



# Hammer Metals Limited

ABN. 87 095 092 158

## Data & Research Innovations for Exploration in Northwest Queensland

March 21<sup>st</sup> , 2019

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ASX: HMX

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*Fountain Springs Fault looking south*

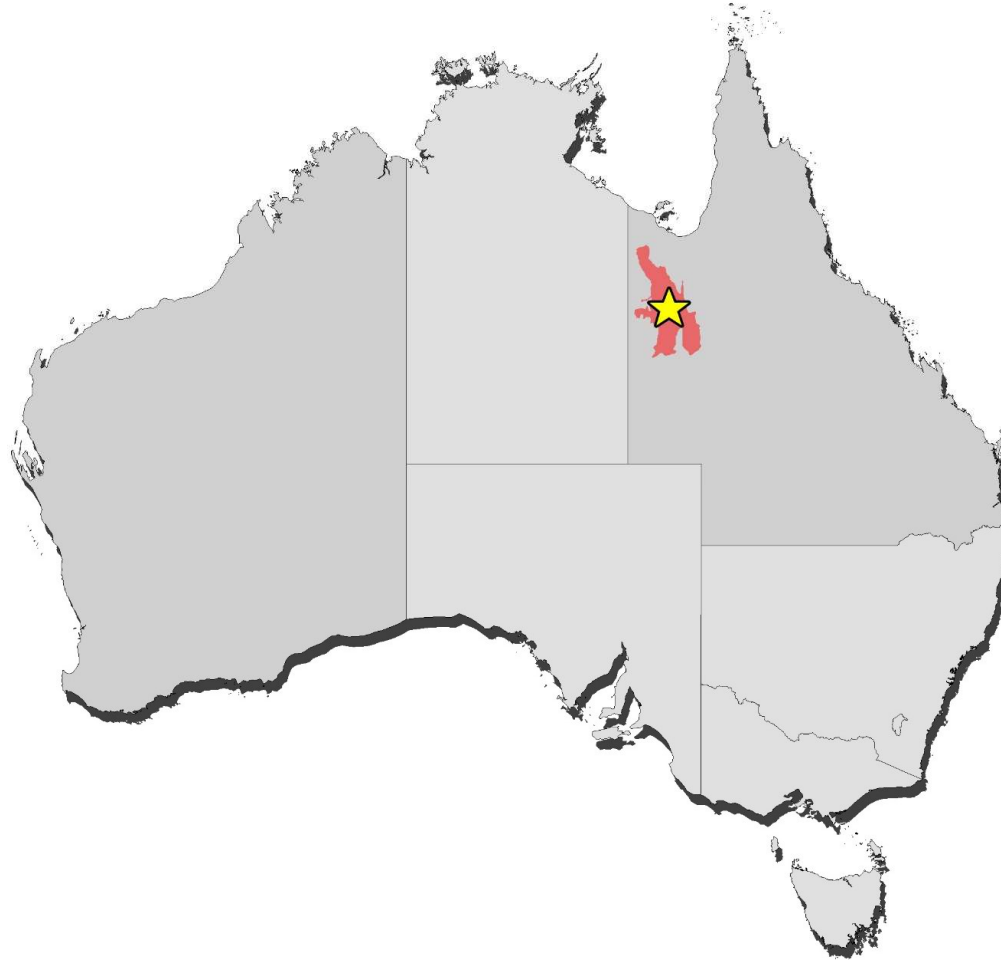
# Summary



- Presentation will be a summary of Hammers' 2018 and 2019 proposed activities
- **Presentation structure**
  - Summary
  - Board
  - Strategy
  - **Mount Isa Project**
    - **Resources**
      - Jubilee Cu-Au Deposit – Mt Frosty JV
      - Elaine Cu-Au Deposit
      - Overlander Cu-Au Deposit
      - Kalman Cu-Au-Mo-Re Deposit
      - Millennium Cu-Co-Au Deposit
    - **Brownfields and Greenfields**
      - Black Rock Cu-Au Target
      - Mt Philp Cu-Au and CEI Target
      - Perentie Cu-Au Target
      - Regional Targets
  - **Bronzewing South Project (WA)**
    - **Brownfields**
      - Bronzewing South
      - Mt McClure Trend



*Lady Jenny looking north towards Mary Kathleen*



## Mount Isa Province

### Cu-Au-Mo-Re

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

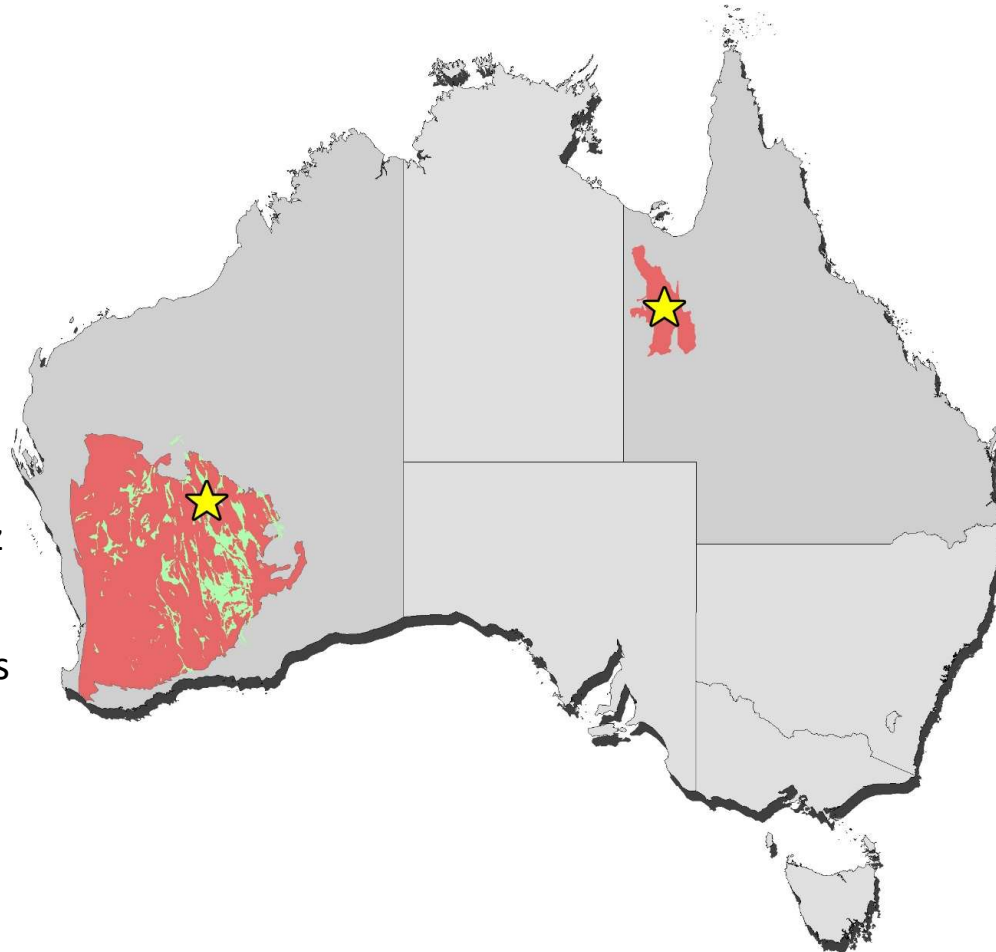
# Positioned in Two of the World's Great Metal Provinces



## Yilgarn Province

**Au**

- Bronzewing South
- Proposed acquisition\*
- Located in heart of 24 Moz Yandal Belt
- Under-explored tenements adjacent to infrastructure
- This transaction augments the Isa Project.



## Mount Isa Province

**Cu-Au-Mo-Re**

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

\* Acquisition is subject to shareholder approval



## 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 (Mining and exploration experience in both the Mount Isa and Yilgarn regions)
- Lean and commercial operating approach

# Directors and Management



*The Hammer board has extensive technical and corporate experience*



<p><b>Russell Davis</b> Chairman BSc (Hons) MBA MAusIMM, AICD</p>	<p><b>Ziggy Lubieniecki</b> Director BSc MAIG</p>	<p><b>Nader El-Sayed</b> Director B.Comm, MA, C</p>	<p><b>Mark Whittle</b> Chief Operating Officer BSc Geol Hons, MSc Geol MAusIMM</p>	<p><b>Mark Pitts</b> Company Secretary</p>
<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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</p>

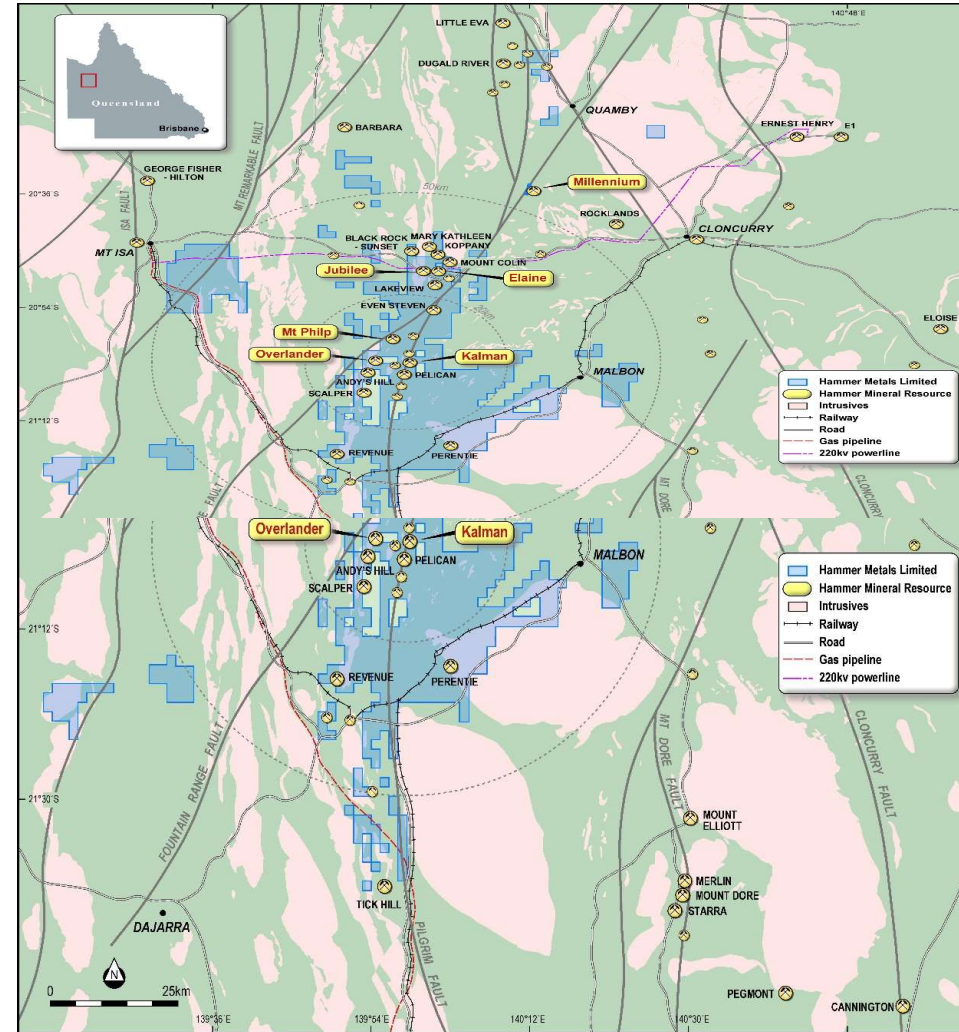
# Mount Isa Province: Range of early stage to advanced projects



- 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 deposits containing Cu, Au, Mo, Re, Co, Fe

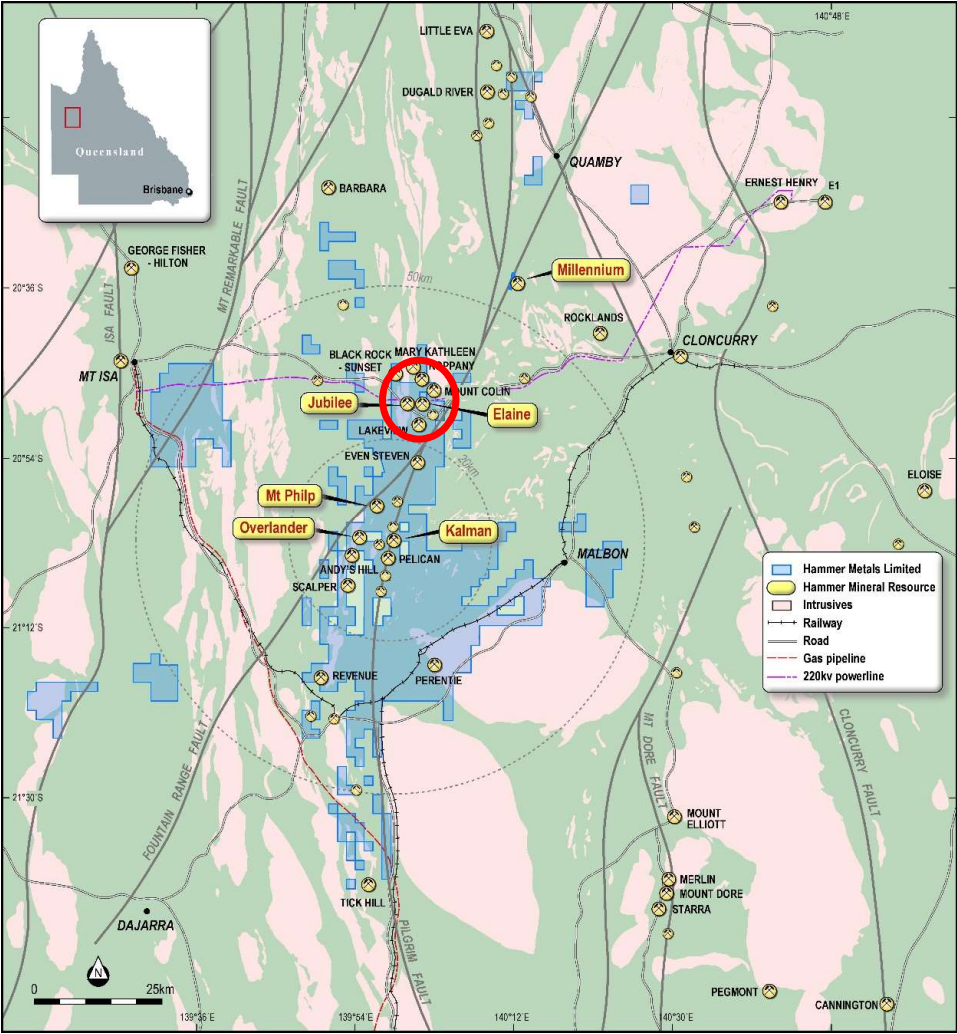
Deposit	Tonnes Mt	CuEq %	Cu %	Au g/t	Co %	Mo %	Re g/t	Fe %	Comment
Kalman	20	1.8	0.61	0.34	-	0.14	3.7	-	0.75% CuEq cut-off
Millennium	5.9	-	0.32	0.11	0.11	-	-	-	0.7% CuEq cut-off
Jubilee	1.4	-	1.41	0.62	-	-	-	-	0.5% Cu cut-off
Elaine	9.3	0.95	0.82	0.19	-	-	-	-	0.7% CuEq cut-off
Overlander	1.8	-	1.20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



