

Merlin

A New Mo ~Re Discovery in the Cloncurry District



SMEDG
SYDNEY MINERAL EXPLORATION DISCUSSION GROUP

Ivanhoe Australia Geology Team

17th August 2009

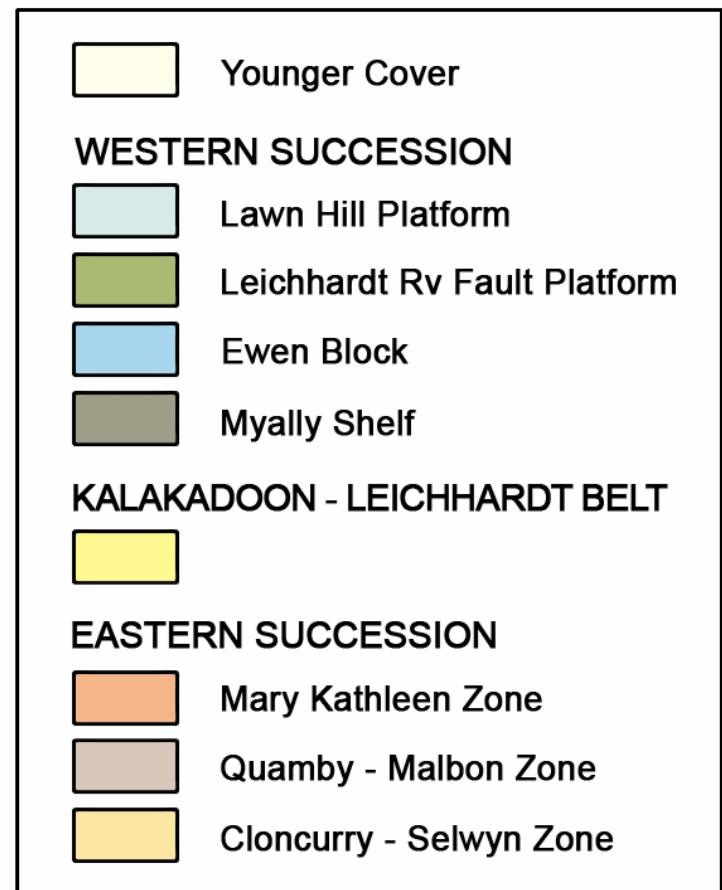
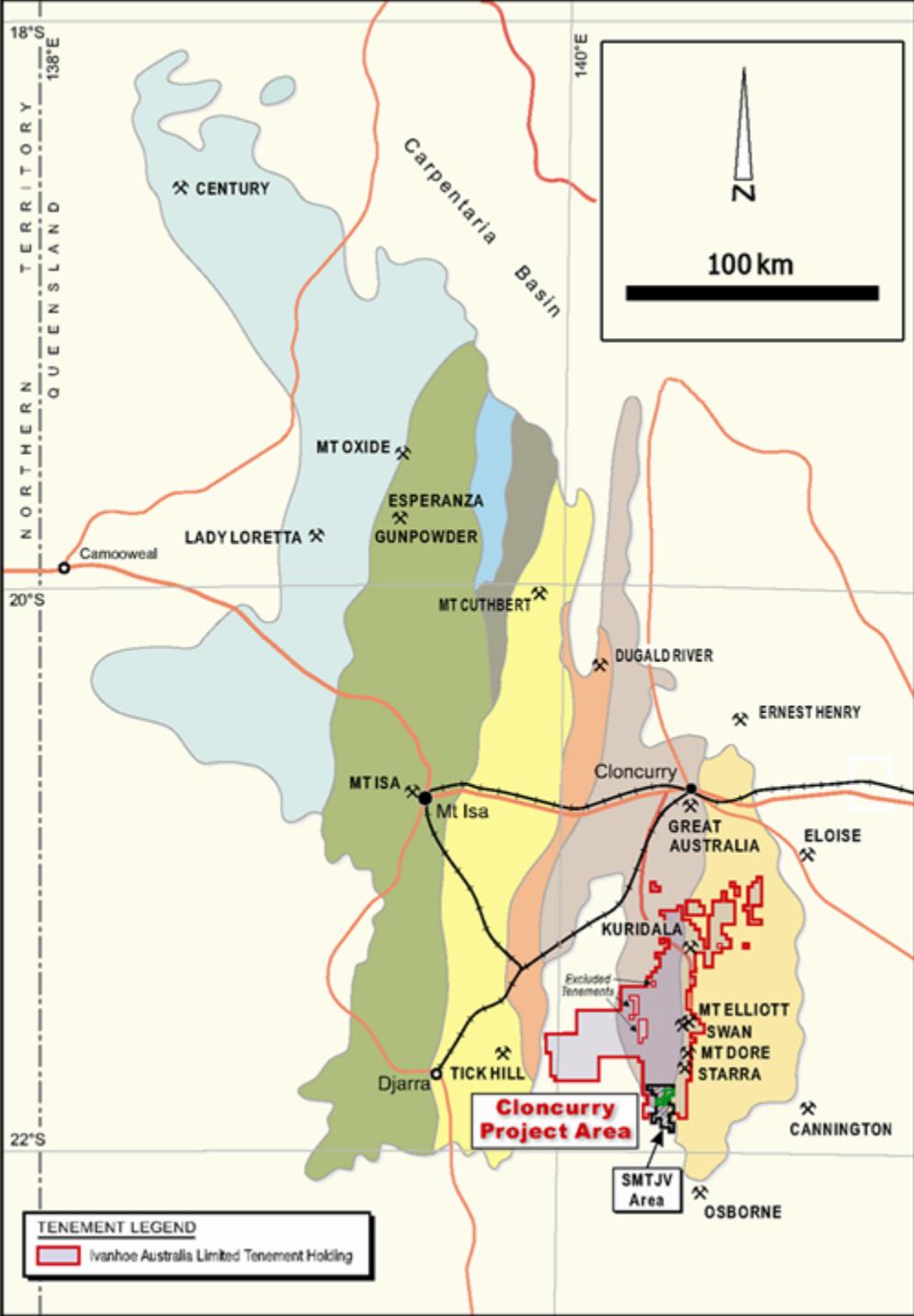


