

Nucam Industries Pty Ltd

**E51/1406
'PHOENIX'**

***CO-FUNDED GOVERNMENT - INDUSTRY DRILLING
PROGRAM 2013-14
Western Australia***

Final Report

**on Drilling Activities relating to:
Funding Agreement between
The Department of Mines and Petroleum, WA
And Nucam Industries Pty Ltd**

Co-funded drilling number: DAG2013/00239243

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November 2014**

1:250,000 sheet Belele SG50-11
1:100,000 sheet Koonmarra 2445

- **Distribution** Nucam Industries Pty Ltd
- DMP

SUMMARY

Nucam Industries Pty Ltd has successfully completed drilling at its Jillewarra project, west of Meekatharra. The second of 2, related co-funded Government – Industry drilling agreements, the Phoenix drilling project included 1 diamond hole drilled on E51/1406.

The primary target: an IP chargeability high/resistivity low was determined to be due to sulphidic black shales 13m in width down-hole which is also coincident with the sheared northern contact of the Jillewarra ultramafic unit. Core-logging indicates that this unit dips sub-parallel to the drill hole.

Coincident gold and arsenic in soils at surface has not been explained by the drilling. Holes drilled in a southerly orientation have a better chance of explaining this surface geochemical anomaly given the northerly dips observed in core.

The co-funded drilling programme has contributed significantly to the understanding of the geology of the Mingah Range greenstone belt.

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1.0 Introduction

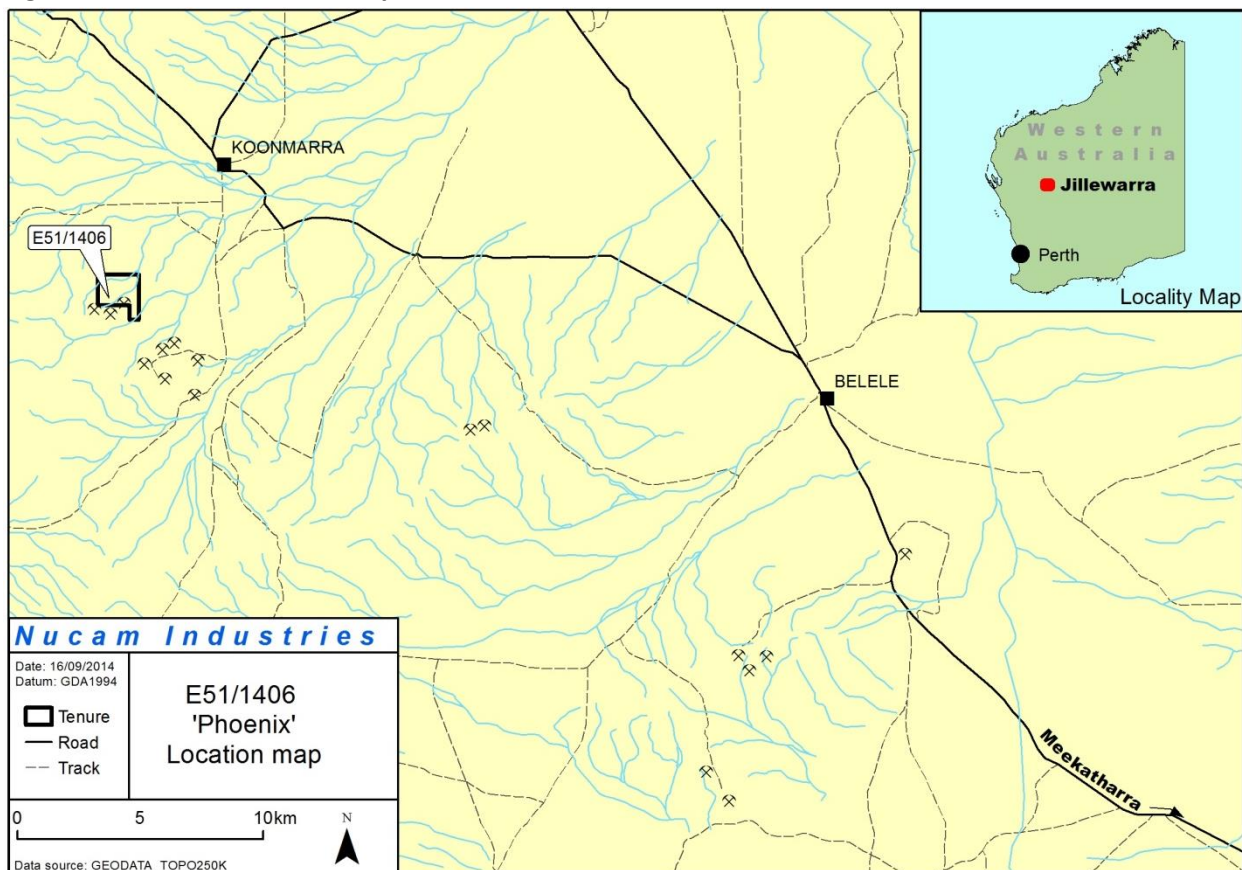
This report documents the work carried out during the co-funded drilling programme on E51/1406, 'Phoenix' in June 2014.

