



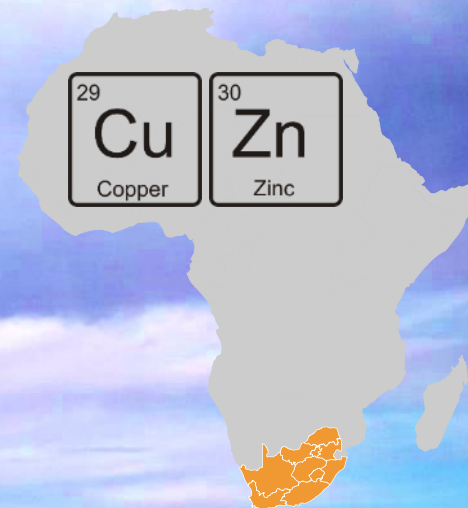
Orion Minerals

ASX/JSE: ORN

DELIVERING THE PRIESKA PROJECT

A strong foundation for near-term development and long-term growth

Presentation: February 2020



DISCLAIMER



Orion Minerals

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CORPORATE STRUCTURE



- Primary listing on the ASX.
- Secondary listing on Main Board of the Johannesburg Stock Exchange.

Capital structure summary	
Shares on issue ¹	2,900M
Options on issue	211M
Market capitalisation (2.5cps (ASX)) ²	\$72M
Convertible loan (2.6cps convert, 12% interest, Jun'20 term) ³	\$4.2M
AASMF loan ⁴	\$1.8M
Cash on hand ⁵	\$5.2M

Significant shareholders	%
Tembo Capital	24.0
Wyllie Group	5.5
United Super	5.4
IGO Limited	5.3
Tarney Holdings	3.9
Total	44.1

1. Fully paid ordinary Orion shares (**Shares**) on issue as at 24 Jan'20.
2. Closing price of ORN Shares on the ASX on 24 Jan'20. Closing price of ORN Shares on the JSE on 24 Jan'20 was ZAR0.24.
3. Orion announced on 25 Jan'19 that it had entered into a \$3.6M loan facility with Tembo Capital (excluding capitalised interest and fees) (**Loan Facility**). Under the terms of the Loan Facility, Tembo may at its election, have the balance of the Loan Facility settled by the issue of Shares at a deemed issue price of 2.6cps (subject to receipt of shareholder approval). Refer to ASX releases 25 Jan'19 and 24 Jan'20 and the Company's Annual Financial Report for the period ended 30 Jun'19 for additional information. Balance shown as at 31 Dec'19.
4. Refer to the Company's Annual Financial Report for the period ended 30 Jun'19 for information related to the loan agreement (ZAR14.25M) that Repli Trading No 27 (Pty) Ltd has entered into with Anglo American sefa Mining Fund (**AASMF**). Balance shown as at 31 Dec'19.
5. Cash on hand at 31 Dec'19.

2020: BUILDING ON PHENOMENAL 2019 SUCCESS

✓	First global Mineral Resource for the Prieska Project exceeds 30Mt @ 1.2% Cu and 3.7% Zn	Jan 2019
✓	Ayoba Satellite VMS discovery, first new VMS discovery in the Areachap Belt in over 36 years	Jan 2019
✓	Compelling extensional potential from Airborne and Down-Hole EM Surveys at Prieska	Feb 2019
✓	High-profile SA investors part of key BEE ownership re-structure	Apr 2019
✓	Community & employee trusts registered to establish Mining Charter compliant ownership structure	Jun 2019
✓	Prieska BFS confirms long-life, high-margin SA copper-zinc mine with strong economics	Jun 2019
✓	Orion receives Environmental Authorisation for the development of Prieska Project	Jul 2019
✓	Drilling commences on highly prospective Fraser Range targets at IGO-ORN Joint Venture, Australia	Aug 2019
✓	Orion Minerals granted Mining Right for its flagship Prieska Copper-Zinc Project in South Africa	Sep 2019
✓	Optimisation studies on Prieska Copper-Zinc Project progressed with positive indications	Q4 2019

ORION MINERALS – COMPELLING INVESTMENT CASE



THE OREBODY

- Globally significant VMS Resource: 30.49Mt @ 1.2% Cu, 3.7% Zn
- Mineral Reserve: 13.62Mt @ 1.06% Cu, 3.18% Zn

FOUNDATION PHASE (10 YR) BFS OUTCOMES

- Initial 10-year, 2.4Mtpa operation targeting 22ktpa Cu & 70ktpa Zn
- Strong operating margins and financials
 - Pre-tax free cash flow of A\$1.1bn (post-tax A\$819m)
 - Pre-tax NPV_{8%} of A\$574m (post-tax A\$408m)
 - Peak funding of A\$378m
 - Payback period of three years from first production
 - All-in sustaining margin of 44%

PERMITTING

- Environmental Authorisation awarded July 2019
- Mining Right for initial 24 years (renewable) granted August 2019

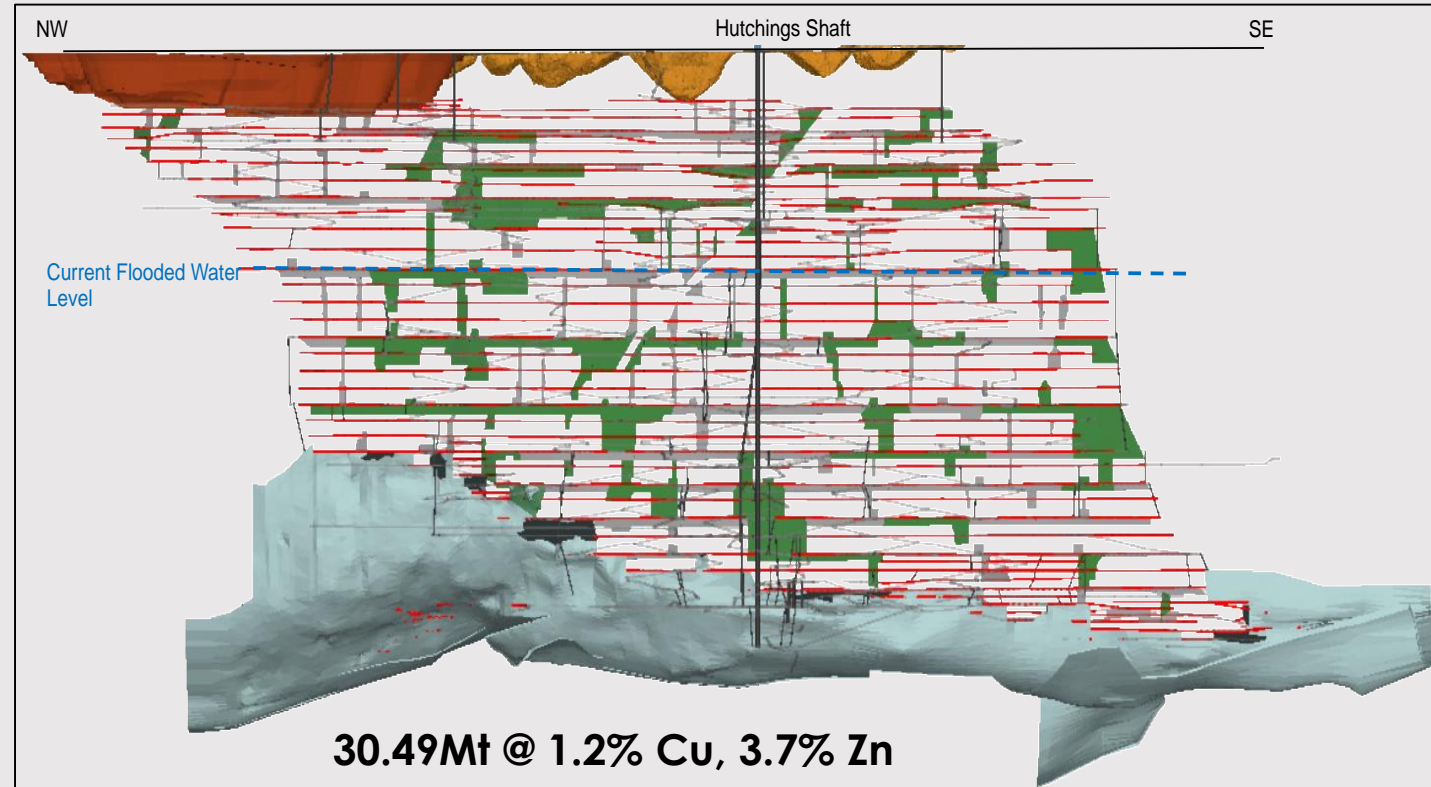
THE FUTURE

- Exceptional exploration and growth pipeline



PRIESKA: REAWAKENING A GLOBAL VMS GIANT

- World-class orebody – recorded as a Top 30 global VMS deposit
- Located in Northern Cape Province, 270km south-west of regional capital, Kimberley
- Established mining region, yet least populous region of South Africa
- Historically mined by AngloVaal (1971-1991)
- Recorded historical production of 1Mt of Zn and 430kt of Cu from 46.8Mt of sulphide ore milled*
- Extensive infrastructure in place
- Near-mine exploration and further expansion potential