NORTH AUSTRALIAN CRATON



Regional Setting

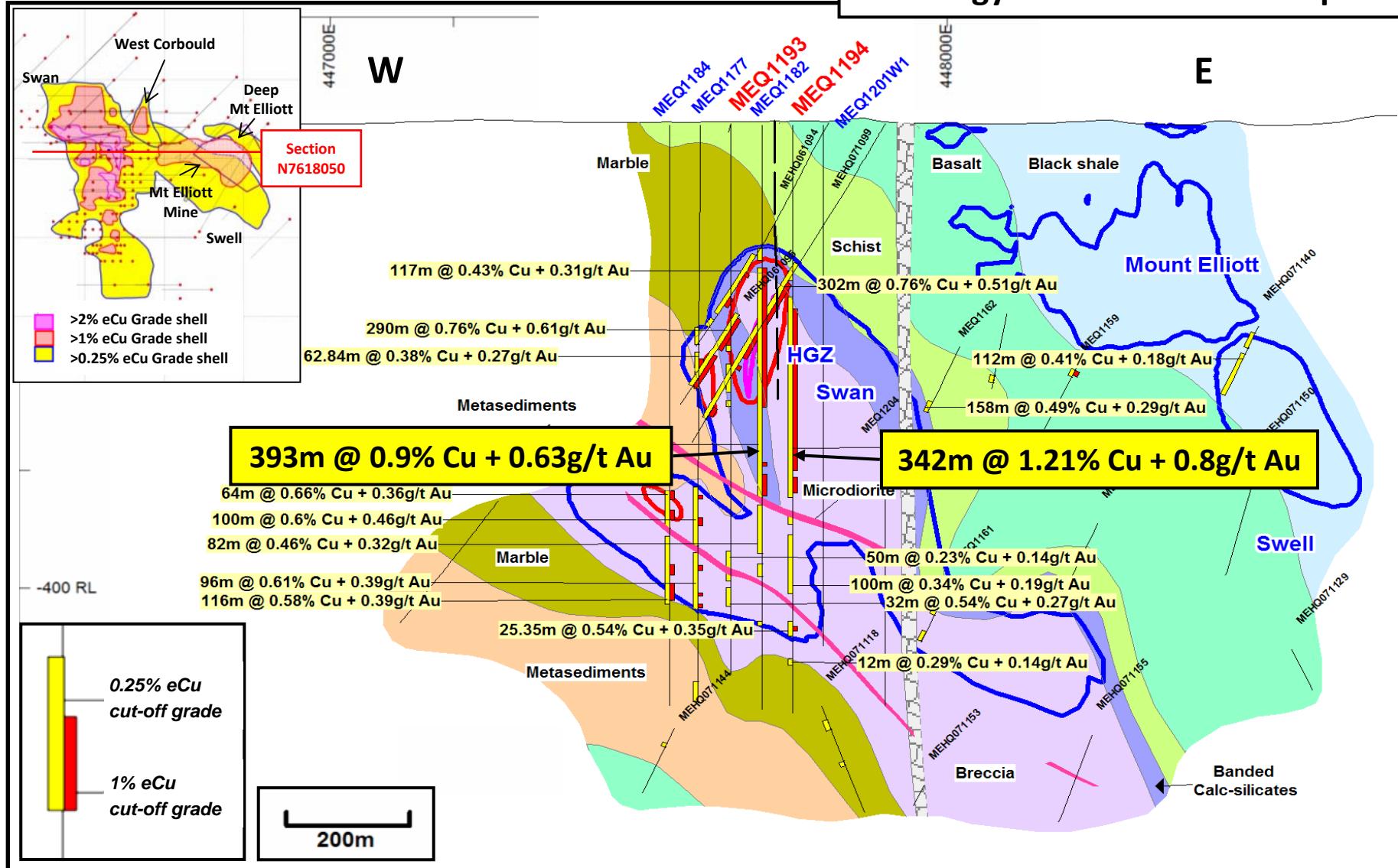
Cloncurry Project Tenements



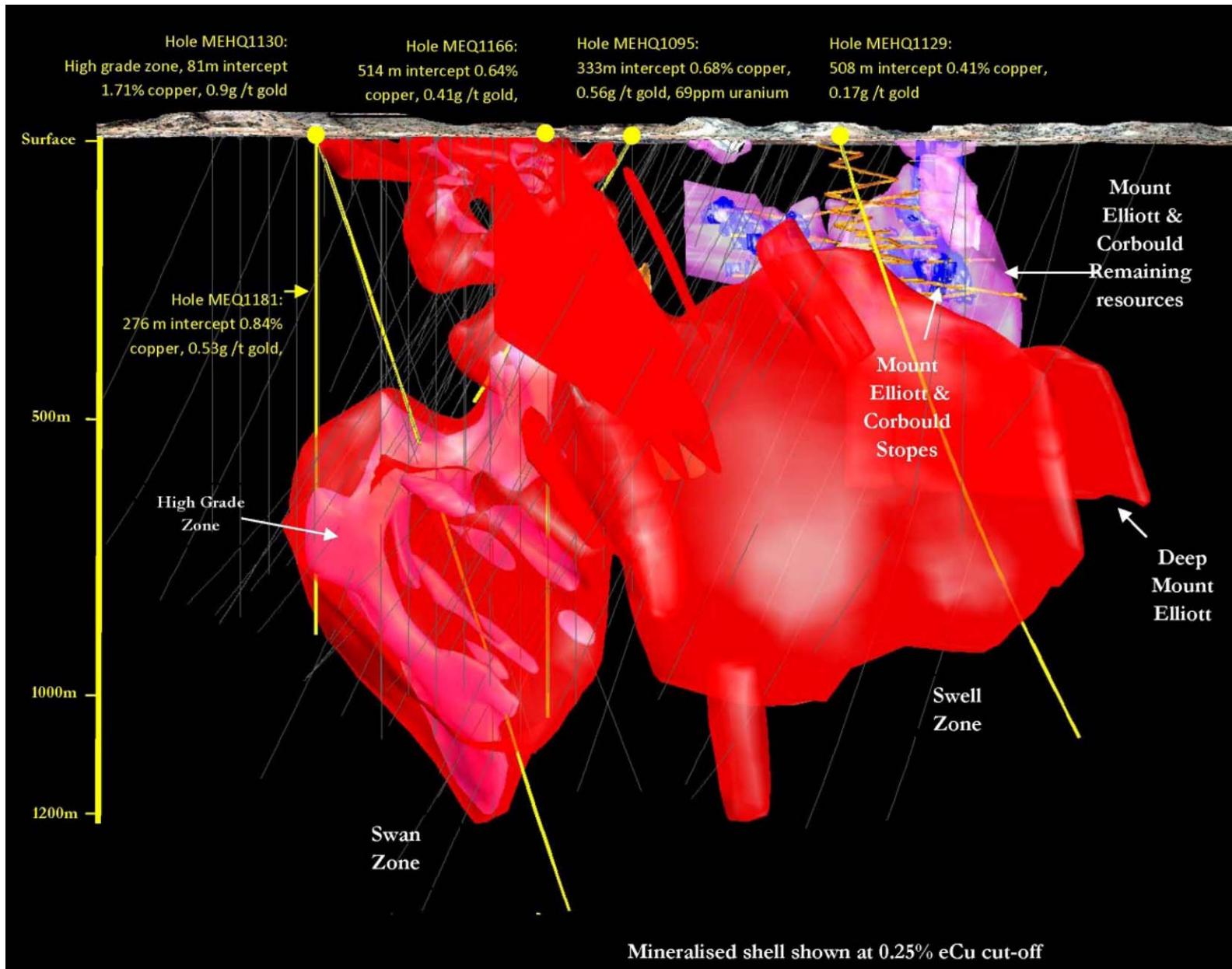


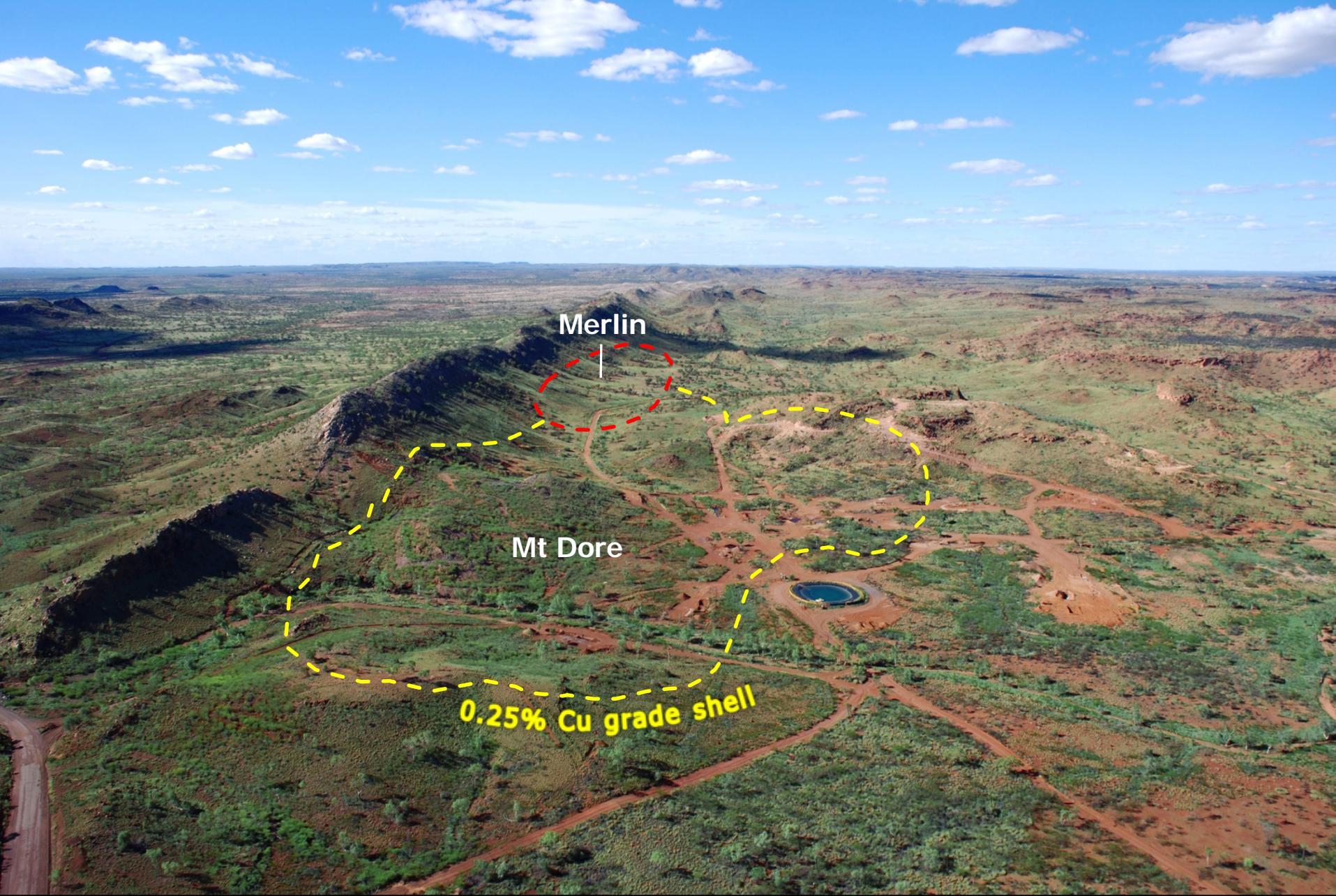
SWAN – Mount Elliott aerial view, looking northeast

MOUNT ELLIOTT PROJECT
XS N7618050
Geology and Cu & Au Intercepts

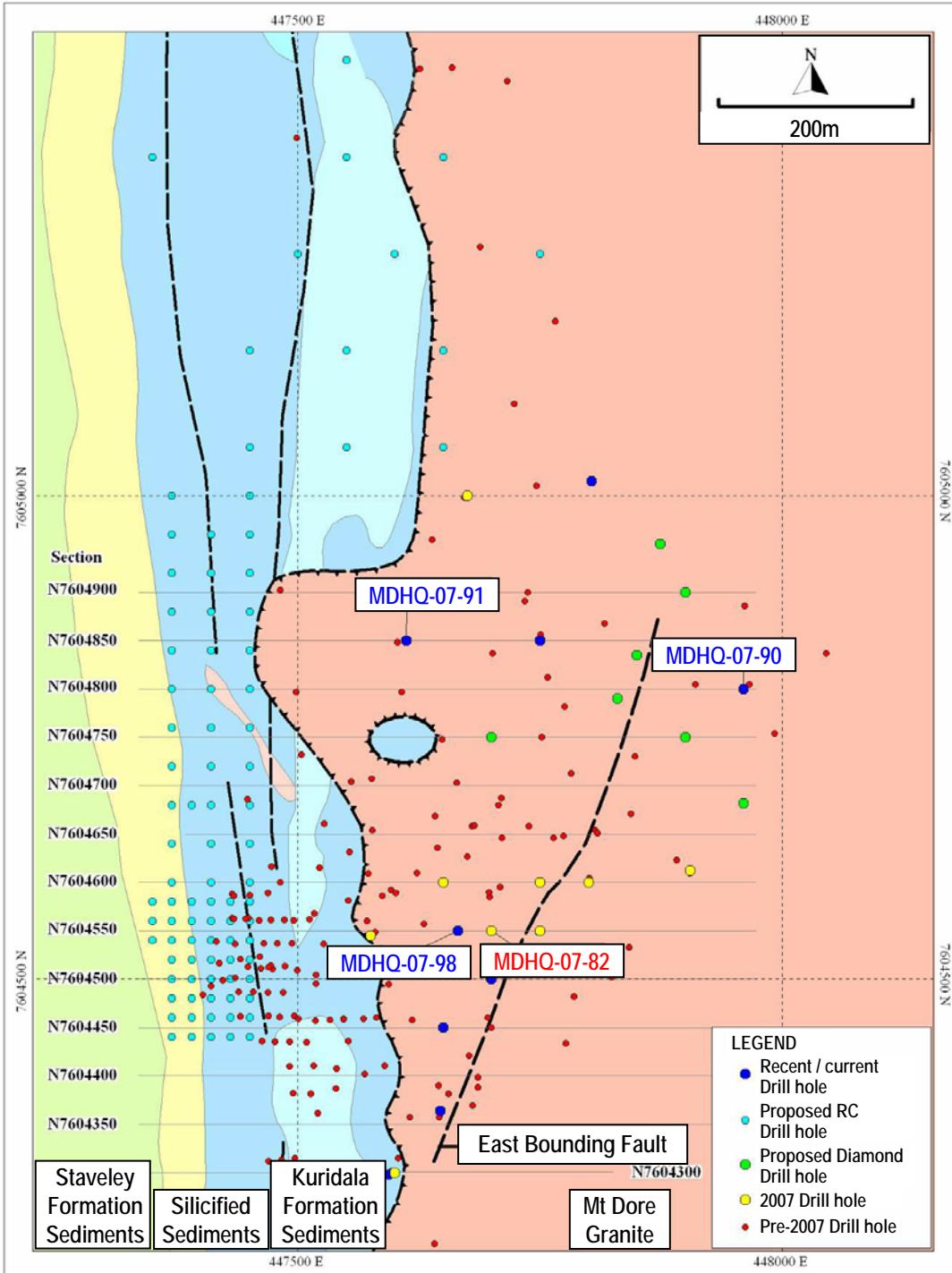


Overview of the Large SWAN Mount Elliott Project





Mount Dore – Merlin, view looking north



Mount Dore Geology

Kuridala Fm:

Shale / siltstone, carb shale, phyllite, qtz-mica schist.
Alteration: silica- K-feldspar altered
Sheared / brecciated

Hanging-wall: Mount Dore granite; schist breccia

Footwall: Staveley Fm sediments

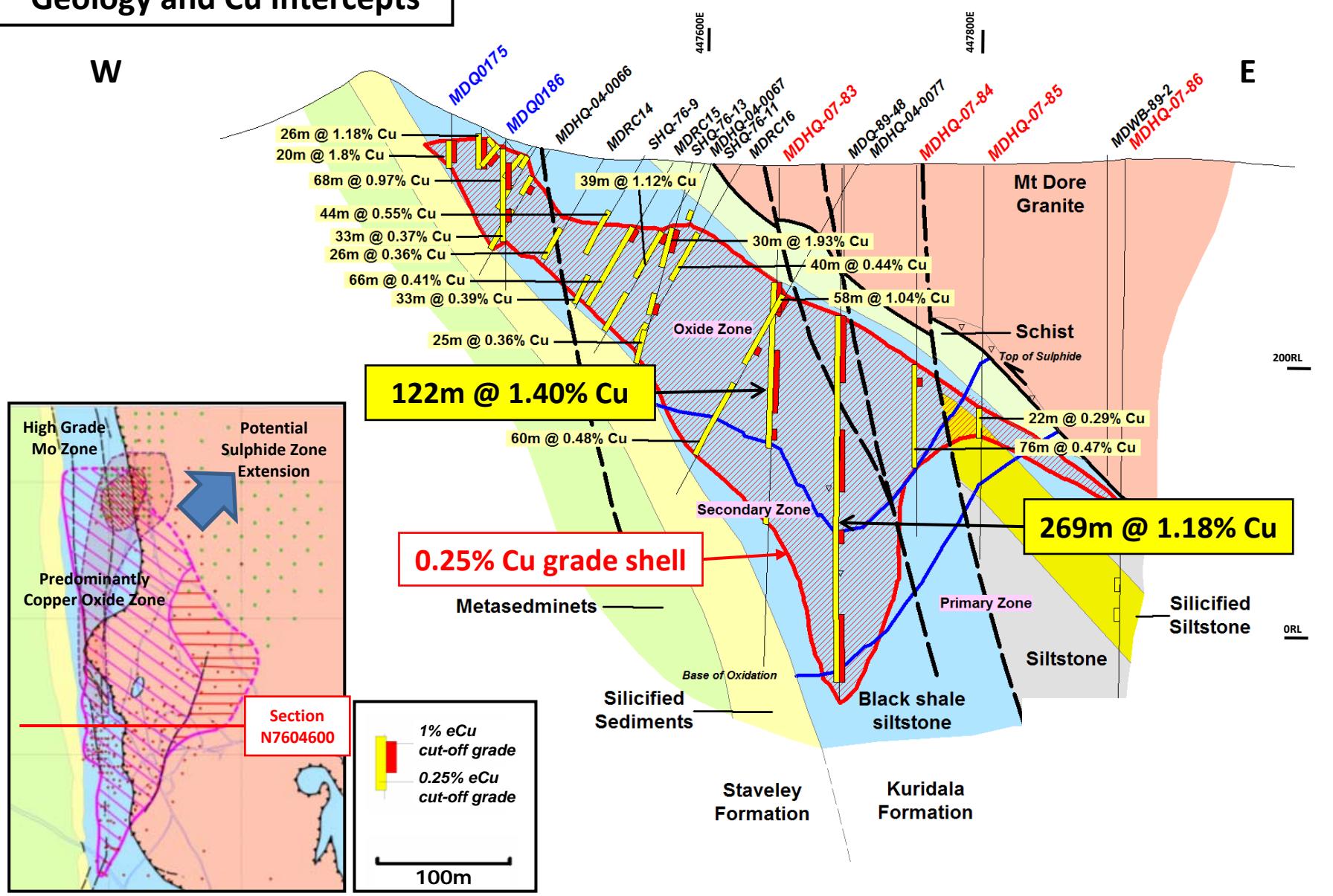
Deep oxidation of copper minerals; more hypogene sulphides (chalcopyrite, bornite, pyrite, molybdenite, chalcocite) to down dip to east.

