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Telephone (08) 8963 2399 Facsimile (08) 8963 2377

PO Box 294, Tennant Creek 0861 Northern Territory, Australia

### **ANNUAL REPORT FOR**

MLCs 3, 6-14, 19, 32, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149,

235-238, 343-355, 507, 509-510, 519, 576-577, 584-586, 588, 598, 652, 664-667

AND MCCs 66, 67, 213, 239, 240, 925-944

FOR THE YEAR ENDING 25 FEBRUARY 1999

**NOBLES NOB REPORTING GROUP** 

**PEKO LEASES** 

TENNANT CREEK 1:250,000 MAP SHEET NO SE53-18-2

VOLUME 1 OF 1

**AUTHOR:** 

M HILL

SENIOR EXPLORATION GEOLOGIST

DATE:

**MARCH 1999** 

**AUTHORISED BY:** 

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### **SUMMARY**

REPORT NO: TENNANT CREEK: 99016 ADELAIDE: 23812

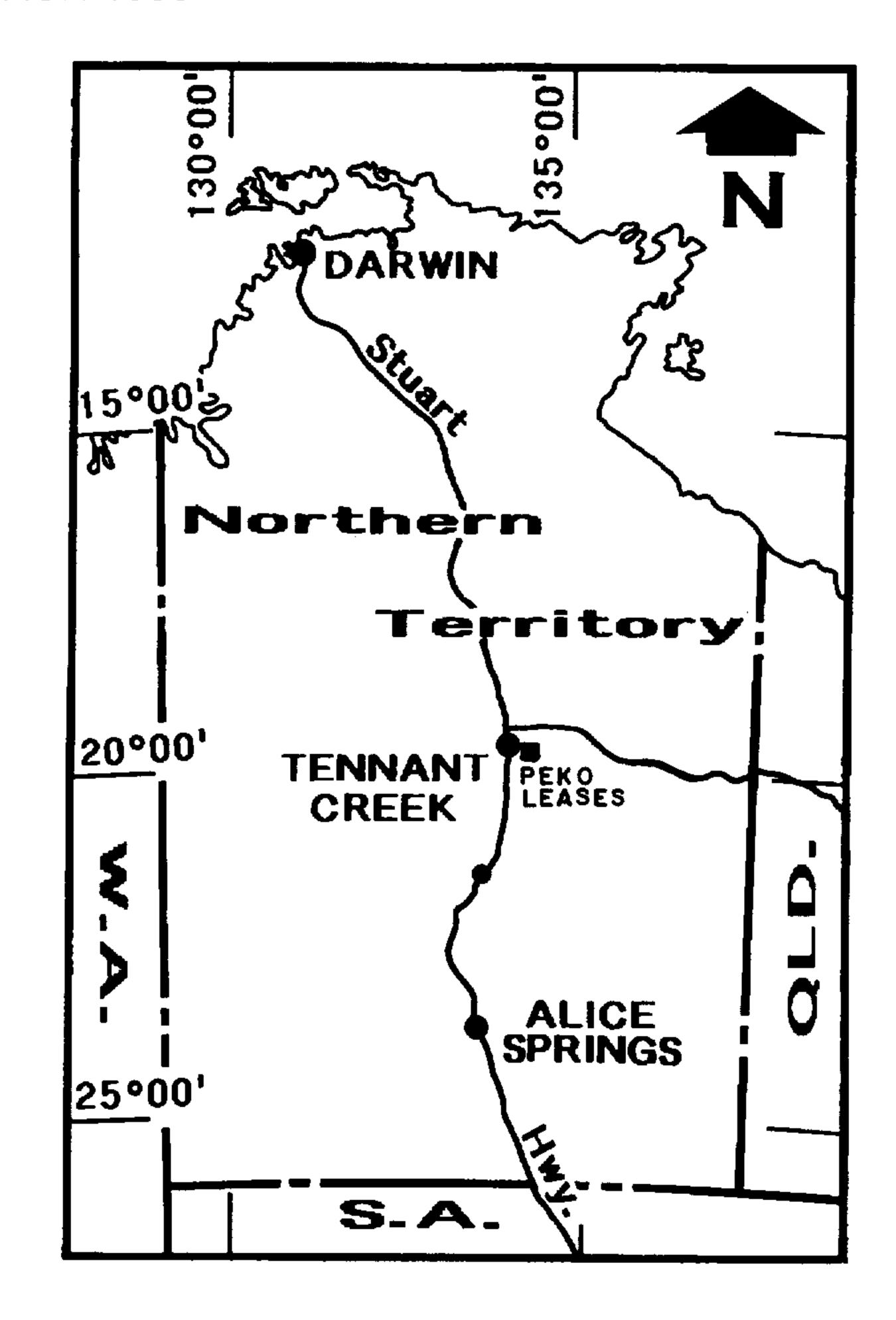
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126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510, 519, 576, 577, 584-586, 588, 598, 652, 664-667 AND MCCs 66, 67, 213, 239, 240, 925-944 FOR THE YEAR ENDING 25 FEBRUARY 1999, NOBLES NOB REPORTING GROUP, PEKO LEASES, TENNANT CREEK 1:250,000

MAP SHEET NO SE53-14, VOLUME 1 OF 1.

