

# TNG LIMITED

## ENIGMA MINING LTD

### McARTHUR PROJECT

### ANNUAL REPORT

9/07/10 to 8/07/11

EL 27711 "Kilgour River"

<b>Tenement/s</b>	EL 27711	<b>1:250 000 Sheet Name</b>	Walhallow (SE5307)
<b>Holder</b>	Enigma Mining Ltd	<b>1:100 000 Sheet Name</b>	Kilgour (6063)
<b>Manager</b>	Enigma Mining Ltd	<b>Datum</b>	GDA94-53
<b>Operator</b>	Enigma Mining Ltd		
<b>Commodity</b>	Cu, Au, Mn		
<b>Elements Analysed</b>	Bi, Co, Cr, Cu, Fe, Mn, Ni, Pb, Zn		
<b>Keywords</b>	Literature Review, geological mapping, rock chip samples, Cu anomalies		
<b>Authors</b>	C. Wetherley, S. Moyle		
<b>Approved</b>	P.E. Burton (Managing Director)		
<b>Report Date</b>	July 2011		
<b>Distribution</b>	TNG Limited		(1)
	Department of Resources – Minerals & Energy		(1)

## **Executive Summary**

Exploration Licence 27711 "Kilgour River" was granted to Enigma Mining Limited (Enigma) on the 09/07/2010. Enigma is a wholly owned subsidiary of TNG Ltd. The licence forms part of TNG's "McArthur River" Project area together with EL 28503 and ELA 28509 and covers an area of 429.94 km<sup>2</sup>.

Exploration carried out on EL 27711 during the reporting year has mainly been of a regional nature. A full literature review was carried out on the historical data and reviews of the current geophysical data were undertaken. Quickbird imagery was obtained of the tenement area and a regional site reconnaissance mapping and sampling program was also undertaken. A comprehensive report on the geology and mineralisation within the tenement has been produced.

The mapping programme generated areas within the tenement which require additional follow-up. Exploration will focus on Cu and Au anomalies.

## TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>5</b>
<b>2. LOCATION AND ACCESS .....</b>	<b>5</b>
<b>3. TENURE.....</b>	<b>5</b>
<b>4. NLC .....</b>	<b>6</b>
<b>5. REGIONAL GEOLOGY .....</b>	<b>6</b>
<b>6. PREVIOUS EXPLORATION .....</b>	<b>7</b>
<b>7. WORK COMPLETED 2010-2011 .....</b>	<b>8</b>
7.1 Literature Review – Historical Exploration .....	8
7.1.1 Australian Geophysical Pty Ltd. ....	8
7.1.2 Carpentaria Exploration Company Pty Ltd .....	9
7.1.3 A.O. Australia Pty Ltd.....	11
7.1.4 Shell Company of Australia .....	12
7.1.5 Perilya Mines N.L. ....	13
7.1.6 Mt Isa Mines Exploration Pty Ltd.....	13
7.1.7 Aberfoyle Resources Ltd .....	15
7.1.8 Kiana Projects Pty Ltd .....	15
7.2 Quickbird .....	17
7.3 Geological Mapping and Sampling .....	17
<b>8. EXPENDITURE .....</b>	<b>19</b>
<b>9. PROPOSED 2011 PROGRAM .....</b>	<b>19</b>
9.1 Proposed Expenditure .....	19
<b>REFERENCES.....</b>	<b>19</b>

## FIGURES

Figure 1: Location of McArthur River project area. ....	5
Figure 2: Regional geological setting of the McArthur project area. ....	6
Figure 4: Summary of historical exploration results within EL 27711. ....	8
Figure 5: Cu-Zn-Pb anomalies Donkey Yard (AO Australia, 1979). ....	10
Figure 6: Geology of EL 1723 with copper occurrences (AO Australia, 1979). ....	11
Figure 7: Soil geochemistry Line MA3. ....	12
Figure 8: Soil geochemistry Line MA4. ....	12
Figure 9: Location of EL 7217 with approximate location of EL 27711. ....	13
Figure 10: Stream sediment sampling zones at Donkey Yard – MIM, 1992. ....	14
Figure 11: Aberfoyle GEOTEM over EL 9497 (Hicks, 1997). ....	16
Figure 12: Kiana Projects Pty Ltd 2006-07 exploration targets (Price, 2008). ....	17
Figure 13: Sample Locations from 2011 mapping, colour coded to Cu results. ....	18

## TABLES

Table 1: EL 27711 tenement details. ....	5
Table 2: Results from drillholes MN1 and MN2. ....	9
Table 3: Comparison of soil and rock chip results, Area C, Donkey Yard. ....	10
Table 4: Anomalous results MIM rock chip sampling 1991 (Kettlewell, 1992). ....	14
Table 5: Rock samples, 2011 mapping programme, Cu>100ppm. ....	17
Table 6: Expenditure for the period 9/07/10 - 8/07/11. ....	19
Table 7: Proposed Expenditure. ....	19

## PLANS

- Plan 1: Carpentaria Exploration Company, Target Areas.
- Plan 2: 1991 MIM, stream sediment sample locations.
- Plan 3: 1992 MIM, stream sediment and rock chip sample locations.
- Plan 4: 1992 MIM, Mallapunyah Dome Geology.
- Plan 5: MIM Stream Sediment Sampling Cu
- Plan 6: MIM Stream Sediment Sampling Zn
- Plan 7: MIM Stream Sediment Sampling Mn

## APPENDICES

- Appendix 1 – Quickbird Images and Report
- Appendix 2 – DIGITAL DATA
- Appendix 3 – Field Mapping Report

## 1. INTRODUCTION

Exploration Licence 27711 "Kilgour Crossing" was granted to Enigma Mining Limited (Enigma) on the 09/07/2010. Enigma is a wholly owned subsidiary of TNG Ltd. The licence forms part of TNG's "McArthur River" Project area together with EL 28503 and ELA 28509 (Figure 1).

All reference to work carried out by TNG Ltd or its subsidiaries will be referenced 'TNG' in this report.

Exploration carried out on EL 27711 during the reporting year has mainly been of a regional nature. A review of historical exploration was undertaken along with a review of existing geophysical data. A follow up ground reconnaissance was also completed that involved mapping and geochemical sampling.

## 2. LOCATION AND ACCESS

EL 27711, part of the McArthur River project, is located approximately 554km SE of Darwin, and 50km East of the sealed Stuart Highway following the Carpentaria Highway and then onto the Tablelands Highway (Figure 1). The tenement covers the far northern portion of the Walhallow (SF53-07), 1:250,000 mapsheet. It lies within the Mallapunyah and McArthur River Perpetual Pastoral Lease and is subject to Native Title. Access in the licence area is good with well maintained station and previous exploration tracks.

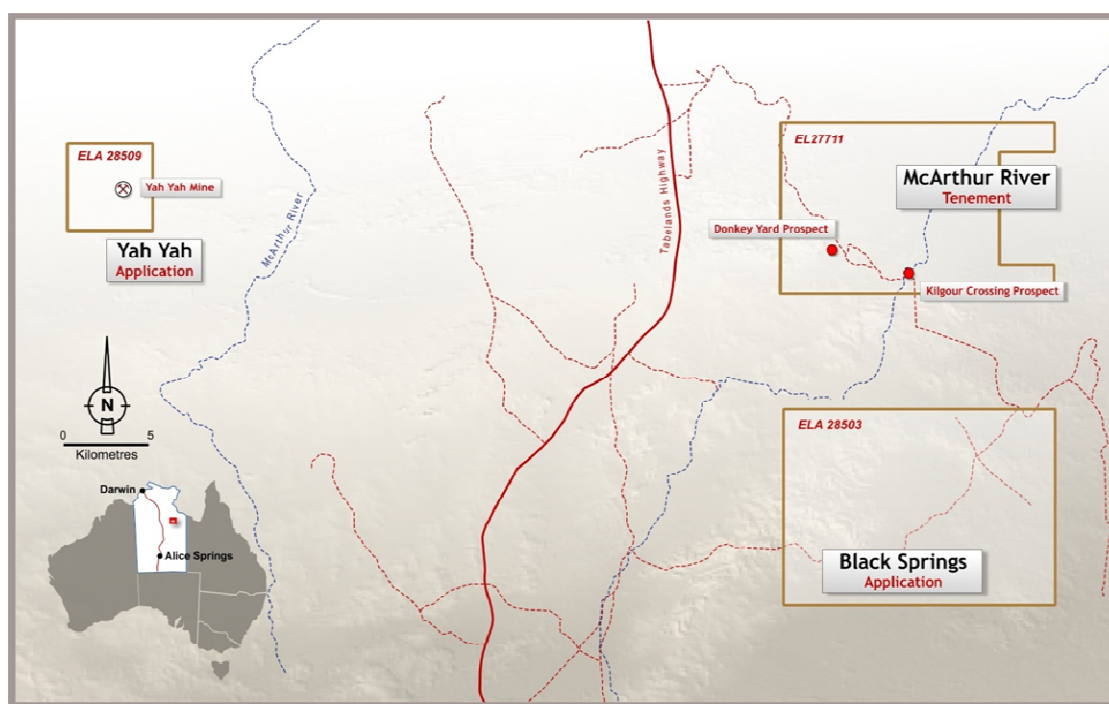


Figure 1: Location of McArthur River project area.