Prospective zone along strike for 5 km north *i.e.* Flora-Busker.

MOUNT DORE PROJECT

XS N7604600

Geology and Cu Intercepts



Mount Dore Breccias – Oxide and Secondary Copper



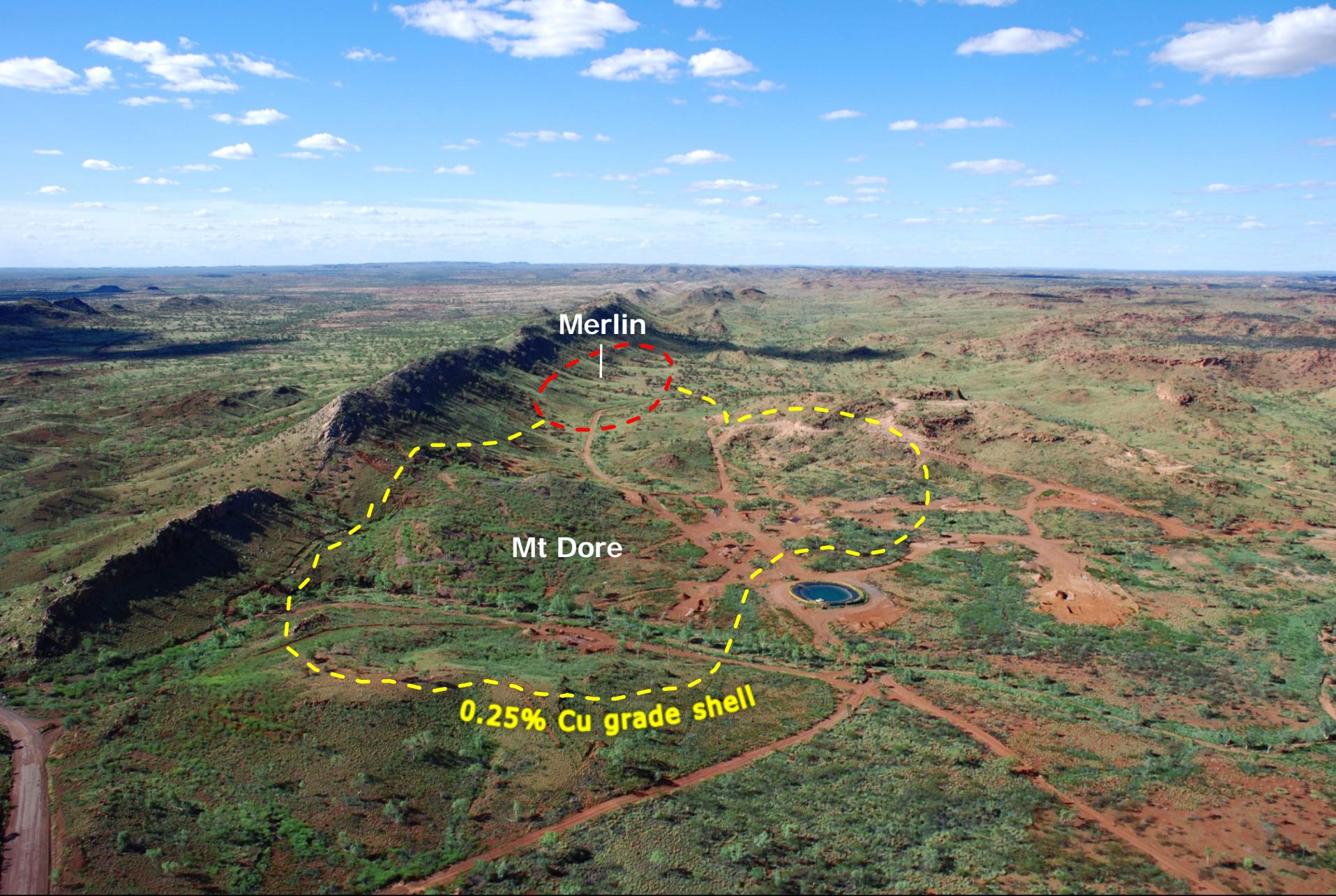
Breccia – chalcocite-chrysocolla, native Cu.
MDQ0088, 223.90m depth



Siltstone breccia with chalcocite.
MDQ0088, 270.00m



Breccia with hypogene chalcocite clasts.

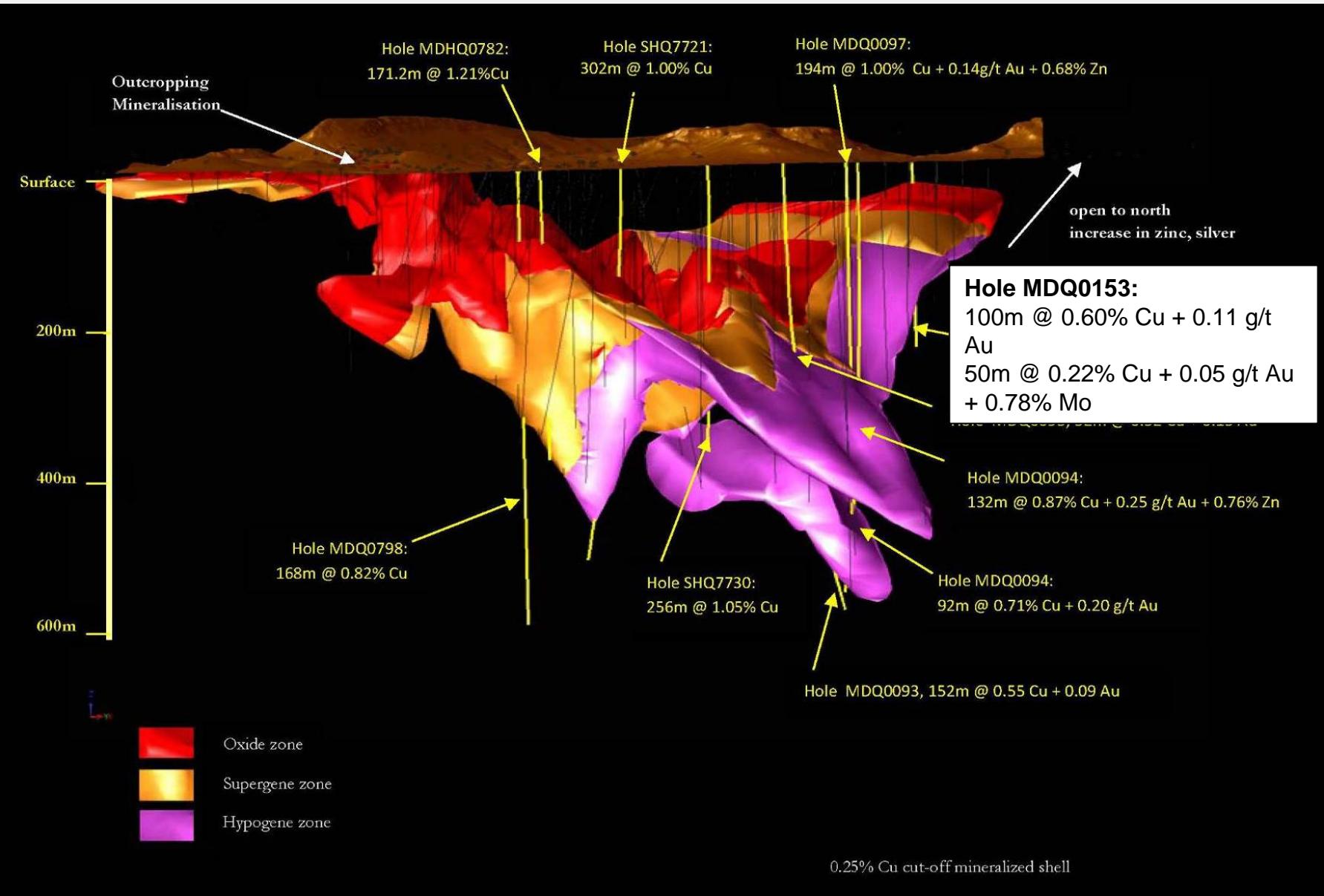


Mount Dore – Merlin, view looking north



Drilling at Merlin Project (November 30th, 2008) with Five Drill Rigs.

