



# Hammer Metals Limited

ABN. 87 095 092 158

## Australian Energy and Minerals Investor Conference

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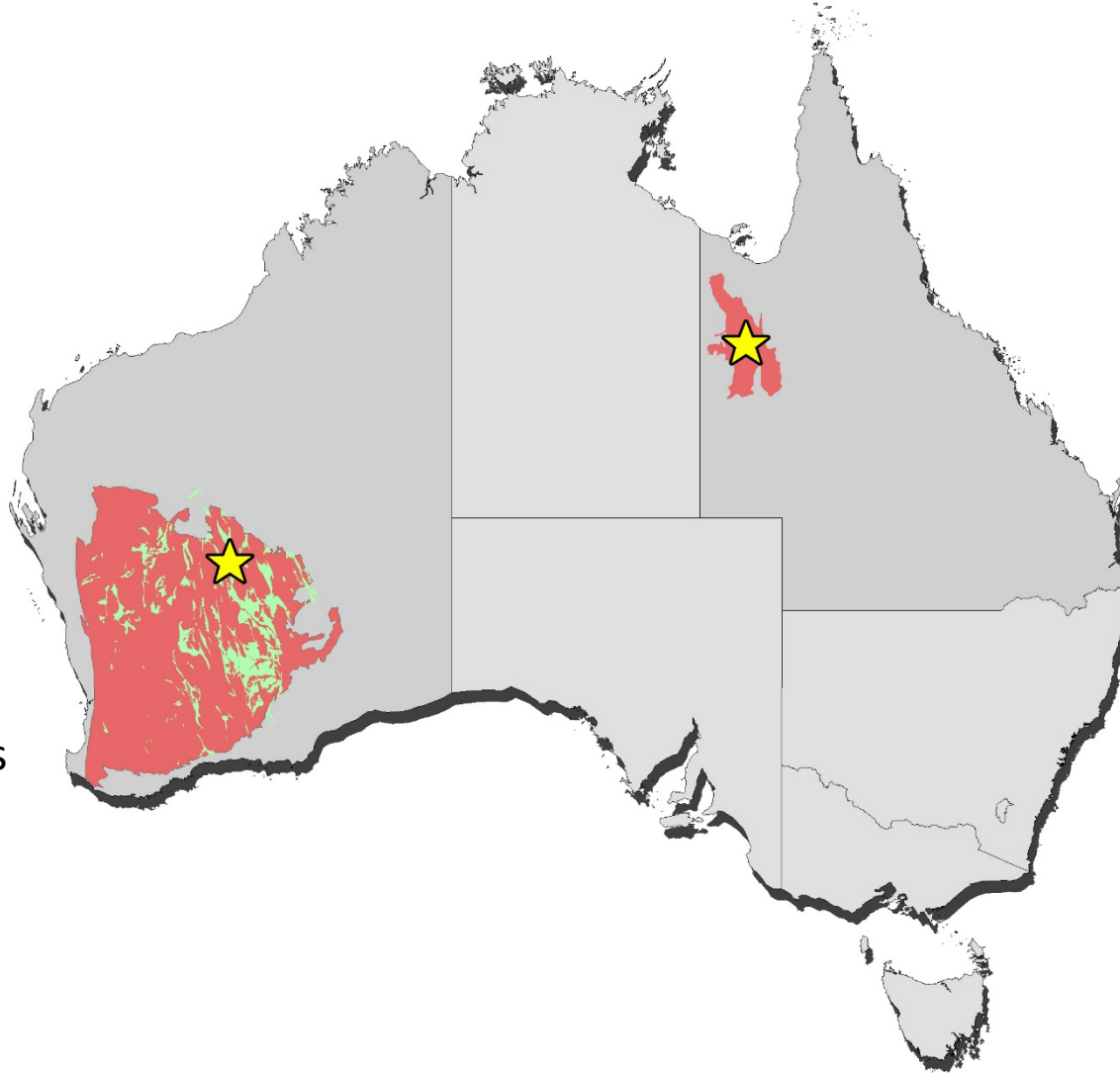
[www.hammermetals.com.au](http://www.hammermetals.com.au)

ASX: HMX

## Yilgarn Province

**Au**

- Bronzewing South
- Proposed acquisition\*
- Located in heart of 24 Moz Yandal Belt
- Under-explored tenements adjacent to infrastructure



\* Acquisition is subject to shareholder approval

## Mount Isa Province

**Cu-Au-Mo-Re  
(Mn-C-REE)**

- 2,500km<sup>2</sup> tenement holding in largest base metal province in the world
- Copper-gold-cobalt-molybdenum JORC 2012 mineral resources
- Manganese, Graphite and REE targets
- Large copper-gold (IOCG) exploration targets



## *The Hammer board has extensive technical and corporate experience*



<b>Russell Davis</b> Chairman BSc (Hons) MBA MAusIMM, AICD	<b>Ziggy Lubieniecki</b> Director BSc MAIG	<b>Nader El-Sayed</b> Director B.Comm, MA, C	<b>Mark Whittle</b> Chief Operating Officer BSc Geol Hons, MSc Geol MAusIMM	<b>Mark Pitts</b> Company Secretary
Geologist with +30 years' of exploration and development experience in Australia and overseas. Australian Manager for ASARCO Exploration, Founding Exploration Director and NED of Gold Road Resources Limited. Founding director and MD of Syndicated Metals Limited. Involved in the discovery of several gold and base metal deposits.	Geologist with +30 years experience in exploration, mining, management, property acquisition and ASX compliance. Held senior positions including Exploration Director for Gold Road Resources Limited. Credited with discovery of Gruyere Gold Deposit (+6Moz) for Gold Road Resources. AMEC Prospector of the Year 2015.	Risk management, corporate governance, strategic and financial background. A member of Australian Institute of Chartered Accountants. Currently Chief Executive Officer of Multiplant Holdings with previously senior management experience with KPMG.	Geologist with 30 years experience, 10 years of which has been in the Mount Isa Region. Previously Exploration Manager of Syndicated Metals Limited and Hammer Metals Limited.	Mr Pitts has over 25 years of experience working in commercial, corporate finance and public practice roles in Australia and overseas. Mr Pitts commenced his career in finance working for KPMG, before working in the property, healthcare and mineral extraction industries. Mr Pitts is a partner in the corporate advisory firm Endeavour Corporate

## Where ? – Two World Class Mining Districts

- Mount Isa Mining District (QLD) + Eastern Goldfields (WA)
- Multiple world-class base metal and gold deposits
- Well developed infrastructure – road, rail, power, ore treatment facilities
- Access to experienced workforce
- Applying modern exploration and data processing techniques to under-explored tenement packages

## Who ? - Experienced & successful team of explorers

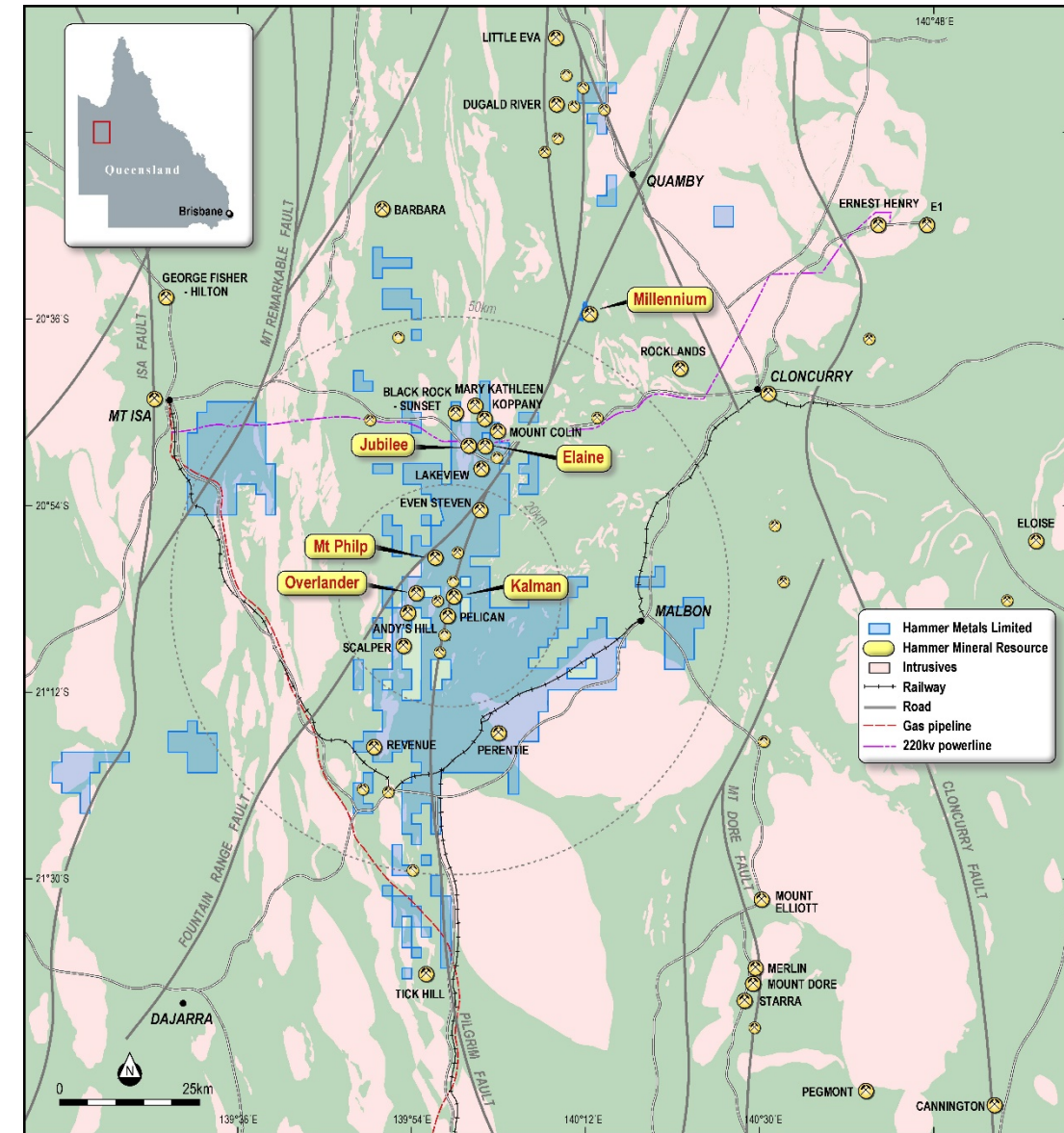
- Russell Davis (Founding director of Gold Road Limited, Syndicated Metals Limited and Hammer Metals Limited)
- Ziggy Lubieniecki (AMEC's 2015 Prospector of the Year for the 6 million ounce Gruyere gold discovery)
- Mark Whittle (substantial mining and exploration experience in the Western Australian Yilgarn region and the Mount Isa District)
- Lean and commercial operating approach



