# OZ MINERALS ANALYST VISIT PRESENTATION PART 1 - EXPLORATION OVERVIEW

18 April 2011

MARCEL VAN ECK & JIM HODGKISON

# MT WOODS PROJECT EXPLORATION OVERVIEW

## MARCEL VAN ECK

- Introduction
- Exploration History
- Discovery of Prominent Hill
- Mine Geology
- Exploration Techniques and Targeting
- Near Mine Exploration Results
- Regional Exploration Results
- 2011 Exploration Program

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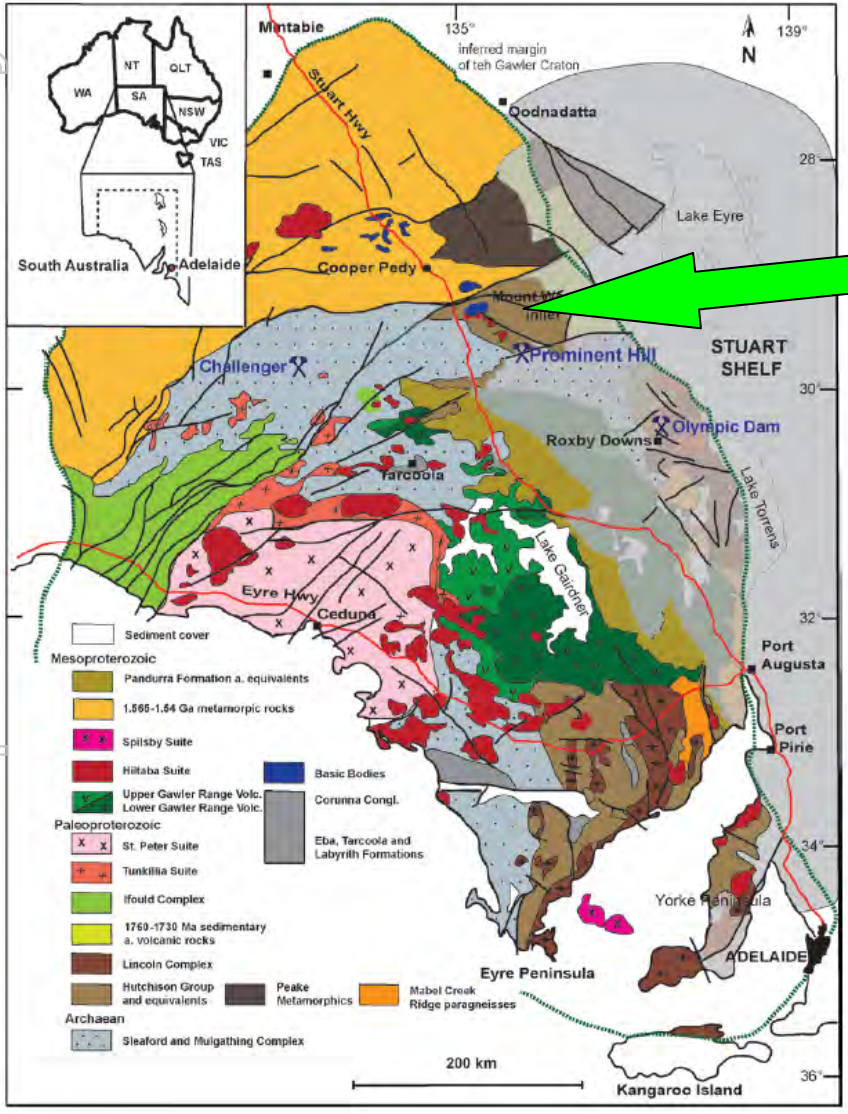
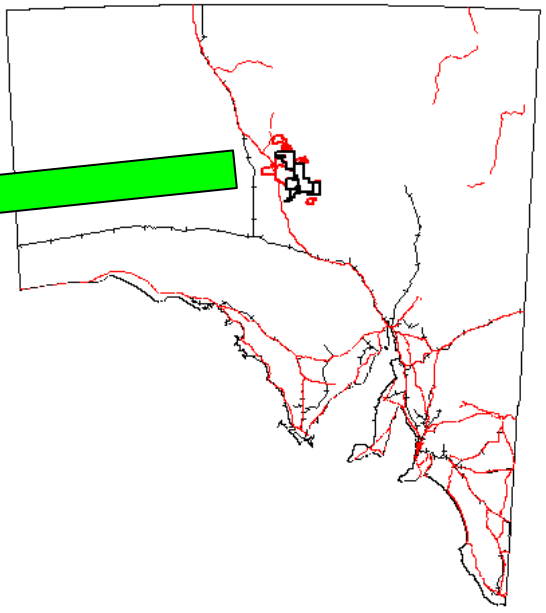
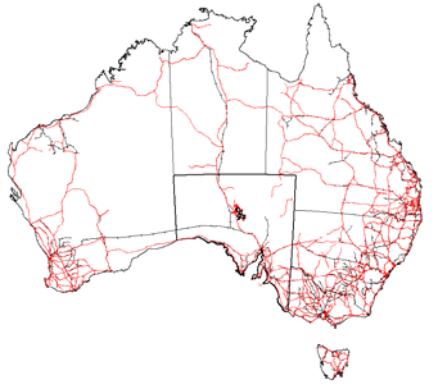
# MT WOODS PROJECT - LOCATION







# EXPLORATION HISTORY



- **1961**: Delhi explored the Mt Woods area (approx 50 kilometres to the northwest) for iron ore. Shallow drill holes intersected iron rich mafic units and magnetic granulites.

- **1975**: Olympic Dam discovery. OD Exploration Model: African Copper Belt type of sediment hosted syngenetic copper deposit – basement highs (magnetic and gravity highs).

- **1978**: Newmont and Kennecott: Explored for Olympic Dam-type mineralisation.

- **1979-1981**: Australian Selection and Aquitaine carried out exploration for Olympic Dam style mineralisation in various localities within the Mt Woods area.

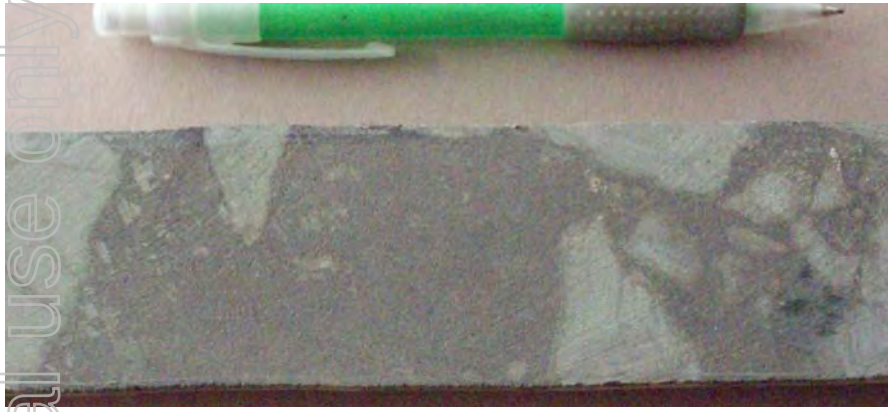
- True nature of OD mineralisation poorly understood at his time.

# EXPLORATION HISTORY



- **1986-1989**: CRAE carry out drilling in White Hill area.
- Manxman Prospect: Hole DD88EN43 intersects 287 metres at 0.23% copper + anomalous Au, U and REE.
- First indication of large iron oxide-rich breccia and replacement bodies,
- **13 years after the discovery of OD**.

# EXPLORATION HISTORY



- **1987**: Metals Exploration Limited secures current leases east of the White Hill area in November – containing PH. Ground mag reveals Uranus magnetic anomaly. Burmine JV and drill ***90URANRC1; 4m @ 0.2% Cu and 0.09g/t Au.***
- "Gawler Range Volcanics" + magnetite + chalcopyrite discovered at Neptune prospect.
- **1991-2000**: Normandy. Primary target was Joes Dam – magnetite breccias + ~0.1% Cu.
- **1993**: NOREX drills many other prospects, including one hole at Uranus Prospect: Hole 93DD10 intersects ***92m @ 0.12%Cu.***

# EXPLORATION HISTORY

Minotaur Resources (MNR) floats, with Alliance backing from Billiton. World-class base metal deposit search. Target deposits are IOCGs and BHTs.

- High IOCG prospectivity of Mount Woods Inlier indicated to Minotaur by:
  - High magnetic relief – Fe-oxides
  - Presence of known mineralisation and alteration systems; anomalism of REE, F, Ba, Cu and Au,
  - Na, K and Si alteration halos,
  - Evidence of high structural levels (i.e. GRV),
  - Various mafic to felsic intrusive suites & major NE and NW structures
  - Presence of mantle derived mafic rocks and related Hiltaba aged granites, 1580Ma.

- Minotaur approaches Normandy.

- **2000**: Minotaur-Billiton Alliance. Farm-in, Minotaur as operator.

**25 years after the discovery of OD**

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# DISCOVERY OF PROMINENT HILL

- Barbara Anderson's systematic data review. Five priority targets identified:

  1. Blaze
  2. Neptune
  3. Uranus
  4. Scorch
  5. Balta Baltana

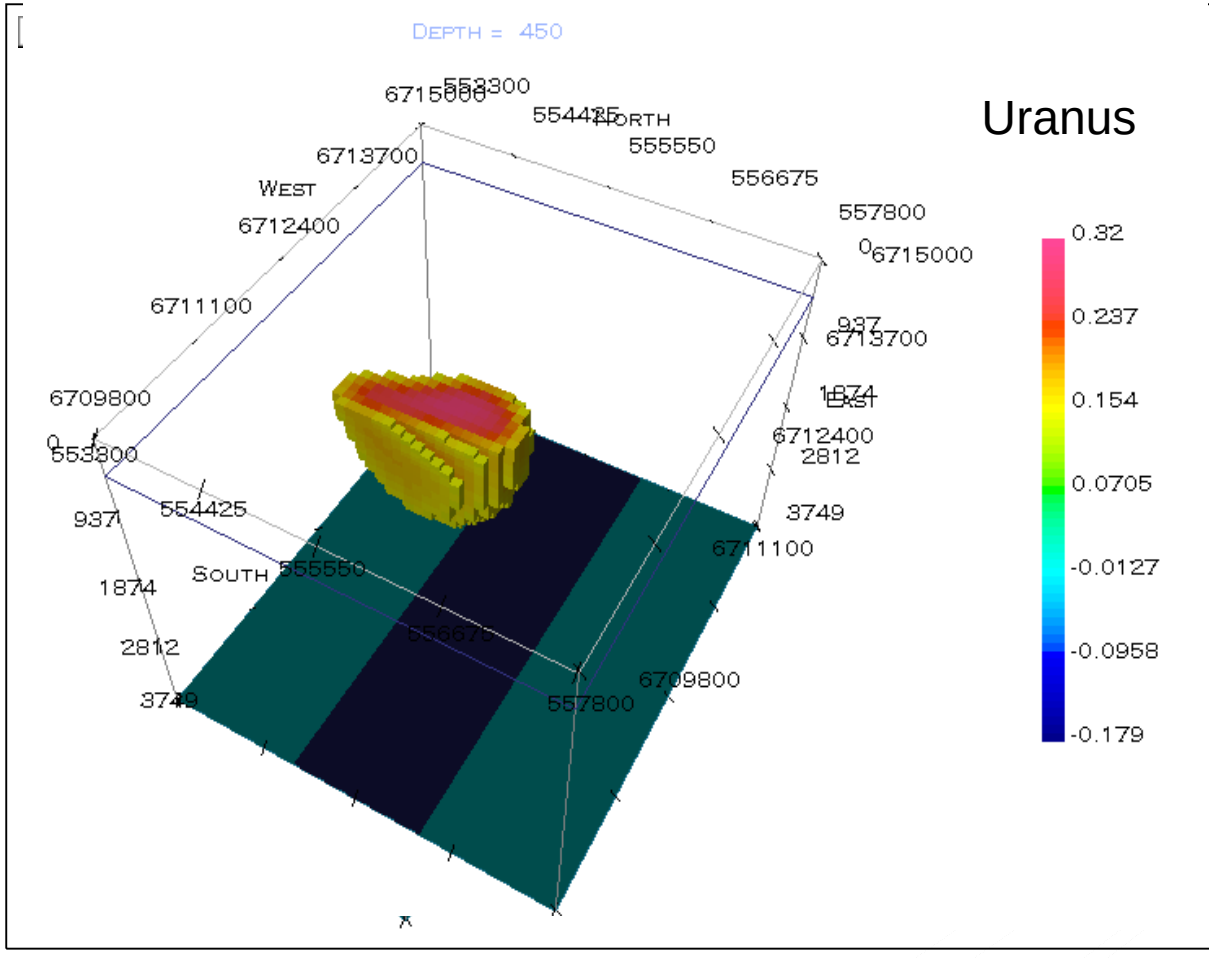
- Minotaur select six targets for 3D inversion modeling and drill testing:

  1. Armstrong North
  2. Blaze
  3. Neptune
  4. Uranus
  5. Peculiar Knob North
  6. Manxman B

- **No new gravity data obtained: All data used was available to the previous explorer.**

# DISCOVERY OF PROMINENT HILL

- Wayne Petit and Chris Moore: 3D inversion modeling at six prospect areas.
- Uranus model defined a large dense mass ~0.5gcm$^{-3}$ > background.
- Heritage clearance obtained
- JV agrees to drill all six priority targets. Uranus is the forth to be drilled.



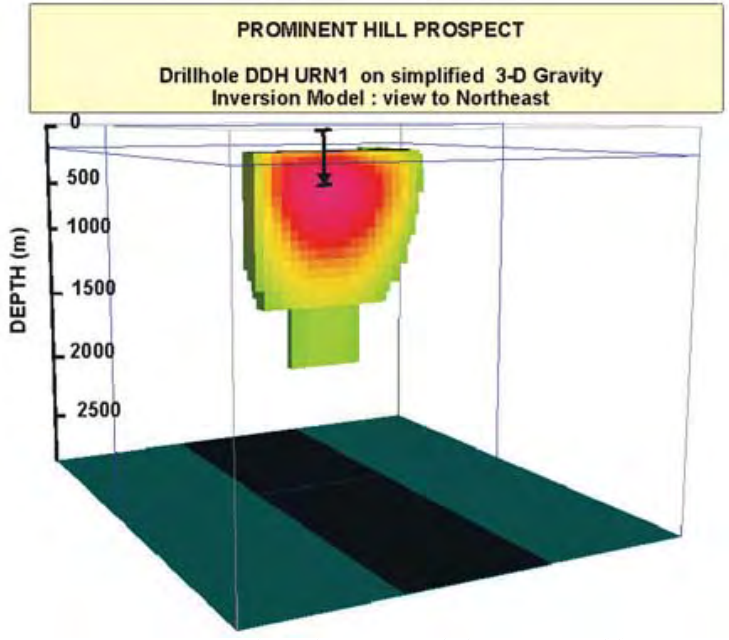
# URAN1: Site Pegged on 7 August 2001

# DISCOVERY OF PROMINENT HILL

- Burmine (1990): Uranus magnetic anomaly was drill tested, returning 4 metres at 0.2% Cu and 0.09 g/t Au, and 4 metres at 0.24% Cu and 0.04 g/t Au in magnetite skarn.
  **Missed PH by a few hundred metres!**
  In 1993 Uranus was revisited by Normandy. Hole 93DD10 also intersected magnetite skarn assemblages - 92 metres at 0.11% Cu. Late-stage carbonate-fluorite-haematite-sulfide veining noted in core.
  **Missed PH by a few hundred metres!**

- High-grade copper-gold mineralization at Prominent Hill was discovered in October 2001 through drill testing of a high frequency, non-magnetic portion of gravity anomaly. Results of URAN1 included; 20 metres @ 3.0g/t Au, 107 metres @ 1.9% Cu and 0.65g/t Au and, deeper, 152 metres @ 1.1% Cu and 0.6g/t Au.


Drilling hole URAN1

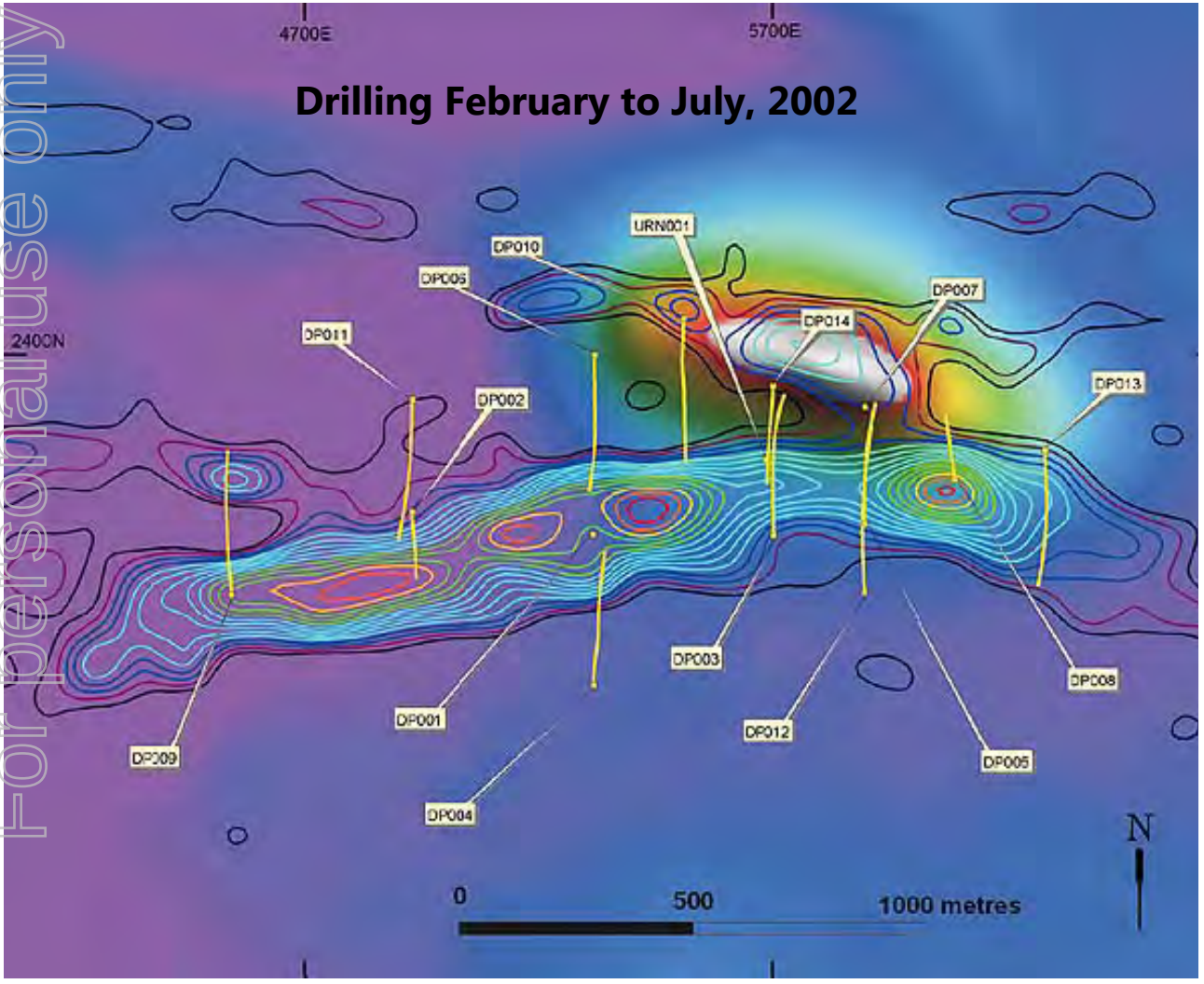


# RIG DRILLING URAN1

Photographer stands on Burmine drill site, 90URANRC1.

# GEOPHYSICS AND FOLLOW-UP DRILLING OF PROMINENT HILL






- Infill gravity (contours – 2nd horizontal derivative)
- Ground Magnetics (image).
- Downhole IP and Dipole - dipole IP. Strong IP anomaly coincides with peak of gravity anomaly – not magnetic anomaly.
- 14 diamond drill holes. First follow up hole targeted peak of IP/gravity - barren.

  DP 003: 30m @ 2.72%Cu, 0.45g/tAu. DP 005: 209m @ 1.54%Cu, 0.93g/tAu.
- High-grade Cu mineralization confined to area adjacent to & immediately south of the magnetic anomaly.
- 'Gold-only' mineralization identified.

