

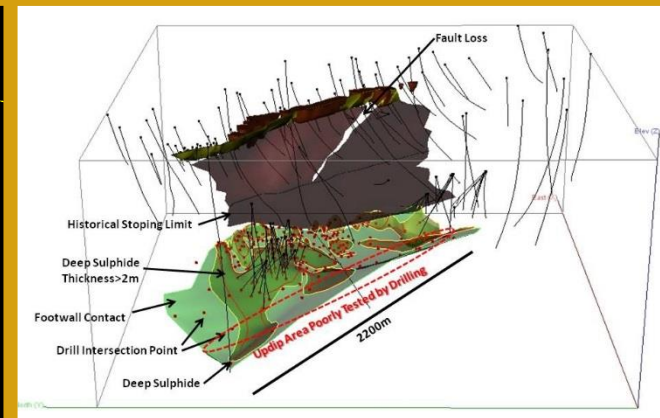
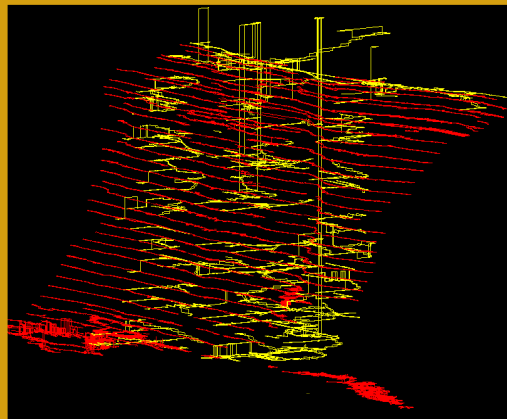
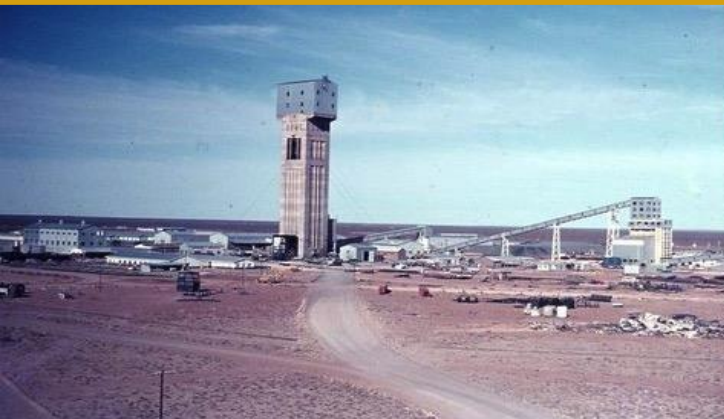


# Advanced Stage South African Zn-Cu

Orion Minerals<sub>NL</sub>

ASX Code: ORN

- *Fast tracking to feasibility study*
- *Large historic database*
- *Drilling continues to deliver wide, high grade Zn & Cu*
- *Technical & Engineering appraisals continue at PC Project*



*Investor Presentation – May 2017*

# Disclaimer and Forward-Looking Statements



- Certain statements contained in this presentation, including information as to the future financial or operating performance of Orion Minerals NL (**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 NL, 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.*
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- 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
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# Orion: Corporate Summary



## Capital Structure Summary

<b>Shares on Issue</b>	<b>792M</b>
<b>Options on Issue</b>	<b>180M</b>
<b>Market Capitalisation</b> (at 2.5cps)	<b>\$20M</b>
<b>Convertible Notes</b> <sup>(1)</sup> (2.6cps convert, 12% coupon, Mar'19 maturity)	<b>\$6M</b>
<b>Cash on Hand</b> <sup>(2)</sup> (at 31 Mar '17)	<b>\$3M</b>

## Board

<b>Denis Waddell</b>	<b>Chairman</b>
<b>Errol Smart</b>	<b>CEO, Managing Director</b>
<b>Bill Oliver</b>	<b>Technical Director</b>
<b>Alexander Haller</b>	<b>Non Executive Director</b>

## Significant Holder Name

## Number

## %

<b>Tarney Holdings</b>	<b>92,541,324</b>	<b>12%</b>
<b>Silja Investment &amp; Alexander Haller</b> <sup>(2)</sup>	<b>69,119,936</b>	<b>9%</b>
<b>Independence Group</b>	<b>54,166,666</b>	<b>7%</b>
<b>Eastern Goldfields</b>	<b>42,433,333</b>	<b>5%</b>
<b>Significant Holder Total</b>	<b>258,261,259</b>	<b>33%</b>

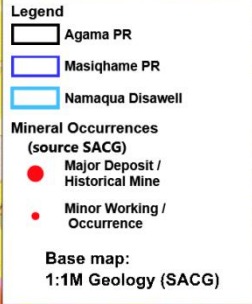
## Management

<b>Martin Bouwmeester</b>	<b>CFO, Company Secretary</b>
<b>Michelle Jenkins</b>	<b>Executive: Finance and Admin</b>
<b>Walter Shamu</b>	<b>Executive: Mining &amp; Development</b>
<b>Louw van Schalkwyk</b>	<b>Executive: Exploration</b>
<b>Nelson Mosiapoa</b>	<b>Social Responsibility Advisor</b>

<sup>(1)</sup> Refer to ASX releases 7 Feb '17, 8 Mar '17 and 17 Mar '17 for additional information.

<sup>(2)</sup> Mr Alexander Haller is deemed to have a relevant interest in securities held by Silja Investment Ltd.





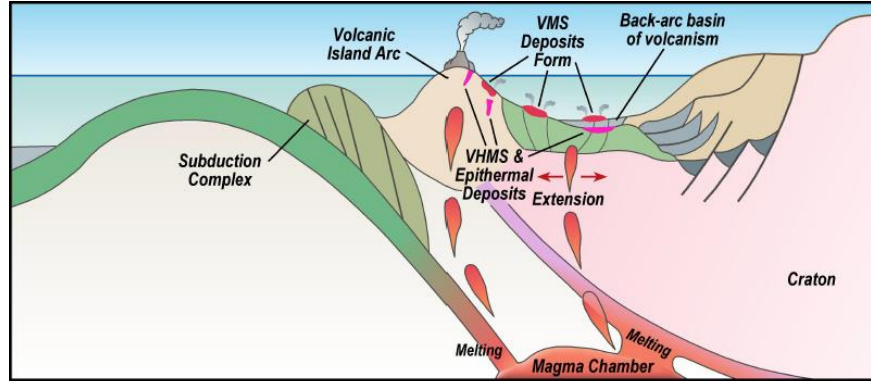
Most discoveries remain open down dip and along strike.

Belt has not benefitted from modern exploration:

- *Areachap Belt is tectonic and time correlate of WA's Fraser Range Belt (Australia).*
- *Despite discovery of large low grade Ni-Cu deposit the belt has not been explored for that style of mineralisation.*

**Orion holdings have Cu-Zn, Ni-Cu-PGE, Au-Cu occurrences and major deposits.**

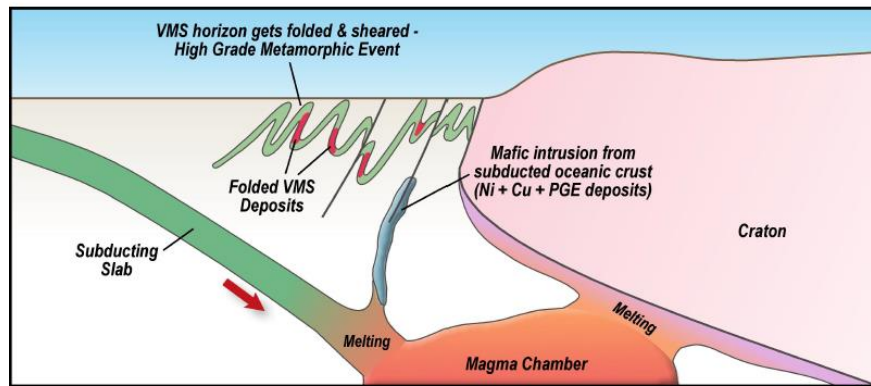
# Areachap South Africa - Three Superimposed Geological Events Produce An Exceptional Metals Province



Gold and base metal deposits were deposited in an active volcanogenic environment at  $\approx 1.28$  Ga.

Prieska **Cu-Zn** deposit recorded as one of world's 30 largest VMS deposits.