AUTHOR: M HILL

DATE: MARCH 1999



The leases and claims are located east of Tennant Creek township. Access is gained via the sealed road to Noble Nob Mine and graded tracks to the Peko, Golden Forty, Kia Ora mines

This report details work undertaken by Normandy Tennant Creek Pty Limited on the Peko Leases Reporting Group (MLCs 3, 6-14, 19, 32, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510, 519, 576, 577, 584-586, 588, 598, 652, 664-667 and MCCs 66, 67, 213, 239, 240, 925) during the period 1 October 1997 to 25 February 1999.

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### 1 CONCLUSIONS & RECOMMENDATIONS

Exploration conducted over the tenements during the period 1 October 1997 to 25 February 1999 has included a high-resolution airborne magnetics survey, the signing of the agreement to access Warrumungu Land Trust areas and ongoing rehabilitation activities.

The exploration planned for next year will include target generation using existing geophysical and geochemical datasets. Detailed structural and alteration mapping will be used to assist in target generation modeling. The magnetic data for pre-existing prospects will re-modelled and compared with previous interpretations and drill data to establish it potential prospectivity. Drill testing will follow for any suitably prospective targets.

#### 2 INTRODUCTION

This report details work undertaken by Normandy Tennant Creek Pty Limited (Normandy) on the Peko Leases Reporting Group (MLCs 3, 6-14, 19, 32, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510, 519, 576, 577, 584-586, 588, 598, 652, 664-667 and MCCs 66, 67, 213, 239, 240, 925) during the period 1 October 1997 to 25 February 1999.

#### 3 LOCATION & ACCESS

The leases and claims are located east of Tennant Creek Township. Access is gained via the sealed road to Noble Nob Mine, and bush tracks to the Peko, Golden Forty, Kia Ora mines (Figure 1).

# 3.1 Peko Leases and Claims sensu stricto (MLCs 3, 6-14, 19, 43-44, 125-126, 128, 507, 509-510, 519, 664-667 and MCCs 213, 239-240)

The area of the Peko tenure can be accessed via the sealed Peko Road leading off Paterson Street, Tennant Creek. The distance to the leases and claims is approximately ten kilometres driving ESE of town.

# 3.2 Golden Forty Claims and Leases (MCCs 66-67 and MLCs 32, 35-37, 53-56, 130-149, 352-355, 576, 577, 584-586 & 598)

The Golden Forty claims and leases are situated approximately fifteen kilometres east of the Tennant Creek town. The tenure covers the inactive Golden Kangaroo and Golden Forty mines. The area can be accessed via a dirt track that extends through the Nobles Nob Mine area towards the east. Alternative access is via a dirt track extending through the Peko mine.

### 3.3 Brolga Leases (MCCs 925-926 and MLCs 348-351)

MCCs 925 to 926 and MLCs 348 to 351, jointly known as the R13 leases by Australian Development Limited (ADL) and later renamed to Brolga, are situated approximately thirteen kilometres ESE of the Tennant Creek town or approximately two and a half kilometres north of the Nobles Nob mine. The leases can be accessed via the sealed Peko Road that passes approximately one kilometre from the SW corner of leases then by utilising bush tracks.