* Source: Mine records

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

Extensive infrastructure already in place:

- Primary shafts and underground decline roadways
- Sealed access roads to project site
- 48km via bitumen road to existing rail siding
- Four high-voltage regional lines linked to national electricity grid
- 175MW operational solar power plants in area with additional 675MW approved and 300MW pending authorisation
- 800km rail link to major bulk commodity and deep-water ports
- Bulk water pipeline supplies to site
- Good contractor accommodation facilities ~3km from site
- Low environmental sensitivity – existing mine footprint



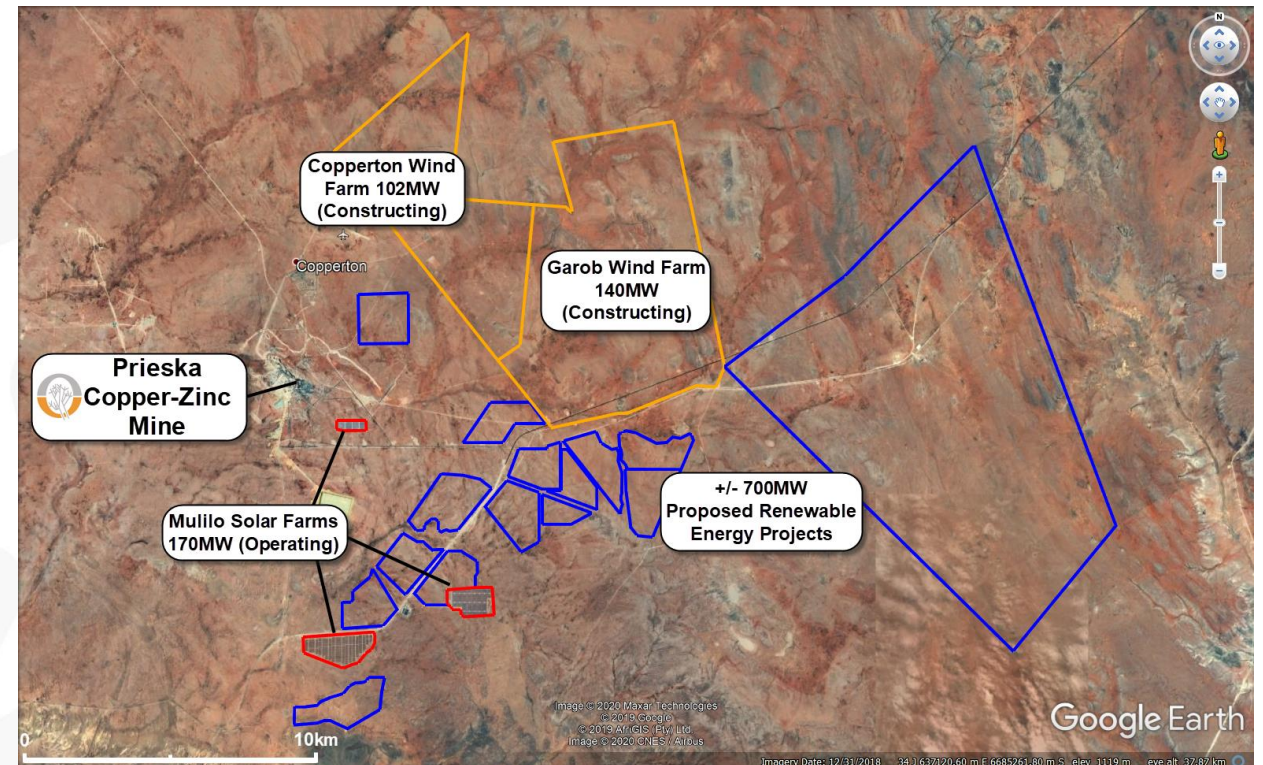
ENERGY EFFICIENT

- Mine nested in established renewable energy hub
- Majority of mine to be powered by renewable energy
- Collaboration agreement with juwi Renewable Energies to investigate renewable energy generation for the Prieska Copper-Zinc Project
- Energy efficiency incorporated throughout design



Sources: Mulilo Solar and juwi Resources

Solar energy projects and wind farms in the project vicinity



PRIESKA JUNE 2019 BFS HIGHLIGHTS



FOUNDATION PHASE



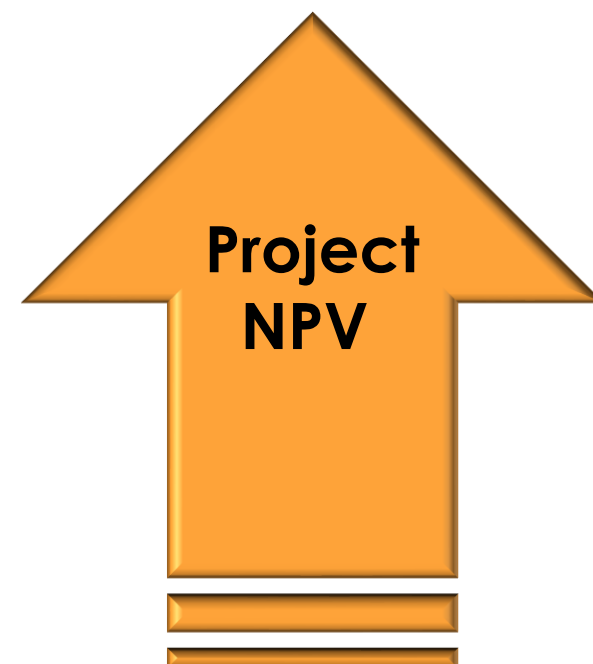
LOM EXTENSION PHASE

- Demonstrates compelling investment case to establish financially robust mine with initial 10-year life
 - Pre-tax free cash flow of A\$1.1bn (post-tax A\$819m)
 - Pre-tax NPV_{8%} of A\$574m (post-tax A\$408m)
 - Peak funding of A\$378m
 - Payback period of three years from first production
 - All-in sustaining margin of 44%
 - Optimisation studies continue
 - Investigating by-product production
- LOM extensions leveraging off Foundation Phase development and requiring limited or no additional capital works
 - Tonnage targeted
 - Remainder of current Global Resource, 9.13 Mt at 1.4% Cu and 3.6% Zn
 - Evaluating existing pillar extraction (7-8 million tonnes) after voids are paste filled
 - High grade strike extensions of resource requiring additional drilling, not yet in JORC resource

FURTHER OPTIMISATIONS **POISED TO ENHANCED VALUE**

Engineering and detailed costing at BFS accuracy (15%) scheduled for completion Q2 2020

- **Metallurgical plant design**
 - Include SAG milling
 - Removes secondary crushing, screening, & rock conveyors.
 - Capital (A\$16m) & Opex savings anticipated
- **Dewatering to include water treatment**
 - Allows alternative uses
 - Allows accelerated dewatering – earlier production
 - Capex savings anticipated
- **Whittle “Mine-to-Market”**
 - Optimises development workstreams, scheduling and cashflow
 - Potential capital savings



OPTIMISED SURFACE LAYOUT COMPLETED



June 2019 BFS surface layout



January 2020 optimised surface layout

PROJECT FINANCING CONSIDERATIONS



Majority Senior Secured Project Debt Finance

- * Proposals received from seven institutions
 - * includes two specialist development finance institutions
- * Discussions progressing
- * To be finalised post optimisation – revised project cashflow

Subordinated debt and structured financial facilities

- * Lease finance
- * Supplier finance
- * Offtake related finance

Equity contribution

- * Interest from potential strategic partners & off-takers
- * Orion 80% : BEE partners 20%

PROJECT SIGNIFICANT TO SOUTH AFRICA

STRONG GOVERNMENT SUPPORT



South African State President **Cyril Ramaphosa**
congratulates Orion Minerals Ltd CEO **Errol Smart** on progress at Prieska
State President's Investment Conference - 6 November 2019

BOOSTING THE REGIONAL ECONOMY

EMPLOYMENT CREATION

- Estimated that 846 people (operational Phase) will be employed
- Empirical multiplier effect potentially creates 2,500 associated jobs

