Mines Dept

KALMET RESOURCES N.L.

REPORT ON

1:500 SCALE GEOLOGICAL MAPPING

AT THE WESTERN SHEAR ZONE

MAUD CREEK PROJECT

MCN's 4134-4139

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DATE: 15 JANUARY 1996

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SUMMARY

Detailed surface geological mapping around the Main, Central Zone and North Zone along the Western Shear Zone at the Maud Creek Prospect was carried out during the period from 24th June, 1996 to 22nd July, 1996. Rock chip sampling was also carried along the traverse to evaluate the extent of the mineralisation on the western shear zone and parallel zones. The mapping exercise has been able to define the massive quartz breccia outcrops, associated caprock and major host rock units more accurately within the area and has also resulted in a better understanding of the formation and general distribution of the regolith within the area.

A newly revised grid was established and surveying was undertaken by GHD Surveys P/L on a 50 x 50 meter grid, covering an area from 8550N to 10300N and from 18900E to 19600E local grid. The grid was established on an orientation of 004° magnetic north.

1.0 SCOPE OF REPORT

This report summarises the geological traverse and rock chip sampling on MCN's 4134,4135,4136,4137,4138 and 4139 - Maud Creek Project. The report also documents the detailed mapping on 1:500 and 1:2000 scales in a digital format.

2.0 INTRODUCTION

Kalmet Resources NL has carried out extensive exploration and evaluation with RC and diamond drilling around the Main Zone Deposit within the Western Shear Zone since 1993, which resulted in a substantial increase in resources on the Main Zone ore body.

A newly revised grid was established on a 50m x 50m grid basis and surveying / gridding was under taken by GHD Surveys P/L during the month of July 1996 covering an area from 8550N to 10300N and from 18900E to 19600E local grid. The local grid was established on an orientation of 004° magnetic north.

A detailed geological mapping and rock chip sampling exercise was carried out at 1:500 scale covering the areas along the Western Shear Zone including the Main Zone Deposit as well as the highly prospective North and Central Zones utilising the new grid as a mapping control. An interpretative map was also composited at 1: 2,000 scale. The area covered by detailed mapping is 700m x 1750m and proceeded from 8550N to 10300N and from 18900E to 19600E local grid.

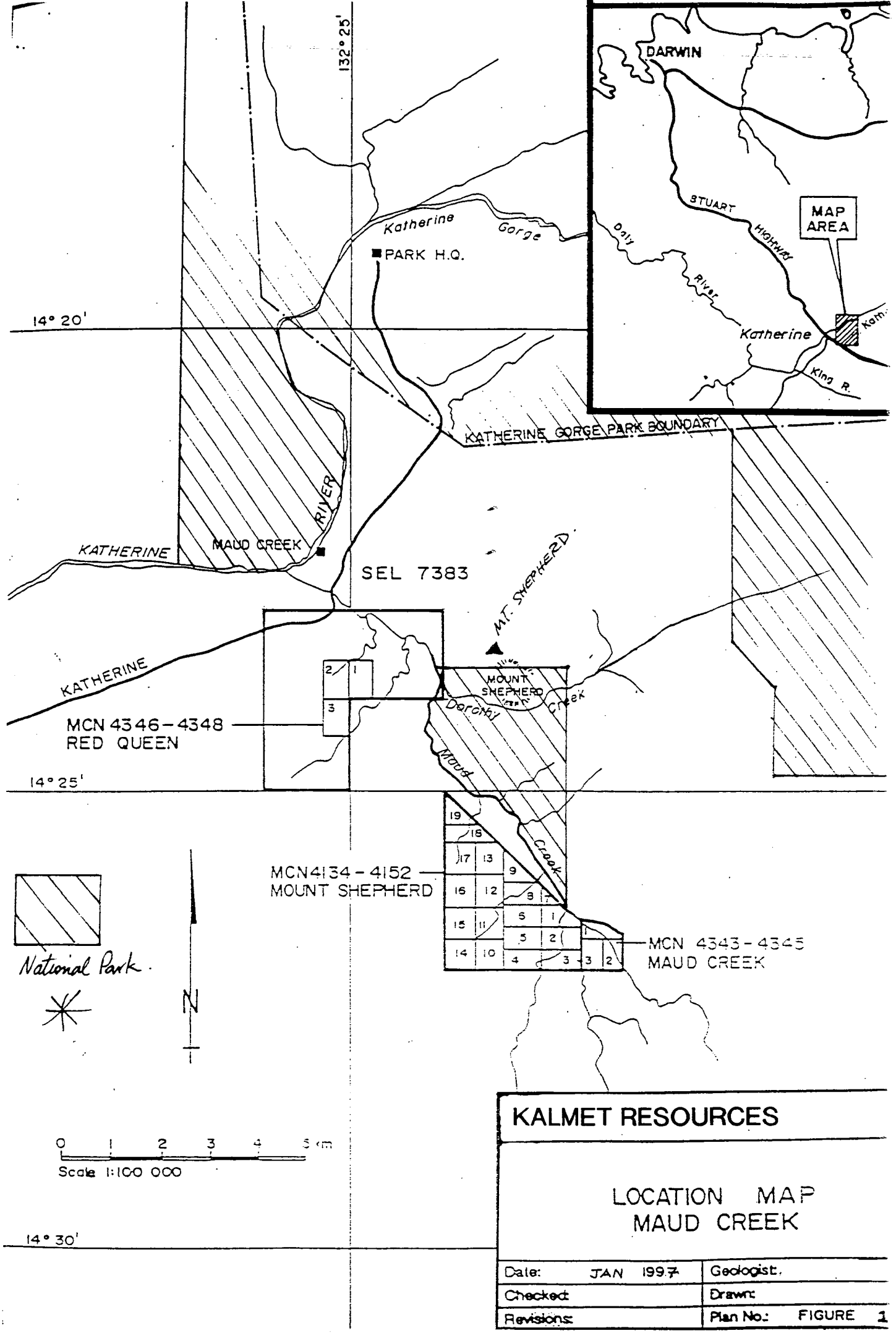
The mapped area covers tenements comprising MCN's 4134, 4135, 4136, 4137, 4138 and 4139.