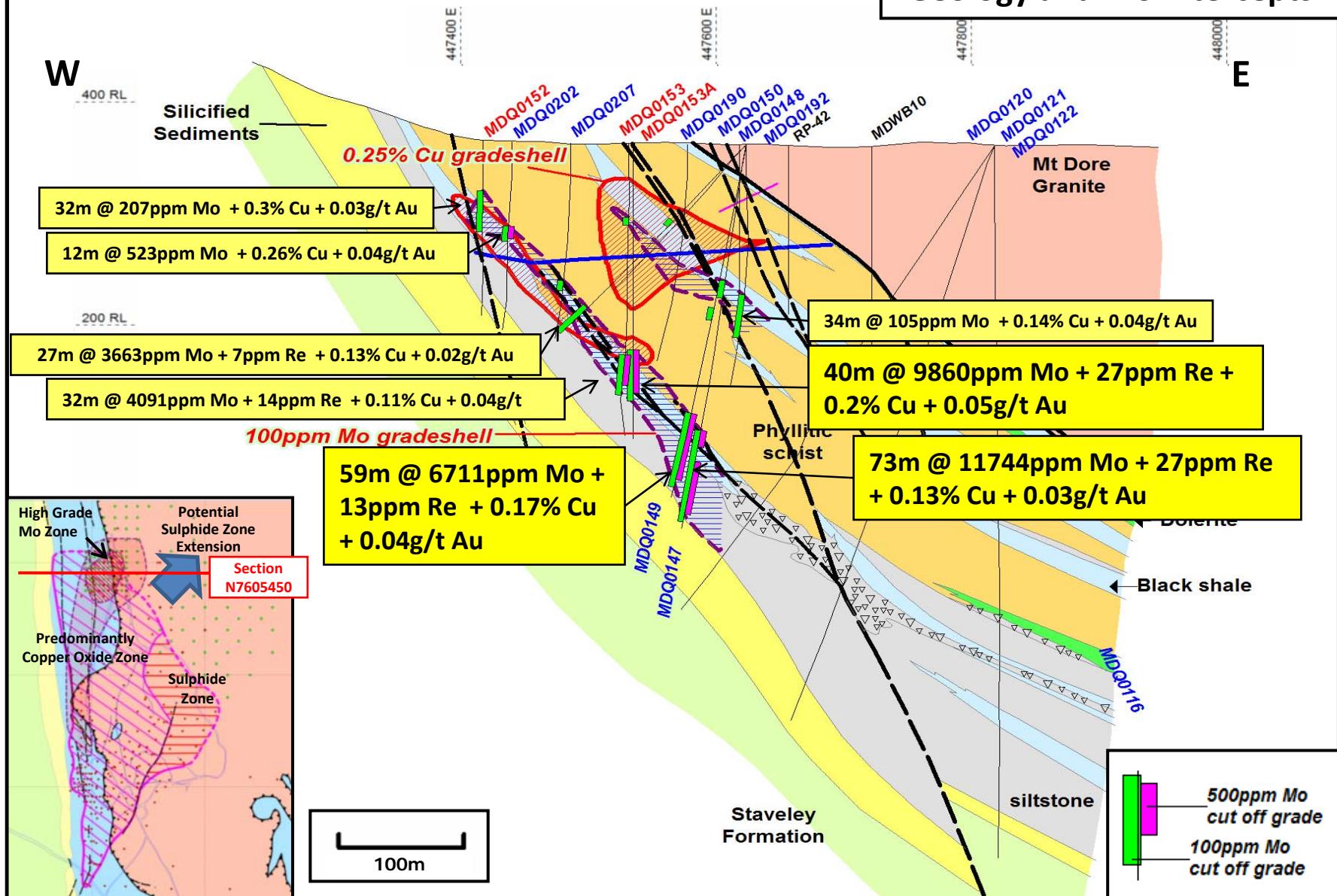
Ivanhoe Australia



Project History

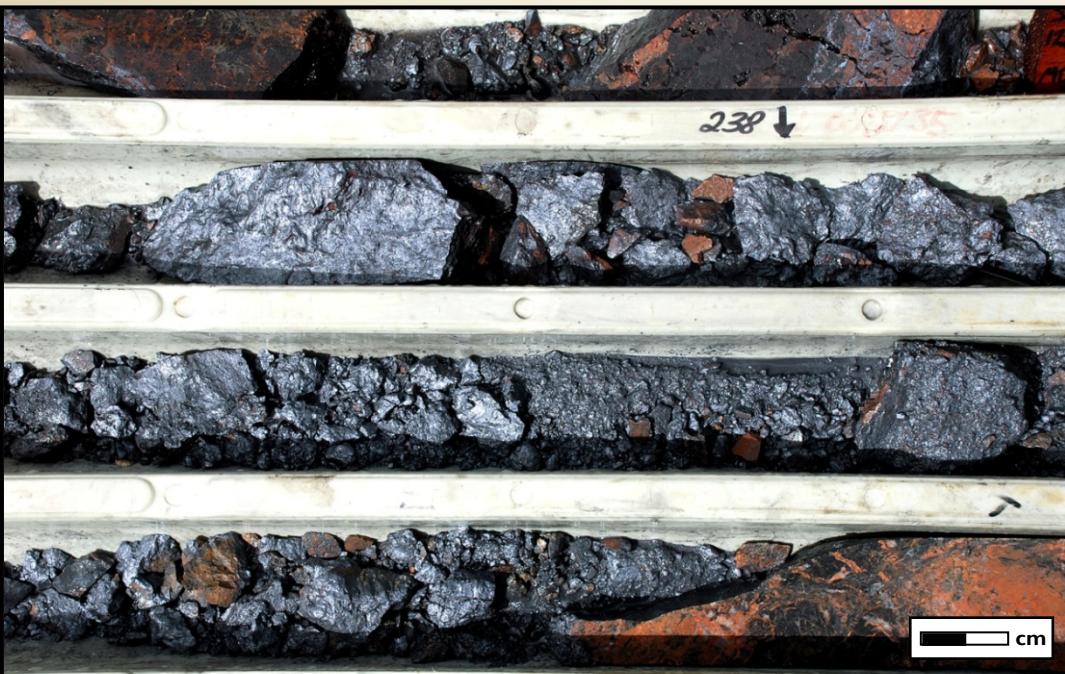
- Early 2008 – Shallow Cu Resource RC Campaign, MDQ0153 returned 32m @ 0.41% Mo, 14.3 g/t Re
- June 2008 – Twin hole of MDQ0153 (MDQ0153A) intersected Mo sulphides (40 m @ 0.99% Mo and 26.8 g/t Re)
- End-September – Mo trend recognised after a review of drill holes with anomalous Mo for Re- analysis (700m strike length)
- MDQ0147 intersected thick high grade Mo zone
- Cu-targeted RC holes started to be deepened and confirmed the robust trend and dip of Mo mineralisation
- Present – continuous drilling

MERLIN PROJECT
XS N7605450
Geology and Mo Intercepts

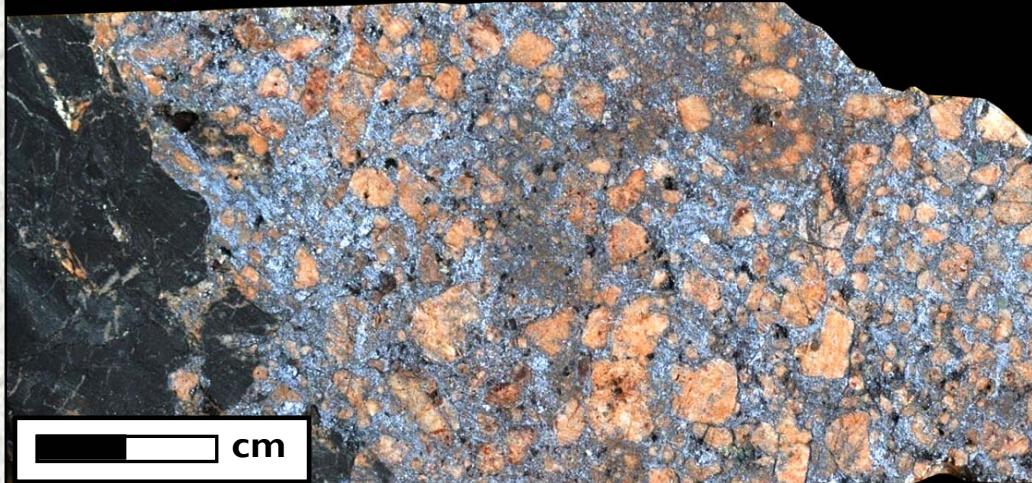




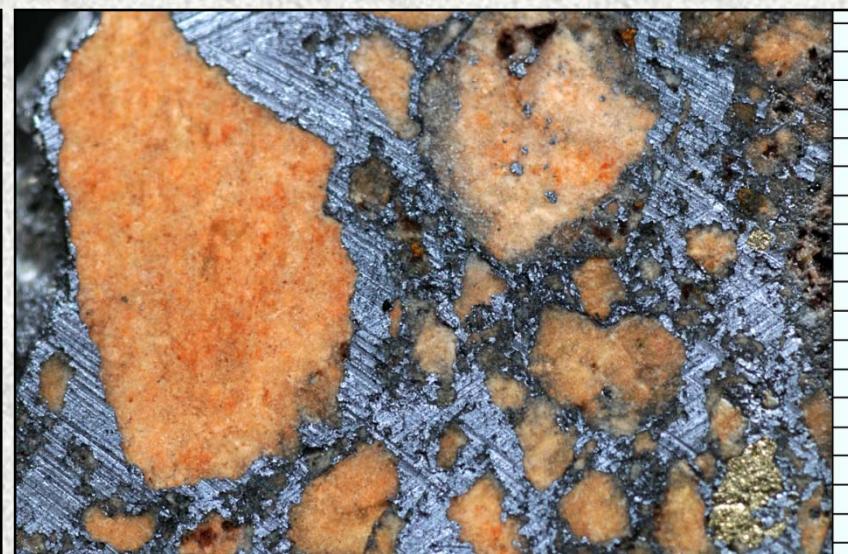
**Drill hole MDQ0147,
233.8-236.7m**



Massive Molybdenite



MDQ0147, 238.4m – Interval from 238-239m,
12.4% Mo, 305g/t Re, 0.6% Cu, 0.16g/t Au,
83g/t Ag



Hole 147, Close up Image. The scale rule is in mm.

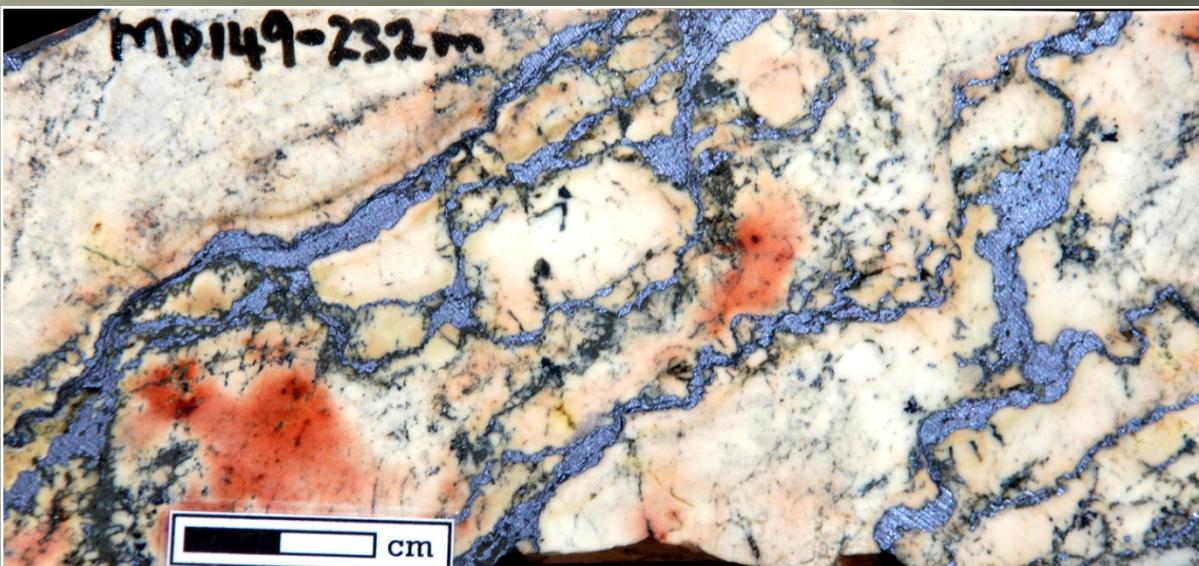
MDQ0147, 233.1m – Molybdenite Supported Breccia, 8.1% Mo,
151g/t Re, over 233-234m

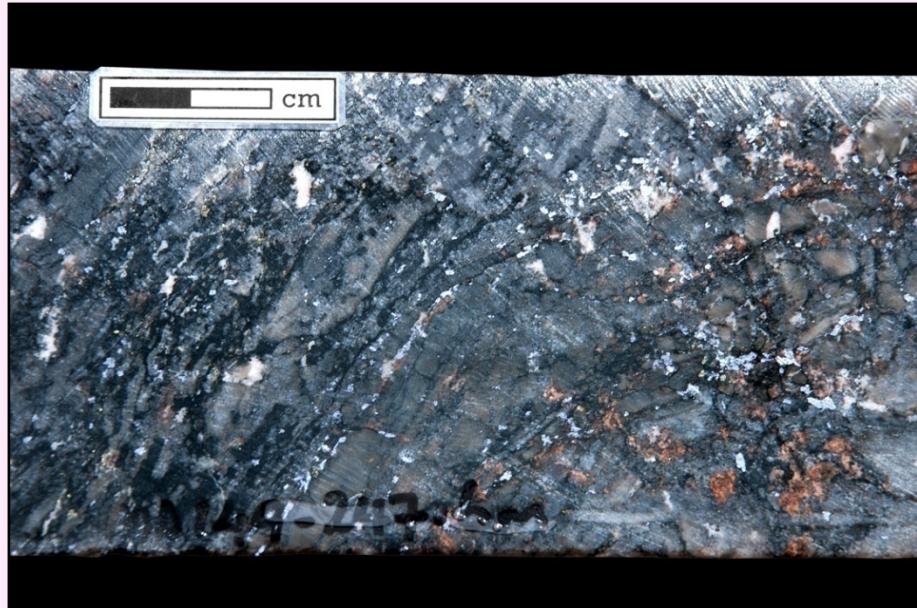


MDQ0119, 412m – “Molybdenite Supported Breccia”

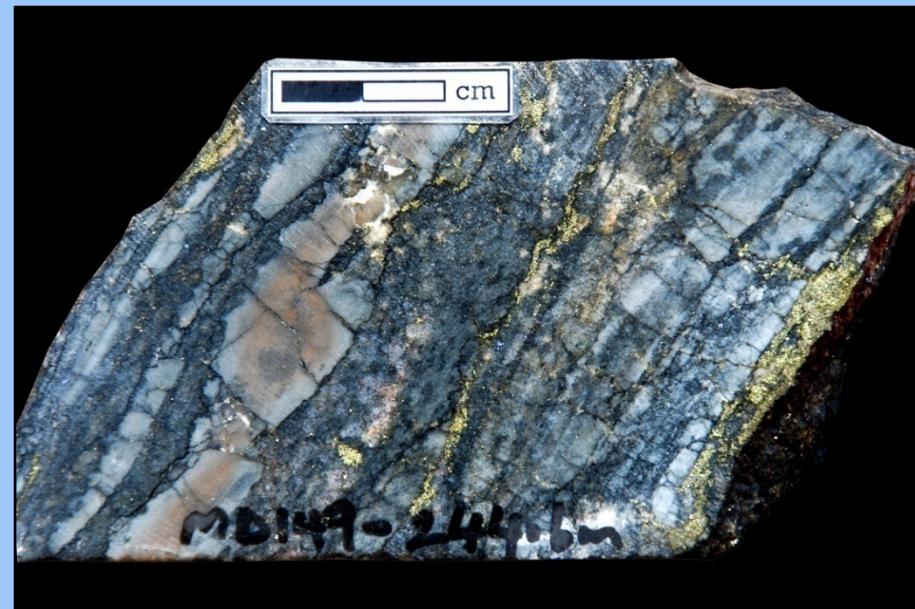


MDQ0147 - Breccia, sheared sediment with Molybdenite in filling fractures.





MDQ0149 - Altered style Mo mineralisation.