CONTRIBUTIONS TO LOCAL INFRASTRUCTURAL DEVELOPMENT

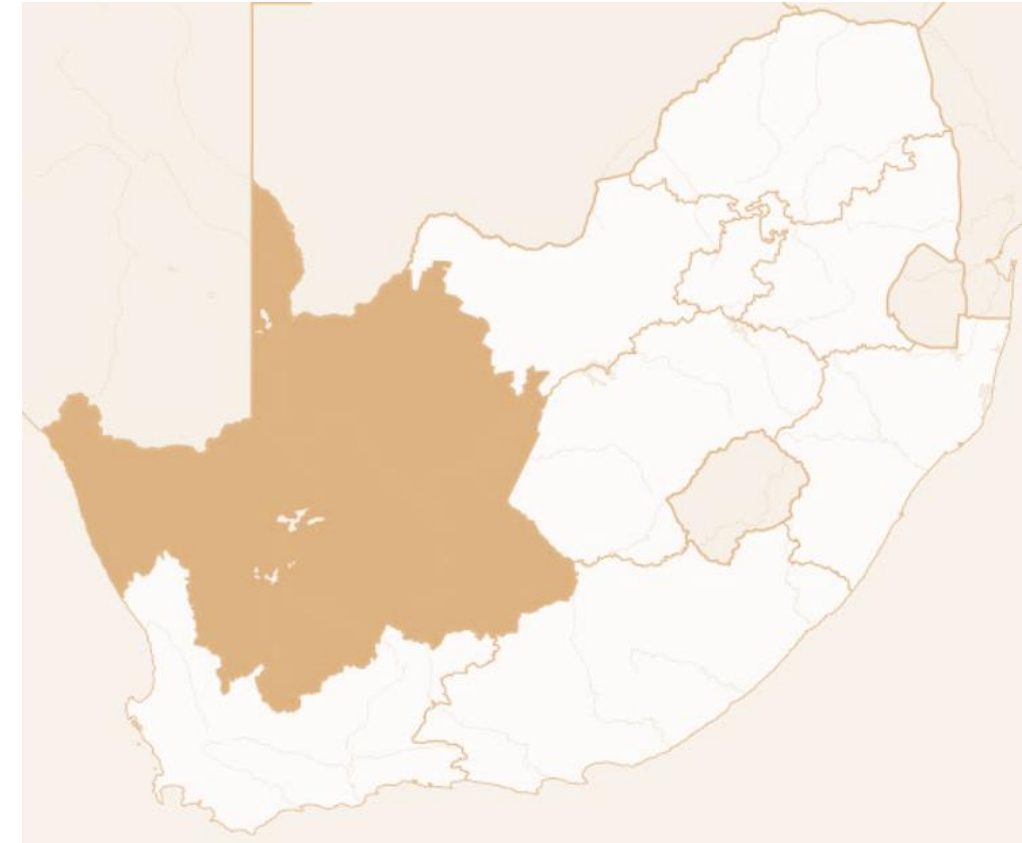
- Improved water supply – 20ML a day Water Treatment Plant planned for Prieska
- Improved residential development – Contributes to the 3,500 new residences planned in the IDP

ENTERPRISE DEVELOPMENT

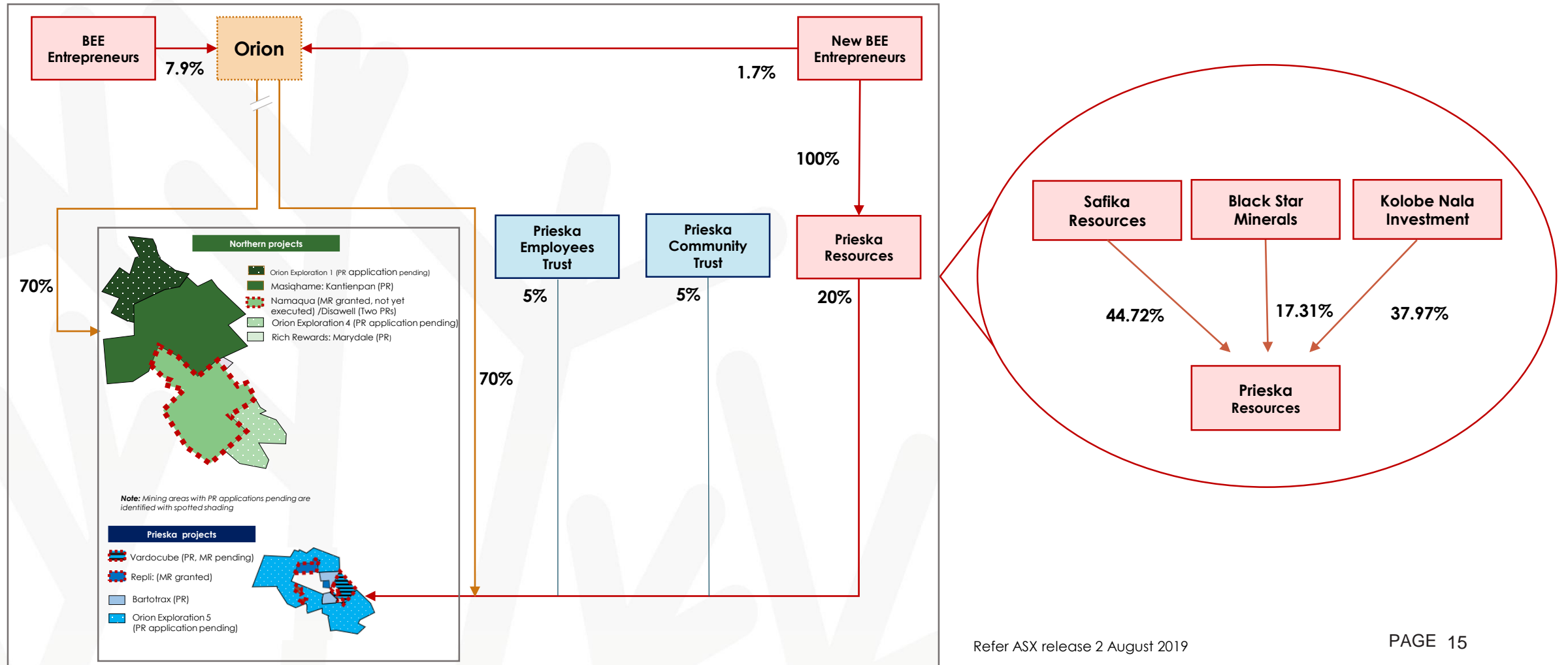
- Mine support services will develop locally
- Stimulation of related synergic industries
- Promote commerce in the region

INCREASE IN GROSS DOMESTIC PRODUCT

- District GDP increase expected to increase by 20.3% at optimal mining
- Combined multipliers may increase local economy by 30%
- Local sourcing of select goods and services



BEE: PIVOTAL TRANSACTION COMPLETED

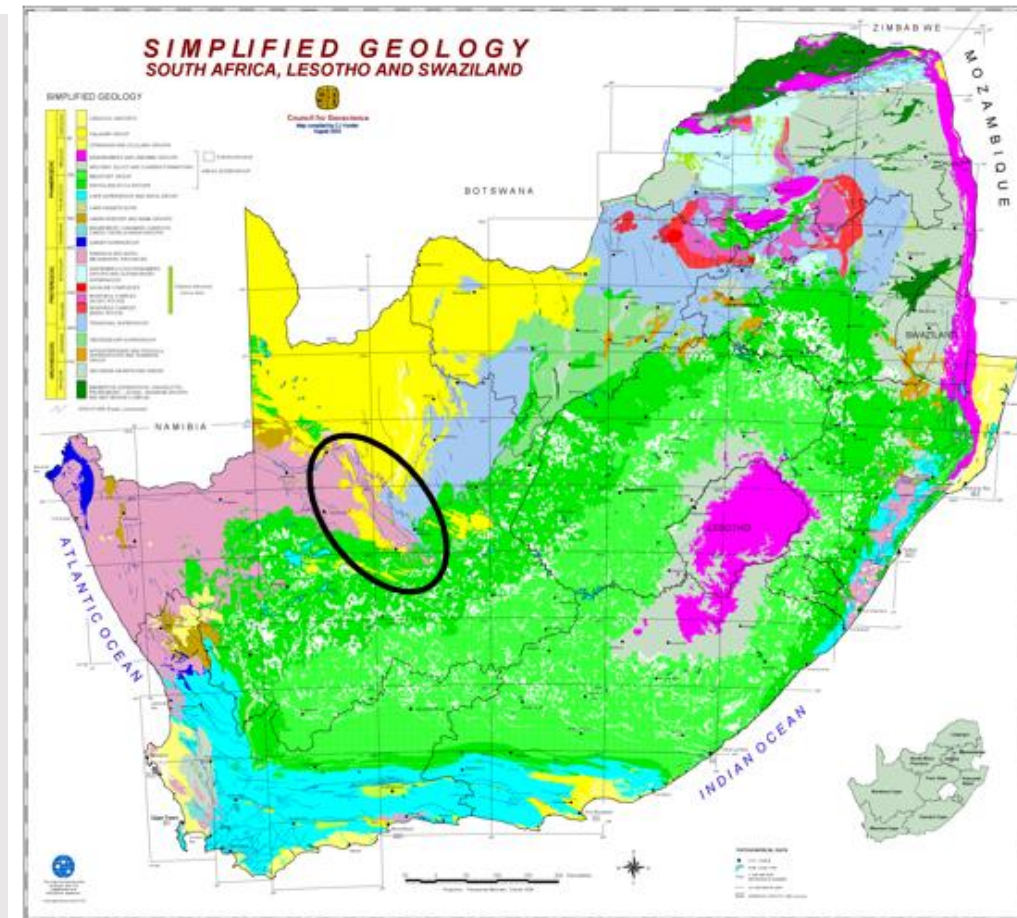


A DOMINANT LAND-HOLDING IN MINERAL BELT IDENTICAL TO FRASER-ALBANY (AUSTRALIA)