2.0 Tenement Information and Access

E51/1406 Phoenix was granted to Michael Francis Madigan on 19th August 2010. In 2012 Nucam entered into an option with Michael Francis Madigan on several exploration titles in the Mingah Range greenstone belt including E51/1406, subject to due diligence. Due diligence work including exploration for this reporting period has resulted in Nucam exercising its option. In August 2014 tenure ownership was transferred to Nucam Industries Pty Ltd Pty Ltd.

The exploration permit is located approximately 80km west-northwest of Meekatharra and 10km south of Koonmarra station homestead. Access is via station tracks and old access tracks to the historical mining areas. A location map is shown on Figure 1.

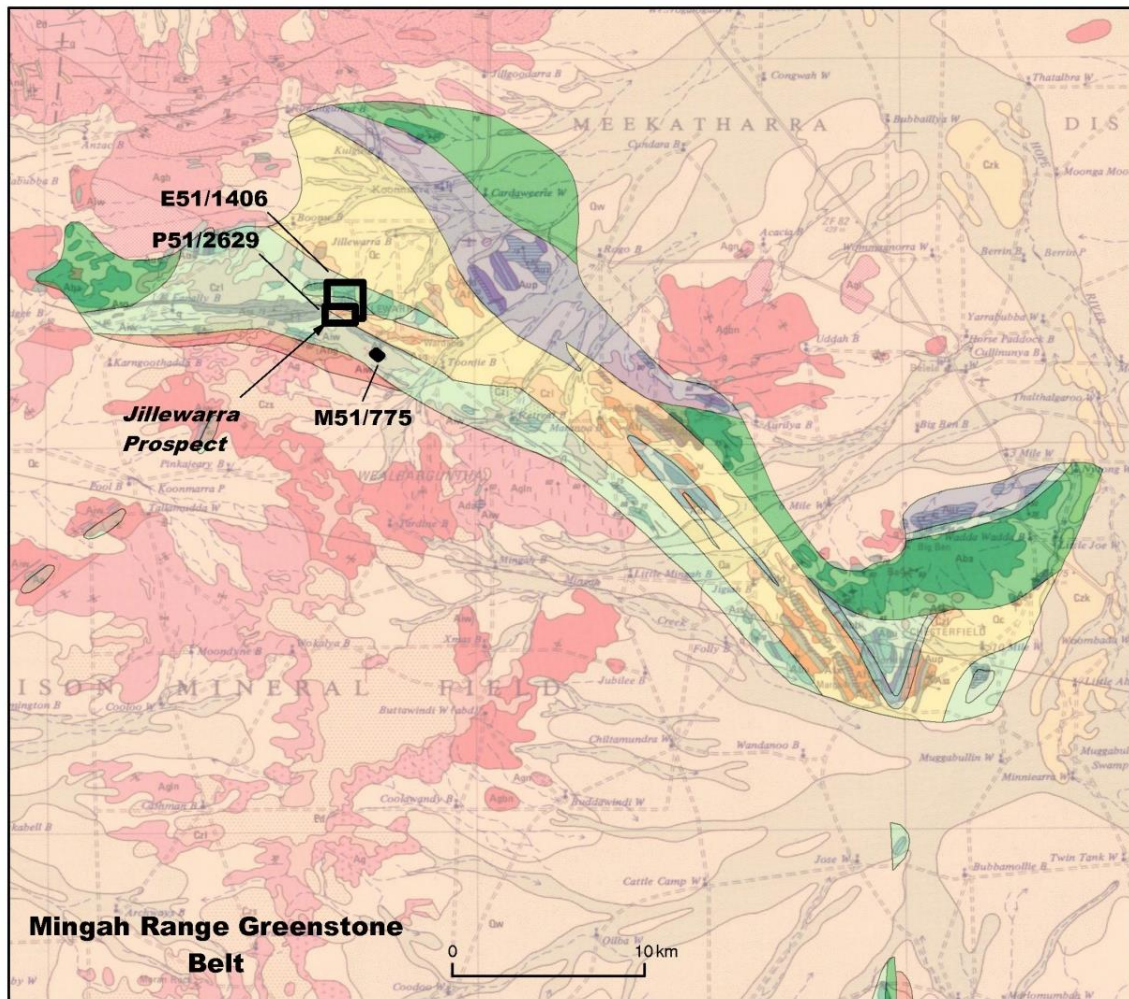
Figure 1 E51/1406 Location Map



3.0 Geology

The Jillewarra Project lies within the Mingah Range greenstone belt (Figure 2). Regionally, rocks consist of sediments, felsic volcanics, basalt, dolerite, ultramafic, high-magnesium basalt and banded iron formation. The stratigraphic sequence is interpreted to be, from the base, sediment hosted banded iron formation passing upwards through quartzites to fine grained felsic, epiclastic sedimentary lithologies to komatiites, high Mg basalt and gabbro.

Figure 2. Geology



Locally, rocks comprise of predominantly massive to sheared mafics, with a central band of ultramafics lying just north of the Jillewarra workings. Quartz scree is abundant on residual soil which occupies approximately 60% of the tenement.