3.0 TENEMENT STATUS

Kalmet Resources NL was granted a five year option agreement by Placer Exploration Ltd in December 1992 to aquire 25 mineral claims (MCN'S 4134 - 4152 and 4343 - 4348) covering nine square kilometres at Maud Creek, 20 kilometres east of Katherine (Figure 2).

4.0 LOCATION AND ACCESS

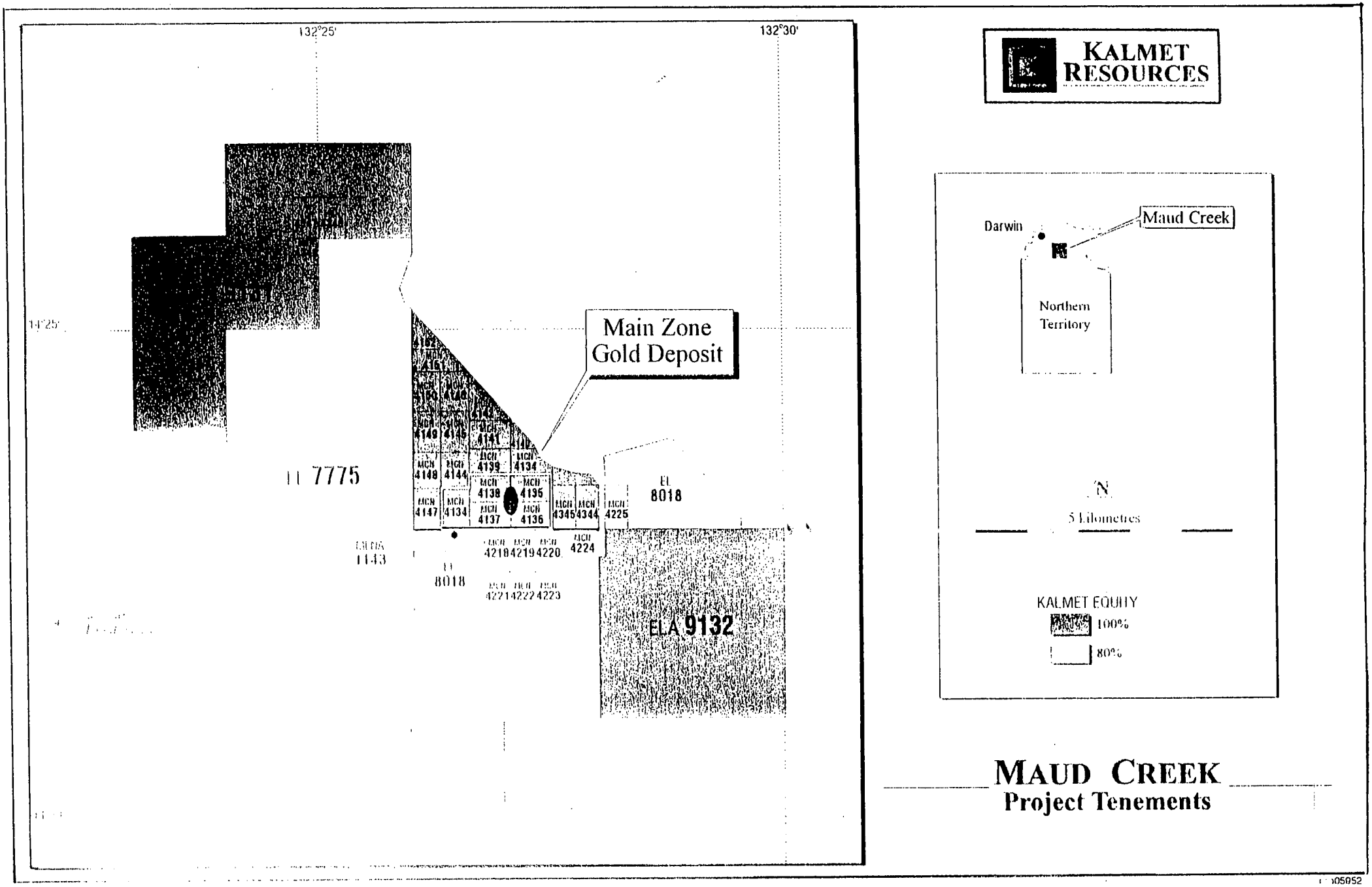
The tenements are located about 29 kms east north east of the town of Katherine. Access is from two all weather bitumen roads which lead eastwards via the Katherine River Gorge Road to Maud Creek Station or southwards along the Stuart Highway towards the radar site turnoff (Figure 1).