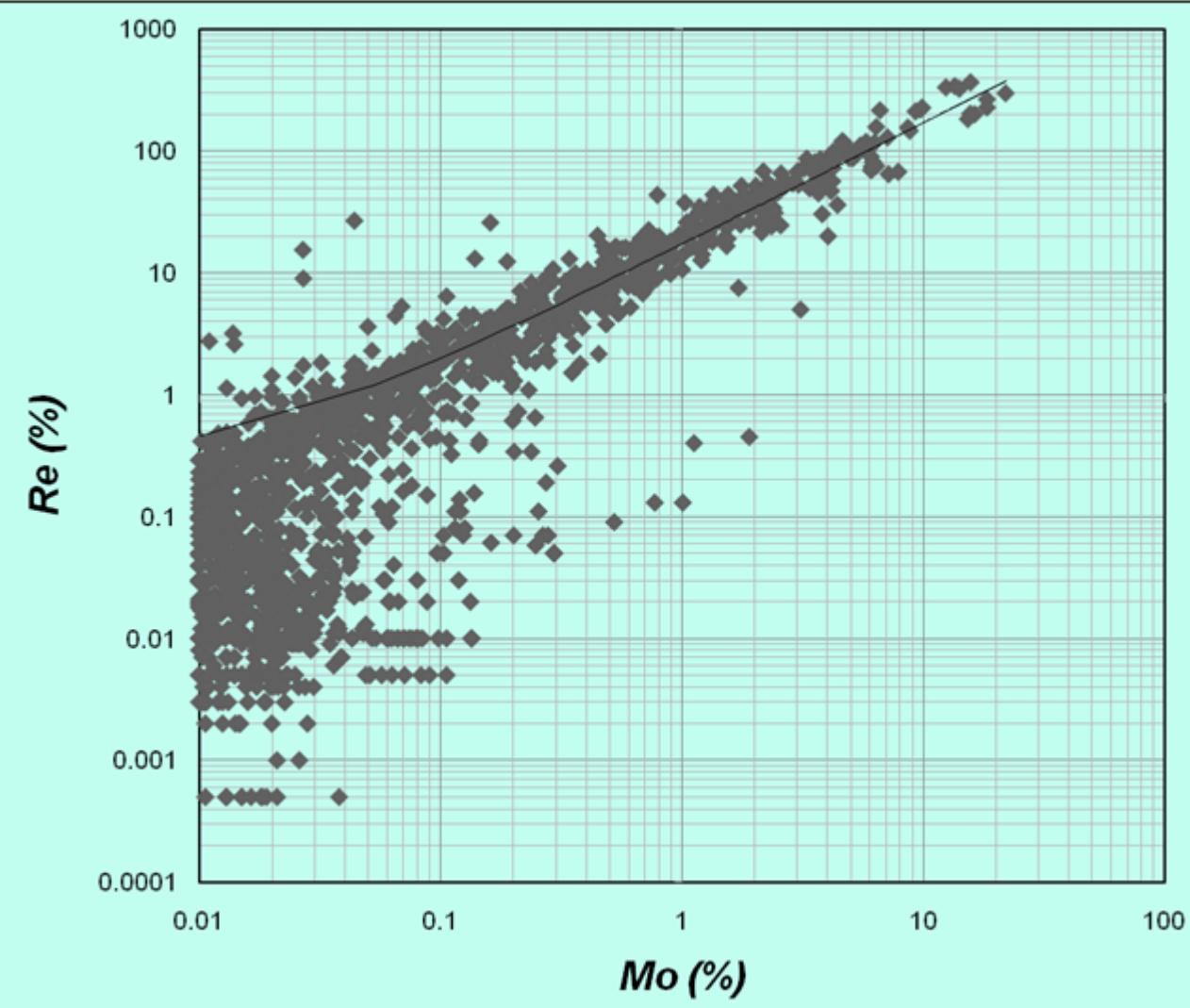


MDQ0149 - Copper Mineralisation is also present.



Albite alteration – DDHMD149





**Good Correlation of
Mo and Re**

Mo Range Used (%)	Ratio
0.01 - 22.00	597 : 1
0.01 - 1.00	583 : 1
0.01 - 0.10	394 : 1

Significant Merlin Drill Results, March 2009

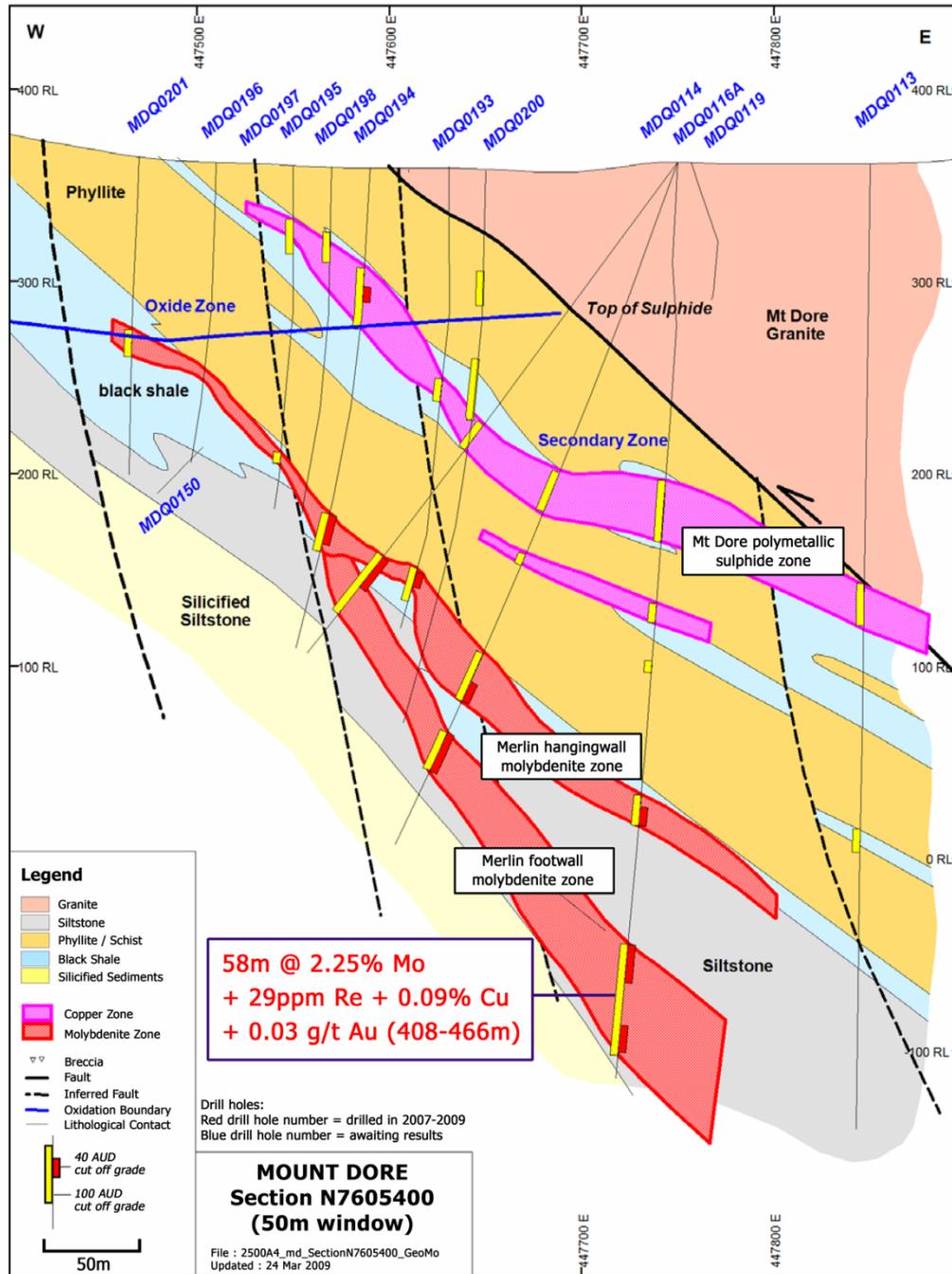
Hole No.	Mo (%)	Re (g/t)	Cu (%)	From Depth (m)
MDQ0115 - 38m	1.20	17.29	0.17	246
MDQ0119 - 58m	2.25	28.99	0.09	408
Including - 20m	6.26	81.83	0.14	
MDQ0128 - 24m	1.07	16.96	0.11	190
MDQ0132 - 50m	1.60	24.34	0.12	350
MDQ0135 - 70m	1.05	*	0.05	360
Including - 20m and 10m	2.29	*	0.14	367
	1.55	33.3	0.05	418
MDQ0154 - 34m	1.82	22.04	0.12	240.9
Including - 6.1m	8.77	101.95	0.16	
MDQ0154w1 - 30m	1.66	21.14	0.30	220
Including - 10m	4.97	63.13	0.13	240
MDQ0189 - 18m	1.68	39.54	0.17	246
MDQ0199 - 10m	1.50	32.96	0.29	214