Orion Minerals

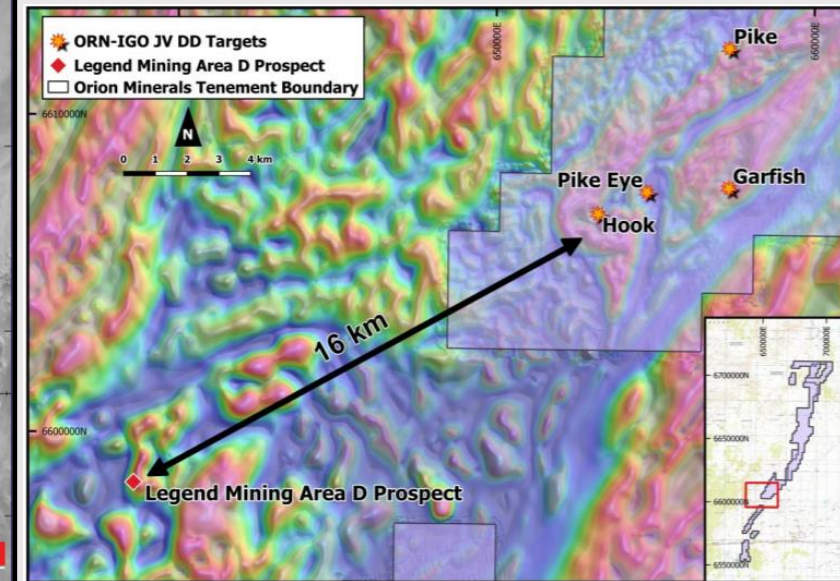
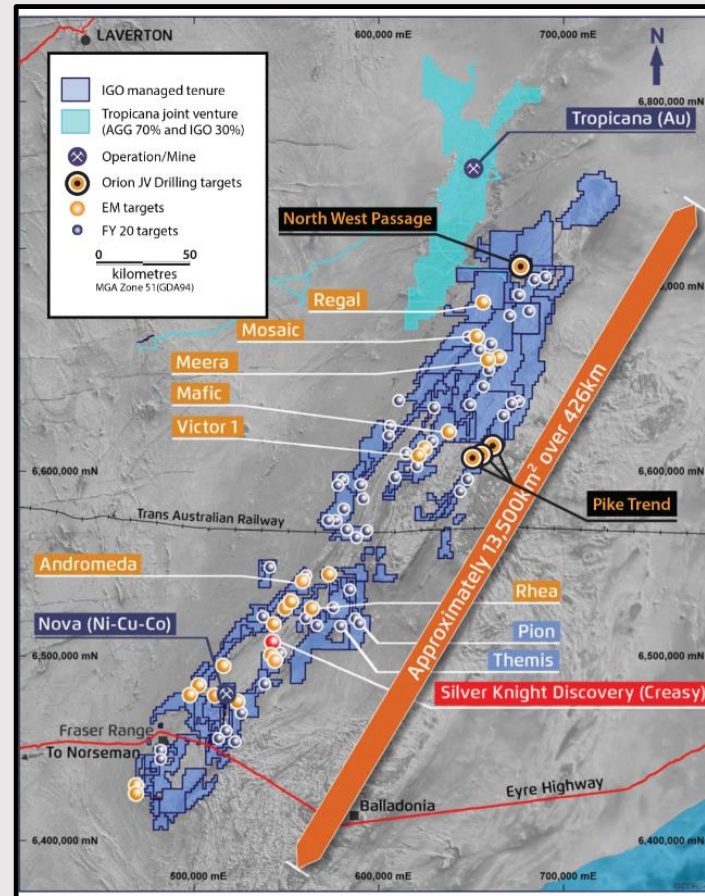
- We have the worlds largest, single lens VMS Cu-Zn deposit
 - BFS completed June 2019
 - Optimisation studies well advanced
- Located in an underexplored mineral belt
- 22 identified VMS Cu-Zn occurrences on our mineral rights
- Several intrusive Ni-Cu-PGE sulphide deposits located on our mineral rights - limited modern exploration
 - Large tonnage - low grade JORC resource
 - Potential for discovery of high-grade massive sulphide Ni-Cu deposits



FRASER RANGE AUSTRALIA: IGO JV – ORN FREE CARRIED

“We have a conviction the (Nova) system is much larger than we believed, and the increased probability of additional discoveries means we are motivated to significantly increase our spending in 2020.” – IGO Managing Director Peter Bradford, quoted on Miningnews.net, 31 July 2019

- Drilling will also test combined Ni-Cu Intrusive and Cu-Zn VMS targets identified at the Pike, Pike-Eye and Hook Prospects
- Drilling forms part of a larger exploration program across the northern part of the Fraser Range and it is expected that, following completion of drilling at the North West Passage, drilling will move to the highly prospective Pike Trend (IGO 70% : Orion 30%)



APPENDICES



PRIESKA: MINE OF THE FUTURE

Implementing a modern operating philosophy (4IR enabled) can contribute to achieving quantum changes in key output parameters that are traditionally slow to improve or have regressed in the local mining industry, including:

- Safety and health improvements
- Improved environmental conditions, reduced pollution and contamination
- Improved energy efficiency and lower energy costs
- Productivity improvements
- Operating cost reductions

**Benchmark
Globally**

**Implement
Enablers**

**Be Fast
Followers**

**Always Make
Commercial
Sense**

BANKABLE FEASIBILITY STUDY DASHBOARD



Price and FX Assumptions	Unit	Value	Financial Performance	Unit	Value
Metal price – Cu	USD/t	6,834	NPV pre-tax (post-tax) @ 8.0% discount rate	AUD M	574 (408)
Metal price – Zn	USD/t	2,756	IRR pre-tax (post-tax)	%	38% (33%)
Exchange rate	ZAR:USD	14.5 :1	Payback from first production	years	2.9
Exchange rate	ZAR:AUD	10 : 1	Undiscounted free cash flow pre-tax (post-tax)	AUD M	1,127 (819)
Exchange rate	AUD:USD	1.45 : 1	Peak funding	AUD M	378
Production Metrics	Unit	Value	Project Cost Metrics	Unit	Value
Life of Mine	Years	9.7	Average cash operating unit cost (C1)	AUD/t	80
Treatment plant capacity	Mtpa	2.4	All-in-sustaining cost per unit ROM t	AUD/t	94
ROM Plant Feed – tonnage	kt	20,827	All-in-sustaining cost per unit Cu_Eq t sold	AUD/t Cu	5,470
ROM Plant Feed – grade - Cu	%	1.1%	All-in-sustaining cost per unit Zn_Eq t sold	AUD/t Zn	1,582
ROM Plant Feed – grade - Zn	%	3.4%	Price received (net of NSR) - Cu	AUD/t Cu	9,785
Concentrate tonnage - Cu	kt	790	Price received (net of NSR) - Zn	AUD/t Zn	2,830
Concentrate tonnage - Zn	kt	1,180	All-in-sustaining margin	%	44%
Concentrate grade – Cu U/G (O-Pit)	%	23.8% (25.6%)	Operating breakeven grade (Cu_Eq)	%	1.2%
Concentrate grade – Zn U/G (O-Pit)	%	49.9% (35.5%)			
NSR as % of metal price – Cu U/G (O-Pit)	%	98.7% (91.2%)			
NSR as % of metal price – Zn U/G (O-Pit)	%	71.3% (53.7%)	Project Cash Flows	Unit	Value
Metal sold (in concentrates) - Cu	tonnes	189,000	LoM net revenue	AUD M	3,284
Metal sold (in concentrates) - Zn	tonnes	580,000	LoM operating costs (+ Royalty and Tax)	AUD M	1,673
Total Sales as Cu equivalent	tonnes	357,000	Project Start-up Capital Expenditure	AUD M	402
Total Sales as Zn equivalent	tonnes	1,230,000	Sustaining Capital Expenditure	AUD M	83
There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the Production Target or financial forecast information will be realised.					