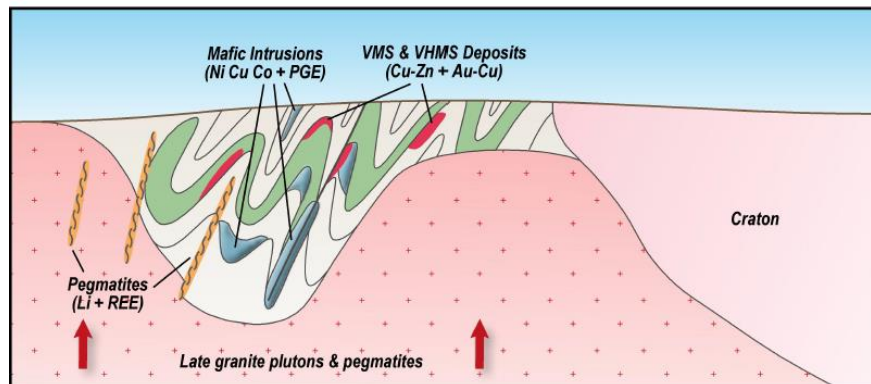
Numerous other VMS centres identified.



The terrain is within a tectonic / mobile belt on western margin of Kaapvaal Craton and has subsequently been intensely altered & tectonised.

Mafic Intrusives analogous to Fraser Range, WA with Ni-Cu deposits intruding pre existing VMS & VHMS.

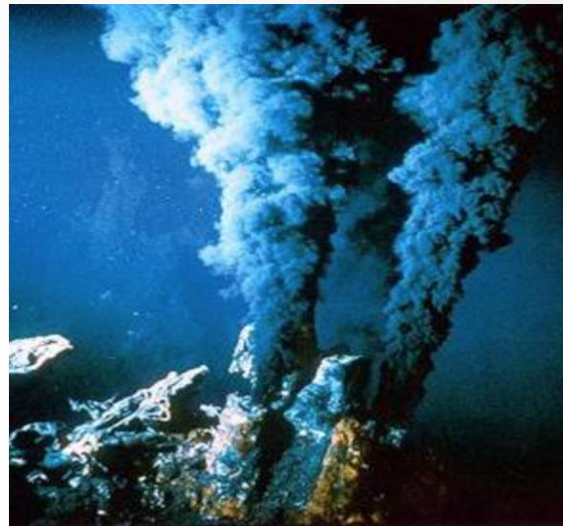
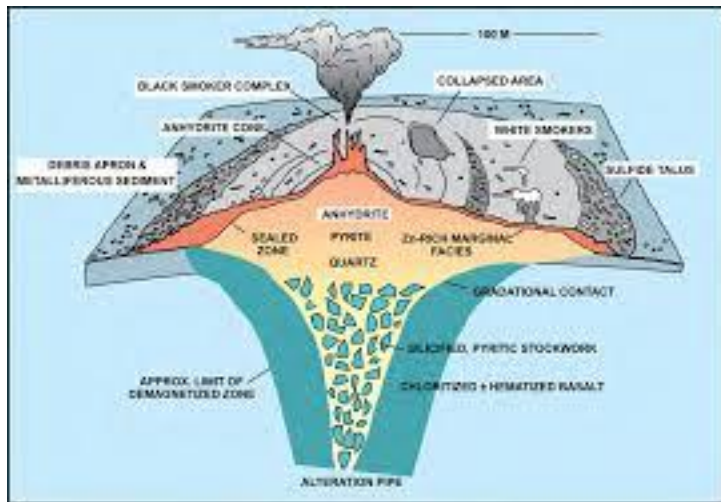
Jacomynspan **Ni-Cu-PGE** deposit contains demonstrated huge metal endowment.



Late stage granites and pegmatites intrude, with **Li** and **REE** deposits.



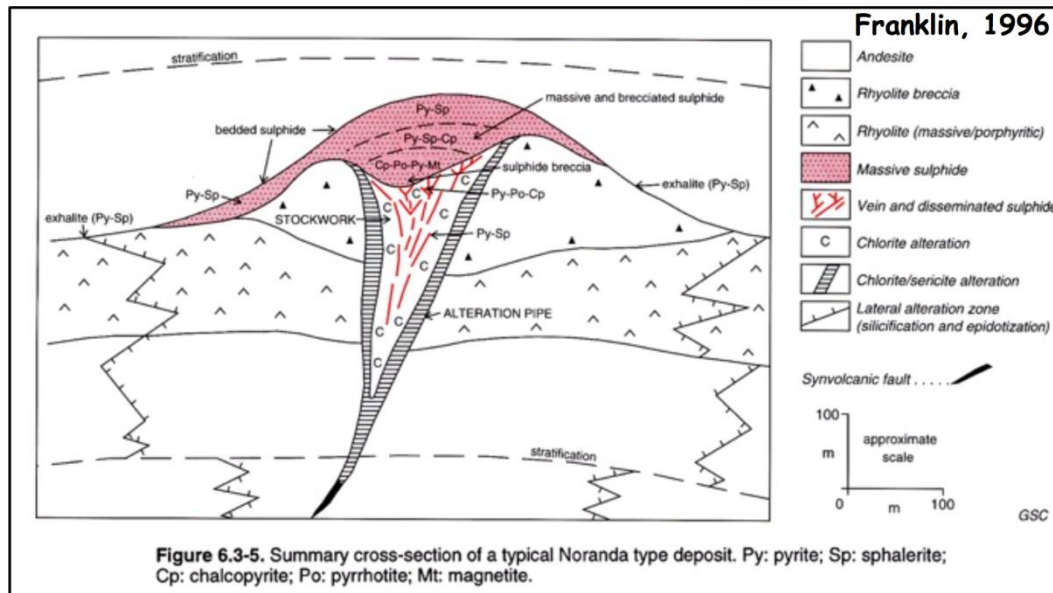
# Understanding VMS Deposits



- Modern deposits still forming help us understand them.

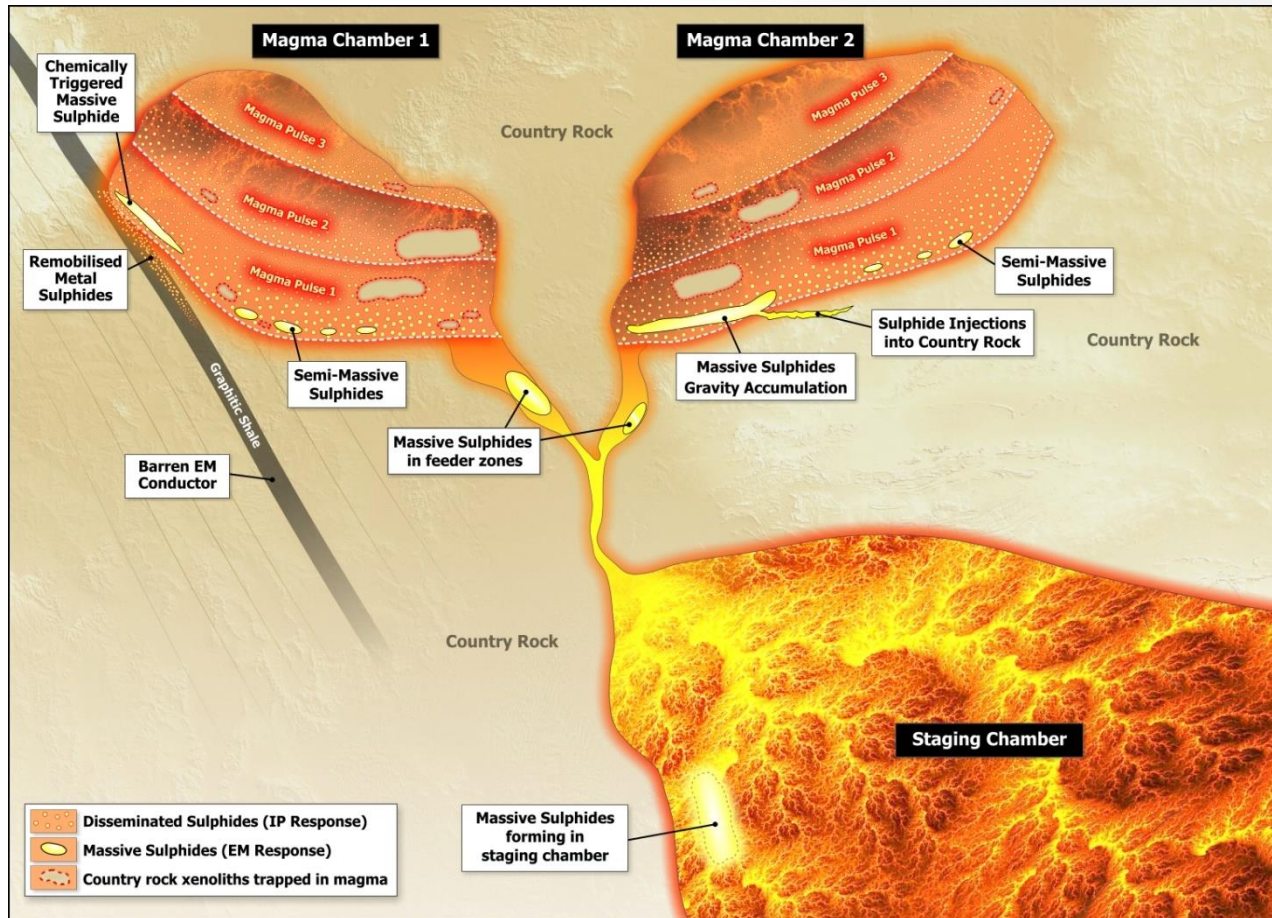
- They form in clusters along fault lines.