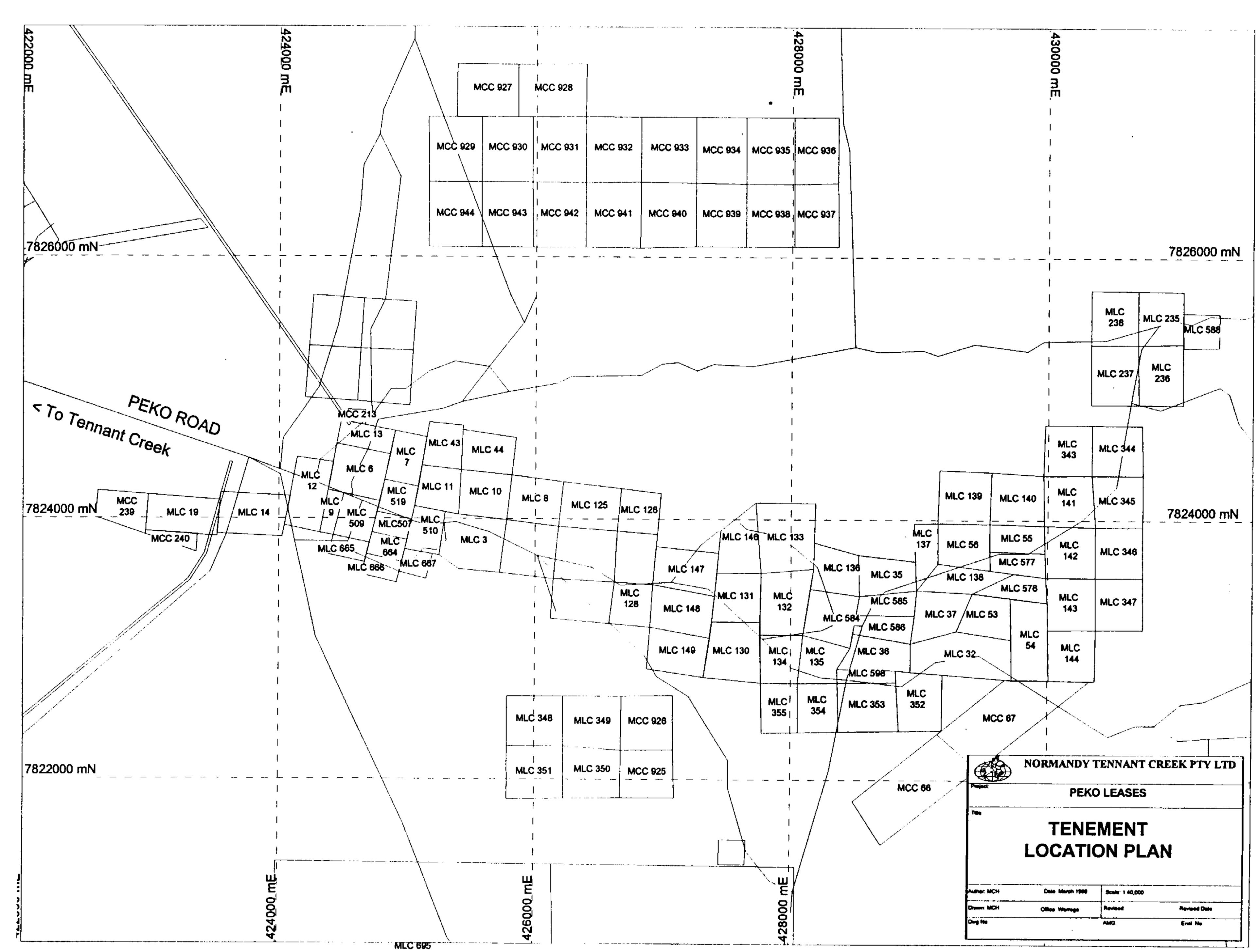


Figure No. 1

## 3.4 Rocky Range Leases (MLCs 343-347)

The Rocky Range leases MLCs 343 – 347 are situated approximately twenty kilometres ESE of the Tennant Creek township. Access can be gained from a network of tracks extending from Peko Road.

# 3.5 Golden Kiwi Leases (MLCs 235-238) and Kia Ora Mine Lease (MLC 588)

The leases are located approximately seventeen kilometres ESE of the Tennant Creek town. Access can be gained from the gravel road extending through the Peko Mine area off Peko Road. The road leads NE of the Golden Forty and Golden Kangaroo mines to Kia Ora that lies east of MLC 588.

## 3.6 Shag-Gull Claims (MCCs 927-944)

The Shag or Gull tenure, MCC 927-944, is situated approximately twelve kilometres east of the Tennant Creek town. Access is via tracks from behind the Peko Mine for three kilometres.

The climate of the Tennant Creek district is mild and dry through most of the autumn to spring months. The summer period is hot with seasonal heavy rainfall between January and March making access very difficult during these periods.

#### 4 TENURE

The Peko Leases Reporting Group is formed by the following leases and claims MLCs 3, 6-14, 19, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510, 519, 576, 577, 584-586, 588, 598, 652, 664-667 and MCCs 66, 67, 213, 239, 240, 925. The leases and claims cover 1,483 ha (figure 1).

MCCs 925-926 and MLCs 348-351 are known as Brolga Prospect (or R13). MCCs 66, 67 and MLCs 35-37, 53-56, 130-149, 352-355, 576, 577, 584-586 & 598 are known as Golden Forty and Golden Kangaroo. MLCs 343-347 are known as Rocky Range (or R20). MLCs 235-238 & 588 are known as Kia Ora. MLC 652 is the Juno Mine access road. MCCs 927-944 are known as Shag & Gull Prospects. The remaining leases are the Peko Leases sensu stricto.

A tenure summary for these leases and claims is presented in Appendix 1.

#### 5 REGIONAL GEOLOGY

The geological understanding of the Tennant Creek Inlier has been recently advanced by detailed geological mapping over the Tennant Creek and Flynn 1:100,000 map sheets (Donnellan et al, 1995), precision dating of stratigraphic components of the region (Compston, 1995) and regional geophysical interpretations.

The oldest exposed Proterozoic lithofacies in the Tennant Creek Inlier are the metasedimentary rocks of the Warramunga Formation, which are the hosts to the ironstone Au-Cu-Bi mineralisation of the Tennant Creek Goldfield. These Palaeoproterozoic metasediments were deposited approximately 1860 Ma. Deformation and intrusion of the Warramunga Formation by volumous porphyries and granitoids occurred during the Barramundi Orogeny (1858 Ma to 1845 Ma).

Following deformation and uplift the volcanics and volcaniclastics of the Flynn Sub-Group were erupted (1845 Ma to 1827 Ma), with intrusion of porphyries and minor granitoids into the Warramunga Formation. An additional deformation event preceded the deposition of the Hatches Creek Group/Tomkinson Creek Sub-Group (1820 Ma to 1785 Ma) and the intrusion of late-stage granitoids and porphyries into both the Warramunga Formation and Flynn Sub-Group at 1650-1712 Ma.

#### 6 LOCAL GEOLOGY

# 6.1 Peko Leases and Claims sensu stricto (MLCs 3, 6-14, 19, 43, 44, 125, 126, 128, 507, 509, 510, 519, 664-667 and MCCs 213, 239, 240)

The Peko Mine is a magnetite and haematite ironstone body hosted within Warramunga Formation sediments. The ironstone body is oriented in an E-W direction with a dip of approximately 70° towards the north. The ironstone body is approximately 100 metres long, varying in width from 10 to 30 metres. The long axis of the ironstone is approximately parallel to a foliation developed from later small folds. Surrounding this main orebody were 13 smaller satellite pods (in Ward, 1997).

