

FINDING HERA

*Looking for the
rest of the family*

Hera

Goddess of marriage, women, childbirth,
and family



Zeus

God of the sky, lightning, thunder, law,
order, and justice



Athena

Goddess of wisdom, craft, war, diplomacy,
weaving, poetry, medicine, and commerce



Apollo

God of music, poetry, art, oracles, archery,
plague, medicine, sun, light and
knowledge



Hebe

Cupbearer to the gods
Goddess of eternal youth



Iris

Goddess of the Rainbow



HISTORIC NYMAGEE



Nymagee Copper Mine and Smelting Works ~1912

Nymagee Copper
Mine
Sporadic producer
1879 to 1917.

- ❖ Direct smelting operation requiring ~5% Cu feed.
- ❖ Operation hampered by lack of water and transport costs.
- ❖ Up to 1890s high grade supergene chalcocite ore (~10% Cu average).
- ❖ Operation cut off grade of ~4% Cu.
- ❖ Recorded production 422000t @ 5.8% Cu.
- ❖ Minor shaft sinking and prospecting pits elsewhere in the area. Two shafts within 500m of Hera.
- ❖ A ML pegged over Hera in 1908 but no shaft sinking undertaken. Could easily have found the deposit.

PREVIOUS EXPLORATION 1970's

- ❖ Exploration by numerous companies in 1960's 1970's, 1980's and 1990's.
- ❖ Pillar resource defined at Nymagee Mine in 1974.
No Au or Ag assays. Resource too small for stand-alone operation.

Nymagee Mine Remnant Copper Lodes – 1974 Historical Estimate		
	TONNES	Cu (%)
	409,000	3.0
	260,000	2.0
	152,000	1.0
Total	821,000	2.3

Nymagee Mine Remnant Pb-Zn lodes – 1974 Historical Estimate				
	TONNES	Cu (%)	Pb (%)	Zn (%)
Total	363,000	0.5	3.0	7.0

- Some tribute production from Nymagee in 1976.

NYMAGEE MINE 1972



PREVIOUS EXPLORATION 1980's – 1990's

- ❖ 1983 to 1992 intensive exploration by CRAE, Blue Circle Southern Cement and Clutha Minerals involving IP, EM, 3979 RAB drill holes, 13 percussion drill holes and 9 diamond drill holes.
- ❖ Strong linear Pb RAB and soil anomaly over Hera. 400m long >0.2% Pb with anomalous As, Zn but negligible Au, mostly <5ppb.
- ❖ Hole KW1 intersected top of Hera SE Lens in 1984 1.6m @ 4.8% Pb+Zn from 127.31m
- ❖ Hole KW2 intersected top of Hera Main Lens in 1984 3.04m @ 1.72ppmAu, 12ppmAg 0.6%Cu, 1.0%Pb, 1.3%Zn from 217.23m
- ❖ Prospect considered interesting but did not have potential to meet CRA “target ore body size criteria”. 30 years from first drill hole to production!
- ❖ Great database of work used by all subsequent explorers.

HERA RECOGNITION, PASMINCO, 1999 - 2001

- ❖ In 1999 Pasminco started exploration in the area. After compilation and review of previous work it was recognised that there was a strong untested Pb RAB anomaly north of hole KW2. After confirmation soil sampling hole PNDD1 was completed intersecting Hera Main Lens; 6m @ 0.33ppmAu, 13ppmAg, 2.4%Pb, 4.9%Zn from 260m
- ❖ DHEM on PNDD1 confirmed that deeper drilling should occur.
- ❖ The discovery hole, PNDD2, was drilled below PNDD1 and intersected Hera Main Lens;
8.6m @ 26.6ppmAu, 70ppmAg, 1.8%Cu, 10.9% Pb, 7.0%Zn
from 371.4m.
- ❖ Historic dataset at the time of Pasminco receivership consists of 39 RC and diamond drill holes.

TRIAKO EVALUATION 2002-6

- ❖ In 2002 Triako Resources purchased Hera from the Pasminco receivers.
- ❖ Project developed to prefeasibility status as a gold deposit with lead and zinc credits.
- ❖ A number of farsighted decisions made such as purchasing the property and permitting for an exploration decline.
- ❖ In September 2005 Triako published a resource using only two mineralised structures, the Main and 1530 lenses, using a 2.5 g/t AuEq cut-off and a minimum 4m mining width.