## 3. TENURE

Exploration Licence 27711 is part of the "McArthur River" Project and covers a total area of 429.94km<sup>2</sup>. It is 100% held by Enigma Mining Limited, a wholly owned subsidiary of TNG Limited. Tenure details for EL 27711 are summarised in Table 1.

Table 1: EL 27711 tenement details.

TITLE	PROSPECT	AREA (blocks)	GRANT DATE	EXPIRY DATE
EL 27711	McArthur River	52	09/07/2010	08/07/2016

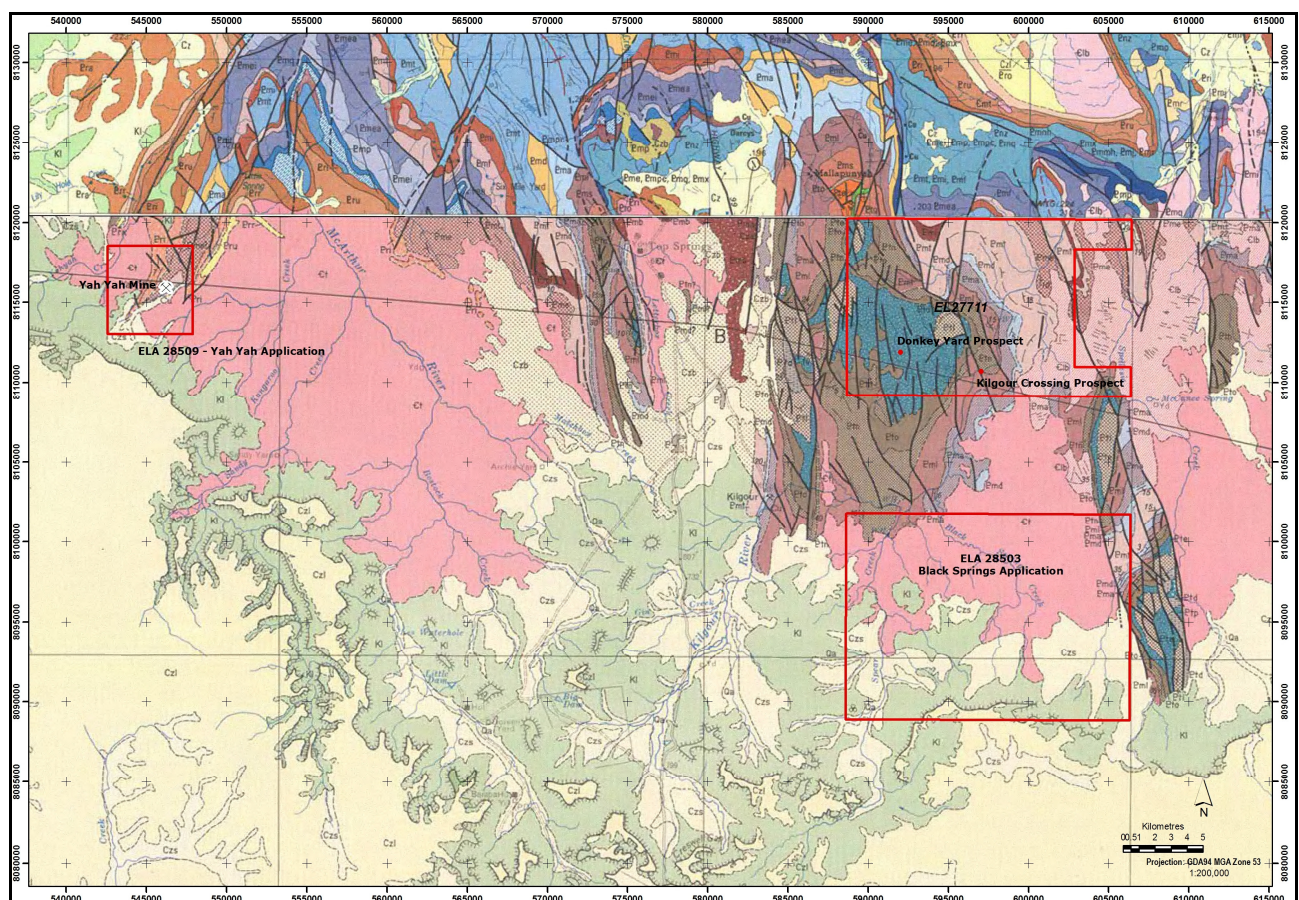


## 4. NLC

In June 2011 a formal presentation from TNG management was made to the local McArthur River communities. The presentation was conducted to initiate a relationship between TNG and the Traditional Owners of the area and provide them with an outline of likely work programme during the initial exploration phase of the McArthur tenements.

## 5. REGIONAL GEOLOGY

The McArthur river project area lies within the McArthur Basin. The McArthur Basin contains a thick platform cover sequence overlying the eastern edge of the North Australian Craton, consisting of Lower Proterozoic basement rocks (Jackson et al. 1987). The Malapunyah dome forms the majority of the local geology within the exploration licence. The project area lies in the northern portion of the WALHALLOW (SF 53-07) 1:250,000 mapsheet (Figure 2).



**Figure 2: Regional geological setting of the McArthur project area.**

The McArthur Basin sequence is divided into four major units: the roper, Nathan, McArthur and Tawallah groups.

The geology underlying the Mallapunyah area consists of units of the Tawallah Group (Mc Dermott Formation, the Sly Creek Sandstone, Settlement Creek Volcanics, Wologorang Formation and Masterton Formation) overlain by sediments of the McArthur Group (Mallapunyah Formation, Amelia Dolomite, Tatoola Sandstone and Tooganinie Formation).

The Tawallah Group is the oldest group in the McArthur Basin consisting mainly of thick sequences of ridge-forming sandstones alternating with units of recessive volcanics and fine-grained clastics (Pietsch et al., 1991). It has a maximum thickness of 5200m and an unconformable basal contact with the Scrutton Volcanics, part of the Lower Proterozoic basement.

The McArthur Group (Figure 3) unconformably overlies the Tawallah Group and comprises a sequence of interbedded carbonates and lutites with sub-ordinate sandstones up to 4200m thick (Jackson et al., 1987). The Mc Arthur Group is subdivided into the Umbolooga (older) and Batten (younger) subgroups which are separated by a regional palaeoregolith. The Umbolooga Sub-group is host to the McArthur River lead-zinc-silver deposit.

McARTHUR GROUP	Umbolooga Subgroup	Reward Dolostone	Pmx
		Barney Creek Formation	Pmq
		Coxco Dolostone Member	Pmp <sub>c</sub>
		Teena Dolostone	Pmp
		Undivided Emmerugga Dolostone	Pme
		Mitchell Yard Dolostone Member	Pme <sub>i</sub>
		Mara Dolostone Member	Pme <sub>a</sub>
		Myrtle Shale	Pmf
		Leila Sandstone	Pmi
		Tooganinie Formation	Pmt
		Tatoola Sandstone	Pmd
		Amelia Dolostone	Pma
		Mallapunyah Formation	Pml
	Pm	Masterton Sandstone	Pms

