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Linton Mine
Mineral Lease 64M/79
Forester, NE Tasmania

Exploration Report

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1.0 Introduction

The Linton Mine of the Forester goldfield forms part of mineral lease no. 64M/79 held by Mr. Garry Fisher. The lease is located 15km ENE of Scottsdale, NE Tasmania.

The mine consists of three major gold bearing quartz reefs named No.1, No. 2 and No. 3 reefs respectively. Veins are variably mineralised, narrow and strongly deformed as a result of shearing and folding. Associated with major reefs are cross cutting mineralised ore shoots which have been overlooked in previous work.

The primary aim of this survey is to sample and assess mineralised quartz veins of the Linton Mine in particular shoots that have differing orientations to major reefs and have been exposed by surface excavations. Mineralised veins at the Linton Mine are highly prosperous as they are easily mined using shallow open cut mining techniques.

2.0 Previous Work

Initial work began in the Forester district during the 1920's when small scale mining of quartz lodes commenced. Significant gold mineralisation averaging between 80 and 100 g/t and as high as 130 g/t were discovered from workings on the No. 1 and No. 2 lodes by Nye during 1923.

Further work was undertaken in 1934 by Blake who concluded that the quartz lodes were generally short easterly trending structures, however of significant value to warrant small scale mining.

Recent exploration in the region commenced in 1985 by E.M.F Consultants followed by Goldfield Exploration Pty Ltd in 1987 reporting significant gold values. This prompted a comprehensive survey by Herald Resources Ltd in 1994. Herald undertook RC percussion drilling, rock chip sampling, channel sampling and soil geochemistry to establish mineable mineralisation at the

Linton Mine. Gold grades of 16 g/t were intersected during drilling and MMI (mobile metal ions) soil geochemistry defined a northerly trending corridor of gold mineralisation running through the deposit.

Previous work indicates the presence of significant gold mineralisation in short and narrow quartz veins and shoots. High grade shoots associated with the larger veins are highly prosperous warranting further assessment of the Linton Mine.

3.0 Geological Background

The geology of the north east of Tasmania is dominated by Siluro-Ordovician Mathinna Group sediments and Mid-Devonian granitoids. The Mathinna Group consists of variably metamorphosed and deformed turbiditic quartzose sandstones, siltstones and carbonaceous shales and mudstones. During the Mid-Devonian the Mathinna Group was intruded by several granitoid phases. During and after granite emplacement the Mathinna Group were subject to several mild deformation events, producing dominantly N-NE and S-SE trending upright folds and an intense sub-^{* vertical}horizontal penetrative cleavage. Late extension and rotation of the pre-existing folds formed N-NW orientated shear zones and associated jointing. Thermal metamorphism produced hornfels and a 1-5km metamorphic areole.

4.0 Linton Mine Geology

Mineralised mesothermal quartz veins at the Linton Mine are directly controlled by a major northerly trending shear zone, defined by previous geophysical mapping as ranging from 75 to 100m in width.

Evidence for a major brittle-ductile shear zone includes an intense penetrative sub-^{* vertical}horizontal S₂ cleavage, faulted upright fold hinges and vein scale structures such as sheeted, stockwork and vein networks, vein boudinage, brecciation and gash veining.

* Change confirmed on File 64M/19-Folio 35

The dominant lithologies at the Linton Mine include fine quartzose sandstones, siltstones and carbonaceous shales of the Mathinna Group. They are variably metamorphosed from the Scottsdale Batholith outcropping approximately 5km to the east of the mine. The sediments show mid to intense silicification and silicic bleaching proximal to quartz veining. Veining appears to be more common in less competent carbonaceous shales.

Multiple generations of veining can be identified at the Linton Mine. Auriferous veins are grey to blue in colour, containing gold, pyrite, arsenopyrite, galena and sphalerite. Gold bearing veins are typically coarse grained and contain vughs where sulfides are commonly concentrated.

It is suggested that gold deposition at the Linton Mine was derived from metamorphic fluids during intrusion of the Scottsdale Batholith.

5.0 Linton Mine Survey

The Linton Mine consists of three major sub-~~horizontal~~-reefs orientated ENE (Figure 1). Cutting the reefs is a cross course described by Nye (1923) as a soft slate formation of approximately 0.75m in width orientated ~~255°N~~ and dipping steeply to the west. On further examination the cross course comprises a carbonaceous, slightly graphitic inter-bed that is host to several mineralised narrow quartz veins which have been exposed at the surface by recent excavations of G.I.F. The cross course appears to be structurally controlled by small faults and shears running parallel to the major shear zone. This opposes the orientation of the No. 1, No. 2 and No. 3 reefs, which cut the shear zone at a high angle and are likely to be controlled by tensional or extensional features.

The primary aim of this survey is to further sample and assess the prospectivity of veins and shoots intersecting the No. 3 reef which have approximate orientations to that of the cross course. Furthermore the survey hopes to further quantify prosperous veins along the No. 1 and No. 2 reefs.