# PROMINENT HILL MINE AREA 2010



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## JIM HODGKISON



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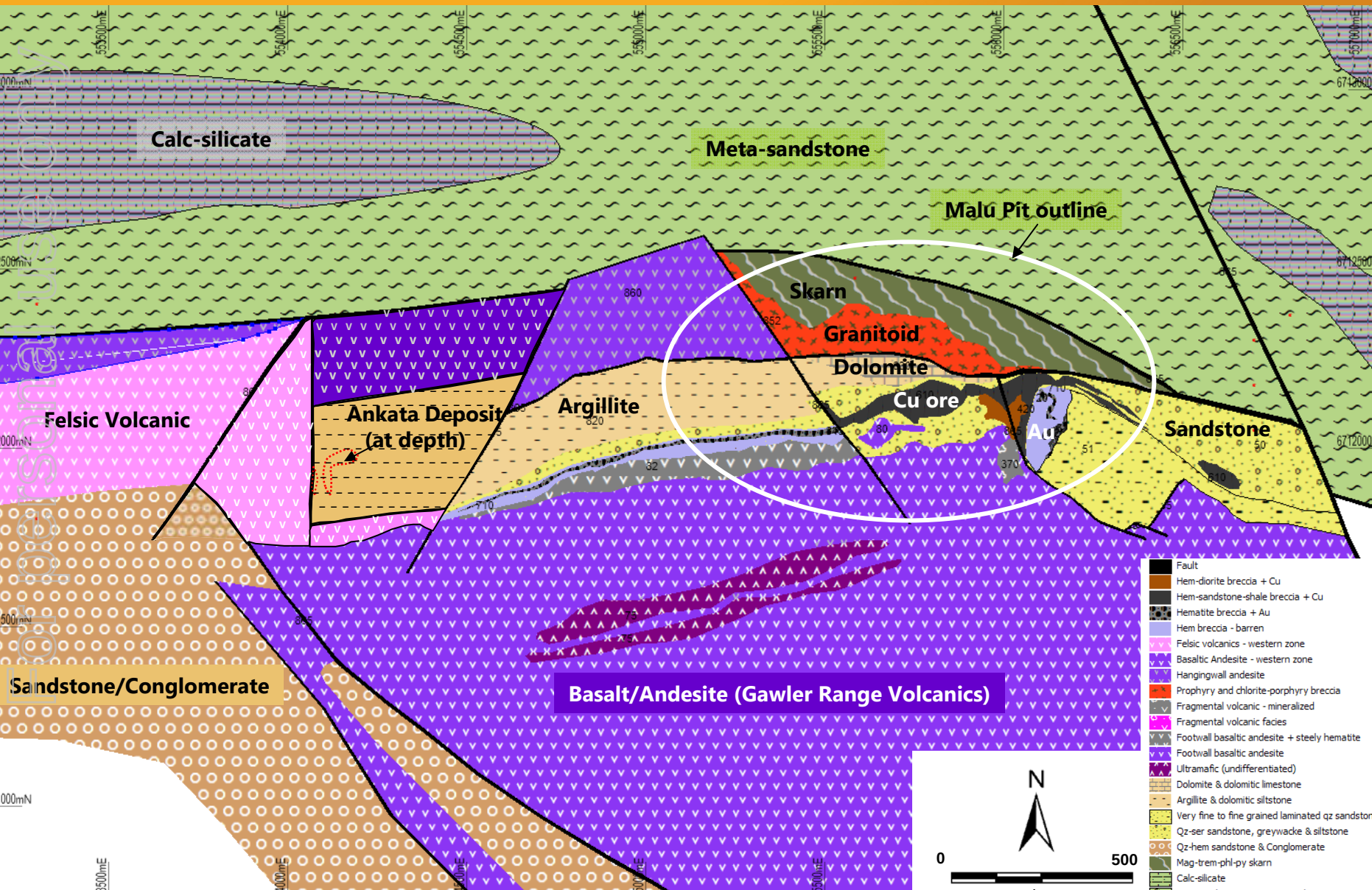
# GEOLOGY REVIEW

- Geology of the Deposit
- Mineral Resource
- Underground Exploration

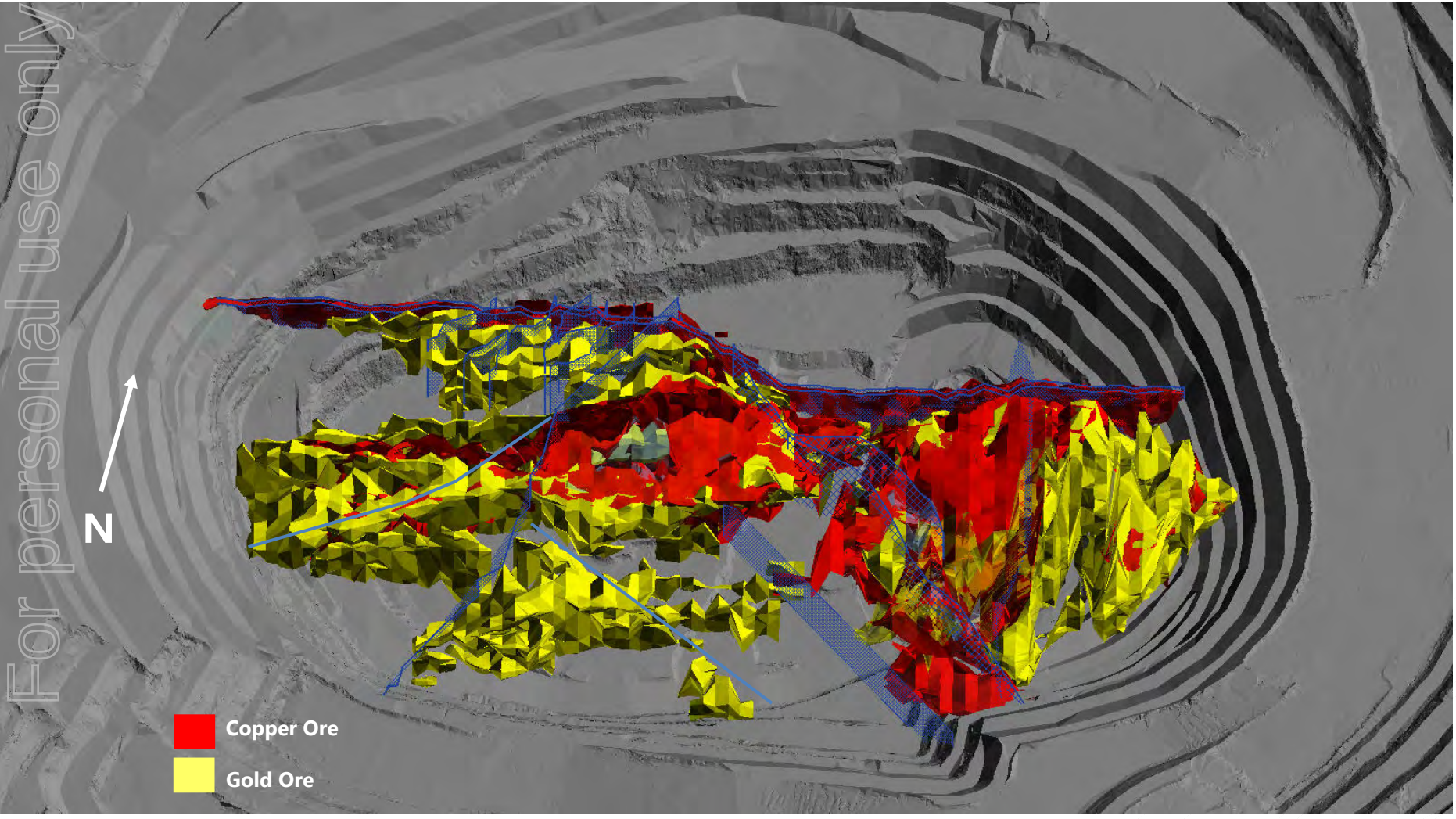
# PROMINENT HILL
# - INTERPRETED GEOLOGY AT THE UNCONFORMITY



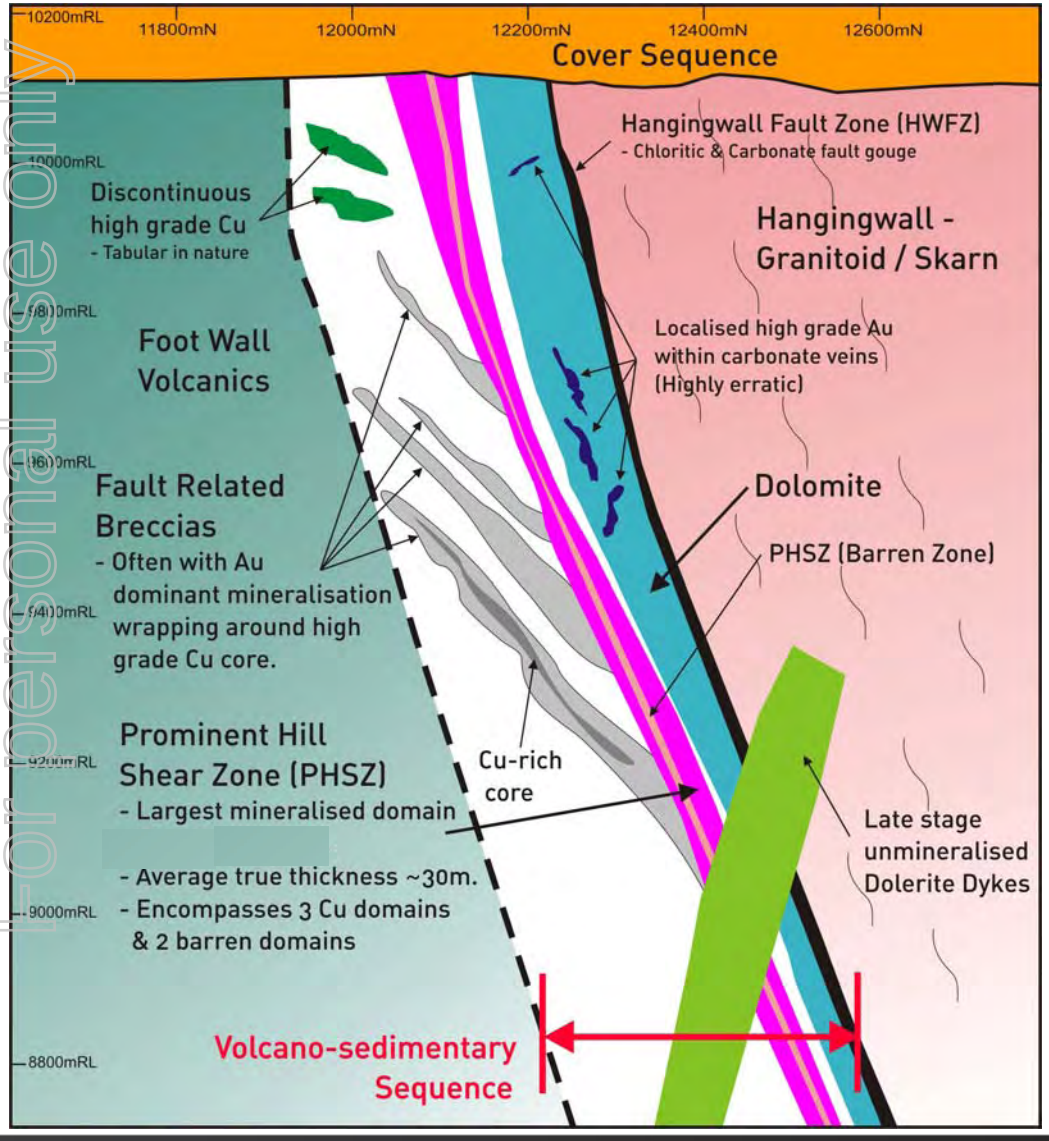
# PIT GEOLOGY - STAGE 1

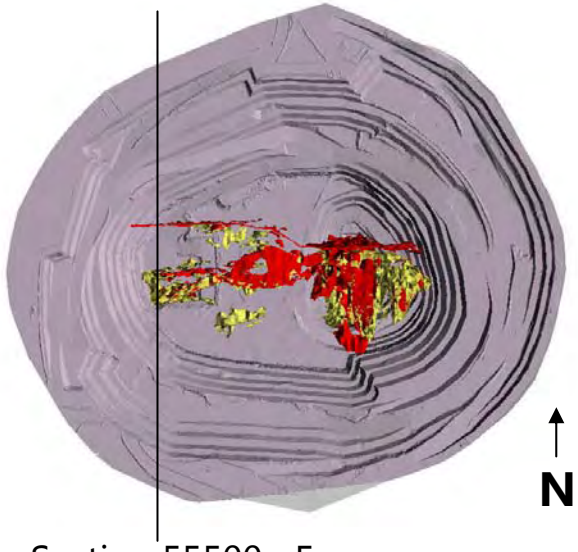
# MALU ORE DOMAINS - STRUCTURAL CONTROLS





# CROSS SECTION - 55500mE LOOKING WEST

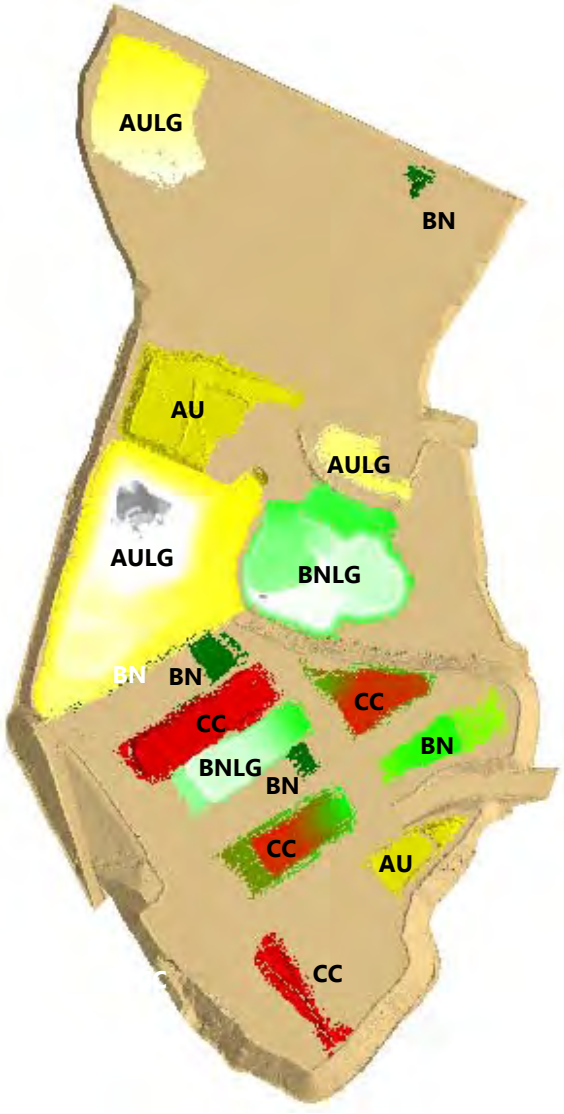



Section 55500mE

# RUN-OF-MINE (ROM) - MARCH 2011

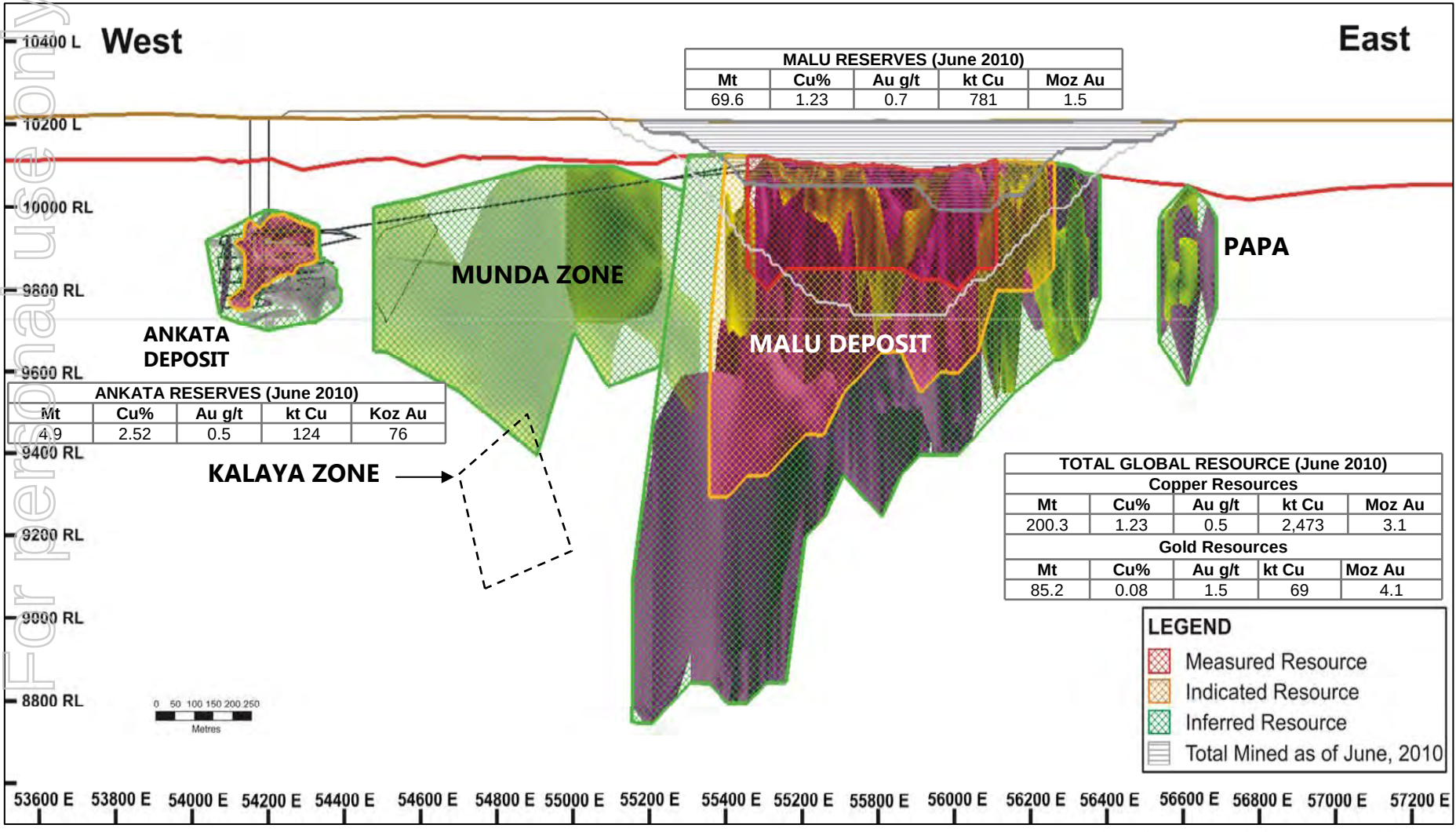





| Ore Type | | Tonnes (kt) | Cu (%) | Au (g/t) |
|---|---|---|---|---|
| Chalcocite | (CC) | 850 | 1.8 | 0.5 |
| Bornite | (BN) | 1,344 | 0.6 | 0.3 |
| Chalcopyrite | (CP) | - | - | - |
| **Total Copper** | | **2,194** | **1.1** | **0.4** |
| Gold | (AU) | 6,869 | 0.1 | 1.0 |
| **Total Ore** | | **9,063** | **0.3** | **0.8** |

**** LG Denotes Low Grade***

# PROMINENT HILL RESOURCE AND RESERVES - JUNE 2010




| MALU RESERVES (June 2010) | | | | |
|---|---|---|---|---|
| Mt | Cu% | Au g/t | kt Cu | Moz Au |
| 69.6 | 1.23 | 0.7 | 781 | 1.5 |