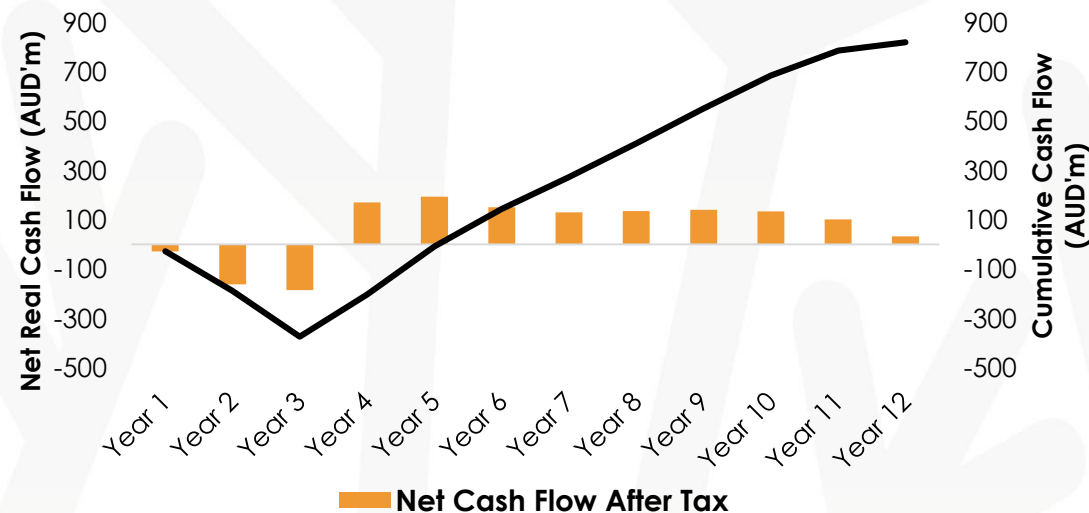
Table: Key BFS Results for the Foundation Phase of the Prieska Copper-Zinc Project. Note that the Study estimation accuracy level is ±15%.

CONSTRUCTION MILESTONES

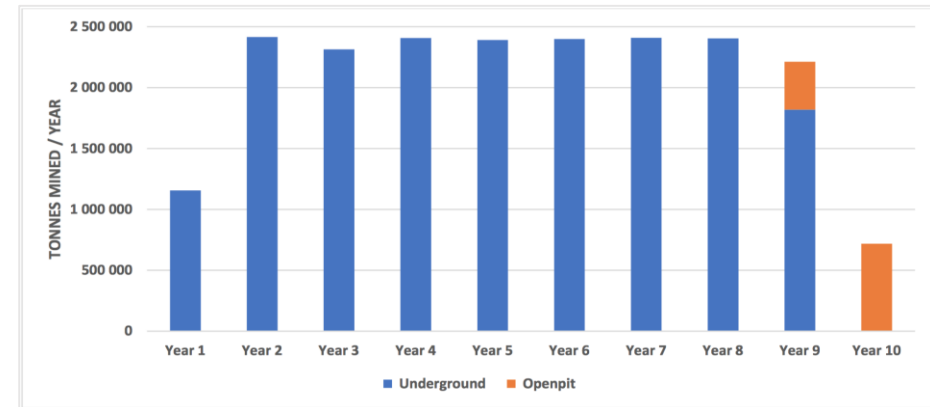
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MINING PRODUCTION PROFILE

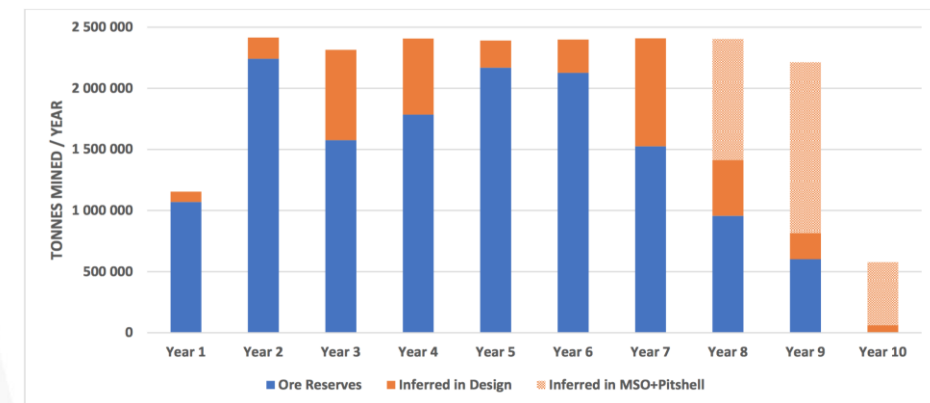
- Underground mining for majority of the Foundation Phase
- Small open pit mined on retreat
- Underground mining to commence on completion of:
 - mine dewatering
 - shaft refurbishment
- Underground establishment program of 23 months before first ore mined
- Underground mining will build up over 14 months to steady-state run-of-mine production rate of 200ktpm or 2.4Mtpa



MILLED ORE SOURCES



MILLED ORE JORC CATEGORIES



MINERAL RESOURCE

Total Prieska Project Mineral Resource for Repli + Vardocube Tenements (Effective Date: 11 January 2019)						
Mineral Resource	Classification	Tonnes	Cu (tonnes)	Cu (%)	Zn (tonnes)	Zn (%)
Deep Sulphide Resource	Indicated	18,507,000	217,000	1.17	667,000	3.60
	Inferred	10,219,000	117,000	1.1	417,000	4.1
+ 105m Level Resource	Indicated	624,000	10,000	1.54	19,000	3.05
	Inferred	1,138,000	17,000	1.4	16,000	1.4
Total	Indicated	19,131,000	227,000	1.18	686,000	3.59
	Inferred	11,357,000	134,000	1.2	433,000	3.8
Grand Total		30,488,000	361,000	1.2	1,119,000	3.7
Deep Sulphide Resource bottom cut-off = 4% Equivalent Zn; +105m Level Mineral Resource bottom cut-off = 0.3% Cu. Mineral Resources stated at zero % cut-off. Tonnes are rounded to thousands, which may result in rounding errors.						

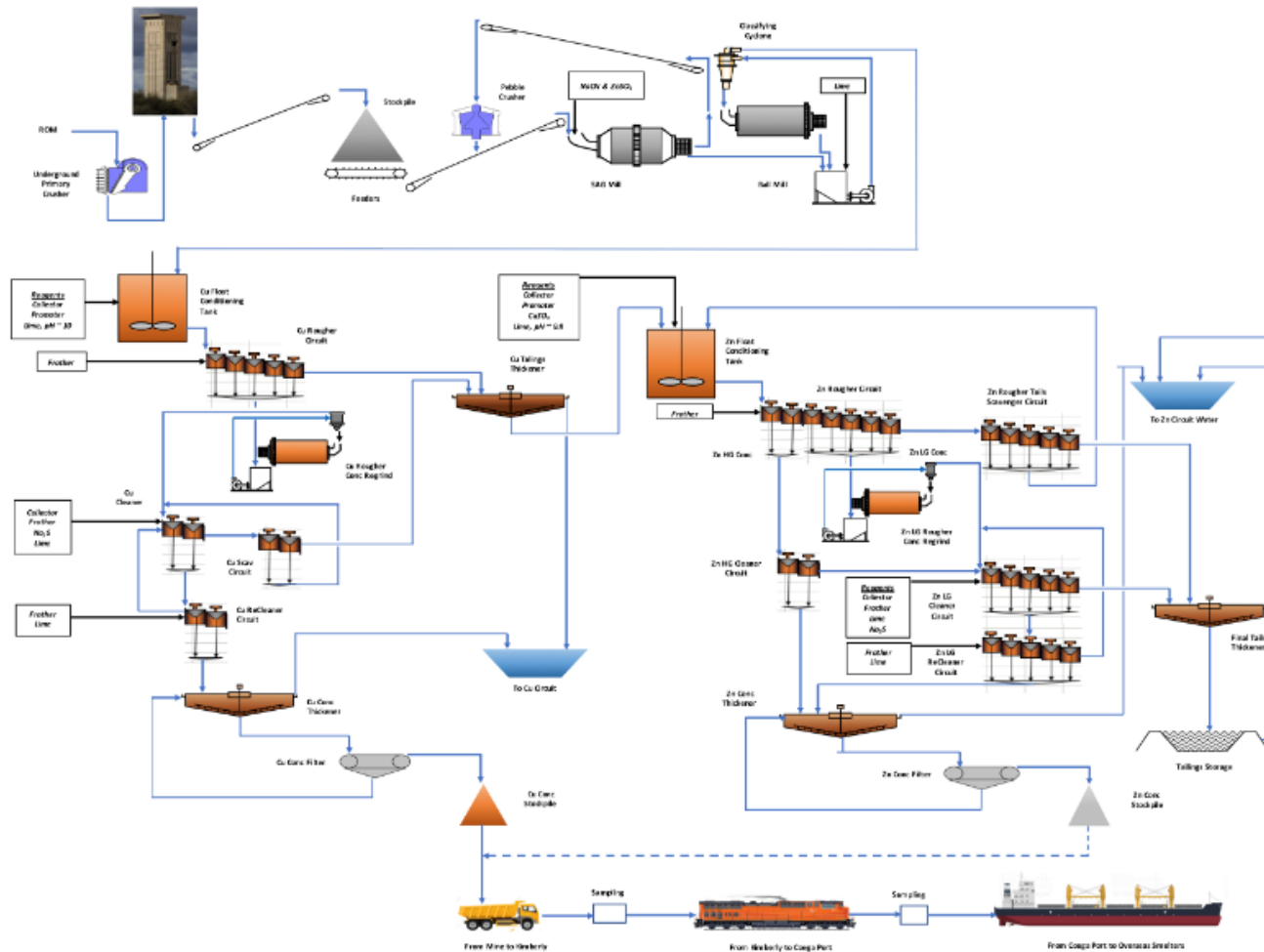
The Mineral Resources are inclusive of the Mineral Reserves