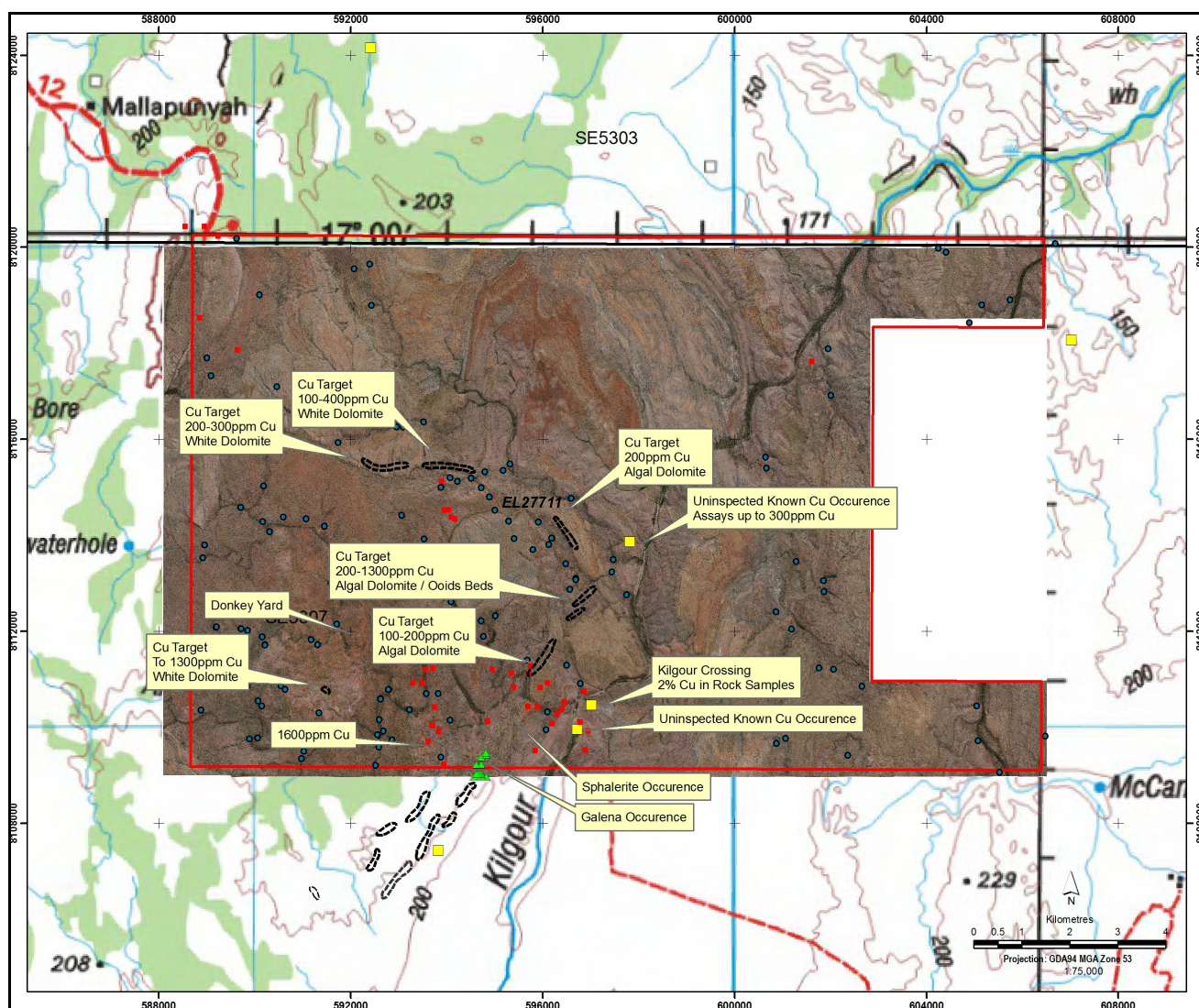
**Figure 3: McArthur Group, within the McArthur Basin, NT.**

## 6. PREVIOUS EXPLORATION

The Kilgour River region has been partially explored for a variety of commodities including gold, copper, lead, zinc and diamonds. This exploration is outlined below and more detail can be found in Section 7: Work Completed 2010-2011. Targets generated from previous exploration are shown in Figure 4.

- From 1966 to 1967 the Mallapunyah Dome was extensively rock chipped and soil sampled by Australian Geophysical limited.
- From 1967 to 1976 Carpentaria Exploration Pty Ltd undertook stream sediment, soil and rock chip sampling along with a minor geophysical programme.
- In the years following A.O Australia, Shell Company of Australia and Perilya mines returned to the Kilgour prospect however only completed very minor work.
- From 1993 – 1995 Mt Isa completed an extensive stream sediment program over the whole tenement area. Cu, Mn and Zn all returned anomalous results.
- In later years Aberfoyle Resources (1997) and Kiana Project Pty Ltd (2006 – 2007) were granted tenements in the McArthur River area.





**Figure 4: Summary of historical exploration results within EL 27711.**

## **7. WORK COMPLETED 2010-2011**

### **7.1 Literature Review – Historical Exploration**

#### *7.1.1 Australian Geophysical Pty Ltd.*

The area covered by ELA 27711 was held under AP 1343 by Australian Geophysical Pty Ltd (AGEO) from 1967-69, and again under AP 2233 (same area as AP 1343) from 1970-71. A stratabound copper deposit in the Mallapunyah Area was their target and an extensive stream sediment sampling program defined several copper anomalies and a zone of Cu-Pb-Zn mineralisation (Kettleworth, 1993).

In 1967 AGEO carried out an extensive geochemical sampling programme, IP geophysics and geological mapping (McMahon, 1968). The conclusions of this programme, in relation to the Mallapunyah area were as follows:

- The most favourable zone for the location of base-metal mineralization is on the eastern rim of the Mallapunyah North Dome, where sediments and volcanics are best developed.
- In this zone there is much evidence of disseminated copper sulphides in the Wologorang Formation, Settlement Creek Volcanics and in breccia fragments of the Gold Creek Volcanics.



- There is evidence to support continued volcanic activity during the deposition of the basal Wologorang Formation, a sequence slowly under a reducing environment.
- Induced polarization work carried out over the same zone indicates an IP anomaly which persists to within 200 ft of the surface.
- The most persistent geochemical anomalies are associated with the same zone and particularly with soils overlying the poorly exposed Ovoid Beds of the Wologorang Formation.

Drilling was recommended and 2 holes MN1 and MN2 were drilled in the area in 1969 (McMahon, 1970). A summary of the results are shown in Table 2.

**Table 2: Results from drillholes MN1 and MN2.**

<u>Hole No.</u>	<u>Target</u>	<u>Intersection</u>				<u>Cu</u>	<u>Pb</u>	<u>Zn</u>
		<u>ft</u>	<u>ins</u>	<u>ft</u>	<u>ins</u>	<u>ppm</u>	<u>ppm</u>	<u>ppm</u>
MN1	Ovoid Beds	300	10	- 400	0	153	250	1425
MN2	Gold Creek	81	6	- 396	6	318	37	85
	Volcanics	435	0	- 602	0	135	27	41

These drill holes lie just to the south of EL27711. Detailed geochemistry and geophysics and limited drilling failed to find an economic deposit, and while further drilling was recommended, the Authority was surrendered in 1971.

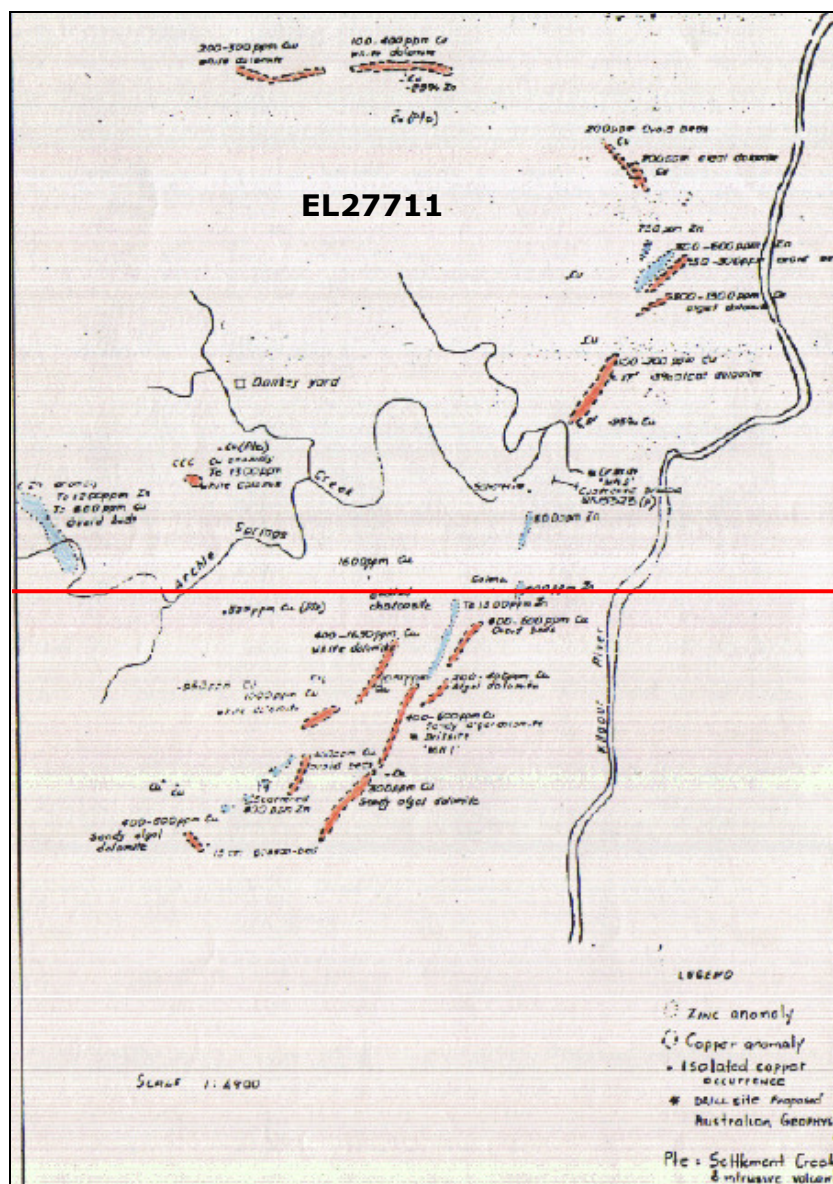
#### *7.1.2 Carpentaria Exploration Company Pty Ltd*

Stream sediment sampling carried out by Carpentaria Exploration Company (CEC) Pty Ltd in 1968 in the Archie Creek area, east of Donkey Yard, concluded that high zinc values did not repeat and copper anomalies were caused by finely disseminated chalcopyrite occurring in chill margins and shear zones within the volcanics. Mineralisation was classified as sub-economic (Bennett, 1971).