Divestment of HMX 75% interest in Millennium is in progress



# Copper-Gold: Jubilee Deposit

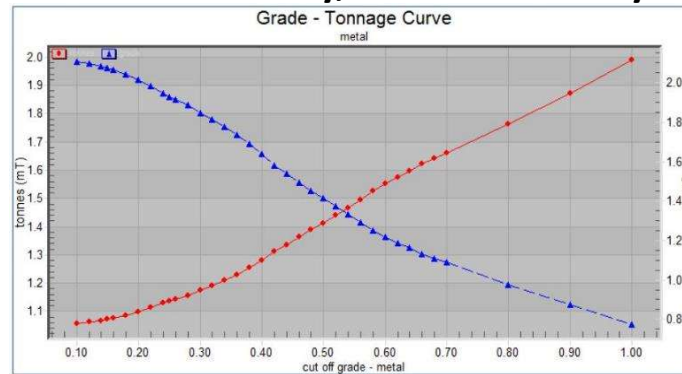


Refer to HMX ASX announcement dated November 12<sup>th</sup> and December 20<sup>th</sup>, 2018

# Copper-Gold: Jubilee Deposit



- Joint Venture with MIM (August 2017). HMX 51% and operator. 1km from bitumen highway and 55km from Mount Isa
- First metallurgical study complete – **99% Cu recovery, 87% Au recovery to concentrate**
- Open at depth and along strike
- Seeking commercial outcomes
- **Conceptual Pit optimisation underway**

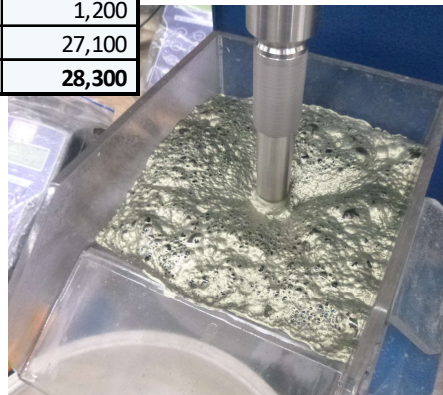


Category	Domain	Mt	Cu %	Cu (t)	Au g/t (Cut)	Au oz (Cut)
Inferred	Mod-Slightly Weathered	0.07	1.51	1,000	0.55	1,200
Inferred	Fresh	1.34	1.41	19,000	0.63	27,100
Inferred	<b>Total</b>	<b>1.41</b>	<b>1.41</b>	<b>20,000</b>	<b>0.62</b>	<b>28,300</b>

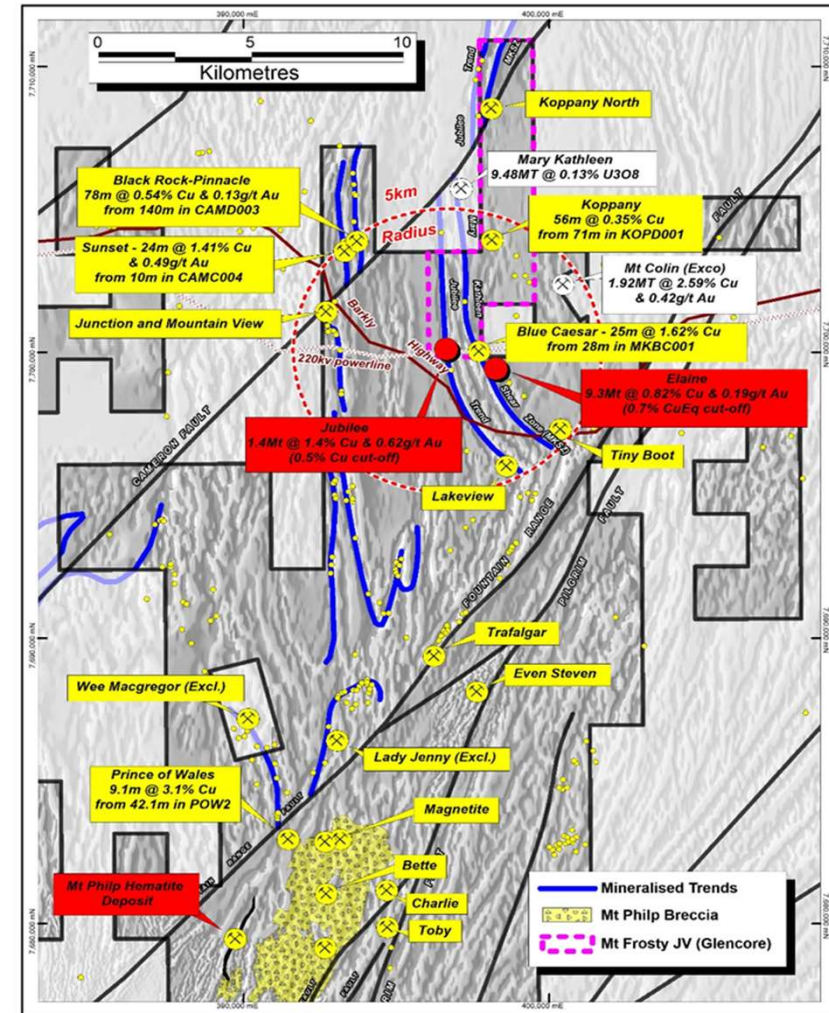
### Jubilee December 2018 Inferred Mineral Resource Estimate

The company is not aware of any new information or data that materially affects the information in HMX ASX announcement dated December 20<sup>th</sup>, 2018. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

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

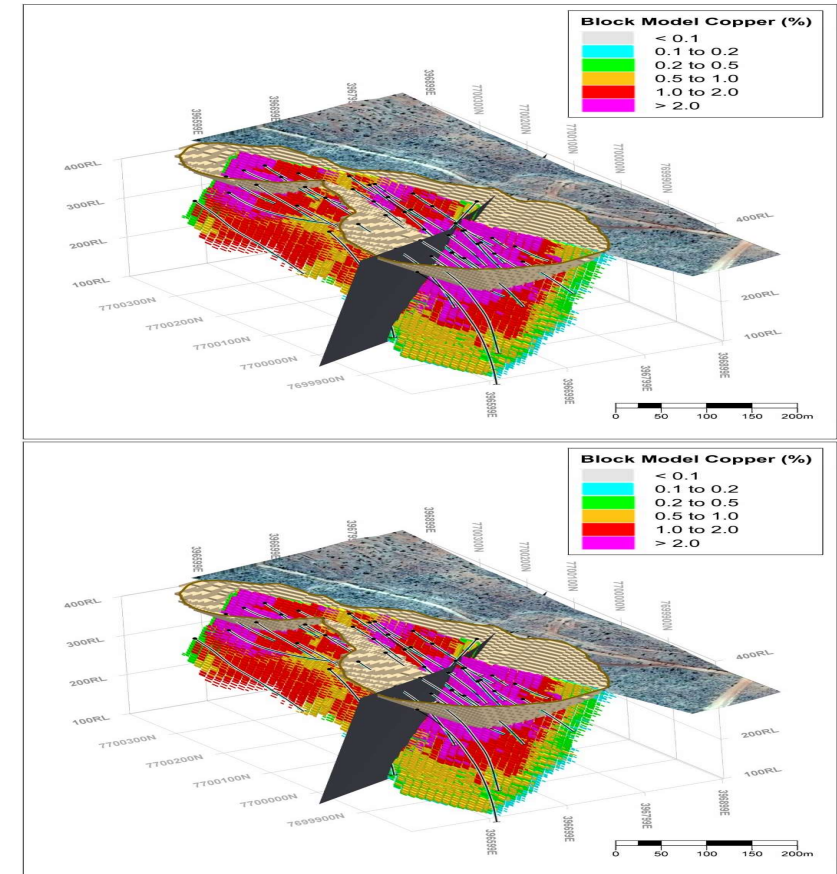
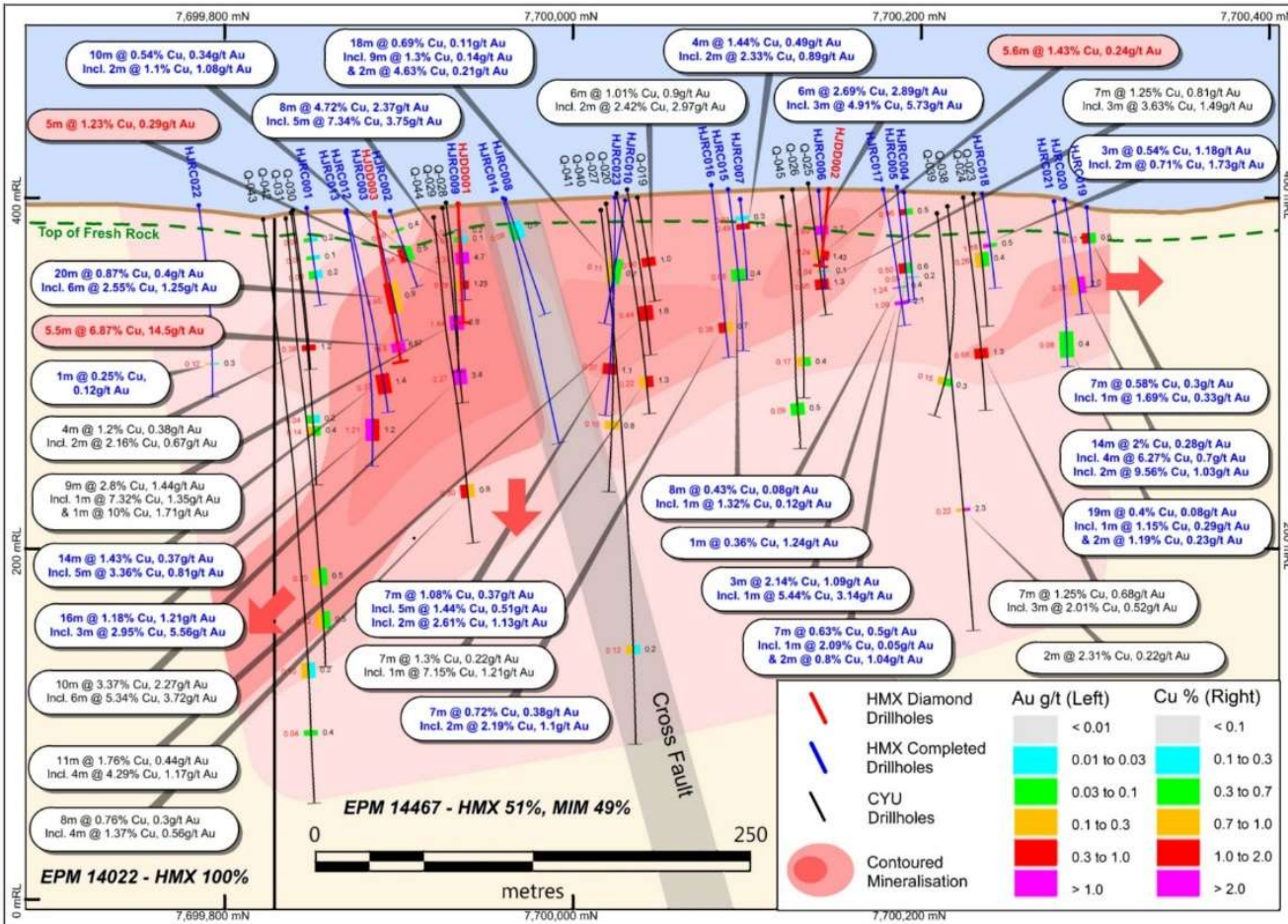


Test	Product	Cu		Au		Co	
		%	% Rec'y	ppm	% Rec'y	%	% Rec'y
T3	Cu Con	19.4	98.5	10.7	80.0	0.10	56.4
	Co Con	0.4	0.9	2.4	7.2	0.12	27.5
	Total Con	99.3	87.2				83.9



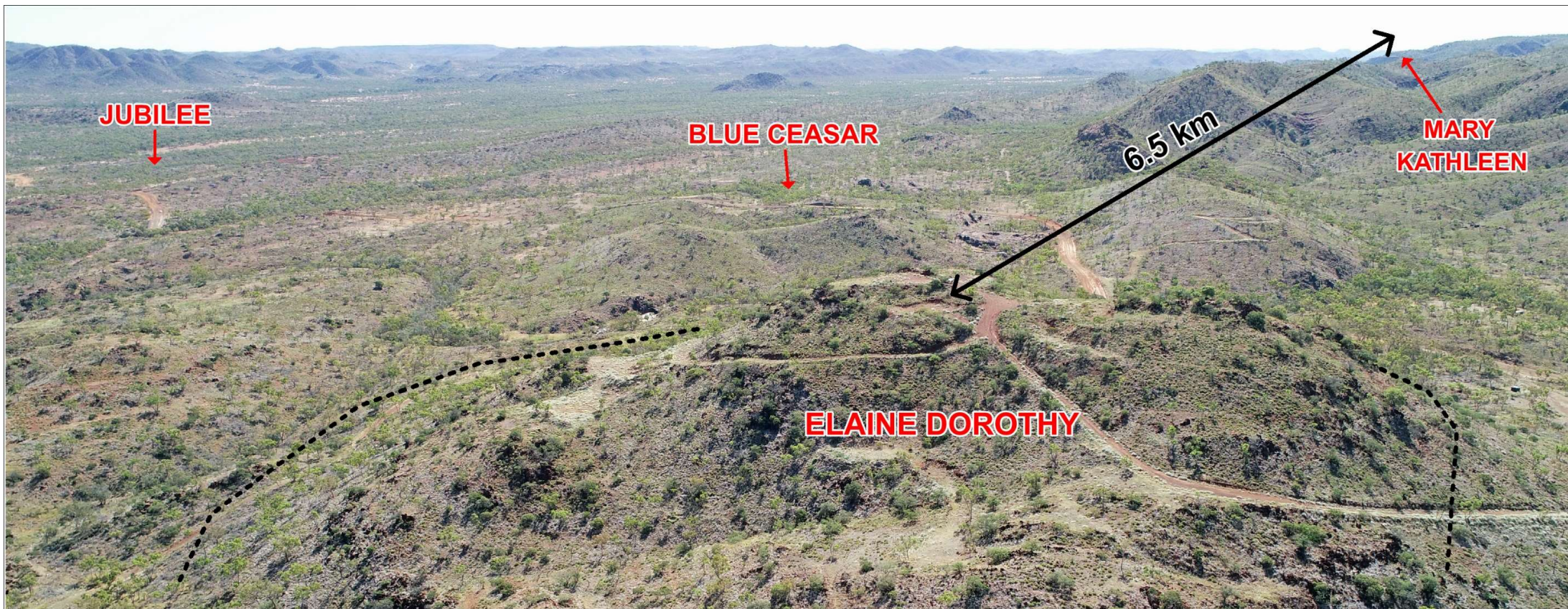
Refer to HMX ASX announcement dated November 12<sup>th</sup> and December 20<sup>th</sup>, 2018

