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**DEFIANCE MINING NL**  
A.C.N. 009161522

**ANNUAL REPORT FOR THE PERIOD**

**1 AUGUST 1998 TO 31 JULY 1999**

**MICROFILMED**  
FICHE No.015115-

**FOR 24M/93 - MANGANA**

24M/93PTI  
See folio 78

14 SEP 1999  
TASMANIA

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Annual Report for the period 1 August 1998 to 31 July  
1999 for ML 24M/93 - Mangana  
Connemara Gold Mines Pty Ltd; Defiance Mining NL  
Jackson, D.G. ML24M/93

Report No : Def 080D  
Date due : 1 July 1999  
Author : DG Jackson  
Accepted By: AG Keogh  
Signature :  
Copies : Defiance Mining (1)  
: Connemarra Gold Mines (1)  
: Mineral Resources Tasmania (1)

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**LIST OF APPENDICES**

1. **Historical Soil Geochemical Data**

## **1. Summary**

Defiance Mining NL are exploring EL 18/91 at Mangana in Joint Venture with Connemarra Gold Mines Pty Ltd, a wholly owned subsidiary of the Mining Contractor, Barminco Pty Ltd.

The targets are high-grade gold bearing reefs containing more than 50,000 ozs and similar in style to the New Golden Gate reefs in nearby tenement 43M/89.

Since the Joint Venture was signed in September 1998, Defiance has mainly concentrated its field program within 43M/89 near Mathinna, located approximately 20km to the north of 24M/93.

Work completed in 24M/93 during the reporting period has included:

- Entering historical geochemical data from Resolute Samantha Limited into a digital data base and processing the data in a GIS package, at a variety of scales, as both images and dot plans.
- Obtaining regional airborne geophysical data from Mineral Resources Tasmania and having it processed into images by Southern Geoscience Consultants.
- Evaluation of all the available historical data within the tenement and selection of a number of targets for further work.
- Purchasing geological and topographical data in digital form to enhance map production.

## **2. Introduction**

24M/93 "Mangana", of approximately 0.36sq km, is located near the town of Mangana approximately 65 km east of Launceston. The licence, which is now nearing its sixth anniversary, is due for renewal on 1 August 1999.

Connemarra Gold Mines Pty Ltd now holds the tenement, which has been previously held by Alex White and Resolute Samantha Ltd. Defiance Mining NL has signed a joint venture with Connemarra, whereby they can earn a 50% equity in this and other associated tenements, by spending \$1 million on exploration for high-grade gold reefs.

The licence is a mixture of private land on alluvial flats and State Forest in adjacent hilly country. Access is generally excellent with a sealed road to Launceston and strategically placed gravel roads through the tenement.

## **3. Conclusions and Recommendations**

- First pass evaluation drilling should be completed on the Mangana Reef as soon as evaluation drilling in the New Golden Gate area is completed.

#### **4. Geology**

24M/93 lies near the southern end of the 90-km long, north-north-west trending, line of gold deposits that extend from Mangana in the south to Lyndhurst on the north coast.

The gold deposits occur as auriferous quartz reefs, hosted in the Mathinna Beds, a folded sequence of Silurian-Ordovician age sediments. The Mathinna beds are intruded by younger, Devonian-Carboniferous age granites and are in part overlain by Permo-Triassic glacial marine sediments, Jurassic dolerites and Tertiary basalts.

The gold bearing veins are structurally controlled and occur in a range of orientations and forms within zones of shearing and tectonic deformation. Typical vein features are:

Width	0.1-1.0m	up to 10m
Length	10-100m	up to 350m
Depth	<100m	up to 580m
Grade	15-30g/t	cut off 10g/t
Strike	variable	NW to NE dominant
Dip	typically steep	70-80°
Mineralogy	quartz, arsenopyrite, pyrite	minor galena, chalcopyrite, sphalerite

This overall geological setting is very similar to the high grade, quartz vein style mineralisation in the slate belts of central and eastern Victoria which have historical production of approximately 80Mozs.

#### **5. Summary of Previous Exploration**

The first gold discovery in Tasmania was made at Mangana in 1852. As exploration extended to the north, further discoveries were made in the Lyndhurst-Mangana belt (including additional discoveries in Mangana EL 18/91) and at Lisle, Lefroy and Beaconsfield.

In this first phase of mining, production peaked sometime prior to 1884. In the Lyndhurst-Mangana zone, activity was concentrated on the southern section between Mangana and Alberton within a 70km by 5km belt of deformed sediments.

In about 1887, after the first phase of mining had largely been completed, a Mr A Loane discovered a reef (Loane's Reef) in the abandoned adit of the Golden Gate mine. Sinking of a shaft to evaluate this reef discovered an additional reef (Main Reef). These two reefs were subsequently mined down to about 280m depth and probably each produced somewhere between 50,000 and 100,000 ozs.