Further exploration by CEC under EL 1042 (Binks, 1975; Taylor, 1976) worked to re-evaluate the copper potential of the anomalous zones defined by Australian Geophysical three years earlier. "Visual examination" of the area resulted in five areas being chosen for intense soil and rock chip geochemical and geophysical work (Plan 1). 510 soil samples were collected and 104 of these submitted for assaying. The Donkey Yard (Plan 1 - Area C; Figure 5) area was of particular interest and rock chip samples were collected. These were compared to the soil samples and it was noted that enrichment of metals in the soil had taken place (Taylor, 1976; Table 3).

**Table 3: Comparison of soil and rock chip results, Area C, Donkey Yard.**

Area "C" leached ovoid beds, proceeding uphill:							
<u>Soil Sample</u>	<u>Rock Chip</u>	<u>Pb</u>		<u>Zn</u>		<u>Cu</u>	
		<u>Soil</u>	<u>Rock</u>	<u>Soil</u>	<u>Rock</u>	<u>Soil</u>	<u>Rock</u>
380512	QX.13684	100	100	660	70	50	910
380513	QX.13685	80	250	235	120	175	480
	QX.13686		170		90		410
380514	QX.13687	105	270	360	60	250	1120
	QX.13688		210		90		440
380515		50		145		115	
249960	QX.13690	155	90	640	90	70	1050
	QX.13691		80		120		950
249961	QX.13692	300	300	1120	100	70	610
	QX.13693		290		10		250
249962	QX.13694	185	10	1160	20	155	90



**Figure 5: Cu-Zn-Pb anomalies Donkey Yard (AO Australia, 1979).**

At the Kilgour Crossing prospect (Plan 1) observed mineralization is restricted to two dolomitic horizons termed the Upper and Lower Copper Beds respectively 1 m and 150 mm thick (Taylor, 1976). Chalcocite and very minor chalcopyrite was restricted to a strike length of 500 metres in the Lower Copper Bed and poor outcrop prevented delineation of the extent of copper mineralization in the Upper Copper Bed.

Twenty one rock chip samples (mainly of the Lower Copper Bed) were collected and analysed for a number of elements. Copper was found to be the only significantly anomalous element. No possibly valuable by-products were detected (Taylor, 1976).

CEC concluded that the copper mineralisation occurred as either small stratabound deposits or within breccias in shear zones. An economic resource was not envisaged due to the small size of these occurrences and the Licence was surrendered in 1976

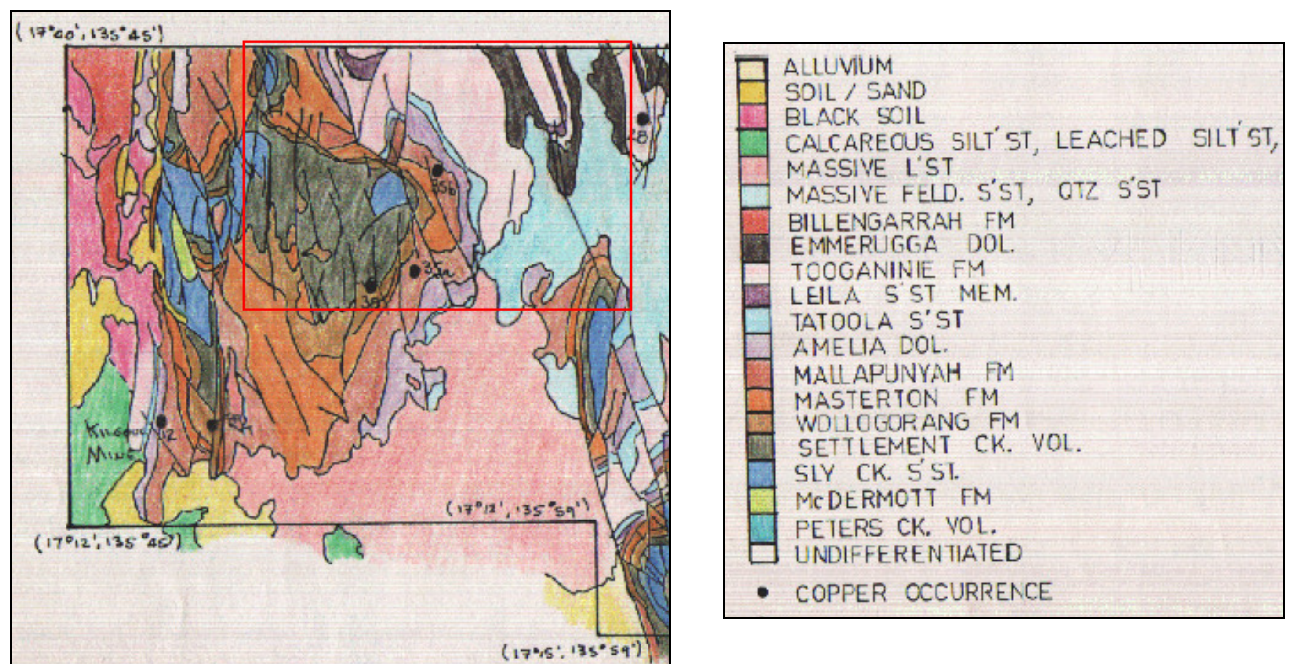
### 7.1.3 A.O. Australia Pty Ltd

Exploration Licence 1723 was granted to AO (Australia) Pty Ltd in June 1978. The initial focus of exploration was compilation of existing data on the area. Forty known copper occurrences are located in the McArthur Basin succession within this tenement. Of these, three (Figure 6 - 35a, 35b, 38) are within the region overlapping EL 27711.

Two of these locations relate to the previously defined Kilgour Crossing (35a) and Donkey Yard (38) prospects. In locations 35a and 35b the copper mineralisation occurs within and above the cauliflower chert zone in the middle of the Mallapunyah Formation (AO Australia, 1979).

In the Kilgour Crossing area (35a) observed mineralisation is restricted to 2 dolomitic horizons termed the Upper and Lower Copper Beds which are 1 metre and 0.15 metres thick respectively. Location 38 centres on the Donkey Yard prospect and is stratigraphically situated in the Wologorang Formation.

No on ground work was carried out by AO Australia. Although they regarded the area as having significant potential for the development of sedimentary stratiform copper deposits a reassessment of the priorities of the JV agreement they were working under concluded that HYC-type lead-zinc deposits were the sole target for exploration within the McArthur Basin and the licence was surrendered.



**Figure 6: Geology of EL 1723 with copper occurrences (AO Australia, 1979).**



#### 7.1.4 Shell Company of Australia

Exploration Licence 2423 was granted to Shell Company of Australia (Metals Division) in January 1981. Reconnaissance rock chip sampling was completed to provide regional data on the distribution of base metals within the sequence. Detailed soil sampling on five traverses (traverses MA 3 and MA 4 within the boundaries of EL 27711) was completed in those areas where previous sampling was considered inadequate (Cruse, 1982).

A total of 24 rock chip samples were submitted for copper, lead, zinc, iron and manganese analyses. An additional 63 soil samples were collected and analysed for copper, lead and zinc. Figure 7 and 8 show the soil geochemistry along lines MA 3 and MA 4.