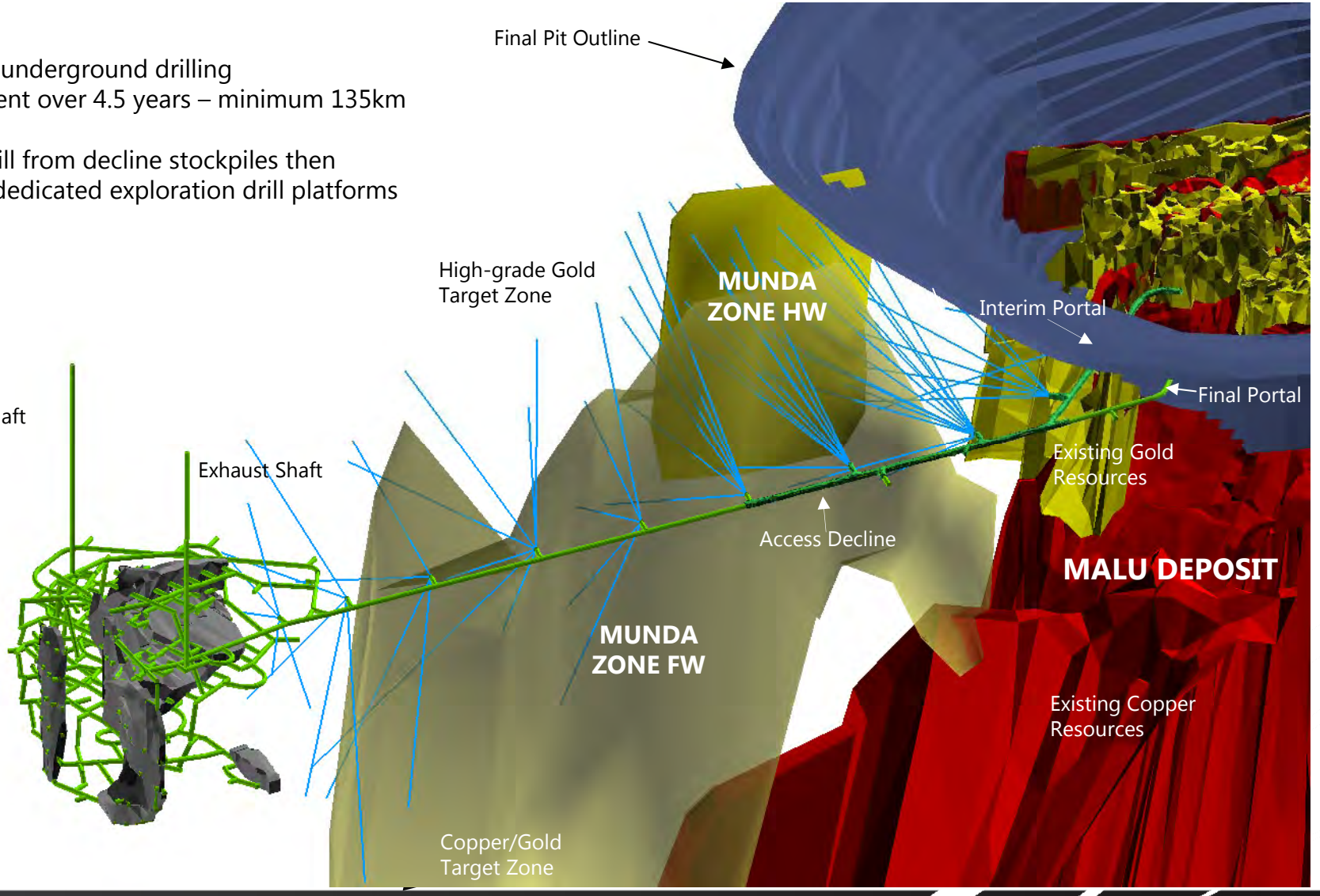
| ANKATA RESERVES (June 2010) | | | | |
|---|---|---|---|---|
| Mt | Cu% | Au g/t | kt Cu | Koz Au |
| 4.9 | 2.52 | 0.5 | 124 | 76 |

| TOTAL GLOBAL RESOURCE (June 2010) | | | | |
|---|---|---|---|---|
| Copper Resources | | | | |
| Mt | Cu% | Au g/t | kt Cu | Moz Au |
| 200.3 | 1.23 | 0.5 | 2,473 | 3.1 |
| Gold Resources | | | | |
| Mt | Cu% | Au g/t | kt Cu | Moz Au |
| 85.2 | 0.08 | 1.5 | 69 | 4.1 |

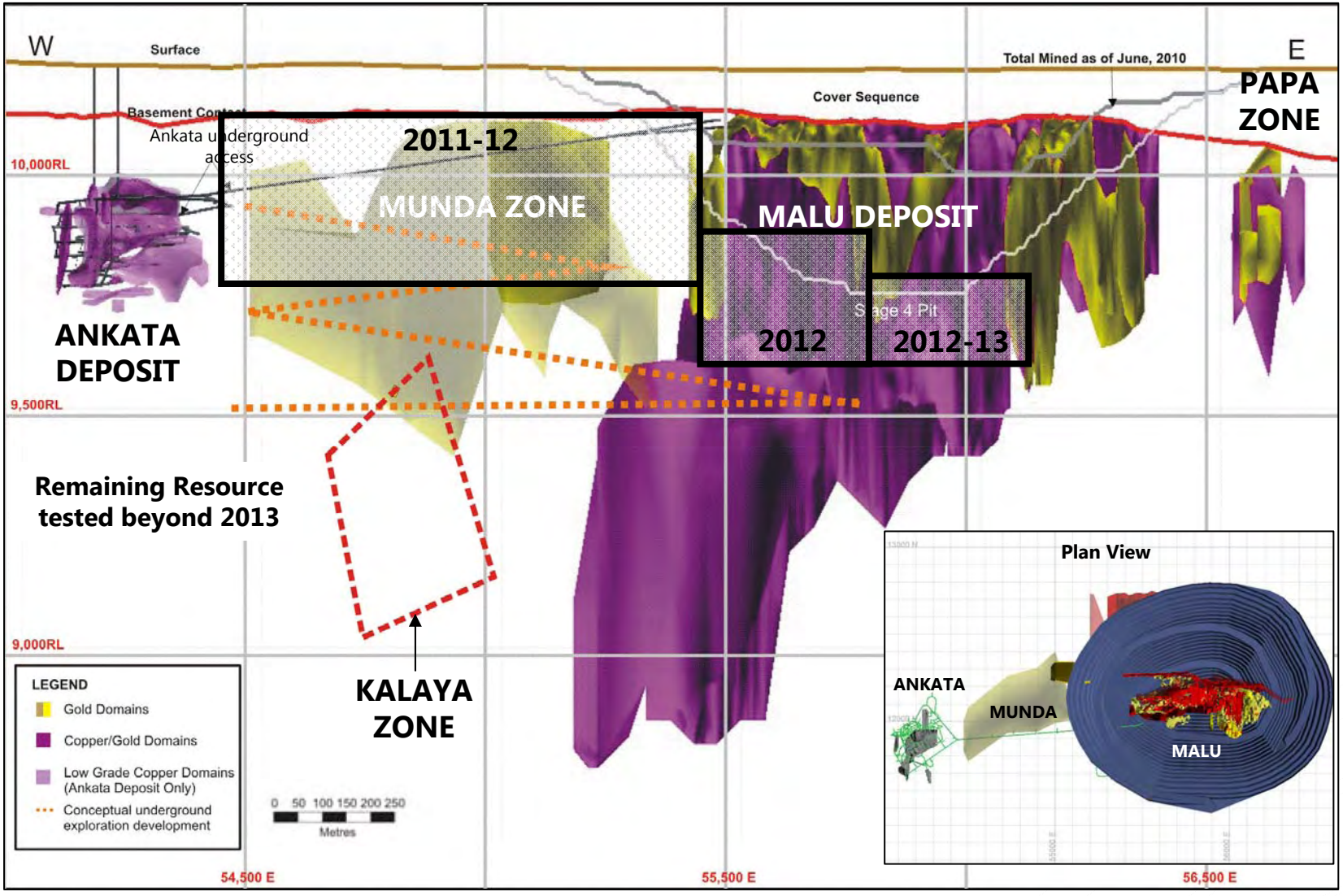
# UNDERGROUND DRILLING

Proposed underground drilling commitment over 4.5 years – minimum 135km

Initially drill from decline stockpiles then establish dedicated exploration drill platforms



# UNDERGROUND DRILLING - TIMING OF DRILL PROGRAMS



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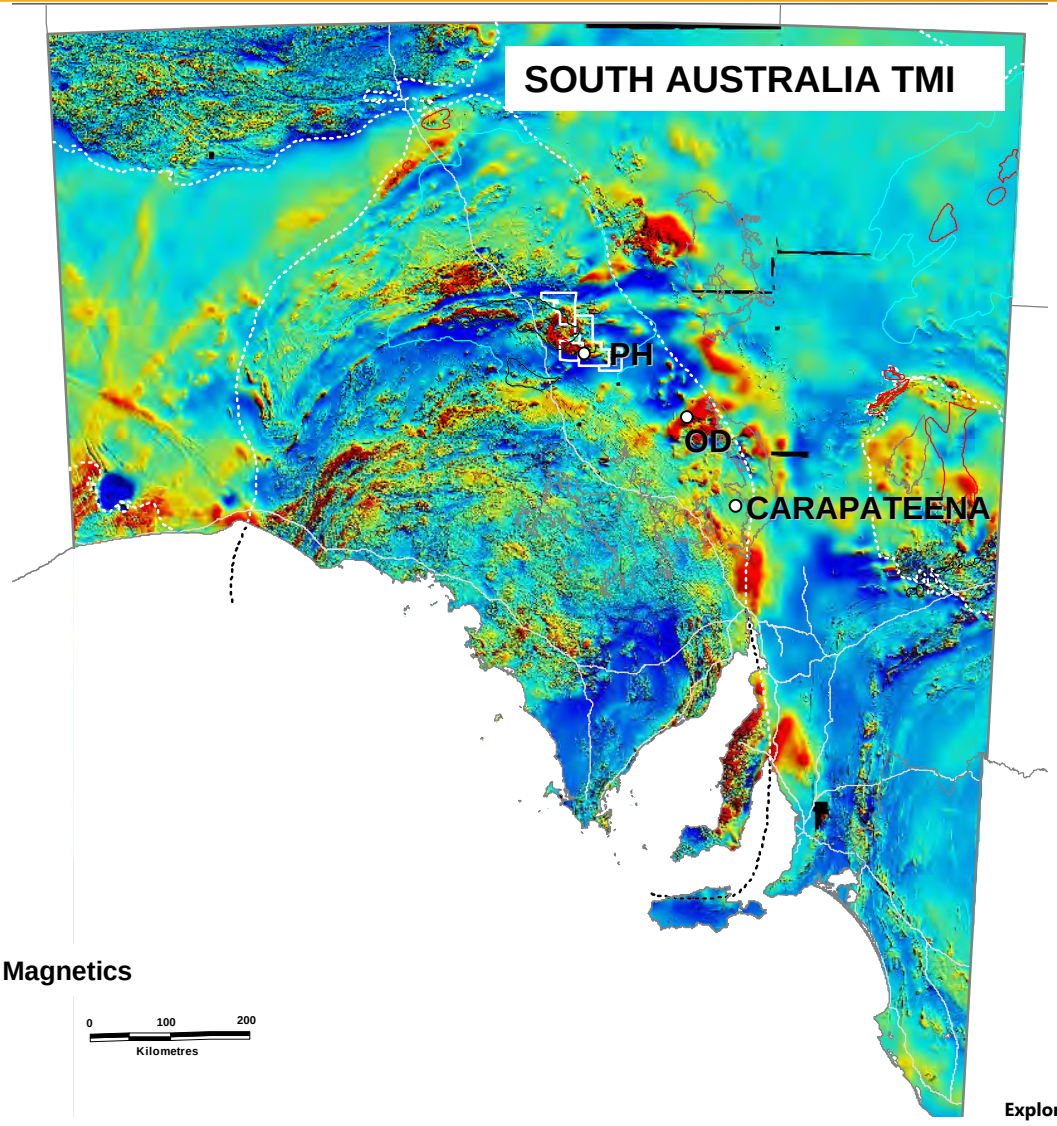
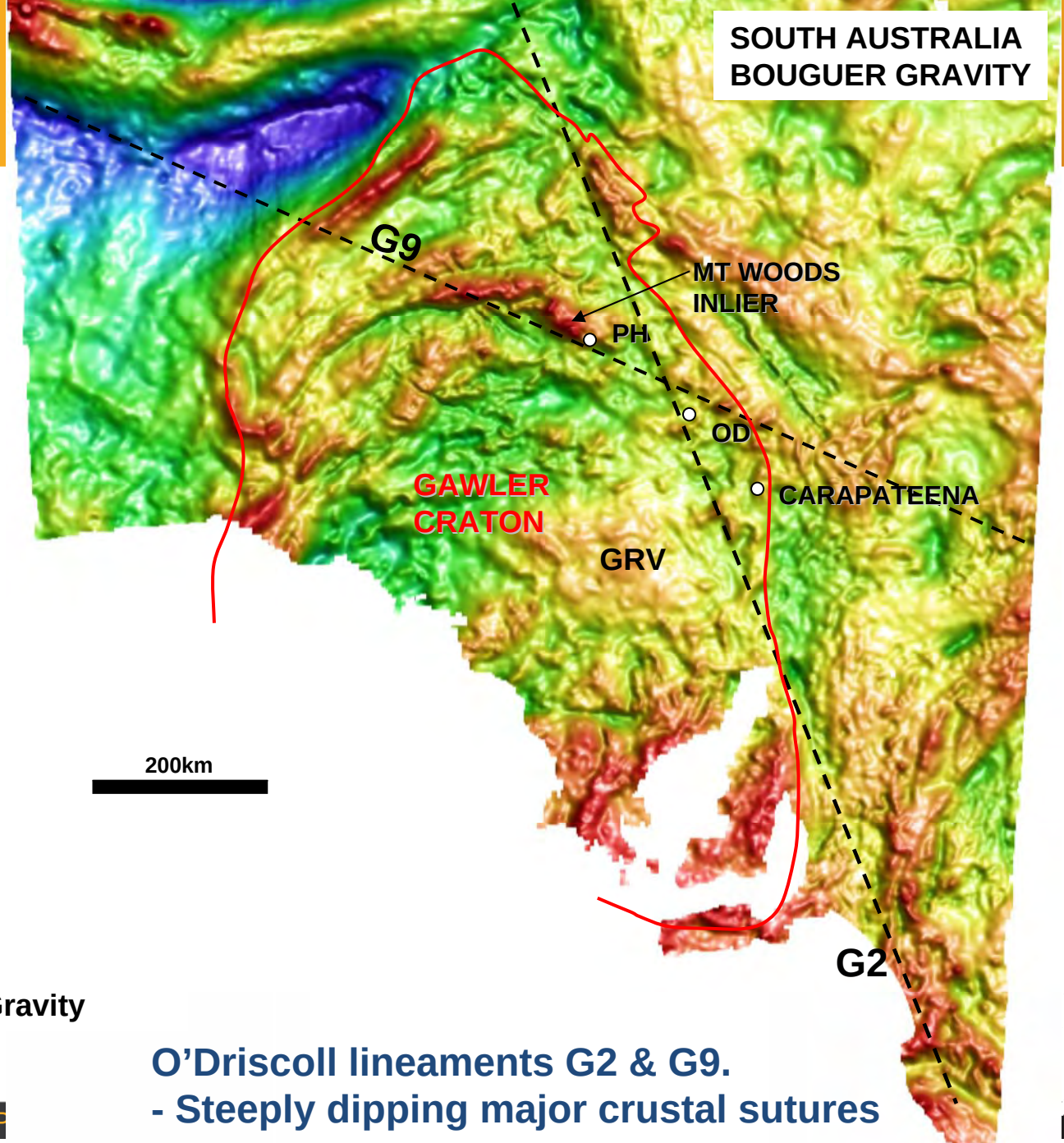


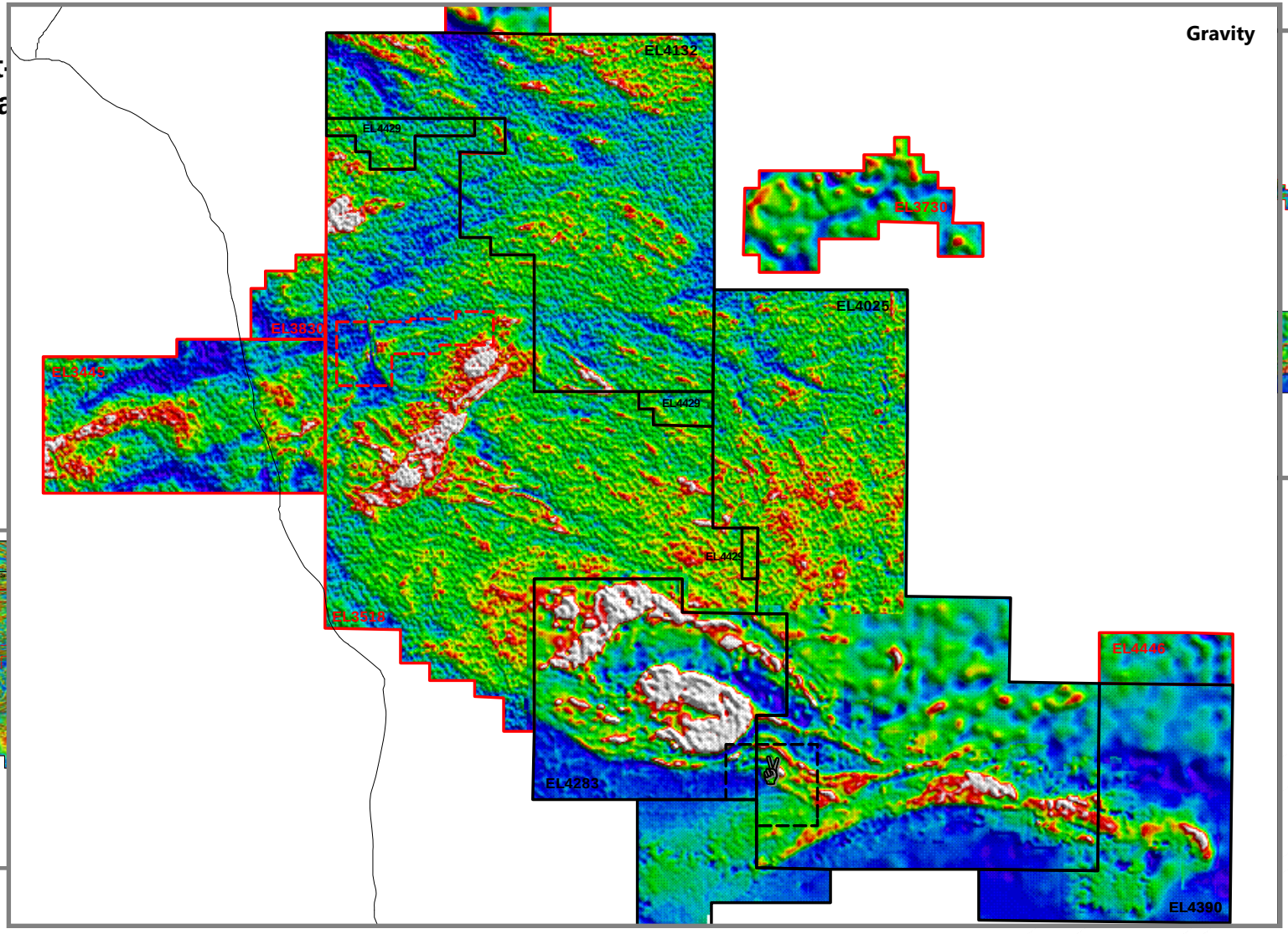

**State-Scale Magnetics**




State-Scale Gravity

## O'Driscoll lineaments G2 & G9.
## - Steeply dipping major crustal sutures

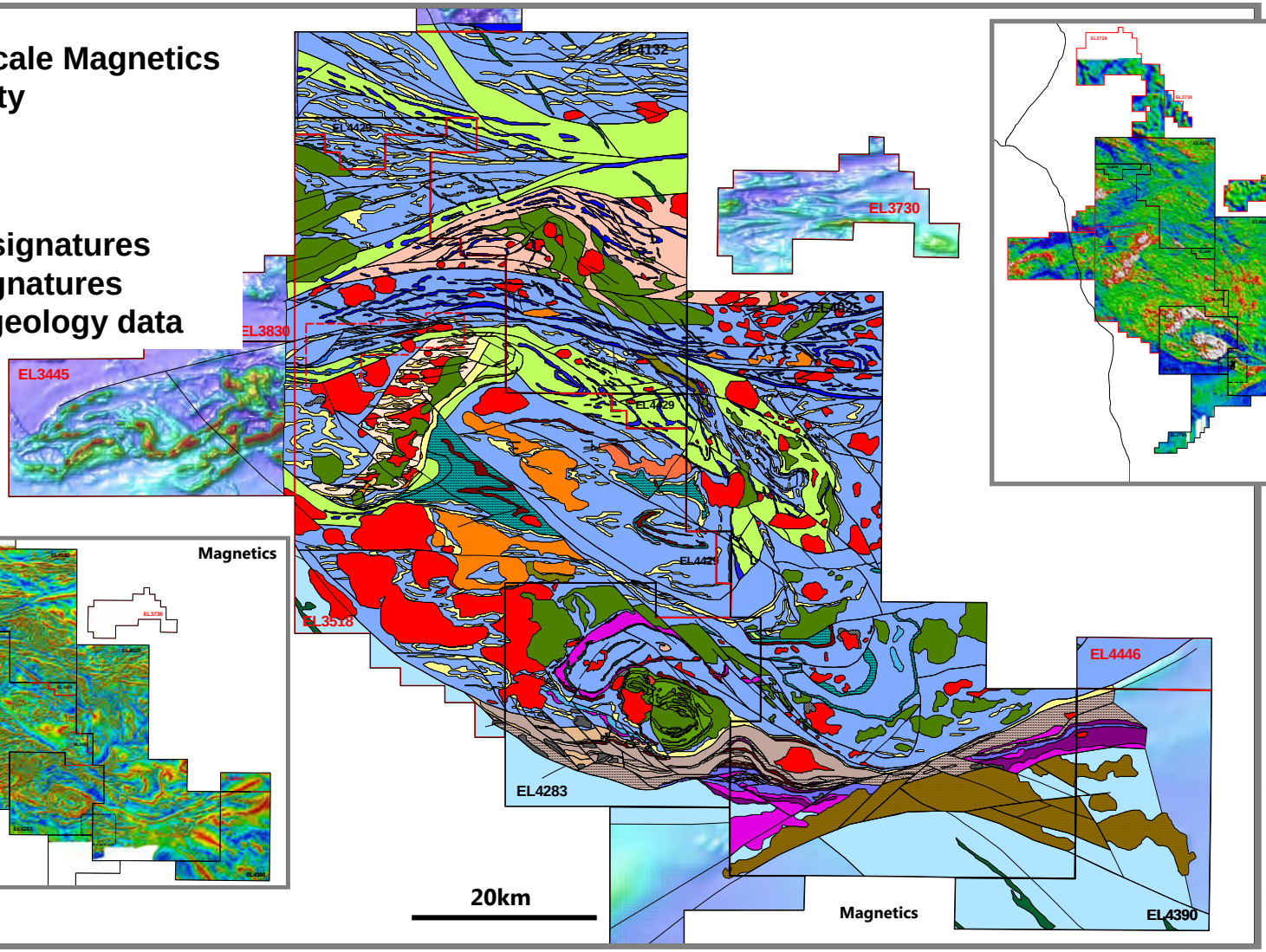
# GEOPHYSICAL DATA



# INTERPRETATION OF GEOLOGY

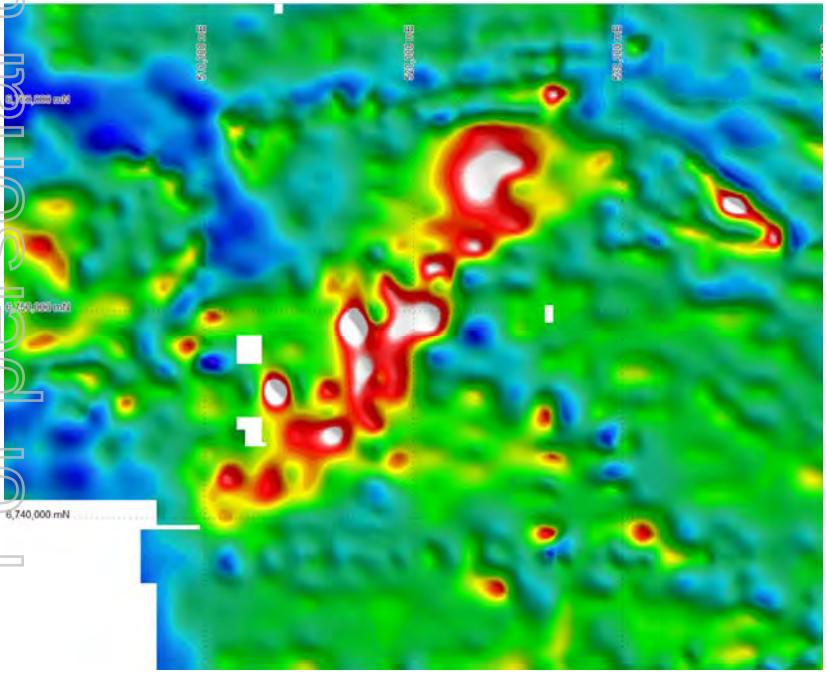
**District-Scale Magnetics and Gravity**