- Individual exhalative massive sulphide lenses are metal zoned.



- Discovery of a system, then a lens are only the first steps, they then need to be tested in vertical and lateral extent to determine metal zonation & concentrations.

# Understanding Mafic Intrusive Ni-Cu-PGE



## Process to Discovery of Mafic Intrusive Hosted Metal Deposits

- Locate the mafic/ultramafic intrusive hosts – often below surface.
- Determine if they are “fertile”
  - Ni-Cu sulphide content.
  - Cumulate textures.
  - Immiscible sulphide injections forming?
- Work out the geometry and test the floors in chambers & blows in magma channels.

**Disseminate Ni-Cu sulphides are “hot smoke” indicating likely presence of immiscible massive sulphides – “the fire”**



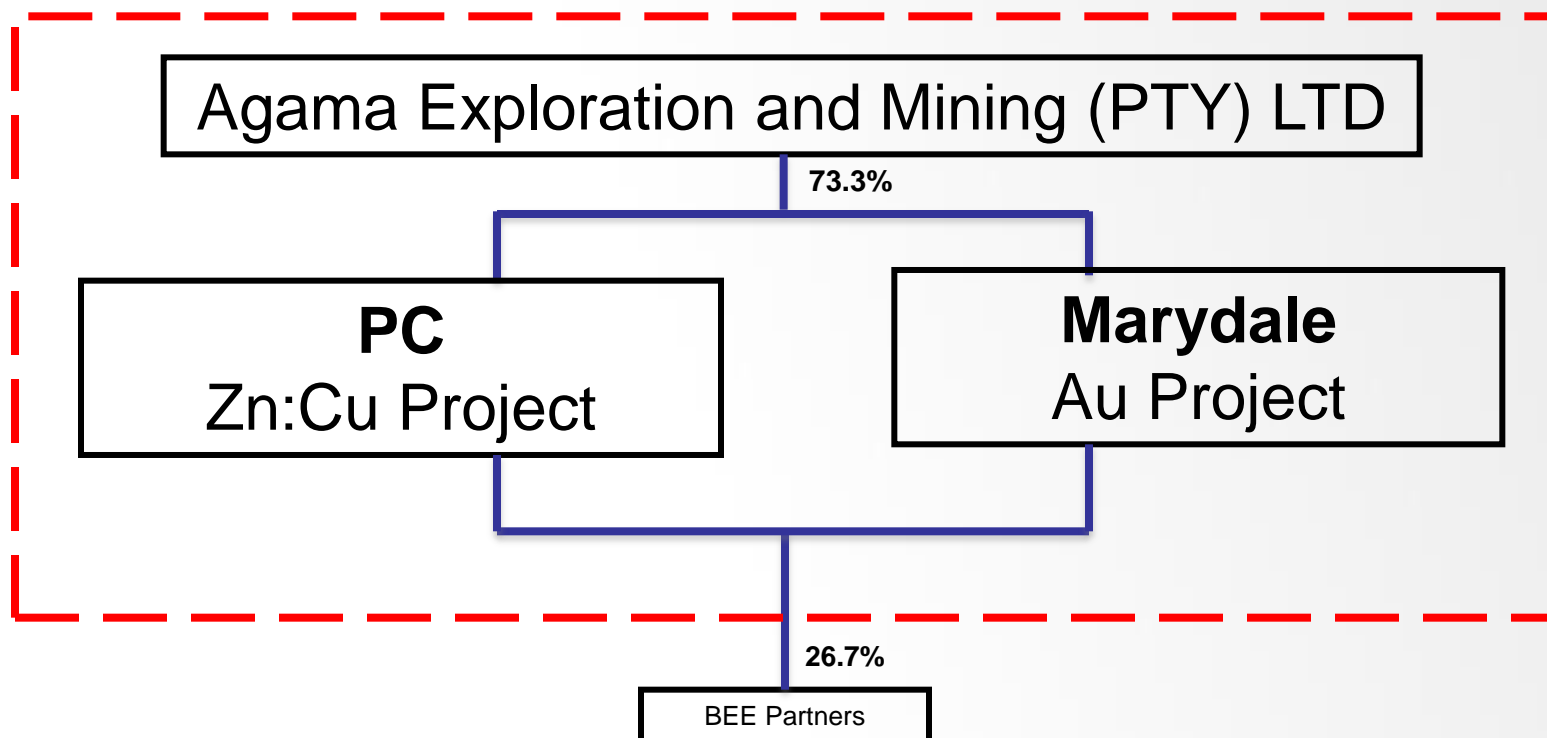
- **African project portfolio provides exposure to:**
  - **Advanced Zinc-Copper project acquired** with numerous known satellites on Orion optioned and owned prospecting rights.
  - Zinc Copper, Nickel-Copper + PGE, Gold-Copper deposits identified on Orion optioned and application prospecting rights.
  - High density of polymetallic occurrences provide exploration upside.
  - Commanding mineral rights holdings in an exceptional geological terrain.
- **Australia**
  - WA - Fraser Range
    - JV with Independence Group NL a leading mid-tier Ni producer who are operators.
    - Orion retained significant minority interest, with free carried position to feasibility study.
  - Queensland - Connors Arc
    - Large 100% tenement holding.
    - Seeking JV partners.



# Areachap Project – Agama ( PC + Marydale )



- Acquired end March 2017 following extensive DD, including technical-economic evaluation.
- Total Acquisition Cost:
  - Cash A\$3.3m
  - Shares\* A\$2.2m
  - Shareholder loan settlement A\$3.4m
  - = Total A\$8.9m



\* Each share includes one free attaching option.  
Refer ASX release 29 March 2017.



## *Reviving a historical success*



### HISTORY OF SUCCESS

1971-1991 the mine employed 4,000 people and milled 8,000tpd

Produced >430,000tons Copper and > 1million tons Zinc

Mine closed and site rehabilitated 1991

**Returned R2.64 (US\$1.16 at the time) per share in dividend yields for R0.50 (US\$0.7 at the time) per share investment from shareholders**

Source: Company and Mine Records

### KEY PROJECT DRIVERS FOR REVIVAL

- Data rich
  - Drilling indicates extensive remaining mineralisation
- Infrastructure rich
  - All key services available on site
- Historically proven metallurgical process for sulphide & Intermediate ore
- History of producing premium quality Cu and Zn concentrates
- Low environmental sensitivity

# PC Now

## Remote Desert Site with Exceptional Infrastructure



75MW Solar Power Plant

Shaft Head-frame



**4 separate regional HV lines link to national electricity grid.**

- Sealed road to project site.
- 48km via bitumen road to existing rail siding.
- 800km rail link to major, bulk commodity, deep water port.
- Bulk water pipeline supplies site.
- Good contractors accommodation available.

Low regional environmental sensitivity – existing disturbed/rehabilitated mine footprint  
All mining plant and equipment has been removed, and site rehabilitated except for major civil works and infrastructure.