# 6.2 Golden Forty Claims and Leases (MCCs 66, 67 and MLCs 35-37, 53-56, 130-149, 352-355, 576, 577, 584-586 & 598)

Warramunga Formation sediments dominate the Golden Forty tenure with a number of porphyries, quartz veins and ironstone outcrops. Shearing within the area has a typical strike of between 80° and 100°. A number of small E-W fold hinges are noted within the Warramunga sediments. Outcropping talcose schist with anomalous Cu was the initial attraction to the area (Ward, 1997).

## 6.3 Brolga Leases (MCCs 925, 926 and MLCs 348-351)

MLCs 348 to 351 and MCCs 925 to 926 comprise dominantly Warramunga Formation sediments located close to the hinge of the Peko Syncline. The sedimentary package is interbedded variably ferruginous siltstones, shales, sandstones as well as porphyry extrusives and tuffaceous beds. Minor jasper is recorded on the contact between the porphyry and the sedimentary package (Ward, 1997).

#### 6.4 Rocky Range Leases (MLCs 343-347)

The Rocky Range leases dominantly comprise Warramunga Group sediments. A suite of siltstones, sandstones, greywackes and conglomerates subcrop to outcrop within the areas of the tenure. The initial Jacro auger drilling carried out by ADL defined disseminated magnetite. The succession strikes approximately E-W, except where near to the Joker Fault where the bedding is rotated to NE, sub-parallel to the strike of the Joker Fault (Ward, 1997).

# 6.5 Golden Kiwi Leases (MLCs 235-238) and Kia Ora Mine Lease (MLC 588)

Warramunga Formation sediments hosting two E-W parallel shears dominate the local geology. The southern shear contains the Kia Ora Mine that produced 681.68 tons at a grade of 18.8 g/t Au. The northern shear extends for 500

metres and hosts highly altered and sheared sediments hosting stringer haematite-breccia similar to the southern shear (Ward, 1997).

### 6.6 Shag-Gull Claims (MCCs 927-944)

Warramunga Group sediments dominate the immediate geology of the Shag or Gull tenure, MCC-927 – 944. Exposed lithologies of this group include siltstones, sandstones and greywackes. The Black Eye Member comprising a suite of magnetite-rich sediments creates an elongate magnetic feature. Aeolian sands or alluvial material obscures bedrock in large areas of the leases (Ward, 1997).

#### 7 PREVIOUS WORK

# 7.1 Peko Leases and Claims sensu stricto (MLCs 3, 6-14, 19, 43, 44, 125, 126, 128, 507, 509, 510, 519, 664-667 and MCCs 213, 239, 240)

Mining and exploration at Peko has involved a number of phases of activity, by prospectors, GeoPeko Limited (GeoPeko) and more recently by Normandy. Historical exploration and production is presented in Ivanac (1954). Between 1936 and 1952 the Peko mine produced 6,079 tonnes @ 3.55 dwt Au.

A magnetic survey conducted by the AGGSNA in 1936 defined the Peko West, Comet, Peko and East Peko magnetic anomalies (Richardson et al, 1937).

In 1950, the Bureau of mineral resources conducted a diamond-drilling program to test the AGGSNA magnetic anomaly. The drilling defined a down dip and plunge extension to the Peko surface ironstone (Ivanac, 1954).

During the late 1950s, Peko-Wallsend Limited (Peko) conducted a self-potential survey (Elliston, 1956) and further gravity and magnetic surveys (Elliston, 1961; Richardson 1961). Production of the Peko primary copper resource resumed in the 1950's. Underground mining ceased in 1975 with a total recorded production of 3.1 million tonnes of ore at 3.8% Cu and 2.1 g/t Au (Evans, 1996).

An application for the renewal of MLCs 509-510 was lodged by GeoPeko in 1990 (Love, 1990) and the leases were renewed by the DME in 1993.

An application for the renewal of MLCs 6 & 7 was lodged in 1994 (Kuoni, 1994a), MLC 8 in 1995 (Evans, 1995), MLCs 9-13 in 1996 (Evans, 1996), MLC 14 in 1997 (Ward, 1997a), MLC 664 in 1994 (Kuoni, 1994b) and MLCs 3, 125, 126, 128, 146-149 & 519 in 1992 (Lowe, 1992). An application for the renewal of MCCs 239, 240 was lodged in 1997 (Evans, 1997).

During the period 1956 to 1991, GeoPeko conducted several phases of diamond drilling testing the magnetic features. Reverse circulation and air-track drilling were carried out by GeoPeko during 1989-1990 to test the potential of a further open-cut resource between the 62' and 170' levels. An estimated 21,800 tonnes @ 6g/t Au was calculated. Covering MLCs 10-11 is the majority of the Peko Mine tailings, which includes tails from Peko, Juno, Ivanhoe, Orlando, Eldorado and Warrego ore. In 1985, ADL (now Normandy) entered into an agreement with Peko Mines to investigate the retreatment of the copper-gold tailings then owned by Peko Mines. The joint venture was called Peko Tailings Joint Venture. A resource estimate of 3.5 million tonnes @ 1.33 g/t Au, 0.28% Cu, 0.119% Co and 5.19% S was calculated from drill hole assays (in Evans, 1996).