**Outcrop**
**Drilling**
**Magnetic signatures**
**Gravity signatures**
**Regional geology data**

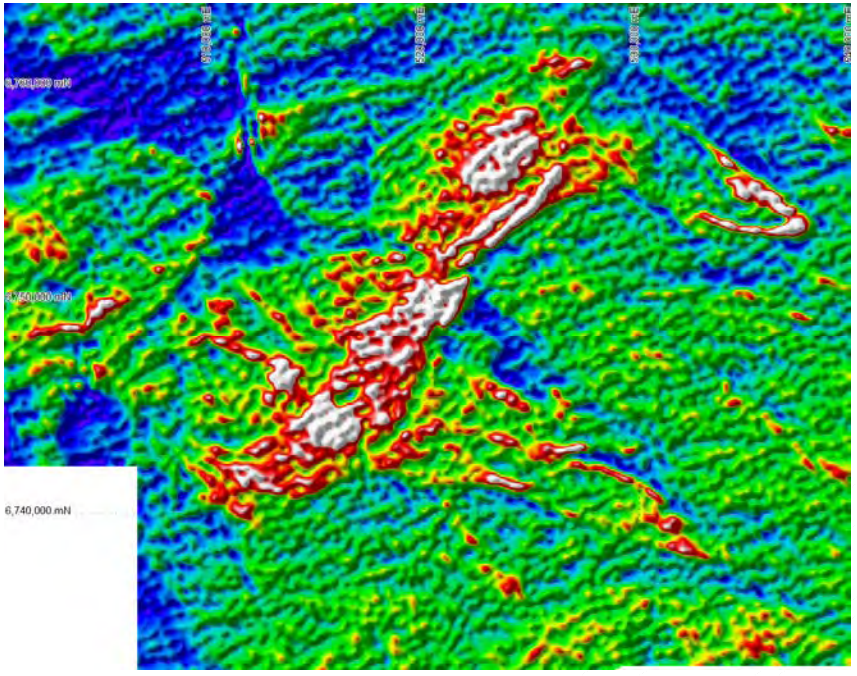


# AIRBORNE GRAVITY GRADIENT – WHY?

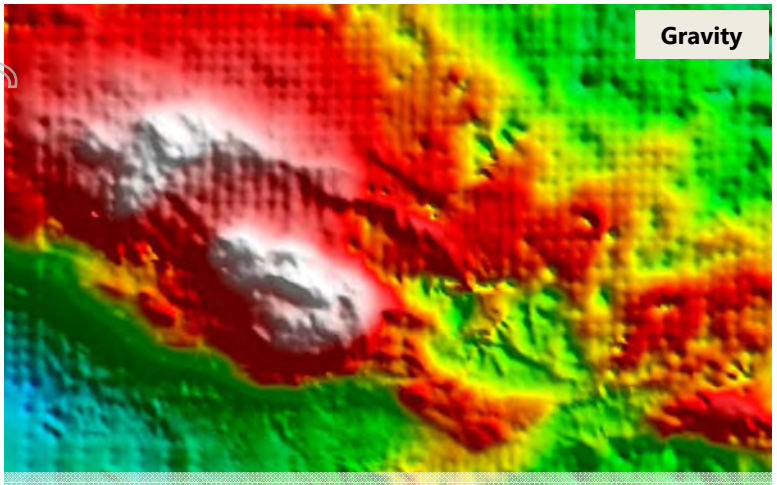
- Airborne gravity gradient (AGG) and current ground gravity comparison;
  - Greatly improved detail defining new targets and important structures.
  - AGG survey flown in 8 weeks, equivalent ground data requires 2-3 years to collect.



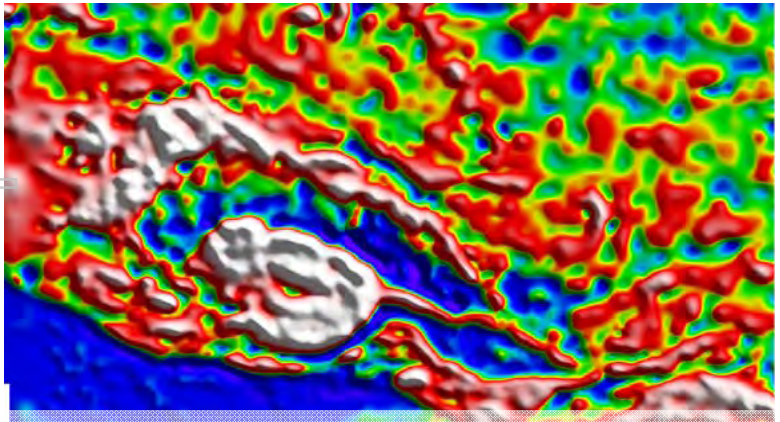

– 1st vertical derivative (1VD) of ground gravity (~800m line spacing).



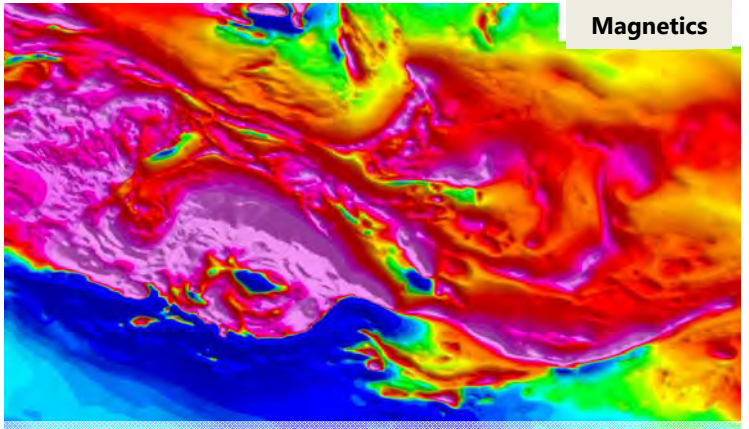

- Airborne gravity gradient (AGG) data (200m line spacing).



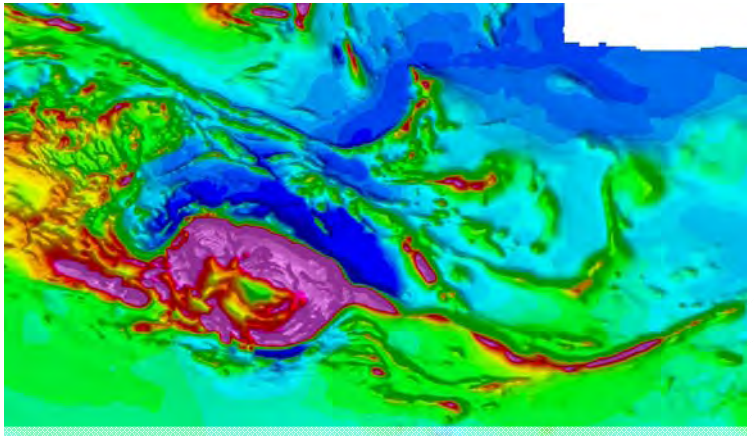

**Observed Gravity (gObs)** – Raw data as measured by a gravity meter and tied to known values.



**First Vertical Derivative (1VD BC267)** – Derivative of the BC267 grid to highlight high frequencies. Defines anomaly edges.



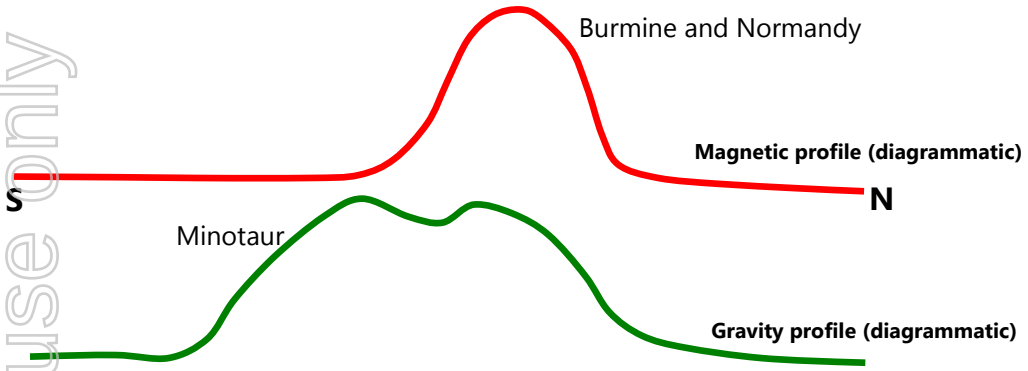

**Total Magnetic Intensity (TMI)** – Raw data as measured by a magnetometer. A dipole response from each source.

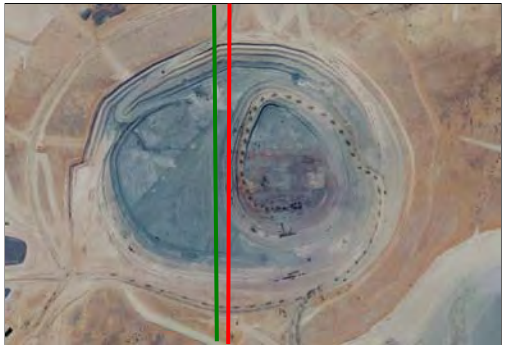


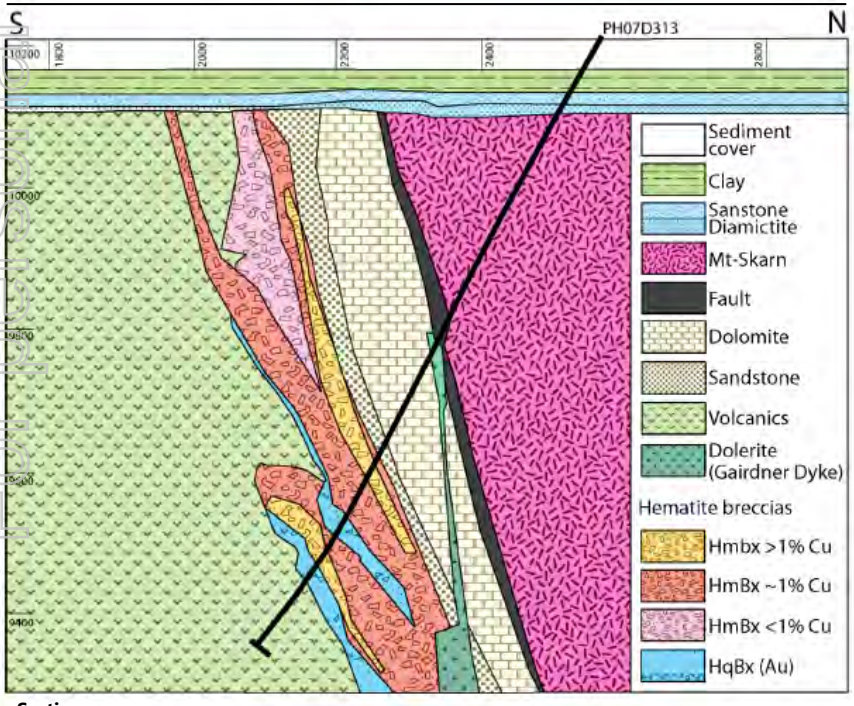
**Reduction to Pole (RTP)** – TMI processed to turn dipole response into a monopole. Moves peak of response over centre of source.

# TARGETING

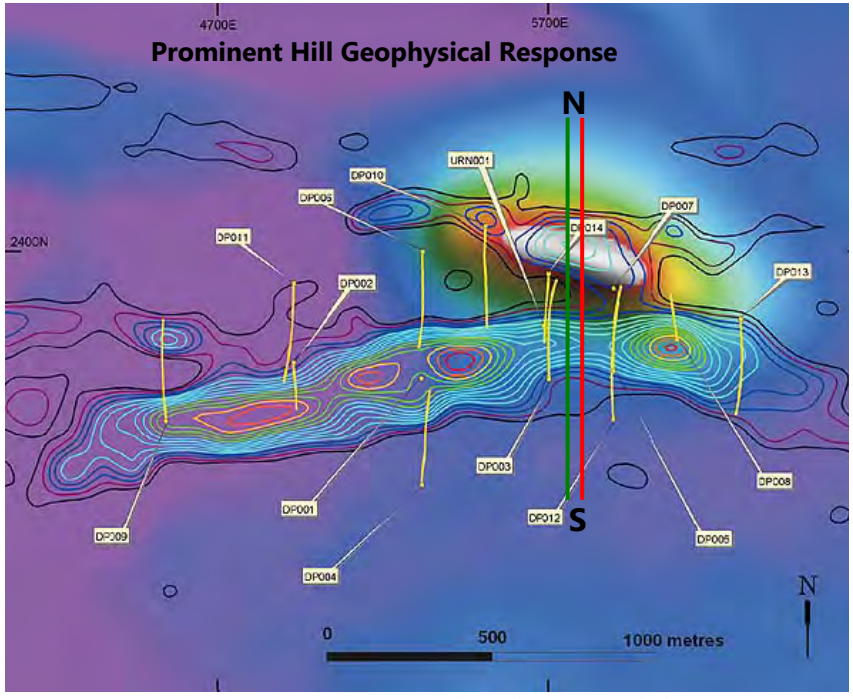






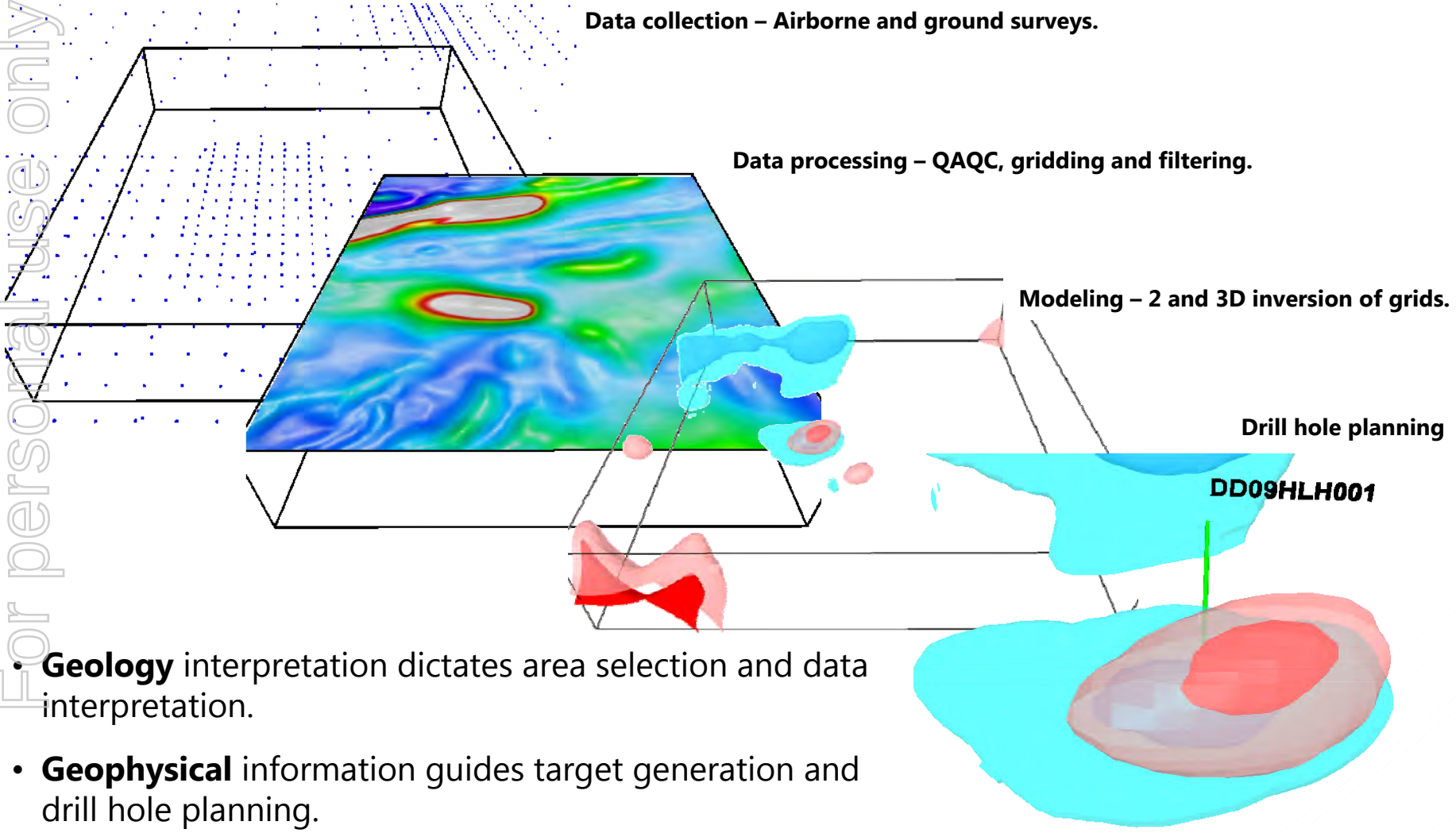

Section




Plan

# GEOPHYSCIAL TARGET GENERATION PROCESS – POTENTIAL FIELD DATA (GRAVITY AND MAGNETICS)





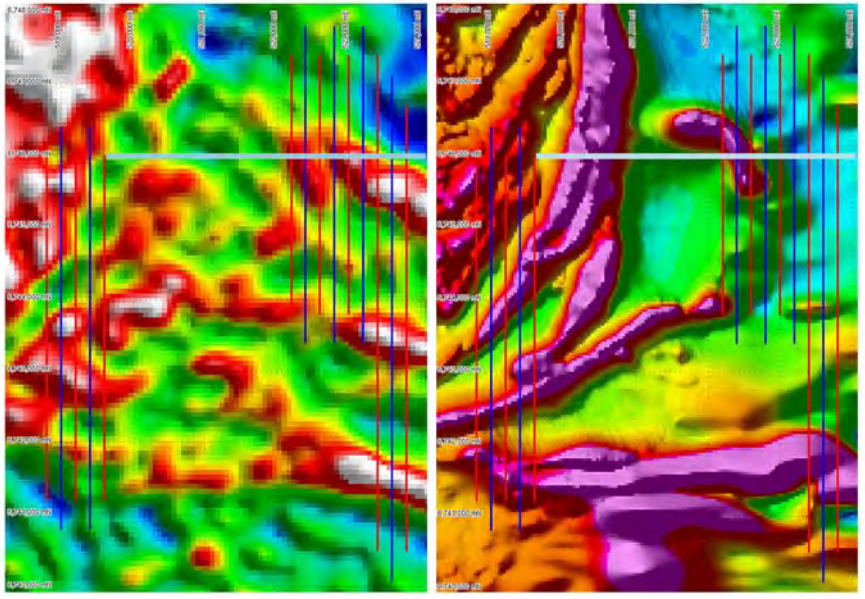

- **Geology** interpretation dictates area selection and data interpretation.
- **Geophysical** information guides target generation and drill hole planning.