# Prieska Copper Mines Ltd – Operational History



## Mine Manager's Planning Proposal to Anglovaal Head Office (June 1987)\*

PAGE 2

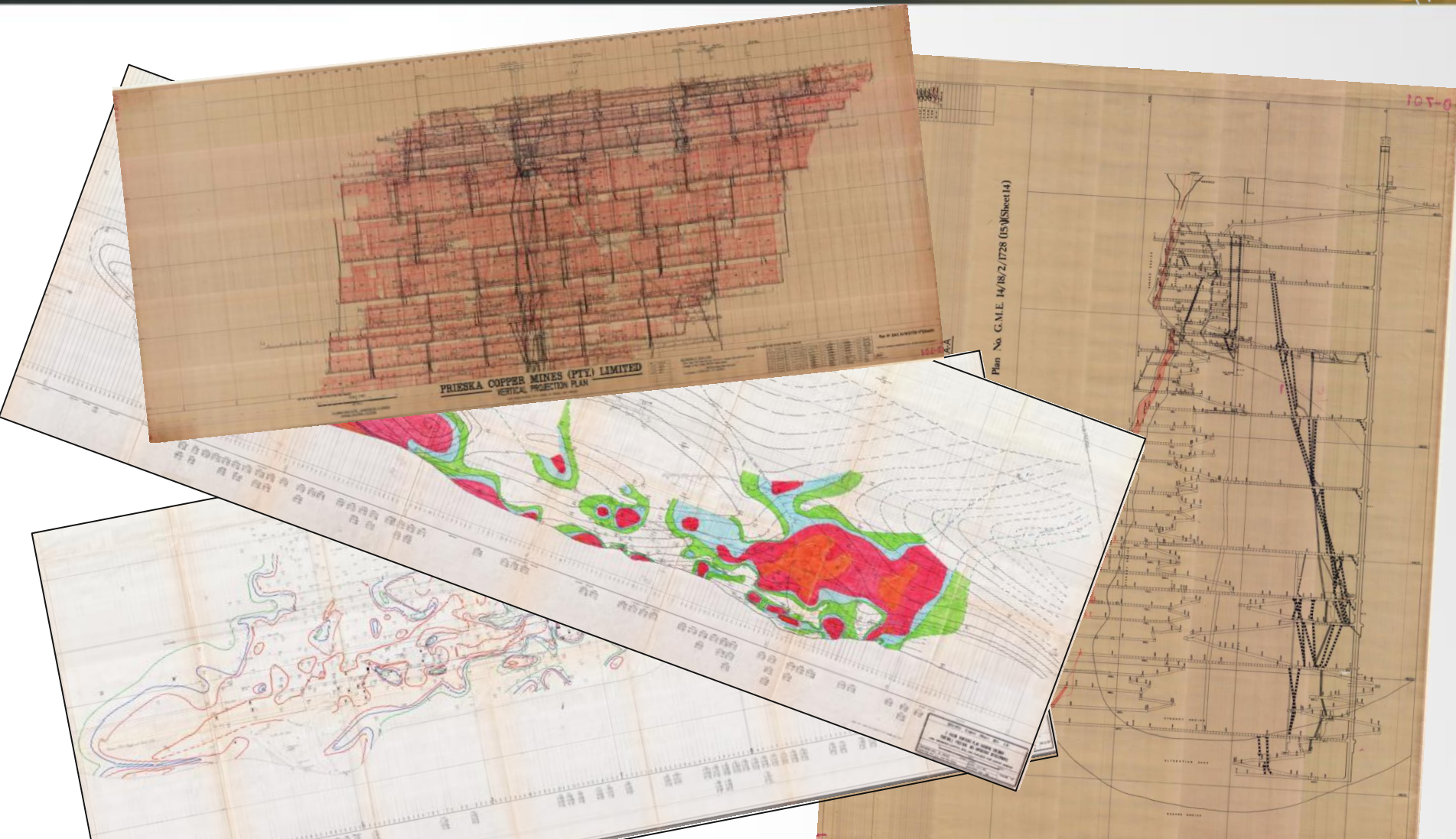
MINING & MILLING	MONTH: - MAY 1967								
	PLAN			ACTUAL			TOTAL FOR PREVIOUS YEAR		
	TONS	Cu %	Zn %	TONS	Cu %	Zn %	TONS	Cu %	Zn %
A. Tonnage Mined & Killed									
Drilled Mining Reserve				808766	1.458	4.388	23765486	1.569	4.259
Broken from Ore Reserves				82270	2.388	6.572	1970253	1.679	4.896

- After this date, no more than 2Mt of ore blasted from underground (milling of surface stockpiles from 1989).
- This only for ore below 105m level.
- Estimation conformed to “Industry Best Practice” of the time.

- *Note: This is an historical estimate and is not reported in accordance with the 2012 Edition of the JORC Code. A Competent Person has not completed sufficient work to classify the historical estimate as Mineral Resources or Ore Reserves as defined in the JORC Code. It is uncertain whether Mineral Resources or Ore Reserves will be able to be reported until the current drilling program is completed.*

\* Source: Mine Archive - Mine Managers Planning Proposal to Anglovaal Head Office (June 1987).

# Extensive Historic Data Available



**Extensive historic drill hole data, mine survey and geology plans show un-mined extensions and supports last mine planning reports**

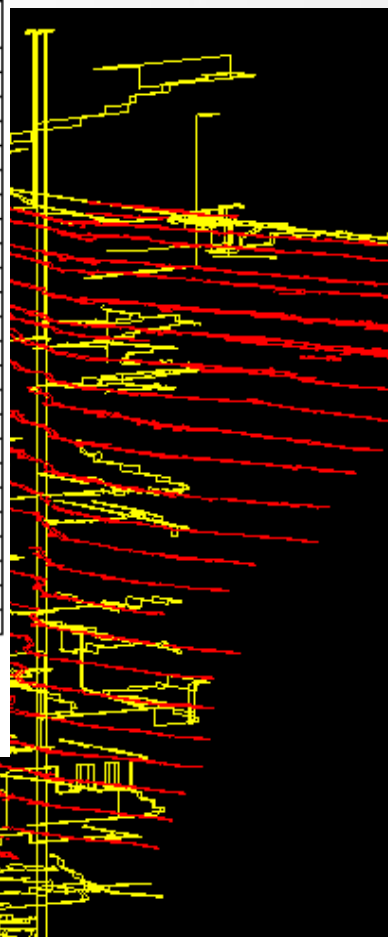
# PC Deep Sulphide Target



## Orion permitted to re-access & assess underground development

Area	Item	Arithmetic Mean Value	Weighted Mean	Max Value	Count
NW Trough	Cu%	1.59	1.49	4.29	42
	Zn%	4.19	4.12	6.52	42
	SG	3.54	3.65	N/A	17
	Thickness	7.71	N/A	N/A	75
NW Hinge	Cu%	1.52	1.27	3.13	4
	Zn%	3.73	3.81	4.27	4
	SG	3.41	3.41	N/A	4
	Thickness	5.76	N/A	N/A	39
SE Trough	Cu%	1.34	1.38	2.76	28
	Zn%	5.58	5.54	7.68	28
	SG	3.64	3.62	N/A	24
	Thickness	4.97	N/A	N/A	36
SE Hinge	Cu%	1.63	1.75	2.69	12
	Zn%	6.94	7.04	12.62	12
	SG	3.77	3.77	N/A	2
	Thickness	10.12	N/A	N/A	14
Central Trough Area	Cu%	0.40	0.40	0.41	2
	Zn%	5.91	5.39	8.29	2
	SG	3.18	3.19	N/A	2
	Thickness	5.77	N/A	N/A	18
Whole Area	Cu%	1.48	1.50	4.29	88
	Zn%	5.03	4.90	12.62	88
	SG	3.57	3.62	N/A	49
	True Thickness	6.74	N/A	N/A	182

Notes  
 Cu%, Zn% and SG "arithmetic mean values" are arithmetic mean of stretch values.  
 "Weighted means" are individual intersections (stretch values) weighted by true thickness.  
 Cu% and Zn% "max values" are maximum of stretch values.  
 Thickness mean values are arithmetic mean of true thickness values.