The Jillewarra workings to the south of the EL have exploited narrow, high grade quartz veins in sheared mafics in what is interpreted to be the footwall of the Jillewarra Shear Zone. Supergene enrichment almost certainly contributed to the success of the goldfield as all underground workings have terminated well before the water table and subsequent exploration targeting mineralisation under the workings have failed to delineate any resource.

4.0 Previous Work

Modern exploration techniques carried out on E51/1406 include:

- 1984 – 1989 CRAE: Surface geochemical surveys, ground EM surveys, vertical RAB 'bedrock' drilling, aeromagnetism.
- 1989 – 1991 Australian Ores and Minerals: Geoscan multispectral remote sensing, surface geochemical surveys north and west of the Jillewarra trend

4.1 Recent Work

In 2013, Nucam completed 9 line km over 3 lines of dipole-dipole IP across the Jillewarra trend of workings and the Jillewarra shear zone, extending into E51/1406 for a total of 3.9 line km. This work defined a strong chargeability anomaly along the southern boundary of the ultramafic, coincident with the interpreted location of the Jillewarra shear zone and, a weaker anomaly along the northern contact of the ultramafic (in E51/1406).

Following these findings, Nucam was successful in receiving co-funded government-industry drilling grant to support a drilling programme targeting these IP anomalies.

5.0 Current Work

Field assessment prior to drilling led to a change in the location of one drill hole to target the CRA drilling which yielded mineralised intercepts.

Per the WA DMP – Nucam co-funded drilling agreement, 1 diamond hole was drilled on E51/1406 (Figure 3 – Drill locations). Collar information as follows:

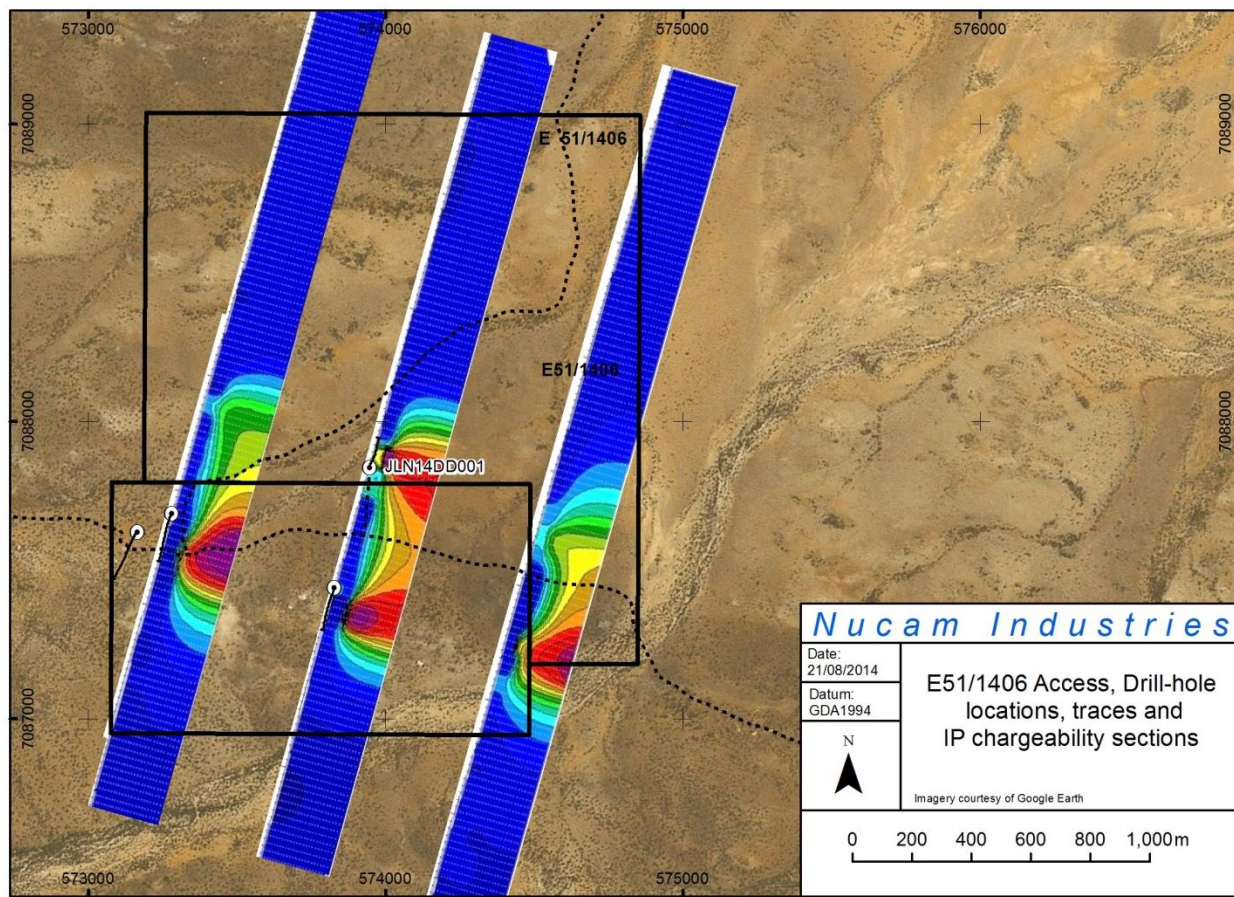
Table 1 Drill hole collar information

HOLE_ID	EASTING	NORTHING	RL	HOLE_TYPE	DEPTH	MAG_AZI	AMG_AZI	DIP	PRECOLLAR
JLN14DD001	573946	7087844	504	DDH	200	10	17	-60	5

Drilling was carried out by DDH1 drilling contractors using a Sandvik 1200 multipurpose truck-mounted drill rig. Precollars were completed by reverse circulation percussion drilling. Sample was collected by the metre in plastic sample bags. Assay samples were split via an automated system on the cyclone and composited over 3m.

Diamond drilling was carried out by the same drilling rig after all precollars were drilled. Bit size was NQ2. Core was collected in plastic Impala core trays; core orientation was completed by DDH1 crew.

Core logging was carried out using standard logging procedures. Structural measurements were collected using a kenometer. The core was transported to ALS Global laboratories, Perth where the tagged core was cut by ALS staff using their automated Almonte core saw.

Figure 3. Drill hole location

Assaying was completed by ALS, Perth using the following techniques:

Table 2 Assay information

Method	Analyte	Units	Detection Limit	Method	Analyte	Units	Detection Limit
ME-ICP61	Au-AA25	Au	ppm	ME-ICP61	Mo	ppm	1
	Ag	ppm	0.5		Na	%	0.01
	Al	%	0.01		Ni	ppm	1
	As	ppm	5-10,000		P	ppm	10
	Ba	ppm	10-10,000		Pb	ppm	2
	Be	ppm	0.5		S	%	0.01
	Bi	ppm	2		Sb	ppm	5
	Ca	%	0.01		Sc	ppm	1
	Cd	ppm	0.5		Sr	ppm	1
	Co	ppm	1		Th	ppm	20
	Cr	ppm	1		Ti	%	0.01
	Cu	ppm	1		Tl	ppm	10
	Fe	%	0.01		U	ppm	10
	Ga	ppm	10		V	ppm	1
	K	%	0.01		W	ppm	10
	La	ppm	10		Zn	ppm	2
	Mg	%	0.01		Mg	%	0.01
	Mn	ppm	5		Mn	ppm	5