Type	Tonnes (M)	Gold (Au g/t)	Copper (Cu %)	Lead (Pb%)	Zinc (Zn%)	Silver (Ag g/t)
Indicated	0.667	7.6	0.3	2.9	3.0	16
Inferred	1.12	6.3	0.2	2.3	2.6	13
TOTAL	1.787	6.7	0.2	2.5	2.8	14

CBH EVALUATION 2006-9

- ❖ Hera Project was acquired by CBH Resources in the \$70m takeover of Triako Resources in 2006.
- ❖ Focus changed to being a lead + zinc dominant project with thoughts of processing at the existing Elura Mine (150km away).
- ❖ Resource was estimated by CBH Resources and published in June 2008 using 15 mineralised lenses and applying a 7.5% ZnEq cut-off. (141 drill holes of >90m depth).

Type	Tonnes (M)	Gold (Au g/t)	Copper (Cu %)	Lead (Pb%)	Zinc (Zn%)	Silver (Ag g/t)
Indicated	1.70	2.81	0.18	2.59	3.26	13.48
Inferred	1.60	2.52	0.17	2.86	3.45	16.88
TOTAL	3.30	2.67	0.18	2.72	3.35	15.13

- ❖ In 2009 CBH Resources became a distressed seller of the Hera and Nymagee projects to YTC Resources for \$12M.

YTC / AURELIA 2009 ONWARDS

- ❖ Just under 5 years from purchase to first production.
- ❖ Permitting took 2.5 years.
- ❖ Construction took 1.5 years.
- ❖ Two discoveries.
- ❖ Hera North Pod found by re-interpreting DHEM data at mid-time constants and following up on near miss CBH drill hole. Completely blind at surface.
- ❖ Depth extensions and footwall stockwork zone found at Nymagee Mine. December 2011 Nymagee resource below. Note: no Au.

Description	Cut Off	Tonnes	Pb %	Zn %	Ag g/t	Cu %
INDICATED						
Shallow Cu Resource (above 90mRL)	0.3% Cu	5,147,000	0.10	0.20	5	1.00
Deeper Cu Resource (below 90m RL)	0.75% Cu	1,984,000	0.30	0.60	11	1.80
Lead-Zinc-Silver Lens	5% Pb + Zn	364,000	4.40	7.80	41	0.50
INFERRED						
Deeper Cu Resource (below 90m RL)	0.75% Cu	601,000	0.10	0.20	8	1.30
GLOBAL		8,096,000	0.30	0.70	9	1.20
Contained Metal (tonnes)			27,000	53,000	69	96,000t