KALMET RESOURCES

LOCATION MAP
MAUD CREEK

Date: JAN 1997	Geologist:
Checked:	Drawn:
Revisions:	Plan No.: FIGURE 1



MAUD CREEK
Project Tenements

Figure 2

Off-track access is generally reasonable within the area in dry weather, but deeply incised creeks and a large expanse of black soil covered areas may restrict vehicle access during the wet season.

5.0 REGIONAL GEOLOGY

The Maud Creek Goldfields are located within the Katherine - El Sherana area in the south-eastern part of the Pine Creek Geosyncline, which consists of small Archean domes surrounded by a 14 km thick sequence of Lower Proterozoic metasediments and minor volcanics. These rocks are intruded by Middle Proterozoic granite and dolerite (Mulder and Whitehead, 1988; Needham et al, 1980).

The El Sherana Group consists of a 2.5 km thick sequence of fluviatile sediments and volcanic rocks and is subdivided into the Scinto Breccia, Coronation Sandstone, Pul Pul Rhyolite, Big Sunday Formation and the Tollis Formation. Folding is evident within the sediments with tight to open folds occuring along a northerly axis. The Edith River Group unconformably overlies the El Sherana Group. The Katherine River Group unconformably overlies the Edith River Group and is represented in the Katherine - El Sherana area by the Kombolgie Formation.