Further exploration at depth below, and adjacent to, these reefs discovered a further two reefs (East and West Reefs) which were mined from 250-470m depth. The New Golden Gate Shaft was subsequently extended to 549m.

The bulk of the 265,000 ozs of gold from the New Golden Gate mine was produced in the years 1888 to 1904. Intermittent production occurred through to 1929 when the workings were finally abandoned. New Golden Gate production represents approximately 16% of Tasmania's historical production.

Early mills were generally simple stamp and gravity mills, which recovered most of the coarse free gold, but gold associated with sulphides was lost. The New Golden Gate mill experimented with cyanide extraction of their sulphides with limited success.

An important feature of the area is that many of the quartz veins never outcropped and were only discovered during underground development aimed at other veins.

Modern day exploration activity has seen a number of companies hold tenure over the Mangana area, however, very few have carried out drilling programs in the area of the old mines. Recent drilling programs have largely concentrated in the Mathinna area.

The Mangana Reef remains effectively untested by drilling.

A more detailed summary of historical exploration is available in MacDonald (1996)

## **6. Summary of Work Completed**

### **6.1 Soil Geochemical Data**

Resolute Samantha Ltd collected a number of soil and auger samples over 24M/93 while they held tenure. These samples, which were collected at 100m by 50m spacing with 100m by 25m infill in anomalous zones, cover most of the tenement. They were analysed at Minlabs in Perth WA for Au by fire assay (AAS finish) with a 50g charge and a detection limit of 1ppb and for As by perchloric acid digest and AAS with a 10ppm detection limit.

After ascertaining that Resolute did not have the data in digital form Defiance arranged to have it entered into a digital data base (Appendix 1 - Excel 97 spreadsheet). In the Defiance data base samples below detection limits are entered as half of the detection limit to facilitate statistical processing.

Plots of sample locations and both elements at a variety of scales and in a number of formats were then possible using the Map Info GIS package. Attached Plan Nos TAS052-054 illustrate the sample locations and elements as dot plans at 1:10000 scale.

### **6.2 Airborne Data Processing**

Defiance purchased the available airborne magnetic and radiometric data, comprising the Fingal (1993), Mathinna (1990) and Alberton-Mangana (1989) surveys from Mineral Resources Tasmania.

These data were processed by Southern Geoscience consultants to produce a number of images. The Total Magnetic Intensity image is presented here at 1:25000 scale (Plan No TAS051).

The structural features that control the Au mineralisation are not readily apparent on the magnetic image. A linear magnetic high running through the southern portion of the tenement probably reflects a magnetic paleochannel deposit.

### **6.3 Prospect Evaluation**

Prior to Defiance Mining NL and Connemarra Gold Pty Ltd forming the Mathinna Joint Venture, Connemarra arranged the production of a report on all the potential gold prospects in the area (Colville 1998). One of these prospects, on which further work was recommended, lies within the Mangana 24M/93 and is summarised below.

#### **6.3.1 Mangana Reef**

The 300 metre strike extent of the Mangana Reef has not been effectively tested by drilling. This is likely due to the steepness of the topography, along most of the line of lode. The most obvious drill target is the depth extent of a steeply plunging shoot in the middle of the reef, which had historical grades up to 30ozs/tonne in the weathered zone. Field examination indicates that reasonable access to this target can be achieved from the top of the ridge and it could be tested by a number of holes. Drill testing of the reef around the old Sovereign Shaft should also be possible from the top of the ridge.

### **7. Proposed Future Program**

In the period June-July 1999 Defiance plans to drill approximately 3090m in 41 holes in the vicinity of the New Golden Gate mine. The majority of this drilling will be within 43M/89.

Defiance would then expect to complete a second larger program in the Mathinna area in late 1999. This program would include additional drilling in the vicinity of New Golden Gate but would also involve drilling of a number of regional targets in the Mathinna/Mangana area. These targets are likely to include the Mangana Reef where approximately four holes are planned for a total of 440m of drilling. This is likely to be a combination of both RC and core drilling.

### **8. References**

- Ashley, J 1995                      Resolute Samantha Group Northeast Tasmania "Mathinna Project" Interpretation of Aeromagnetic Data.

Colville, R. 1998. Connemarra Gold Mines Pty Ltd, Mathinna Gold Project, Annual Report on Exploration Licence 3/97 for the Twelve months ending 19 September 1998.

MacDonald, G. 1996. Resolute Samantha Limited, Annual Report 1995 EL 17/91 "Mathinna".