In 1991, PosGold (now Normandy) took over all GeoPeko's assets in the Tennant Creek field and conducted a vacuum drilling program (102 holes, 992 metres) over MLCs 6-14 and a ground magnetic survey extending from Peko West to Kia Ora (Evans, 1996).

# 7.2 Golden Forty Claims and Leases (MCCs 66-67 and MLCs 35-37, 53-56, 130-149, 352-355, 576, 577, 584-586 & 598)

The initial discovery of the Golden Forty area was by the National Lead Company with a 200ppm Cu assay within a talcose schist. Following the initial discovery a 140 geochemical sample regolith survey was conducted, defining an anomaly more than 700 metres by 300 metres in size with up to 800ppm Cu recorded. Diamond drilling into the paired regolith and magnetic anomaly continued the elevated Cu zones to 66 metres depth (Crohn, et. al., 1964).

In the late 1980s, EL 2535 held by GeoPeko covered all the Peko, Argo, Juno, Golden Forty and Golden Kangaroo areas. During that period GeoPeko completed the following work: compilation of data from the Juno and Peko Mines; compilation of topographic, geological and geophysical information onto 1:50,000 scale plans; drilling; low level airborne magnetic and gravity surveys in 1984; ground magnetic surveys over four anomalies identified from the 1984 survey and compilation of a regional geological map (Love, 1987). All results are presented in Duke (1982, 1983), Duke & Hoschke (1983), Love & Balind (1985), Balind (1986), Love (1985, 1987).

The majority of exploration activity has occurred in areas around the old Golden Forty Mine which produced 146,000 tones of ore at 11.9 g/t Au in the 1970s. PosGold conducted detailed ground magnetic, gravity and geochemical surveys in the early 1990s. These surveys have been complemented by regional aeromagnetic surveys in 1984 and 1989 and more recently by a large-scale gravity survey. Several drilling programs were also undertaken (Evans, 1993).

Exploration conducted within the Golden Forty tenure during the 1 October 1996 to 30 September 1997 period included a three lines electromagnetic (EM) survey, in order to gain greater geological understanding of the mineralisation at the Golden Forty prospect. The survey involved the use of the POS-EM; a Normandy designed proprietary EM survey instrument. Three EM lines were established at 28800E, 28600E, 28400E (22600-23400N) with sample stations marked every fifty metres. Measurements were read into a data recorder for later down-loading to a computer for processing. The data was processed to define conductor strength and is presented in Ward (1997).

## 7.3 Brolga Leases (MCCs 925-926 and MLCs 348-351)

The leases were granted to ADL in 1997 for a period of 21 years. The leases cover areas formerly held under EL 6342. The area covered by EL 6342 was mapped by ADL and Peko in the mid-1970s. Airborne and ground magnetics surveys were conducted over the area by ADL. These surveys defined a magnetic anomaly named R13. The anomaly was subsequently covered by MLCs 348-351. The prospect was investigated again in 1988 and renamed Brolga Prospect. Two further MLCs (925-926) were pegged to cover the eastern extension to the magnetic anomaly. One diamond drillhole was completed (578.4 metres) The drillhole intersected magnetite bearing sediments and no ironstone body was encountered (Lowe, 1993). Exploration conducted by PosGold on EL 6342 in the early 1990s comprised an integration of airborne magnetic surveys,

geomorphological mapping and a photogeological interpretation (Lowe, 1992 & 1993).

## 7.4 Rocky Range Leases (MLCs 343-347)

MLCs 343-347 were granted to ADL in 1977 for a period of 21 years. The tenements originally occurred within the area of Exploration Licence 96 held by ADL between 1972-75. There is no recorded production from these leases and no workings are visible. The area has been explored by ADL since the 1960s. During the period 1966 to 1975 ADL conducted a ground magnetic survey that defined the anomaly referred to as R20. The anomaly was then targeted with three diamond holes with limited drilling success. A Jacro Auger rig was used for bedrock geochemical testing on the leases. All the results are presented in ADL (1973, 1974, 1975a, 1975b, 1976).

Exploration conducted over MLCs 343-347 between 1997 and 1997 comprised a review and reinterpretation of the available geophysical data followed by a vacuum drilling program (65 holes, 260 metres). Bedrock and palaeosoil samples were collected. Assay results were generally low (Clifford, 1997).

# 7.5 Golden Kiwi Leases (MLCs 235-238) and Kia Ora Mine Lease (MLC 588)

Historical exploration and production at Kia Ora is presented in Ivanac (1954). During the period from the 1930s to 1959 the Kia Ora Mine was owned by Kia Ora Gold Mines NL. The mine produced 681 tonnes @ 12.4 dwt Au. Four shafts with associated short-cuts and a boomerang-shaped open-cut constitute the workings.

MLC 588 (previously GML 744E) was granted to Nobelex NL in 1974 for a period of 21 years. It was covered by Authority to Prospect 1450 and 2389 held by ADL between 1965-74, EL 96 held by Nobelex NL, EL 4536 held by GeoPeko Limited and EL 6929 held by PosGold.

