HERA Au-Cu-Zn-Pb-Ag PROSPECT, NYMAGEE, NEW SOUTH WALES

M. Skirka[1] and V. David[2]

[1] *Triako Resources Ltd., P.O. Box 1048, North Sydney, NSW 2059*

[2] *NSW Dept of Mineral Resources, P.O. Box 536, St Leonards, NSW 1590*

LOCATION

The Hera Prospect is approximately 5 km SE of Nymagee at 32°06’40”S, 146°19’30”E; Nymagee 1:250 000 sheet (SI55-02).

DISCOVERY HISTORY

The prospect was initially identified by Buka Minerals in 1974 following a Barringer Input Survey. Although CRA Exploration Pty Ltd (CRAE) first drilled into sub-economic mineralization in 1984, it was not until 2000 that Pasminco intersected ore-grade mineralization along strike from the CRAE drilling, beneath a Pb soil anomaly. In 2003, Triako Resources Ltd acquired the Hera Prospect and additional diamond drilling has confirmed the continuity of high-grade Au mineralization and extended the prospect to the N. To date, high-grade mineralization has only been intersected at depths greater than 250 m below surface. The surface expression of the mineralization is as rare, weakly gossanous float, on a colluvial slope, adjacent to a siliceous hill. Historic prospecting is indicated by a shallow shaft in the siliceous hill, 250 m E of the Hera Prospect.

PHYSICAL FEATURES AND ENVIRONMENT

The prospect is on a colluvial slope adjacent to a prominent, low hill, known as the Peak. The colluvial slope gives way to a broad erosional plane to the N, W and S of the prospect. The climate is semi-arid with an average annual rainfall of 390 mm, distributed uniformly throughout the year. Vegetation consists of Bimble Box (*Eucalyptus populnea*), White Cyprus Pine (*Callitris glaucophylla*) and other drought resistant shrubs and grasses (MacRae, 1987). Local land use is sheep grazing.

GEOLOGICAL SETTING

The Hera prospect is located close to the eastern margin of the Palaeozoic Cobar Basin, near the contact between shelf facies sediments of the Mouramba Group and turbiditic sediments of the Amphitheatre Group. Steeply dipping siltstone and fine-grained sandstone with a strong, near vertical cleavage, metamorphosed to the low-middle greenschist facies, host the mineralization. The mineralized horizon extends approximately 800 m along strike and is currently open to the NNW.

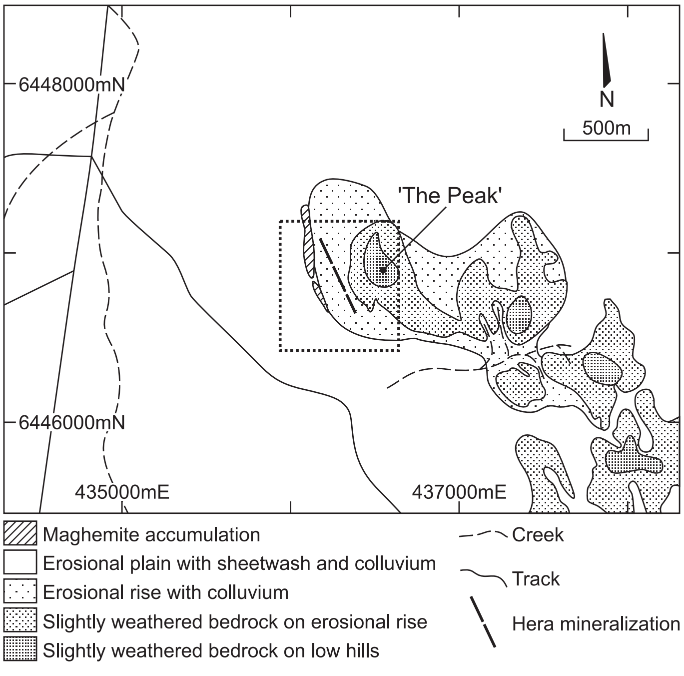

Figure 1. Local regolith geology of the area surrounding the Hera prospect showing the dominant landforms and the distribution of colluvial material and weathered bedrock. Area covered in Figure 2 is enclosed in a dotted box.