# Mount Isa Province: Range of early stage to advanced projects

- One of the world's most significant iron oxide copper-gold (IOCG) provinces and hosts almost 30% of the world's lead-zinc reserves
- Close to major players and mines:
  - Glencore (Mt Isa, George Fisher, Ernest Henry, Lady Loretta)
  - South 32 (Cannington)
  - Chinova Resources (Osborne, Merlin, Mt Elliott, Starra)
  - Round Oak Minerals (Mt Colin, Cloncurry, Barbara)
- Range of high quality IOCG grassroots targets including Overlander, Andy's Hill, Perentie and the Mt Philp Breccia
- Mining studies underway at Jubilee, Elaine, Kalman & Overlander to assess development options
- JORC 2012 deposits containing Cu, Au, Mo, Re, Co, Fe

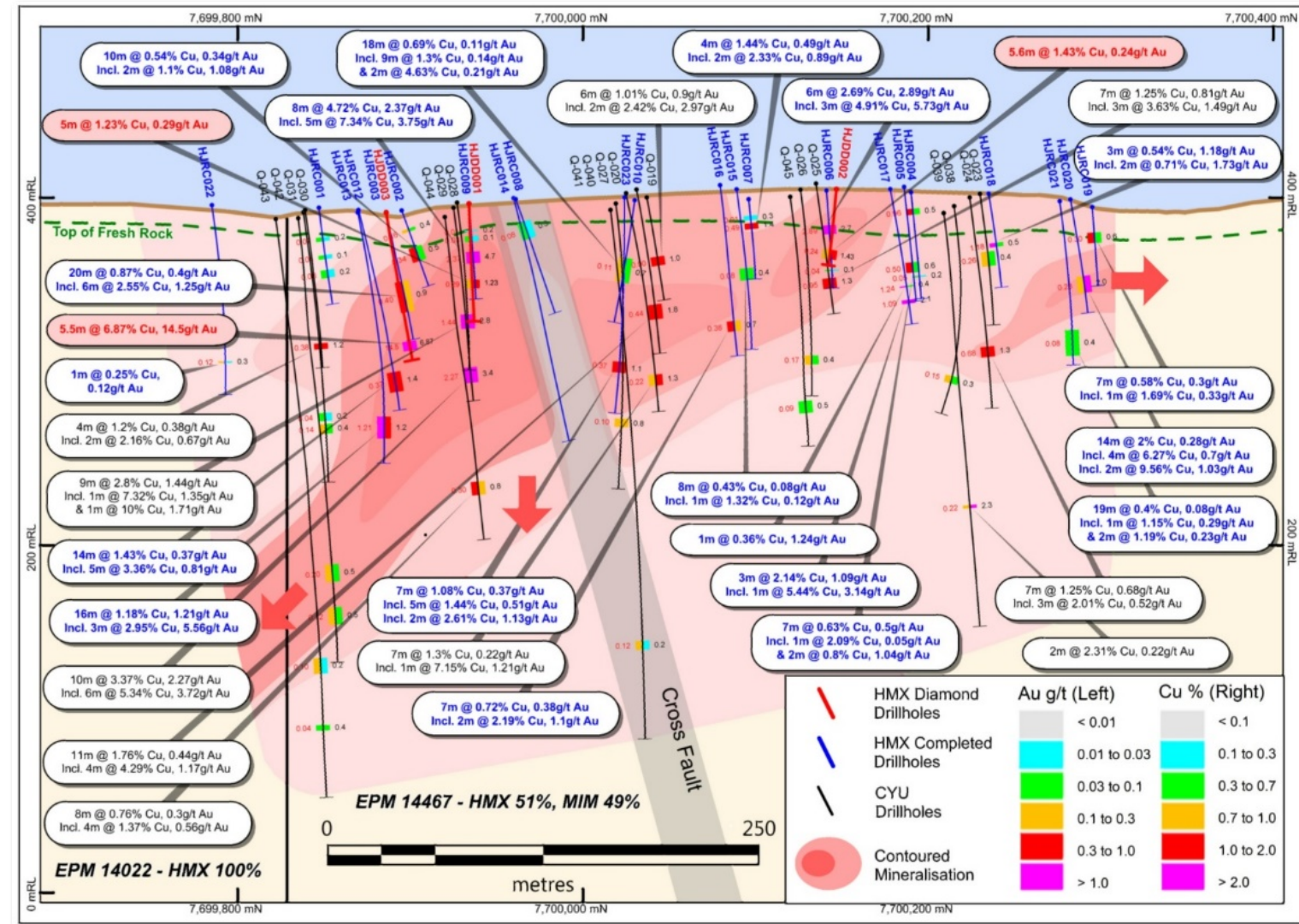
Deposit	Tonnes Mt	CuEq %	Cu %	Au g/t	Co %	Mo %	Re g/t	Fe %	Comment
Kalman	20	1.8	0.61	0.34	-	0.14	3.7	-	0.75% CuEq cut-off
Millennium	5.9	-	0.32	0.11	0.11	-	-	-	0.7% CuEq cut-off
Jubilee	1.4	-	1.41	0.62	-	-	-	-	0.5% Cu cut-off
Elaine	9.3	0.95	0.82	0.19	-	-	-	-	0.7% CuEq cut-off
Overlander	1.8	-	1.20	-	0.045	-	-	-	0.7% Cu cut-off
Mount Philp	30.5	-	-	-	-	-	-	39	



# Copper-Gold: Jubilee Deposit

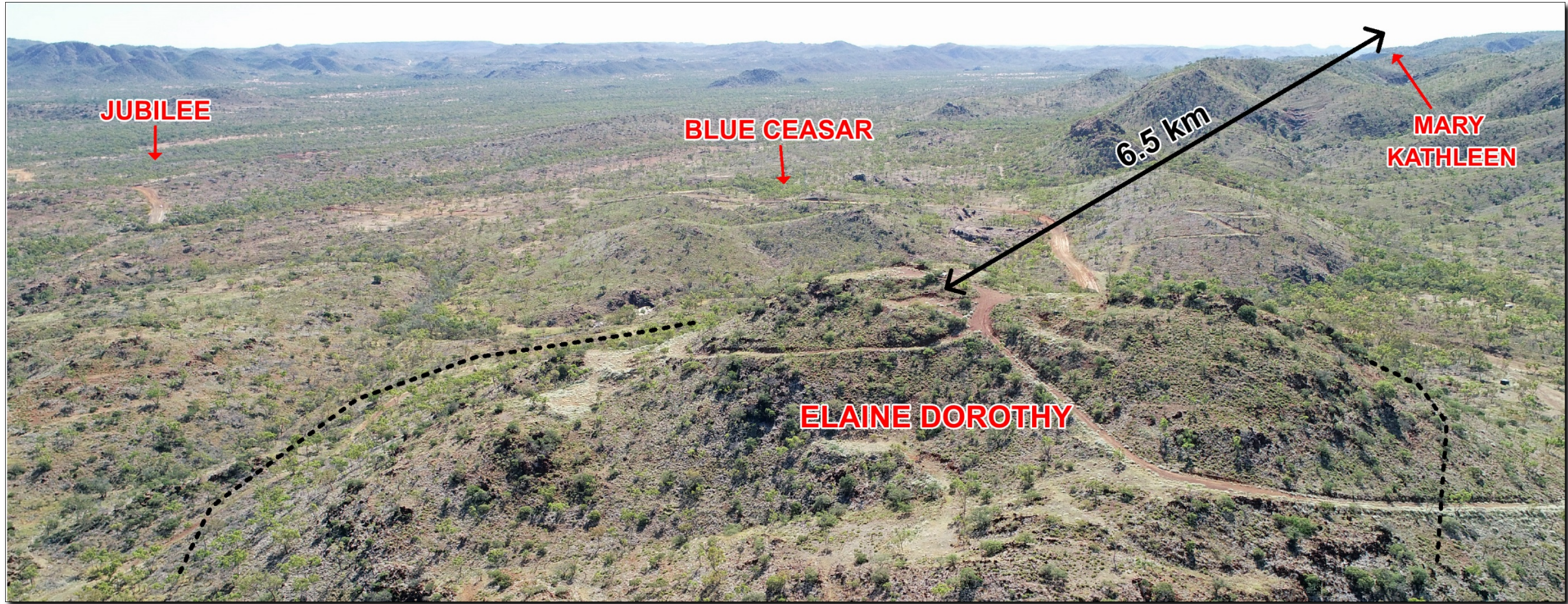


- Joint Venture with MIM - HMX 51% and operator
- 1km from bitumen highway and 55km from Mount Isa
- Inferred Mineral Resource estimate – **1.4Mt at 1.41% Cu & 0.62g/t Au**
- First metallurgical study complete – >90% copper metal recovery to rougher concentrate
- Elaine & Jubilee “look-a-likes” 5km to west at Black Rock and Sunset