* Changes verified on File 64M/79-Folio 35

? subvertical

? 355°

AK

5.1 No. 1 Reef

5.1.1 General

The No. 1 reef is orientated 75°N along the trend of the regional shear zone. It is documented that the original lode was 200mm in width. Surface bulk sampling of the No. 1 reef by Nye (1923), E.M.F Consultants (1985) and G.I.F (1993) have resulted in gold values of 130 g/t, 19 g/t and 12.5 g/t respectively. Further sampling by Nye and G.I.F of the No. 1 and No. 2 levels have yielded lower values averaging 20 g/t Au. Some of such sampling may be misleading as downgrading by the surrounding country rock is reported. The silicified country rock varies from 1 to 2 g/t Au.

Excavations of the No. 1 reef have exposed sections of the footwall of which several massive quartz veins remain. Large portions of the main lode have been mined however veins and shoots up to 100mm in width are exposed in places.

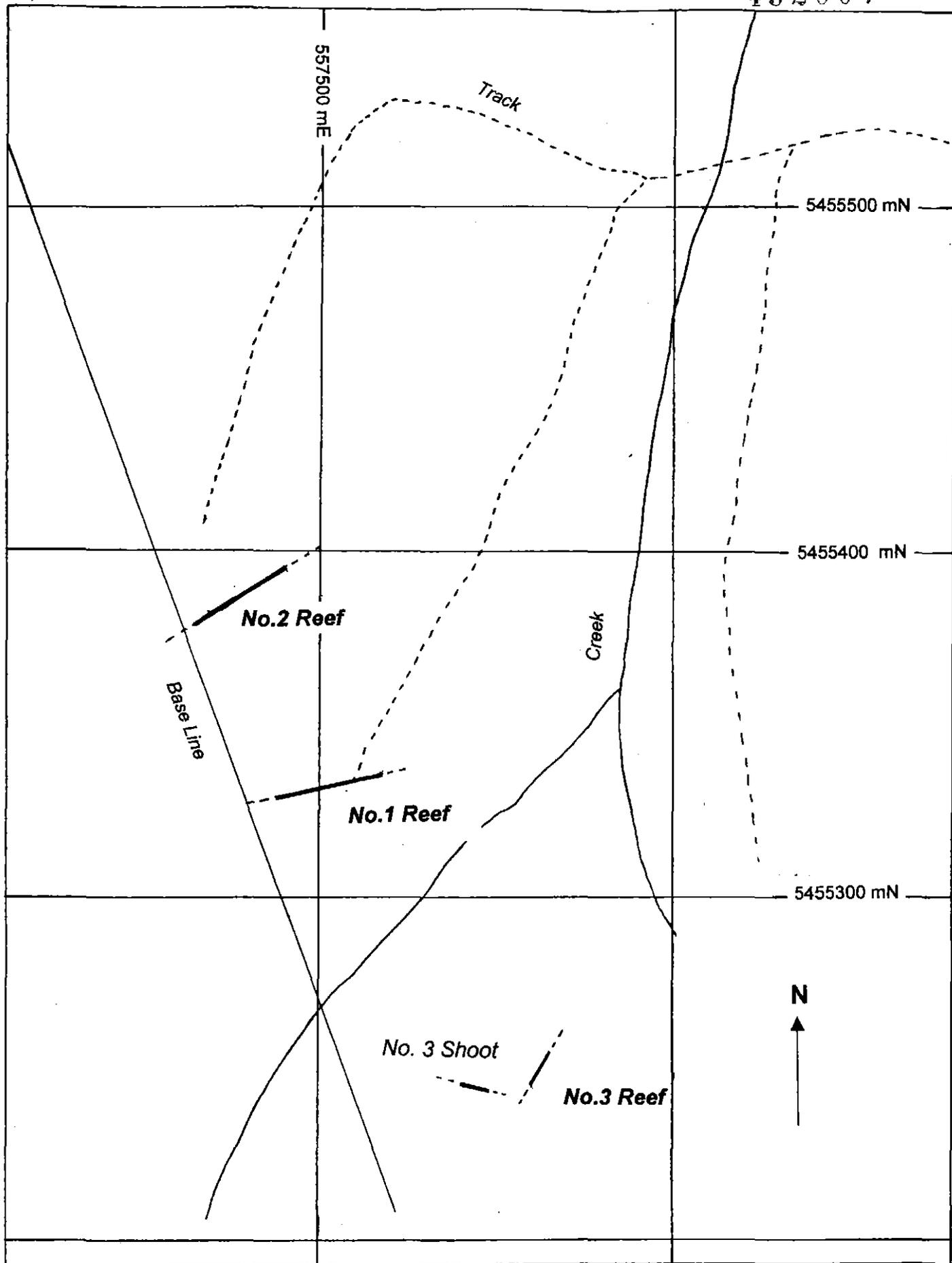
Veins and shoots along the No. 1 footwall commonly comprise of massive dark grey to blue iron rich quartz containing minor pyrite and arsenopyrite. Fine fractures along the veins are typically lined with iron oxides such as limonite and goethite.