# Copper-Gold: Jubilee Deposit



Jubilee conceptual pit optimization looking northeast

# Copper-Gold: Elaine Deposit



*Elaine looking northwest*

# Copper-Gold: Elaine Deposit

- 2km from bitumen highway - 55km to Mount Isa
- Broad copper intersections – **206m at 0.53% Cu & 159 metres at 0.5% Cu**
- High grade gold – **30m at 6.7g/t Au** and **26m at 1.7g/t Au** and **0.24% Bi**
- Preliminary metallurgic study - **Cu recovery >90% to concentrate**
- Multiple targets along strike – Elaine 2 and Elaine 3
- **Conceptual pit and underground optimisation studies underway**

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

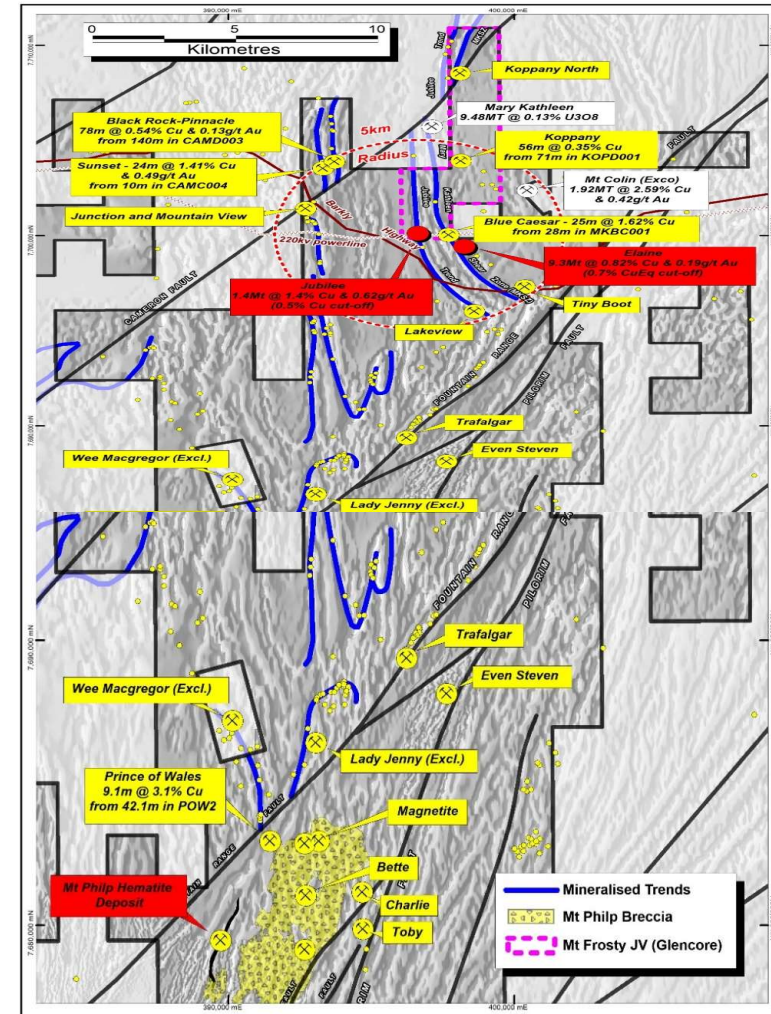
### Elaine 2012 Inferred Mineral Resource Estimate

The company is not aware of any new information or data that materially affects the information in AKN ASX announcement dated October 18<sup>th</sup>, 2012. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

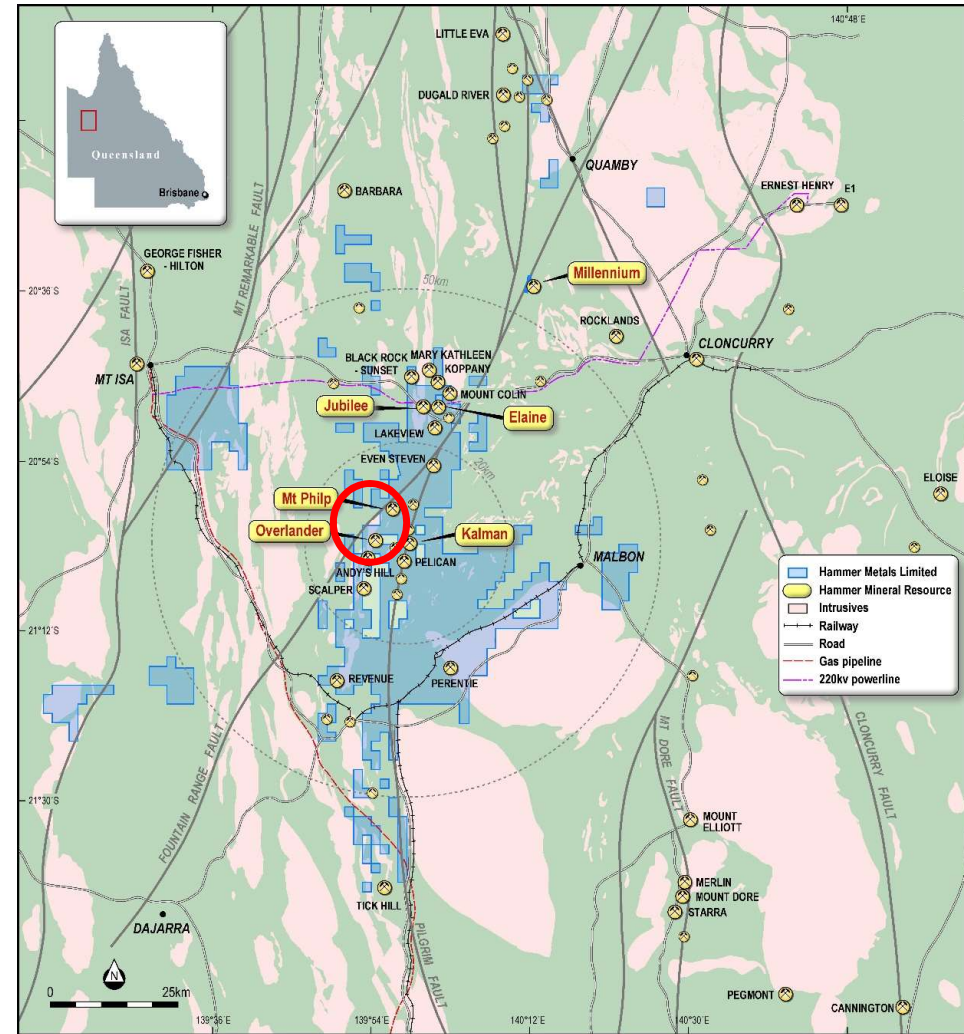
- Note: (1) Totals may differ due to rounding
- Note: (2)  $CuEq \% = Cu \% + (Au \text{ ppm} * 0.70216)$

Rougher and cleaner flotation results (below) with the rougher float cell test T-13 (right)

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



# Copper-Cobalt: Overlander Deposit



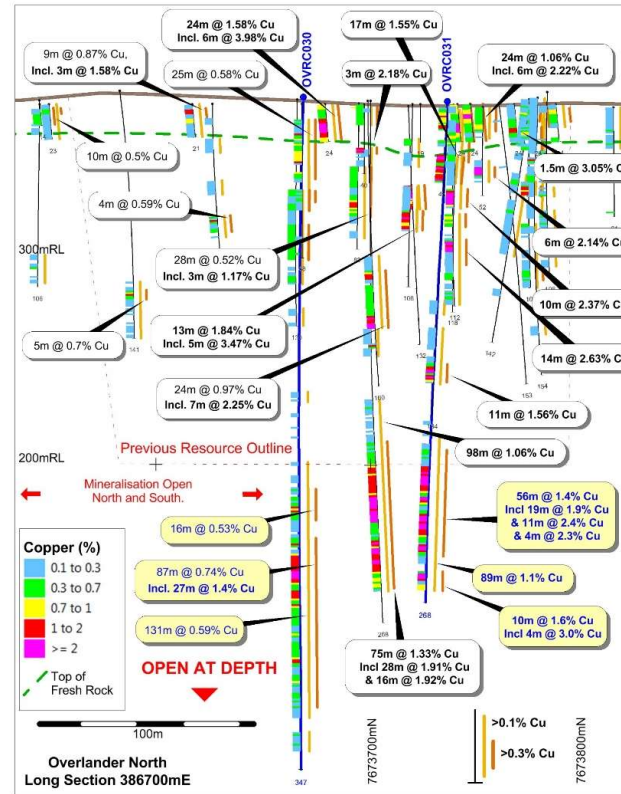
Refer to HMX ASX announcement dated August 26<sup>th</sup>, 2015



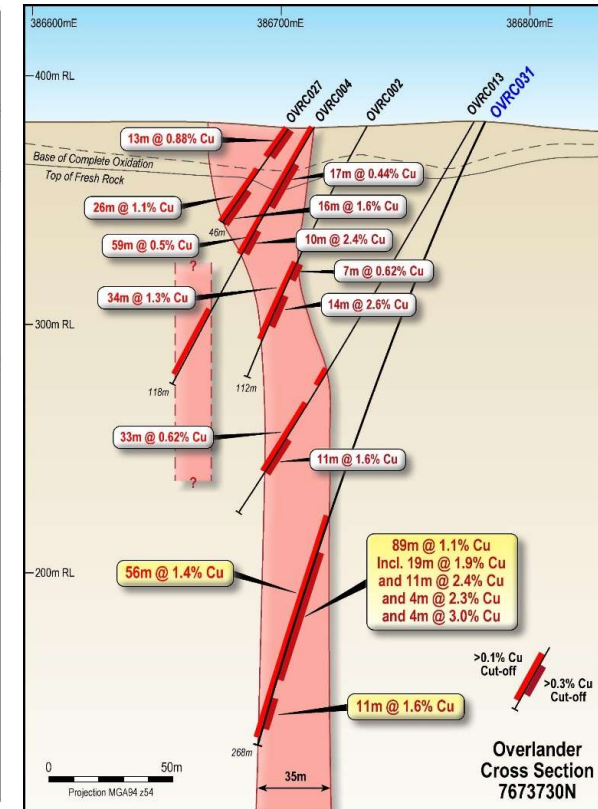
# Copper-Cobalt: Overlander Deposit



- Current resource **1.8 Mt at 1.2% Cu (reported at 0.7% Cu cut-off)**
- Conceptual pit optimisation studies underway on both JORC reported and in-house ore resource estimates
- 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 OVRC29**
  - **87m @ 0.74% Cu incl. 27m @ 1.4% Cu in OVRC30**
  - **89m @ 1.1% Cu incl. 56m @ 1.4% Cu & 11m @ 2.4% Cu & 10m @ 1.6% Cu in OVRC31**
- Significant untested potential



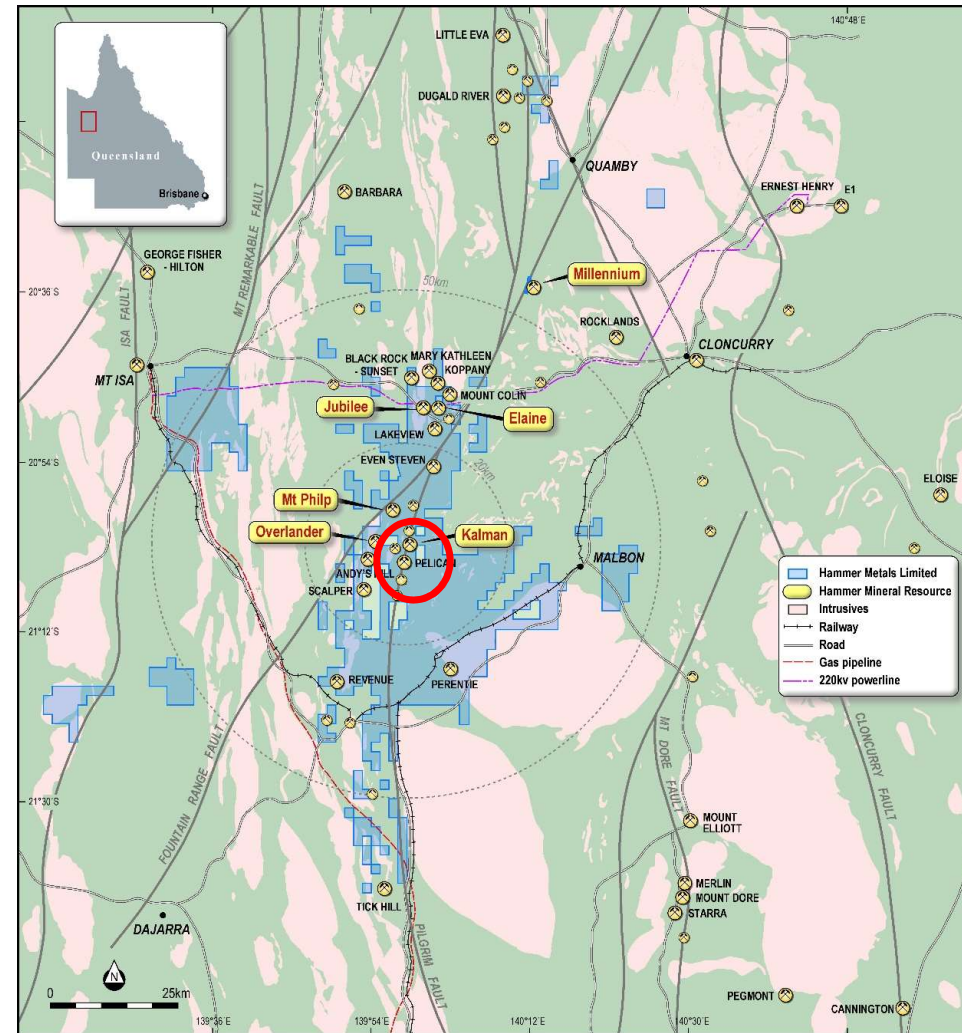
Overlander North Long section looking west



Overlander North Cross section looking north



# Copper-Gold-Molybdenum-Rhenium: Kalman Deposit



# Copper-Gold-Molybdenum-Rhenium: Kalman Deposit



*Kalman deposit looking southeast*

# Copper-Gold-Molybdenum-Rhenium: Kalman Deposit



- Open pit and underground potential, open at depth
- Strategy to use Kalman for base load plant feed
- **Further pit optimisation studies planned for 2019**

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
<b>Total</b>			<b>20.0</b>	<b>1.8</b>	<b>0.61</b>	<b>0.14</b>	<b>0.34</b>	<b>1.9</b>	<b>3.7</b>

## Kalman Millennium November 2016 Mineral Resource Estimate

The company is not aware of any new information or data that materially affects the information in 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.