# Copper-Gold: Elaine Deposit

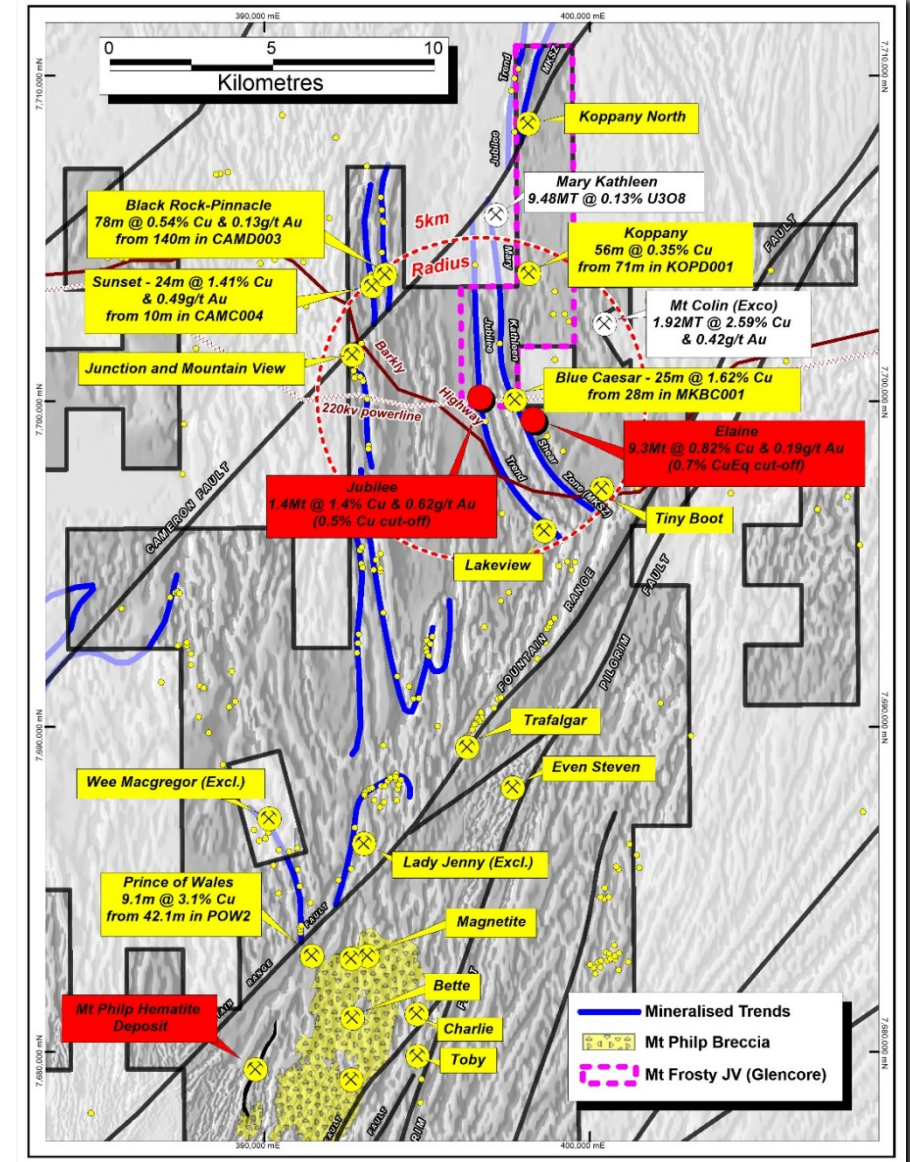




# Copper-Gold: Elaine Deposit



- 100% HMX – 5km from Jubilee
- 2km from bitumen highway - 55km to Mount Isa
- Inferred resource estimate of **9.3Mt at 0.82% Cu & 0.19g/t Au** (at a 0.7% CuEq Cu cut-off)
- Broad copper intersections – **206m at 0.53% Cu & 159m at 0.50% Cu** from **503m in MKED007**.
- High grade gold – **30m at 6.73g/t Au** from 508m in MKED009 and **26m at 1.7g/t Au & 0.24% Bi** from 160m in MKED026
- Preliminary metallurgic study - **Cu recovery >90% to cleaner concentrate**
- Multiple targets along strike – Elaine 2 and Elaine 3, Blue Caesar
- Conceptual pit optimisation studies underway





# Copper-Gold-Molybdenum-Rhenium: Kalman Deposit



*Kalman deposit looking south*



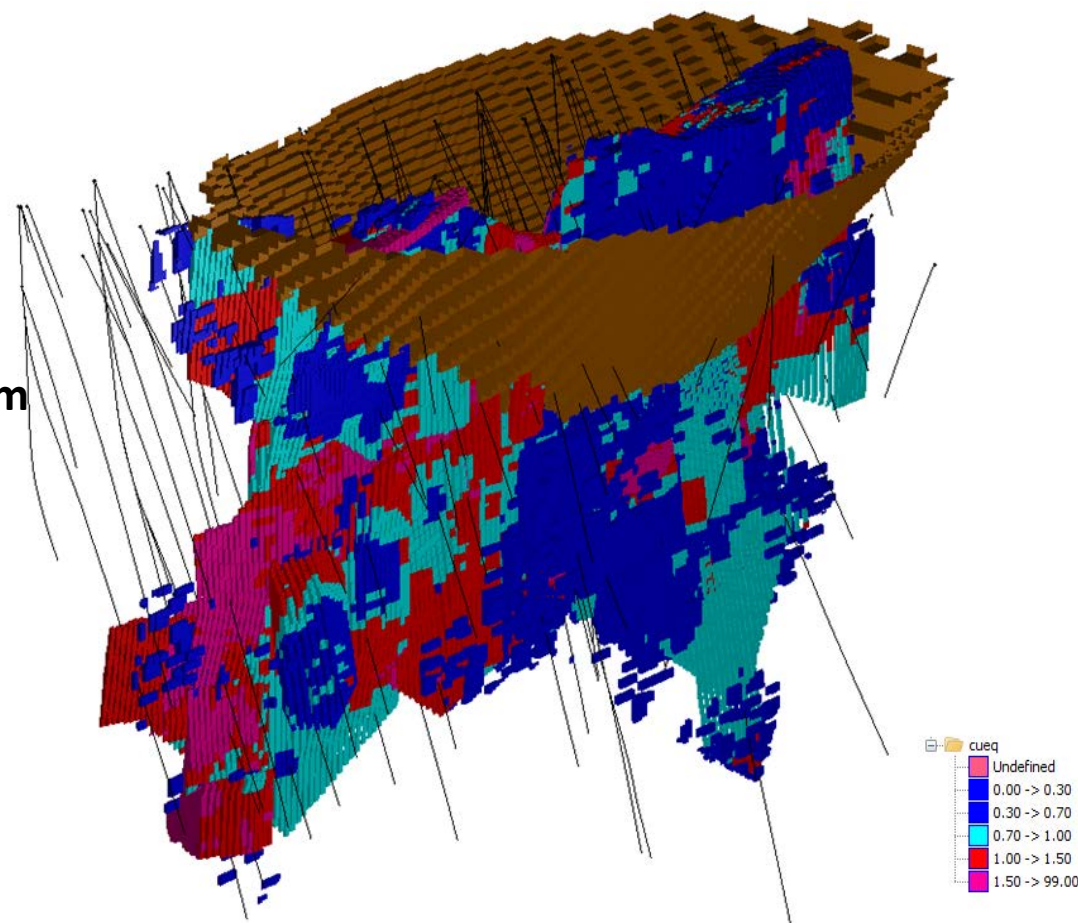
# Copper-Gold-Molybdenum-Rhenium: Kalman Deposit



- Ternary Lithium Molybdenum Oxide Anodes
- Open pit and underground potential, open at depth
- Strategy to use Kalman for base load plant feed.
- **20 Mt at 0.61% Cu, 0.16% Mo, 0.34g/t Au & 4g/t Re.**
- Significant intersections include:
  - **7.65m @ 23.38% Cu and 0.51g/t Au from 581.65m and 53m @ 2.1% Cu and 0.52g/t Au from 695m in K-106C**
  - **31m @ 1.01% Cu and 1.13g/t Au from 221m in K-53**
  - **62m @ 0.65% Mo & 11g/t Re from 152m incl. 7m @ 3.44% Mo, 57.3g/t Re and 0.33% Cu in K-132**
- Further pit optimisation studies planned for 2019