5.1.2 Sampling

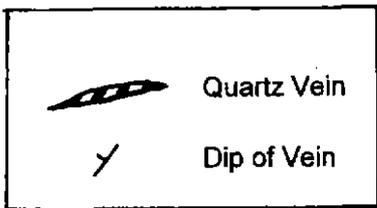
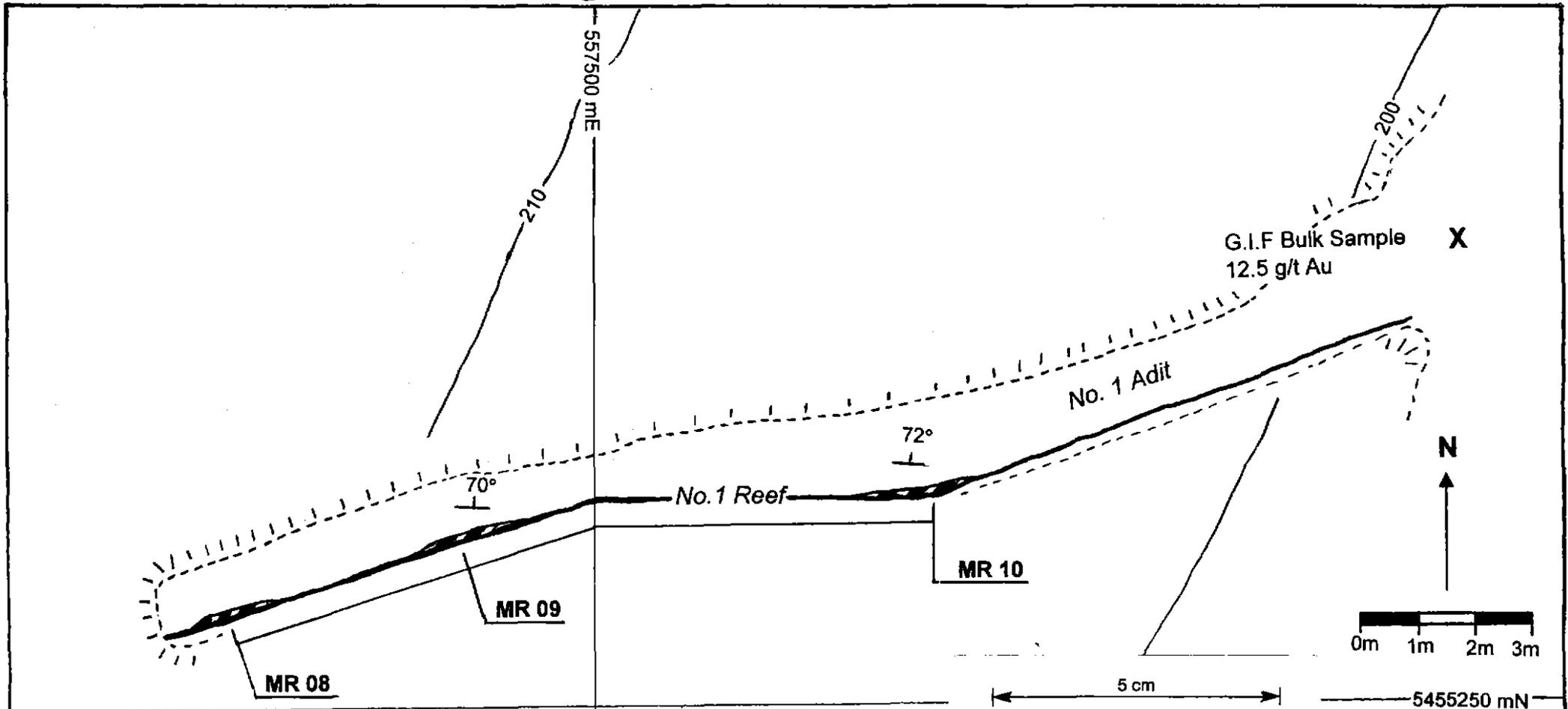
Approximately 1kg-quartz vein samples were taken from the exposed footwall of the No. 1 reef. Care was taken in sampling only vein material opposed to the silicified country rock to assure representative results. Three veins were analysed ranging from 90 to 120mm in width. Sample locations and the No. 1 reef are shown in figure 2.

5.1.3 Results

Results of No. 1 reef sampling are shown in table 1. The results indicate very low grade gold mineralisation averaging 0.46 g/t.



Linton Mine, NE Tasmania.		ML 64 M/79
Reef Locations		
Matthew Ramsden	May, 1999.	



Linton Mine, NE Tasmania.		ML 64 M/79	
No. 1 Reef Sampling			
	Sample	Vein Width (mm)	Grade (g/t Au)
	MR 08	90	0.22
	MR 09	40	0.40
<i>Matthew Ramsden</i>	<i>May, 1999</i>	MR 10	120
			0.56

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Table 1: Results and sample details, No. 1 reef.