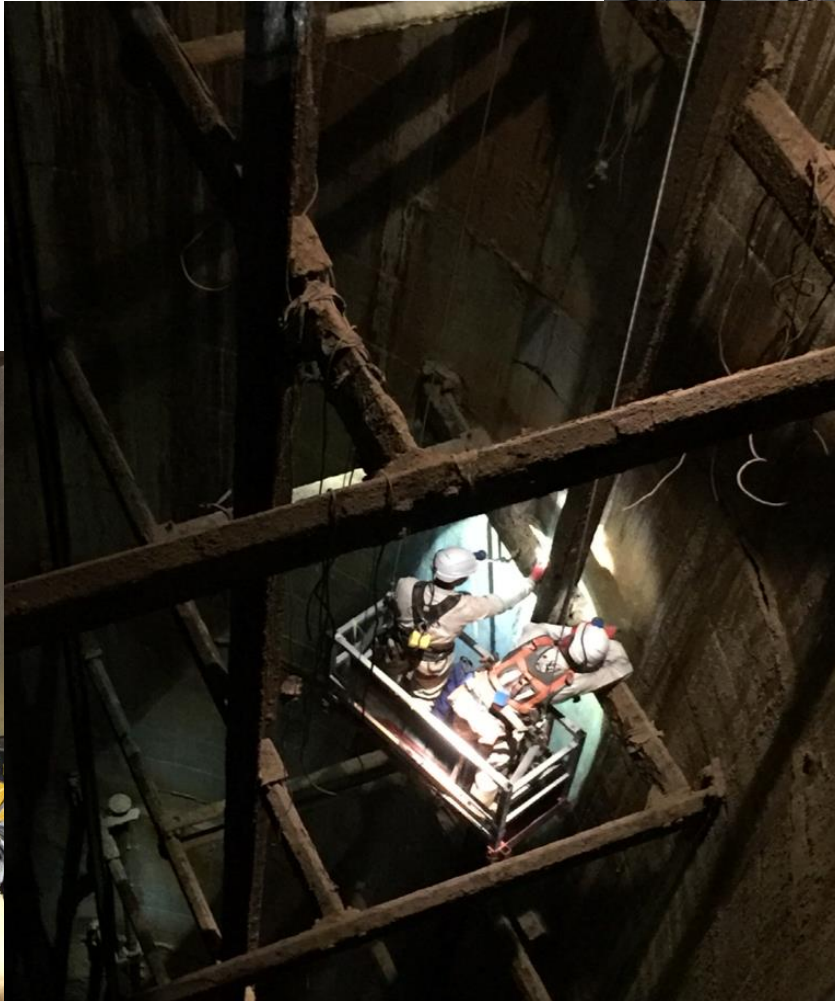
Deep Sulphide Target Area

- 8.8m diameter concrete lined vertical shaft to 1,024m.
- 3 separate ramp declines (6.5 x 3.8m) reach deepest ore at 1,140m. **Reopening commenced April 2017**
- Primary mine development in place to reach deep sulphide mineralisation together with extensive regional infrastructure will significantly reduce future development costs.
- Historic drilling shows high grade copper and zinc remaining.

Sources: Company and Mine Records  
 Refer ASX Release 18 November 2015.

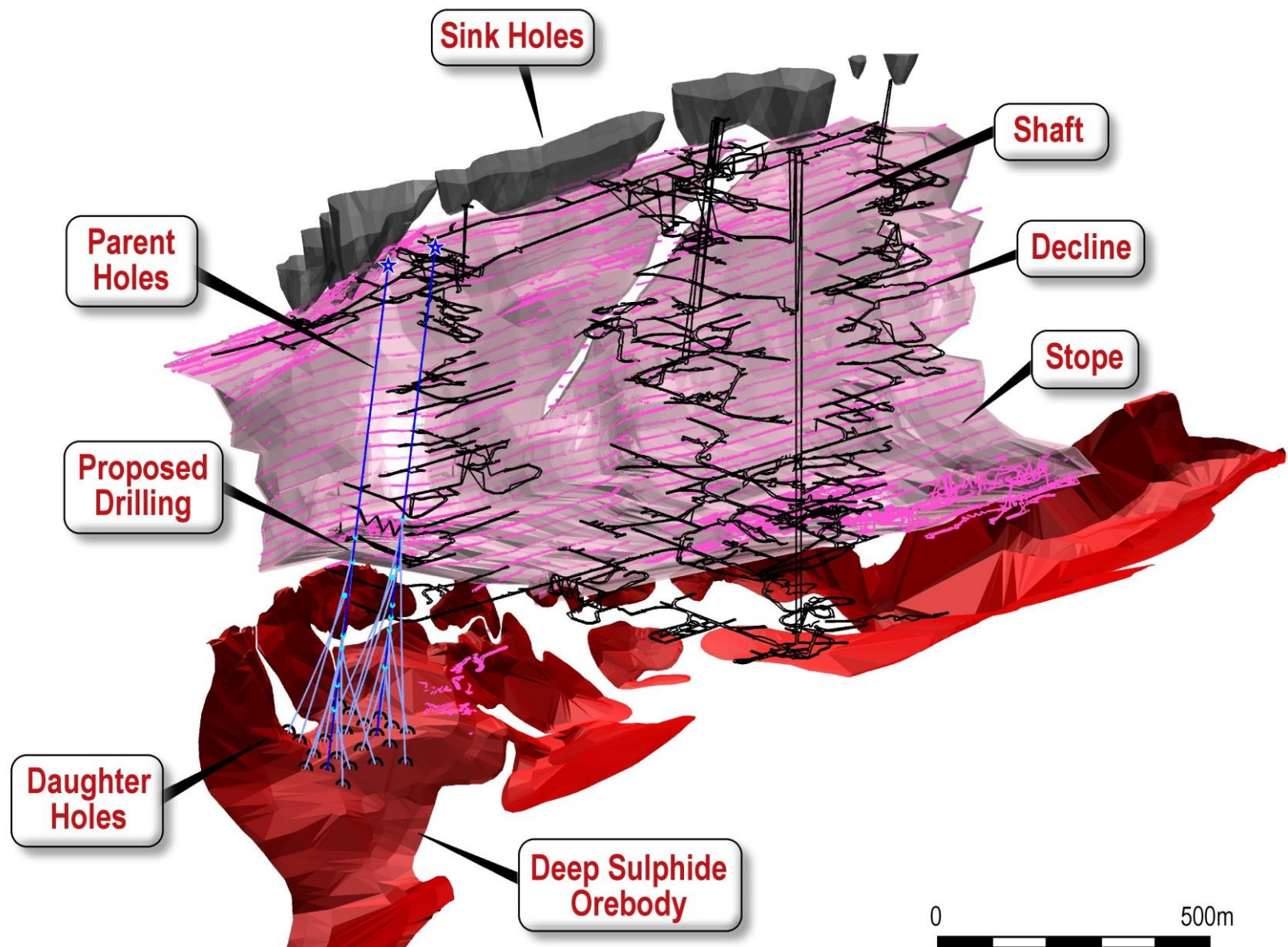


# Shaft Inspected by Expert Safety Inspectors & Engineers

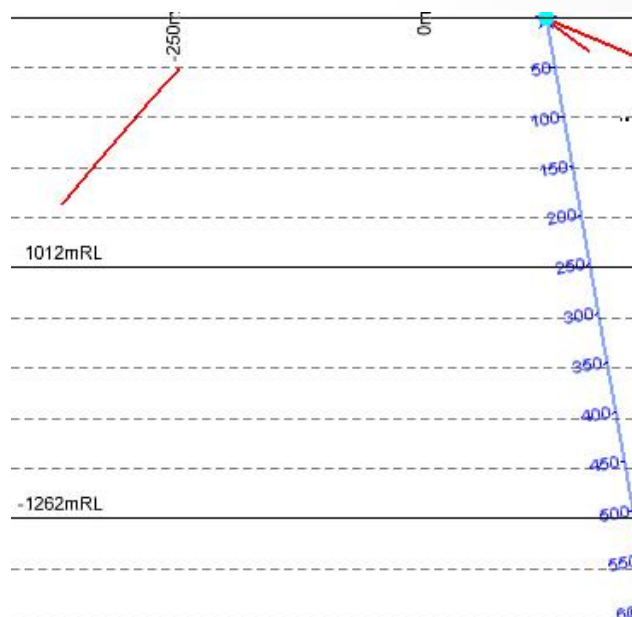




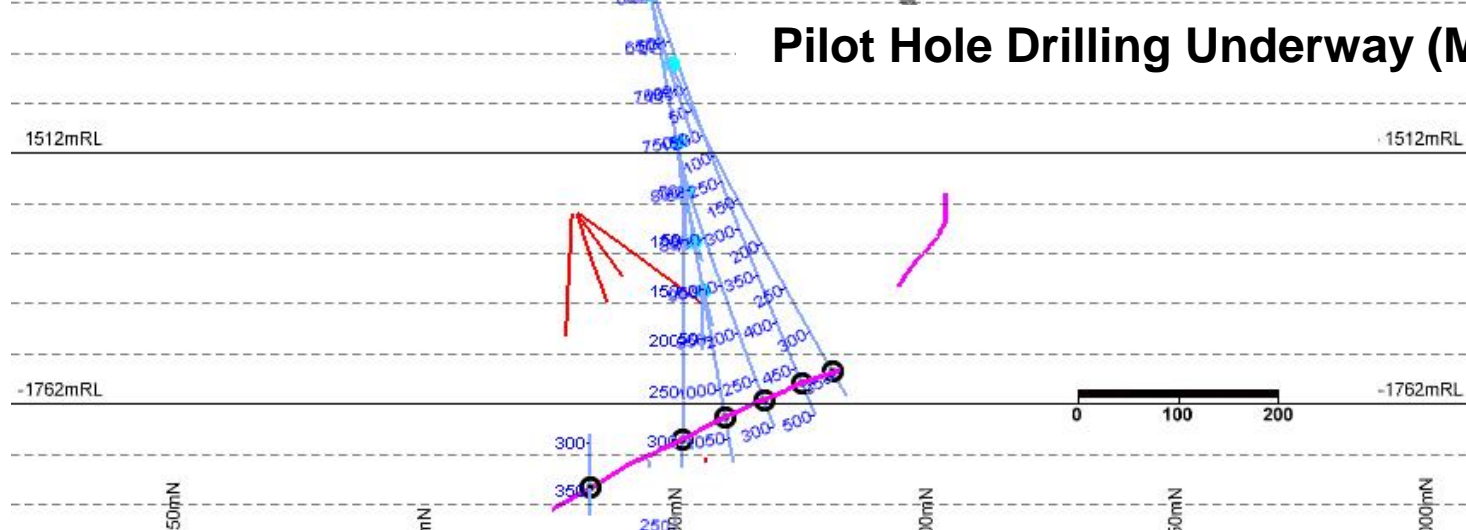
# Drilling Clusters of Intersections From “Mother” Holes