Massive chalcopyrite (33% Cu) intersected K-106C in Kalman Deep

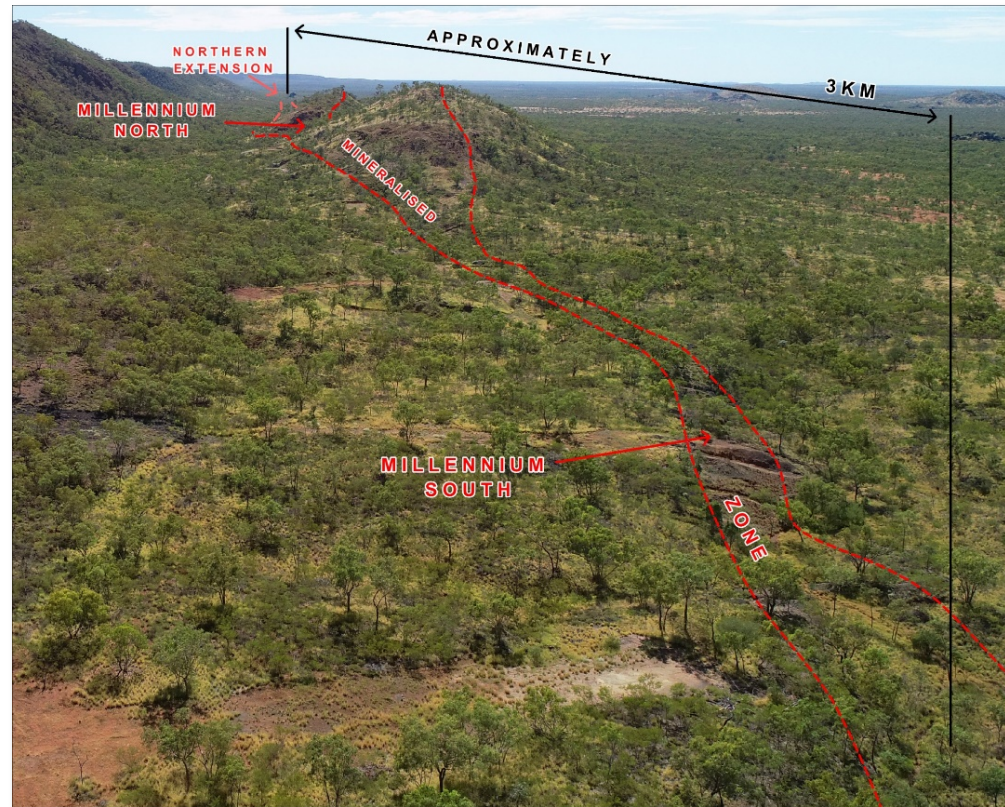


Kalman conceptual optimised pit shell showing drill traces  
– Looking northwest

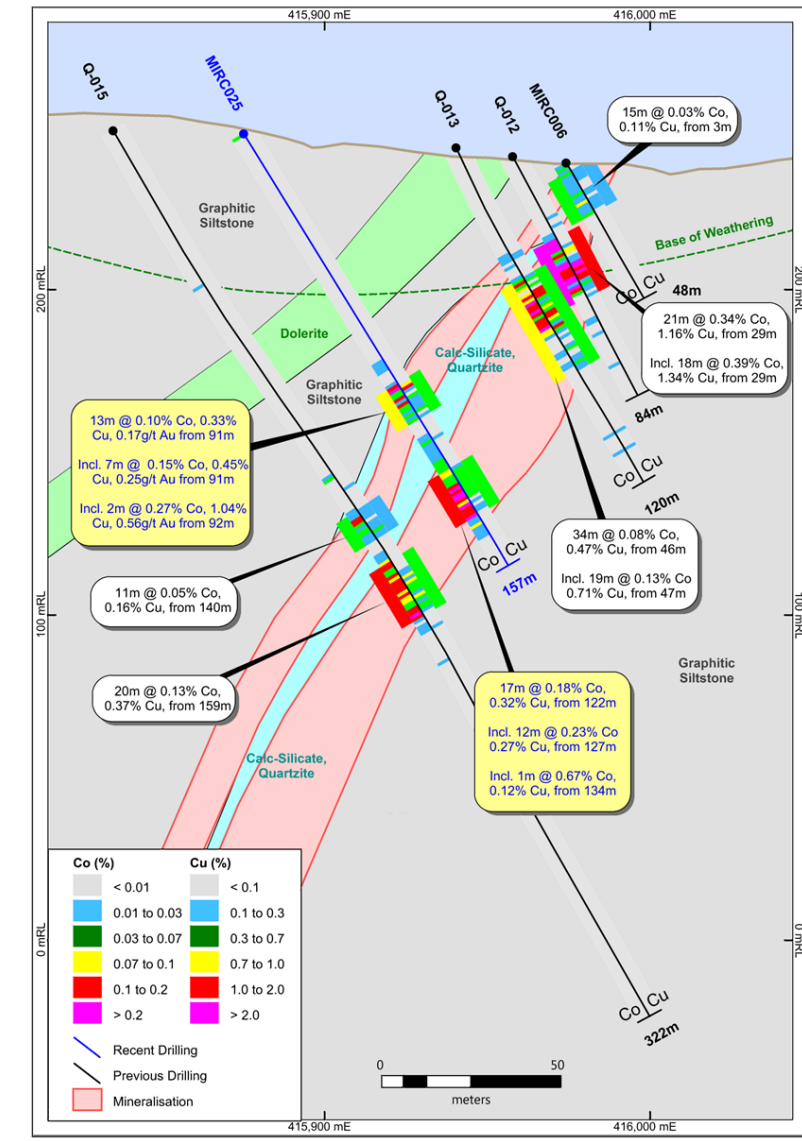


# Cobalt-Copper-Gold: Millennium Deposit

- JV with GEMC – Sale of HMX 75% interest in progress
- Maiden Mineral Resource in November 2016. Open at depth. Untested target zone along strike to north
- First metallurgical study complete. Cu recovery 95.1%, Co recovery 95.4%, Au recovery 81.4% to concentrate
- Resource and extensional drilling planned for 2019



Millennium Deposit looking north



Millennium cross section (looking north)



# Copper-Cobalt: Overlander Deposit



- Large mineralised system - 6km of strike and 6km west of Kalman
- Consists of a shear zone hosted mineralisation (Overlander North and South deposits), a central zone of rhyolite breccia hosted mineralisation and the northern IOCG target.
- Current resource **1.8 Mt at 1.2% Cu (reported at 0.7% Cu cut-off)**
- Strong IOCG alteration intersected in diamond drill holes OVD001 – OVD003 with coincident geochemistry, magnetic, gravity and IP anomalies breccias to east
- Some excellent copper grades and thickness:
  - **75m @ 1.33% Cu incl. 28m @ 1.91% Cu & 16m @ 1.92% Cu in OVR29**
  - **87m @ 0.74% Cu incl. 27m @ 1.4% Cu in OVR30**
  - **89m @ 1.1% Cu incl. 56m @ 1.4% Cu & 11m @ 2.4% Cu & 10m @ 1.6% Cu in OVR31**
- Significant untested potential

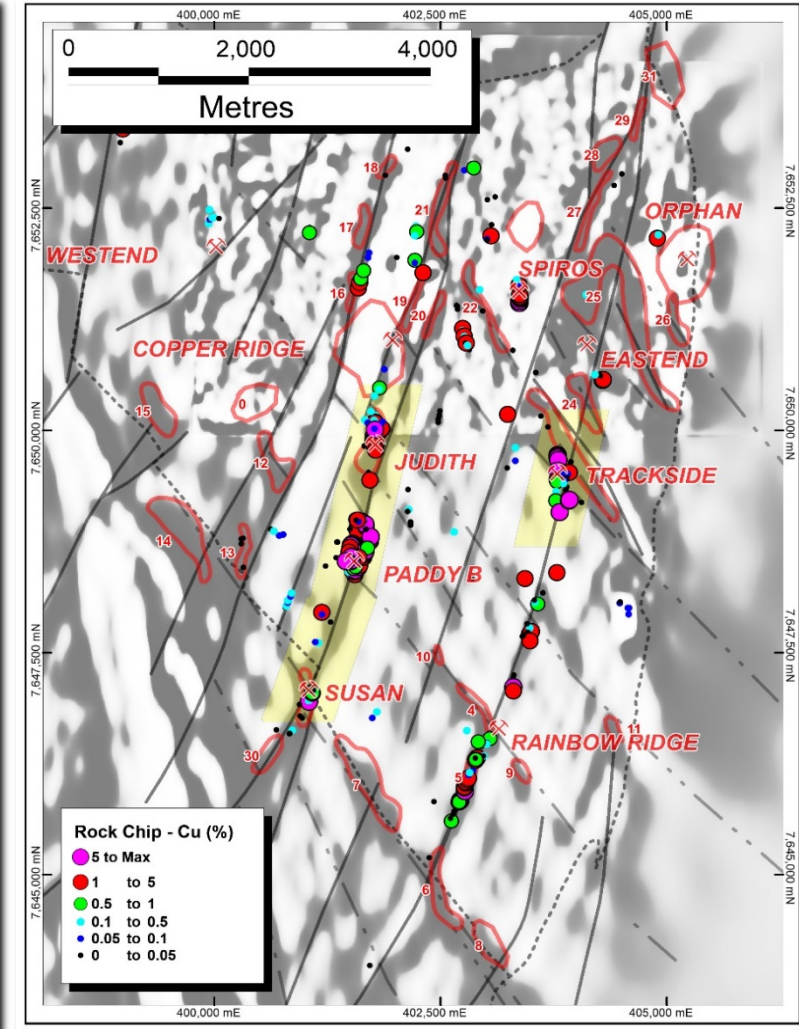
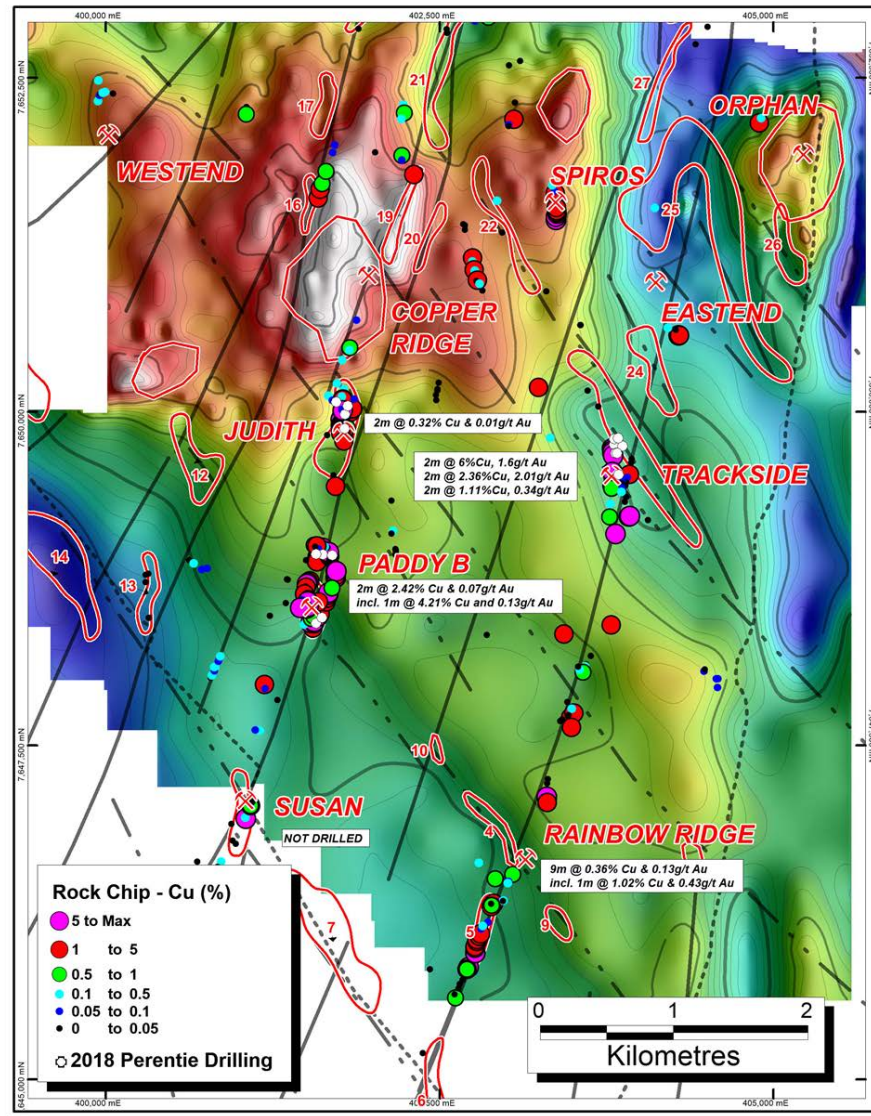


Overlander prospect (looking north) showing the location of Overlander south, central and north with the IOCG target



# Perentie Project – Copper-Gold

- Large regional-scale alteration zone with 30+ targets. 2 target styles
- Scout drilling (15 holes, 1329m) and a SAM survey completed in early December on Paddy B, Judith and Trackside prospects.
- First pass RC drilling confirms zones of high-grade copper mineralization coincident with the Perentie targets. Intersections include:
  - 2m at 2.42% Cu from 74m including 1m at 4.21% Cu and 0.13g/t Au from 75m in HDRC012 at Paddy B and,
  - 2m at 2.36% Cu and 2g/t Au from 37m in HDRC016 at Trackside.
  - 2m @ 1.11% Cu and 0.34g/t Au from 73m in HDRC018 at Trackside
  - 1m @ 1.05% Cu and 0.22g/t Au from 48m in HDRC019 at Trackside