Sample	Vein Width (mm)	Grade (g/t)
MR 08	90	0.22
MR 09	40	0.40
MR 10	120	0.56

5.2 No. 2 Reef and Cross Course

5.2.1 General

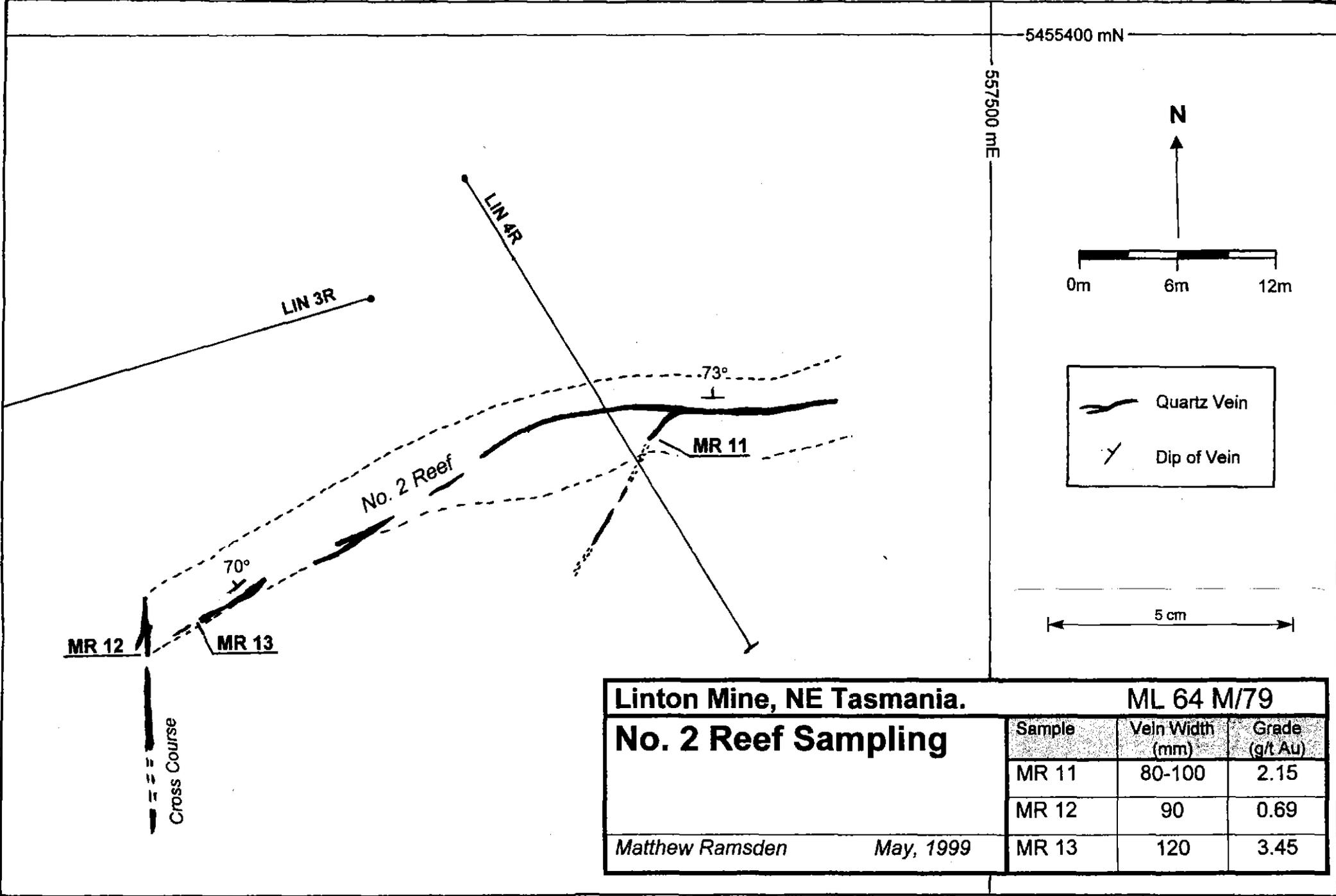
The No. 2 reef has a similar orientation to the No. 1 reef of 085°N and like the No. 1 reef has undergone considerable surface and underground excavation. Previous surface and sampling of the No. 1 level by Nye (1923), E.M.F (1985) and G.I.F (1993) has resulted in grades ranging from 10 to 90 g/t Au.

The No. 2 reef intersects the cross course at the western end of the reef. Exposed are several veins between 90 and 120mm in width of similar orientation to that of the cross course. Such veins occur as massive gossanous iron stained, grey to blue, sulfide rich quartz. Several veins orientated 030°N cut the No. 2 reef, possibly structurally controlled by small faults.

The No. 2 reef has been thoroughly sampled in previous work by Herald Resources Ltd. However veins with similar orientation to that of the cross course have not been sampled and are of considerable width to warrant assessment within this study.

5.2.2 Sampling

Three 1kg samples were taken from the No. 2 reef. Sample MR 11 was taken from a 030°N orientated vein of 80 to 100mm in width and samples MR 12 and MR 13 from veins at the intersection of the cross course and the No. 2 reef. Sample locations and the No. 2 reef are shown in figure 3.



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Figure 2

MT

5.2.3 Results

Results of No.2 reef sampling are shown in table 2. Results from the No. 2 reef and its intersection of the cross course indicate low grade gold mineralisation.

Table 2: Sample details and results, No. 2 reef.