MINERAL RESERVE

Preiska Project Ore Reserves Estimate (Effective Date: 16 June 2019)								
Deposit	Ore Reserve Classification	Tonnage (Mt)	Cu		Zn		Cu Equivalent	
			Metal Tonnes (kt)	Grade (%)	Metal Tonnes (kt)	Grade (%)	Metal Tonnes (kt)	Grade (%)
+ 105 Supergene	Probable	0.48	7	1.5	16	3.3	11	2.2
Deep Sulphide	Probable	13.14	136	1.0	417	3.2	257	2.0
Total	Probable	13.62	143	1.1	433	3.2	268	2.0

Prieska Ore Reserves calculated using financial assumptions and modifying factors stated in the Study. Tonnes are rounded to thousands, which may result in rounding errors.

MINE FACE TO MARKET

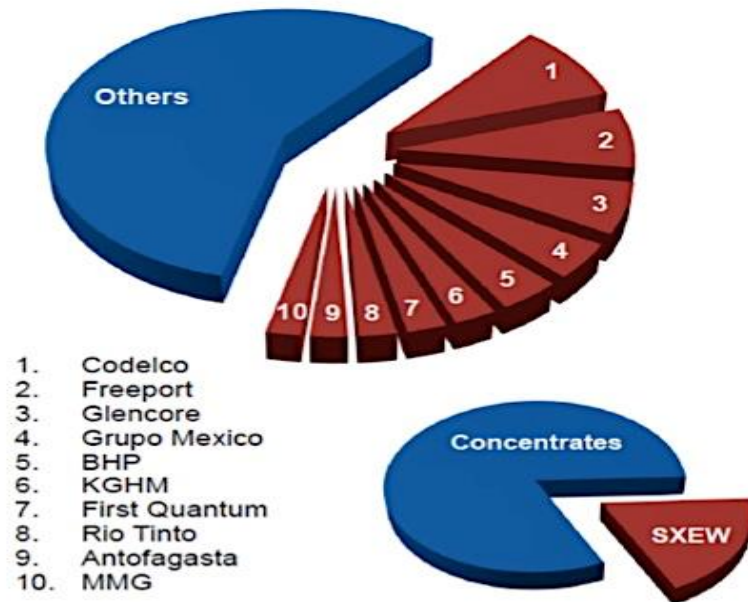


PROBLEM LOOMING: COPPER SUPPLY CHAIN

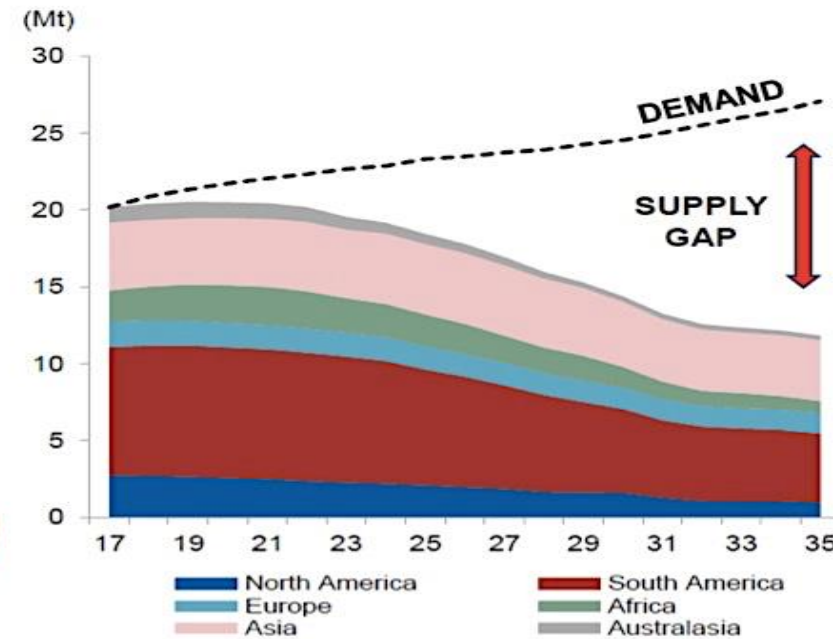
CRU

Without projects supply gap will exceed 15Mt by 2035

1. Copper Mine Production 2017: 20.4Mt

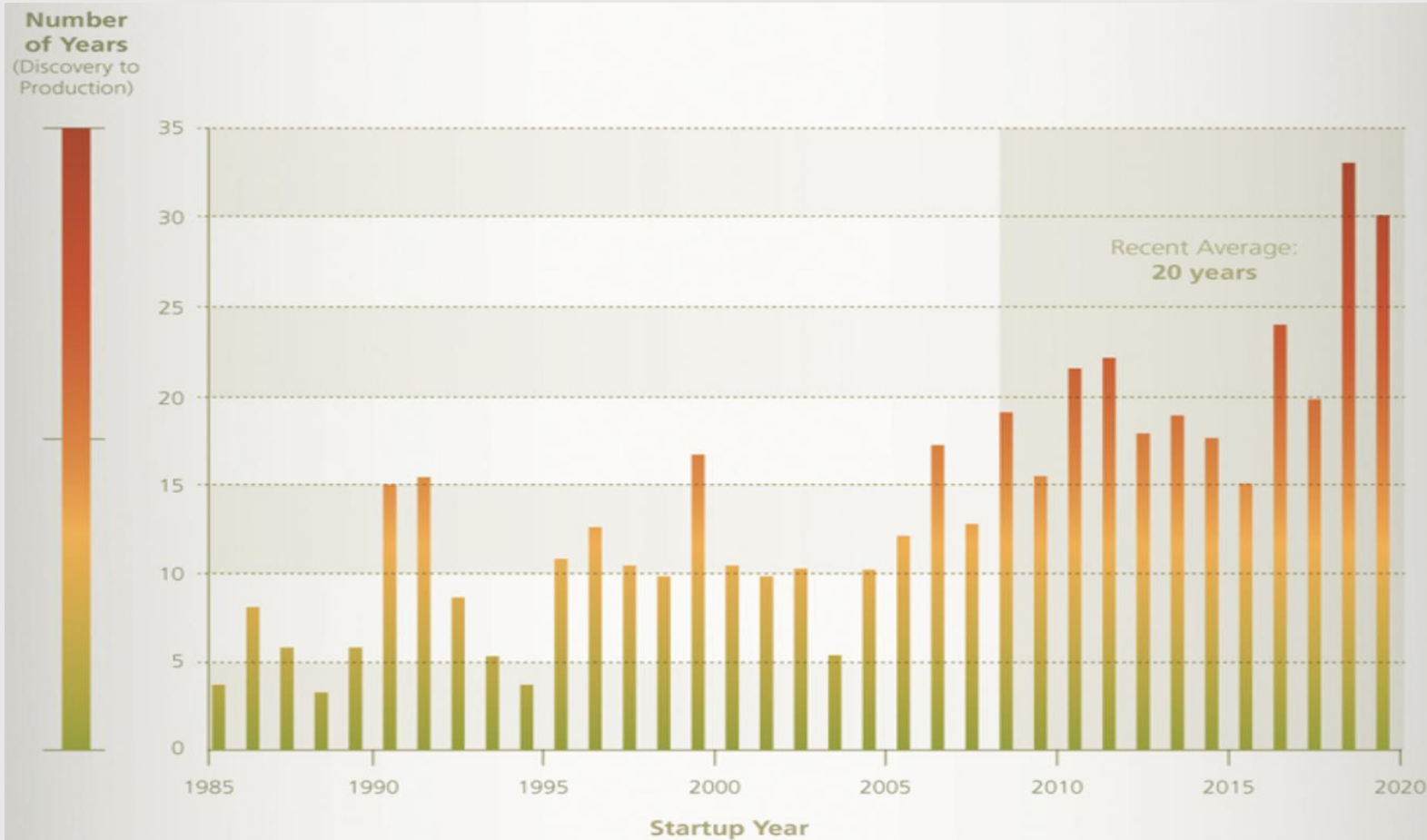


2. Committed* Mine Supply Forecast



* Committed = Existing Operations and Firm Expansions

LARGE COPPER MINES HAVE A **VERY LONG LEAD TIME**



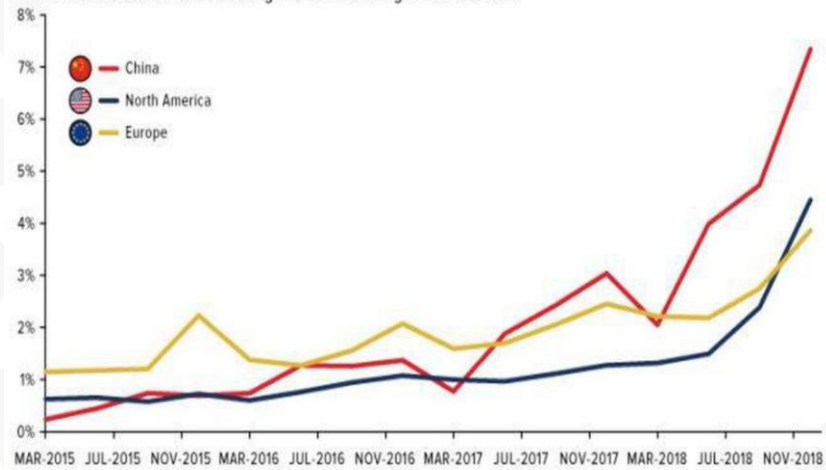
Not enough low-cost production mines already in development

Existing LOMs may be extended with substantially higher metal prices

ADD A MAJOR NEW COPPER DEMAND DRIVER

China Leads the World in Electric Vehicle Adoption

Electric Vehicle Sales as a Percentage of Total Passenger Vehicle Sales

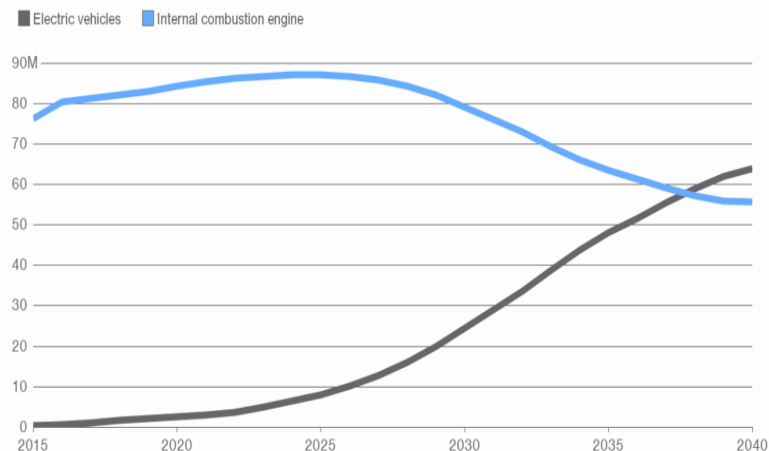


Source: China Association of Automotive Manufacturers, BNEF, U.S. Global Investors

China Leads the World in Electric Vehicle Adoption U.S. GLOBAL INVESTORS

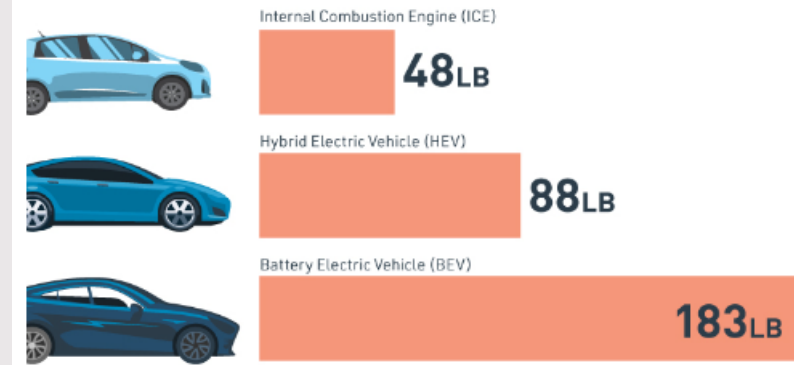
Overtaking Lane