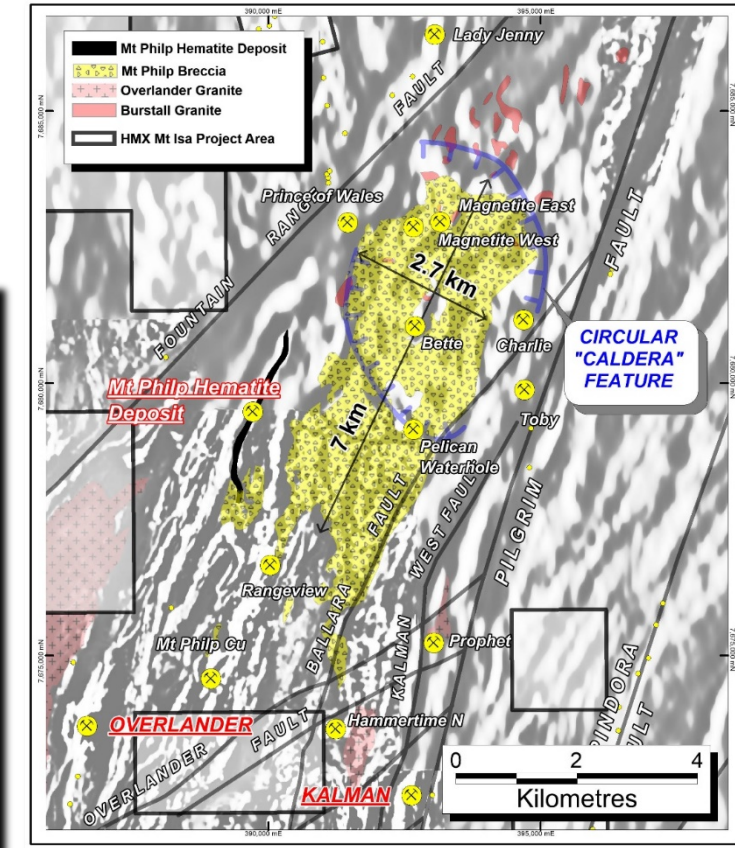
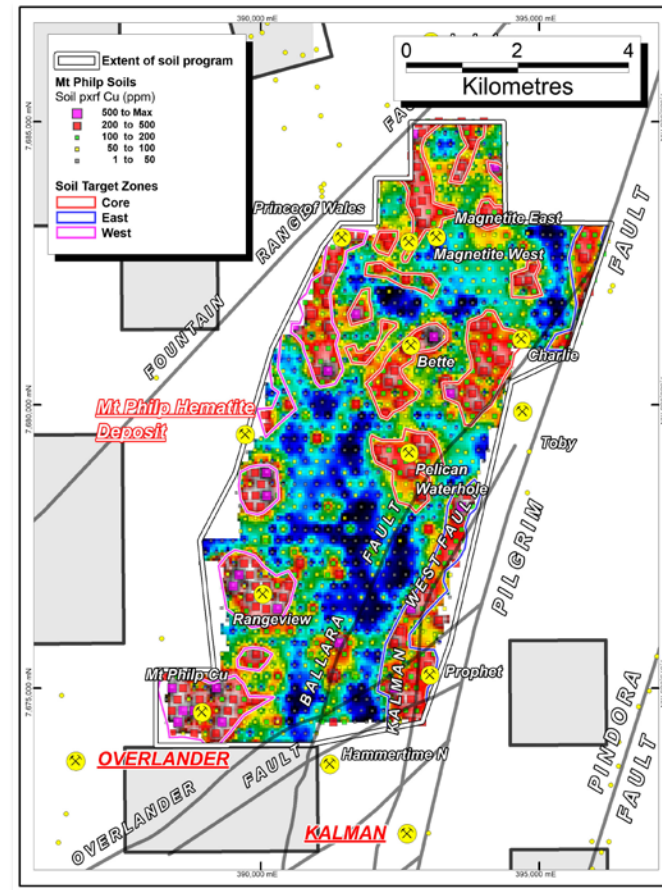


# Mount Philp Breccia IOCG Target: Copper-Gold

- Very large breccia complex (+20km<sup>2</sup>) with extensive alteration, brecciation and intrusive activity
- Never previously assessed for IOCG mineralisation – Tier 1 grassroots target. Received government grant to partly fund future work
- Portable XRF Cu response defines multiple targets. Lab Au analyses in progress
- Gravity, aeromagnetic interpretation and mapping to generate drill targets



Mt Philp Breccia showing magnetite and Hematite alteration





# Manganese: Manganese Ridge Prospect

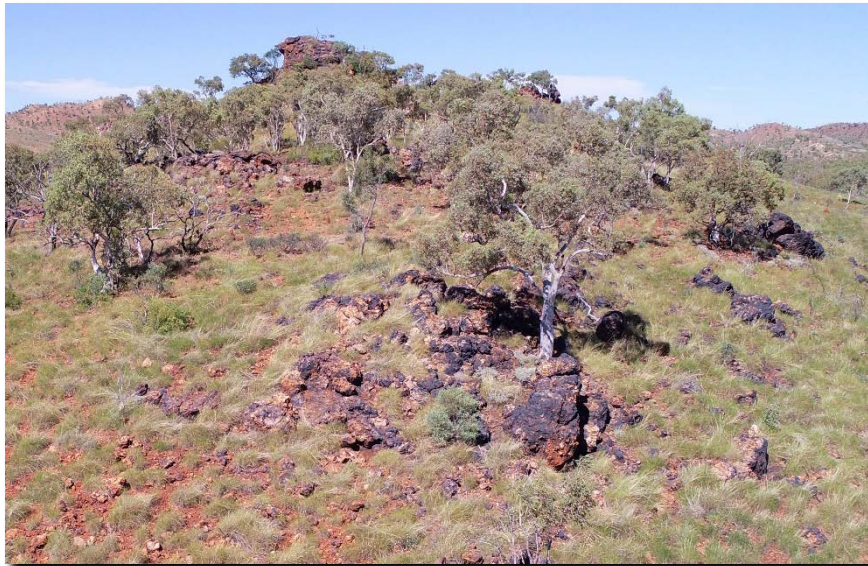


*Manganese Ridge southern zone looking south*

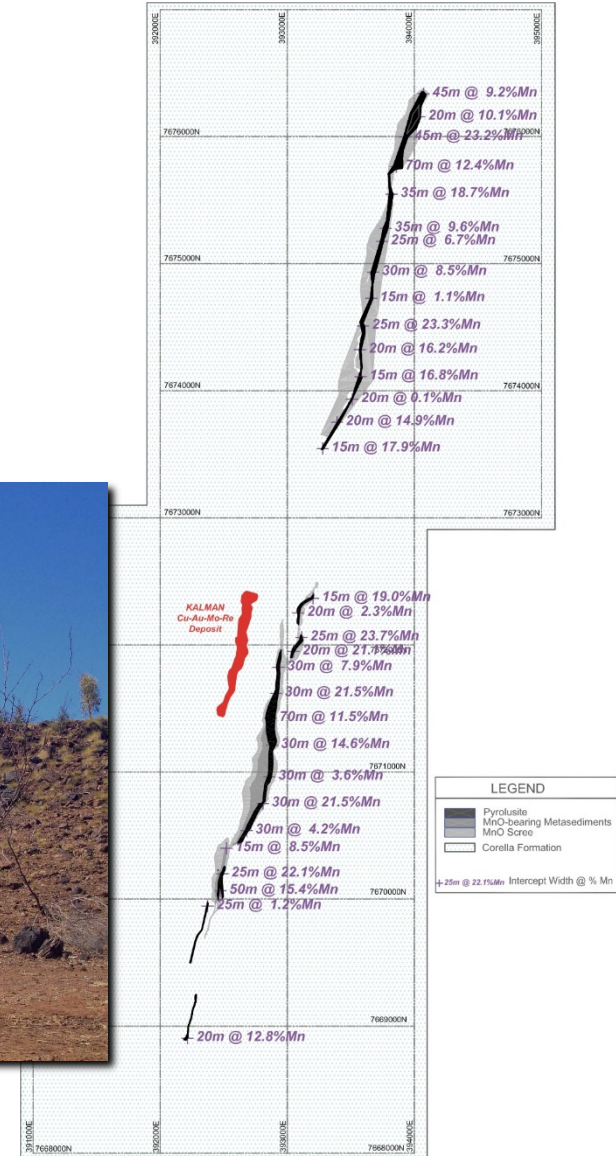


# Manganese: Manganese Ridge Prospect

- Lithiated manganese dioxide batteries (LMD) currently in use in Chevy Volt and Nissan Leaf.
- Manganese is an underrated battery metal.
- Encouraging results from Manganese Ridge Prospect
  - Sporadic pyrolusite ( $\text{MnO}_2$ ) outcropping over 15km strike length
  - Two main zones (totalling over 5km strike length)
  - Widths up to 70m at grades of up to 23% Mn
  - Not systematically drill tested



Examples of the pyrolusite quartz breccia of Manganese Ridge





# Graphite – Grassroots targets – Millennium and Kalman West

## Millennium

- Multiple occurrences of Graphitic Shales in Project area
- Tested via Rock Chip Sampling
- Grades of to 30.1% Total Graphitic Carbon in Rock Chips. Widths up to 30m
- Petrology indicates fine flake size ranges (2-35 microns)