Sample	Vein Width (mm)	Grade (g/t)
MR 11	80-100	2.15
MR 12	90	0.69
MR 13	120	3.45

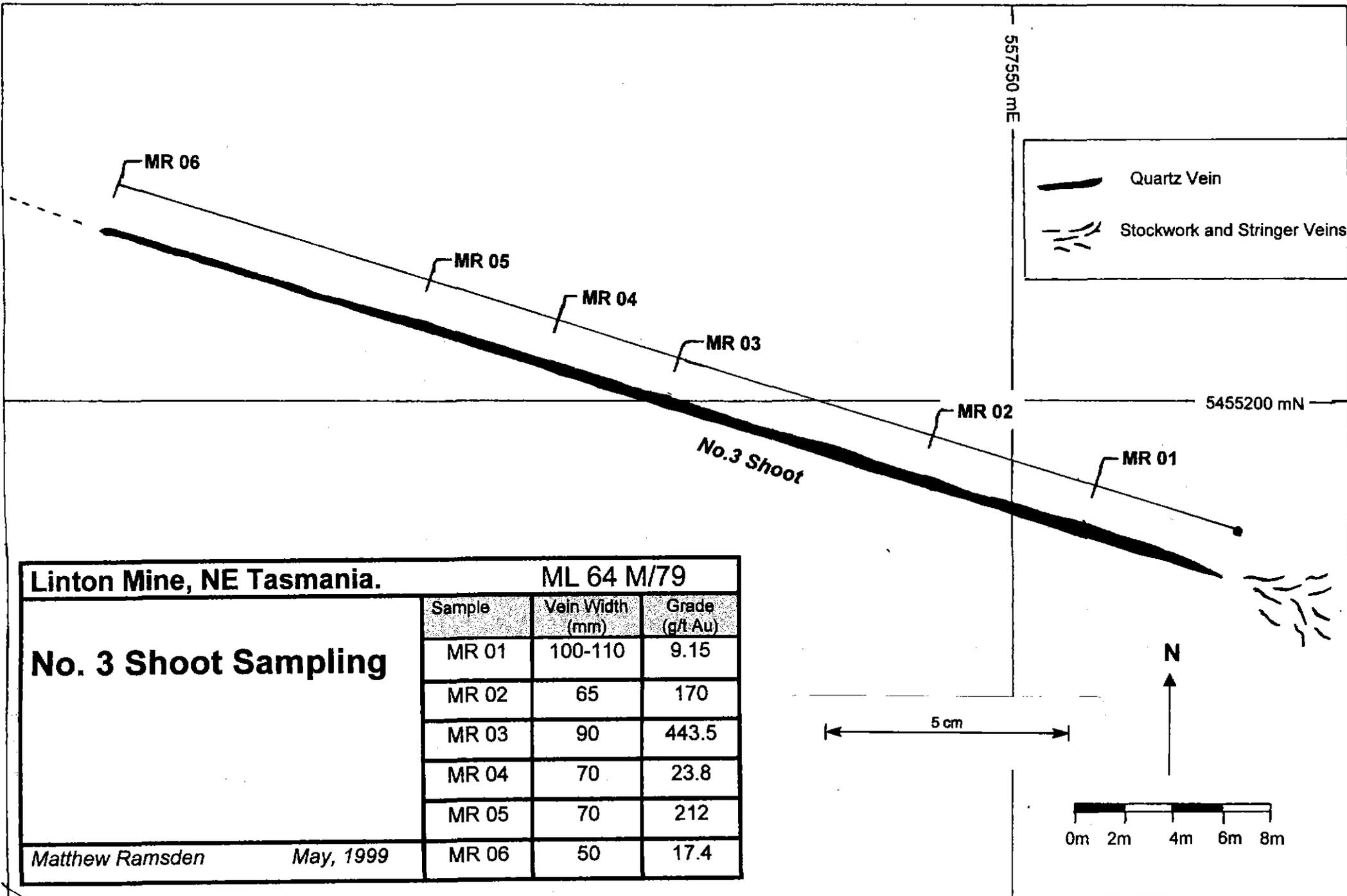
5.3 No. 3 Reef and No. 3 Shoot

5.3.1 General

The No. 3 reef is orientated 047°N and dips steeply to the west. The reef has been excavated over a strike length of 14m. Possibly intersecting the reef is a mineralised shoot (No. 3 shoot), orientated W to NW, exposed at the surface by shallow excavations. Excavations on the No. 3 shoot expose a massive quartz vein averaging 75mm in width and from what is exposed as 12m in strike length. The SE end of the vein appears to narrow out into a zone of stockwork and stringer veining. The shoot may extend further southward however cannot be confirmed due to lack of exposure.

