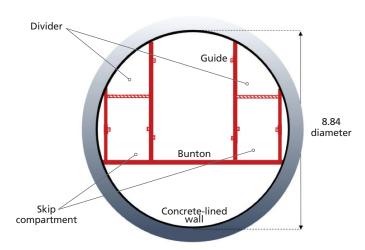
Plan view photograph of Hutchings Shaft



Underground bunton divider steel thickness



Section through retrieved underground bunton divider steel thickness



Plan view schematic of Hutchings Shaft



Location of removed section from underground bunton

Decline roadways and haulages in good condition and accessible



Surface portal access



Existing underground haulage



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

	Tost Do	scription	Test Hea	d Grade	Total Red	overed to Co	ncentrate Combined Tails			ls	
	lest De	scription	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	
SCOUTING PHASE	Supergene	Rougher-Cleaner	1.53	8.87	17	92.0	92.8	83	0.19	0.94	
Confirm amenability to flotation		Test Description		Copper Co	oncentrate			Zinc Con	entrate		
	Test Description		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	
•	Greater than	enability of Copp 92% of metal re gene) samples di	eports to co	oncentrate		-		refer ASX	release 15 N	lovember 2	
	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	
FLOWSHEET DEVELOPMENT	Supergene Blend	Open Circuit Cleaner	2.1	3.7	73.7	7.3	88.1	20.2	0.2	0.2	
Confirm differential concentrates			F	irst Pass Copp	er Concentrat	te		First Pass Zinc Concentrate			
	Test De	Test Description		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     *refer ASX release 1 March 2										
								*retei	ASX release	e 1 March 20	
▼		<ul> <li>Preliminary marketable concentrates achieved using only open-circuit testing</li> <li>Deeps (hypogene) samples differentiate easily in first stage rougher float</li> </ul>									
·		gene, samples u			ist stage it		•••••	••••	•••••	•••••	
	WAY FORWARD - Test Description and Deliverables										
OPTIMISED CONCENTRATES	Lock-cycle tests to produce optimised concentrate grades and metal recoveries										
VARIABILITY TESTING	• Targetting >85% metal recoveries at concentrate gardes of +27% copper and +50% zinc										
Best priced products	Variability testwork to confirm whole deposit response within design parameters										
Best priced products	Process optimi	sation option studie	es to investig	ate pre-conce	entration						
			bility study fi								



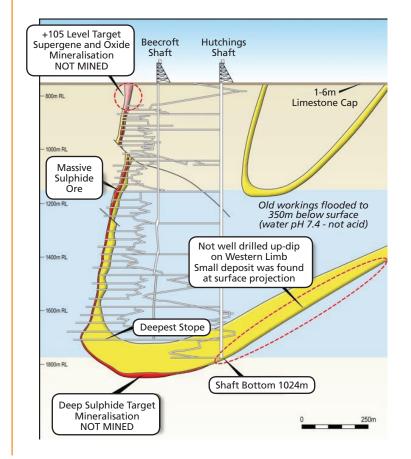
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#### MINE PLAN FOR PRIESKA PROJECT BFS