* Rhenium results not yet complete

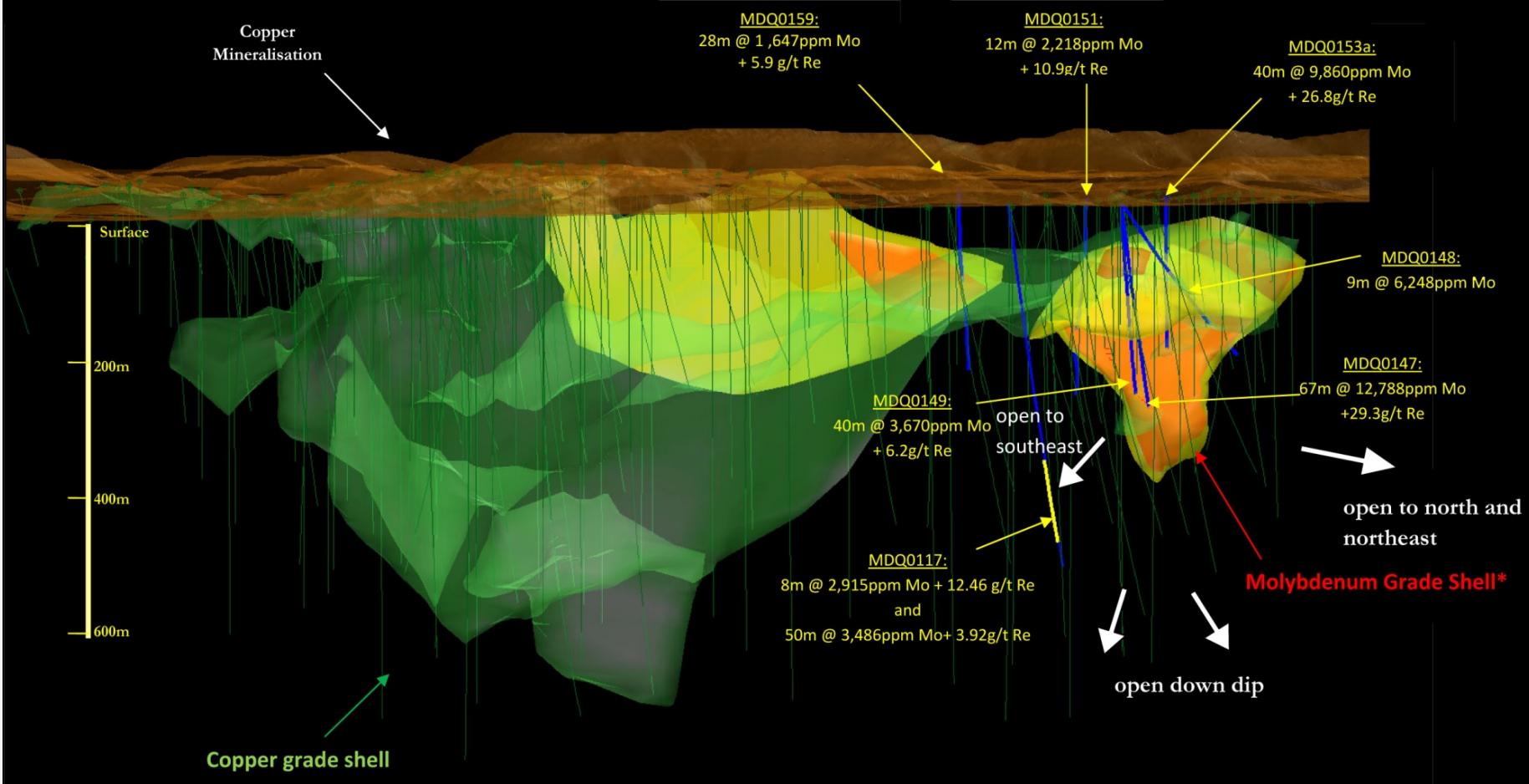


Drill hole MDQ0119, 409.4 to 414.8m – 5.4m @ 19.3% Mo & 247.7 g/t Re

Cross-section 7605400N Showing Down Dip Drilling on Merlin Project



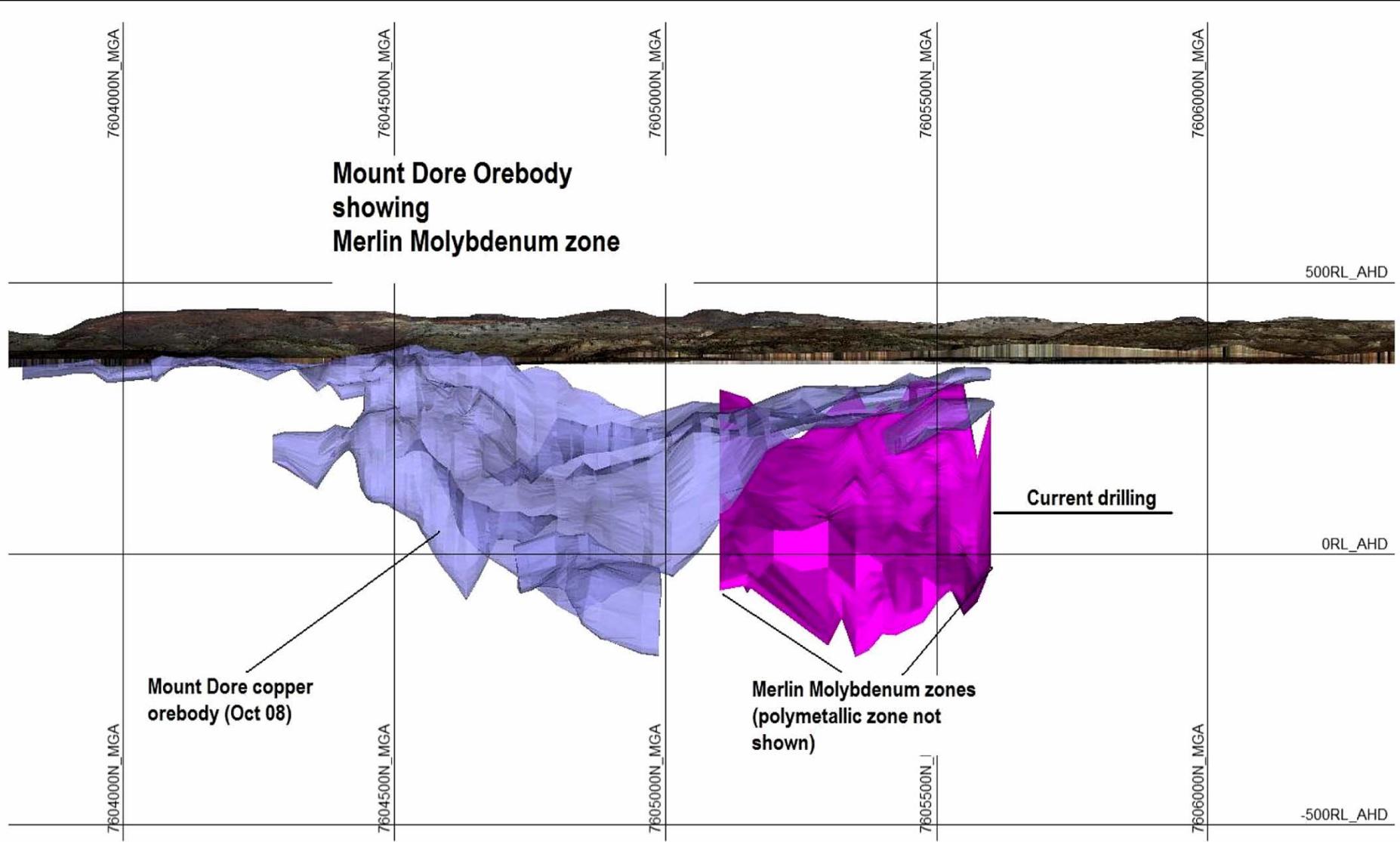
Ivanhoe Australia



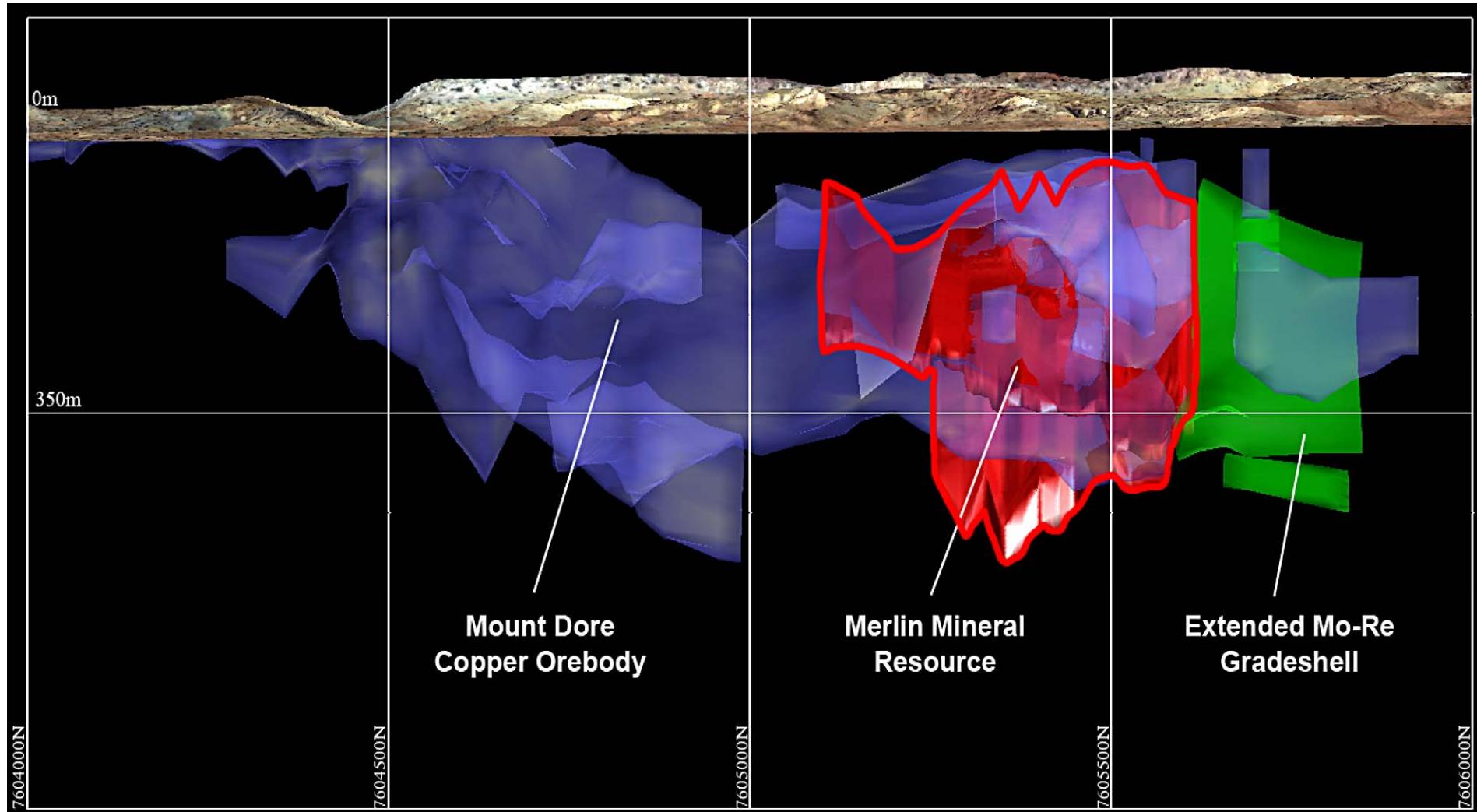
Merlin Zone

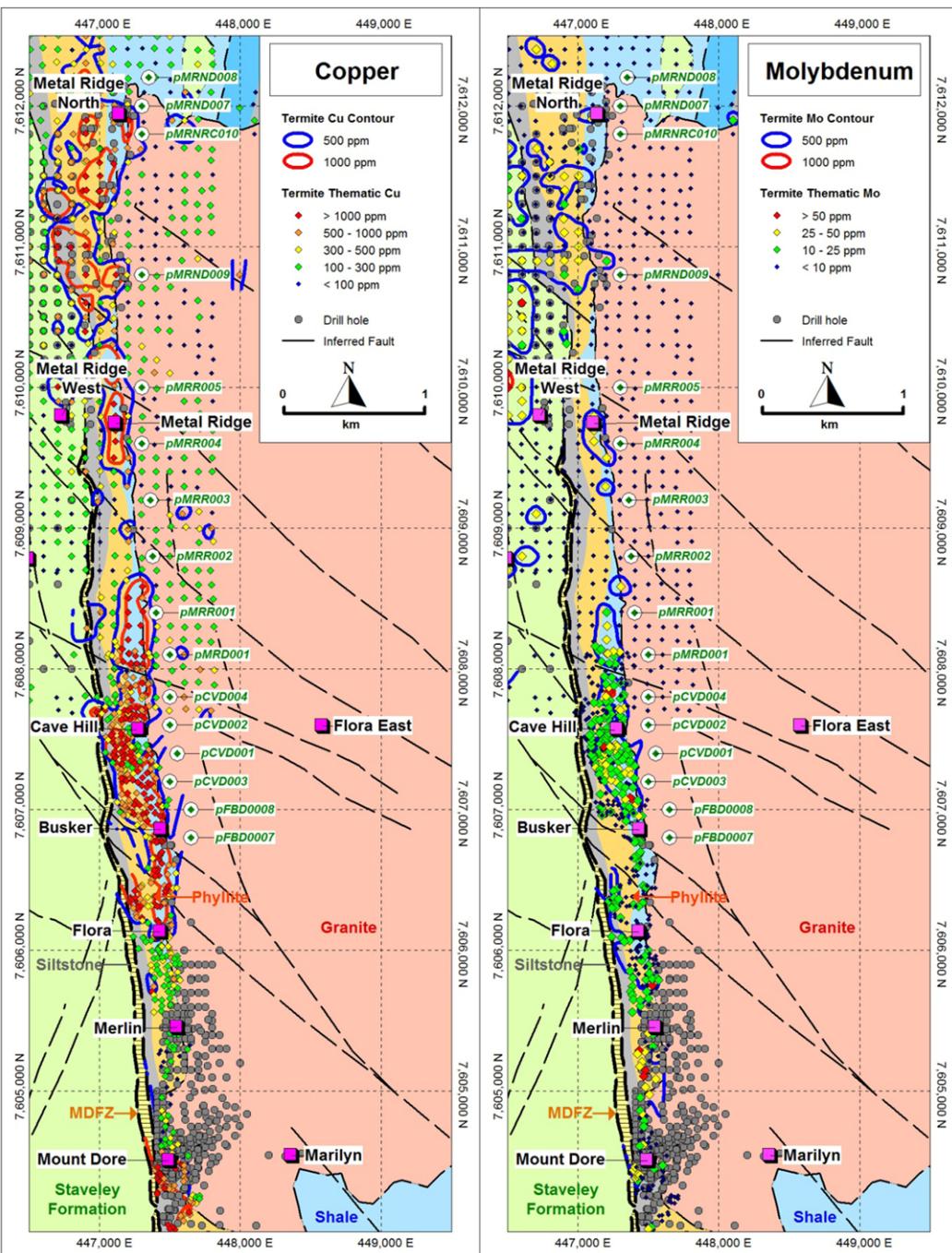
Mount Dore Oxide Copper Orebody and Merlin Molybdenum project