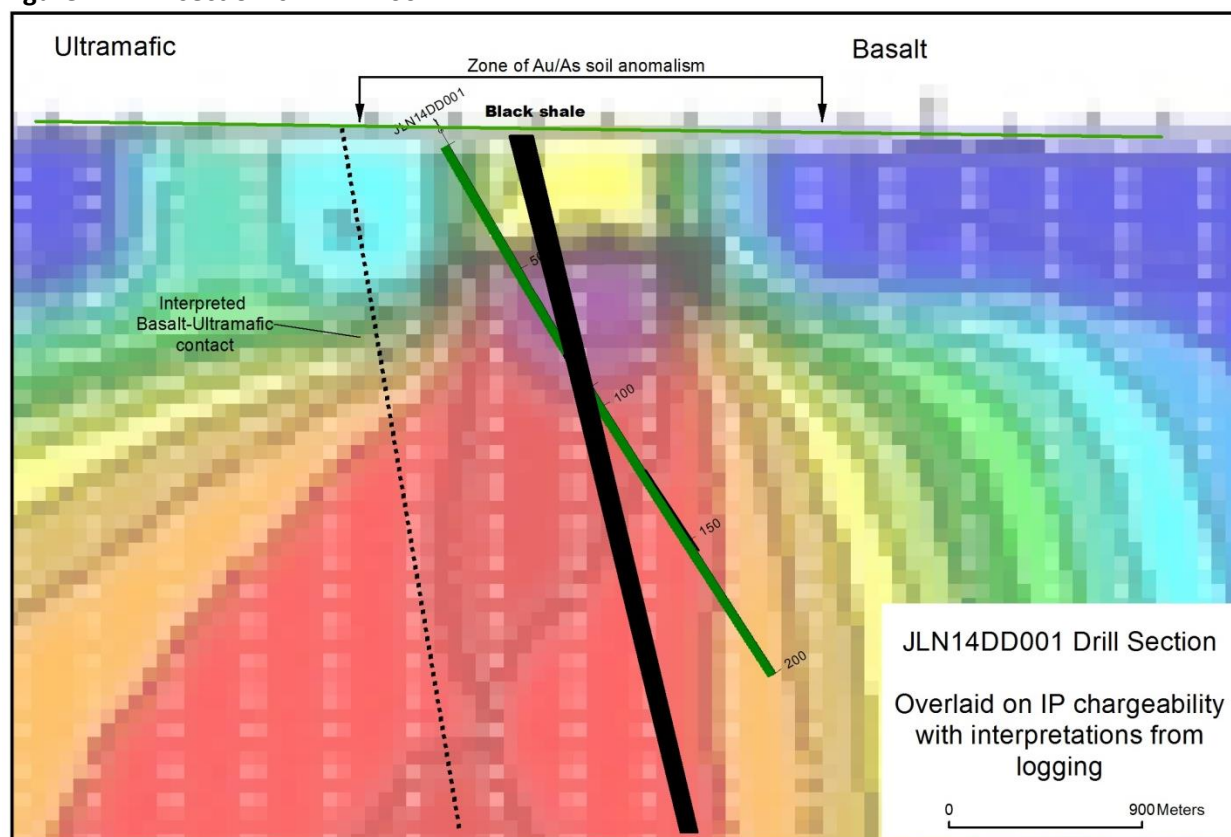
6.0 Results

The IP chargeability anomaly lying along the interpreted northern edge of the sheared Jillewarra ultramafic unit, obtained from the IP survey was tested by 1 hole JLN14DD001.

Results from this drilling are uniformly low.

The IP conductor was identified as un-mineralised sulphidic, black shale within variably carbonate-veined basalt. Core orientation studies show that the shearing and black shale is sub-parallel to the core axis. Figure 4 demonstrates the relationship between IP chargeability anomaly (conductor) and the position of the black shale.