In 1960, ADL conducted an EM survey over the Kia Ora leases. Results were inconclusive and did not assist in the identification of further mineralised systems. In 1961, ADL conducted a ground magnetics survey resulting in the definition of two weak magnetic anomalies. In 1962 ADL surrendered the leases over the Kia Ora Mine due to the lack of exploration success. During 1965-1974 ADL explored the area under Authority to Prospect 1450 and 2389. ADL conducted and 'ABEM' magnetometer survey which defined a small anomaly interpreted to be an extension of the Kia Ora body. Two short percussion holes were drilled without significant result. In 1967 ADL mapped the Kia Ora mine area. In 1974 GML774E was granted to ADL for the purpose of tribute mining of the old Kia Ora Mine. During the period 1974-75, 237 tonnes @ 11.7 g/t Au were produced. In 1986 ADL drilled 4 shallow RC holes for 297 metres targeting down plunge extensions beneath the mine. In 1986 the Kia Ora mine tails and mullock stockpile were sampled with regard to the extraction of remnant ore from various mining phases (best result 28.23 g/t Au). In order to test a magnetic anomaly defined in a 1987 ground magnetic survey ADL drilled three more RC holes for 405 metres. No significant assay results were recorded (Evans, 1994a).

PosGold conducted work over MLC 588 since the early 1990s. Exploration completed over the lease included structural mapping, rock chip sampling and vacuum drilling. All results are presented in the renewal application for MLC 588 (Evans, 1994a).

MLCs 235-238 were pegged and granted to Nobelex NL an exploration subsidiary of ADL in 1975 for a period of 21 years. During the 1960s ADL conducted a ground magnetic survey which defined the Golden Kiwi or R17 magnetic anomaly. In 1968 ADL tested the anomaly with a vertical diamond drillhole (DDH-300) drilled to 139 metres. No ironstone was intersected. In 1970, ADL excavated a series of trenches and undertook costean mapping programs (in Evans, 1995). In 1975, Nobelex contracted Geoex Pty Ltd to interpret the Golden Kiwi anomaly. The source of the anomaly was interpreted to be a deep-seated ironstone subvertical in orientation (Haigh, 1975). No further work has been undertaken on the leases.

PosGold explored the Kia Ora area under EL 6929 between 1990-94. Work completed by PosGold included a review of the historical data, gridding, a regional gravity survey, photogeological mapping, a geomorphological survey, structural map work, geochemical rock chipping, vacuum drilling, RAB drilling and RC drilling. All the results are presented in Lindsay-Park (1991), Lowe (1992a, 1993a), Evans (1993, 1994b)

## 7.6 Shag-Gull Claims (MCCs 927-944)

MCCs 927-944 were granted to PosGold in 1991 for a period of five years. The area was previously explored by GeoPeko under EL 2535 and PosGold under ELs 4929 and 6343.

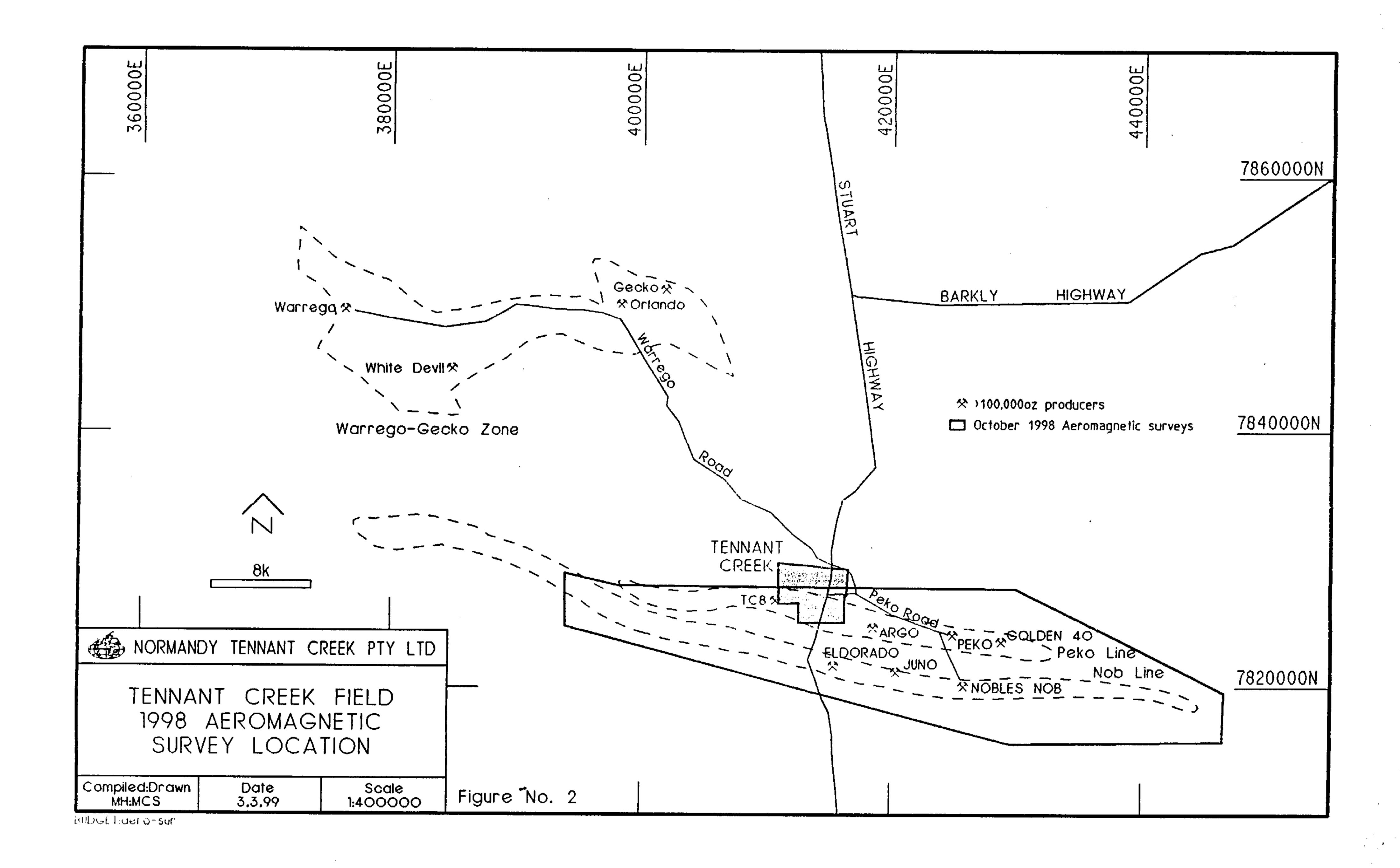
EL 2535 covered all the Peko, Argo, Juno, Golden Forty and Golden Kangaroo areas. During that period GeoPeko completed the following work: compilation of data from the Juno and Peko Mines; compilation of topographic, geological, geophysical information onto 1:50,000 scale plans; drilling; low level airborne magnetic and gravity surveys in 1984; ground magnetic surveys over four anomalies identified from the 1984 survey and compilation of a regional geological map (Love, 1987). All results are presented in Duke (1982, 1983), Duke & Hoschke (1983), Love & Balind (1985), Balind (1986), Love (1985, 1987).