**9. Expenditure Statement – 24M/93****For the period 1 October 1998 to 30 June 1999**

<b>Item</b>	<b>\$</b>
MRT/ Legal/NNTT Costs	1815.00
Literature Research	328.61
Freight	55.00
Geophysics - Aeromags	75.00
Computing & CAD Services	892.83
Consultant - Geophysics	765.50
Salaries & Wages	6523.70
Vehicles	319.63
Travel & Accommodation	4170.96
Consumables	441.95
Overheads at 10%	1538.82
<b>Total</b>	<b>16927.00</b>

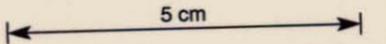
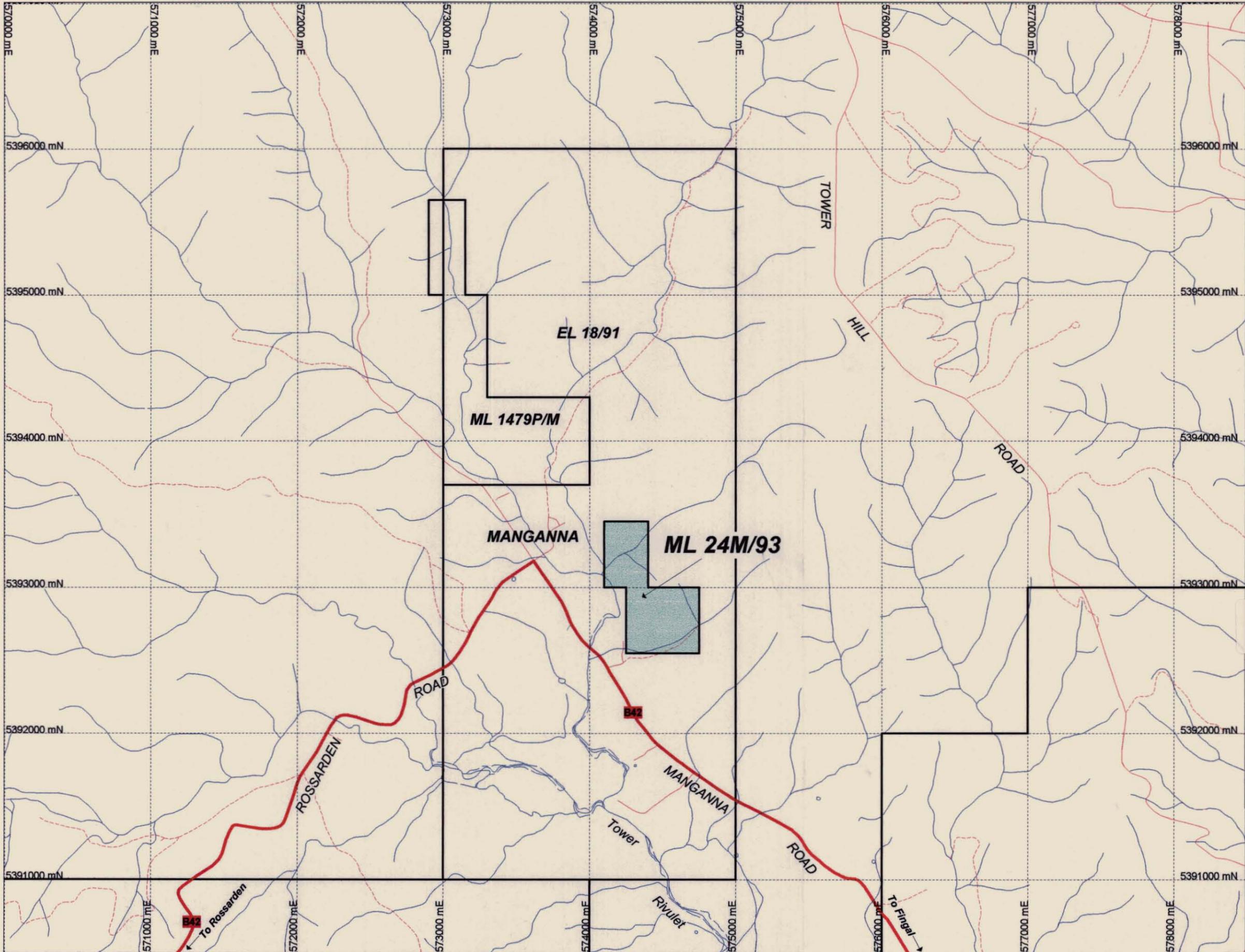
**Notes:**

1. All expenditure is attributed to Defiance Mining NL in the period 1.10.98 to 30.6.99.

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ML24M/93  
Jackson, D.G.