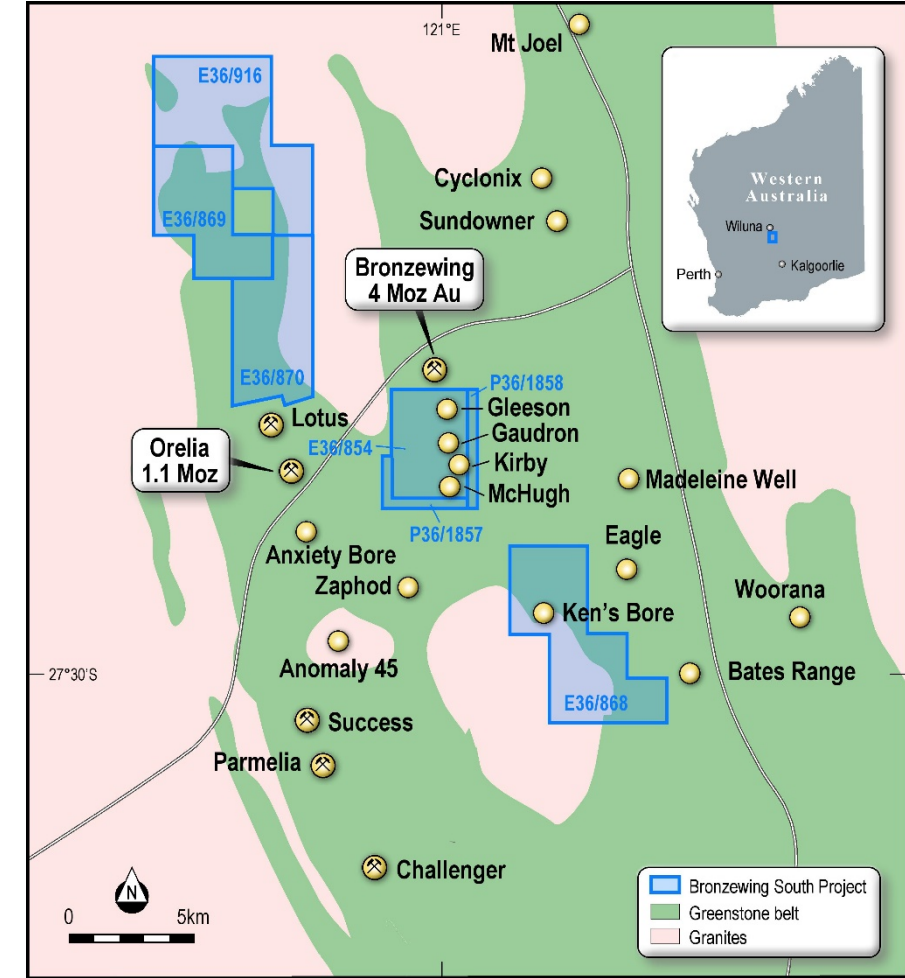
## Kalman West

- Graphitic Schist is a common lithology within the Kalman West structure
- VTEM conductors possibly indicate widespread graphite or sulphide occurrences elsewhere along the structure
- Rock chip results range between 7.42% and 10.95% Total Graphitic Carbon with an average of 9.35% TGC
- Petrology indicates flakes of up to 1.2mm in size (“Jumbo Flake”)





- 
- Geological map of the Wiluna area, Western Australia**
- Legend:**
- Mine / deposit (circle with cross)
  - Gold occurrence (star)
  - Greenstone belt (green)
  - Ultramafics (purple)
  - Granites (pink)
- Key Locations and Features:**
- Mines/Deposits:** Jundee (>10Moz), Wiluna Group (>11Moz), Matilda (0.76Moz), Honeymoon Well (Ni), Mt Keith (Ni), Corboys, Orelia (1.1Moz), Success, Parmelia, Cosmos (Ni), Challenger, Harmony (Ni), Perseverance (Ni), Darlot (>3.5Moz), Agnew Group (>8Moz), Lawlers Group, Thunderbox (>8Moz).
  - Geological Features:** Greenstone belts, Ultramafics, Granites.
  - Infrastructure:** Roads, Railways.
  - Scale:** 0 to 25 km.
  - Coordinates:** 121°E, 27°S, 28°S.
  - Inset Map:** Western Australia showing the location of Wiluna relative to Perth and Kalgoorlie.





# Proposed Gold Project Acquisition\* – Bronzewing South



## Bronzewing Trend

### 5km strike length – multiple targets

Previous drilling did not target Bronzewing-style steeply plunging mineralisation

Significant intersections include:

- 4m @ 6.53g/t Au from 56m (NEWBWSA0453)
- 1m @ 5.67g/t Au from 127m (NEWBWSD0001)
- 1m @ 3.45g/t Au from 161m, 1m @ 2.54 from 188m, 1m @ 4.42g/t Au from 230m and 1m @ 3.27g/t Au from 242m (NMTBWRCD3208)

## Orelia Trend

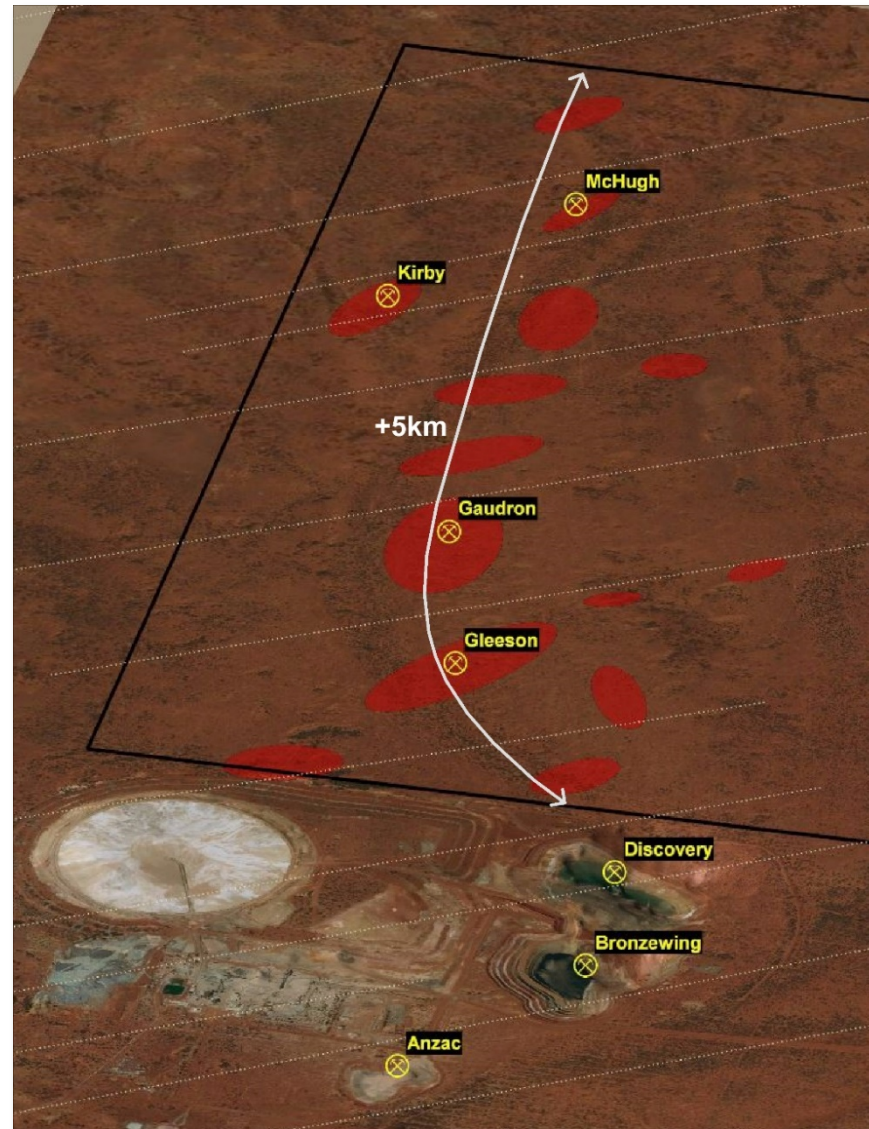
### 14km strike length

Significant intersections include:

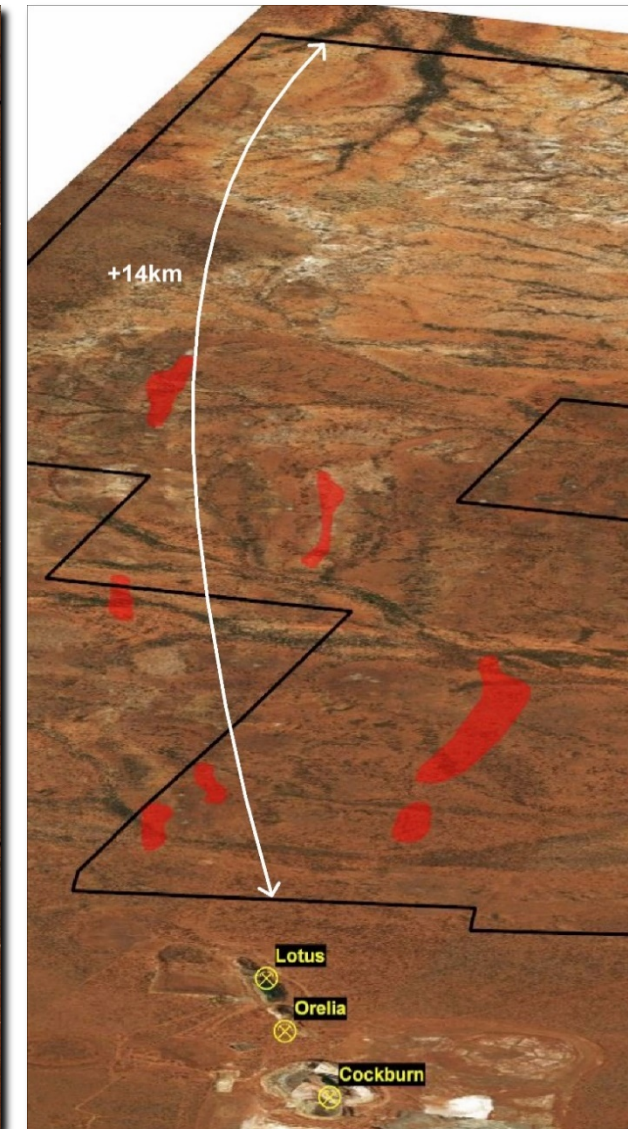
- 3m @ 12.0g/t Au from 18m (ARL6340/1057)
- 3m @ 3.60g/t Au from 9m (ARL6160/1152)
- 3m @ 2.35g/t Au from 6m (ARL6290/1055)

## Ken's Bore

- Strongly anomalous gold results in rock chips (up to 246g/t Au) coinciding with a 3km strike length gold-in-soil anomaly