•Note: (1) Numbers rounded to two significant figures

•Note: (2) Totals may differ due to rounding

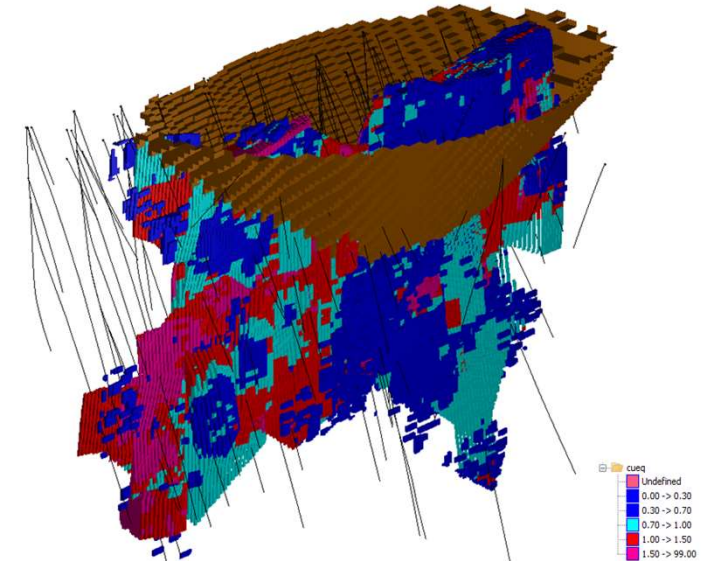
•Note: (3) The CuEq equation is  $CuEq = Cu + 0.594464Au + 0.010051Ag + 4.953866Mo + 0.074375Re$

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

## 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

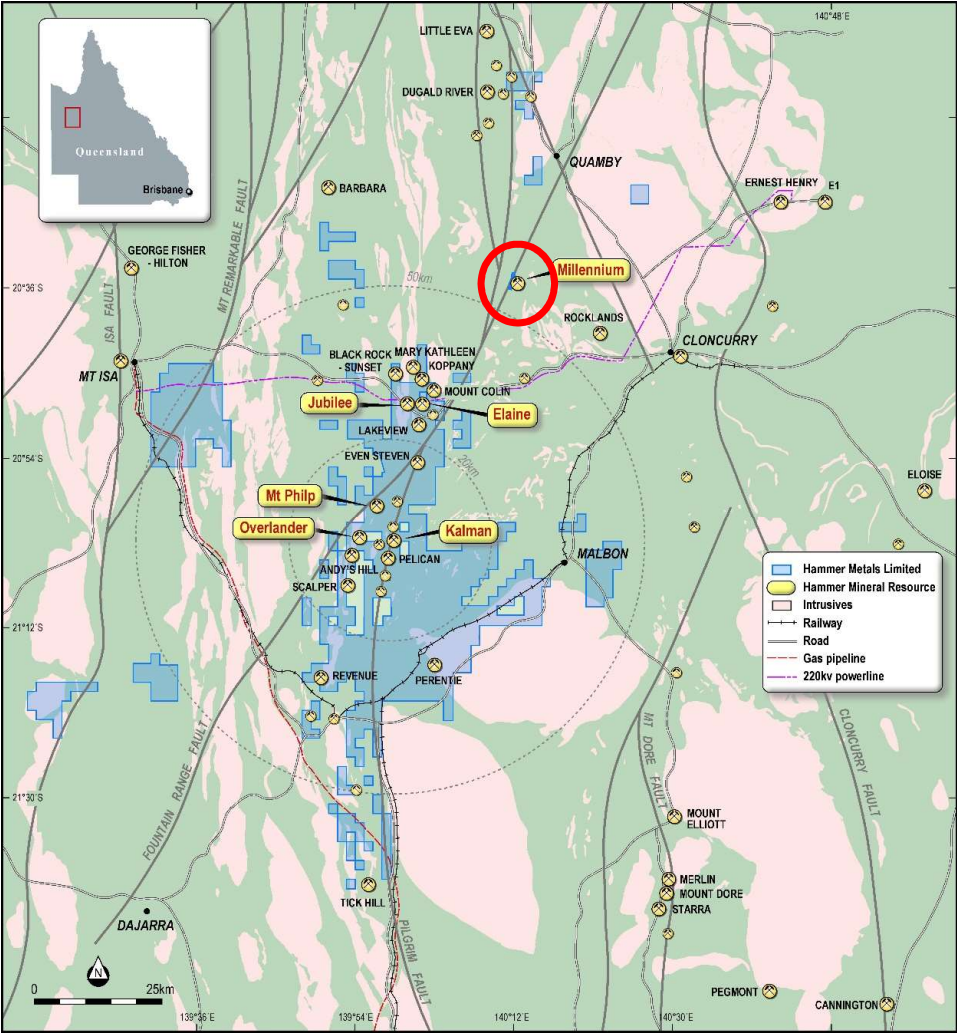


Kalman conceptual optimised pit shell showing drill traces – Looking northwest



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

# Cobalt-Copper-Gold: Millennium Deposit



Refer to HMX ASX announcement dated December 6<sup>th</sup>, 2018

# Cobalt-Copper-Gold: Millennium Deposit



*Millennium  
Deposit  
looking  
north*



# Cobalt-Copper-Gold: Millennium Deposit



- Currently JV with GEMC (a TSX listed company) – Sale of HMX 75% HMX interest for 19.9% of GEMC in progress (June 2017). HMX to get one board seat. Has to manage project going forward.
- 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
- **Extensional drilling and an updated resource estimate planned for 2019**

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

Rougher flotation results (below) with the rougher float cell test HG-7 (right)

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

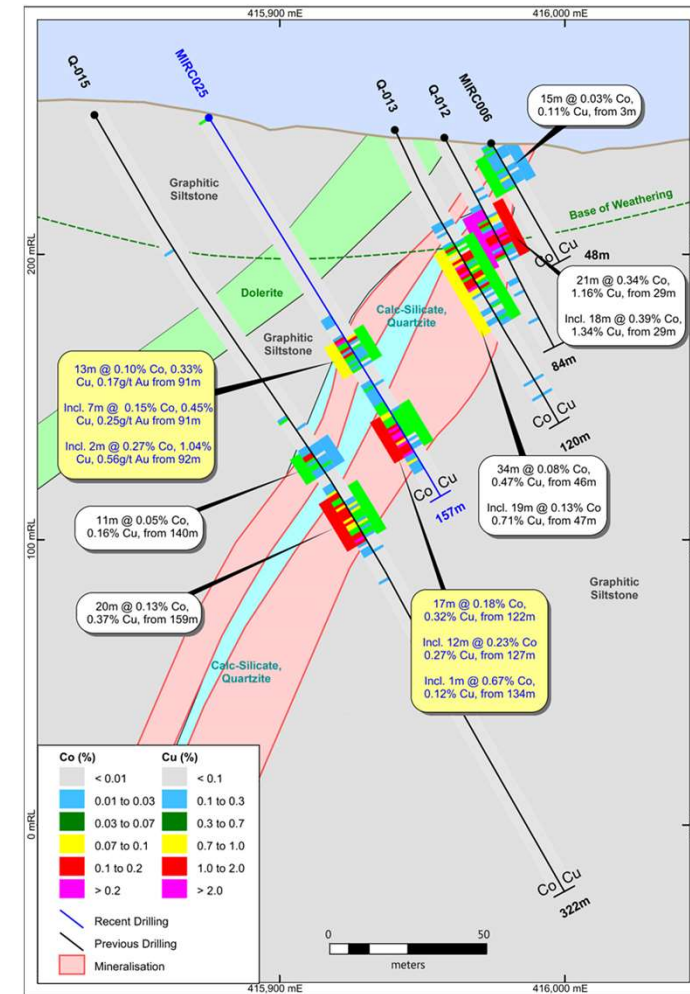
Test No.	Low Grade Composite - Optimum Test – Combined Rougher Concentrate								
	Product	Cu		Co		Au		As	
		%	% Rec'y	%	% Rec'y	ppm	% Rec'y	%	% Rec'y
LG-5	Cu Con	16.9	85.2	0.26	7.8	4.3	51.0	0.14	4.9
	Co Con	0.5	6.1	1.16	83.9	0.9	27.0	1.00	88.4
	Total Con		91.3		91.7		77.9		93.2

### Millennium November 2016 Inferred Mineral Resource Estimate

The company is not aware of any new information or data that materially affects the information in HMX ASX announcement dated December 6<sup>th</sup>, 2018. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

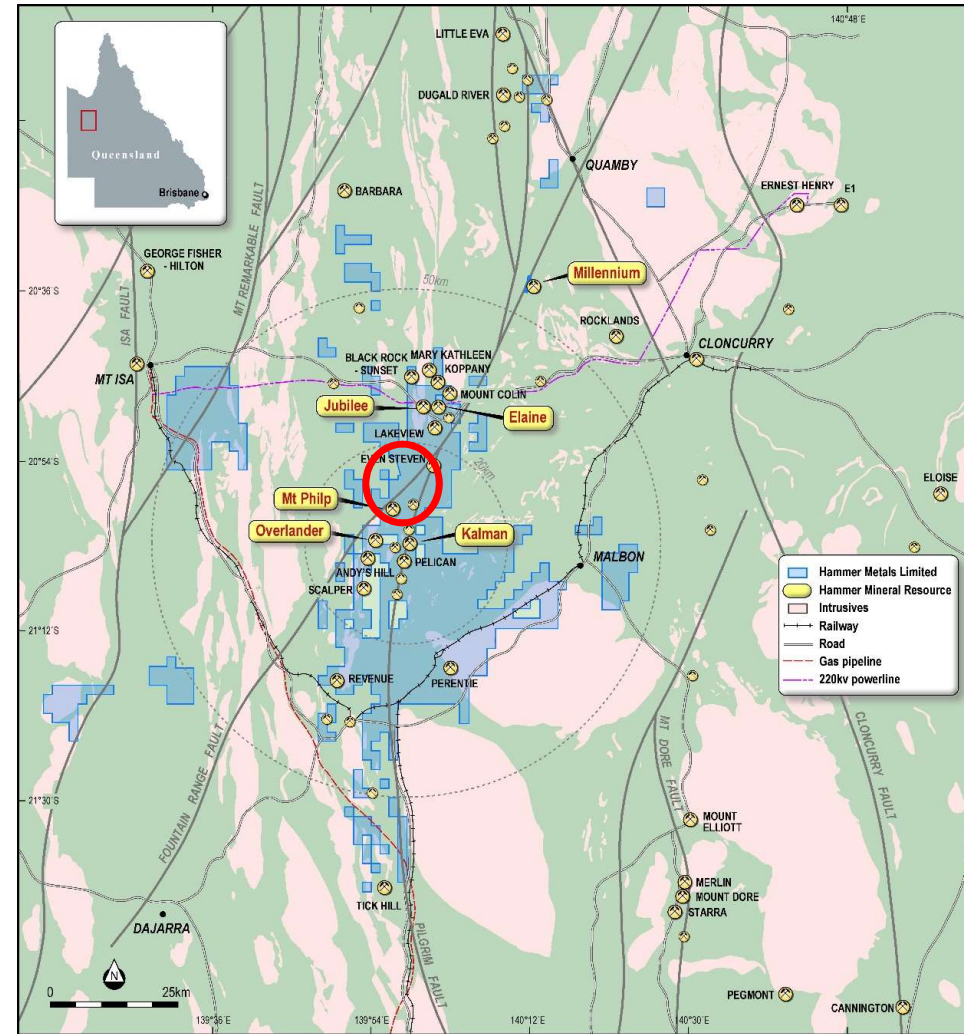
•Note: (1) Totals may differ due to rounding

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

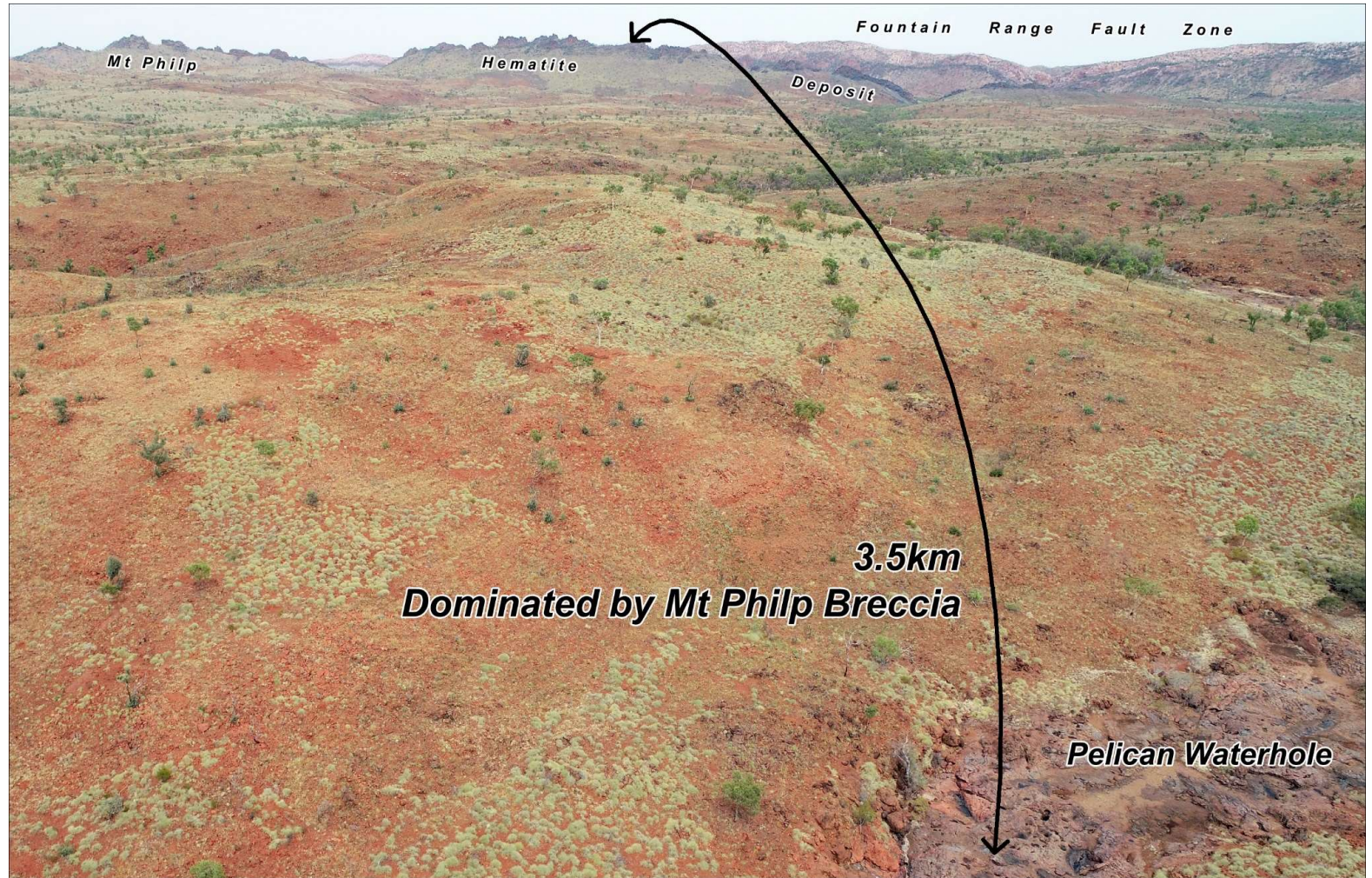


Millennium cross section (looking north)