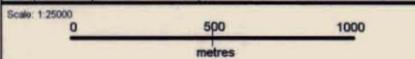
-  Tenement 24M/93
-  Primary Surfaced Roads
-  Secondary Roads
-  Unsurfaced Roads and Tracks
-  River

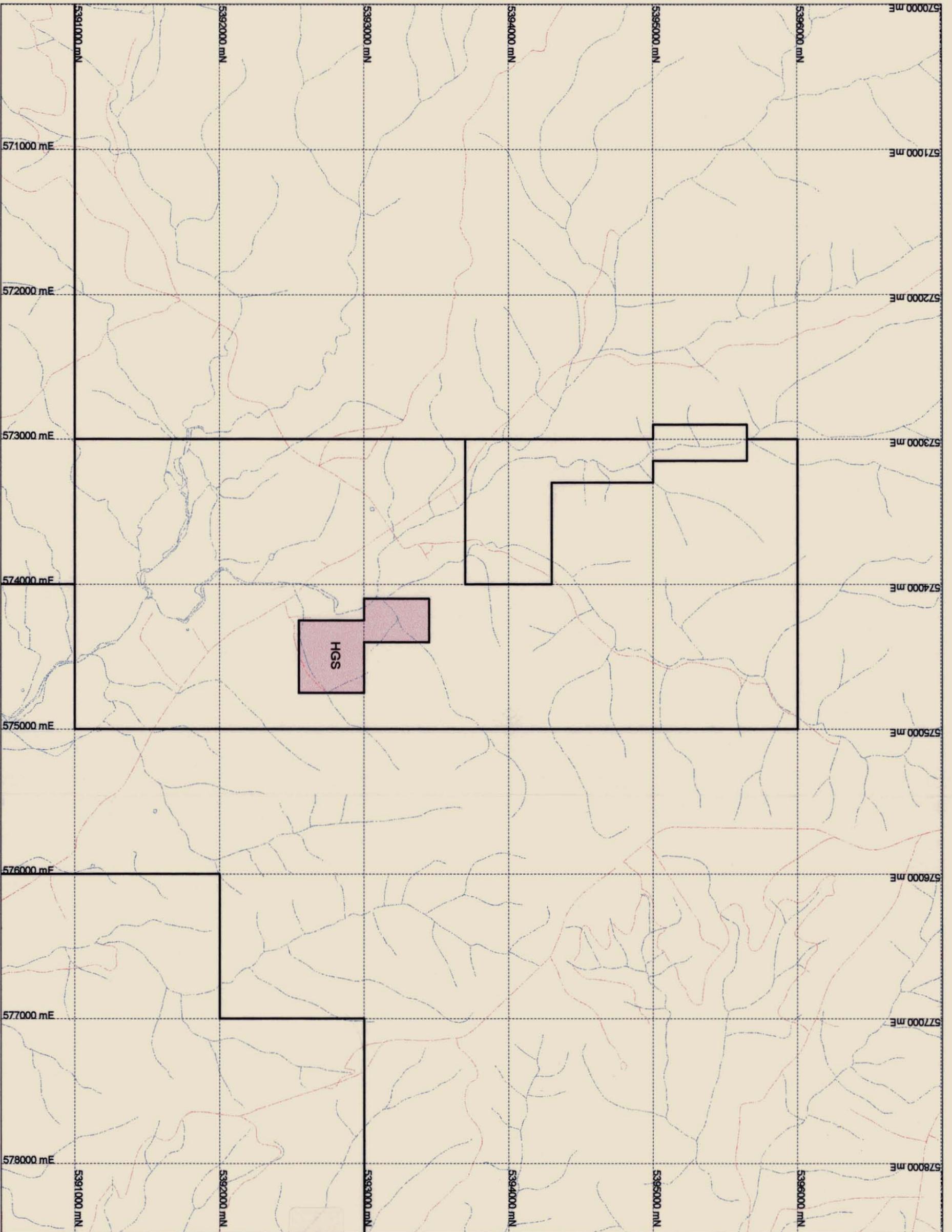
**DEFIANCE MINING NL**

Mathinna Joint Venture  
Tenement Location Plan  
24M/93



Date: 19/5/1999	Geologist: DG Jackson
Author: TC Downs	Plan No: TAS050
Projection: AMG Zone 55 (AGD 84)	