REGOLITH

The Hera prospect lies beneath <1 m of colluvial sediments and talus on a colluvial slope. This extends approximately 300 m from the Peak, to the N, W and S, and gives way to a broad erosional plain with a veneer of residual and colluvial sediments (Figure 1). Low hills of slightly-to moderately-weathered Palaeozoic bedrock occur to the E and SE of the Peak. The colluvium is locally derived, poorly sorted, subangular to angular fragments of weathered bedrock and ferruginous silty clay. The colluvial layer is underlain by weakly to moderately weathered bedrock.

At the break between the colluvial slope and the erosional plane, to the W of Hera, there is a narrow band (<50 m) of accumulated maghemite lag. This is also broadly coincident with an anomalous magnetic and EM response, which was initially interpreted as a palaeochannel. However, subsequent drilling indicates residual kaolinitic saprolite below the lag.

MINERALIZATION

There are several, possibly parallel, narrow lenses of intense vein pyrrhotite-sphalerite-galena-pyrite±chalcopyrite mineralization. Host sandstones and siltstones are pervasively silicified, have varying degrees of green chlorite alteration and commonly contain disseminated, non-magnetic pyrrhotite, typically aligned parallel to the cleavage. Quartz veining is common and several zones of barren quartz veins, up to 1 m thick, are associated with the sulphide mineralization.

The sulphide lenses appear to strike approximately 340° and dip steeply E at >70°. Based on drilling and EM modelling, the top of the sulphide package is approximately 250 m below surface in the southern part of the prospect. It appears to plunge shallowly N, and strikes for at least 800 m. The EM source may continue a further 400 m N but interpretation is difficult due to interference from a possible palaeochannel.

There is insufficient drilling, at present, for grade estimation or to interpret any metal zonation. The best intersection to date was diamond drillhole PNDD2 (8.6 m at 26.6 g/t Au, 19.0% Pb+Zn and 1.8% Cu from 371.4 m (Simpson *et al.*, 2001)). Re-assay of this interval by Triako Resources Ltd, using screen fire assay, has upgraded this to 38.6 g/t Au. No supergene mineralization has been identified. Additional geochemical anomalies in RAB drilling occur nearby. There is a multi-element (Zn, As, Cu and Pb) anomaly at the Peak and sporadic Pb and/or Zn anomalies extending up to 1 km to the SE of Hera that have been investigated only with RC drilling.

REGOLITH EXPRESSION

Weathered bedrock samples from bottom-of-hole RAB drilling spaced at 25 m on lines 100 m apart, were analysed for Cu, Pb, Zn, Ag, As, Fe and Mn. A coherent Pb anomaly of >1000 ppm, over a strike of 400 m, coincides with the up-dip projection of the known mineralization. This strong Pb anomaly lies within a larger anomalous area of >200 ppm Pb (Figure 2A). There is a similar anomalous zone approximately 250 m E of Hera, at the Peak. Manganese gives similar results to Pb (Figure 2B) but Zn, Cu and As were less coherent (Weber, 1984). Manganese corresponds closely with Pb and appears to coincide with the up-dip projection of the main mineralization (see Figure 2). There is no evidence for a stratigraphic control. Background abundances for Pb and Mn are 30 ppm and 55 ppm respectively. Additional RAB drilling, to the N, E and S of Hera, used the soil B-C horizon interface to increase the target size by assuming increased geochemical dispersion. Although direct correlation between the two media is unavailable, both identified the same anomalous trends. Statistically, thresholds for these media are similar but backgrounds are slightly greater for the B-C interface, possibly reflecting increased dispersion.