Hera February 2014

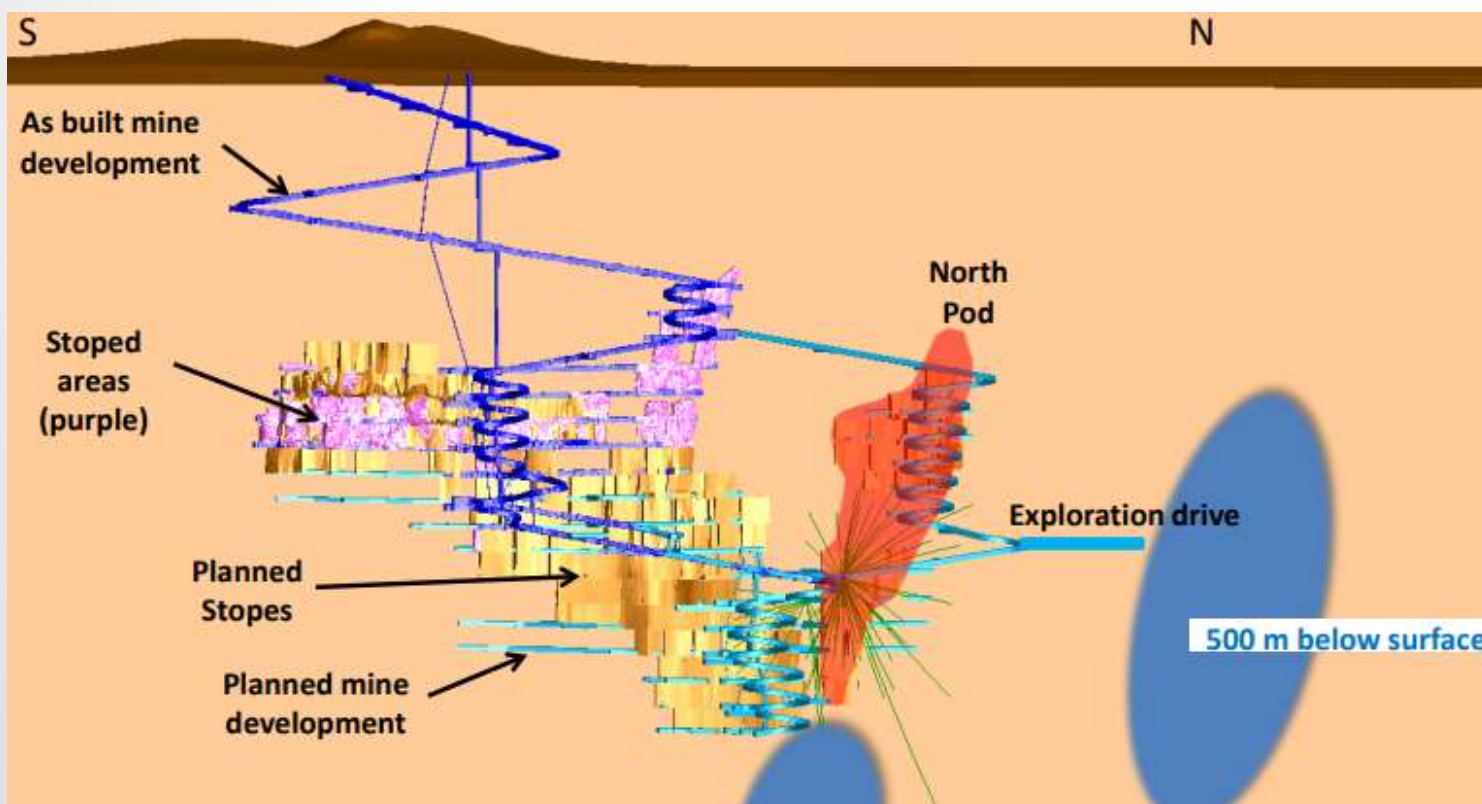


HERA NORTH LENS

HRD059W1
17.1m @
14.8g/t Au,
168g/t Ag,
15.9% Pb,
15.2% Zn,
0.3% Cu
from
387.3m

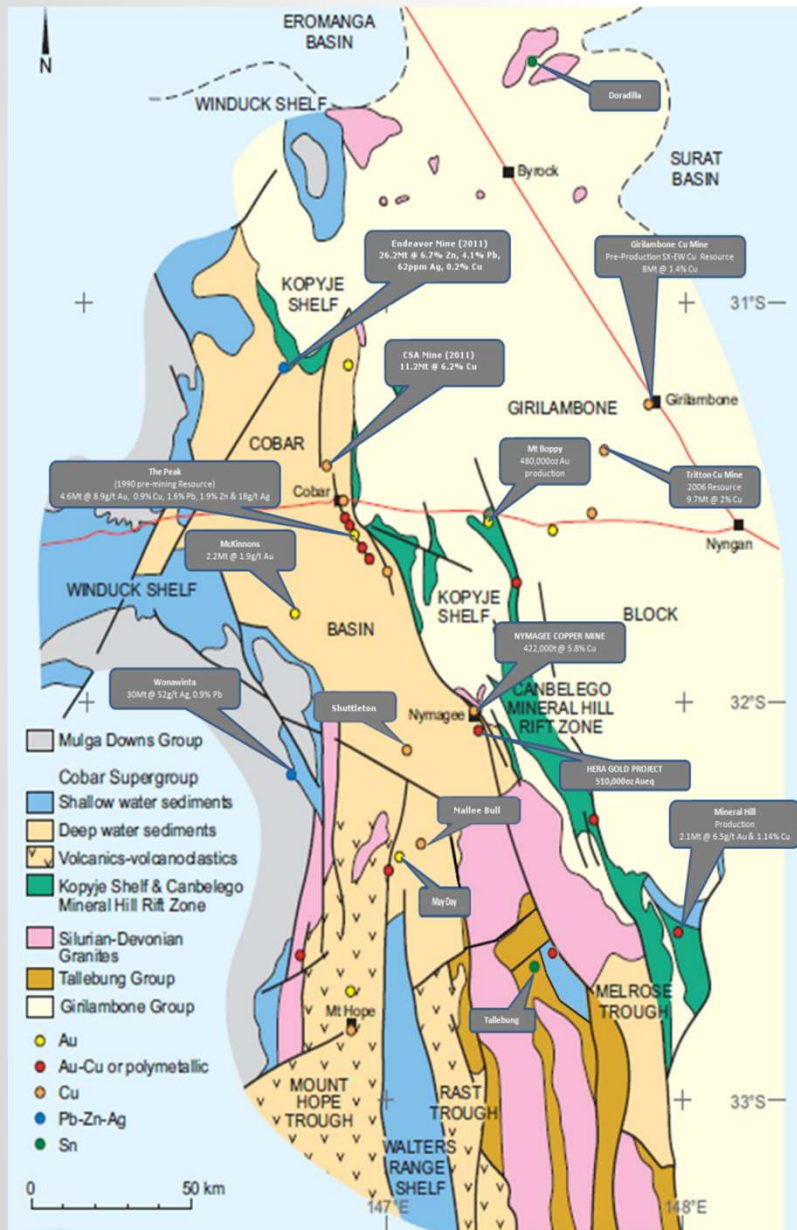
HERA 2017

	tonnes	Au ppm	Ag ppm	Pb %	Zn %
2014-5 Production	223338	3.26	13	2.77	3.90
2015-6 Production	307240	6.03	14	2.66	2.52
2016-7 Production	373795	4.63	13	2.33	3.11
Resource July 2017	2934000	2.8	24	2.6	3.8
Hera Endowment	3838373	3.3	21	2.6	3.6



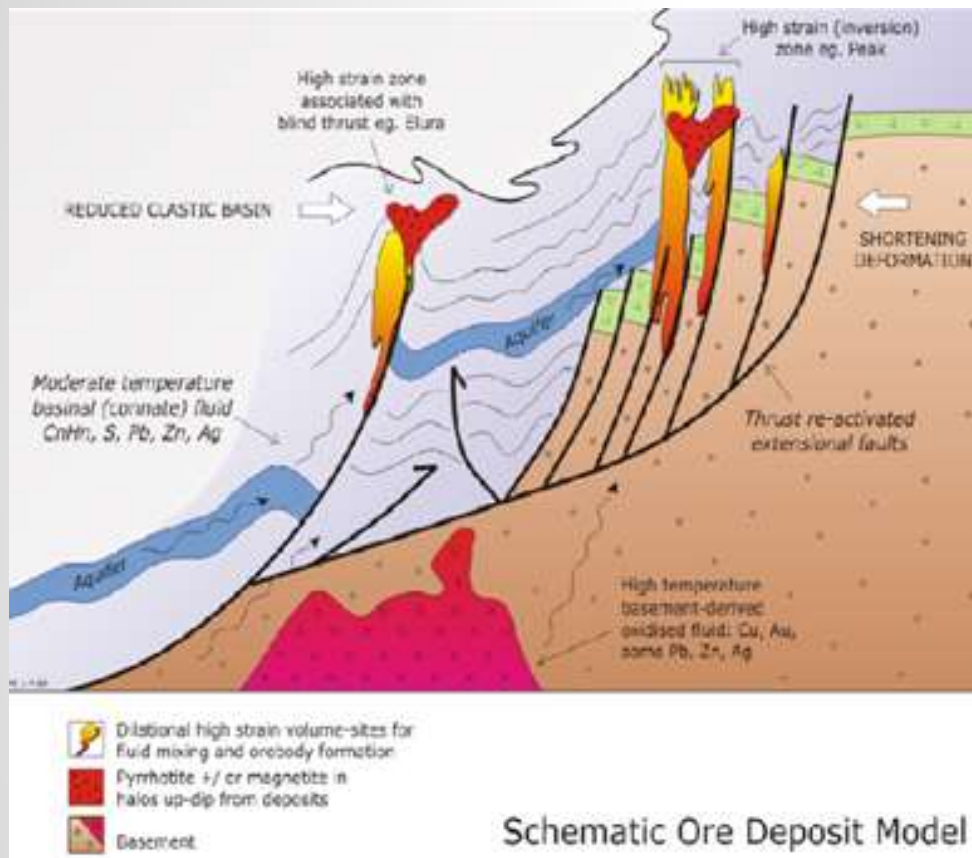
Hera Mine long section, looking west

REGIONAL GEOLOGY



- Nymagee deposits close to eastern margin of Devonian Cobar Basin and adjacent to major inflexion in 300km long Rookery Fault.
- Cobar Basin dominated by deep water siltstones and sandstones with minor volcanics.
- Shallow water shelf sediments and felsic volcanics east of Cobar and Nymagee.
- Basin inverted in Mid-Devonian with basin sediments thrust over Ordovician basement and Silurian granites.
- Nymagee mineralisation syn to late tectonic.
- Hera dated at 382Ma; Tabberabberan Orogeny

GENERAL “COBAR STYLE” DEPOSIT FEATURES



Conceptual model for the formation of Cobar Basin Deposits (Lawrie and Hinman 1998).

- ❖ The Nymagee area is in a similar setting to the Cobar Gold Field. The area lies to the immediate west of the regional Rookery Fault.
- ❖ Mineralisation located in high strain zones.
- ❖ Mineralisation in the broader Cobar Basin is hosted in Devonian siltstones and sandstones with little volcanic present.
- ❖ Mineralisation tends to be short strike length with great vertical extent and pipe like.
- ❖ Tend to be distinct $Pb+Zn \pm Au$ and $Cu \pm Au$ lenses.
- ❖ Alteration is dominated by silicification and chloritisation.
- ❖ Mineralisation is structurally controlled, epigenetic and is syn to post regional deformation and metamorphism.