Scale: 1:25000

**DEFIANCE MINING NL**  
Maitima Joint Venture  
Exploration Activity Map  
24M/93

Date: 18/07/1999  
Author: TC Downs  
Printer: No. 145851

Geologist: D.G. Jackson

Airborne Geophysical Survey

Airborne Geophysical Survey and  
Historical Soil Geochemistry Survey

Roads

River

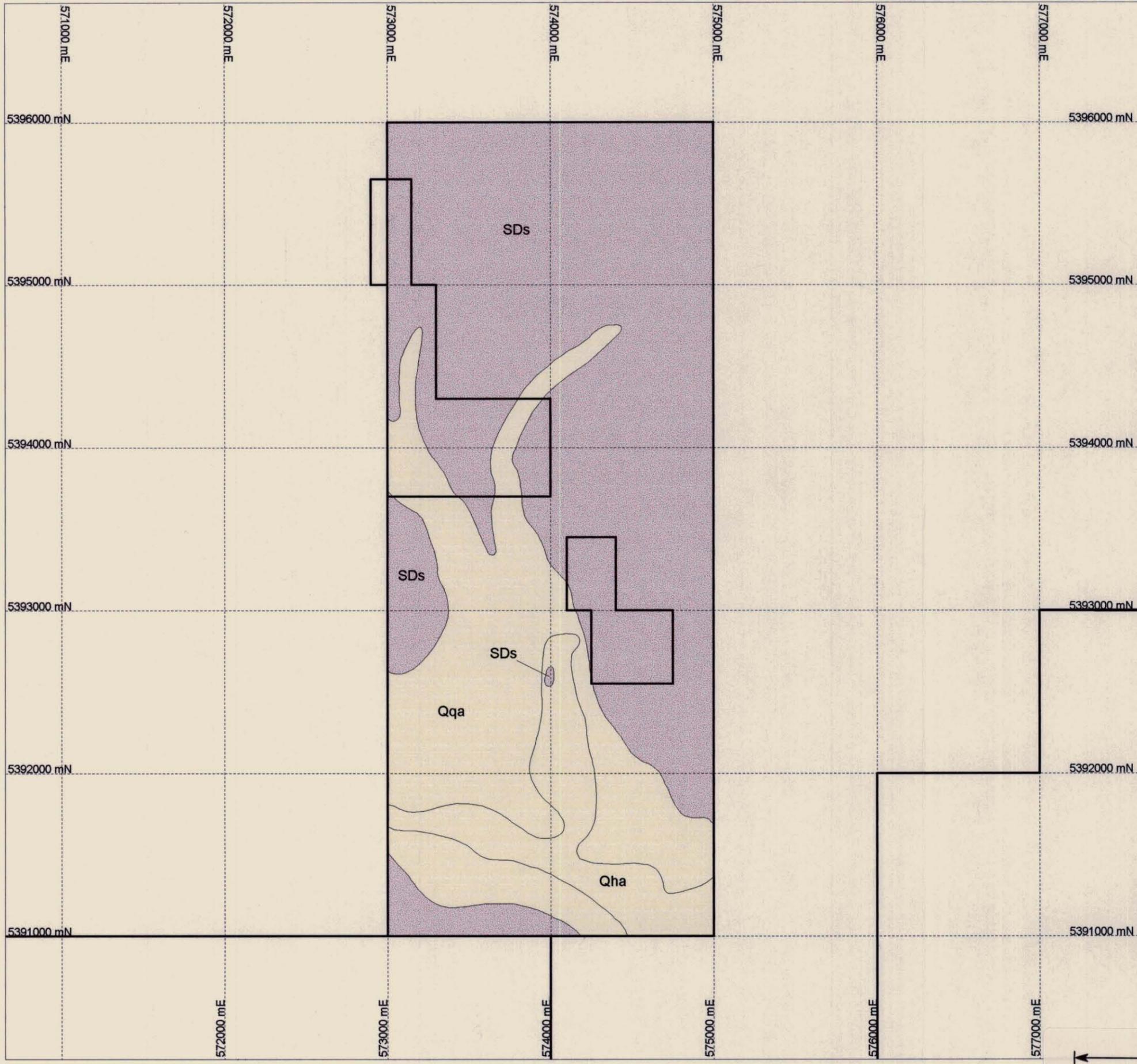
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Jackson, D.G. ML24M/93

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497012



**QUATERNARY**

- Qhm Mine tailings and man disturbed ground
- Qha Stream alluvium, swamp and marsh deposits
- Qqa Older alluvium of river terraces
- Quc Colluvium - derived from Mathinna Group
- Qdt Talus consisting of dolerite and subordinate Upper Permian rocks
- Qda Dolerite block fields probably underlain by clay from weathered dolerite, with interstitial fines
- Qdt Toppled dolerite masses (>100m), coherent or partly disaggregated, produced by cliff failure

**TERTIARY**

- Conglomerate with rounded clasts of Mathinna Group and very rare weathered dolerite, often partly cemented by iron oxides

**MESOZOIC**

**TRIASSIC**

- Rt Dominantly lithic sandstone with minor mudstone and coal
- Rtm Quartz rich lithic sandstone and minor quartz sandstone (Rt), with mudstone and carbonaceous mudstone (Rtm)
- Rsq Cross bedded quartz sandstone
- Rm Fine grained, slightly felspathic quartz sandstone, micaceous shale and minor carbonaceous mudstone
- Rpg Poorly sorted grey mudstone, siltstone and rare sandstone, unfossiliferous except for rare forams. Bed of pebbly sandstone indicated (Rmg)
- Rpb Thick-bedded usually poorly sorted, pebbly sandstone passing upward to interbedded sandstone, siltstone and mudstone. Marine fossils abundant in places
- Rpl Dominantly bioclastic limestone