# GEOPHYSICAL TARGETING – 2D AND 3D

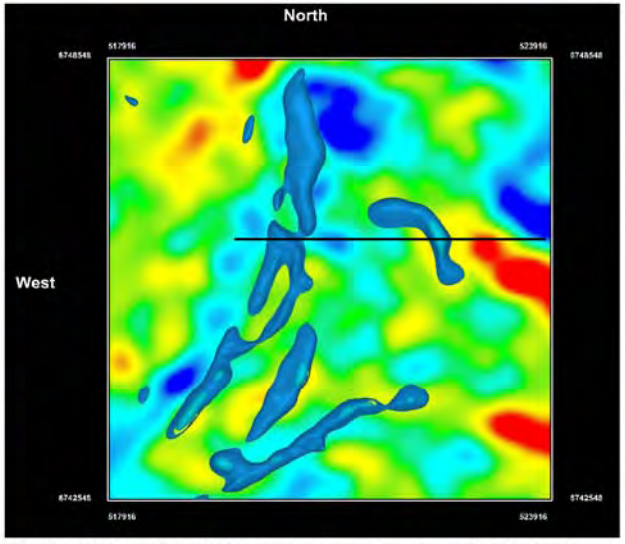


Gravity

Magnetics

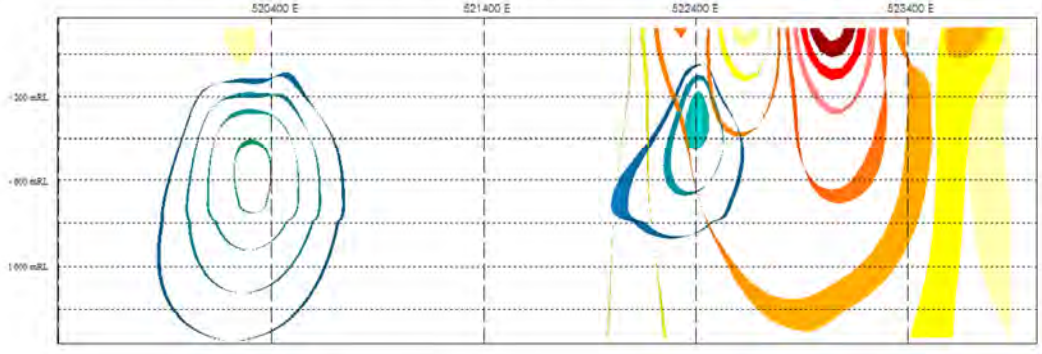


**(above)** Planned IP lines over 1VD airborne gravity gradient (AGG) and 1VD Reduced to Pole magnetic grids.




**(above)** -100mRL depthslice (+/-25m window) through inversion model. 2km band pass gravity inversion pseudocolour grid with magnetic isosurface shells.

**(below)** Inversion model through section 6746000mN (+/-25m window). Gravity isosurfaces in warm colours and magnetic isosurfaces in cold colours.




## Target

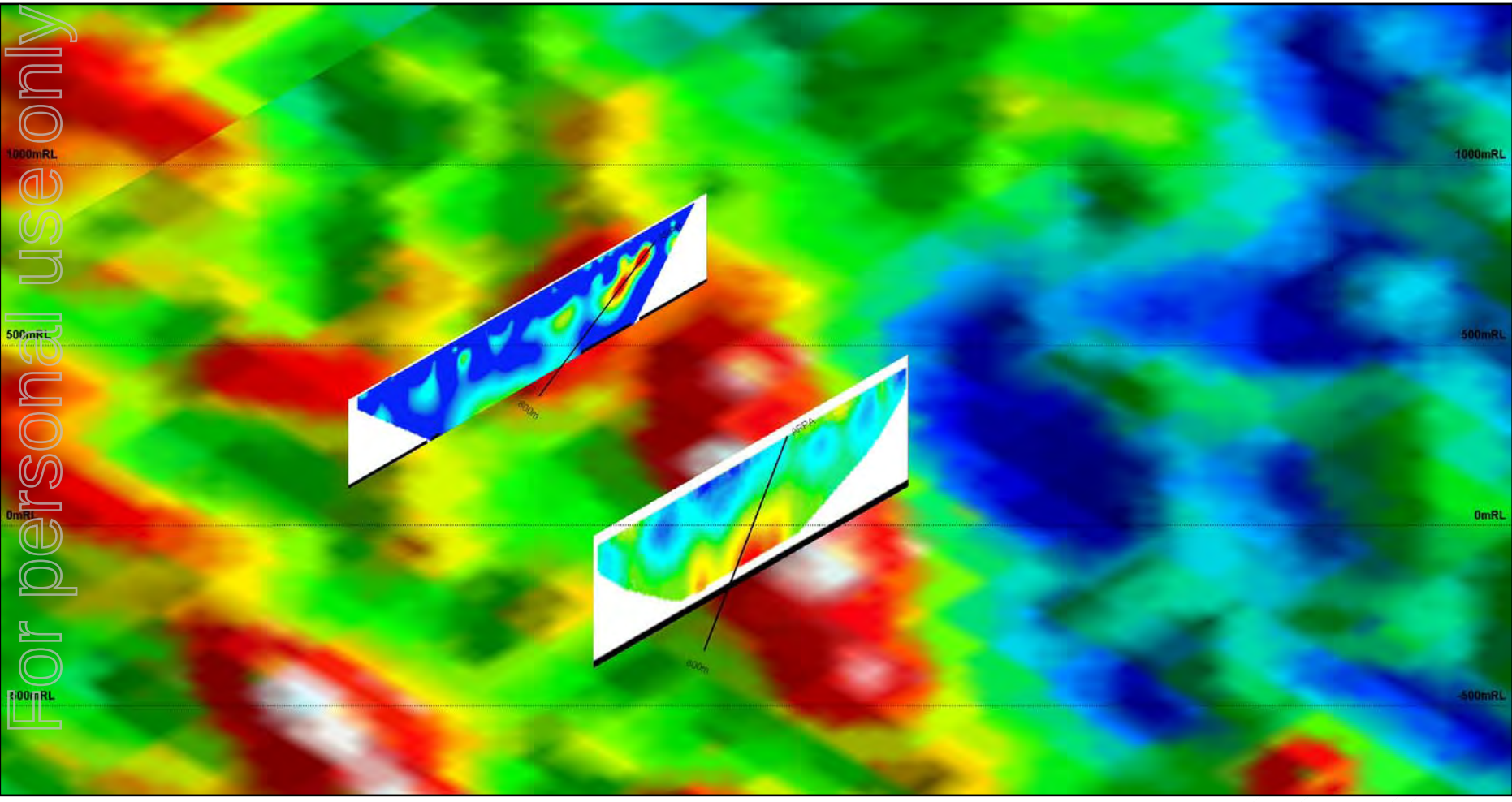
**Target**

- Complex structural zone.
- Interpreted fault and simple offset magnetic susceptibility and density responses.

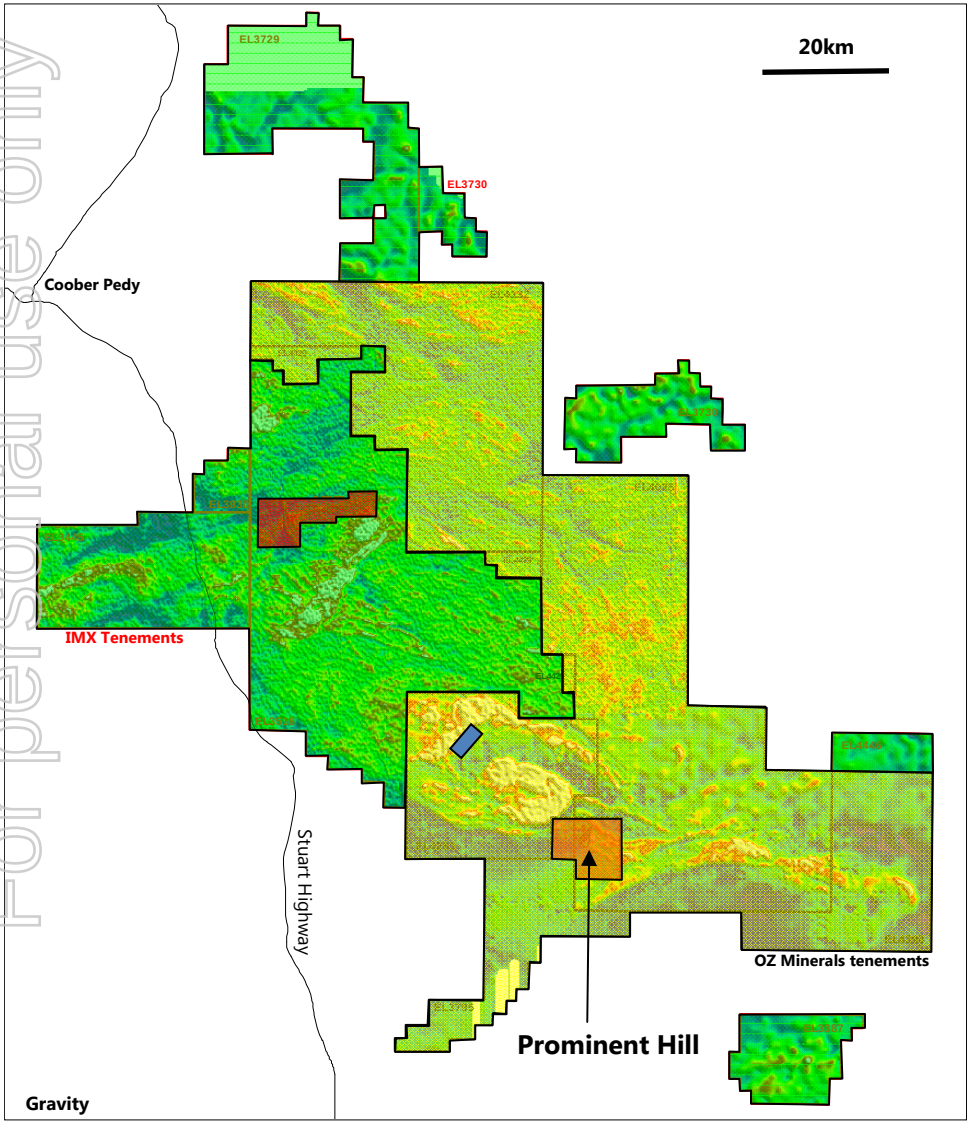
**Plans**

- Follow up reconnaissance IP survey (31.4km).
- Partial detailed airborne magnetic survey.
- Further work on demagnetisation modelling problem, hole plan and drill.

# GEOPHYSICAL TARGETING – 2D IP (INDUCED POLARISATION)



# GEOLOGICAL RESEARCH




**Interpretation of Regional Magnetics and Gravity**

**Innovative use of IP**

**Technical Support and Research Group**

**Basement Geology Map**

**Regional Structure**

**Detailed Structural Setting**

**Geochronology**

**Geochemical Studies Cover (post-Doc)**

**Geochemical Targeting**

**Sedimentology**

**Ore Fluid Studies (MSc, PhD)**

**Alteration Studies (BSc Hons)** **Targeting**

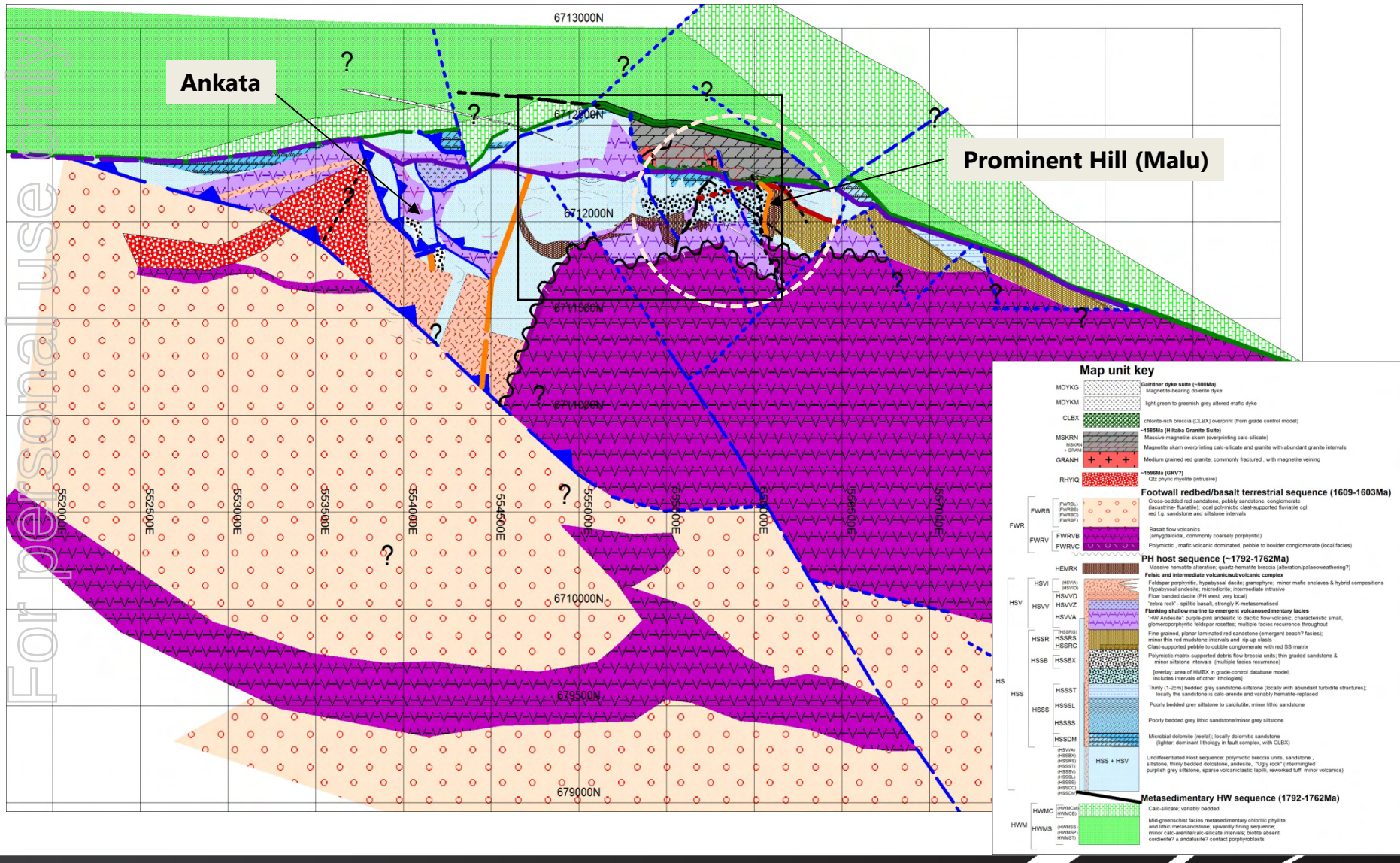
**Isotopic Studies**

**Paragenetic Studies**

**Structure and Metamorphic Setting (BSc Hons)**

**Area-specific studies (BSc Hons)**

# RESEARCH EXAMPLE – STRUCTURAL GEOLOGY INTERPRETATION



# SYSTEMATIC EXPLORATION IS ESSENTIAL



- District-scale Magnetics and Gravity data
- Discrete Magnetic and Gravity anomalies
- Coincident Magnetic and Gravity anomalies
- Linear features (large and small) with contained or adjacent anomalies
- Intersections of linear features with contained anomalies
- Induced Polarisation (IP) anomalies over magnetic or gravity features
- Ground gravity surveys to detail selected features
- Geophysical (3D) modelling using drill or petrophysical inputs
- Review by geologists and geophysicist (including old holes)
- Prioritising of anomalies or prospects
- Planning of drill holes (often using 3D information)
- Drilling of hole(s)
- Review of drill core and results
- Time to analyse
- Re-prioritise
- More drilling

- Continued research to assist with exploration assessment and targeting

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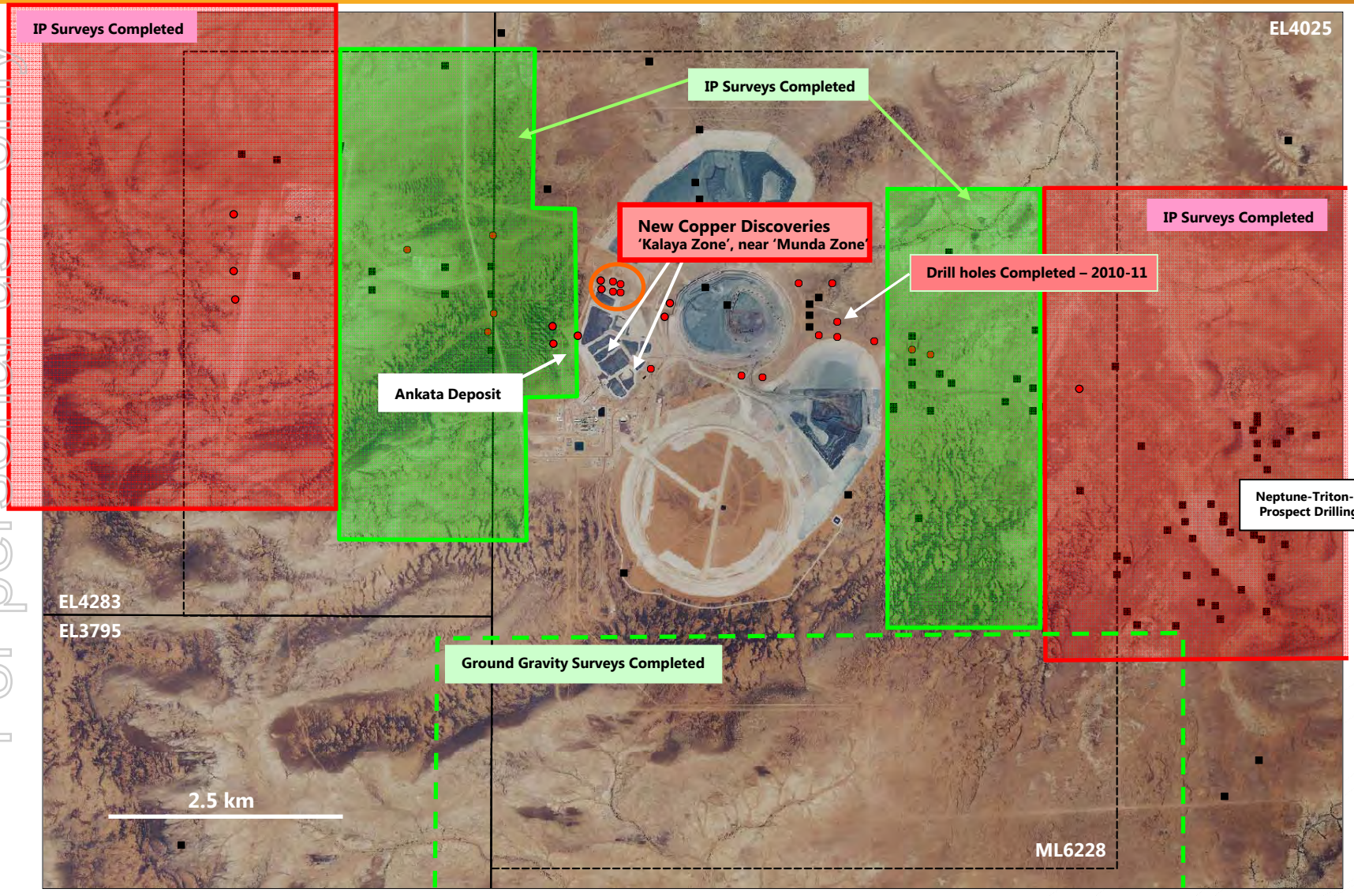
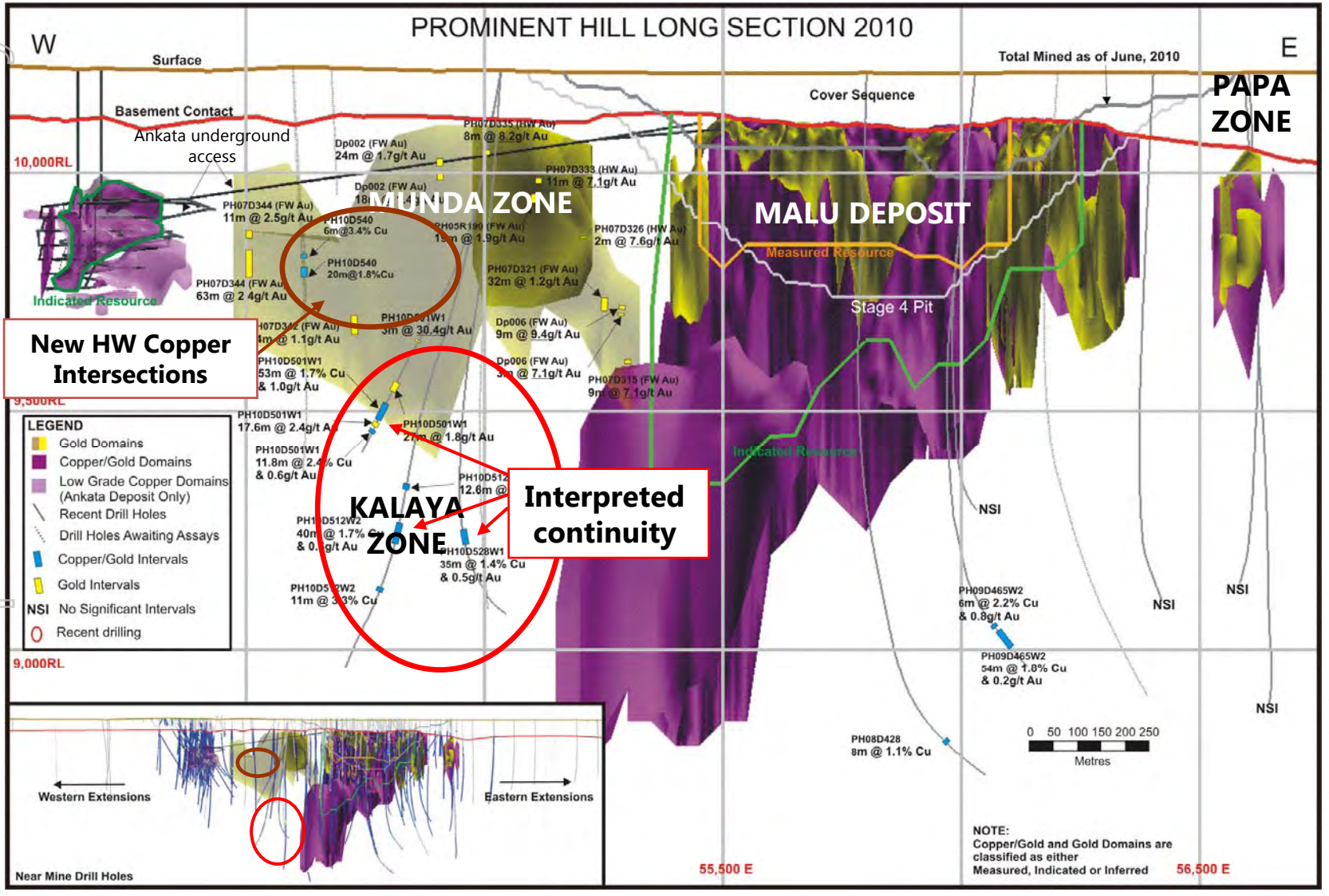
- 2011 Exploration Programme