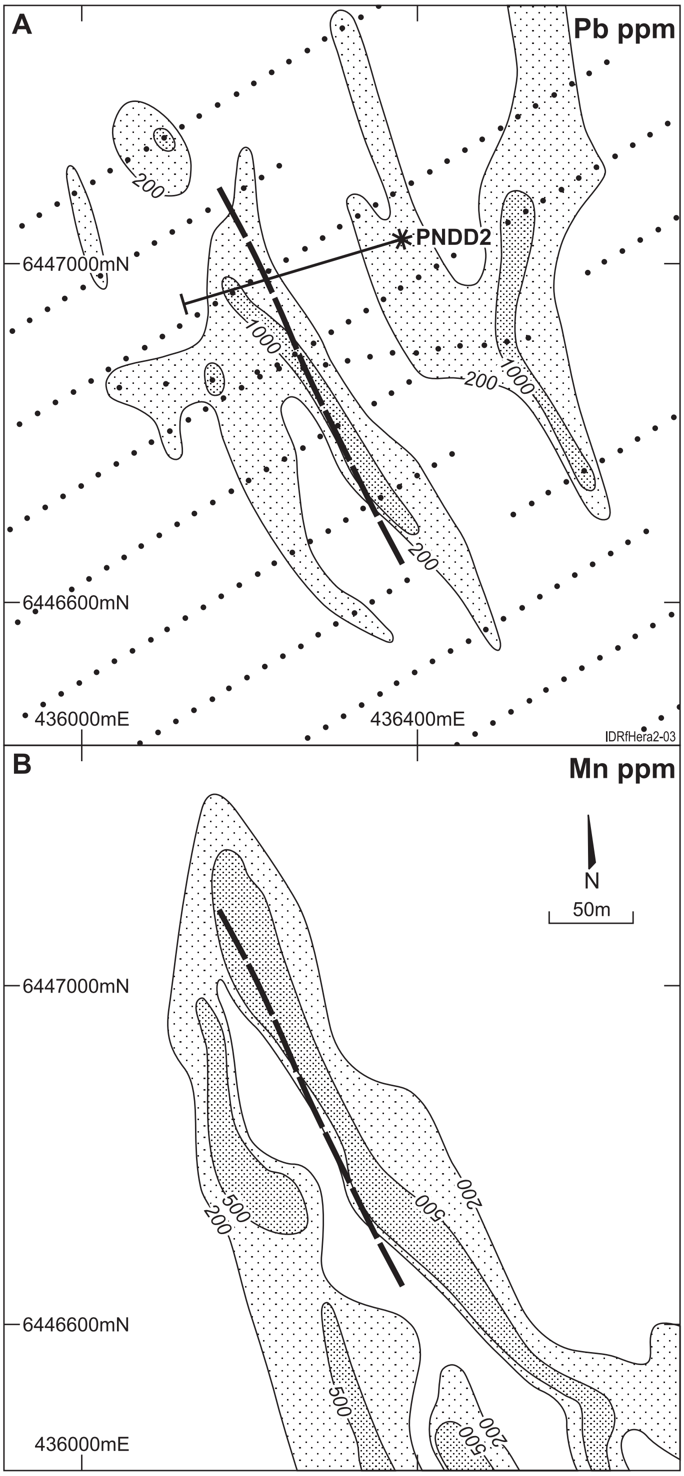

Figure 2. Distribution of Pb (A) and Mn (B) in weathered bedrock from RAB drilling. Up-dip surface projection of Hera mineralization is shown as bold dashed line. Lead anomalous zone E of Hera is broadly coincident with the silicified hill referred to as The Peak.

Sampling of the B soil horizon at 25 m spacing and analysing the <2 mm fraction by total digest, revealed anomalous Pb and Au (single point) coincident with the up-dip projection of the known mineralization (Figure 3). Values for Pb in soil are significantly less than from weathered bedrock and are more widely dispersed. Gold is poorly dispersed in the soil. Other elements, such as Zn, As and Cu, are anomalous at the Peak but are not anomalous above the known Hera mineralization.

Partial leach analysis of soil is broadly consistent with the conventional total digest technique. These samples (25 m spacing) were only analyzed for Cu, Pb, Zn and Cd. The best correlation with the known mineralization was again from Pb and a coherent Pb, Zn, Cu anomaly occurs over the Peak (Figure 4). The partial leach samples were all taken close to Hera and resulted in an artificially high background (8.8 ppm for Pb).

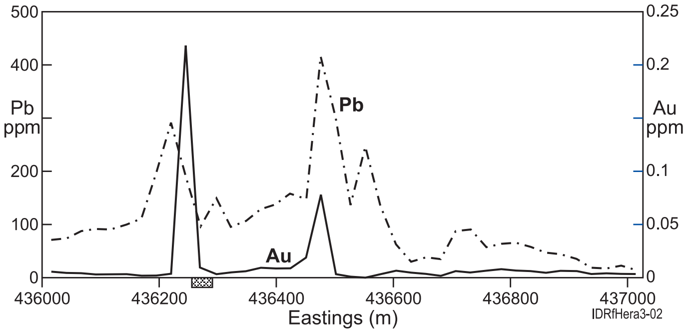

Figure 3. Conventional soil sampling across Hera on line 6446960mN showing Pb and Au. Surface projection of Hera mineralization indicated by hatched box.