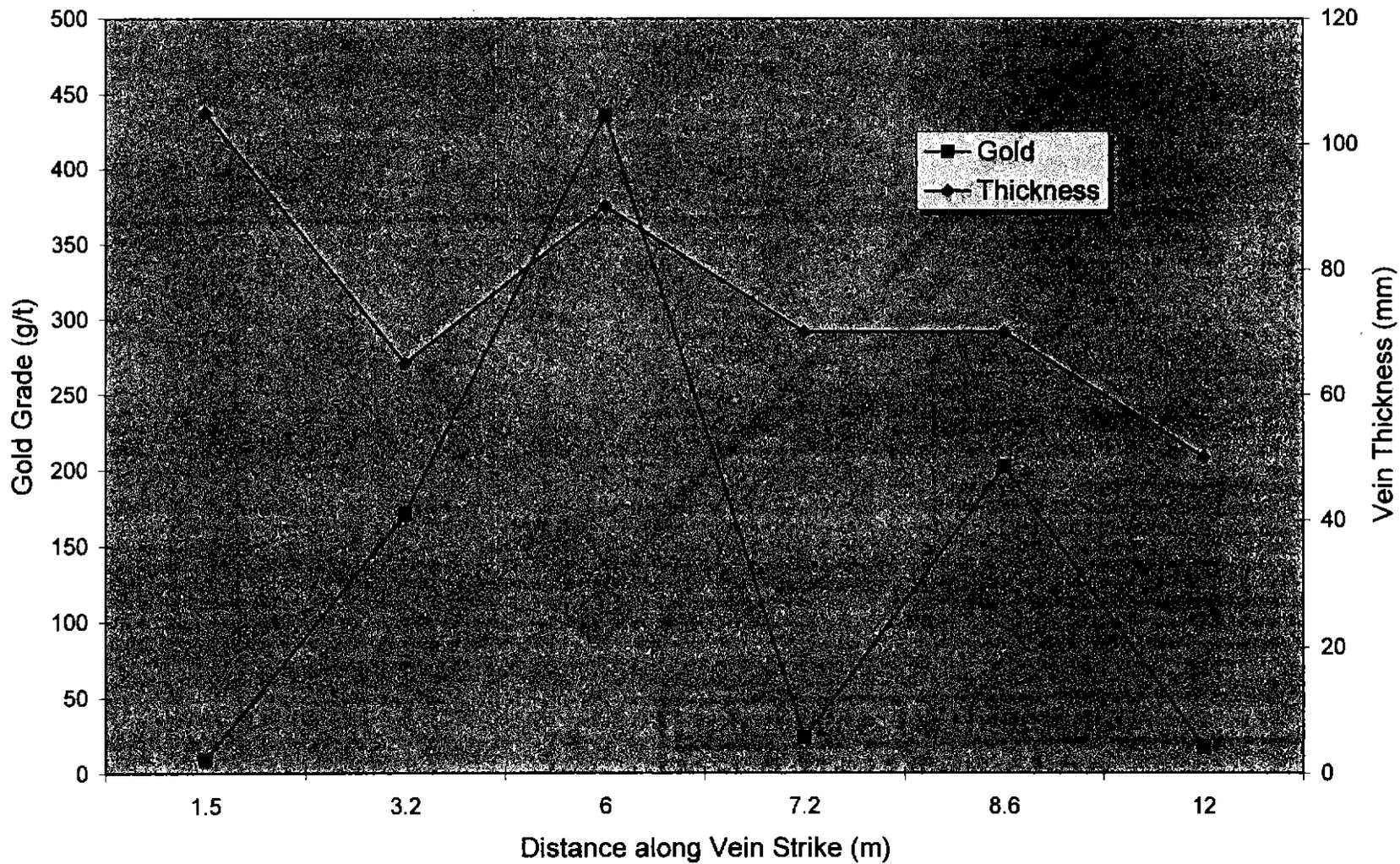
5.3.2 Sampling

Due to the limited exposure of the no. 3 shoot sampling was undertaken over a strike length of 12m. 6 samples were taken along the vein where sufficient representative vein material was accessible. 1kg samples were taken with aid of a mechanical hammer. Manual digging was required to expose the vein in places. One bulk sample (MR 07) was taken from the No. 3 reef. Sampling details of the No. 3 shoot and the No. 3 reef are shown in figures 4 and 6 respectively.