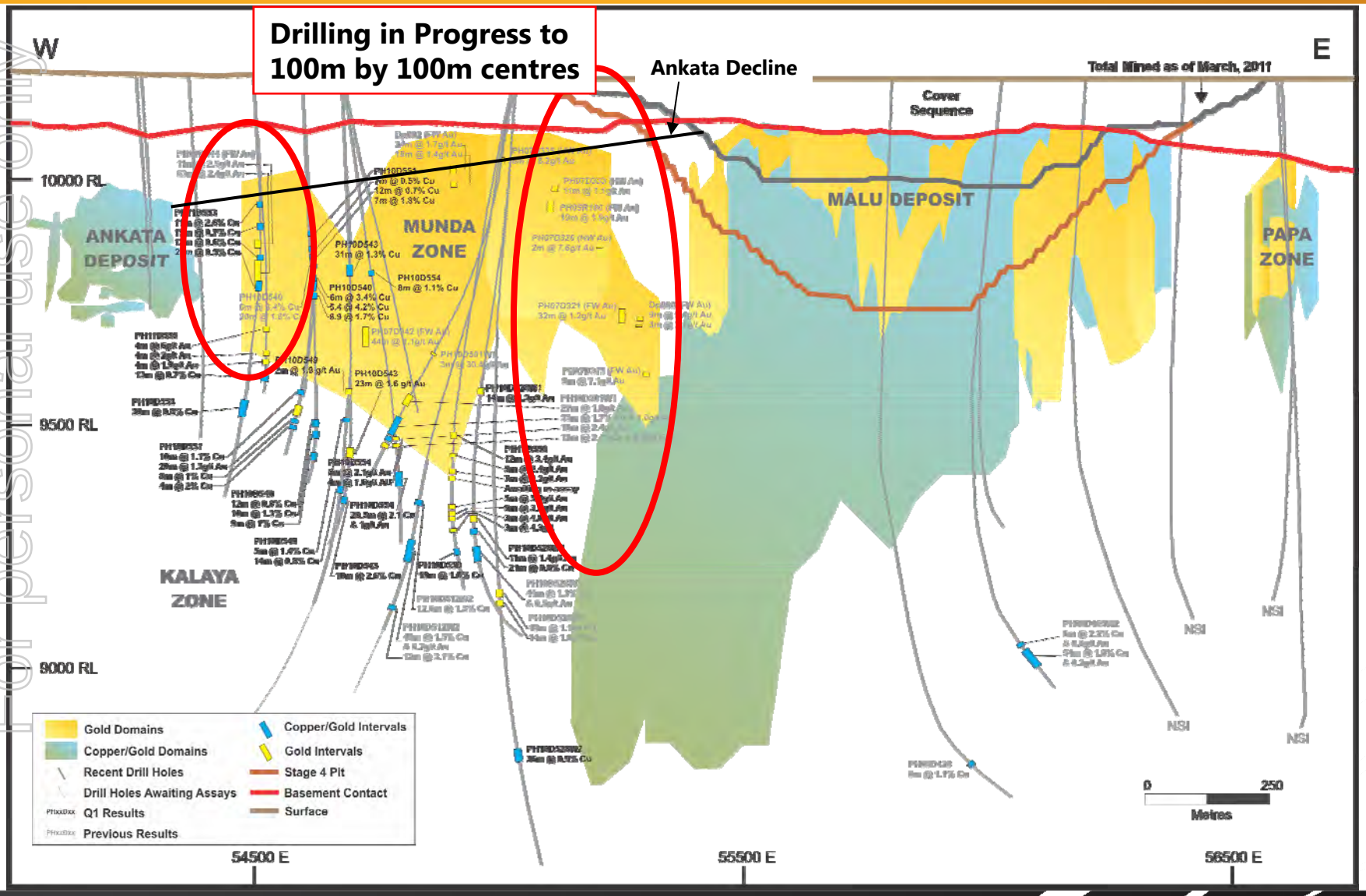
# NEAR-MINE EXPLORATION 2009 TO DATE



# PROMINENT HILL LONGITUDINAL SECTION - 2010

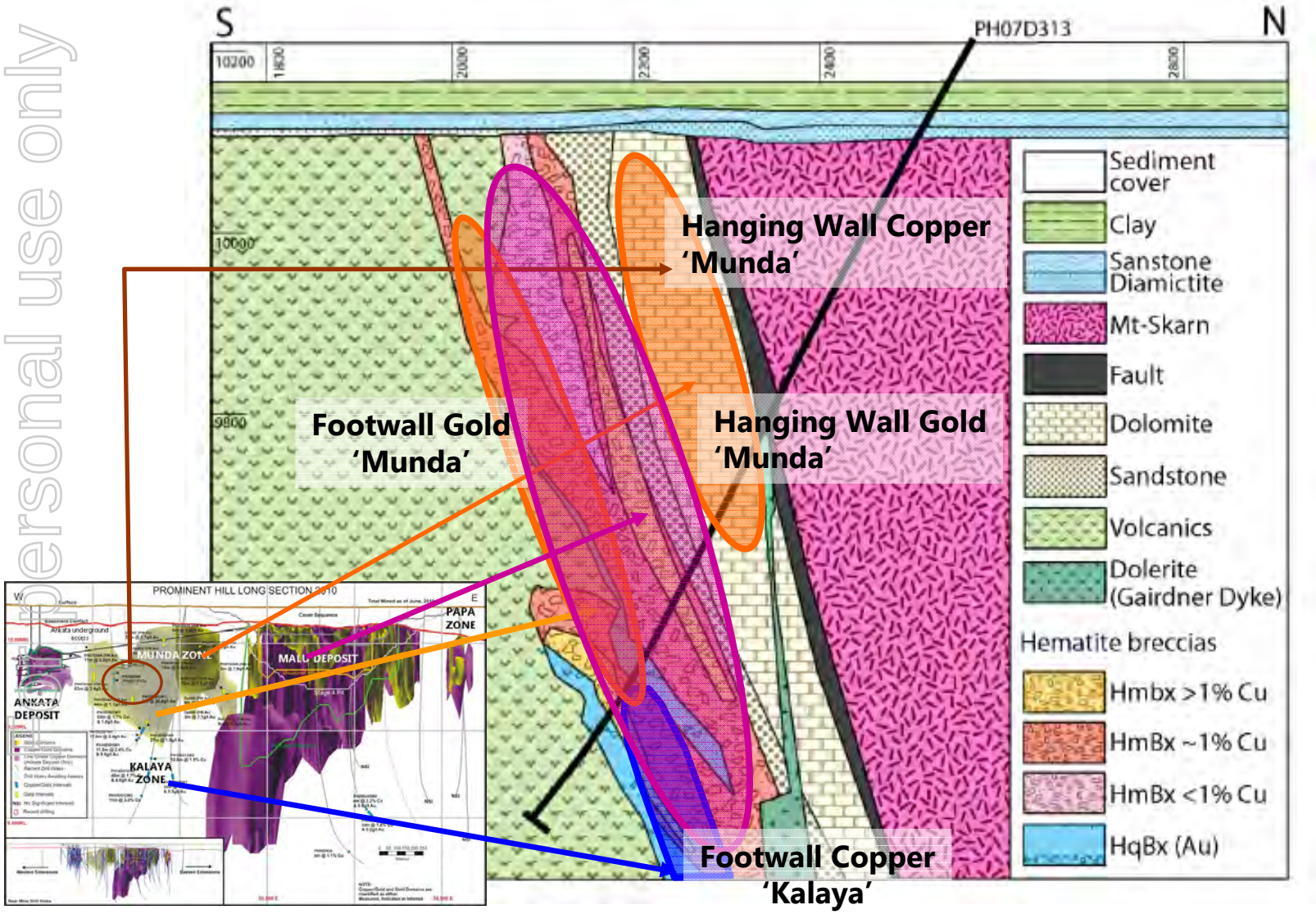


# PROMINENT HILL LONGITUDINAL SECTION – 2011



# PROMINENT HILL – CROSS SECTION (INDICATIVE)





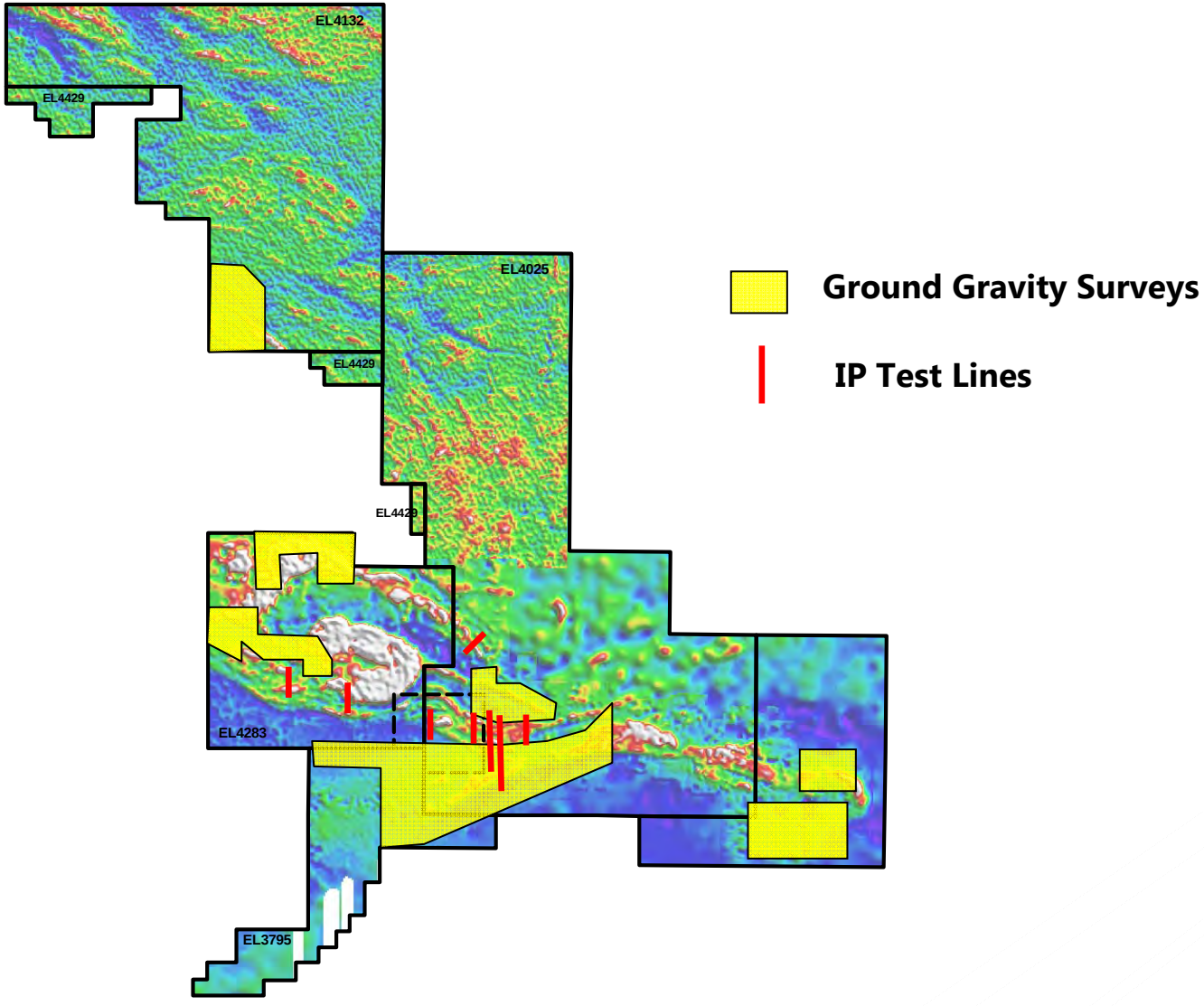

| Near Mine Metres Drilled | | Rigs |
|---|---|---|
| 2009 | 26,000m | 4 (AKT) |
| 2010 | 48,000m | 4 (AKT, NM) |
| 2011 | 12,000m * | 4 (NM, AKT) |

# MT WOODS PROJECT EXPLORATION OVERVIEW



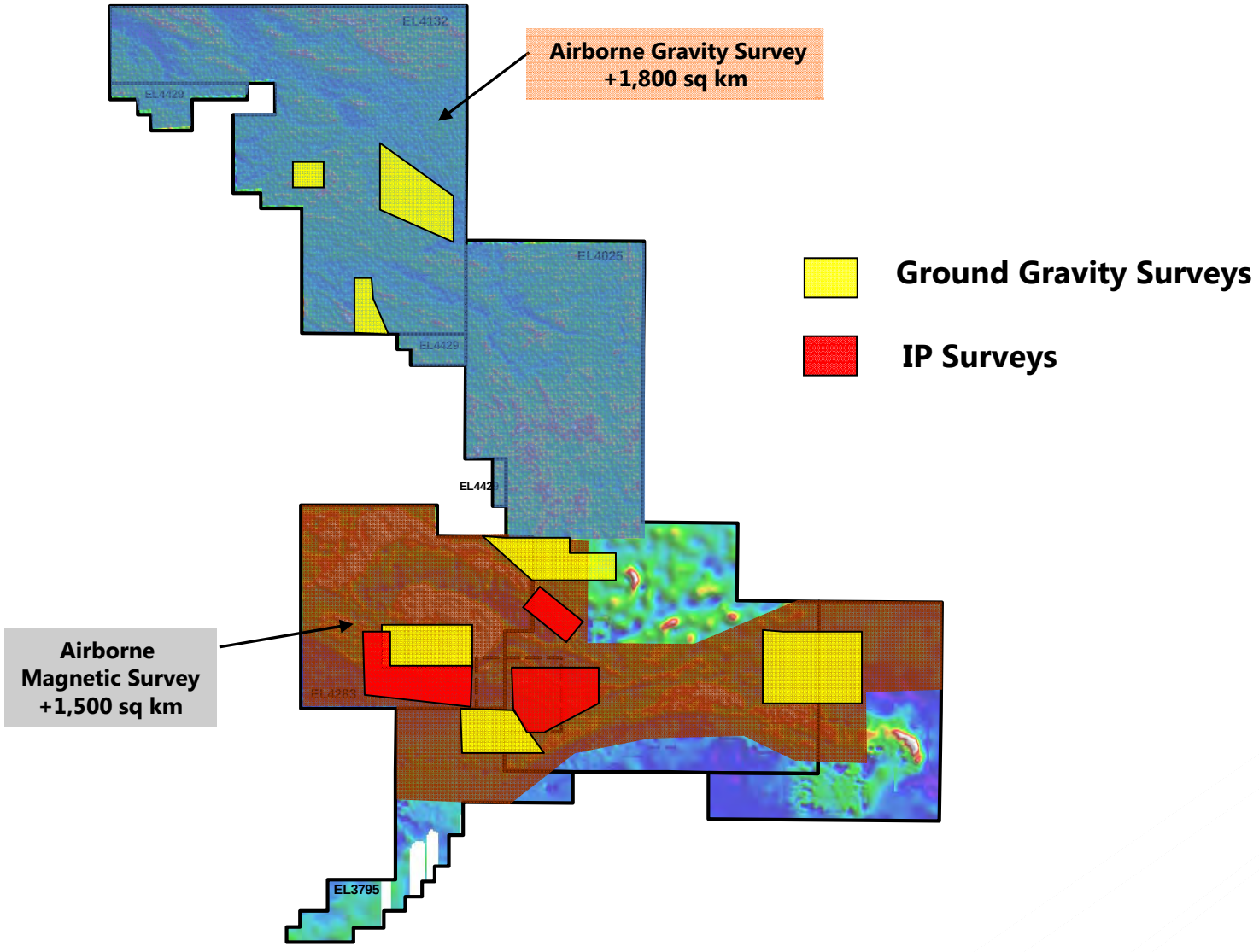
- Introduction
- Exploration History
- Discovery of Prominent Hill
- Mine Geology
- Exploration Techniques and Targeting
- Near Mine Exploration Results
- **Regional Exploration Results**
- 2011 Exploration Program