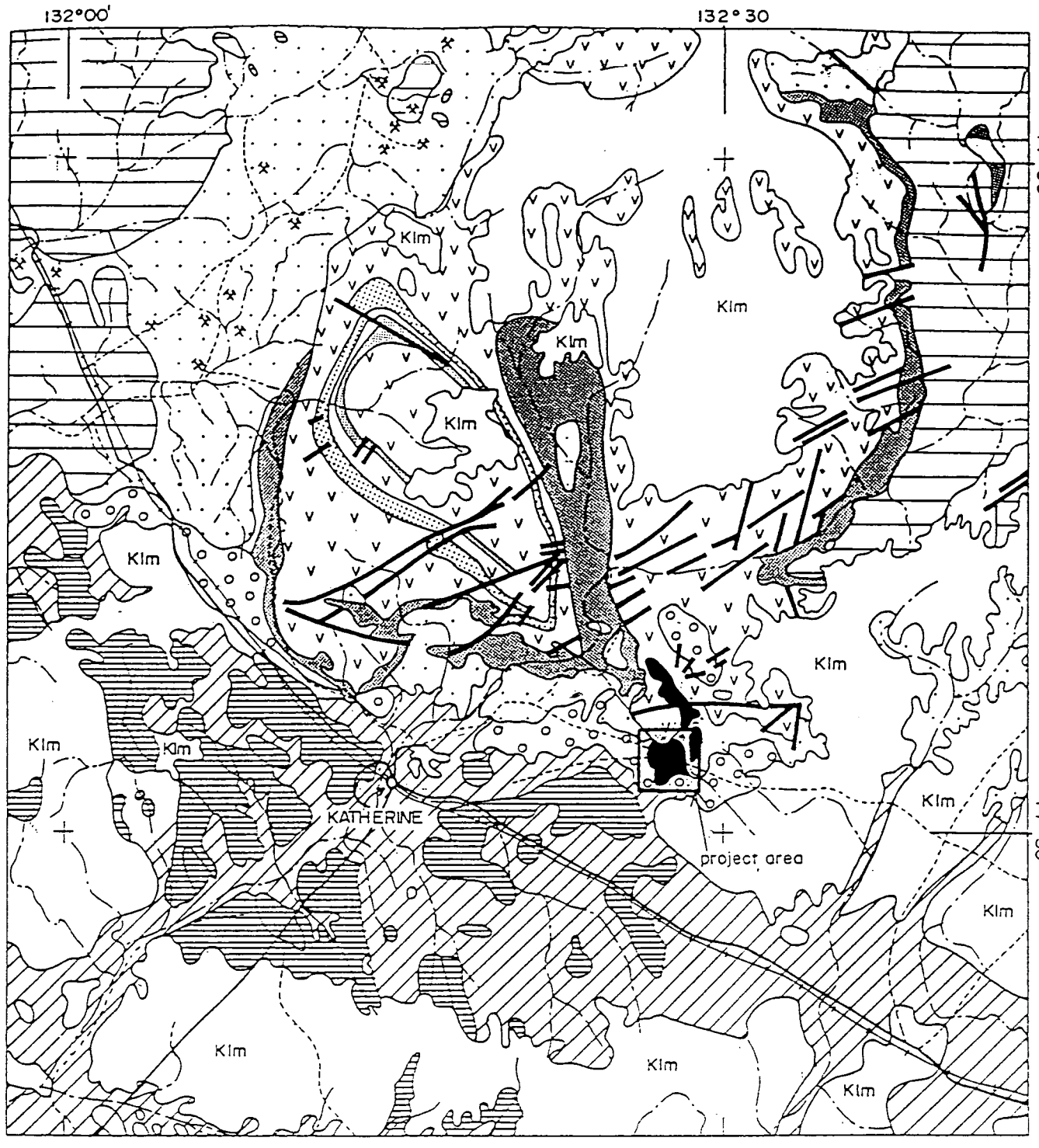
The Antrim Plateau Volcanics were deposited during Cambrian times following a hiatus in sedimentation after the deposition of the Kombolgie Formation. (Mulder and Whitehead, 1988).

6.0 PROSPECT GEOLOGY

The major rock units represented within the Maud Creek prospect are the Tollis Formation, the Maud Dolerite, the Edith River Volcanics, the Kombolgie Formation and the Antrim Plateau Volcanics.

The Tollis Formation forms part of the El Sherana Group and is composed of interbedded greywacke, siltstone, slate, argillite, cherty and crystal tuff with altered mafic to intermediate volcanic rocks and banded ironstones.

The Maud Dolerite intrudes the Tollis Formation and massive irregular outcrops are present along the south-eastern part of the mapped area. The massive flat top area of the Maud Dolerite which extends east towards the old Maud Creek Goldfield area, acted as a large rigid block and is responsible for the deformation of the area. A subsequent dilational structure was formed along the contacts between the footwall sediments and overlying mafic volcanic packages. Gold mineralisation within the western shear zone occurs along this structure.



LEGEND

- Alluvium soil
- Klm — Mullaman beds
- Tindall Limestone
- Antrim Plateau
- V — Kombolgie Formation
- Henwood Creek Volcanics
- Mc Addens Creek Volcanics
- Edith River Volcanics
- Cullen Granite intrudes Burrell / Tollis
- Burrell Creek Formation and Tollis Formation
- Zamu Complex (Maud Dolerite)

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MAUD CREEK
REGIONAL GEOLOGY

Date: JAN 1997	Geologist:
Revisions:	Drawn:
Scale: 1:500 000	Plan No. FIGURE 3

A footwall sedimentary package of the Tollis Formation comprises interbedded greywacke and siltstone, with bedding generally striking 300-350° magnetic and dips commonly around 45° to the east. A distinctive buff to light yellow brown soil is developed over the Tollis Formation sediments. The overlying mafic volcanics package of the Tollis Formation which is located at the hanging wall side of the western shear zone comprises volcanosediments, agglomerates and tuffs. This tuff has strong foliation, medium green to green-grey colour and is chlorite-carbonate altered. When weathered, the tuff is deep purple to cherry red brown in colour due to oxidation of chlorite and carbonates to haematite and occasional specular haematite which highlights haematite stained calcite veins. Reddish-brown to deep purple-brown residual soils formed over the mafic volcanics.