- 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

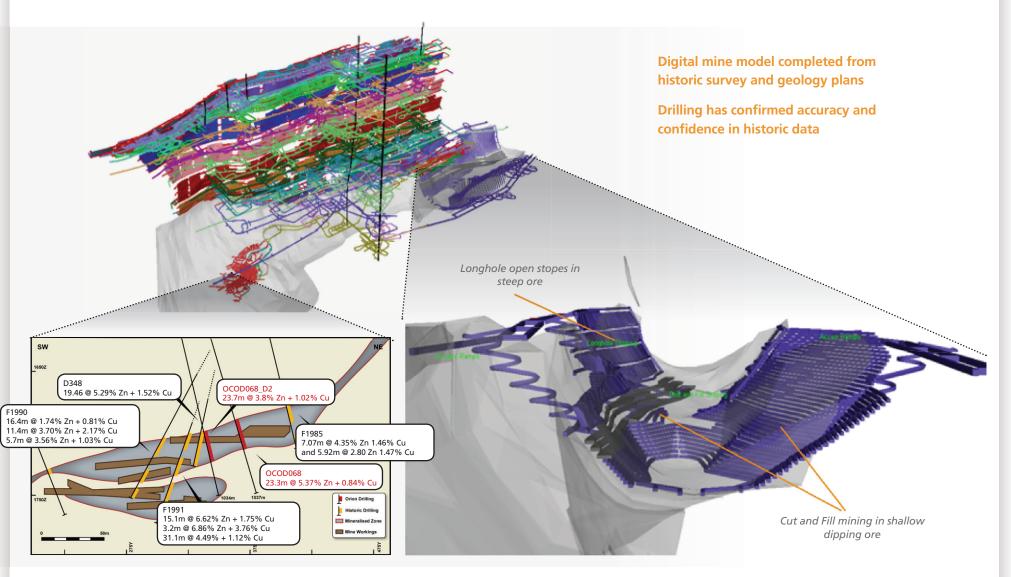


# Prieska target mineralisation and existing mine infrastructure





### PRIESKA PROJECT BFS: MINE PLANNING IN PROGRESS



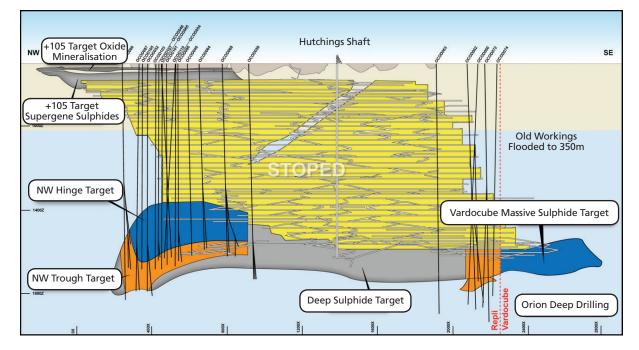


#### PRIESKA PROJECT BFS: EXPANDED DEEP SULPHIDE MINERAL RESOURCE

# Drill rigs remain active on surface



Long section with current drilling and historical development

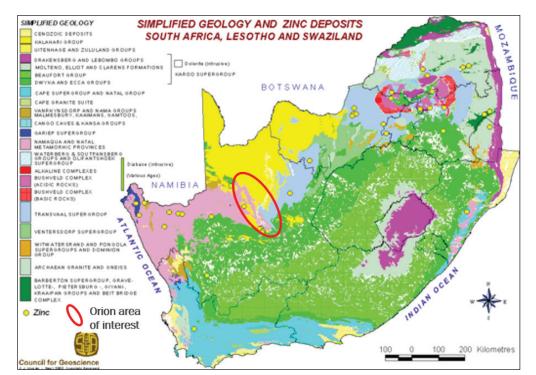


- Dual focused drilling program
- Continue with infill drilling to achieve drill density for resource category upgrade
- Targeting dip and strike extensions of historically identified mineralisation with step-out drilling



### 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





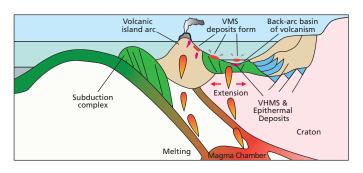
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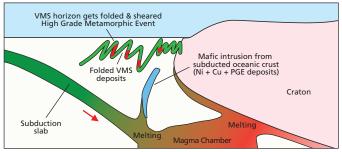
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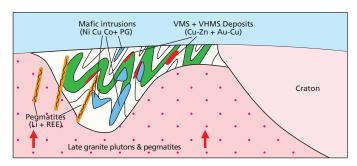
#### EXPLORATION: AREACHAP - A HIGHLY PROSPECTIVE BASE METALS BELT

- 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



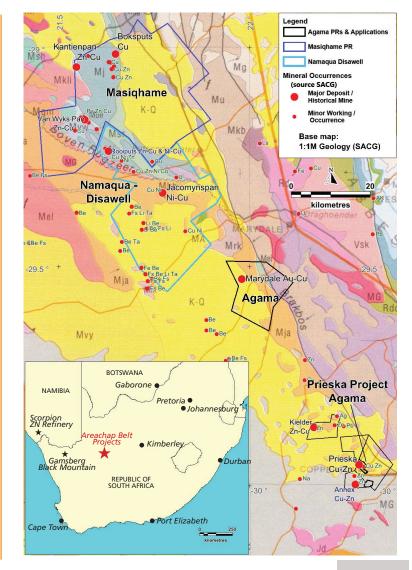






#### EXPLORATION: MAJOR CONSOLIDATION PLAY IN A PROVEN MINERALISED DISTRICT

- 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

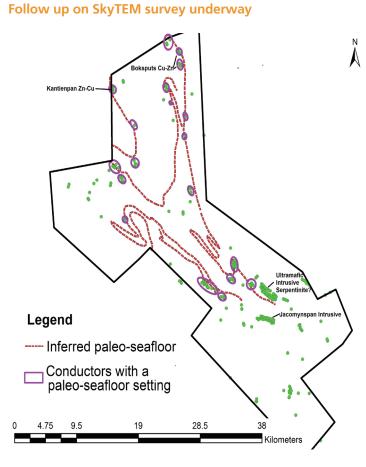
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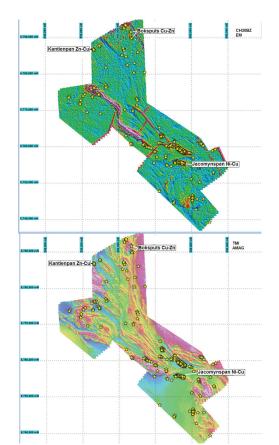