# OZ MINERALS GEOPHYSICAL WORK COMPLETED - 2009



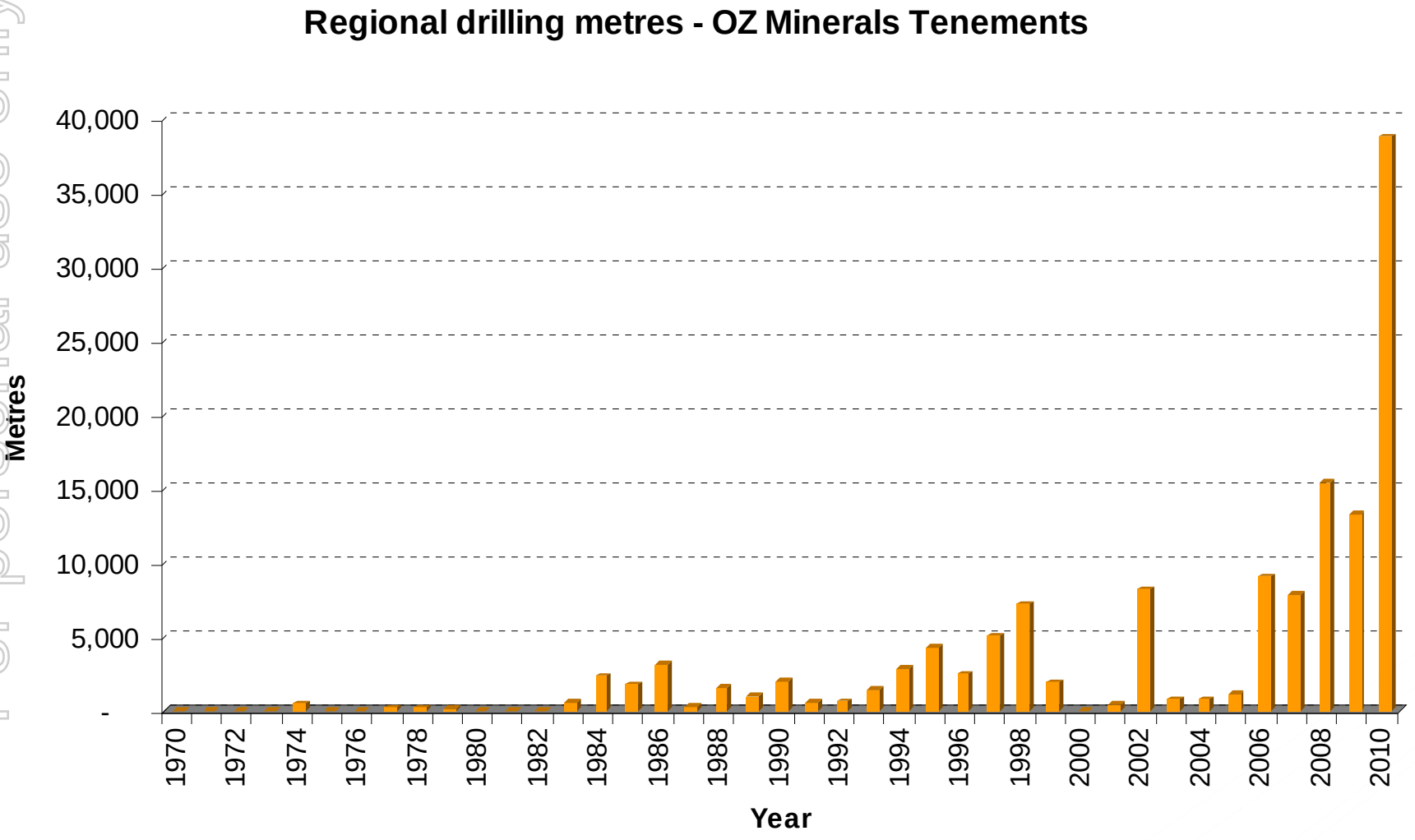
# OZ MINERALS GEOPHYSICAL WORK COMPLETED - 2010



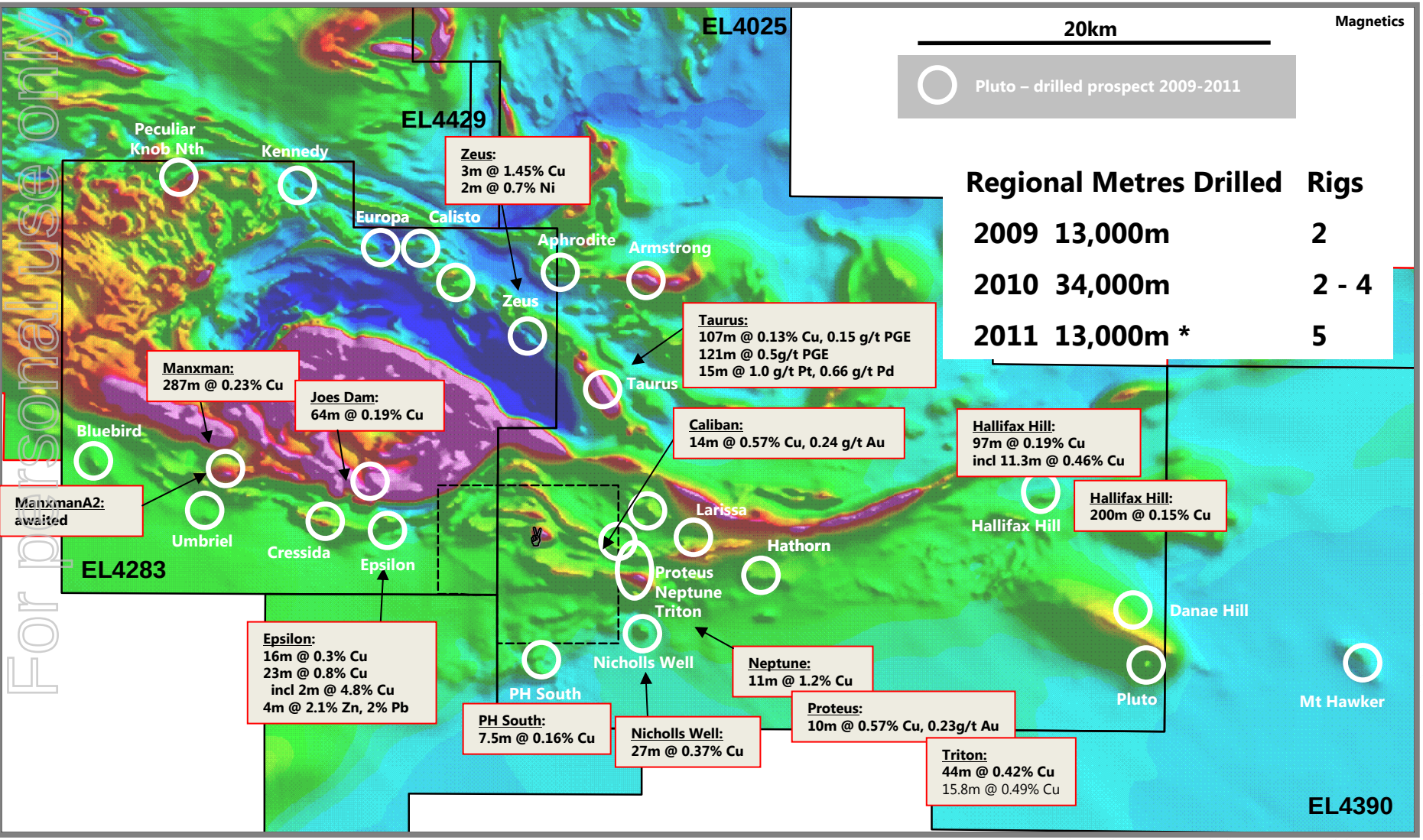


# REGIONAL EXPLORATION DRILLING – OZ MINERALS TENEMENTS

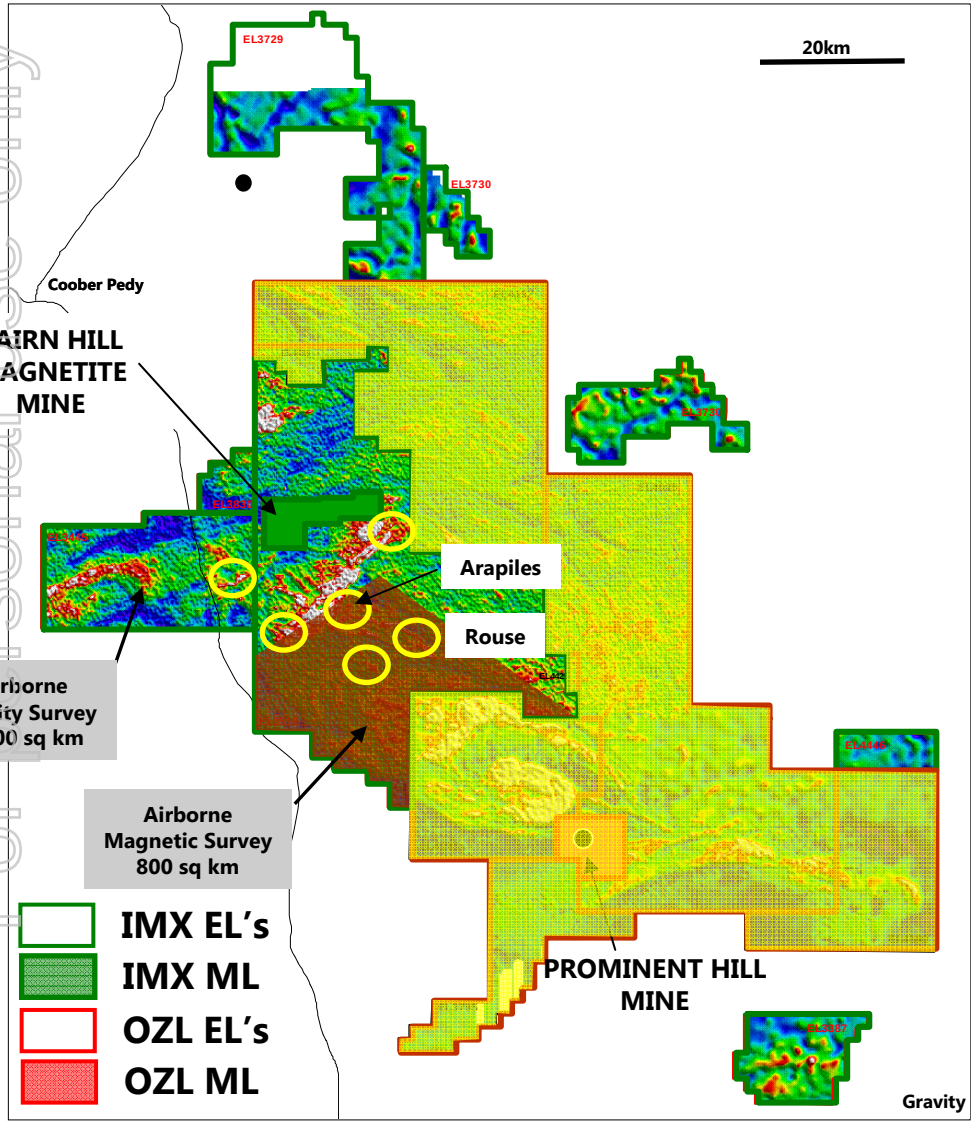




# OZ MINERALS REGIONAL EXPLORATION RESULTS TO DATE



# IMX JV REGIONAL EXPLORATION WORK 2010-2011






## IMX JV

- Airborne Gravity Gradient Survey (2,200 sq km).
- Airborne Magnetic Survey (800 sq km).
- IP Surveys.
- Ground Gravity Surveys.
- Rouse Prospect (1,900m drilled).
- Arapiles Prospect (400m drilled).
- Develop More Prospects.

- Diamond Drilling – 1 (2) rig
- 2010-2011 First JV Year (31 Apr 11)

<u>2,300m completed</u>

Year One expenditure requirement met.

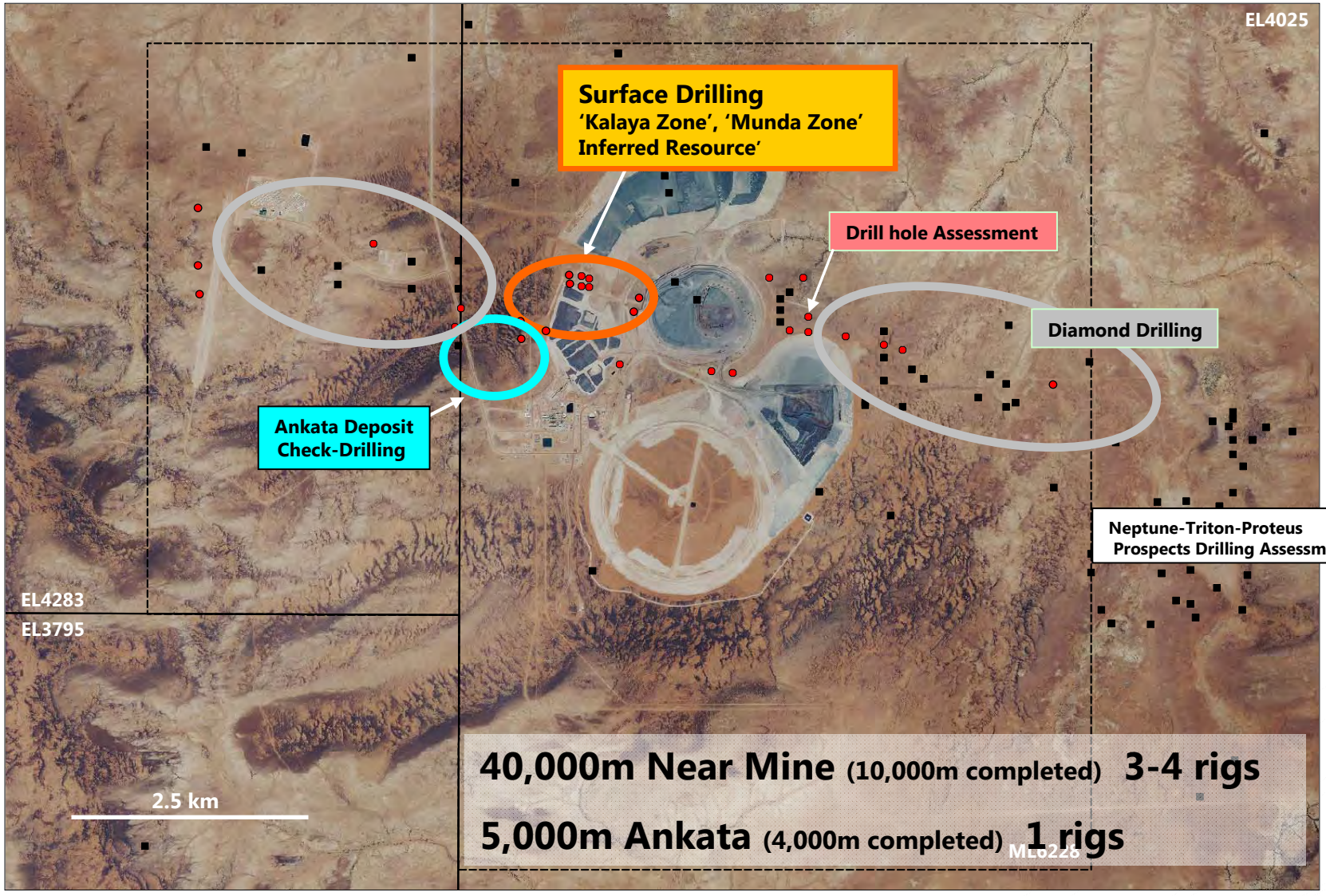
# MT WOODS PROJECT EXPLORATION OVERVIEW



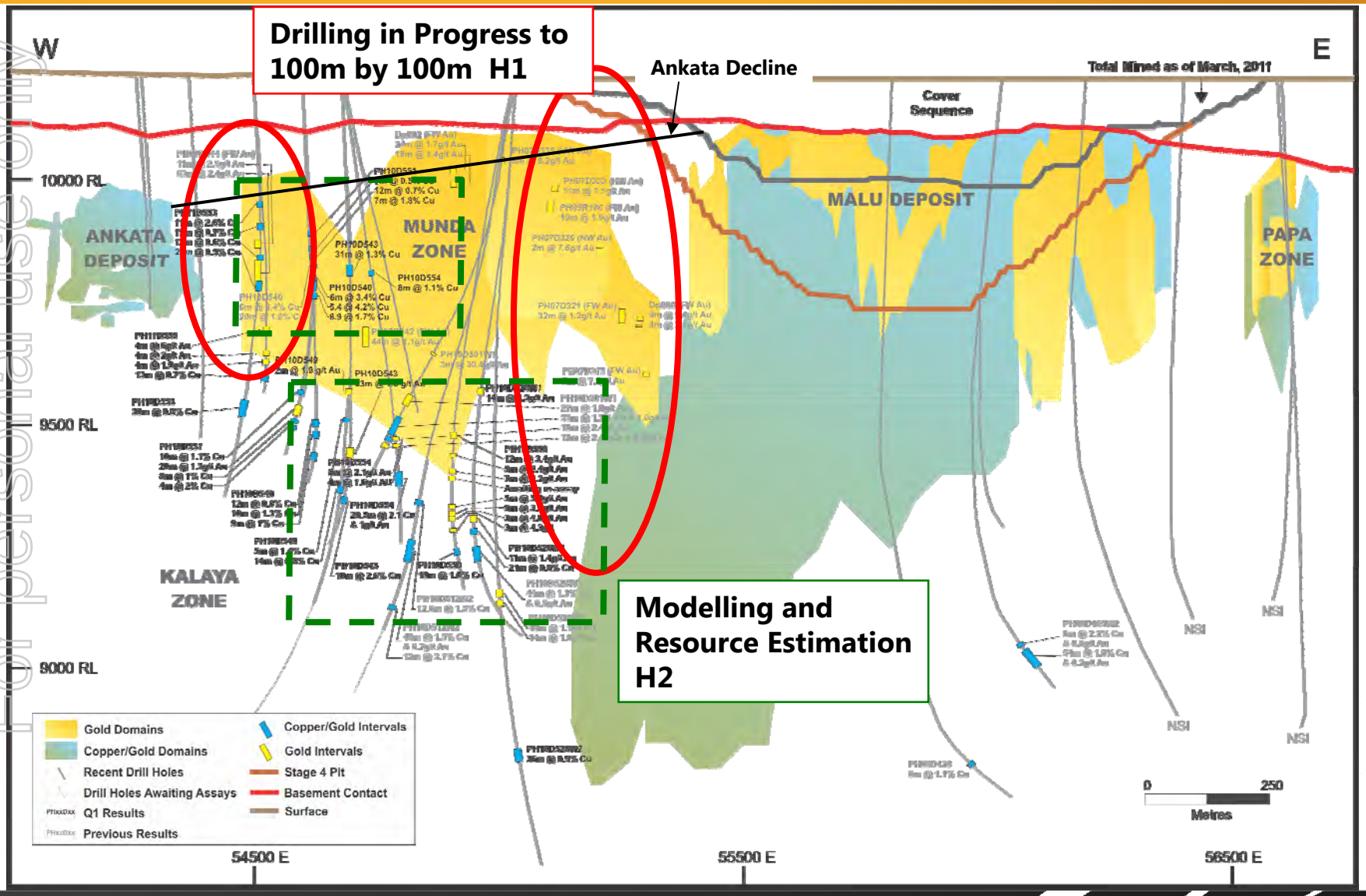
- Introduction
- Exploration History
- Discovery of Prominent Hill
- Mine Geology
- Exploration Techniques and Targeting
- Near Mine Exploration Results
- Regional Exploration Results
- **2011 Exploration Program**