**PERMIAN**

- Mm Marine fossiliferous mudstone siltstone and minor sandstone and bioclastic limestone
- Mpb Fine grained pebbly sandstone with phosphatic nodules. Marine fossils present in some areas
- Mpa Mudstone siltstone and poorly sorted sandstone. Uncommon marine fossils
- Mpw Dominantly well sorted quartz sandstone, usually cross-bedded and commonly with interbedded inter-laminated carbonaceous shale lesser conglomerate and rare coal
- Mpb Poorly sorted pebbly mudstone, sandstone and minor conglomerate, marine fossils present in places (Pb), dominantly thick-bedded to massive, medium to coarse-grained quartz sandstone and minor conglomerate (Pbs)

**EARLY DEVONIAN (?) - SILURIAN - ORDOVICIAN (?)**

- SDu Quartzwacke turbidite sequence of interbedded sandstone siltstone and mudstone (SDu), sequences with significant mudstone indicated (SDup), dominantly sandstone and siltstone (SDs), some quartzite units indicated (SDsq)
- SDm Dominantly mudstone and siltstone (SDm)
- SDsp Metapsammite (SDsm, SDspm), metaquartzite (SDsqm)

**IGNEOUS ROCKS**

**TERTIARY**

- Tba Basaltite

**JURASSIC**

- Jd Dolerite - grain size <0.2mm (v). Areas with later very fine-grained dykes shown (Jd)

**DEVONIAN**

- Dap Aplite

**MAJOR GRANITIC INTRUSIONS**

**SCOTTSDALE BATHOLITH**

- Scm Generally equigranular medium to coarse grained, leucocratic biotite alkali felspar granite/adamellite with pale pink felspar
- Scp Sparingly to moderately porphyritic (quartz and K felspar), fine to coarse grained biotite granite
- Scoc Equigranular coarse to very coarse grained biotite +/- hornblende adamellite / granodiorite with pink to white felspar

**BLUE TIER BATHOLOITH**

- Btq Medium grained, equigranular to rarely porphyritic (KF), biotite-hornblende granodiorite. Locally with a strong grain foliation. Variable but usually strongly magnetic (Dtgs). Weakly magnetic (Dtgv)

**BEN LOMOND GRANITE**

- Blg Fine to coarse grained equigranular to porphyritic (KF) alkali felspar granite

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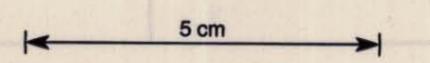
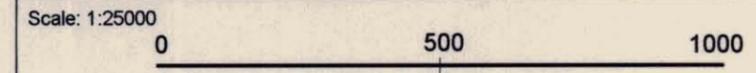
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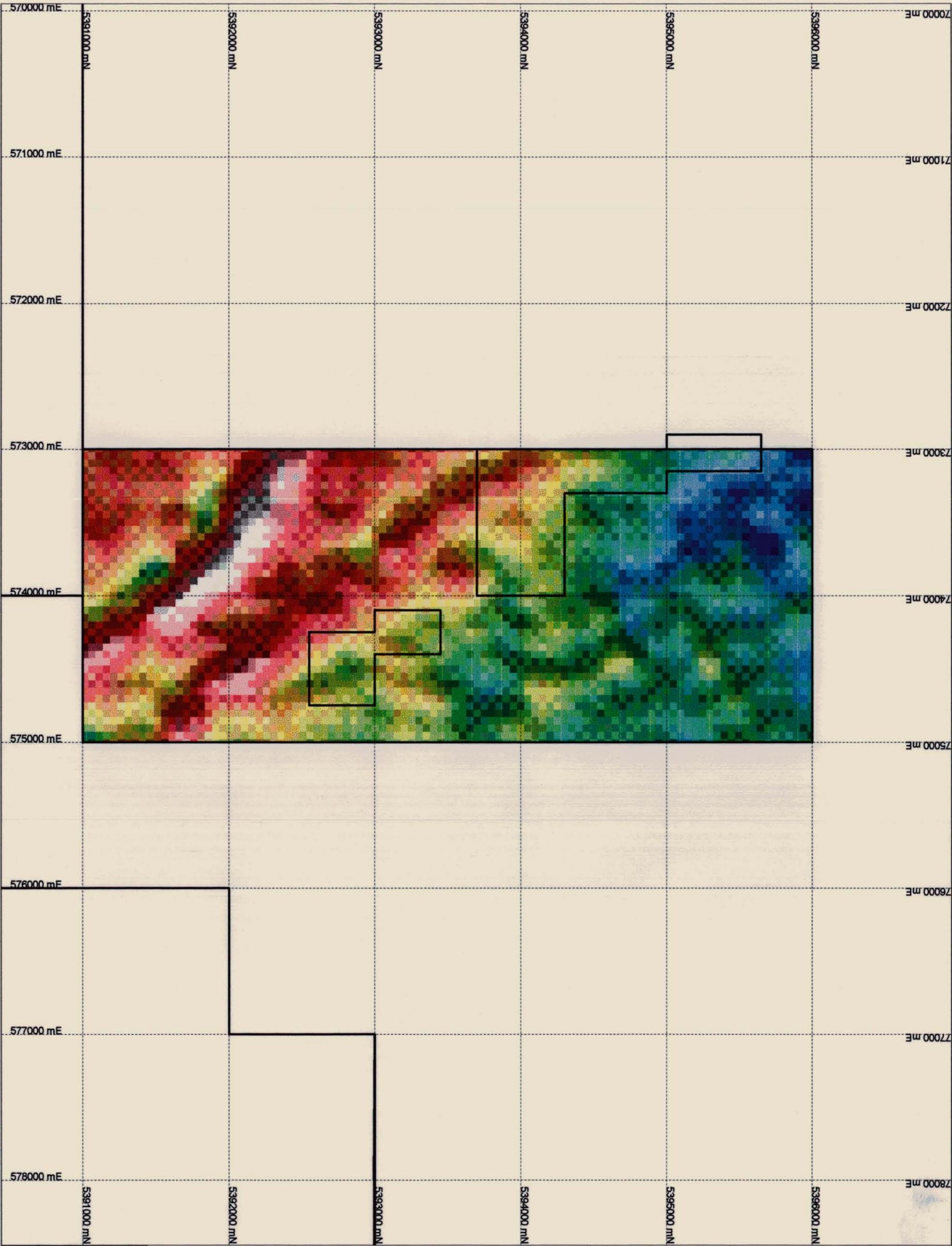
### DEFIANCE MINING NL