Electric vehicle sales will surpass internal combustion engine sales by 2038



Source: Bloomberg New Energy Finance

COPPER CONTENT BY VEHICLE TYPE

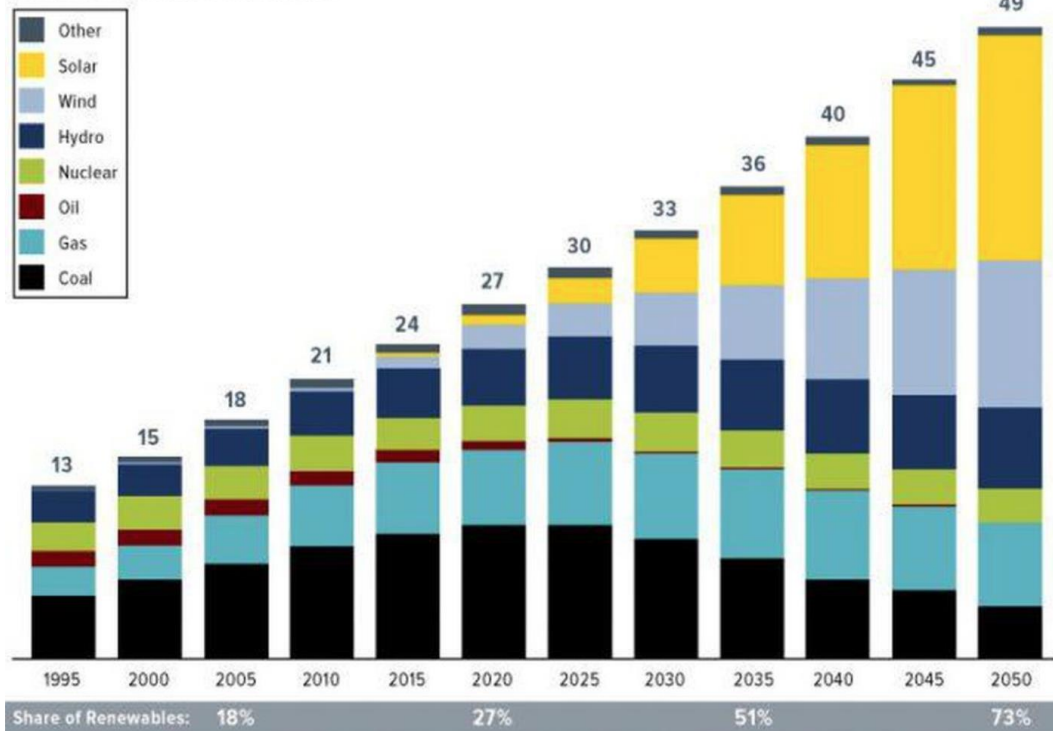


Source: Reuters

AND COPPER HUNGRY RENEWABLE ENERGY

Renewable Energy Projected to Account for Three Quarters of Global Power Generation by 2050

Thousands of Terawatt Hours (TWh)



Other includes biomass, geothermal and marine.

Source: McKinsey Energy Insights' Global Energy Perspective (January 2019), U.S. Global Investors

Renewable Energy Projected to Account for Three Quarters of Global Power Generation by 2050 U.S. GLOBAL INVESTORS

Copper in Solar Technology



There are approximately **5.5 TONS PER MW** of copper in solar power systems.

Source: Manganese Research

Commonly used in



HEAT EXCHANGERS
Used to transfer solar energy to heat water or air in heating systems



WIRING
Used for conducting electricity



CABLING
A group of insulated conductors used for transmitting electrical power or signals

Copper in Energy Storage

There are many ways to store energy, but every method uses copper. For example, a lithium ion battery contains **440 lbs** of copper per MW and a flow battery **540 lbs** of copper per MW.

Copper wiring and cabling connects renewable power generation with energy storage, while the copper in the switches of transformers help to deliver power at the right voltage.

Copper in Energy Storage



Copper wiring and cabling connect renewable power generation with energy storage devices while the copper in the switches of transformers help to deliver power at the right voltage.