The Tollis Formation and the Maud Dolerite are unconformably overlain by the Edith River Group. The Edith River Group which comprises conglomerates, greywacke, phyllite, tuffaceous sediments and felsic volcanics, can only be observed further north from the mapped area. The Edith River Group is in turn unconformably overlain by the Kombolgie Formation and is marked by a basal conglomerate composed mostly of clasts derived from the underlying volcanics and quartz fragments. Grits, quartz pebble conglomerate and breccia composed of sediment clasts from the Kombolgie Formation are evident along the north-western edge of the mapped area. Suboutcrops and float of the quartz pebble conglomerate from the Kombolgie Formation can still be traced further to the south near the Main Zone area, straddling the contact with the Antrim Plateau Basalts.

At the western and southern edge of the mapped area, the Kombolgie Formation is unconformably overlain by the Cambrian Antrim Plateau Volcanics which include amygdaloidal basalts. The vesicular textured basalt fringes along the contact with the sediments of the Tollis Formation and this thin basal unit is probably overlain by the amygdaloidal Antrim Plateau basalts which has a gentle and shallow apparent dip towards the south and west. The Antrim Plateau basalts are in turn overlain by the Tindall Limestones and sandstones of the Daly River Group which are located further south west of the prospect area.

7.0 RESULTS OF MAPPING

Detailed mapping at 1:500 scale was completed over the newly established grid at the entire western shear zone and an interpretative map composited at 1: 2,000 scale (Figure 4). This latest mapping is in general agreement with the previous work compiled by Placer Exploration Limited at 1:1,000 scale. (Stephenson, J., 1991) although the most important breccia unit was able to be sub-divided and mapped as three different units: - massive quartz breccia (Mqbx), breccia caprock (Obc) and sedimentary breccia (Sbx). The breccia caprock (Obc) which consists of angular quartz clasts with a haematite stained clayey matrix is the product of weathering and recementing of the scree material derived from the massive quartz breccia (Mqbx). An area of

abundant float of (Obc) and/or (Mqbx) may indicate the presence of the massive quartz breccia in the vicinity. The sedimentary breccia (Sbx) which is characterised by sediment clasts within a silica matrix occurs together with the quartz pebble conglomerates. It extends along the contact with the Antrim basalts on the western side of the prospect area and probably originated as beds or lenses within the basal conglomerates of the Kombolgie Formation. Mapping has shown the conglomerate unit which straddles the western contact between the basalts and sediments to extend further to the south near the Main Zone area. Massive quartz breccia and silicification is not present further north of 10,000N, although the contact between the sediments and mafic volcanics can still be traced along the surface. Quartz veining and abundant massive black specular haematite was observed further north of the mapped area. This quartz veining was not identical with the (Mqbx/Mq) from the western shear zone. The western shear zone which has a southerly plunging structure, was also unable to be traced further south beneath the cover of black soil/ Antrim basalt within the area. Additional suboutcrops of Maud Dolerite have been mapped along the south-eastern edge of the area. Thin agglomerates (Vag) interbedded with the mafic tuffs outcrop along the creek in the north east around 10,100N.

The mapping also outlined the distribution of regolith units such as black soils, residual soils, silcrete, calcrete, calcareous soils, lateritic (hematite and maghemite) gravels and float. Black soils, which are generally developed over relatively low lying areas and drainage depressions, occur mainly over the Antrim basalts at the south-western edge of the area and they also occur as "sheet wash" over the mafic volcanics at the north east corner of the prospect area. A pedogenic carbonate horizon overprints the sub-surface layer within the black soils and was also found to be well developed in the creek beds. Calcrete is abundant around the main zone area and is scattered within the black soils. It also occurs as joint infills on basalt outcrops in the creeks. Silcrete is present as well rounded cobbles and is widely dispersed amongst the black soils and within the main zone area. Silcrete is believed to have been transported over long distances and probably represents remnants of the overlying sediments or granites further north and east. Red-brown or purple-brown soils can be found on the mafic volcanics of the Tollis Formation and brown to yellow-brown soils are developed over the sediments.

7.1 PREVIOUS INVESTIGATIONS

CSR Minerals Australia explored the Maud Creek Goldfield during the period from 1985 to 1986. A quartz -haematite lode identified by CSR west of the main Maud Creek Goldfield was targeted for further investigation by Placer Exploration Limited during 1988. The lode is referred to as the Western Shear Zone and consists of three zones: the main zone; the central zone; and the north zone (Stephenson, 1992). During 1990 Placer established a new grid and detailed geological mapping at 1: 1000 scale was completed over the entire Western Shear Zone grid and an interpretative

map composited at 1:5000 scale. Rock chips and -40# soil samples were collected over the entire gridded area except for the alluvial black soils. Diamond and RC drilling were also carried out to delineate the mineralized ore body.