3D image looking west



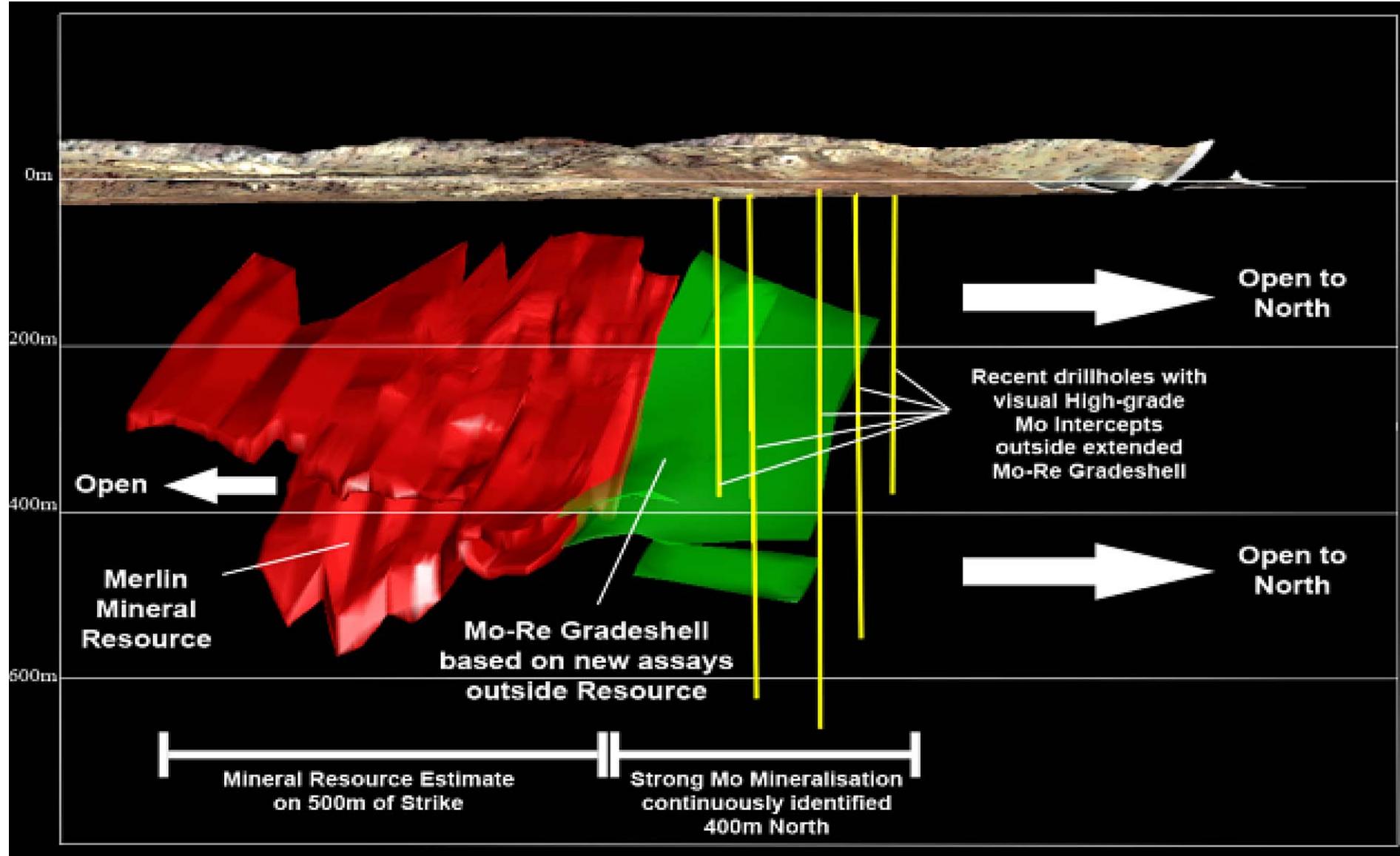
Mount Dore Long Section Showing Merlin





Termite Mound Niton Results for the Mount Dore to Metal Ridge Belt

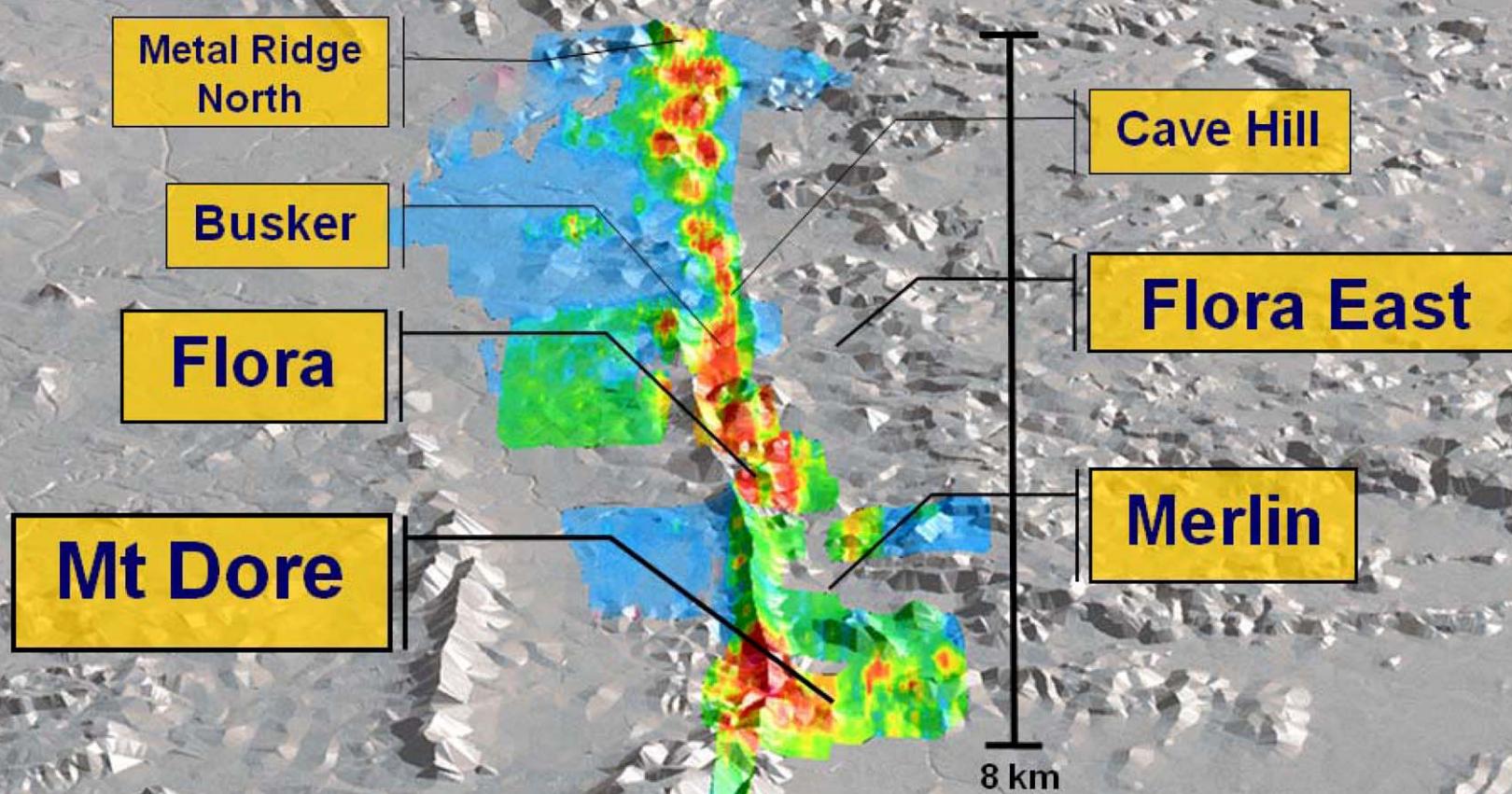
Merlin Section and Extensions







Mount Dore Belt - Cu Soil Geochem



Yellow & Red >100 ppm Cu



IOCG ?
Fluid Source ?
Metal Source ?
Share Price ?

Rhenium Metal



Rolls-Royce Trent 1000 Inlet Turbine

Rhenium



- ◆ Silver-grey metal with a melting point of 3180°C.
 - ◆ One of the least abundant elements in the earth's crust (parts per billion).
-
- ◆ Identified in 1925, although predicted in Mendeleeff's first periodic table of the elements in 1871.
 - ◆ First significant commercial application was in Pt-Re catalysts introduced in petroleum refining in late 1960s.
 - ◆ Principal application today is in high-temperature alloys that are precision cast for turbine blades in jet engines.

RHENIUM SOURCES

- Biproduct from Cu-Mo porphyries
 - eg. Bingham Canyon
- Biproduct from sediment hosted Cu deposits
 - eg. Dzhezkazgan and Kupferschiefer
- Biproduct from sediment hosted U deposits
 - eg. Uzbekistan
- Primary mineral rheniite (ReS_2) Kudriavy volcano, Kurile Is.
- Trace to 4% in molybdenite

Photo credit: irocks.com



Rheniite (ReS₂) from Kudriavy volcano

Kudriavy volcano, Iturup Island in the Kuril Arc, Western Pacific



Photo - Russian Academy of Sciences 1992



Courtesy of G.S. Steinberg 1999

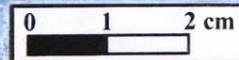
The ten most expensive traded metals (*22 December 2008*)

No.	Element	Price in \$/kg	Price in \$/oz
1	Rhodium	32,953	1,025
2	Platinum	27,520	856
3	Gold	27,247	847
4	Iridium	13,101	407
5	Osmium	12,217	380
6	Rhenium	10,000	311
7	Ruthenium	5,722	178
8	Palladium	3,054	95
9	Germanium	1,200	37
10	Hafnium	1,000	31

Source: Lipmann Walton & Co., Ltd. (www.lipmann.co.uk)

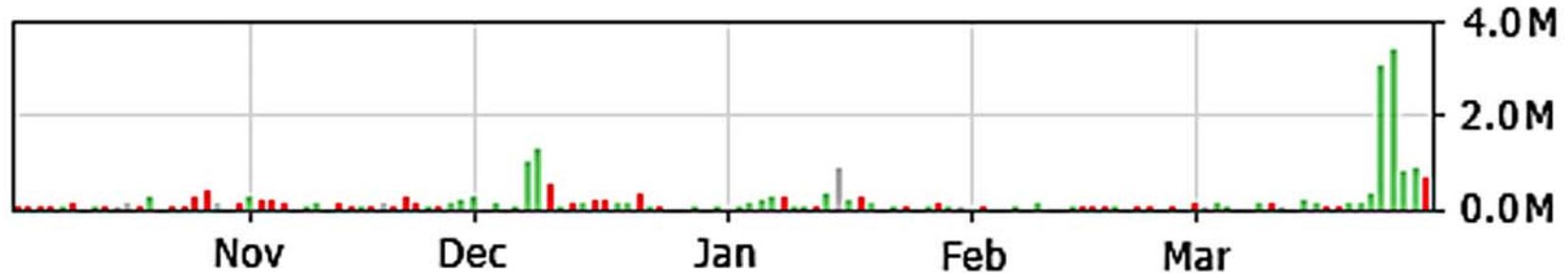
Merlin Molybdenum - Rhenium Deposit

- ◆ Shallow, high-grade molybdenite
- ◆ In-ground value of A\$6.4 billion - \$500 a tonne
- ◆ 13 Mt at 0.8% Mo, 14 g/t Re, 0.2% Cu and 4.8 g/t Ag
- ◆ 110,000 t Mo - 180,000 kg Re - 30,000 t Cu and 2 Moz Ag
- ◆ Equivalent to:
 - ❖ *A 6 million ounce gold deposit at 14 g/t gold*
 - ❖ *A 1.1 million tonne copper deposit at 8.5% copper*



Molybdenite breccia, Merlin Deposit

Ivanhoe Australia Ltd (IVA)