Bronzewing Trend



Mt McClure Trend



# Hammer is leveraged to a rising copper and gold price



- HMX has strategic tenement positions in Two World Class Mining Districts – Mt Isa Mineral Province and the Eastern Goldfields
- Substantial defined Cu-Au-Mo-Co-Fe JORC 2012 and JORC 2004 Mineral Resource Estimates
- HMX is progressing multiple large-scale exploration targets
- HMX is focussed on the discovery of Tier One Ore Deposits
- Experienced exploration team
- Active exploration programs

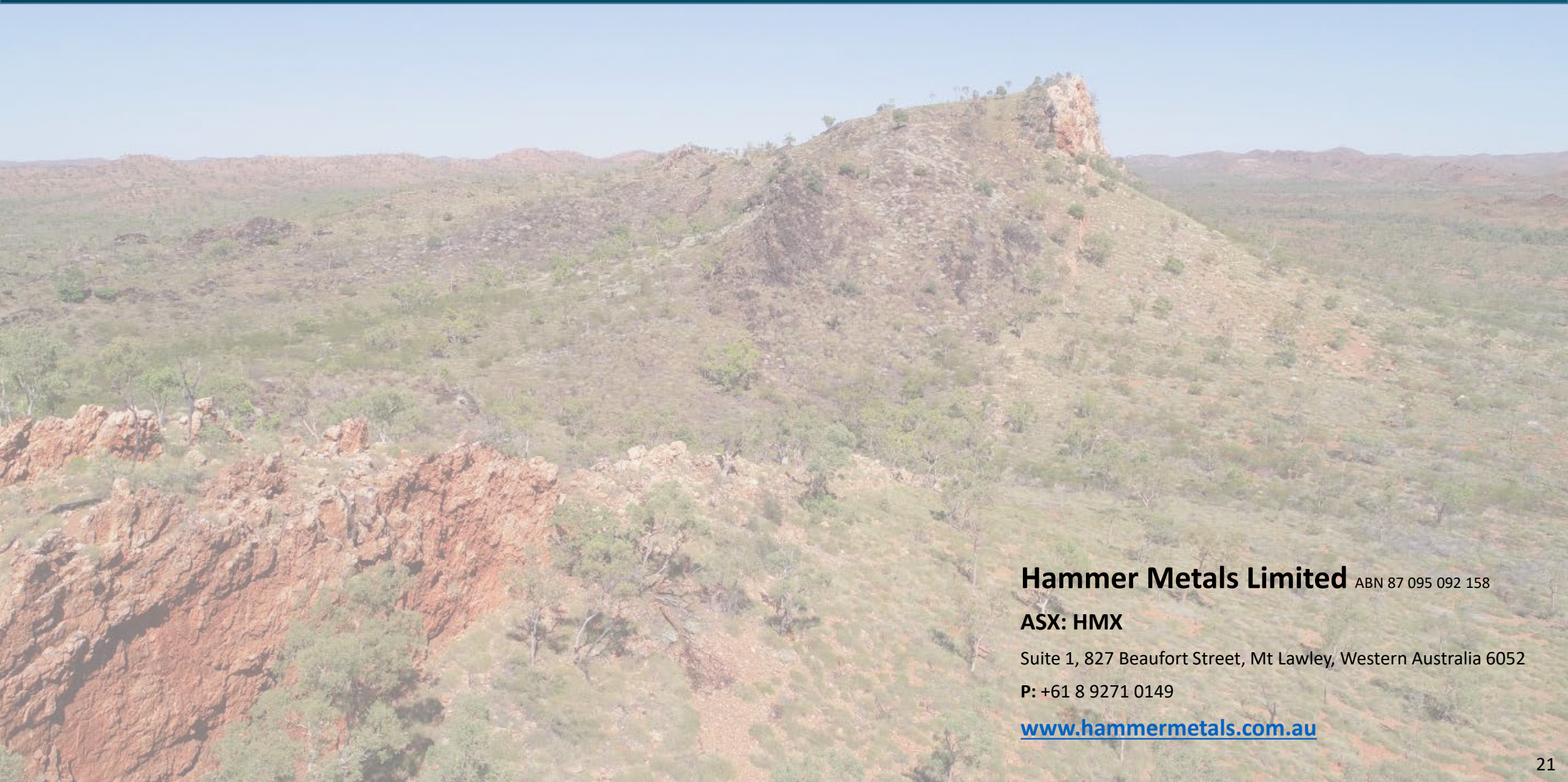


*Drill rig on site at Paddy B*



*Ziggy Lubieniecki at Perentie*





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# Disclaimer and Competent Persons Statement



## Disclaimer

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## Competent Persons Statements

Certain exploration drilling results relating to the Mount Isa Project were first disclosed under JORC code 2004 and have not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed.

### *Resource Estimates*

Where the Company refers to Mineral Resource Estimates for the following projects:

- the Kalman Deposit (refer ASX 27 Sept 2016);
- the Overlander North and South Deposit (refer ASX 26 Aug 2015);
- the Millennium Deposit (refer ASX 6 Dec 2016); and
- the Jubilee Deposit (refer ASX 21 December 2018).

It confirms that it is not aware of any new information or data that materially affects the information included in those announcements and all material assumptions and technical parameters underpinning the resource estimates with those announcements continue to apply and have not materially changed.

The Minerals Resource Estimates shown for Mt Philp and Elaine Dorothy were prepared and disclosed by previous owners refer to attached Mineral Resource Estimate Appendices

The information in this presentation that relates to Exploration Results or Mineral Resources is based on information compiled by Russell Davis who is a member of the Australasian Institute of Mining and Metallurgy. Mr Davis is a Director, shareholder and option holder of Hammer Metals Limited. Mr Davis has sufficient experience which is relevant to the style of mineralisation under consideration to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (The JORC Code). Mr Davis consents to the inclusion in the presentation of the matters based on their information in the form and context in which it appears.

The information in this presentation that relates to Exploration Results or Mineral Resources was reviewed by Mark Whittle who is a member of the Australian Institute of Mining and Metallurgy and a Consultant to Hammer Metals Limited. Mr Whittle has sufficient experience which is relevant to the style of mineralisation under consideration to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (The JORC Code). Mr Whittle consents to the inclusion in the presentation of the matters based on their information in the form and context in which it appears.

Where the Company refers to the proposed Bronzewing South Gold Project acquisition it refers to the ASX announcement dated 14 March 2019.

Both Mr Davis and Mr Whittle have an interest in Hammer Metals Limited shares and options.



# Kalman Resource Estimate & Notes on Copper Equivalence Calculation and Metallurgical Recoveries



The Kalman Mineral Resource Estimate was updated in August 2016 in accordance with the JORC Code (2012 Edition). (Refer to the ASX Release dated 27th September 2016 for full details of the Resource Estimate.) The company is not aware of any new information or data that materially affects the information in the HMX ASX announcement dated September 27<sup>th</sup>, 2016. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

## Kalman Deposit Mineral Resource Estimate

(Reported at 0.75% CuEq cut-off above 100m RL and 1.4% CuEq cut-off below 100m RL)

Classification	Mining Method	CuEq Cut-Off	Mt	Cu Eq %	Cu %	Mo %	Au g/t	Ag g/t	Re g/t
Indicated	Open Pit	0.75%	7.1	1.5	0.48	0.12	0.27	1.4	2.9
Inferred	Open Pit	0.75%	6.2	1.6	0.44	0.15	0.24	1.5	3.9
Inferred	Underground	1.40%	7.0	2.4	0.89	0.16	0.5	2.9	4.5
Total			20.0	1.8	0.61	0.14	0.34	1.9	3.7

- Note: (1) Numbers rounded to two significant figures
- Note: (2) Totals may differ due to rounding
- Note: (3)  $CuEq = Cu + (0.864268 * Au) + (0.011063 * Ag) + (4.741128 * Mo) + (0.064516 * Re)$

Copper equivalent (CuEq) grades were calculated using estimated block grades for Cu, Au, Ag, Mo and Re.

The CuEq calculation is based on commodity prices and metallurgical recovery assumptions as detailed in this release. Prices agreed to by Hammer were a reflection of the market as at 14/02/2014 and forward looking forecasts provided by consensus analysis. Metal prices provided are:

The CuEq calculation is based solely on commodity prices without assumptions about recovery or payability of the different metals. Prices agreed to by Hammer were a reflection of the market as at 14/02/2014 and forward looking forecasts provided by consensus analysis. Metal prices provided are: Cu: US\$7,165/t, Au: US\$1,324.80/oz, Ag: US\$22.40/oz, Mo: US\$16.10/lb

The forward looking price for Rhenium was estimated using available historical and current prices - Re: US\$5,329/kg

The CuEq equation is  $CuEq = Cu + 0.594464Au + 0.010051Ag + 4.953866Mo + 0.074375Re$  and was applied to the respective elements estimated within the resource block model.

## Assumed Metallurgical Recoveries

Based on the testing completed and the current understanding of the material characteristics it has been assumed that the Kalman material can be processed using a “typical” concentrator process flowsheet. The mass balance and stage metallurgical recovery of the four major elements were based on the metallurgical test results from the molybdenum zone sample and benchmarks. The final overall recovery (Table 3) was established from the mass balance and benchmarked against other operations and projects.

Process Stage	Copper	Molybdenum	Gold	Rhenium	Silver <sup>(1)</sup>
	% Rec'y	% Rec'y	% Rec'y	% Rec'y	% Rec'y
Bulk Rougher	95	95	82	86	82
Overall	86	86	74	77	74

(1) No data available for Silver recoveries so they have been assumed similar to Gold Recoveries

It is the company’s opinion that the metals used in the metal equivalent equation have reasonable potential for recovery and sale based on metallurgical recoveries in flotation test work undertaken to date. There are a number of well-established processing routes for copper molybdenum deposits and the sale of resulting copper and molybdenum concentrates.



# Millennium Resource Estimate & Notes on Copper Equivalence Calculation



The Millennium Mineral Resource Estimate was conducted in December 2016 in accordance with the JORC Code (2012 Edition). (Refer to the ASX Release dated 6<sup>th</sup> December 2016 for full details of the Resource Estimate.) The company is not aware of any new information or data that materially affects the information in the HMX ASX announcement. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

## Millennium Deposit Inferred Mineral Resource Estimate

(Reported at 0.7% CuEq and 1.0% CuEq cut-offs across four domains)

CuEq cut-off %	Mt	CuEq %	Cu %	Co %	Au g/t
1.00	3.07	1.29	0.35	0.14	0.12
0.70	5.89	1.08	0.32	0.11	0.11

•Note: (1) Totals may differ due to rounding

•Note: (2)  $CuEq = Cu_{pct} + (Co_{pct} * 5.9) + (Au_{ppm} * 0.9) + (Ag_{ppm} * 0.01)$

## Millennium Mineral Resource Estimate Metal Equivalent Information -

The Copper Equivalent (CuEq) equation has been calculated to reflect current and forecast pricing.