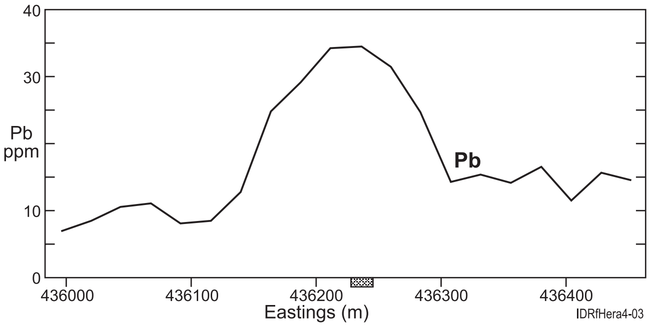

Figure 4. Partial leach soil sampling across Hera on line 6446900mN showing Pb. Surface projection of Hera mineralization indicated by hatched box.

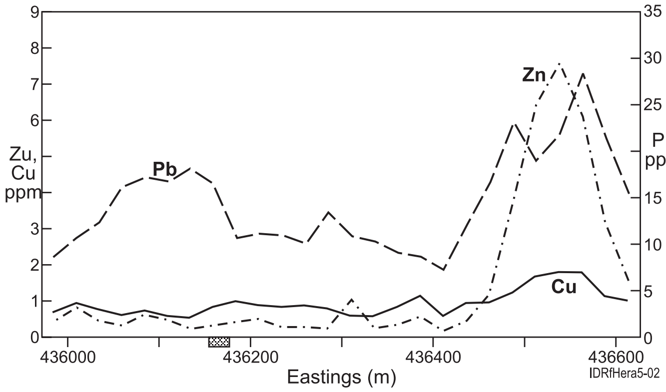

Figure 5. Partial leach soil sampling across Hera on line 6447100mN showing Pb, Cu and Zn values. Surface projection of Hera mineralization indicated by hatched box. Note the down slope offset of the Pb anomaly and the poor response of Cu and Zn over Hera.

SAMPLE MEDIA – SUMMARY TABLE

Sample Medium	Indicator Elements	Analytical Methods	Detection Limits (ppm)	Background (ppm)	Threshold (ppm)	Max anomaly (ppm)	Dispersion distance (m)
Bedrock	Pb	ICP	5	30	50	4300	250m
	Zn	ICP	2	38	85	1350	?
	Cu	ICP	2	15	30	440	?
	As	ICP	1	8	18	400	?
	Mn	ICP	5	55	135	2900	200m
B-C Horizon	Pb	AAS	5	40	55	2400	?
	Zn	AAS	2	50	80	1800	?
	Cu	AAS	2	25	35	125	?
Soil - Conventional	Pb	ICP	1	13	29	418	500m
	Au	ICP-MS	0.001	0.003	0.006	0.22	<50m
	Mn	ICP	5	236	397	1090	300m
Soil - Partial Leach	Pb	"Deepleach"	0.002	8.8	9.6	34.7	50m

Bedrock: No information on dissolution method used by ALS.
Soil: ALS method IC200 for Pb, Mn and MS200 for Au
Deepleach by Amdel method IC8/4.

In summary, the Hera mineralization has a distinct geochemical signature in both the weathered bedrock and residual/colluvial soil. The most effective indicator elements are Pb and Mn in weathered bedrock and Pb in the soil. At present, it is difficult to predict the true geochemical dispersion as the Hera mineralization is poorly constrained and additional, unidentified mineralized lenses may exist.

REFERENCES

MacRae, G.P., 1987. Geology of the Nymagee 1:100,000 Sheet 8133. New South Wales Geological Survey, Sydney.

Simpson, K., Skirka, M. and David, V., 2001. Nymagee EL 5591. Annual report for the period ending 12th July 2001. Pasminco Exploration, Cobar, 27 pp. (Unpublished).

Weber, G.B., 1984. Report on EL 2065 (Four Corners), NSW for the six months ending 28th August, 1984. CRA Exploration Pty. Limited, 14 pp. (Unpublished).