HERA VARIATIONS

- ❖ Whilst matching the general features the Hera Deposit has some variations.
- ❖ Longer strike extents. Hera Main Lens has a 600m strike length. Nymagee Main Lode has a 500m strike length.
- ❖ Non-magnetic pyrrhotite and cubanite indicating formation temperatures over 400°C at Hera.
- ❖ Skarn mineralogy such as vesuvianite, actinolite, tremolite, apatite, garnet, zoisite and cordierite.
- ❖ Remnant carbonates recently found underground.
- ❖ Mineralogy suggesting a possible magmatic input such as fluorite, tourmaline, scheelite and K-feldspar.
- ❖ Variation in mineralogy along strike with northern Ag, Sb rich lens with differing mineralogy.

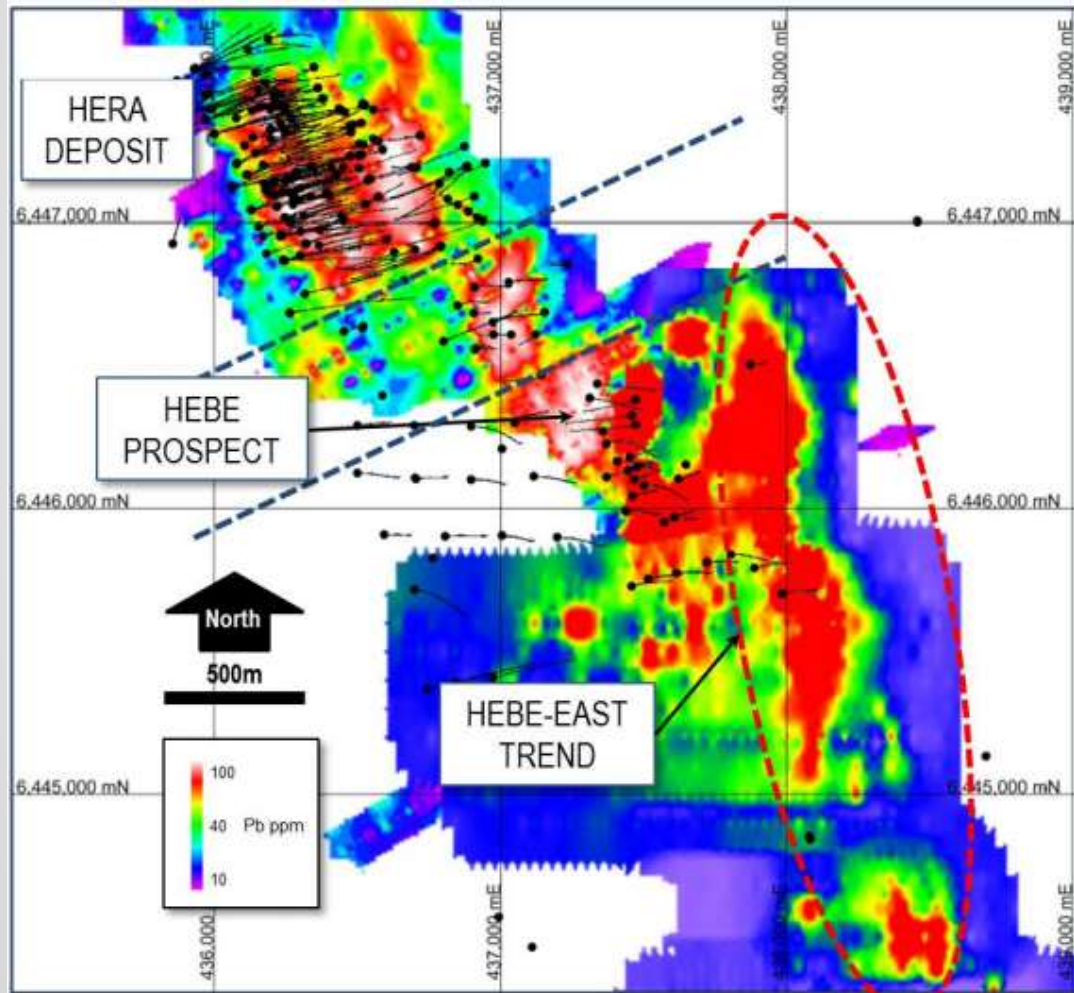


Samples of strong zinc-lead and copper sulphide mineralisation from the first cross cut into the Hera ore body