# Mount Philp Breccia IOCG Target: Copper-Gold



# Mount Philp Breccia IOCG Target: Copper-Gold



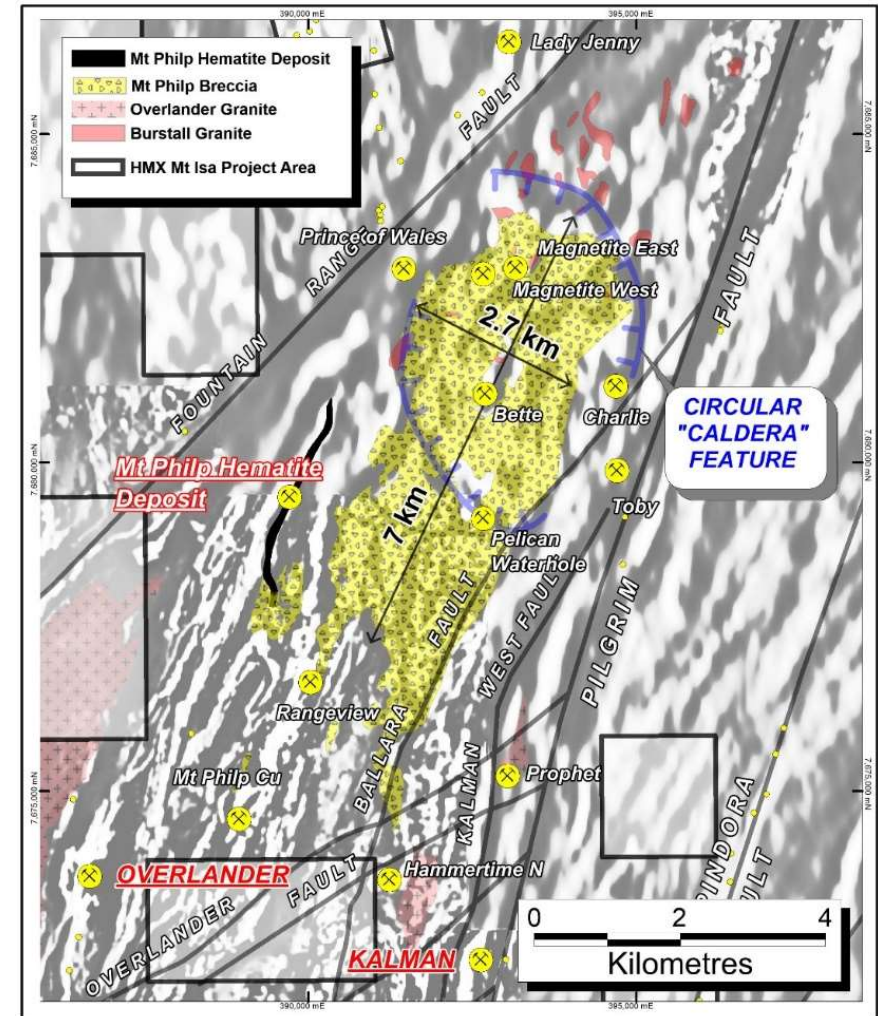
*Pelican waterhole looking west*



# Mount Philp Breccia IOCG Target: Copper-Gold



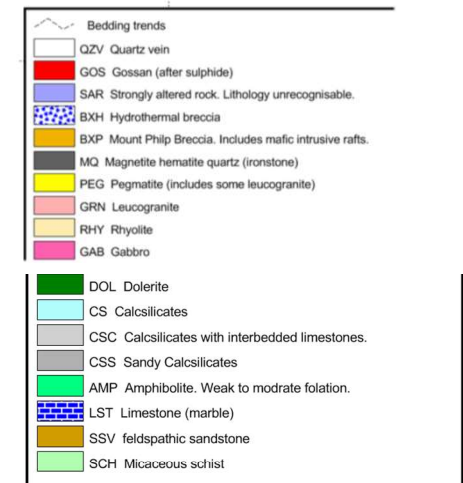
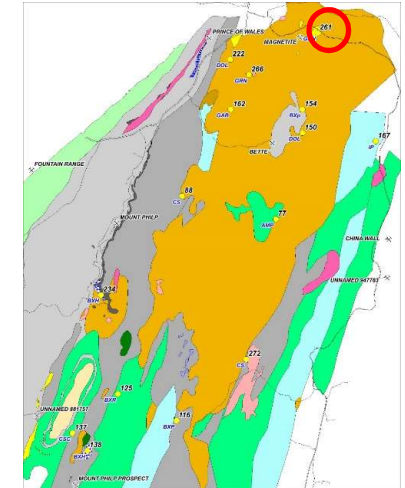
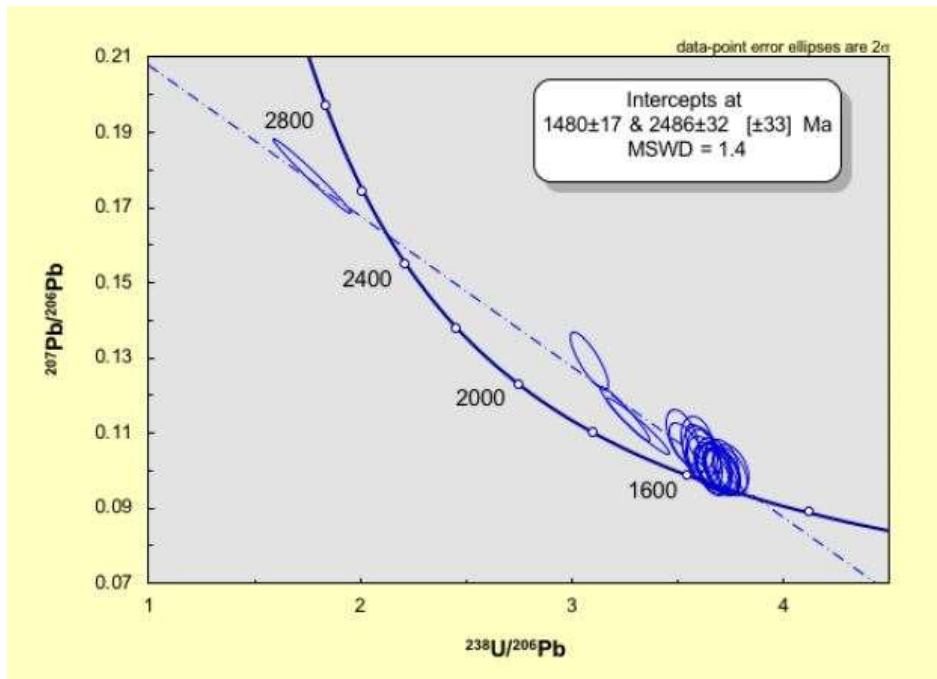
- Very large breccia complex (+20km<sup>2</sup>) with extensive alteration, brecciation and intrusive activity . Dating indicates emplacement significantly younger than previously thought.
- Never previously assessed for IOCG mineralisation – Tier 1 grassroots target. Received government grant to partly fund future work
- Portable XRF Cu response and Lab Au analyses define multiple targets for examination
- Gravity, aeromagnetic interpretation and more detailed mapping are planned to generate drill targets for 2020



# Mount Philp Breccia IOCG Target: Copper-Gold

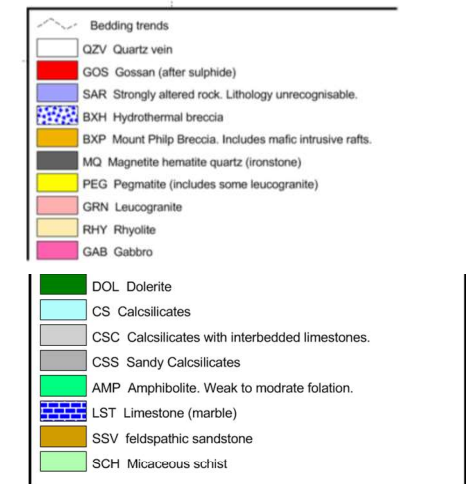
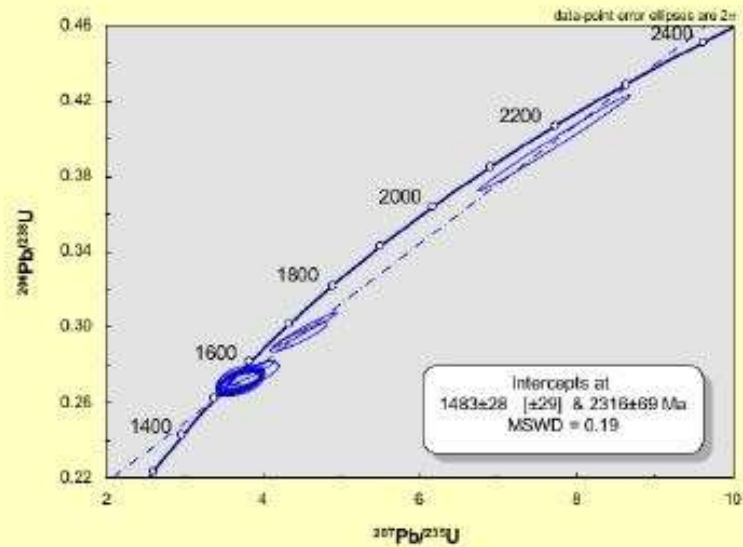
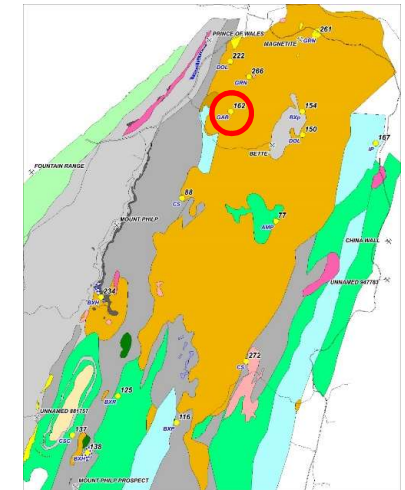


- #261 – A type Granite - Syenite
- Previously identified as Burstall Granite
- Brecciated by Mt Philp Breccia
- $1480 \pm 17$  mya



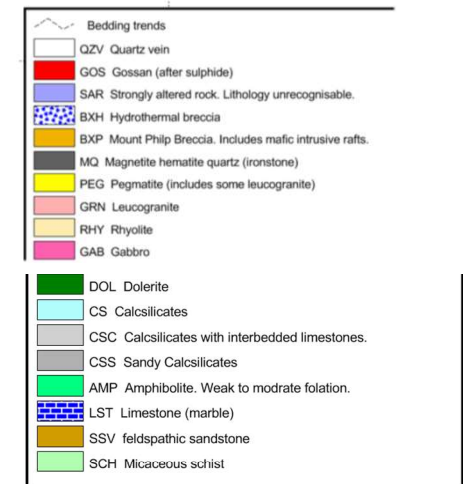
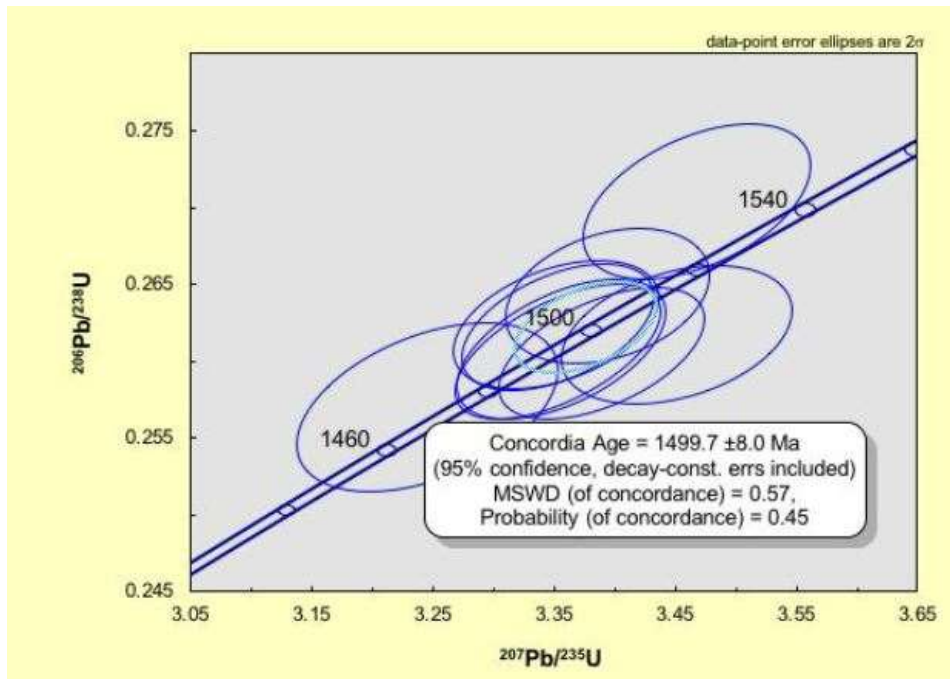
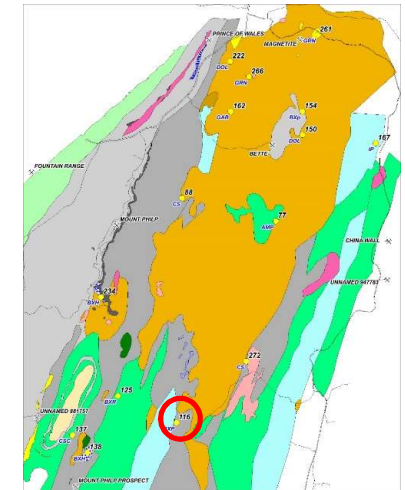
# Mount Philp Breccia IOCG Target: Copper-Gold

- #162 – Gabbro clast/raft in Mt Philp Breccia
- Defines age of  $1483 \pm 28$  mya
- Interpreted to reflect the time of emplacement