Figure 4. Drill section: JLN14DD001

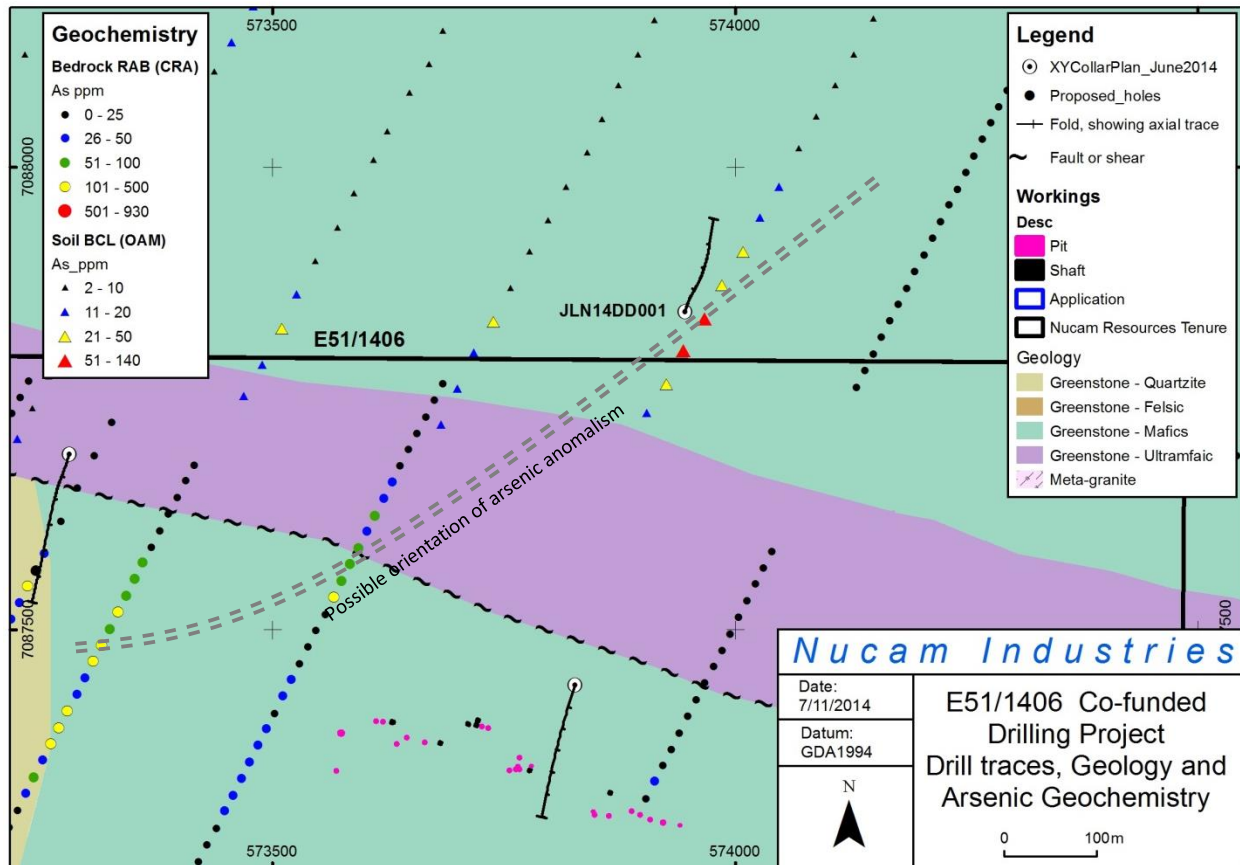


While the black shale is coincident with the IP conductor and logging confirms drilling is 'down-dip' of the rock fabric, the IP model indicates that the conductor (and lithologies) could swing from a northerly dip to vertical or even southerly dip at depth.

6.1 Discussion

Figure 5 shows the relationship between drilling, geology and arsenic geochemistry. It should be noted that OAM attributed the gold/arsenic anomaly in the vicinity of JLN14DD001 to downstream contamination from the Jillewarra workings however, the sample locations plot to the eastern side of the creek. Arsenic (and gold anomalism) may be oriented obliquely to the lines of sampling (see annotation, Fig 5).

Further work in this area needs to assess this possibility. The gold-arsenic anomalism could be related to a cross-cutting structure which in this area which coincides with a 'flexure' in the ultramafics.

Figure 5. Drill traces, Geology and Arsenic Geochemistry

7.0 Conclusions and Recommendations

- The IP anomaly represents a zone of un-mineralised sulphidic, black shale.
- Drilling is sub-parallel to the lithologies intersected.
- Arsenic, a critical pathfinder to locating gold, indicates the possible location of a northeast oriented mineralising structure

Proposed activities:

- Orientation soil surveying to determine if there is a technique that delivers surface geochemical results similar to bedrock RAB drilling – ionic leach, different mesh sizes
- Geochemical surveys to assess the possible northeast orientation to anomalism

8.0 References

Le Messurier, L.A. 1988. CR25079: Annual Report for 1988 on E51/47 Jillewarra and E51/48 Chesterfield, SG-50-11 Belele, Western Australia. CRA Exploration Pty. Ltd.

Perez, R. 1990. CR32283: Relinquishment Report for E51/232 for the period 5/10/1989 to 4/10/1990. Australian Ores and Minerals Ltd.