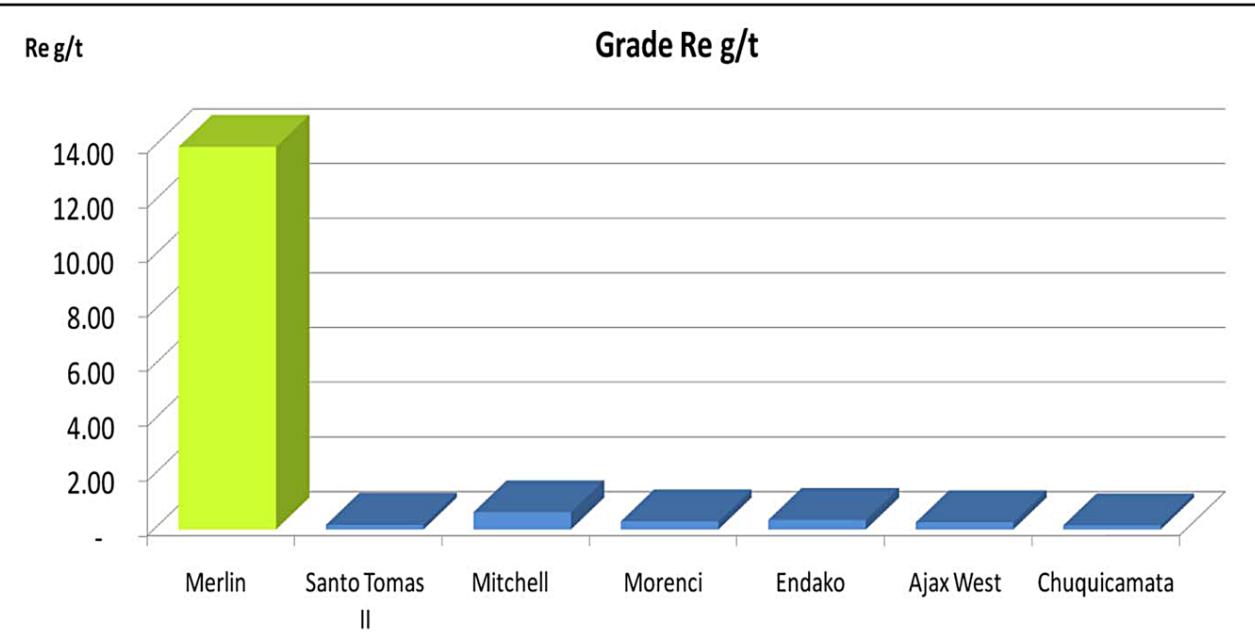
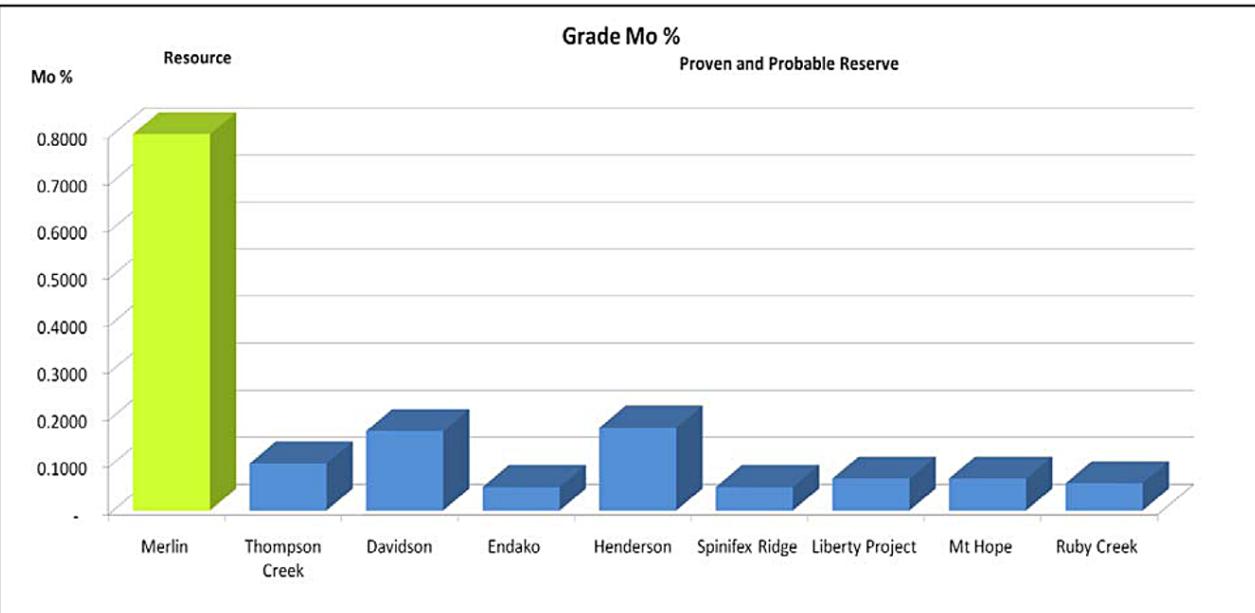


Merlin Molybdenum - Rhenium Deposit

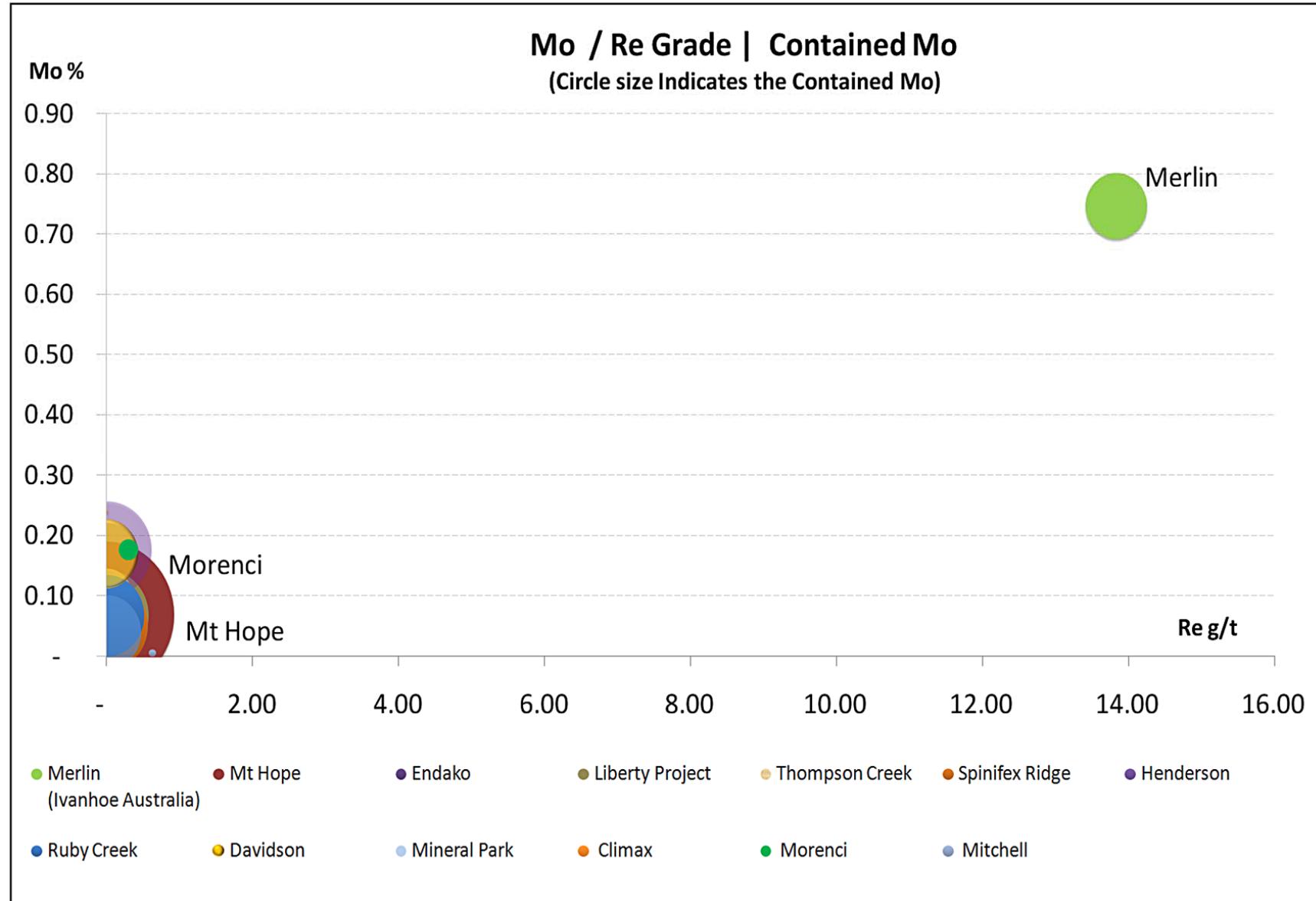
- ◆ World's highest grade molybdenum rhenium deposit
- ◆ JORC compliant Inferred Resource estimated as:
 - 13 Mt at 0.8% Mo, 14 g/t Re, 0.2% Cu and 4.8 g/t Ag
- ◆ Estimate of contained metal is:
 - 110,000 tonnes (240 million pounds) Mo
 - 180,000 kilograms (6 million ounces) Re
 - 30,000 tonnes Cu
 - 2 million ounces Ag
- ◆ Exploration focus to add molybdenite resources

Comparable Charts of Other Mo & Re Deposits

- ◆ Most Mo / Re sources part of large mineral systems - copper porphyries
- ◆ Henderson considered high grade @ 0.2% Mo
- ◆ Primary Rhenium grades in Merlin not seen previously



Comparison Mo & Re Deposits



CONCLUSIONS

1. Mount Elliott is the largest IOCG system discovered to date in the Mount Isa Block.
2. Spectrum of metallogenetic associations

Mount Elliott - SWAN	- Magnetite Cu Au \pm U, REE, Co
Mount Dore	- Pyrite Cu \pm Zn Mo U
Merlin	- Pyrite Mo Re \pm Cu Au
Starra	- Magnetite Au Cu
Amethyst Castle	- Haematite Cu Au U

3. Probable magmatic fluid and metal source

Mount Elliott Copper Mine and Smelting Works, 1912

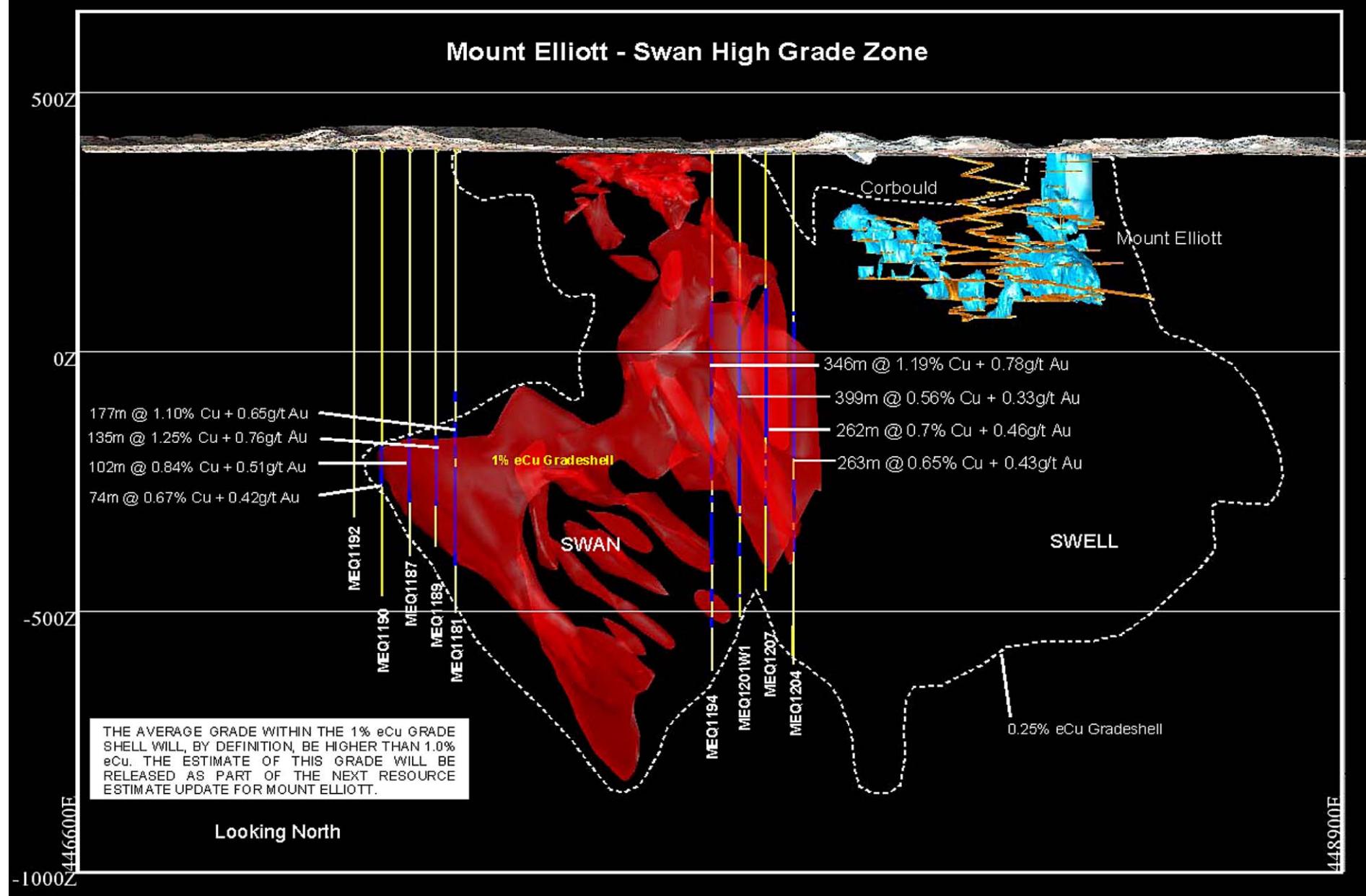


Looking West



Looking South

Mount Elliott SWAN High Grade Zone



How to Find Rhenium - Target Generation Approach





THANK YOU
THANK YOU

53.1°C

127.5°F

50
40
30
20
10
0



CLONCURRY

AUSTRALIA'S HIGHEST TEMPERATURE

16TH JANUARY 1889

A WARM WELCOME

GUARANTEED