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#### EXPLORATION: INCREASING INTENSITY ON REGIONAL EXPLORATION

962km<sup>2</sup> SkyTEM survey completed January 2018 Legend Agama PRs & Applications Kantienpan Masiqhame PR Zn-Cu Namagua Disawel Ma Mineral Occurrences Mkl (source SACG) Masighame Major Deposit Mu Minor Working / Occurrence an Wyks Par Zn-Cu Base map: 1:1M Geology (SACG) Namagua -Cu N Jacomynspar Ni-Cu 20 Disawell kilometres FeliTe Mel ●Li Be ● Be Fs Li EBe Fa Mrk -29.5 Marydale Agama Be Be\_ Prieska Project NAMIRIA Agama retoria Johannesbur Prieska Cu-Zn REPUBLIC OF SOUTH AFRICA 20 Port Elizabeth

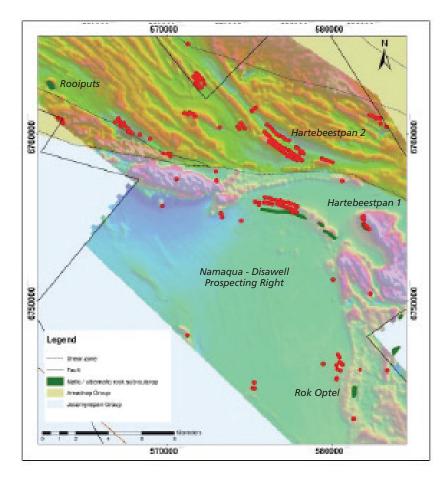






#### EXPLORATION: GEOLOGICAL MODELLING CONFIRMS COMPELLING TARGETS SURROUNDING THE JACOMYNSPAN NI-CU-CO-PGE INTRUSIVE

- 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 | ASX & JSE: ORN | Zn, Cu, Ni, Au, Ag, PGE





#### **ORION CORPORATE SUMMARY**

#### ASX primary listing JSE secondary listing

#### 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

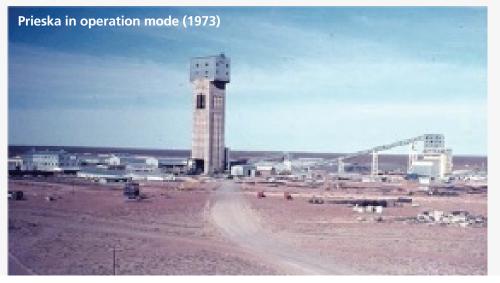
(4) Mr Alexander Haller is deemed to have a relevant interest in securities held by Silja Investment Ltd

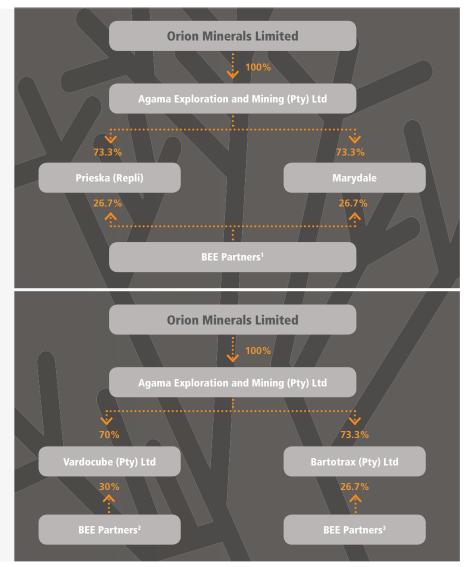


#### PRIESKA OWNERSHIP STRUCTURE

- 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





1: Mosiapoa Family Trust (MFT), Power Matla (Pty) Ltd | 2: African Exploration Mining Finance Corporation, MFT | 3: MFT





# **Orion Minerals**

# **Contact us**

Orion Minerals Ltd Phone: +61 (0)3 8080 7170 Email: info@orionminerals.com.au Website: www.orionminerals.com.au

ASX & JSE: ORN