# Mount Philp Breccia IOCG Target: Copper-Gold

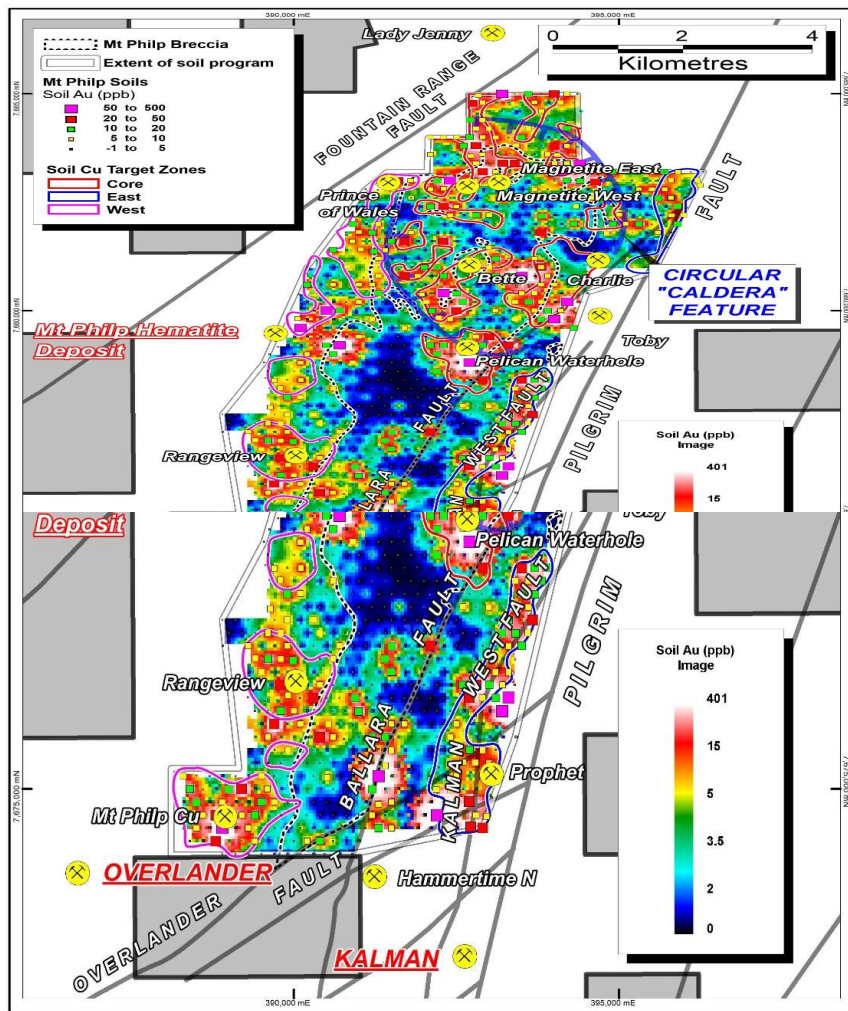
- #116 – Mt Philp Breccia titanite in matrix
- Defines age of  $1499 \pm 8$  mya
- Titanites occur in an “igneous” groundmass
- Interpreted to represent the emplacement age



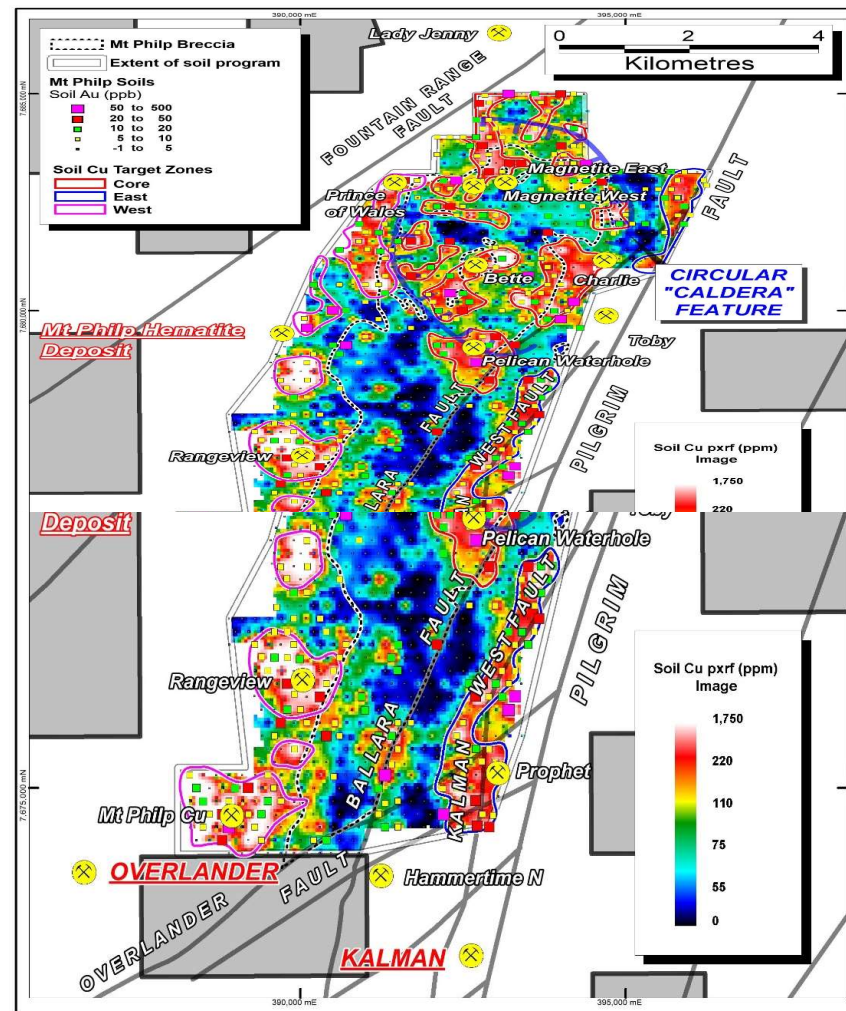
# Mount Philp Breccia IOCG Target: Copper-Gold



Au on  
Au Image

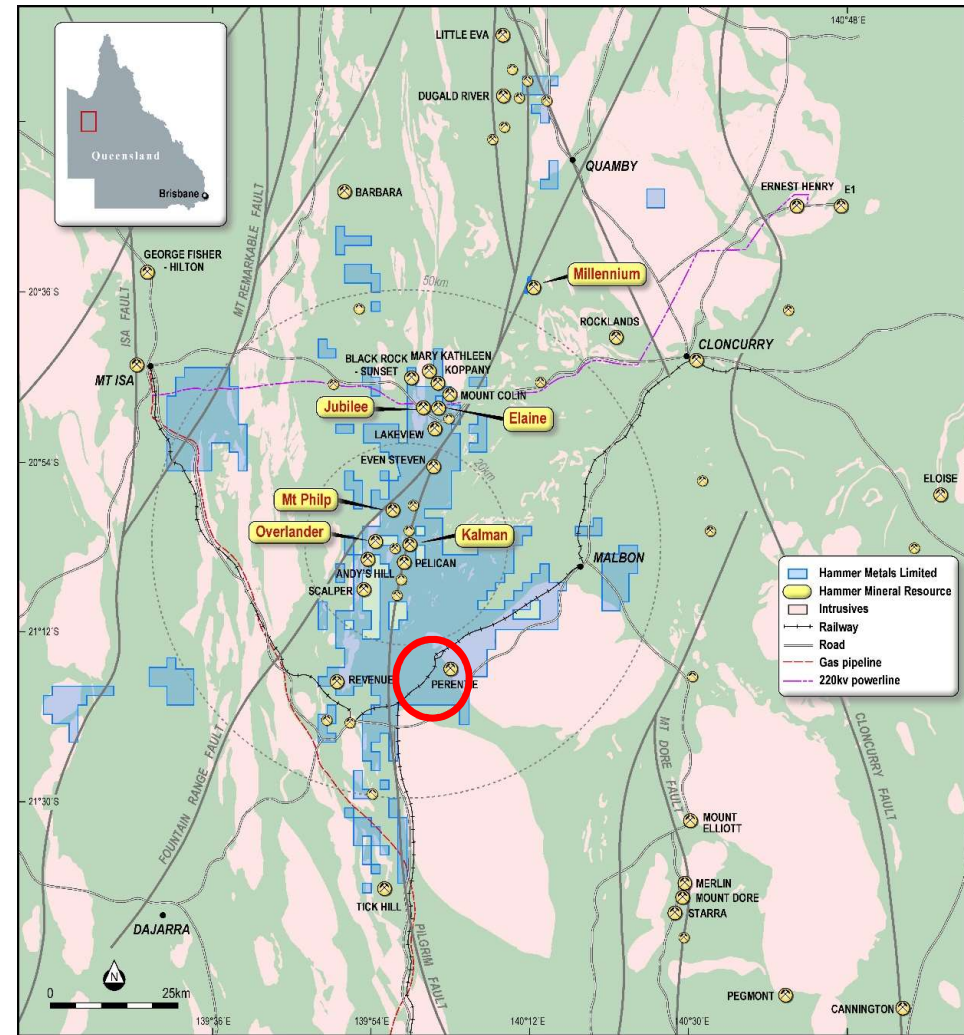


Au on  
Cu Image



Refer to HMX ASX announcements dated December 11<sup>th</sup> and January 24<sup>th</sup> (2019)

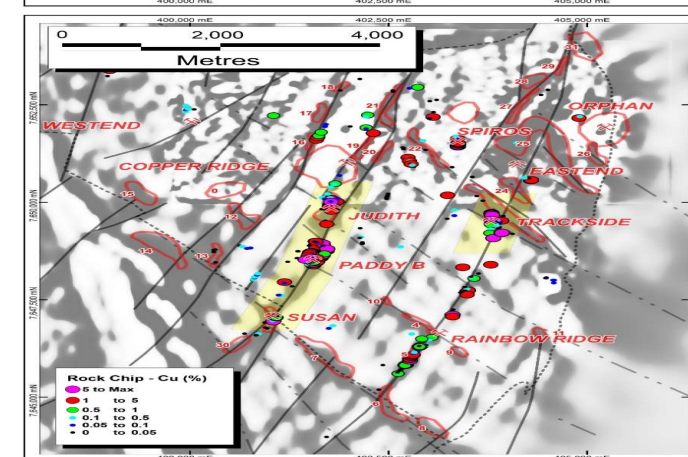
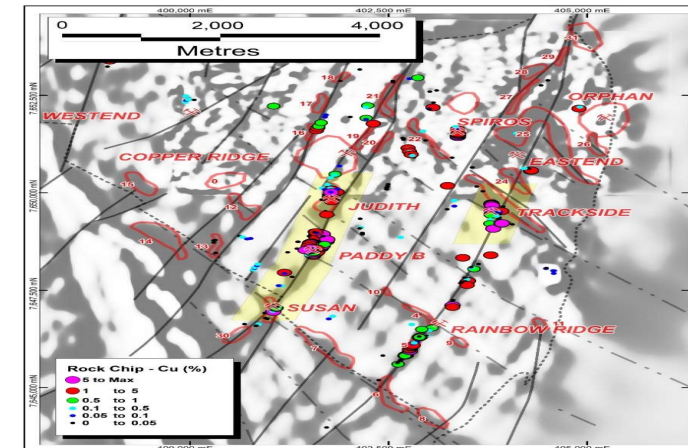
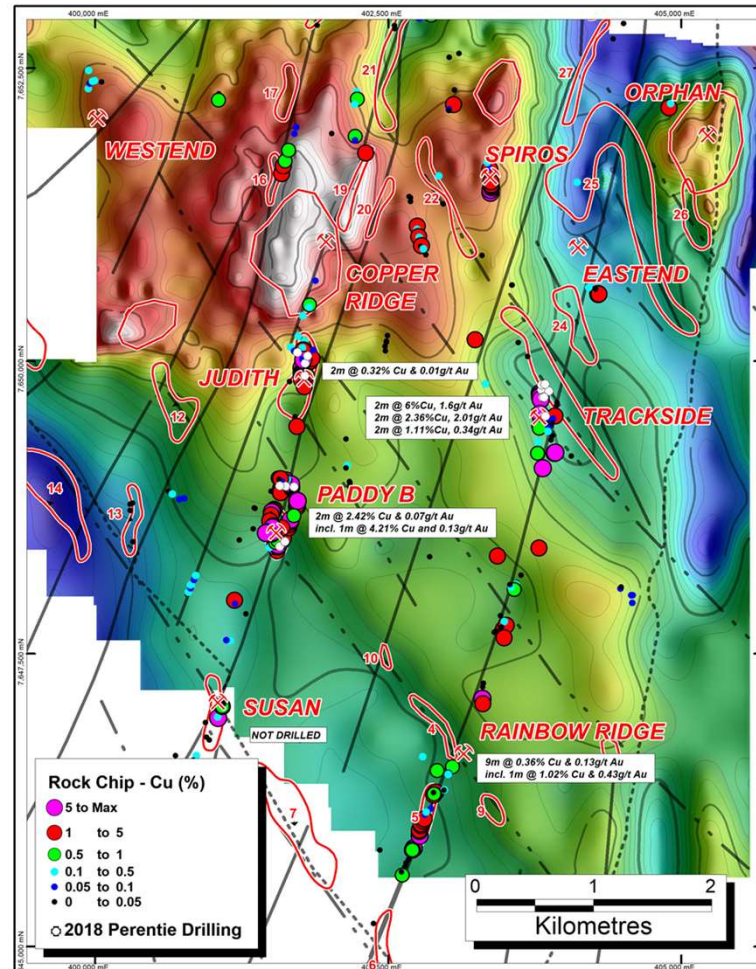
# Perentie Project – Copper-Gold



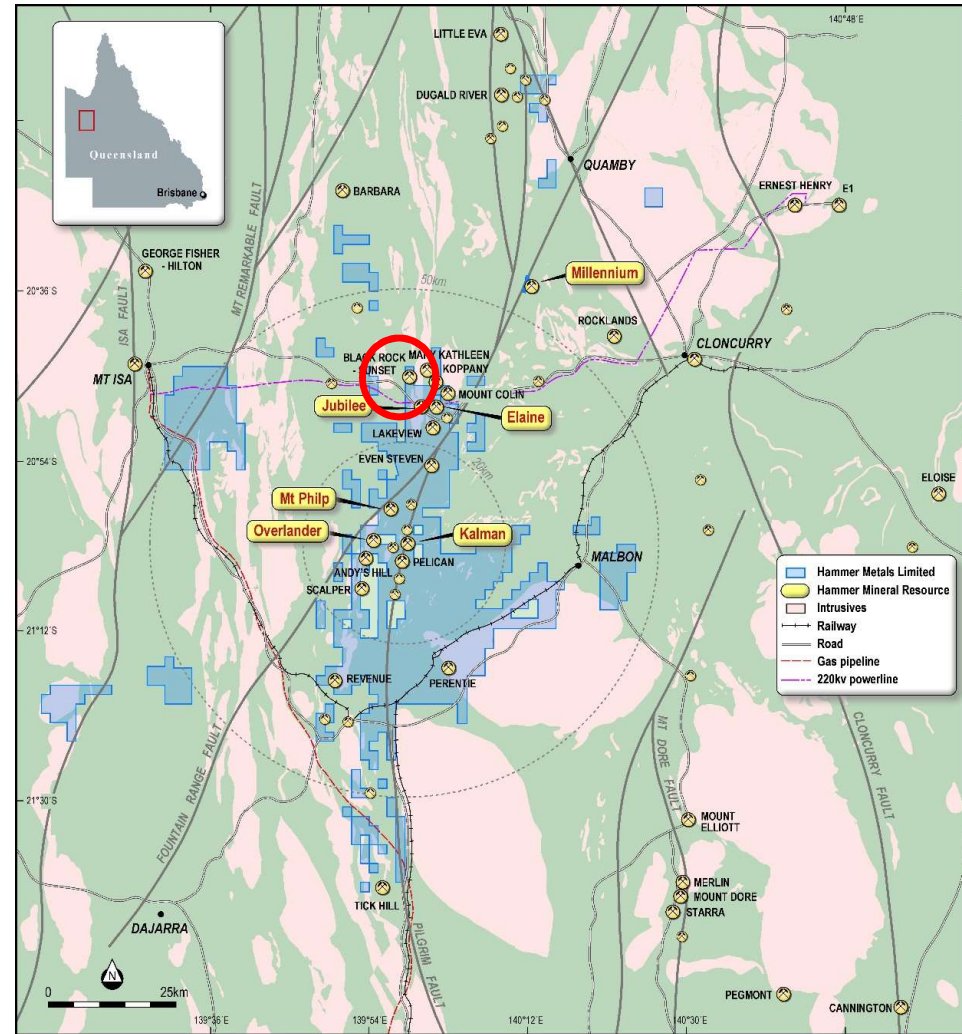
Refer to HMX ASX announcements dated October 11<sup>th</sup> and January 24<sup>th</sup> (2019)