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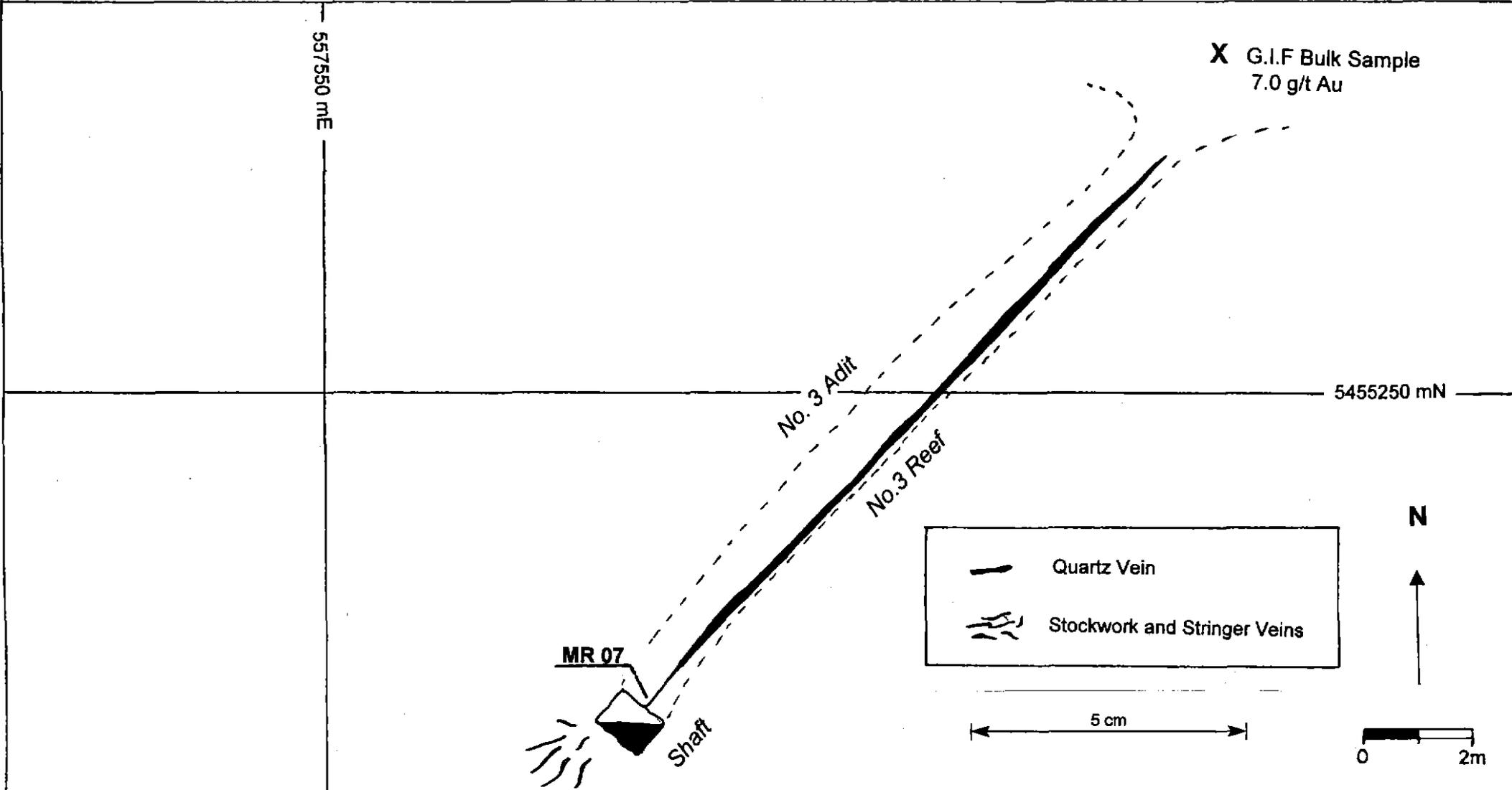
Gold Grades and Vein Thickness - No. 3 Shoot



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Figure 5

BA



Linton Mine, NE Tasmania.		ML 64 M/79		
No. 3 Reef Sampling				
		Sample	Vein Width (mm)	Grade (g/t Au)
<i>Matthew Ramsden</i>	<i>May, 1999</i>	MR 07	120	70.05

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MR

5.3.3 Results

Sampling of the No. 3 reef and the No. 3 shoot indicate high to very high grade gold mineralisation (Table 3 and 4). From this sampling the No. 3 shoot averages 146 g/t Au over a 12m strike length.

Table 3: Sample details and results of the No. 3 shoot.

Sample	Vein Width (mm)	Grade (g/t Au)
MR 01	100-110	9.15
MR 02	65	170
MR 03	90	443.5
MR 04	70	23.8
MR 05	70	212
MR 06	50	17.4

Table 4: Sample details and results of the No. 3 reef. (bulk sample)

Sample	Vein Width (mm)	Grade (g/t Au)
MR 07	120	70.05

6.0 Interpretation

From the results of this study and previous work it is indicated that the Linton Mine has a high potential for narrow, high grade mesothermal vein mineralisation. This survey has located a previously overlooked area that is likely to be a site of future mining and exploration.

Sampling of the No. 1 and No. 2 reef within this survey has indicated very low grade gold mineralisation. It likely that gold assays are low, due to at the present level, little of the original lodes remain. It is indicated from previous results that both the No.1 and No.2 reefs host significant gold mineralisation of up to 130 g/t Au. Exposing the reefs with depth would ensure more accurate and representative sampling. Further work is required to make a complete assessment of the No. 1 and No. 2 reefs.

From the results it is apparent that the No. 3 reef and in particular the No. 3 shoot are highly prosperous and contain high grade gold mineralisation. Of particular interest is the No. 3 ore shoot, which is of sufficient grade to be a mineable resource.

The No. 3 shoot was sampled over a strike length of 12m. This length is based on the present exposure of the vein. A network of stockwork veining in strongly silicified metasediments occurs at the SE end of the exposed vein. This zone is likely to contain significant grades, estimated of > 10 g/t Au. At present there is insufficient evidence due to lack of exposure to confirm the total strike length and the vein may extend further to the NW along an orientation similar to that of the cross course. There is possibility that the strike length of the vein sampled may be doubled with further excavations. An exposure to the NW indicates the No. 3 shoot is structurally controlled by a small shear zone. The outcrop comprises intensely silicified carbonaceous shales and coarse siltstones which are plagued with deformed quartz veins indicating extensional movement. Detailed mapping in this zone and further sampling would determine wholly the extent and structural context of the No. 3 shoot.