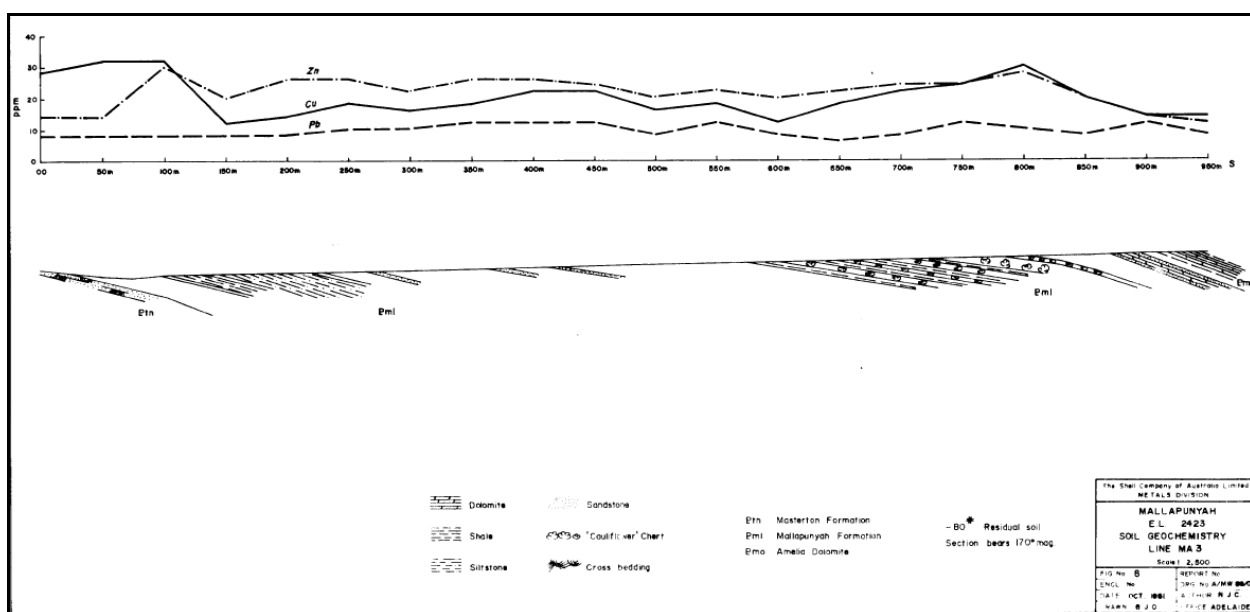


Figure 7: Soil geochemistry Line MA3.

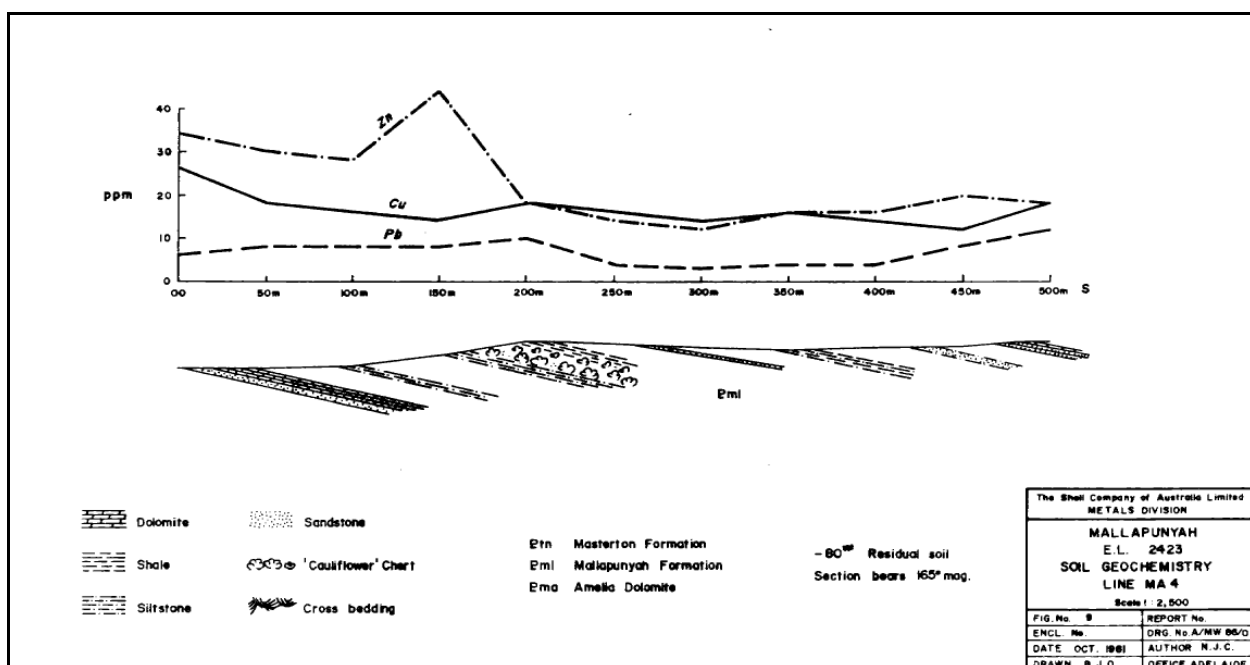


Figure 8: Soil geochemistry Line MA4.

The study concluded that the geochemistry of residual soils overlying the Mallapunyah Formation does not offer encouragement for additional search for copper mineralisation in the area. Further exploration was considered unwarranted, and the area relinquished in May 1981.



### 7.1.5 Perilya Mines N.L.

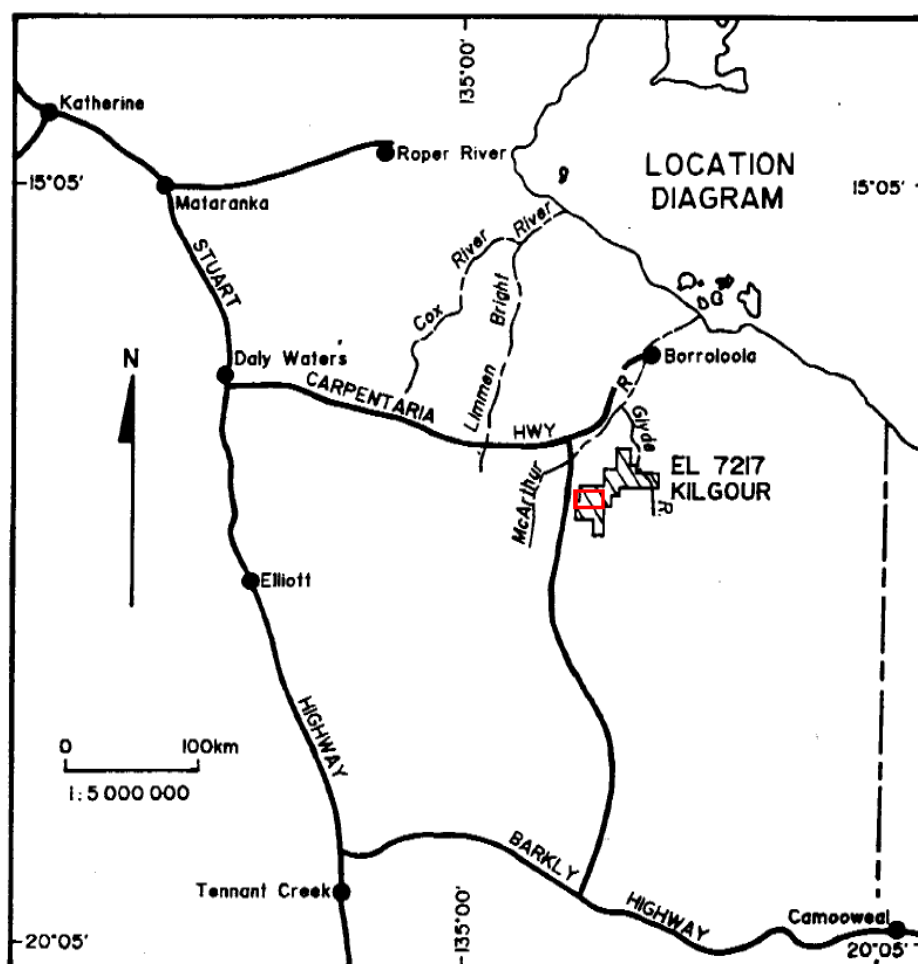
Perilya Mines N.L. were the operators of four exploration licences comprising the southern end of the McArthur River Project area, a joint venture between Top End Resources N.L., and Noranda Pty Ltd and Perilya Mines N.L. (Perilya, 1989).

EL 5653 was granted in July 1988 and covers some of the area within EL 27711. A number of target areas were identified and a geochemical sampling survey undertaken. A total of 24 rock chip samples, 13 stream sediment samples and 79 soil samples were taken across the project area. One rock chip sample was taken from Archies Creek (Cu 33ppm, Pb 38ppm, Zn 43ppm and Au 0.04ppm) and twelve rock chip samples were taken from Mallapunyah Dome North (peak values Cu 115ppm, Pb 12ppm, Zn 35ppm and Au 0.08ppm; Perilya, 1989).