7.2 GRIDDING

A newly revised grid was established on a 50m x 50m basis and surveying / pegging was under taken by GHD Surveys P/L in July 1996 covering an area from 8550N to 10300N and from 18900E to 19600E local grid. The local grid was established on an orientation of 004° magnetic north.

7.3 MAPPING AND ROCK CHIP SAMPLING

Detailed mapping at 1:500 scale was completed over the newly established grid over the entire western shear zone and an interpretative map composited at 1: 2,000 scale. The mapping is in general agreement with the previous work compiled by Placer Exploration Limited at 1:1,000 scale. (Stephenson, J., 1991) A total of (11) rock chip samples were collected from the area in which altered rock suboutcrops were exposed. No anomalous assay results were detected, assay results are included in Appendix I.

7.4 MINERALISATION

Gold mineralisation within the western shear zone occurs along the contact between a relatively ductile sediment package and more competent package of mafic volcanics. Mineralisation in the Main Zone Deposit is hosted by pyritic quartz veins with zones of multiple re-veining and intense silicification and brecciation with haematite staining within the matrix. Massive quartz breccia with haematite staining (Mqbx) occurs along the sediment/ volcanic contact and extents further north up to 9950N within the prospect. The volcanic/ sediment contact continues further north of 10000N but outcrops of massive quartz breccia are absent. Suboutcrops and float of massive quartz breccia (Mqbx) also occur east of the main zone between 9100N and 9350N which indicates the second parallel zone of silicification with gold mineralisation. Cobble to pebble size float of breccia caprock (Obc) which has characteristic angular quartz clasts within a haematite matrix occurs along the outcrops of (Mqbx) within the vicinity of the Main and Central Zone area.

7.5 STRUCTURE

The rocks in the Katherine-El Sherana Group have been subjected to normal faulting in a north west-south east direction. Many faults are quartz filled or have been replaced by doleritic dykes. The majority of faults that cut the Kombolgie Formation have a north-easterly trend and exibit horizontal displacements of up to 2.5km (Mulder and Whitehead, 1988).

Two trends were identified associated with the massive quartz breccia (Mqbx) suboutcrops along the contact between the sediments/mafic volcanics. One is sub parallel with the local grid and the other is 355° - 360°. The western shear zone may have a sinistral sense of movement along the contact zone. Tensional openings with silicification and brecciation may have occured, introducing wide zones of mineralisation along the western shear zone and associated splays.

8.0 CONCLUSIONS

The detailed geological map is in a digital data format and can be used in conjunction with GIS and other relevant software. It will be useful for future planning of exploration and sterilisation drilling programs, proposed open cut mining and infrastructure, environmental studies, hydrogeology and geotechnical studies. The results of the mapping exercise have been able to define the major lithologic boundaries and massive quartz breccia veins as well as discrete and subtle features of the western shear zone more accurately. It has also resulted in a better understanding of the formation and general distribution of the regolith associated within the area. Massive quartz breccia and silicification is not present further north of 10,000N although the contact between the sediments and mafic volcanics can still be traced along the surface. Quartz veining and abundant massive black specular haematite was observed further north of the mapped area. This quartz veining was not identical with the (Mqbx/Mq) from the Western Shear Zone. The Western Shear Zone which is a southerly plunging structure was also unable to be traced further south under the black soil/ Antrim basalt cover. However patches of calcrete float within the vicinity of the main shear zone and calcareous soil horizons along the creek bed may indicate the presence of alteration associated with the mineralisation. These patches of calcrete can still be trace further south along the bottom of the mapped area and might indicate the continuation of the shear zone towards the south under the basalt cover.

APPENDIX 1

KALMET RESOURCES NL

Attention: MR I MORRISON
YourOrder: 1032
SampleType:ROCK
Project:

Page-no: 1
ALICE SPRINGS
Batch-no: 929
Sub-batch:2
No-samples:11
Received: 26/07/96
Checked: 30/07/96

Element Unit Method	Au ppm FM209	Au FM209 ppm CHECKS	As ppm G003
B24222	<0.01		<20
B24223	<0.01		<20
B24224	0.01		<20
B24225	<0.01		<20
B24226	0.04		20
B24227	<0.01		40
B24228	<0.01		70
B24229	<0.01		60
B24230	<0.01	<0.01	110
B24231	<0.01		<20
B24232	<0.01		<20

B24222 10 080N, 9675E. outcrop of slight weathered, chl altered Ttm in the creek bed. mg, mod fol, gn gy, blocky and sheared.