# OZ MINERALS NEAR-MINE 2011 EXPLORATION PROGRAM

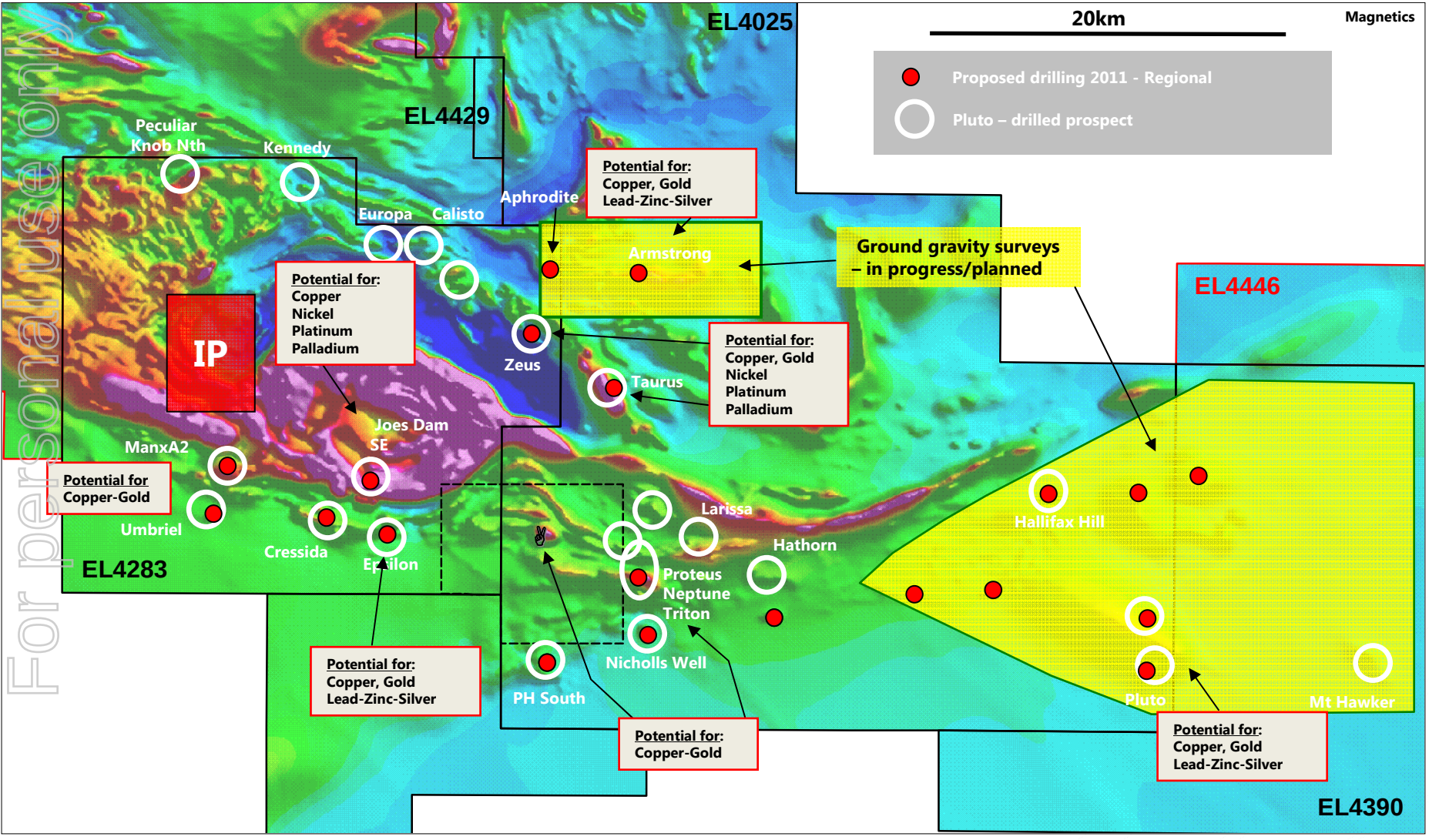




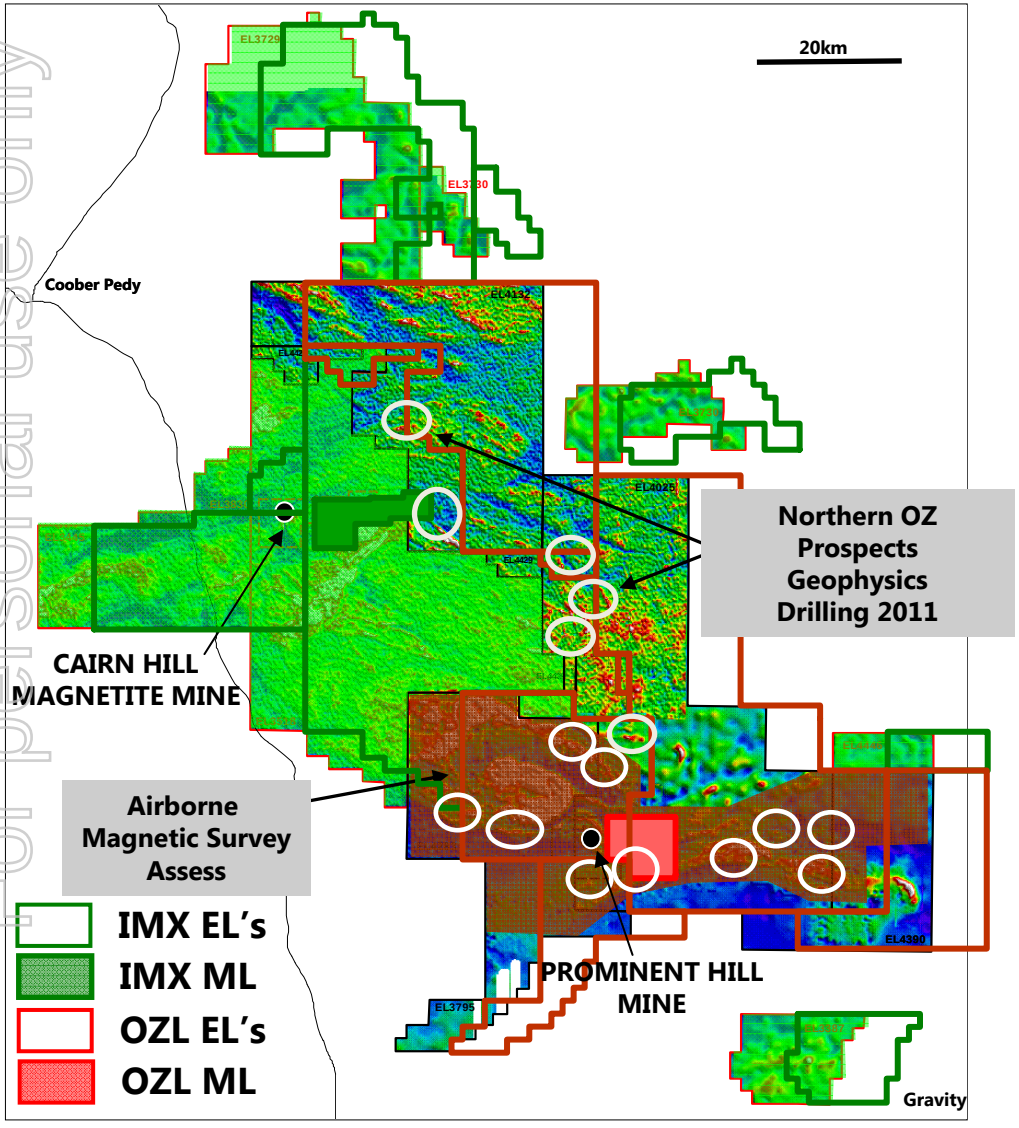
# OZ MINERALS NEAR-MINE 2011 EXPLORATION PROGRAM



# OZ MINERALS REGIONAL 2011 EXPLORATION PROGRAM



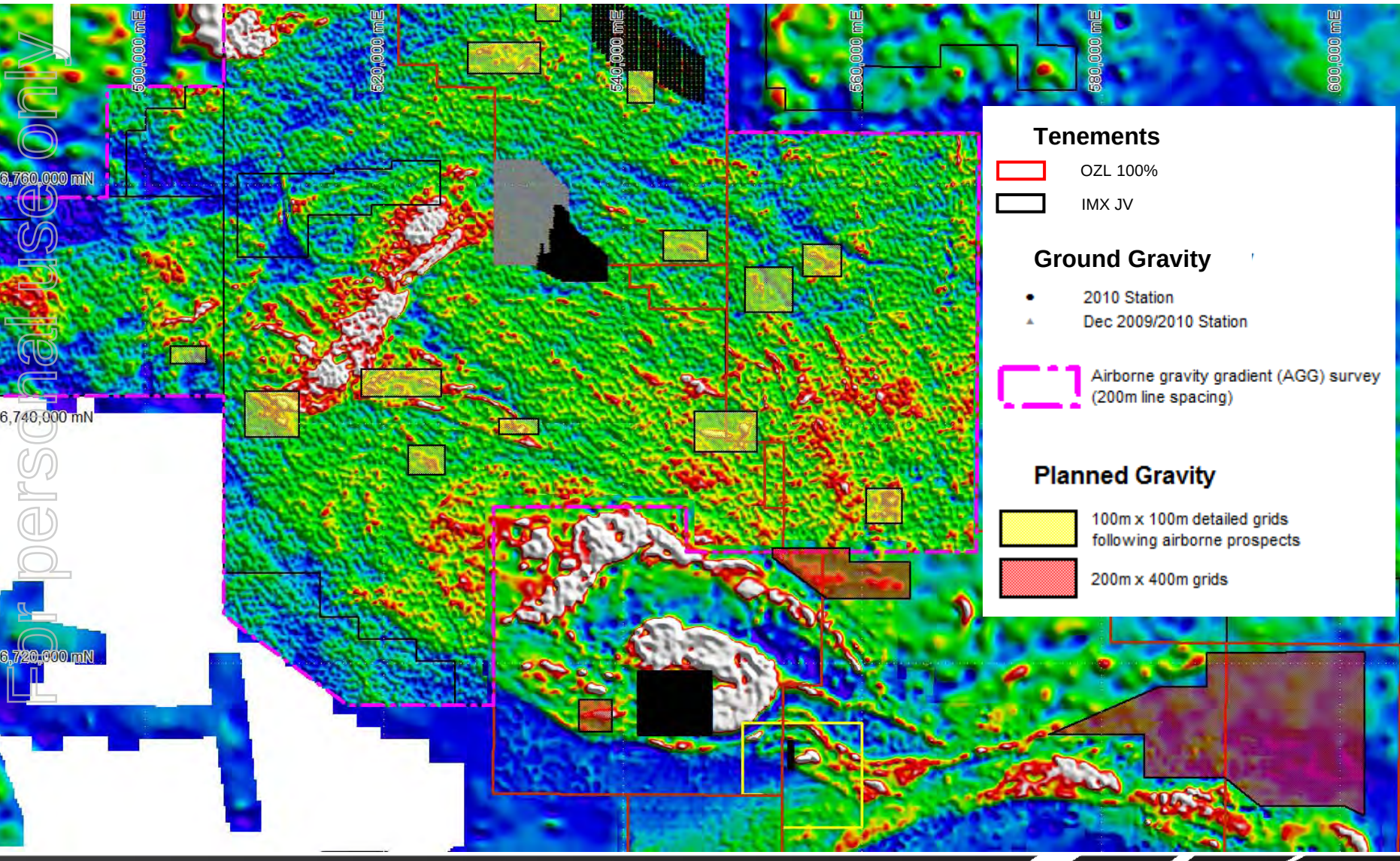
# OZ MINERALS REGIONAL EXPLORATION -2011



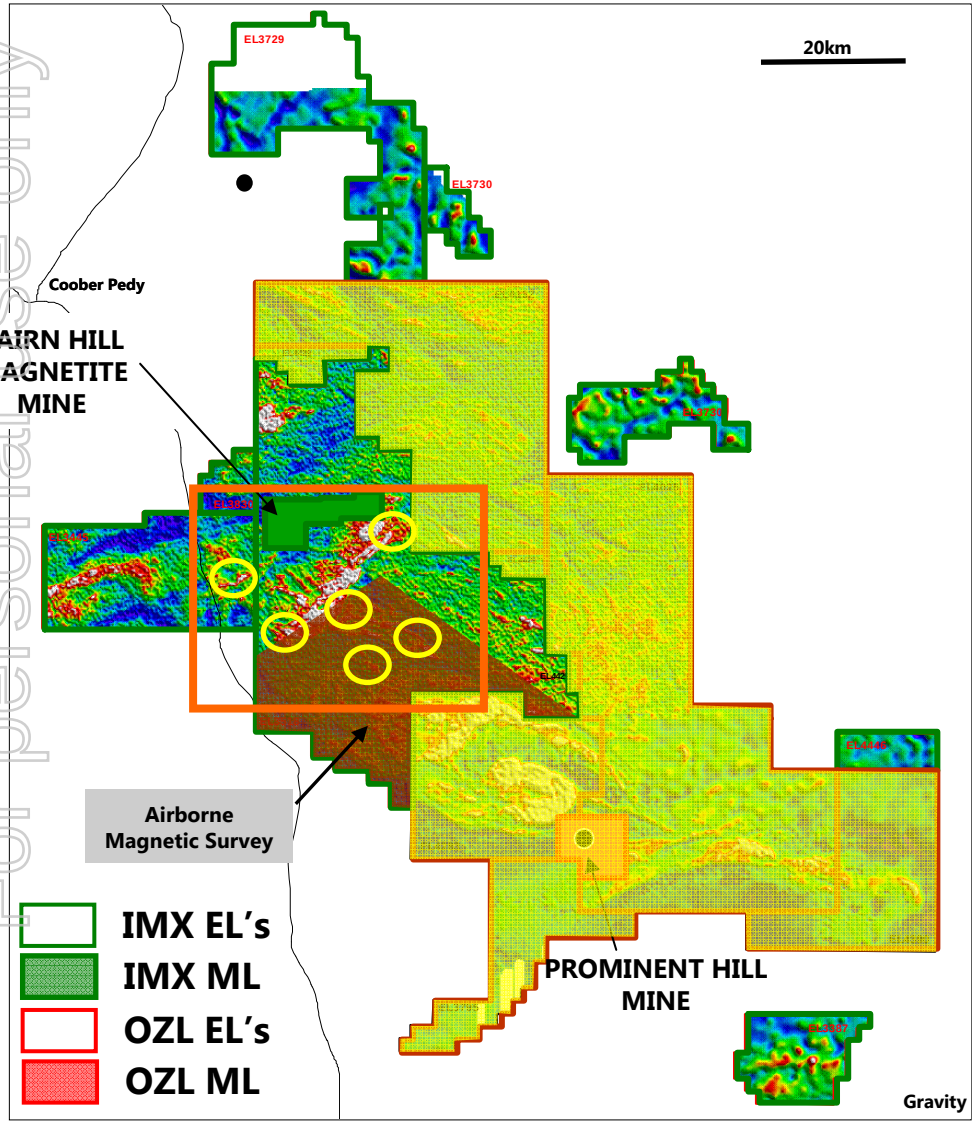

**OZ Minerals**

- Airborne Magnetic Survey – targets.
- IP Surveys.
- Ground Gravity Surveys.
- Develop and Explore Northern Prospects.
- Diamond Drilling – 5 rigs.
- 80,000m drilling 2011.

# 2011 EXPLORATION PROGRAM – GROUND GRAVITY



# IMX JV 2011 EXPLORATION PROGRAM




**IMX JV**

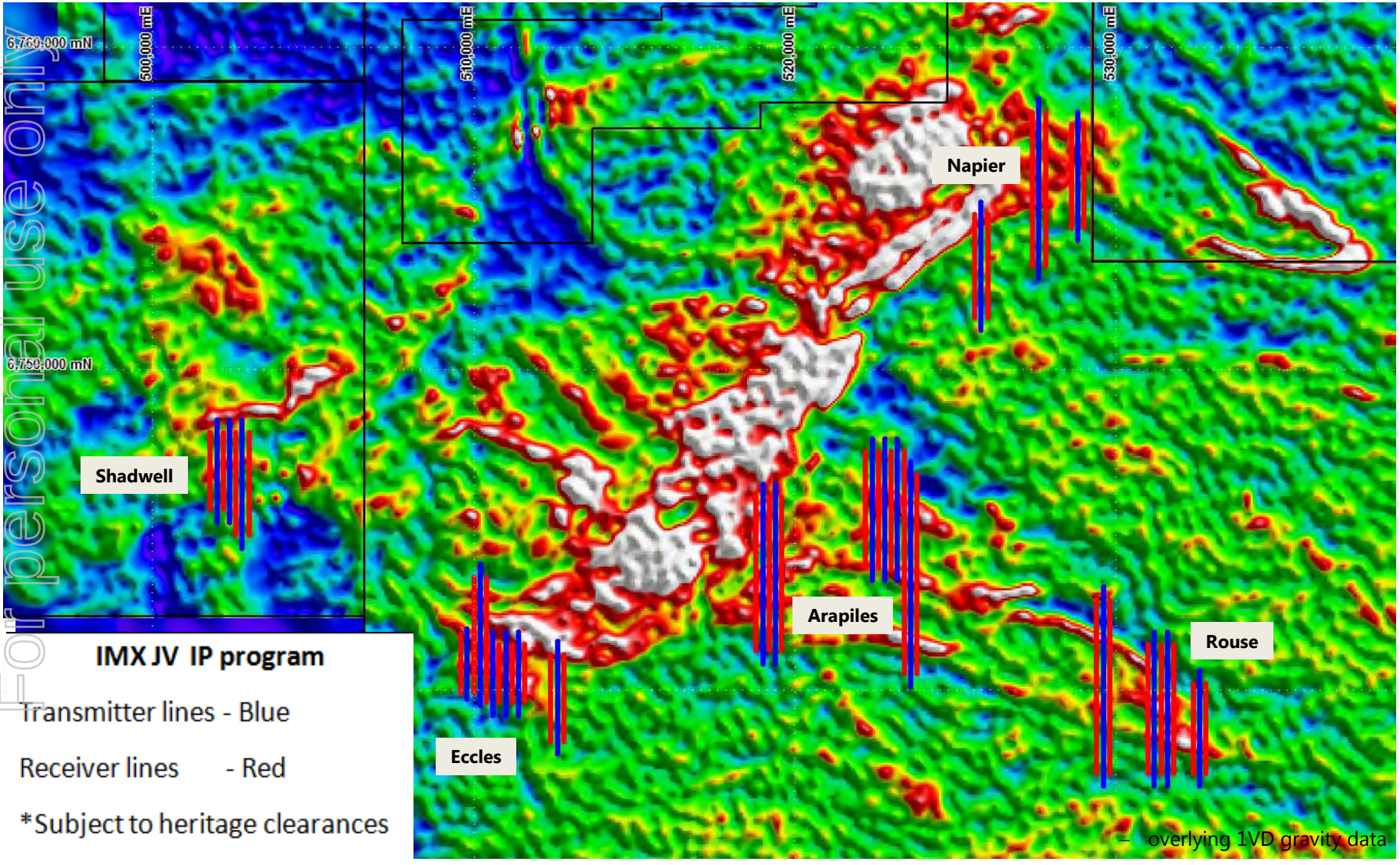
- Airborne Magnetic Survey assessment
- IP Surveys.
- Ground Gravity Surveys.
- Develop More Prospects.

- Diamond Drilling – 1 rig
- 5,000m 2010-2011 First JV Year (31 Apr 11)

  +3,000m completed

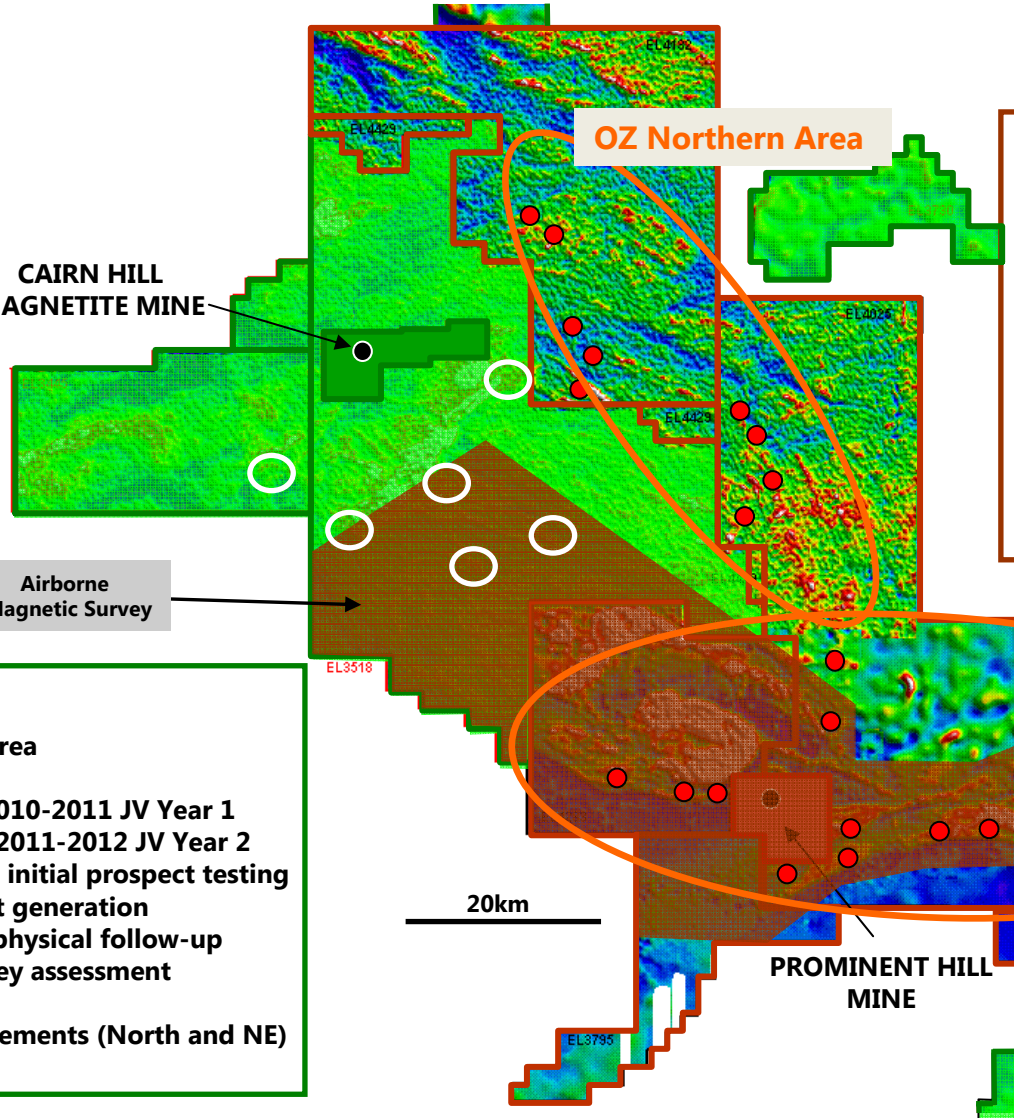
- 15,000m 2011-2012 Second JV Year.

# IMX JV 2011 EXPLORATION PROGRAM – IP SURVEYS



# 2011 EXPLORATION PROGRAM - SUMMARY






**OZ MINERALS**

- 4,150 sq km total area
- 9 rigs including Near-Mine work
- 120,000m in 2011 including Near-Mine
- Continued IP, ground techniques
- Aeromagnetic survey assessment
- Continue prospect generation
- Continue Technical/Research Group input
- Copper-focus - IOCG

**IMX JV**

- 3,200 sq km total area
- One rig – 5,000m 2010-2011 JV Year 1
- One rig – 15,000m 2011-2012 JV Year 2
- Continue/complete initial prospect testing
- Continued prospect generation
- IP and ground geophysical follow-up
- Aeromagnetic survey assessment
- Assess other JV tenements (North and NE)

Information in this presentation which refers to Minerals Resources at Prominent Hill is a summary of the information relating to Mineral Resources set out in the Prominent Hill Mineral Resources and Ore Reserves explanatory notes as at 30 June 2010 that was summarised in the announcement released to ASX on 9 November 2010 (and available at www.ozminerals.com/operations/Resources-Reserves) which was complied by Mr Jim Hodgkison MAusIMM who is a full time employee of OZ Minerals and a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Hodgkison consents to the inclusion of the material in the form and content in which it appears.

Information in this presentation which refers to Prominent Hill Ore Reserves is a summary of information relating to Ore Reserves set out in the Prominent Hill Mineral Resources and Ore Reserves Statement as at 30 June 2010 (available at www.ozminerals.com/operations/Resources-Reserves). This information has been approved for release in the form and context in which it appears by Mr David Goodchild who is a full time employee of OZ Minerals and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity undertaken 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'.

Within this statement (or presentation) references to exploration results relating to Prominent Hill are based on information compiled by Mr Marcel Van Eck Msc who is a full-time employee of OZ Minerals, is a member of the Australian Institute of Geoscientists and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activities undertaken to qualify as a competent person as defined by the 2004 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Van Eck has consented to the inclusion of the material in the form and context in which it appears.