EXPLORATION TECHNIQUES

- ❖ Large database of historic work in the region. Highly recommended to review and reappraise previous work in as much detail as possible. Worth going back to original documents whenever possible.
- ❖ Regular thin section petrography helpful. Helping to build a 3D picture of alteration and formation temperatures.
- ❖ Magnetic data ambiguous. Hera pyrrhotite halo high temperature and non-magnetic, hence no magnetic signature. Nymagee Mine and Hebe pyrrhotite lower temperature and magnetic hence both of these systems have strong magnetic signatures.
- ❖ EM data difficult to interpret. Hera has only a subtle VTEM response due to the dominance of sphalerite in the mineralisation, effectively not visible to airborne EM. Chalcopyrite rich Mallee Bull and Nymagee have strong VTEM anomalies.

EXPLORATION TECHNIQUES – GEOCHEMISTRY



Pb, B-horizon, -2mm soils, south of the Hera Deposit.

- ❖ In the Nymagee area Pb, As, Bi, and Sb are excellent pathfinder elements.
- ❖ Ag, Zn, and Cu are mobile and often depleted.
- ❖ Sn and W are present on top of systems.
- ❖ The weathering regime appears to reduce Au in the surficial environment.
- ❖ Very little alluvial / eluvial gold in the Cobar district.
- ❖ Intense Na depletion in fresh rock visible for up to 400m from mineralisation.

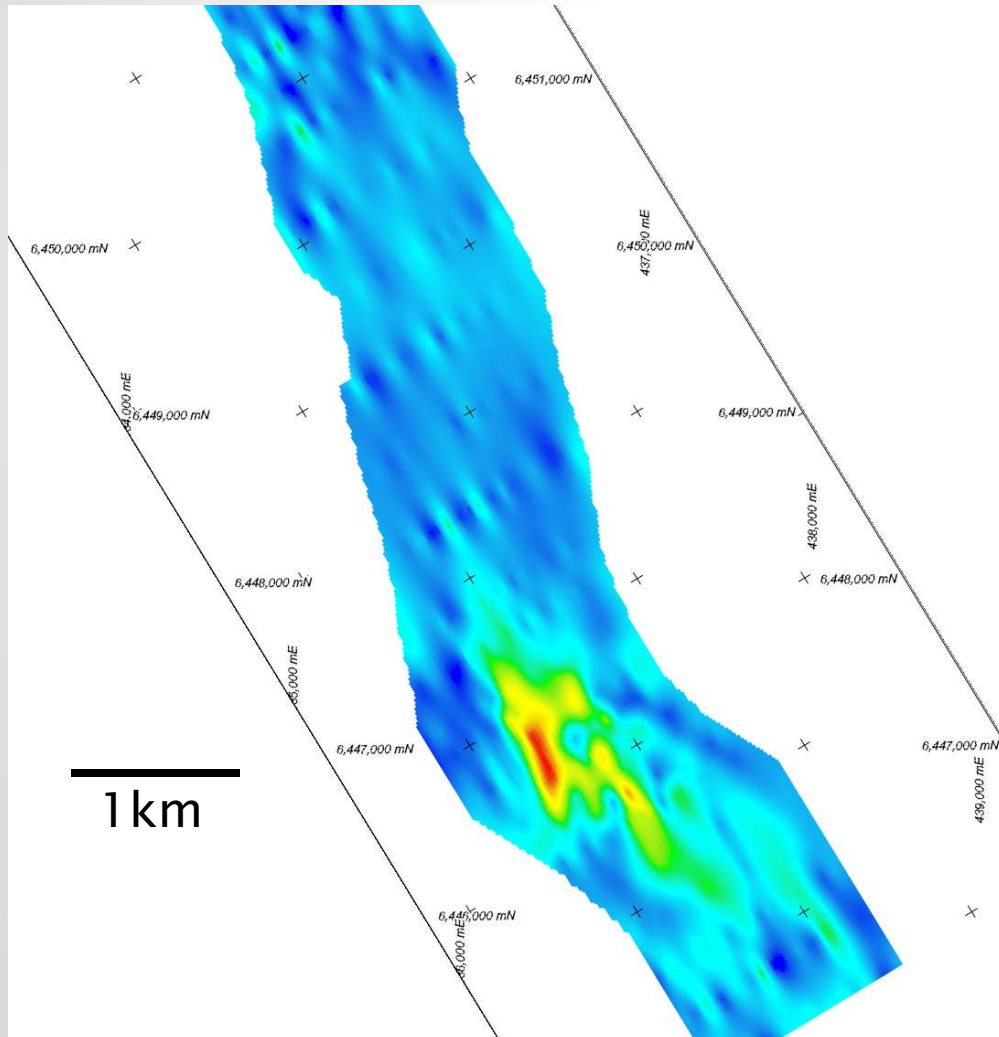
EXPLORATION TECHNIQUES – BOOTS & HAMMER



The Peak. A silicified hill footwall to the Hera Deposit.