The work completed failed to outline and areas considered worthy on ongoing exploration and the licences were surrendered in July 1989 (Perilya, 1989).

### 7.1.6 Mt Isa Mines Exploration Pty Ltd

Exploration Licence 7217 "Kilgour" was granted to Mt Isa Mines Exploration (MIM) Pty Ltd in January 1991 (Figure 9). The southern portion of this licence lies in the area of EL27711. Extensive exploration was carried out from 1991 through to 1995 when the last portion of the southern area was relinquished.



**Figure 9: Location of EL 7217 with approximate location of EL 27711.**

In 1991 MIM carried out an extensive literature search and compilation of previous exploration companies work done throughout EL 7218 to help better define target areas. In addition the BMR 1:250 000 aeromagnetics and gravity were also inspected (Kettlewell, 1992).

An extensive helicopter assisted stream sediment sample survey located a number of minor

moderate to low anomalous Au, Cu, Pb and Zn sites. 661 samples were collected across the tenement (Plan 2). Three-quarters of the anomalies lie in the Mallapunyah Dome area (Kettlewell, 1992). Assay results peaked at 420ppm Cu, 40ppm Pb, 115ppm Zn and 3.45ppb Au. Nineteen rock chip samples were collected from the McArthur and Tawallah Group sediments. Anomalous results are shown in Table 4 (Kettlewell, 1992).

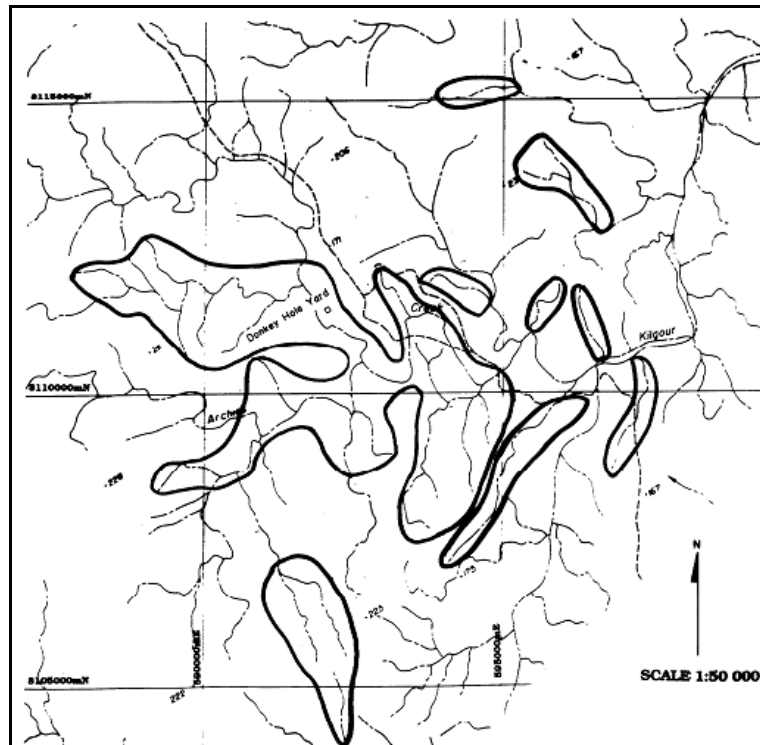
**Table 4: Anomalous results MIM rock chip sampling 1991 (Kettlewell, 1992).**

SAMPLE NO.	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	GEOLOGY
QP98204	10	11	190	<50	chert dolosilt. + haematite
QP93804	1457	171	64	470	chert nodules
QP93808	158	50	<2	390	chert nodules
QP93809	115	23	11	255	dolomitic breccia
QP93810	244	25	<2	<100	dolosiltstone

Follow-up stream sediment and rock chip sampling substantiated the copper anomalies and weakly defined the lead and zinc anomalies (Kettlewell, 1993). A total of 106 stream sediment samples were collected from nine areas in the Mallapunyah Dome. They were located in the vicinity of Donkey Yard (Figure 10), and sample sites are shown on Plan 3. A Cu-Au affinity has been defined from these samples.

Sixteen rock chip samples (Plan 2) were also taken in this area from Tawallah Group rocks. Only Cu returned anomalous results, peaking at 9440ppm, but averaging 1795ppm. The Cu anomalies are restricted to small localized shear and fault zones in the Tawallah Group sediments, especially the dolomitic siltstones of the Wollogorang Formation (Kettlewell, 1993).

A geology map of the Mallapunyah Dome area is included as Plan 4.



**Figure 10: Stream sediment sampling zones at Donkey Yard – MIM, 1992.**

A total of 686 (343 original and 343 duplicate) soil samples were taken in the Archies Creek area (~2.5km south of Donkey Yard) in 1993 (Lawrence, 1994). The survey was conducted over an area of ~600m x 1000m with samples taken every 25m along 600m sample lines, 100m apart (locally 50m apart).

Peak results were:

Cu	670ppm
Pb	270ppm
Zn	1070ppm
Fe	9.54%
Mn	1.60%
Ba	4600ppm
Au	40ppb

The higher values for Cu, Pb, Zn, and to a lesser extent Au appear to form a narrow (approx. 100m) zone trending to the north-east.

In 1994 a total of 15 BLEG (Bulk Leach Extractable Gold) samples were collected from the Archies Creek area (Lawrence, 1995). The programme was designed to confirm the Au anomalies identified from the previous year's sampling.

Peak results were:

Au	18.4ppb
Ag	0.29ppm
Cu	200ppm

These results support the high Au results highlighted previously (Lawrence, 1995). In September 1994 a JV agreement was entered into with Ashton Mining (on behalf of Australian Diamond Exploration Joint Venture) enabling the ADEJV to carry out diamond exploration within MIM's EL 7217 (Rogers, 1996). No further work was carried out within the Donkey Yard, Archies Creek area.

Attached as Plans 5, 6 and 7 are diagrammatic summaries of MIM's stream sediment sampling within the boundaries of EL 27711, from 1991 through to 1996.

#### *7.1.7 Aberfoyle Resources Ltd*

Exploration Licence 9497 was granted to Aberfoyle Resources Ltd in May 1996. The boundaries of this licence fall entirely within EL 27711. A 35 line-kilometre airborne EM survey was completed over the north-eastern corner of EL 9497 in June 1996. The Geotem signature of the data within EL 9497 contains no highly ranked features (Hicks, 1997; Figure 11). No work was completed in the second year of tenure and the licence was surrendered in May 1998 (Henry, 1998).