# Deep Drilling – multiple “daughters” off pilot “mother”

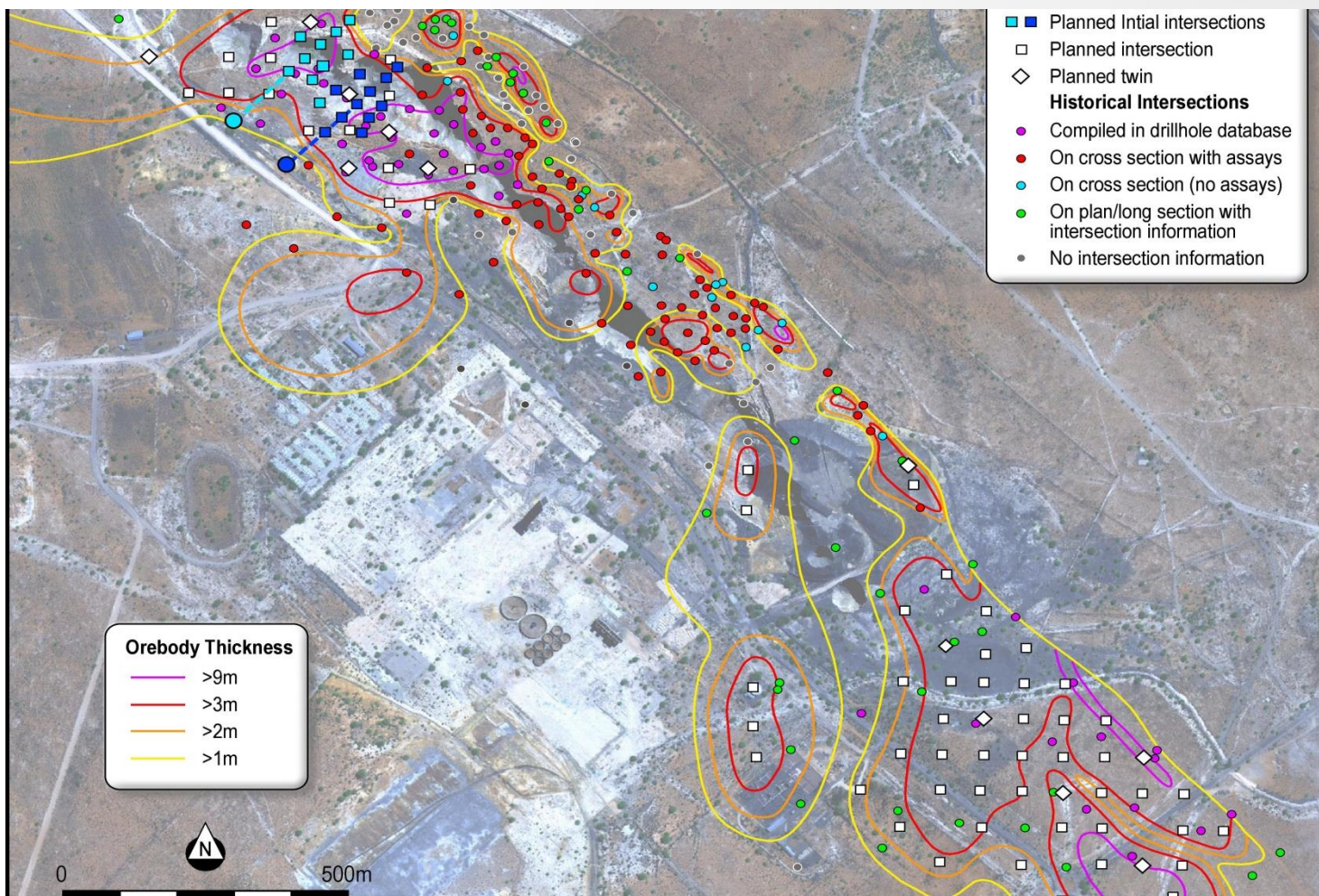


**Pilot Hole Drilling Underway (May 2017)**





# Deep Sulphide - Resource Drill Out Underway

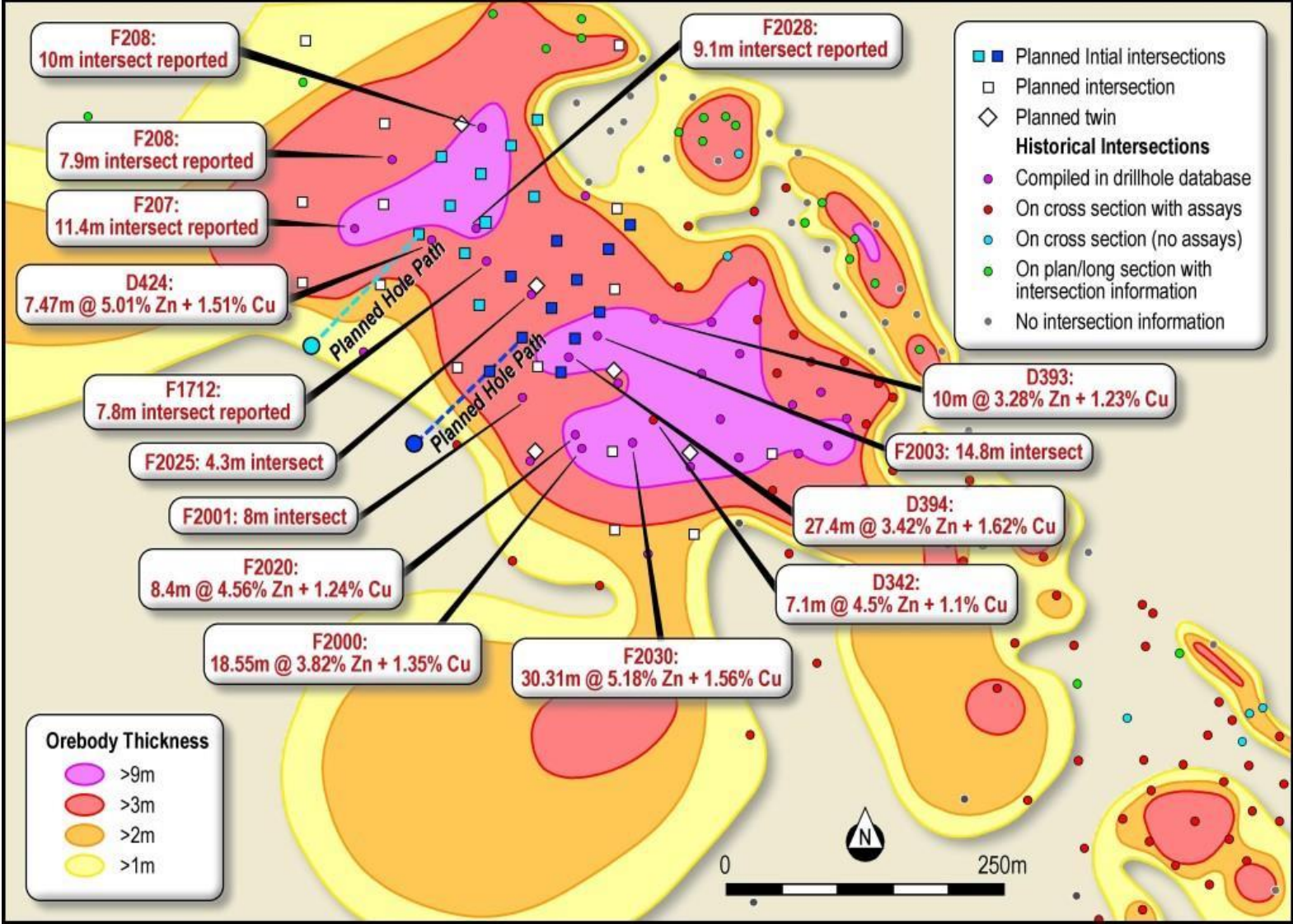


- Drilling to achieve both infill & statistical validation of available drilling data
- Planned to achieve sufficient data for JORC compliant resource estimation by CQ1 2018