# 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



# Copper-Gold: Black Rock



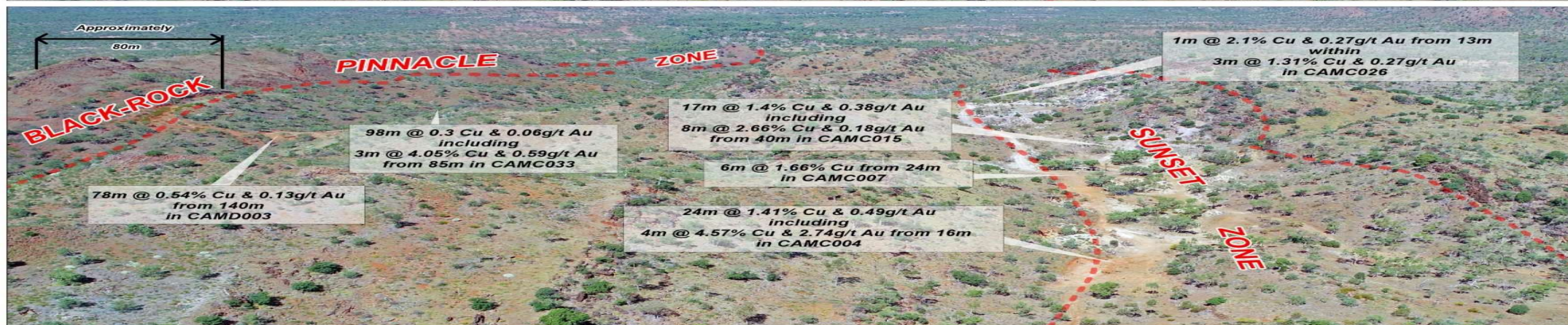
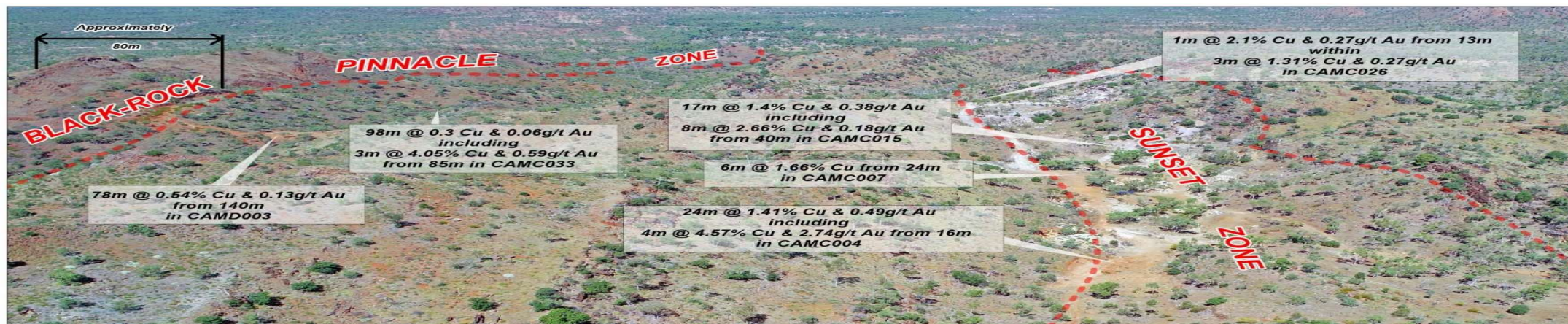


# Copper-Gold: Black Rock



*Elaine looking northwest across to Black Rock*

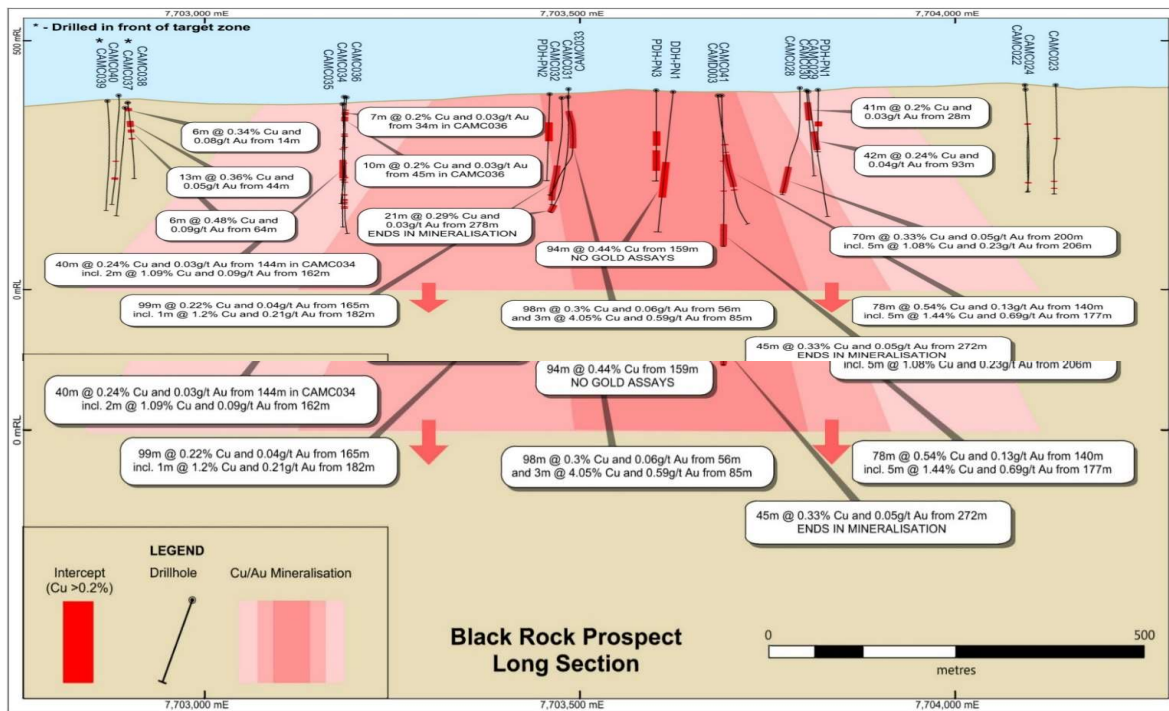
# Black Rock Prospect - Copper-Gold



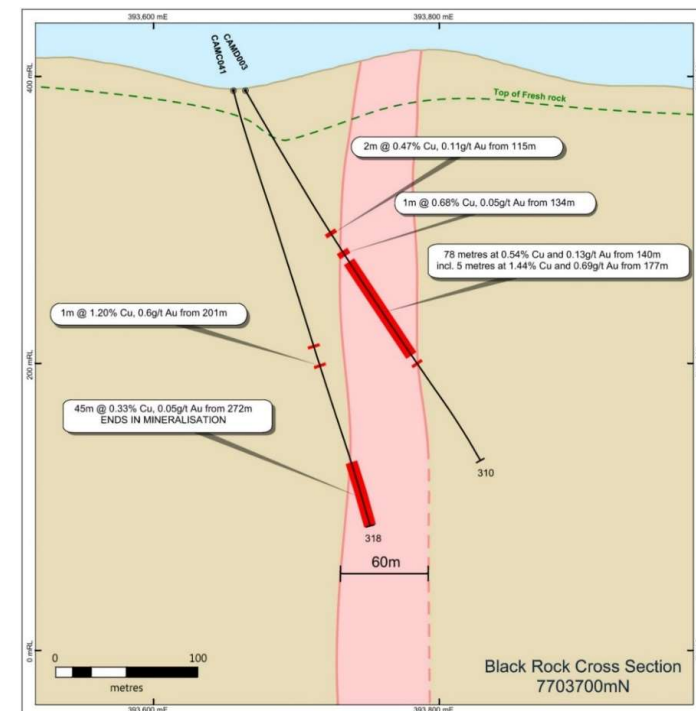
Oblique photo looking south showing the location of Black Rock and Sunset

# Black Rock Prospect - Copper-Gold

- 5km west of Jubilee, 2km from bitumen highway, 50km to Mount Isa.
- Potential for large tonnage Elaine style copper-gold deposit
- **2019 drill planning underway**



Long section through Black Rock looking West

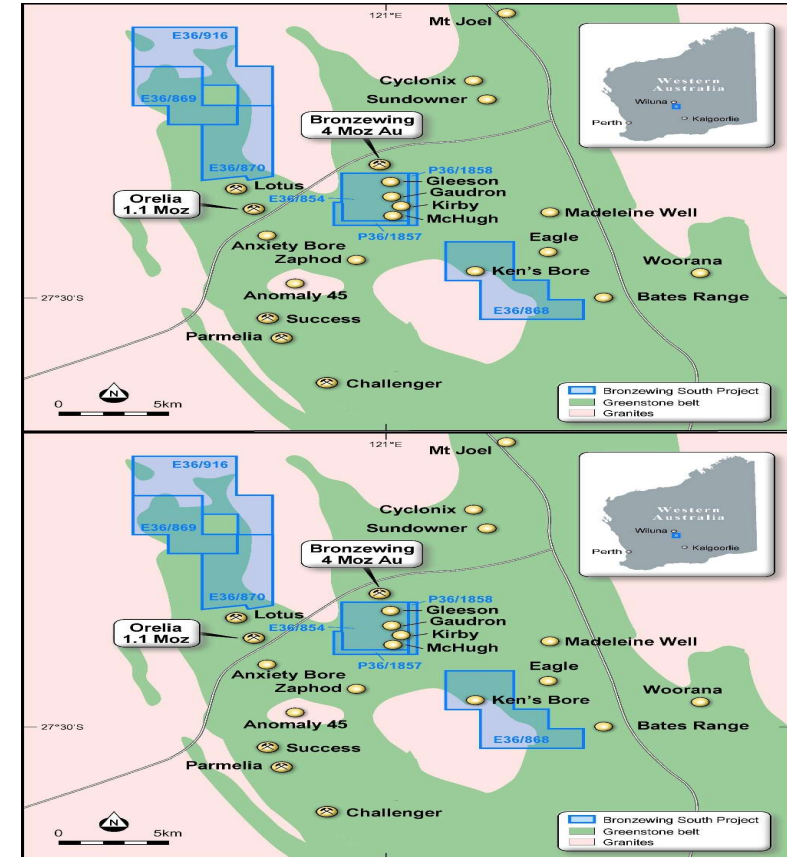
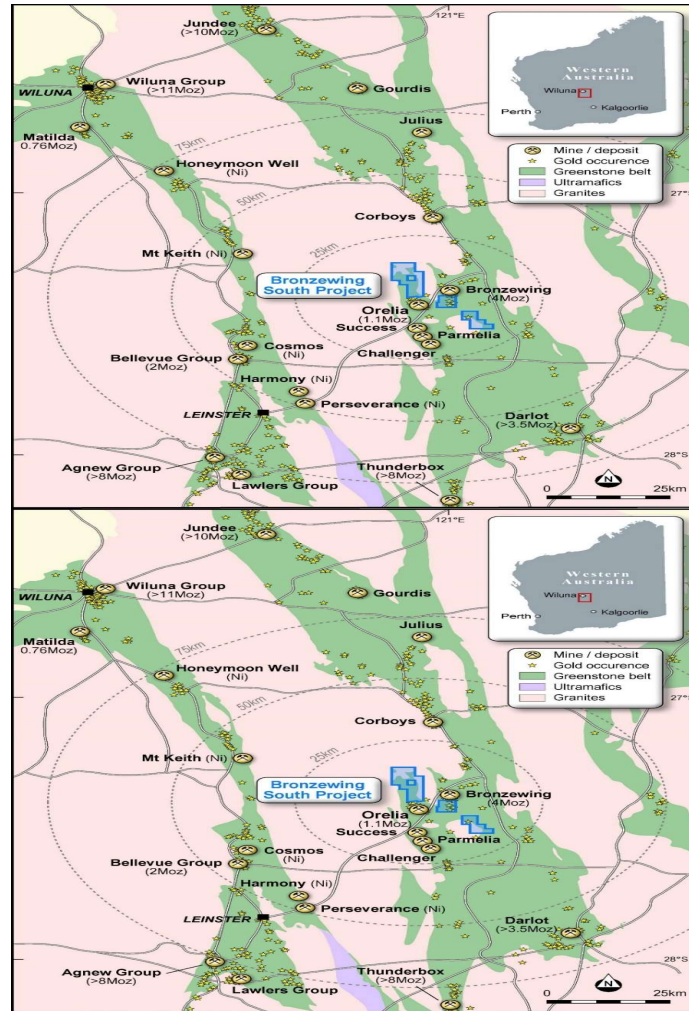


Cross section looking north

# Bronzewing Project Acquisition\* – Yandal Belt



- Located in the heart of 24 Moz Yandal Belt
- 111km<sup>2</sup> of 100%-owned granted tenements
- Along strike from 4 Moz Bronzewing Gold Mine and 1Moz Lotus/Orelia Gold Deposit
- Adjacent to 2mtpa treatment plant at Bronzewing
- Multiple anomalies from shallow geochemical RAB and aircore drilling with limited follow-up with deeper drilling
- Similar alteration and multi-element geochemistry as seen at Bronzewing