- ❖ Walk the ground. There is enough outcrop around Nymagee for structural and alteration mapping to be useful.
- ❖ The silicification with alteration often results in altered areas being hills. (Hera, Nymagee, Mallee Bull, Peak, CSA, New Cobar)
- ❖ Important to recognise areas of residual vs transported soils and design sampling accordingly.
- ❖ Still possible to find untested gossans as at Federation Prospect.
3ppm Ag, 478ppm As, 19.8ppm Au, 0.7% Cu, 0.8% Pb, 0.5% Zn

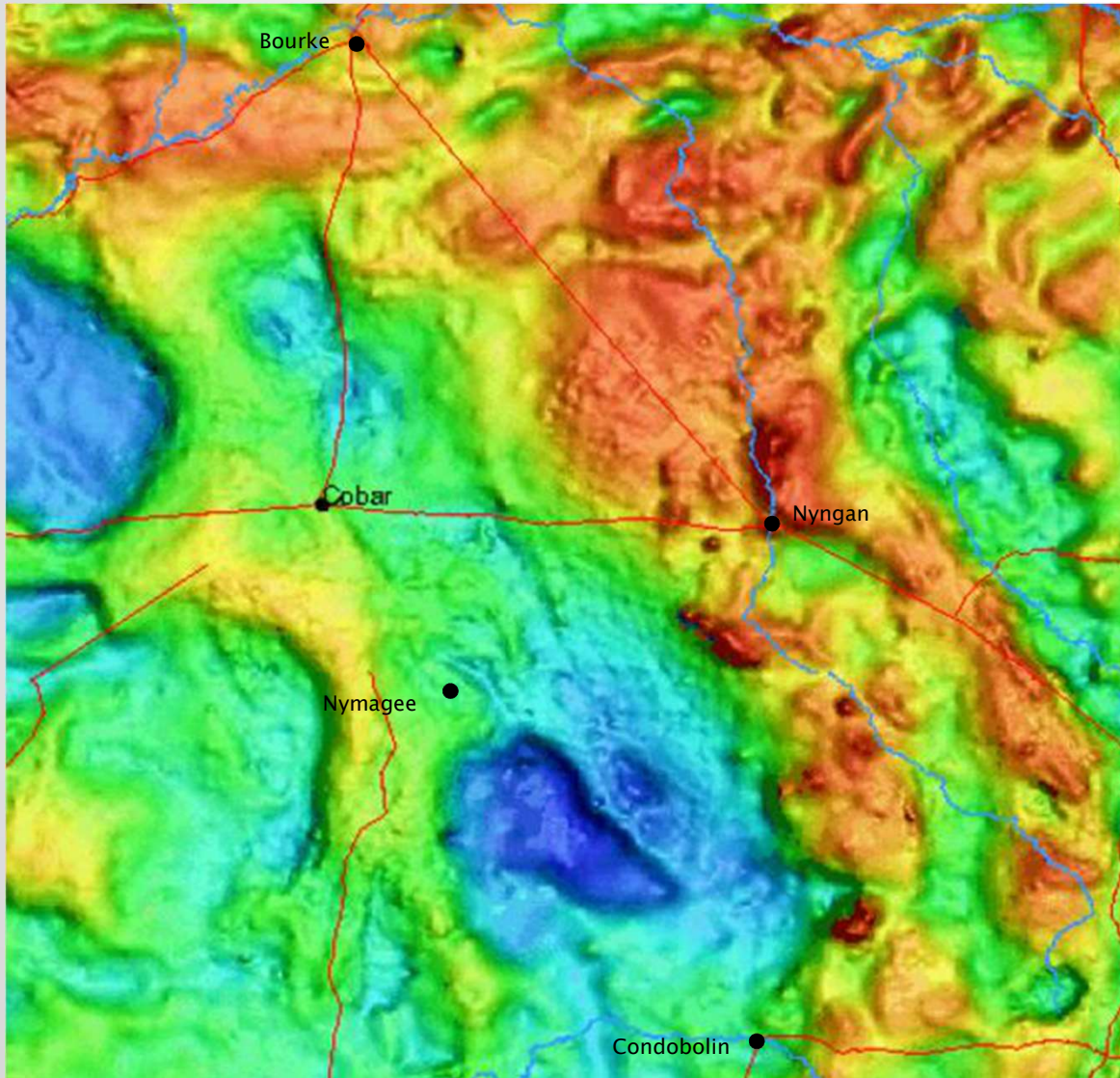
EXPLORATION TECHNIQUES – IP



IP is the only surface electrical method that clearly sees the Hera Deposit.