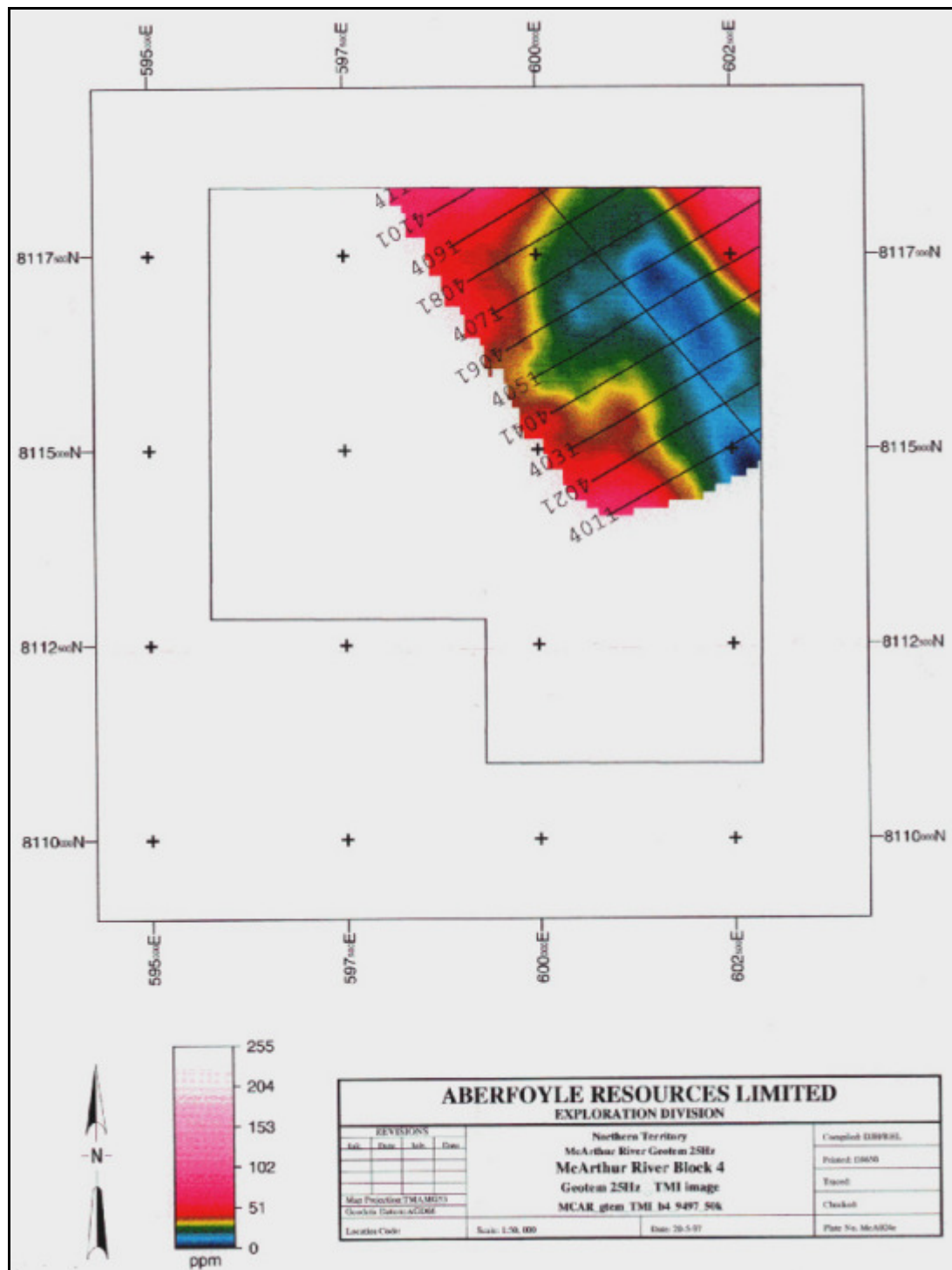
#### *7.1.8 Kiana Projects Pty Ltd*

Exploration Licence 23639 was granted to Mineral Securities Ltd on the 5<sup>th</sup> March 2003. A series of name changes followed and in October 2005 the licence was held in the name of Kiana Projects Pty Ltd (Price, 2008).

A review of the regional geomorphological and geophysical datasets, and compilation of open file historical data was carried out in the early years of tenure. Five base metals, and one diamond target were identified during this review. In the 2006-07 exploration year these targets (Figure 12) were investigated on ground as part of a reconnaissance and sampling trip. Targets 4 and 5 fall within the boundaries of EL27711 (Price, 2008).

Target 4 was selected due to a coincident copper, zinc anomaly in the northern outcrop area of the Wollorgorang and Settlement Creek Volcanics. The area also has local scale NS faults and mapped malachite staining.

Target 5 was selected due to a coincident copper, zinc anomaly in the area of the Wollorgorang and Settlement Creek Volcanics. This target was also a possible location of diamond drill hole MN2 which was not found.



**Figure 11: Aberfoyle GEOTEM over EL 9497 (Hicks, 1997).**

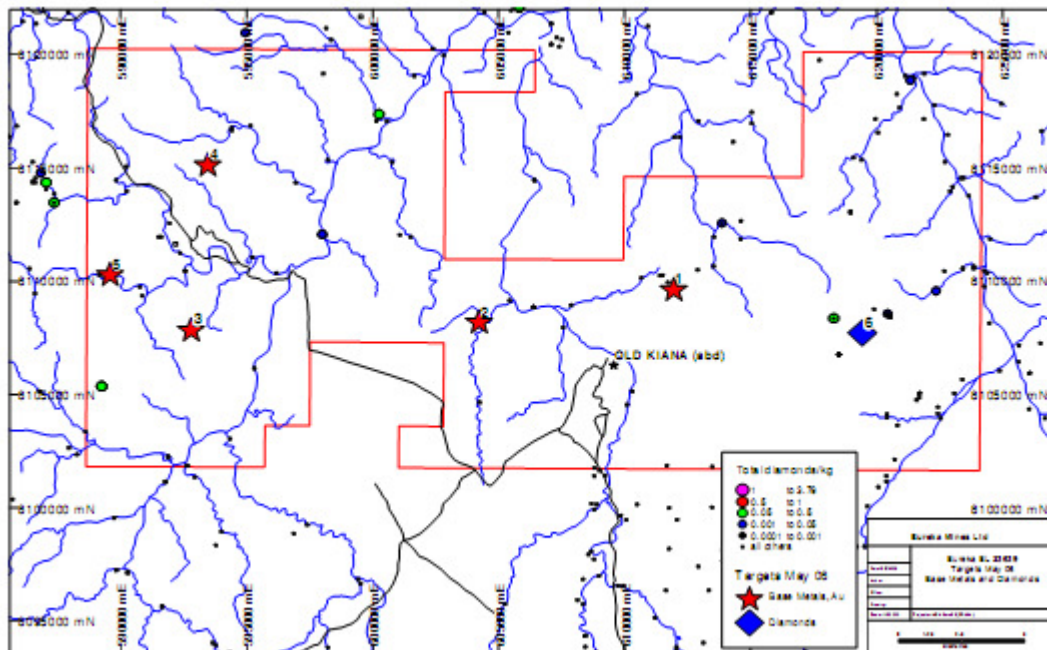
None of the base metal rock or soil samples were highly anomalous for base metals but are relatively comparable to the 1969 soil samples particularly for copper and zinc.

No further geochemical surveys were carried out however compilation of the previous work was undertaken. The western portion of the lease has had extensive stream sediment and soil sampling programs completed. Compilation of soil sampling results shows that the Tawalla Group has extensive areas of copper and zinc anomalies (Ramsey, 2005). These anomalies are within the Wollogorang Formation, often in the basal area. Some anomalies are associated with the upper portion of the Settlement Creek Volcanics. The anomalies are consistent with the mapping records of chalcocite and malachite occurrences or in close proximity to fault structures.



The eastern portion of the licence was relinquished with the western side of the licence being assessed as having higher prospectivity for base metals (Price, 2008).

While work programmes were proposed there are no further reports available for EL 23639.



**Figure 12: Kiana Projects Pty Ltd 2006-07 exploration targets (Price, 2008).**

## 7.2 Quickbird

Image processing and image based interpretation of Quickbird high resolution satellite data was purchased and used as a base for geological mapping of the Kilgour River project. This confirmed and refined the major structural components defined in the Mallapunyah area by earlier exploration work. Low resolution images of the Quickbird data and the accompanying reports are included as Appendix 1.