#### Mathinna Joint Venture Regional Geology Map 24M/93 and EL 18/91



Date: 19/5/1999	Geologist: DG Jackson
Author: TC Downs	Plan No: TAS052
Projection: AMG Zone 55 (AGD 84)	

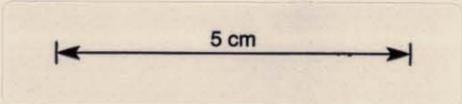




SURVEY SPECIFICATIONS

Contractor : Keron  
 Aircraft : Bell 206  
 Instrumentation : Geometrics G833  
 Survey date : Oct 1993  
 Sample interval : 5 metres  
 Flight Line Spacing : 200 metres  
 Flight Line Direction : 090 - 270 deg  
 Tie Line Spacing : 400 metres  
 Mean Terrain Clearance : 60 metres  
 Navigation : Novatel GPS

Grid Cell Size : 50mE x 50mN



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Mathinna Joint Venture  
 Airborne Geophysical Survey  
 Total Magnetic Intensity Image (TMI)  
 24M/93 and EL1891

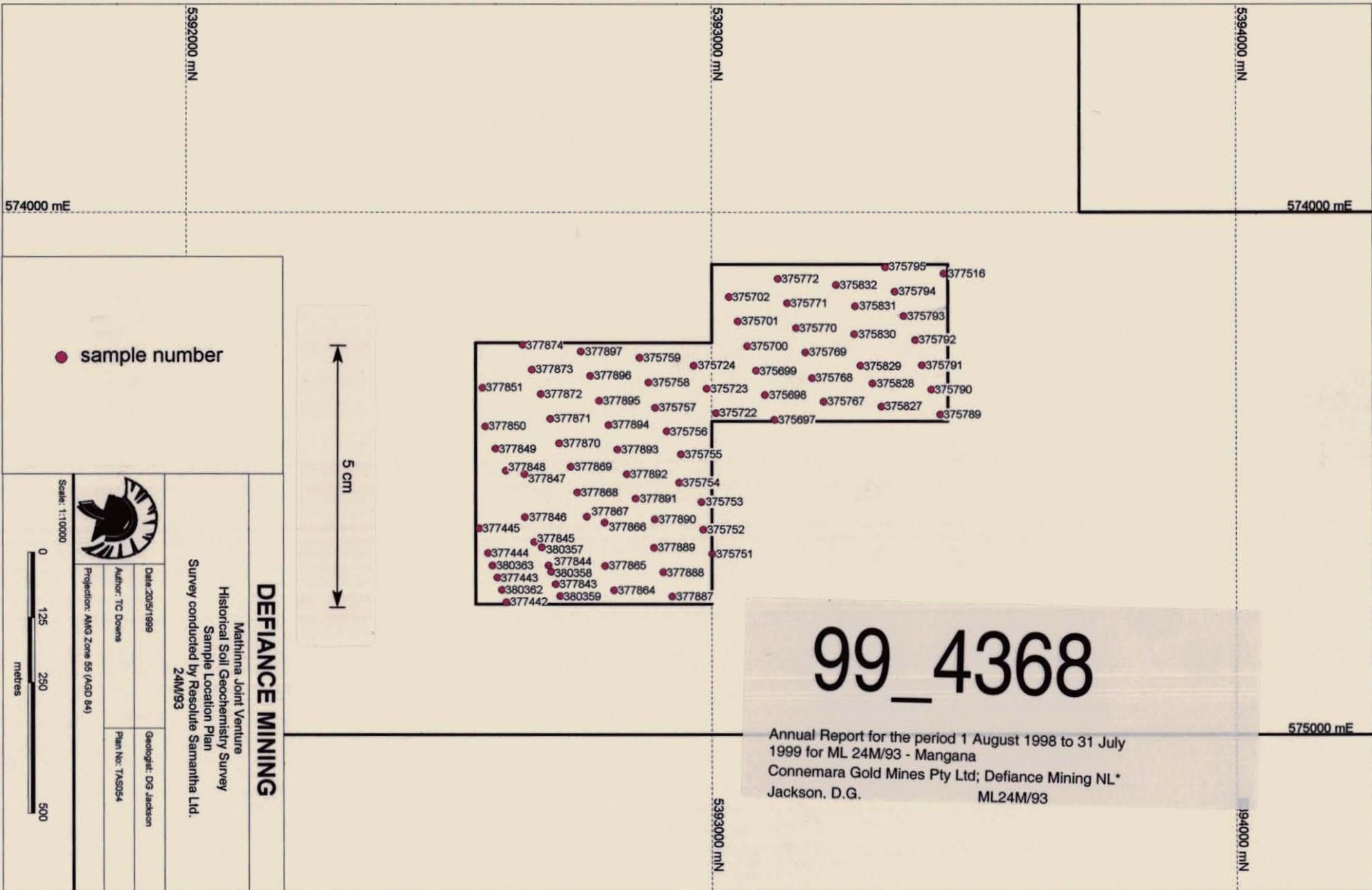
Date: 20/01/99  
 Author: TC Dawes  
 Geologist: DG Jackson  
 Plan No: 745953