190m chargeability depth slice shown from Triako dipole – dipole survey, 2003.

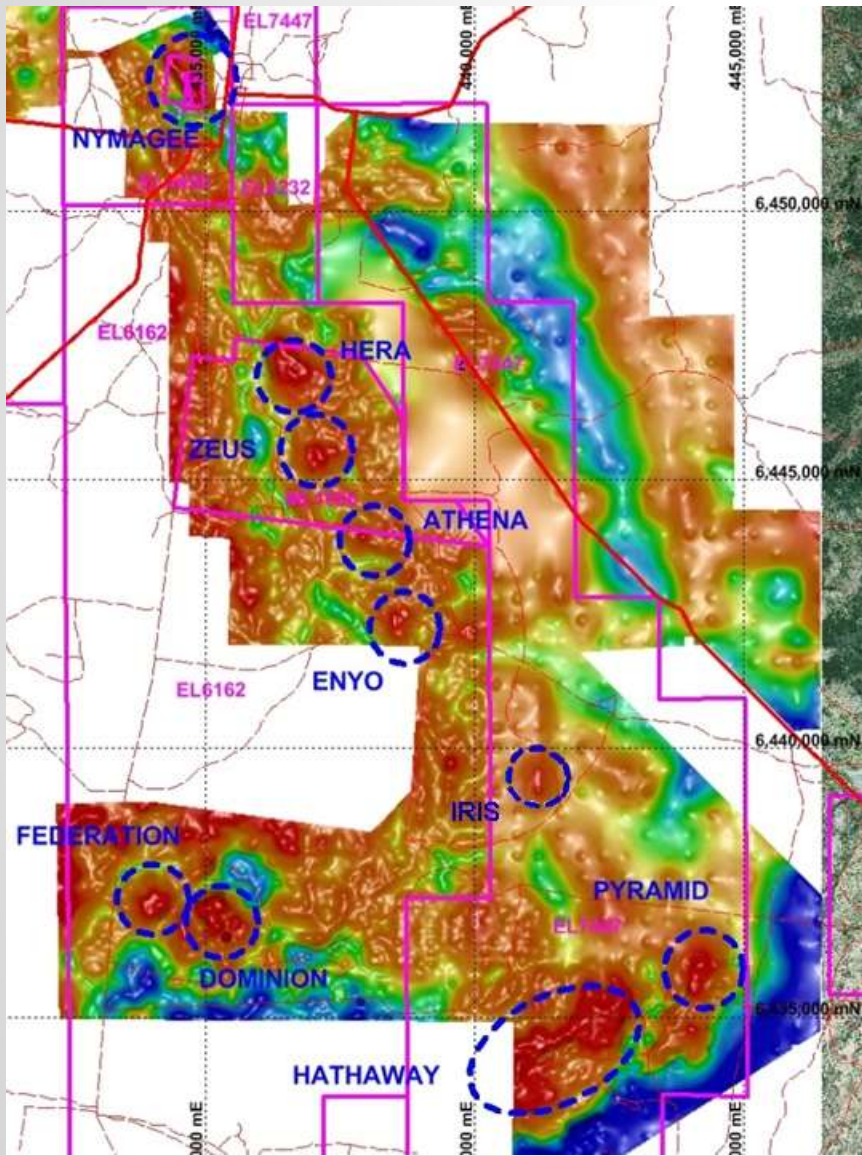
EXPLORATION TECHNIQUES – Regional Gravity



Part of the NSW statewide gravity image.

- ❖ Cobar gravity ridge previously interpreted as lower crustal mafic under plate below Cobar Basin.
- ❖ Possible heat source driving mineralisation.
- ❖ Strong regional gradients, that obscure local features. Need to consider and remove when modelling.

EXPLORATION TECHNIQUES - Gravity



- ❖ Detailed gravity survey (100m x 100m spacing) found to be effective.
- ❖ Strong positive gravity responses related to the significant volume of chlorite and disseminated pyrrhotite surrounding mineralisation as part of the alteration system.
- ❖ Actual ore lenses not large enough to generate a gravity response.
- ❖ Silicification often leads to reduced weathering generating highs.
- ❖ All residual anomalies investigated have alteration systems and anomalous geochemistry. No false positives.

THANK YOU



Nymagee Mine, Open Pit and 1 Level remnants

Aurelia Metals are acknowledged for use of the Nymagee gravity image.

Adam McKinnon will be talking about Hera at Mines and Wines.