Poseidon Gold Limited (Poseidon; now Normandy) explored the area under EL 4929 between 1986 and 1992. Work conducted by Poseidon included geological and geomorphological mapping, vacuum drilling, RC/diamond drilling. All the results are presented in Booth (1988, 1989), Lindsay-Park (1990, 1991) Schusterbauer (1992).

Poseidon explored the Explorer 99 area under EL 6343 between 1991 and 1994. Work completed included a review of historical data, vacuum drilling programs (1,094 holes, 4,377 metres), a regional gravity survey, rock chipping (18 samples), soil sampling (22 samples), geomorphological mapping, photogeological mapping and a RAB drilling program (9 holes, 540 metres). All results are presented in Lowe (1992, 1993) and Evans (1994a & b).

#### 8 WORK CARRIED OUT DURING REPORTING PERIOD

Exploration conducted over the tenements during the period 1 October 1997 to 25 February 1999 has included a high resolution aeromagnetics survey (figure 2), the signing of the agreement to access Warrumungu Land Trust areas and ongoing rehabilitation activities.



## 8.1 Airborne Magnetics Survey

The survey was flown by Kevron in October 1998. Survey specifications were 40m sensor height, 50m line spacing on a north – south line orientation with 7m in line sample spacing (Appendix 2). Elevation recordings were recorded every seventh sample for digital terrain modelling.

Initial review of this data has indicated a greater level of structural detail can be delineated than from the earlier 1984 GeoPeko airborne magnetic survey.

## 8.2 Area of Interest Agreement

The Area of Interest Agreement was signed on 9 December 1998. This agreement, between Central Land Council, Traditional Landowners and Normandy, establishes land access for mineral exploration upon Warrumungu Land Trust areas.

#### 8.3 Environmental Audit

An environmental audit is currently underway, covering all historical mining and exploration sites in the Tennant Creek mineral field. The audit is locating and detailing all occurrences of disturbance including mine workings, tracks, dumps, drillholes, excavations, buildings and rubbish.

### 9 EXPENDITURE STATEMENT FOR THE PERIOD 1/10/97 TO 25/2/99

During the reporting period, the Peko Leases Reporting Group incurred an expenditure of \$47,628. A breakdown of this expenditure follows (Table 1):

Table 1: Exploration Expenditure for the Peko Leases Reporting Group from 1/10/97 to 25/2/1999

| EXPENSE             | COST      |
|---------------------|-----------|
| Employee Costs      | \$ 14,647 |
| Overheads           | \$ 3,180  |
| Drilling            | \$ 0      |
| Assays              | \$ 0      |
| Operating Costs     | \$ 1,760  |
| Specialist Services | \$ 12,276 |
| Tenement Costs      | \$ 15,763 |
| TOTAL               | \$ 47,628 |

# 10 RECOMMENDED WORK PROGRAM & PROPOSED EXPENDITURE FOR THE PERIOD 26/2/1999 TO 25/2/2000

Proposed exploration activities for the period 26 February 1999 to 25 February 2000 will involve assessing the 1998 high resolution magnetics data for target generation and detailed structural mapping.