CABLING

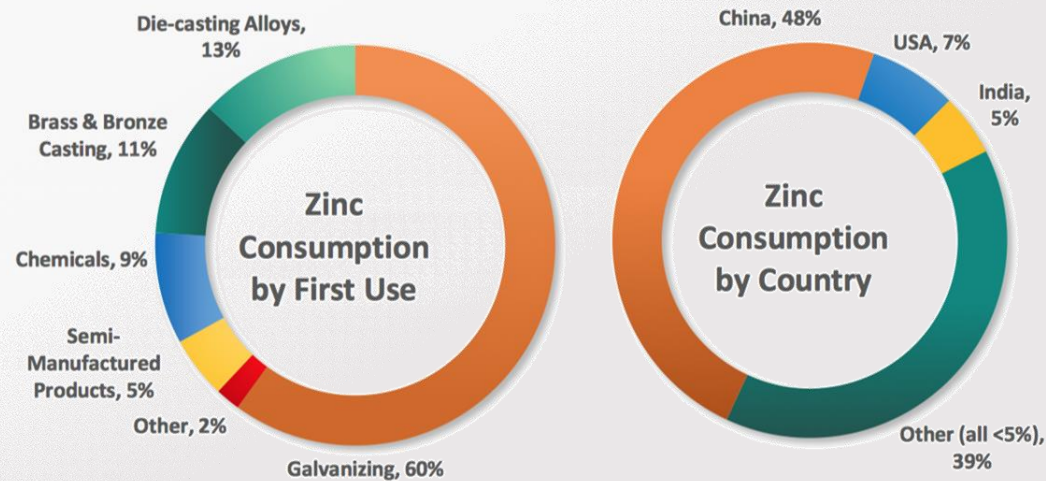


WIRING



SWITCHES

ZINC DEMAND – CONSISTENT CONSUMPTION GROWTH

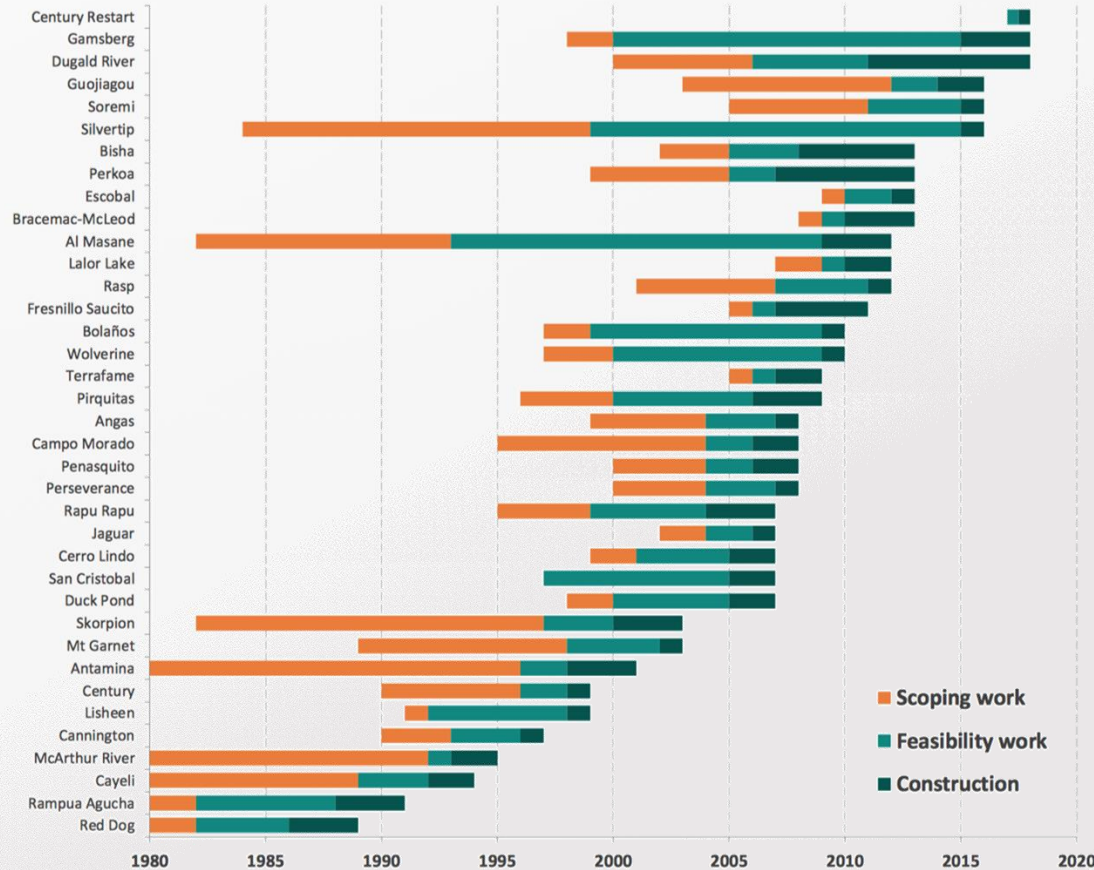


Source: Wood Mackenzie, June 2019

10 Year Zinc Outlook

- ~14 000 000t of zinc metal consumed in 2019
- ~50% of both metal production & consumption occurs in China
- Consumption dominated by Chinese living standard growth
- Global demand forecast to grow by 1.5% annually to 2020-2030
- 230 000tpa new zinc production required to supply projected demand growth
- Current supply attrition not being replaced in time

ZINC CONCENTRATE SUPPLY – NEW MINES TAKE TIME



Source: Wood Mackenzie, June 2018

- Global, zinc permitting, financing & development timelines are increasing
- Delays in new mine production continue:
 - Gamsburg (20-year development)
 - Dugald River (18-year development)
- Current development projects dominated by poor quality concentrate producers – unsustainable

Zinc Mine Development Timelines (Average timeline from scoping study to operations)

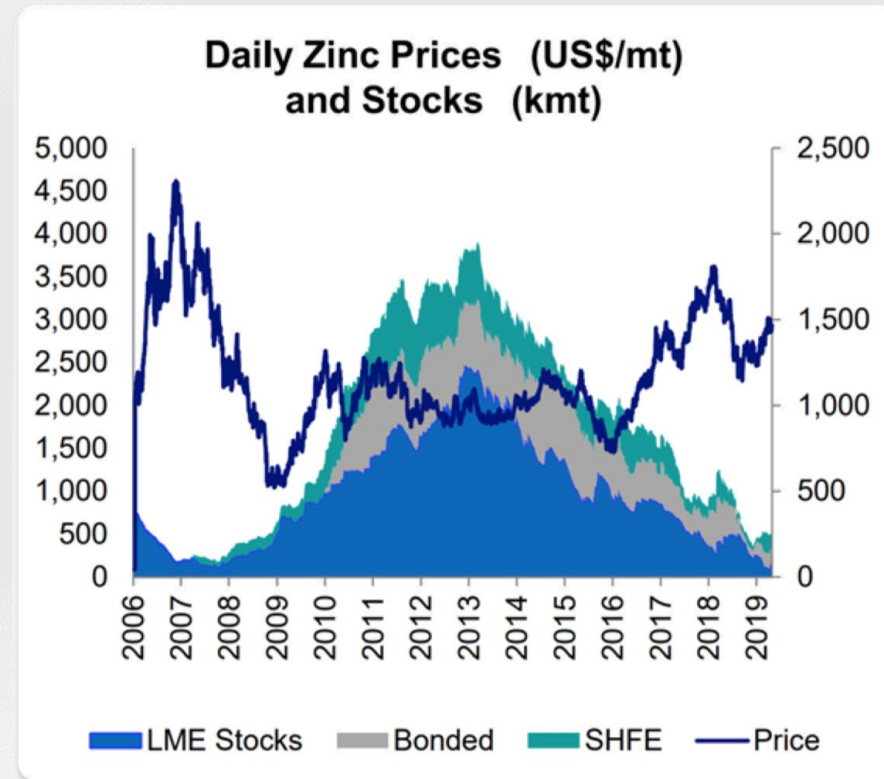
All zinc projects since 2000 **9 years**

Current Top 10 Zinc Producers **13 years**

ZINC METAL SUPPLY – NO STOCKS TO ABSORB SHOCKS

Zinc metal stocks at record lows – strong fundamentals with price subdued by sentiment

- Strong zinc metal fundamentals
 - Persistent annual metal deficits have driven metal stock to record lows
 - LME refined metal stocks at just 75 000t
- Perceived demand weakness keeping price down
 - Trade war
 - Global growth concerns
- **Unlike previous years, current zinc metal stocks are unable to absorb any future demand increase**





Orion Minerals

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

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





Orion Minerals

ASX/JSE: ORN

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