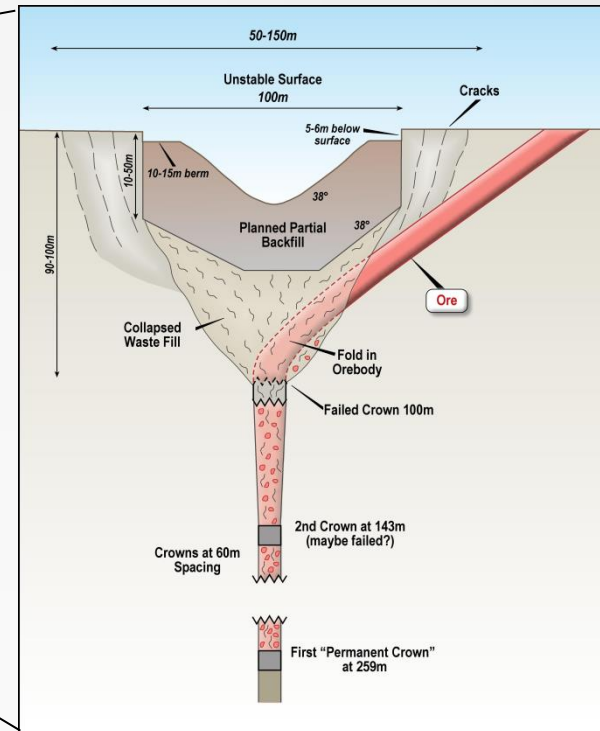
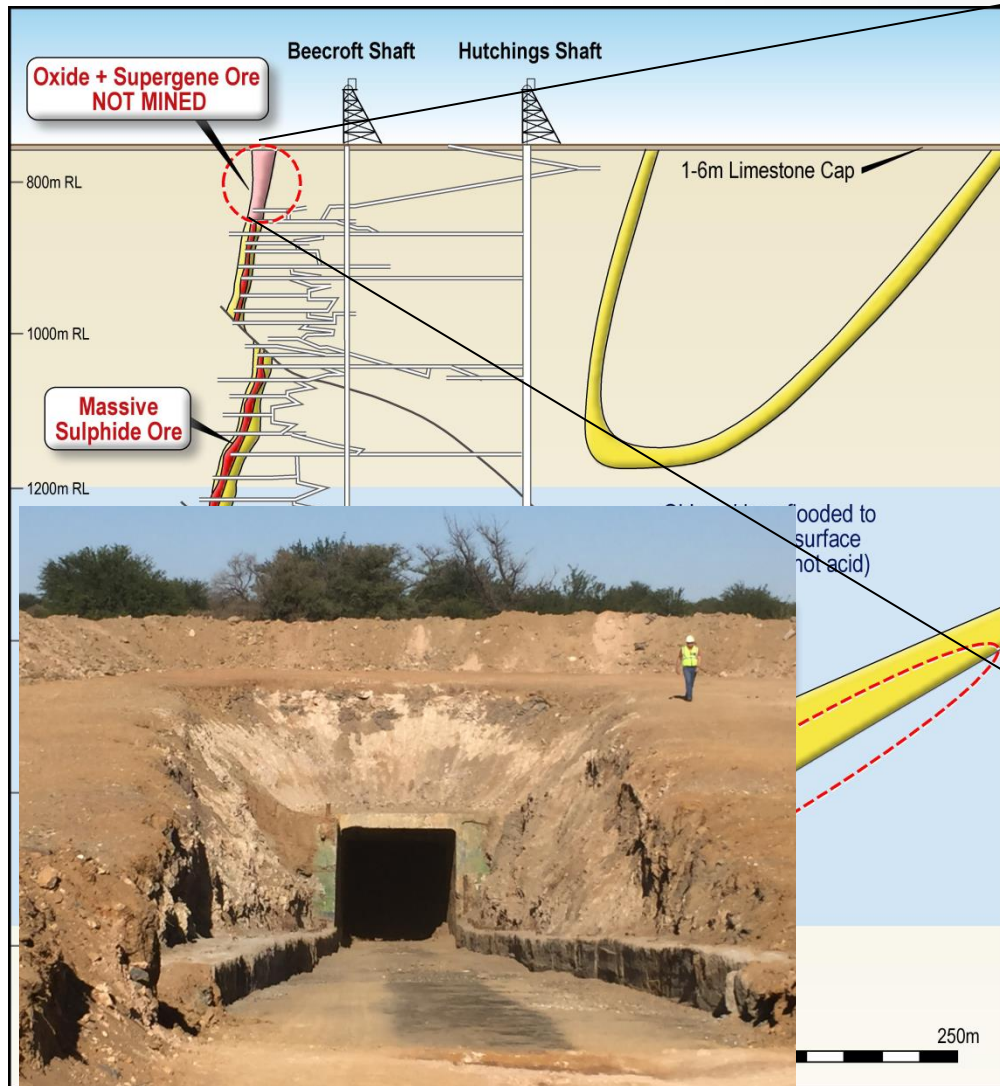
Refer ASX Releases 18 November 2015 and 9 May 2017.



# Planned Infill and Statistical Validation Drilling (NW Trough)



# PC: Assessing +105 Level Target



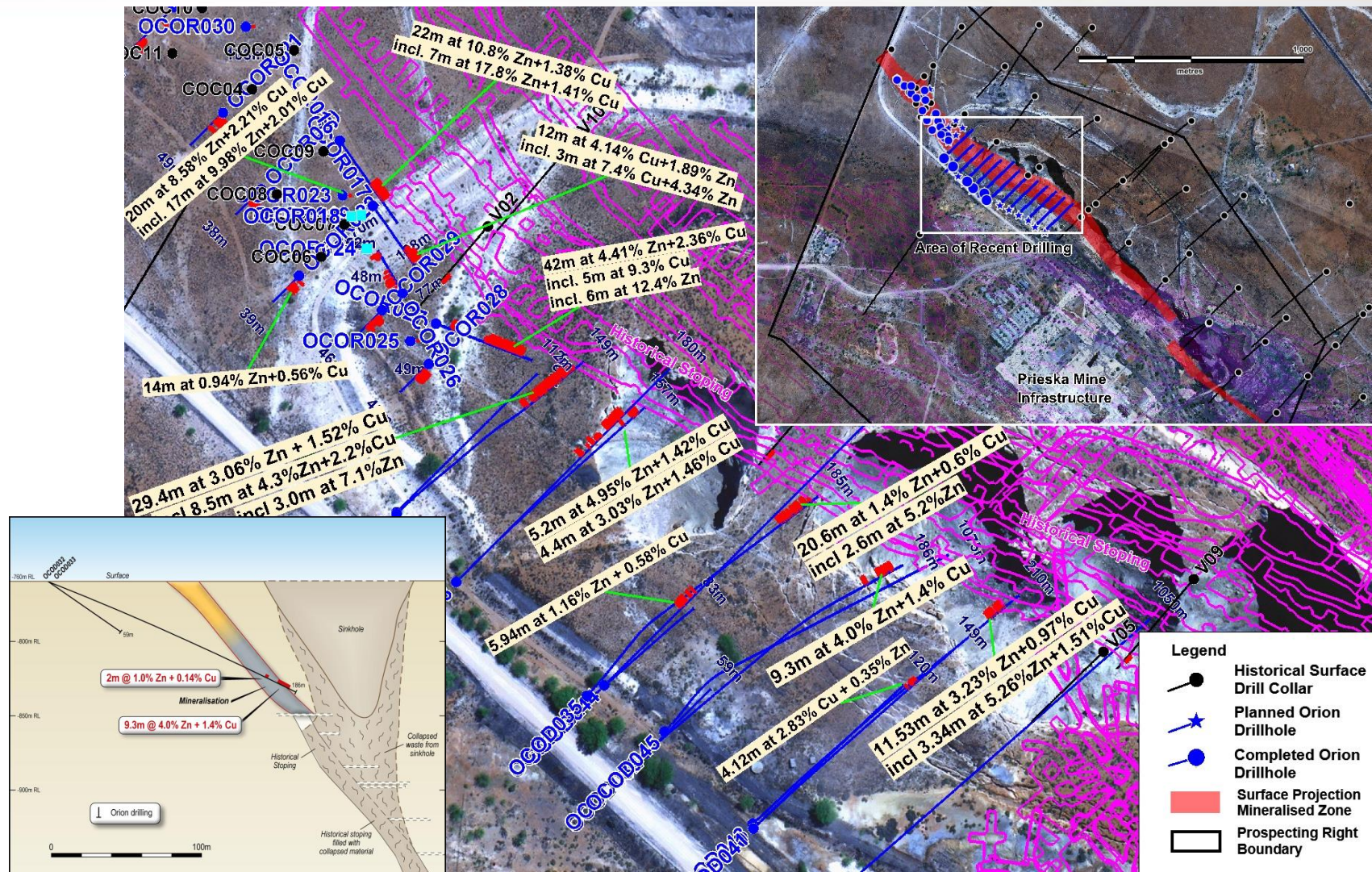
- Geotechnical solution to mining challenge developed to unlock potential of this important target.
- Historic metallurgical test work and run of mine tests proved intermediate ore can be treated in same plant, either separately or blended with massive sulphide ore to yield high recoveries of high quality Zn & Cu concentrates.\*