## 7.3 Geological Mapping and Sampling

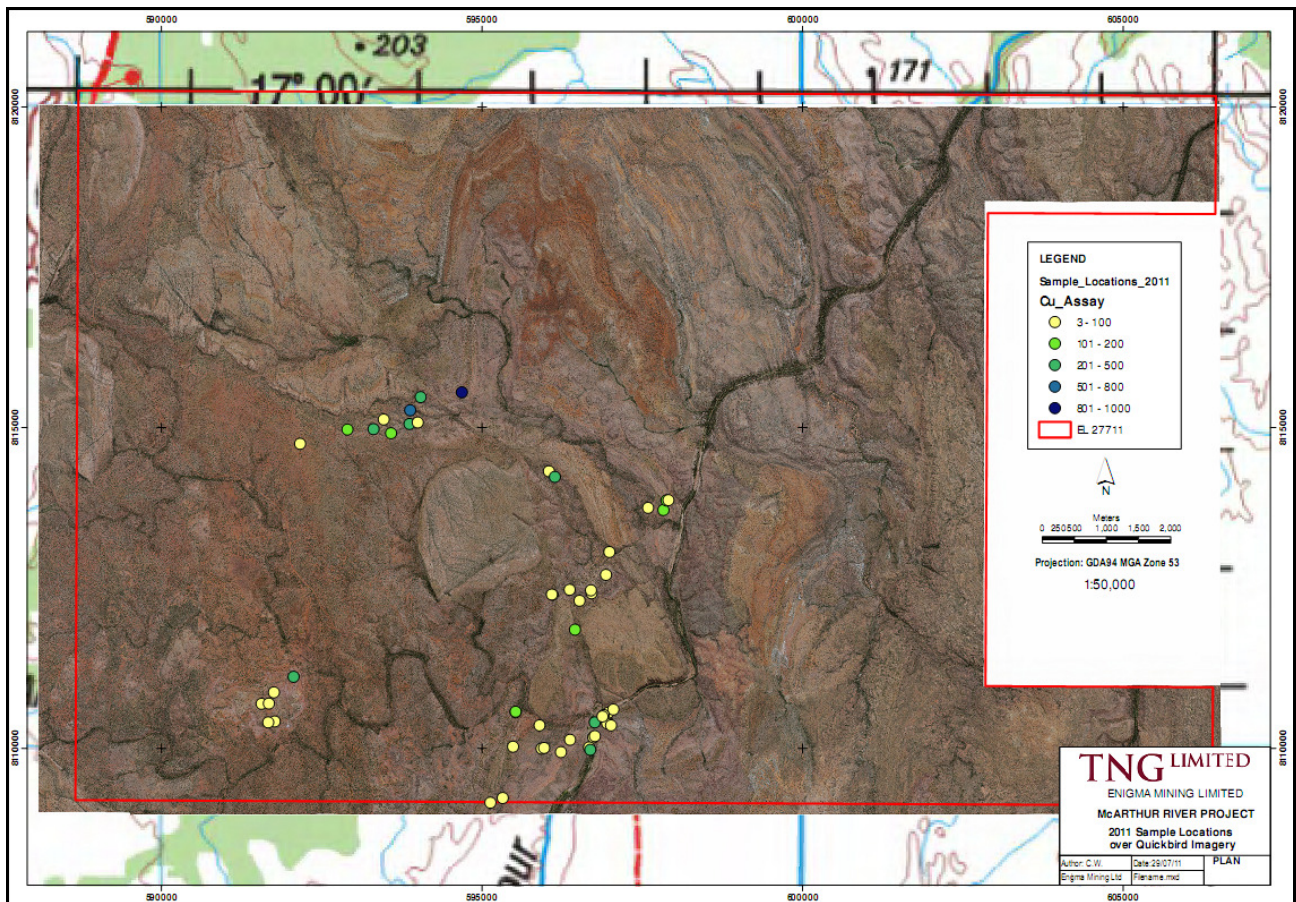
Geological mapping of approximately 50km<sup>2</sup> was completed at a scale of 1:10,000 in May 2011. The main aim of the trip was to map a copper-anomalous corridor within the stromatolitic Proterozoic Wollagorang Formation and a second zone of copper mineralized occurrences within the overlying Mallapunyah Formation.

A total of 57 rock samples were collected across EL 27711 as part of this survey. Samples with results over 100ppm Cu are listed below (Table 5) and full results are attached in Appendix 2. Sample locations are shown on Figure 13..

**Table 5: Rock samples, 2011 mapping programme, Cu>100ppm.**

Sample No	Rock Type	Bi ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Mn ppm	Ni ppm	Pb ppm	Zn ppm
14059	Bs	2	30	84	101	8.01	2150	19	28	55
14069	Sst	2	10	86	374	3.85	2400	10	8	8
14078	Dolomite	3	13	57	752	2.17	6070	12	11	13
14079	Dolomite	<2	13	343	326	2.3	2900	13	8	10
14080	Dolomite	<2	14	60	958	1.89	3670	8	7	7

14082	Dolomite	2	62	23	229	2.66	4510	18	4	8
14083	Dolomite	<2	22	28	131	3.98	3100	8	9	49
14084	Qtzite	3	4	511	112	0.84	333	13	<2	<2
14088	Dolomite	2	4	34	131	2.28	3230	7	4	10
14090	Dolomite	2	5	661	230	7.05	1000	13	2	4
14101	Dolomite	<2	3	280	387	0.63	1840	7	4	4
14102	Dolomite	<2	1	130	399	0.82	2190	3	5	2
14103	Dolomite	<2	9	16	113	4.29	4950	15	57	96
14104	Dolomite	<2	5	23	261	0.72	697	4	5	6
14106	Dolomite	<2	14	65	122	5.21	1700	4	<2	12
14107	Dolomite	<2	14	15	191	2.67	3060	12	8	10



**Figure 13: Sample Locations from 2011 mapping, colour coded to Cu results.**

A number of targets have been defined as a result of this work. Additional geological work is recommended including rock and soil sampling. A full report on the mapping conducted in the area is attached as Appendix 3.

## 8. EXPENDITURE

Expenditure for this reporting period is \$71,602.60 as shown in Table 6.

**Table 6: Expenditure for the period 9/07/10 - 8/07/11.**

EXPENDITURE	AMOUNT (\$)
Office Studies	31,613.03
Remote Sensing	4,517.27
Geological Mapping	18,700.00
Assays	958.20
Geological Contractors/Consultants	8,948.34
Native Title Consultants	3085.74
Travel/Accommodation/Food	2,410.38
Vehicle Costs	667.75
Storage	103.88
Minor Purchases	598.01
<b>TOTAL</b>	<b>\$71,602.60</b>

## 9. PROPOSED 2011 PROGRAM

A number of targets have been identified by TNG as a result of the Literature Review and the geological mapping exercise. TNG intends on expanding its work program to include a detailed investigation of all the high priority targets. Exploration within the tenement will focus on Cu and Au anomalies.

### 9.1 Proposed Expenditure

The proposed expenditure for the next reporting year is shown in Table 7.

**Table 7: Proposed Expenditure.**

EXPENDITURE	AMOUNT(\$)
Geological Mapping and Sampling	15,000
Assays	2,000
Office studies	10,000
<b>TOTAL</b>	<b>\$27,000</b>

## REFERENCES

Bennett, E.M., 1971. Prospecting Authority No. 3246. "Top Springs" Final Report. Carpentaria Exploration Company Pty Ltd. (CR1971-0101).

Cruse, N.J., 1982. Final Report on EL 2423, Mallapunyah, N.T. Shell Company of Australia Limited, Minerals Division (CR1982-0148).

Henry, R.L., 1998. Exploration Licence 9497 (Kiana) Annual Exploration Report to May 29 1998. Aberfoyle Resources Ltd. (CR1998-0495).

Hicks, D.J., 1997. Exploration Licence 9497 (Kiana) Annual Exploration Report to May 29 1997. Aberfoyle Resources Ltd. (CR1997-0418).

Jackson, M.J., Muir, M.D., and Plumb, K.A. 1987; Geology of the Southern McArthur Basin, Northern Territory, Bureau of Mineral Resources, Australia, Bulletin 220.

Kettlewell, D.C., 1992. Exploration Licence 7217 "Kilgour" Northern Territory. First Annual Report. Year Ended 10<sup>th</sup> January 1992. MIM Exploration Pty Ltd. (CR1992-0101).

Kettlewell, D.C., 1993. Exploration Licence 7217 "Kilgour" Northern Territory. Second Annual Report. Year Ended 10<sup>th</sup> January 1993. MIM Exploration Pty Ltd. (CR1993-0140).

Lawrence, R.J.J., 1994. Exploration Licence 7217 "Kilgour" Northern Territory. Third Annual Report. Year Ended 10<sup>th</sup> January 1994. MIM Exploration Pty Ltd. (CR1994-0135).

Lawrence, R.J.J., 1995. Exploration Licence 7217 "Kilgour" Northern Territory. Fourth Annual Report. Year Ended 10<sup>th</sup> January 1995. MIM Exploration Pty Ltd. (CR1995-0177).

McMahon, K., 1970. Calvert Hills Area. Report on Phase II investigations A.P. 2233. Australian Geophysical Pty Ltd. (CR1970-0005).

McMahon, K., 1968. Progress Report A.P. 1343. Calvert Hills Area for 1967. Australian Geophysical Pty Ltd. (CR1967-0007).

Perilya, 1989. Relinquishment Report on Exploration Licences 5653, 5655, 5743 and 6237 – McArthur River Area, N.T. Perilya Mines N.L. (CR1989-0751).

Pietsch, B.A., Wyche, S., Rawlings, D.J., Creaser, P.M., and Findhammer, T.L.R., 1991: McArthur River Region 6065-6 165, 1:100 000 Geological Explanatory Notes, Department of Mines and Energy, Darwin, Australia.

Price, M., 2008. Annual technical report for exploration licence (EL) 23639 (Kiana Project), Wallhallow (SE5307) 1:250,000 sheet, Kilgour (6063) and Lancewood (6163) 1:100,000 sheets, Northern Territory, Australia. 5<sup>th</sup> March 2007 to 4<sup>th</sup> March 2008. Kiana Projects Pty Ltd (CR2008-0090).

Ramsay, R.R. 2005. Annual technical report for exploration licence (EL) 23639 (Kiana Project), Wallhallow (SE5307) 1:250,000 sheet, Kilgour (6063) and Lancewood (6163) 1:100,000 sheets, Northern Territory, Australia. 5<sup>th</sup> March 2004 to 4<sup>th</sup> March 2005

Rogers, T., 1996. Relinquishment Report. Exploration Licence 7217. MIM Exploration Ltd, Ashton Mining Limited. (CR1996-0336).