CuEq grades were calculated using estimated block grades for Co, Cu, Au and Ag. Metal prices used were:

• Cu: US\$4,600/t; Co: US\$27,000/t; Au: US\$1,330/oz; and Ag: US\$20/oz.

The copper equivalent equation is:  $CuEq = Cu \% + (Co \% * 5.9) + (Au ppm * 0.9) + (Ag ppm * 0.01)$

Cut-offs of 0.7% and 1.0% CuEq has been applied for reporting Mineral Resources.

Metallurgical test-work indicated that acceptable copper-cobalt sulphide concentrates could be produced via conventional processing methods. Based on the test-work conducted, it is the company's opinion that all metals used in the metal equivalent calculation have a reasonable potential to be recovered.

Test No.	High Grade Composite - Optimum Test – Combined Rougher Concentrate								
	Product	Cu		Co		Au		As	
		%	% Rec’y	%	% Rec’y	ppm	% Rec’y	%	% Rec’y
HG-7	Cu Con	20.6	90.8	0.48	5.4	5.1	45.6	0.23	2.5
	Co Con	0.4	4.3	3.12	89.9	1.5	35.8	3.39	93.1
	Total Con		95.1		95.4		81.4		95.6

Test No.	Low Grade Composite - Optimum Test – Combined Rougher Concentrate								
	Product	Cu		Co		Au		As	
		%	% Rec’y	%	% Rec’y	ppm	% Rec’y	%	% Rec’y
LG-5	Cu Con	16.9	85.2	0.26	7.8	4.3	51.0	0.14	4.9
	Co Con	0.5	6.1	1.16	83.9	0.9	27.0	1.00	88.4
	Total Con		91.3		91.7		77.9		93.2

The 100%-owned Millennium polymetallic deposit is situated on granted mining leases (ML's 2512, 2761, 2762, 7506 and 7507) approximately 32km northwest of Cloncurry in North West Queensland.

# Overlander Mineral Resource Estimate

The 100%-owned Overlander Project is situated 60 kilometres to the southeast of the mining centre of Mount Isa in North West Queensland and 6 kilometres to the west of Hammer's Kalman copper-gold-molybdenum-rhenium deposit. It is a high-priority target area for both shear-hosted copper and IOCG copper mineralisation. The Overlander North and South copper Deposits are situated approximately one kilometre apart within a common shear zone.

Drilling in the Overlander North deposit extends to a vertical depth of approximately 430m and the mineralisation was modelled from surface to a depth of approximately 420m below surface. Drilling in the Overlander South deposit extends to a vertical depth of approximately 215m and the mineralisation was modelled from surface to a depth of approximately 180m below surface. The resource estimates are based on good quality RC and diamond drilling data. Drill hole spacing is predominantly on a 40m by 20m spacing with additional drill holes between sections targeted at the higher grade cores of the deposits.

Following additional drilling in 2014 and 2015, The Mineral Resource Estimates for the Overlander North and South shear-hosted copper Deposits were revised by Haren Consulting and reported in accordance with the guidelines of the JORC Code (2012 Edition). They contain combined resources of 1,772,000 tonnes at 1.2% copper in the indicated and inferred categories (Refer to the ASX release dated August 26<sup>th</sup> 2015). The company is not aware of any new information or data that materially affects the information in the HMX ASX announcement. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

## Overlander North and South Mineral Resource Estimate

(Reported at 0.7% Cu cut-off)

Overlander North Resource					
Classification	Tonnes	Cu %	Co %	Cu t	Co t
Indicated	253,000	1.4	254	3,414	64
Inferred	870,000	1.3	456	11,350	396
Total	1,123,000	1.3	410	14,764	461

Overlander South Resource					
Classification	Tonnes	Cu %	Co %	Cu t	Co t
Indicated	-	-	-	-	-
Inferred	649,000	1	500	6,352	327
Total	649,000	1	500	6,352	327

Overlander Combined Mineral Resource					
Classification	Tonnes	Cu %	Co %	Cu t	Co t
Indicated	253,000	1.4	254	3,414	64
Inferred	1,518,000	1.2	476	17,700	723
Total	1,772,000	1.2	445	21,112	788

•Note: (1) Numbers rounded to two significant figures to reflect appropriate levels of confidence

•Note: (1) Totals may differ due to rounding



# Jubilee Mineral Resource Estimate

The 51%-owned Jubilee Deposit is situated 50 kilometres west of Mount Isa in North West Queensland. It is a high-priority target area for shear-hosted copper mineralisation.

Mineralisation was modelled from surface to a depth of approximately 325m below surface.

The resource estimates are based on good quality RC and diamond drilling data. Drill hole spacing is predominantly on a 50m by 40m spacing with additional drill holes between sections targeted at the higher grade cores of the deposits.

The Mineral Resource Estimate was conducted by H&S consultants Pty Ltd and reported in accordance with the guidelines of the JORC Code (2012 Edition). They contain combined resources of 1.41Mt at 1.41% copper and 0.62g/t Au in the inferred category (Refer to the ASX release dated December 20<sup>th</sup>, 2018). The company is not aware of any new information or data that materially affects the information in the HMX ASX announcement. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

## Jubilee Inferred Mineral Resource Estimate

(Reported at 0.5% Cu cut-offs)

Category	Domain	Mt	Cu %	Cu (t)	Au g/t (Cut)	Au oz (Cut)
Inferred	Mod-Slightly Weathered	0.07	1.51	1,000	0.55	1,200
Inferred	Fresh	1.34	1.41	19,000	0.63	27,100
Inferred	<b>Total</b>	<b>1.41</b>	<b>1.41</b>	<b>20,000</b>	<b>0.62</b>	<b>28,300</b>

•Note: (1) Totals may differ due to rounding

# Elaine Project Mineral Resource Estimate & Notes on Copper Equivalence Calculation and Metallurgical Recoveries



The 100%-owned Elaine Cu-Au deposit is situated on granted exploration licence 14022, approximately 50km east of Mount Isa in North West Queensland. A resource estimate was first completed and reported to ASX by previous owners (Chinalco Yunnan Copper Resources Limited, now AUKing Limited) on 18<sup>th</sup> October 2012. The resource was conducted by Mine Development Associates. The company is not aware of any new information or data that materially affects the information in the AKN ASX announcement. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

A review of the Resource Estimate was completed for the purpose of compiling this statement and the principles and methodology of the resource estimation procedure and the resource classification procedure are considered to comply.

The Elaine Project Mineral Resource Estimate is based on approximately 30 holes to a depth of 450 metres below surface.

The current resource totals 9.3 million tonnes (Mt) grading 0.82% Cu and 0.19g/t Au and is classified as being all in the Inferred category. The resource is tabulated below at a variety of CuEq % cut-offs.

CuEq cut-off %	Mt	CuEq %	Cu %	Au g/t
0.10	64.34	0.34	0.31	0.05
0.20	32.77	0.54	0.49	0.08
0.25	26.10	0.62	0.56	0.09
0.30	22.81	0.67	0.60	0.10
0.40	17.81	0.76	0.68	0.12
0.50	15.05	0.82	0.73	0.13
0.60	12.47	0.88	0.77	0.15
<b>0.70</b>	<b>9.31</b>	<b>0.95</b>	<b>0.82</b>	<b>0.19</b>
0.80	6.46	1.04	0.87	0.25

## Elaine Inferred Mineral Resource Estimate Metal Equivalent Information

- The Copper Equivalent (CuEq) equation has been calculated to reflect current and forecast pricing.

CuEq grades were calculated using estimated block grades for Cu and Au.

Metal prices used were:

• Cu: US\$5,400/t;

• Au: US\$1,300/oz;

The copper equivalent equation is:  $CuEq \% = Cu \% + (Au \text{ ppm} * 0.70216)$

Cut-offs of 0.7% have been applied for reporting Mineral Resources.

Metallurgical test-work indicated that acceptable copper-cobalt sulphide concentrates could be produced via conventional processing methods. Based on the test-work conducted, it is the company's opinion that all metals used in the metal equivalent calculation have a reasonable potential to be recovered.

Test No.	April 2013 Elaine Metallurgical Testwork				
	Product	Cu		Au	
		%	% Rec'y	ppm	% Rec'y
Test 11	Final cleaner concentrate	29.9	92.2	2.73	31.7
	Rougher concentrate	8.1	96.0	1.22	54.4
Test 13	Final cleaner concentrate	22.9	77.1	0.88	23.9
	Rougher concentrate	11.6	91.6	0.67	42.3

•Note: (1) Numbers rounded to two significant figures to reflect appropriate levels of confidence



# Mt. Philp Mineral Resource Estimate

The Mineral Resource Estimate is based on 48 diamond and reverse circulation (RC) drillholes completed in 2011 for a total of 3,801 metres (m). Drilling comprises fans located on a nominal 100 m pattern along the strike length of the ironstone. The Mineral Resource was estimated and reported in-house by Cerro Resource NL.

The current resource totals 19.1 million tonnes (Mt) grading 41.4% iron and 37.9% silica (Table 1-1) in the Indicated category and 11.4 million tonnes (Mt) grading 33.8% iron and 47.4% silica in the Inferred category. This resource is open at depth.

A resource estimate was first completed and reported to ASX by the previous owners on 28<sup>th</sup> September 2012. The estimate was first prepared and disclosed under JORC 2004 and it has not been updated to comply with JORC 2012 on the basis that the information has not materially changed since it was last reported. A review of the resource estimate was completed for the purpose of compiling this statement and the principals and methodology of the resource estimation procedure and the resource classification procedure have been reconciled with the CIM Resource Reserve definitions and found to comply.

Mt Philp Mineral Resource						
Classification	Mt	Fe %	P %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI %
Indicated	19.11	41	0.02	38	1.2	0.29
Inferred	11.40	34	0.02	48	2.0	0.31
Total	30.51	39	0.02	42	1.6	0.30

- Note: (1) Numbers rounded to two significant figures to reflect appropriate levels of confidence
- Note: (1) Totals may differ due to rounding