High grade mineralisation ranging from 200 to 400 g/t Au along the No. 3 shoot, occurs in comparatively coarse grained, dark grey/blue to black quartz which contains vughs and abundant sulfides. Samples MR 03 and MR 05 contained < 1 cm bands of sulfides comprising dominantly galena and pyrite but also arsenopyrite and sphalerite. Furthermore samples containing high gold contained vughs to 1.5cm, some of which were lined with sulfides. Despite conclusions of previous work it possible that samples containing dark grey to black bands of sulfides may be associated with gold mineralisation. Such mineralogy and vein textures should be applied to recognising mineralised vein generations as opposed to barren generations. Barren veins are commonly more pale in colour, finer grained with little or no sulfides. Recognition of mineralised vein generations may prove an important tool during both further exploration and mining.

Carbonaceous shales and mudstones host the No. 3 shoot. This lithology may be less competent and provide a favourable horizon for veining and subsequent gold mineralisation. Silicification of the host sediments occurs up to 20cm from the No. 3 shoot. It is possible that some of the country rock may be of sufficient grade to be mined.

Bulk sample MR 07 indicates that medium to high grade gold mineralisation occurs along the No.3 reef. An estimated 14m strike length is exposed. It is possible that the No.3 reef intersects the No. 3 shoot. Further sampling and mapping is required after future excavations to investigate this.

Veining at the Linton Mine is typically short, narrow and erratic due to the structural complexity of the region. However as illustrated within this survey, gold bearing veins are commonly of variable but high to very high in grade.

7.0 Summary and Recommendations

It is recommended based on this survey that future exploration be targeted to the No. 3 reef area. Small-scale mining of the No. 3 shoot is feasible, once extracted providing further accessibility to outcrop. Excavation of the No. 1 and No. 2 reefs would also provide more of a representative sample for assessment.

Local exploration is recommended in the following areas:

- Immediate vicinity of the No. 3 reef and its associated ore shoots (such as no. 3 shoot);
- Cross course (to define its prospectivity and relation to the No. 1 and No.2 reefs and most importantly No. 3 reefs).

Regional Exploration is recommended in the following areas:

- To the south and south west of the No. 3 reef (to locate further mineralisation defined by N-S trending corridor defined by Herald Resources Ltd. MMI and geophysical interpretation).

Recommended exploration methods include:

- Regional and local magnetic interpretation (in attempting to define a structural control on mineralised veins);
- Detailed structural mapping;
- Detailed channel sampling and MMI geochemistry in the immediate vicinity of the No. 3 reef to define the possibility of a No. 4 reef associated with the cross course;
- Magnetic susceptibility work to attempt to define any magnetic signature related to gold bearing veins.

Due to the variable nature of veining at the Linton Mine it would be desirable to establish a characteristic signature for mineralised veins. This could be used as valuable exploration tool in discriminating potentially prosperous veins with barren veins, differences in which are subtle. It appears at present from this survey that the best criteria for developing such a model would be based on vein mineralogy and texture and possibly a dominant structural control. Further work is required to establish this.

The Linton Mine remains a highly prosperous deposit . It is proven within this study that several veins of high gold grade in the No. 3 region are feasible for shallow open cut mining. Future exploration is highly likely to discover further gold mineralisation in the No. 3 reef area and further asses the potential of the No. 1 and No. 2 reefs.

8.0 References

EMF Consultants., (1985).

Herald Resources Limited., 1994. Annual Report 1994-1995, Mineral Lease
NO. 64M/79.

G.I.F, (1995).

Goldfield Exploration Pty Ltd (1987).

Nye, P.B. 1923. Report on the Forester goldfield. Unpublished report of
the Tasmania Department of Mines.

APPENDICES**a) Field Data**

Sample	location	Vein Width	Channel Interval
MR 01	No. 3 Reef	100-110	1.5
MR 02	No. 3 Reef	65	3.2
MR 03	No. 3 Reef	90	6.0
MR 04	No. 3 Reef	70	7.2
MR 05	No. 3 Reef	70	8.6
MR 06	No. 3 Reef	50	12.0
MR 07	No.3 Reef	120	-
MR 08	No. 1 Reef	90	1.0
MR 09	No. 1 Reef	40	5.2
MR 10	No. 1 Reef	120	14.3
MR 11	No. 2 Reef	80-100	-
MR 12	No. 2 Reef	90	-
MR 13	No. 2 Reef	120	-

b) Assay Results

Sample	Au (g/t)	Au (b) (g/t)
MR 01	9.15	-
MR 02	171.0	169.0
MR 03	436	451
MR 04	23.0	24.6
MR 05	202	222
MR 06	17.4	-
MR 07	65.5	74.6
MR 08	0.24	0.20
MR 09	0.40	-
MR 10	0.56	0.97
MR 11	2.15	-
MR 12	0.69	-
MR 13	3.45	-