**Opened decline portal (2 May 2017) allowing underground geotechnical inspection and drilling**

*\* source, published reports and interviews with mine metallurgical manager. 20*



# Drilling +105 Level Target



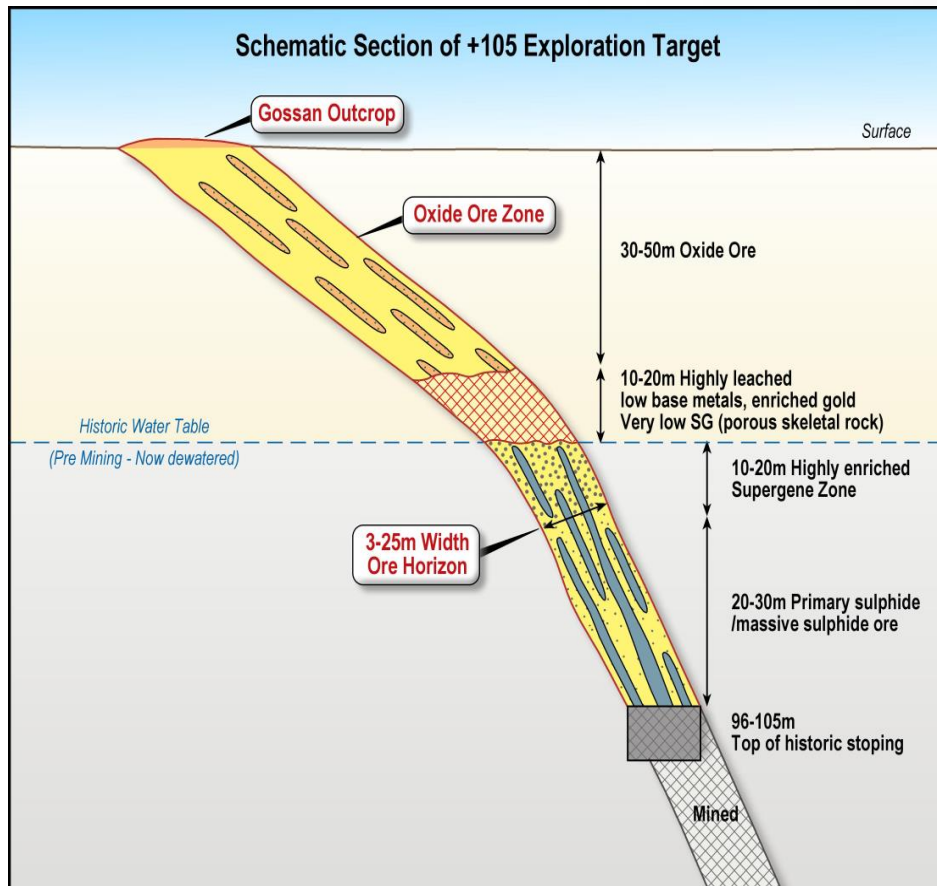
**Drilling Results for +105 Level Target Exceed Expectation  
– high grade supergene enriched sulphides intersected**



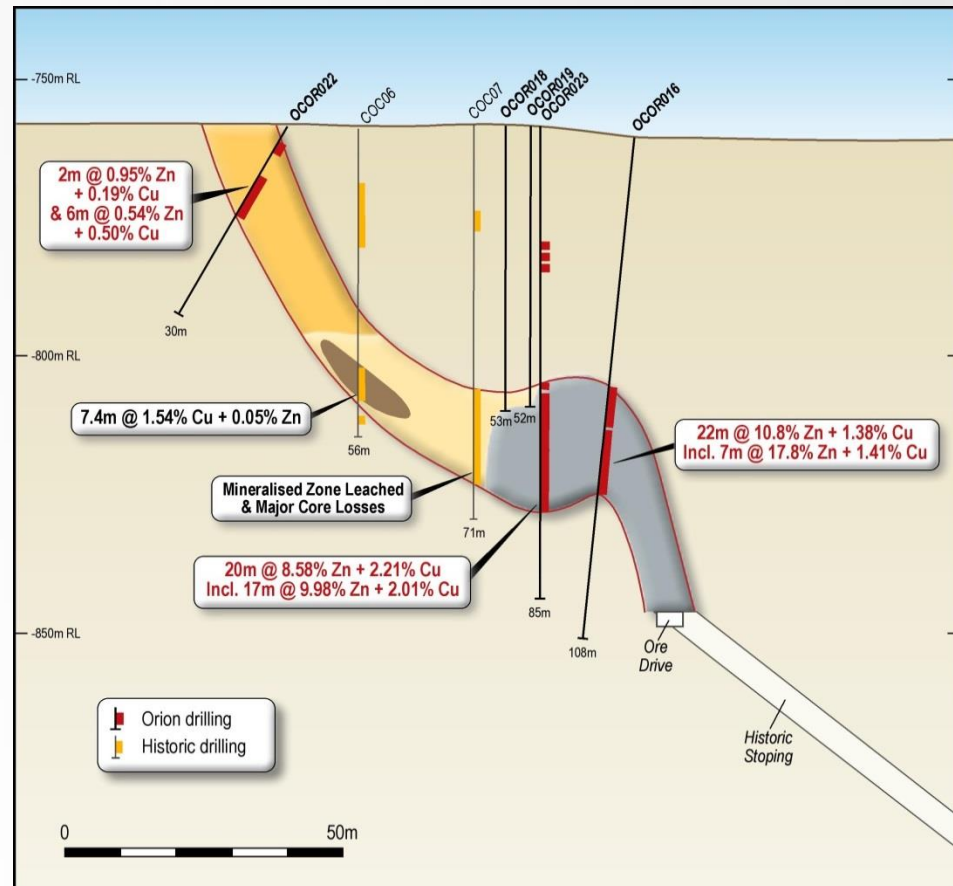
# +105 Level Target – High Grade Intersections Drilled



## Schematic – Interpreted Section



## Drilled Section



- Initial assays received exceeded expectations on copper and zinc grades including:

- 22m at 10.8% Zn, 1.38% Cu and 0.3g/t Au from 57m incl. 7m at 17.8% Zn and 1.41% Cu (OCOR016)
- 12m at 4.14% Cu, 1.89% Zn and 0.29g/t Au from 57m incl. 3m at 7.4% Cu and 4.34% Zn (OCOR017)
- 20m at 8.58% Zn, 2.21% Cu and 0.3g/t Au from 48m, incl. 17m at 9.98% Zn and 2.01% Cu (OCOR023)

# Competent Persons Statement



- The information in this report that relates to Exploration Targets at the Prieska Zinc Copper project complies with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) and is based on information compiled by Mr Paul Matthews, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Matthews has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Matthews consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears. The Exploration Results are based on standard industry practises for drilling, logging, sampling, assay methods including quality assurance and quality control measures as detailed in the ASX release dated 18 November 2015.
- The information in this report that relates to Exploration Results at the Areachap Belt projects complies with the JORC Code and is based on information compiled by and for Mr Errol Smart, Orion Minerals NL's Managing Director. Mr Smart (PrSciNat) is registered with the South African Council for Natural Scientific Professionals, a ROPO for JORC purposes, and sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Smart consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears. The Exploration Results are based on standard industry practises for drilling, logging, sampling, assay methods including quality assurance and quality control measures as detailed in the ASX releases referred to in the text.



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