\* Acquisition is subject to shareholder approval

# Bronzewing South - Targets

## 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

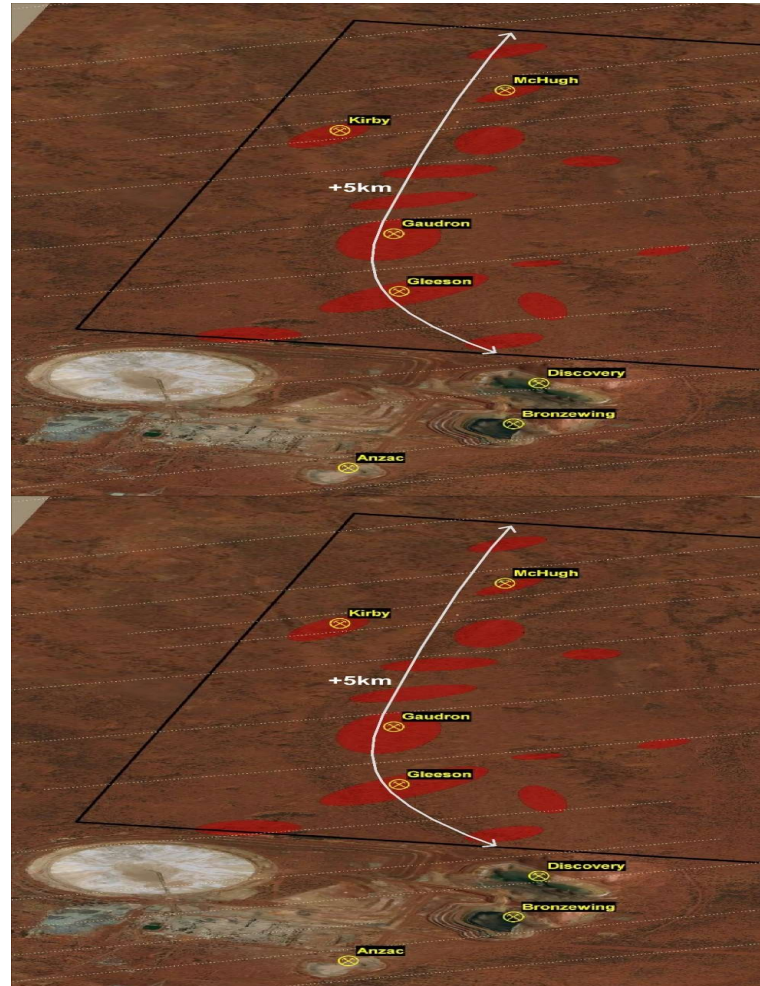
### 14km strike length

Significant intersections include:

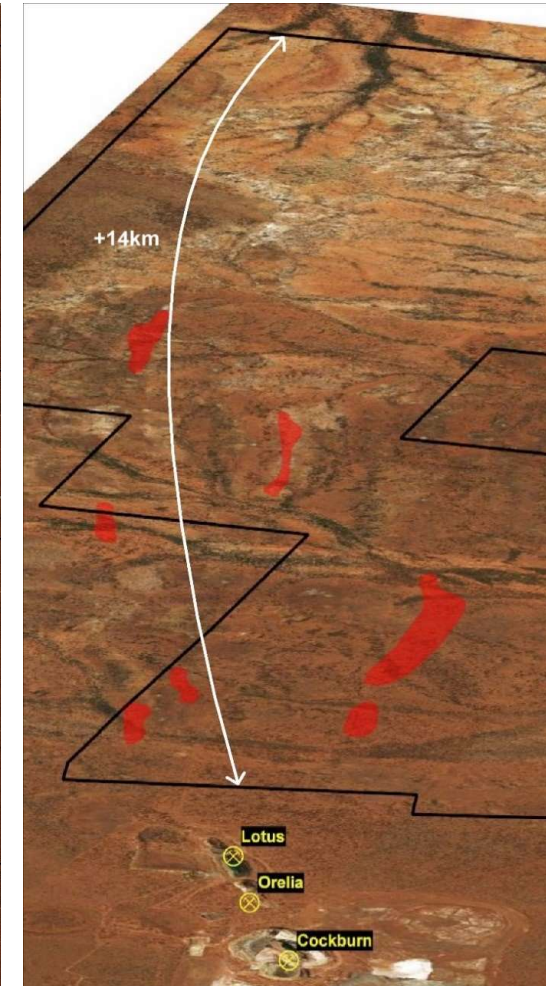
- 3m @ 12.0g/t Au from 18m (ARL6340/1057)
- 3m @ 3.60g/t Au from 9m (ARL6160/1152)
- 3m @ 2.35g/t Au from 6m (ARL6290/1055)

## 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 looking south



Mt McClure Trend looking north

# Summary



- **2019 Planned**
  - **Resources**
    - **Jubilee Cu-Au Deposit – Mt Frosty JV**
      - Conceptual pit optimisation
    - **Elaine Cu-Au Deposit**
      - Conceptual pit optimisation
    - **Overlander Cu-Au Deposit**
      - Conceptual pit optimisation
      - Infill drill planning
    - **Kalman Cu-Au-Mo-Re Deposit**
      - Conceptual pit optimisation
    - **Millennium Cu-Co-Au Deposit**
      - Infill and Extensional drilling
  - **Brownfields and Greenfields**
    - **Black Rock Cu-Au**
      - Vendor data verification
      - Conceptual optimisation on in-house resource
      - Infill drill planning
    - **Mt Philp Cu-Au and CEI**
      - Gravity
      - Geophysical Interpretation
    - **Perentie Cu-Au**
      - Geophysical modelling
    - **Regional**
      - Continuation of target reviews related to regional target generation programs



*DDH1 in action at Perentie*

# 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 Resource Inventory – HMX is progressing advanced targets through to production
- HMX is focussed on the discovery of Tier One Ore Deposits
- Multiple large-scale exploration targets to be tested
- Experienced exploration team
- Active exploration programs



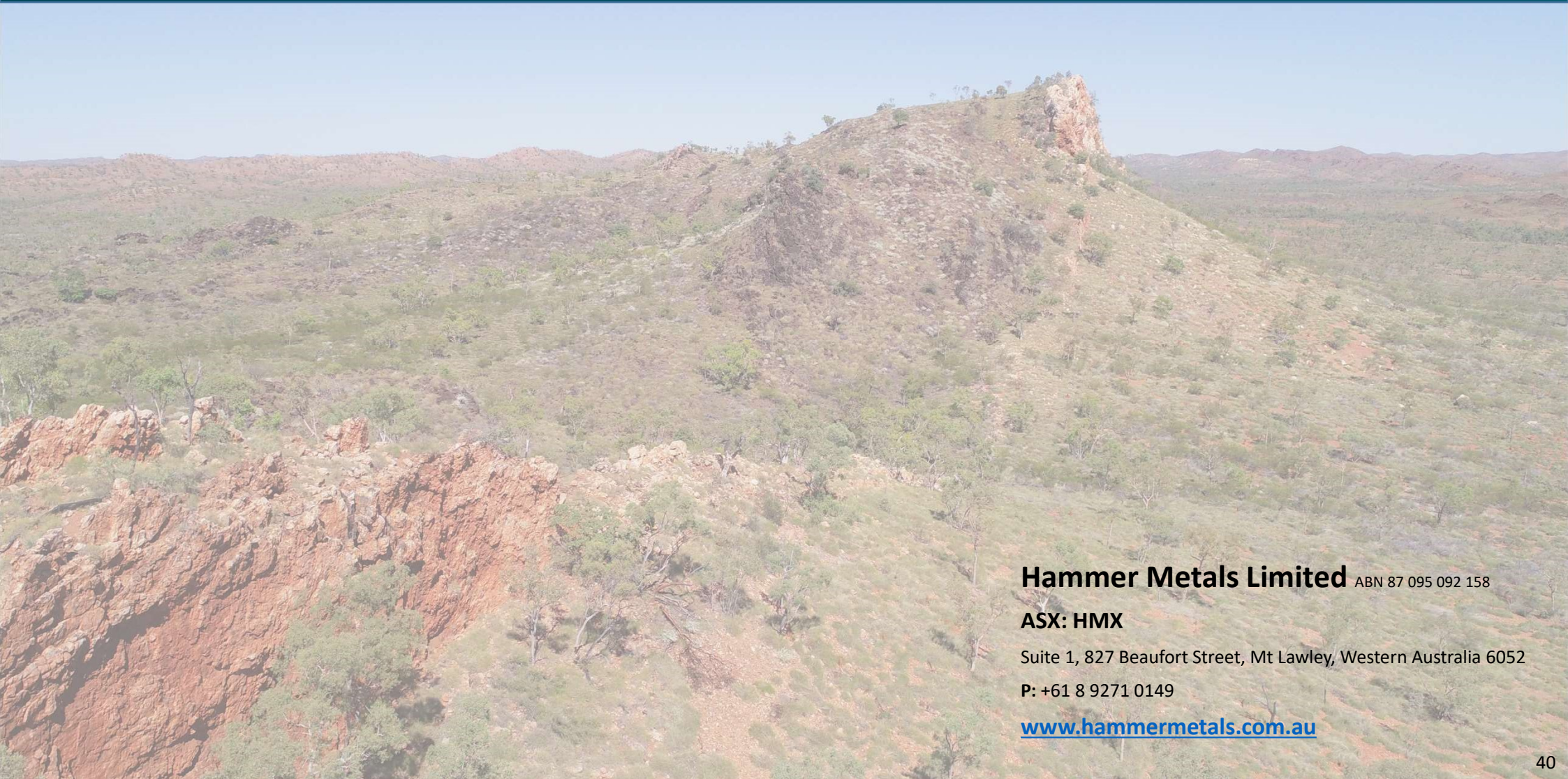
*Drill rig on site at Paddy B*



*Ziggy Lubieniecki at Perentie*



*Drill rig at Millennium*



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# Explanatory Statements



## **Disclaimer**

This presentation by its nature contains summarised information. See Hammer's other periodic and continuous disclosure announcements lodged with the Australian Securities Exchange, which are available at [www.asx.com.au](http://www.asx.com.au) for more information.

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## **Competent Persons Statements**

### **Historic Exploration Results**

The information in this presentation as it relates to exploration results and geology first reported prior to 1 December 2013 was reviewed by Mr John Downing, who is a Member of the Australian Institute of Geoscientists and a Consultant to the Company. Mr Downing has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

Mr Downing consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

Certain exploration drilling results relating to the Mount Isa Project 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.

### **Exploration Results**

The information in this presentation as it relates to exploration results and geology was compiled by Mr John Downing, who is a Member of the Australian Institute of Geoscientists and a Consultant to the Company. Mr Downing has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking 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'. Mr Downing consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

## **Resource Estimates**

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

- the Elaine Deposit
- 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 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, Exploration Targets and 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.

Mr Davis, Mr Downing and Mr Whittle all 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
<b>Total</b>			<b>20.0</b>	<b>1.8</b>	<b>0.61</b>	<b>0.14</b>	<b>0.34</b>	<b>1.9</b>	<b>3.7</b>

- 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



# Overlander Mineral Resource Estimate

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.

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.

## 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

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.

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

•Note: (2)  $CuEq = Cu\_pct + (Co\_pct * 5.9) + (Au\_ppm * 0.9) + (Ag\_ppm * 0.01)$

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.

## 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.

## Overlander North and South Mineral Resource Estimate

(Reported at 0.7% Cu cut-off)

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.

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
<b>Total</b>	<b>1,123,000</b>	<b>1.3</b>	<b>410</b>	<b>14,764</b>	<b>461</b>

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

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

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
<b>Total</b>	<b>1,772,000</b>	<b>1.2</b>	<b>445</b>	<b>21,112</b>	<b>788</b>

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.

•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

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



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

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

# Overlander and Black Rock Exploration Targets

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 previous owners on 28<sup>th</sup> September 2012. The company is not aware of any new information or data that materially affects the information in the ASX announcement. All material assumptions and technical parameters underpinning the mineral resource estimate continue to apply and have not materially changed.

## Mt Philp Deposit Mineral Resource Estimate

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
<b>Total</b>	<b>30.51</b>	<b>39</b>	<b>0.02</b>	<b>42</b>	<b>1.6</b>	<b>0.30</b>

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

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

## Exploration Targets

Prospects	Tonnage Range MT	Cu Range %	Co Range %
Overlander	5 - 30	0.5 - 1.0	0.05-0.1
Black Rock	5 - 15	0.5 - 1.0	-

### Black Rock Exploration Target

Hammer believes that an exploration target of approximately 5 – 15Mt (tonnes) at between 0.5 to 1% Cu may be present at Black Rock. The company acknowledges that the potential quantity and grade of the exploration target is conceptual in nature and that there has been insufficient additional exploration to estimate a mineral resource at the date of this release and whilst additional exploration is planned it is uncertain if this will result in the estimation of a mineral resource. Targeted tonnage/grades are based on results from previous exploration conducted on the prospect.

Level of exploration activity already completed at Black Rock:

- 18 holes totaling approximately 5.6 kilometres (refer to ASX release dated October 30<sup>th</sup>, 2018). Apart from a single 309.5m diamond hole, the remaining drilling was by the reverse circulation method. This drilling tested an approximate 1.2km mineralised strike length.
- These holes were drilled on fences with a spacing of between 100 and 300 metres. Intercept spacing within a fence ranged between 40 and 150 metres.

The process used to determine the tonnage and grade ranges utilised are as follows:

- Review of drilling data followed by data validation and estimation of volume, tonnage and grade. This resulted in a tonnage and grade estimate, which is of insufficient quality to be considered a mineral resource.
- Based on Hammers experience with this style of mineralisation in the Mount Isa region and the quality of data received leads us to reasonably expect a total grade ranging between 0.5% and 1% Cu.

Testing of this exploration target is planned over the next 12 to 24 months by an exploration program comprising predominantly reverse circulation and diamond drilling.

### Overlander Exploration Target

Hammer believes that an exploration target of approximately 5 – 30Mt (tonnes) at between 0.5 to 1% Cu may be present at Overlander. The company acknowledges that

the potential quantity and grade of the exploration target is conceptual in nature and that there has been insufficient additional exploration to estimate a mineral resource at the date of this release and whilst additional exploration is planned it is uncertain if this will result in the estimation of a mineral resource. Targeted tonnage/grades are based on results from previous exploration conducted on the prospect.

Level of exploration activity already completed at Overlander:

- Overlander was drilled by Hammer Metals Limited culminating in the Overlander JORC resource (Refer to the ASX release dated August 26<sup>th</sup> 2015). The Overlander Exploration target refers to the zone encompassing both Overlander north and south in addition to the area between the two JORC resources
- 73 holes totaling approximately 7.9 kilometres. This includes three diamond drillholes. This drilling tested an approximate 1.2km mineralised strike length.
- These holes were drilled on fences with a spacing of between 40 and 200 metres.

The process used to determine the tonnage and grade ranges utilised are as follows:

- Review of drilling data followed by data validation and estimation of volume, tonnage and grade. This resulted in a tonnage and grade estimate, which is of insufficient quality to be considered a mineral resource outside of existing zone of mineral resources.
- Based on Hammers experience with this style of mineralisation in the Mount Isa region and the quality of data received leads us to reasonably expect a total grade ranging between 0.5% and 1% Cu.

Testing of this exploration target is planned over the next 12 to 24 months by an exploration program comprising predominantly reverse circulation and diamond drilling.