Scale: 1:2500  
 0 500 1000 metres



**APPENDIX 1**

**Historical Soil Geochemical Data**



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 Connemara Gold Mines Pty Ltd; Defiance Mining NL\*  
 Jackson, D.G. ML24M/93

**DEFIANCE MINING**

Mathinna Joint Venture  
 Historical Soil Geochemistry Survey  
 Sample Location Plan  
 Survey conducted by Resolute Samantha Ltd.  
 24M/93



Date: 20/5/1999  
 Author: TC Downs  
 Geologist: DG Jackson  
 Plan No: 7AS954  
 Projector: AMG Zone 55 (AGD 84)



497014

5394000 mN

574000 mE

5394000 mN

575000 mE

5393000 mN

5393000 mN



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5 cm

5392000 mN

574000 mE

### Gold (ppb)

- 42 to 750
- 27 to 42
- 17 to 27
- 12 to 17
- 10 to 12
- 6 to 10
- 0 to 6

## DEFIANCE MINING

Mathinna Joint Venture  
 Historical Soil Geochemistry  
 Gold Dot Plan  
 24M/93



Date: 20/5/1999

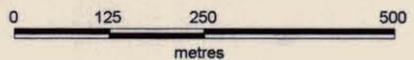
Geologist: DG Jackson

Author: TC Downs

Plan No: TAS055

Projection: AMG Zone 55 (AGD 84)

Scale: 1:10000



# 497015

5394000 mN

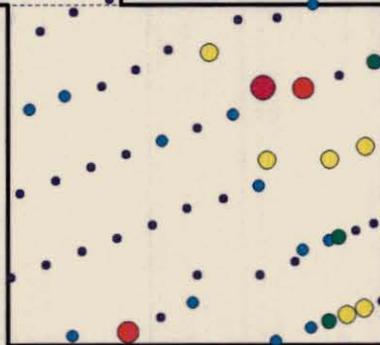
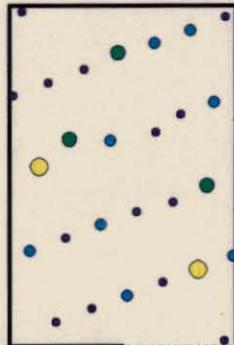
5394000 mN

574000 mE

575000 mE

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ML24M/93  
Jackson, D.G.



5393000 mN

5393000 mN

5 cm

5392000 mN

574000 mE

### Arsenic (ppm)

- 160 to 600
- 110 to 160
- 50 to 110
- 25 to 50
- 10 to 25
- 5 to 10
- 0 to 5

## DEFIANCE MINING

Mathinna Joint Venture  
Historical Soil Geochemistry  
Arsenic Dot Plan  
24M/93



Date: 20/5/1999

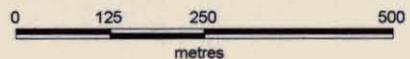
Geologist: DG Jackson

Author: TC Downs

Plan No: TAS056

Projection: AMG Zone 55 (AGD 84)

Scale: 1:10000



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