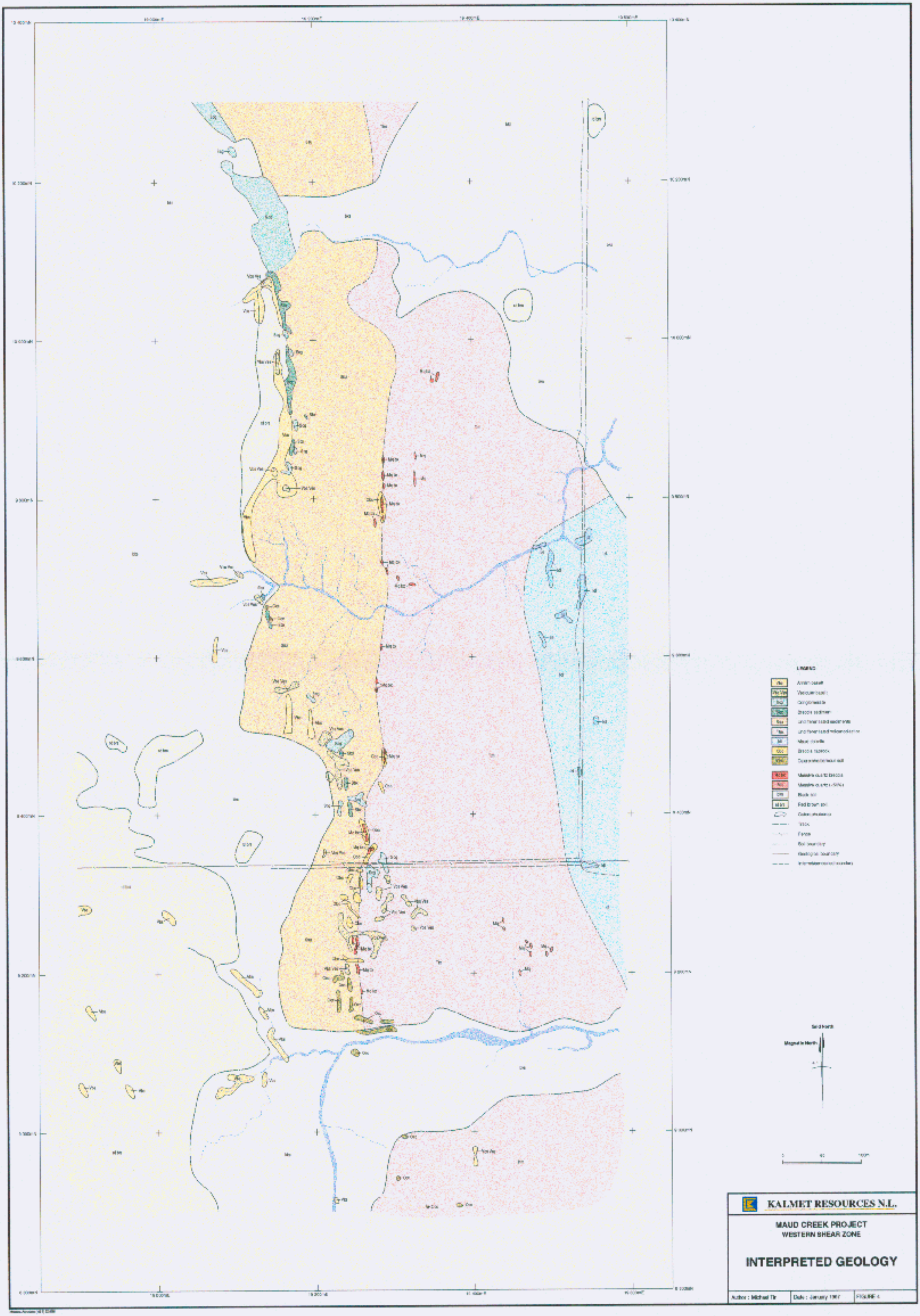
B24223 10 080N, 9675E: agglomeritic outcrop within the creek bed with well-rounded clasts.

B24224 10275N, 9525E: pu rd hi sil mgr foliated Ttm float

B24225 10180N, 9325E: massive floats of pu rd, sil, blocky Ttm, & sq veinlets. Mgr mod fol

B24226 9900N, 19575E: sil, hi altd, hem rich pu rd, O/C mgr Ttm
B24227 19570N, 9810E: pu rd, weathered, hi sil, he rich Ttm mgr
B24228 10 100N, 9150E: conglomerate sample. Float to o/c
B24229 10125N, 9160E: conglomerate - to float
B24230 10140N, 9180E: conglomerate float rubble
B24231 10025N, 19620E: mg mod fol, chl carb altd Ttm on the creek bank
B24232 9890N, 19560E: mgr, mod-wk fol, gy gn, weathered Ttm. O/C

Limit of Detection	0.01	0.01	20


LEGEND
KALMET RESOURCES N.L.
MAUD CREEK PROJECT
WESTERN SHEAR ZONE
INTERPRETED GEOLOGY

INTERDEX

0 20 40 60
Scale 1:1000

KALMET RESOURCES N L

MAUD CREEK GOLD PROJECT

DRILL HOLE COLLAR LOCATION PLAN

GEO:	SCALE 1:1000	REPORT:
DRAWN: FEB 1997	DATE: 20-01-1997	PLAN:

NORTH

2641
LTO 83/128A

GORGE ROAD

TO KATHERINE TOWNSHIP

AGD '84
E = 223301.59
N = 8404938.96

3629
S. 89/151 A TO L

3119
LTO 83/87B

PROPOSED LEASE AREA
AREA = APPROX. 682 ha

SEE ENLARGEMENT

AGD '84
E = 225972.41
N = 8402157.15

AGD '84
E = 223286.97
N = 8400990.53

AGD '84
E = 225982.06
N = 8400978.03

3311
LTO 86/99

NT PORTION 4192

TOTAL AREA (INCLUDING PROPOSED LEASE) = 6738 ha

3799
S.89/376

NOTES – 1. Boundary dimensions of NT Portion 4192 are shown on survey plan LTO 92/72.
2. Co-ordinate information is based on the Australian Geodetic Datum 1984.
3. Co-ordinate information has been calculated based on information supplied from previous survey fieldwork by others.
4. Lease boundary lines are to be confirmed at a future date and are not necessarily straight lines between the co-ordinated points.
5. Mine Grid and AGD '84 are exclusive of one and other.

SURVEY CONTROL – MINE GRID

STATION	EASTING	NORTHING	REDUCED LEVEL
2	19299.395	9498.803	131.004
5	19432.844	9659.194	124.974
6	19537.172	9585.211	124.987
7	19538.149	9349.722	126.917
8	19495.421	9192.941	130.297
9	19522.896	9032.828	127.223
10	19396.759	9017.366	128.101
11	19325.62	9212.905	128.436
12	19275.84	9335.677	132.056
13	19306.489	9410.102	131.286

SURVEY CONTROL – AGD '84

STATION	EASTING	NORTHING	REDUCED LEVEL
2	225275.255	8401651.202	131.004
5	225406.348	8401813.525	124.974
6	225511.745	8401741.073	124.987
7	225516.16	8401505.624	126.917
8	225475.726	8401348.235	130.297
9	225505.536	8401188.54	127.223
10	225379.638	8401171.239	128.101
11	225305.652	8401365.717	128.436
12	225254.084	8401487.75	132.056
13	225283.644	8401562.614	131.286

AGD '84
E = 223301.59
N = 8404938.96

EAST 18000 MINE GRID

NORTH 11000 MINE GRID

EAST 19600 MINE GRID

NORTH 10600 MINE GRID

3629
S. 89/151 A TO L

AGD '84
E = 225972.41
N = 8402157.15

AGD '84
E = 223286.97
N = 8400990.53

AGD '84
E = 225982.06
N = 8400978.03

NORTH 8400 MINE GRID

EAST 18000 MINE GRID

EAST 19600 MINE GRID

NORTH 8400 MINE GRID

ENLARGEMENT

NOT TO SCALE

PLAN 1 : 30000
LONG SECTION N/A HORIZ
VERT

DATUM AGD '84.
CONTOUR INTERVAL N/A

SURVEYED BY MPF.
FIELD BOOK 002
LEVEL BOOK N/A

DESIGNED N/A
DRAWN MPF
PASSED

APPROVED
M.P. Forsyth
LICENSED SURVEYOR
DATE 12/2/97

PAVEMENT WIDTH
FORMATION WIDTH
PAVEMENT DEPTH

AMENDMENTS	BY	DATE

AS CONSTRUCTED SURVEY

M.P.FORSYTH & ASSOCIATES
LAND AND ENGINEERING SURVEYORS
PO BOX 1429 KATHERINE N.T. ph (08) 89 722 227

PLAN SHOWING APPROXIMATE LEASE CORNERS AND CONTROL SURVEY DATA AROUND THE PROPOSED MINE SITE – MAUD CREEK STATION
KATHERINE LOCALITY
PREPARED FEBRUARY 1997 FOR KALMET RESOURCES NL.

FILE No. DWG9703B
JOB No. 97003
ESTIMATE No.

SHEET No. 1
No. OF SHEETS 1

PLAN No. 9703B REVISION A

CR97110