Proposed exploration expenditure for the Peko Leases Reporting Group for the next year of tenure is as follows (Table 2):

Table 2: Proposed Exploration Expenditure for the Peko Leases Reporting Group

| EXPENSE             | COST |        |  |  |
|---------------------|------|--------|--|--|
| Employee Costs      | \$   | 9,800  |  |  |
| Overheads           | \$   | 1,470  |  |  |
| Drilling            | \$   | 33,000 |  |  |
| Assays              | \$   | 8,500  |  |  |
| Operating Costs     | \$   | 4,050  |  |  |
| Specialist Services | \$   | 700    |  |  |
| Tenement Costs      | \$   | 20,396 |  |  |
| TOTAL               | \$   | 59,916 |  |  |

### 11 ENVIRONMENTAL/REHABILITATION REPORT

Normandy has commenced an active rehabilitation program over much of the Tennant Creek field. This commitment has been reinforced within the Normandy Group with the appointment of a Group Environmental Engineer to oversee and implement the Group's guidelines and objectives.

As an example of the Group's commitment to environmental issues several active rehabilitation programs are currently being undertaken in the Tennant Creek field. These include programs at Orlando, Gecko, Eldorado, White Devil, and Warrego.

Environmental Management Plans for the Company's Tennant Creek Operations (Fowler, 1993; Fowler et al., 1998) have been submitted to the Department of Mines and Energy under separate cover. These plans detail the strategies to be implemented over various areas following completion of exploration programs and mining operations.

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# APPENDIX ONE

TENURE SUMMARY

## Tenure Summary for the Peko Leases Reporting Group (Part 1)

| MCC 66   | GOLI     | Location                               |            | 111711       |      | nted     | <b>HY</b> r | oires    | S           |          |
|----------|----------|--|------------|--------------|------|----------|-------------|----------|-------------|----------|
| MCC 67   | 100-     | DEN FORTY                              | 33.00      | (ha)<br>30/1 |      | i        |             |          | t 07/10/93  |          |
|          | GOL      | DEN FORTY                              | <u>.i</u>  |              |      |          |             | <u> </u> | t 07/10/93  |          |
|          |          | ) CENTRAL                              | <u> </u>   | 17/0         |      |          |             | LOVE     |             |          |
| MCC 239  |          |  |            | 24/0         |      | 23/04    |             |          |             | <u> </u> |
| MCC 240  |          |  |            | 24/0         |      | 23/04    | 4/02        |          |             |          |
|          |          | _GA, R13                               |            |              |      |          |             | Repo     | t 29/9/95   |          |
| 1        |          | LGA, R13                               |            |              |      |          |             | <u> </u> | t 29/9/95   |          |
| MCC 927  |          | · · · · · · · · · · · · · · · · · · ·  | <u>.1 </u> |              |      |          |             | <u> </u> | t 29/9/95   | ·        |
| MCC 928  |          |  | _1         |              |      |          |             |          | t 29/9/95   |          |
| MCC 929  |          |  | i          |              |      |          |             |          | t 29/9/95   |          |
| MCC 930  |          | · · · · · · · · · · · · · · · · · · ·  | 1 1        |              |      |          |             | <u> </u> | t 29/9/95   | :        |
| MCC 931  |          | · · · · · · · · · · · · · · · · · · ·  | <b>i</b>   |              | 1    |          |             | <u> </u> | t 29/9/95   |          |
| MCC 932  |          |  |            |              |      |          |             | <u> </u> | t 29/9/95   |          |
| MCC 933  | L        | •                                      |            |              |      |          |             | <u> </u> | t 29/9/95   |          |
| MCC 934  | <u> </u> |  | <u> </u>   |              |      |          |             | <u> </u> | t 29/9/95   |          |
| MCC 935  |          | · · · · · · · · · · · · · · · · · · ·  | 1          |              |      | ,        |             | •        | t 29/9/95   |          |
| MCC 936  |          | · · · · · · · · · · · · · · · · · · ·  |            |              |      |          |             | <u> </u> | t 29/9/95   |          |
| MCC 937  |          | · · · · · · · · · · · · · · · · · · ·  | I          |              |      |          |             | •        | t 29/9/95   |          |
| MCC 938  |          | <u> </u>                               |            |              |      |          |             | •        | t 29/9/95   |          |
| MCC 939  |          | <u> </u>                               | i          |              |      |          |             | •        | t 29/9/95   |          |
| MCC 940  | <u> </u> |  |            |              |      |          |             |          | t 29/9/95   |          |
| MCC 941  |          | · · · · · · · · · · · · · · · · · · ·  |            |              |      |          |             | •        | t 29/9/95   |          |
| MCC 942  |          | · · · · · · · · · · · · · · · · · · ·  |            |              |      | <u>.</u> |             | •        | t 29/9/95   |          |
| MCC 943  |          |  | <u> </u>   |              |      |          |             | •        | t 29/9/95   |          |
| MCC 944  |          |  | <u> </u>   |              |      |          |             | •        | t 29/9/95   |          |
|          |          | DEXTENDED 1                            |            |              |      |          |             | -        | t 24/09/92  |          |
| MLC 6    |          | D. Bushall No.1                        |            |              |      |          |             | •        | t 30/09/94  |          |
| MLC 7    |          | NORTH EXTENDED                         |            |              |      |          |             | <u> </u> | rt 30/09/94 |          |
| MLC 8    | <u> </u> | D No.5                                 |            |              |      |          |             |          | rt/Rent 30/ |          |
| MLC 9    |          | D, Bushall No.4                        | 4.00       | 24/0         | 1/55 | 31/1:    | 2/06        | Repo     | t 30/9/96   |          |
| <u> </u> |          | •                                      |            |              |      |          |             | _        | t 30/9/96   |          |
|          |          | D, Bushall No.2                        | 13.00      | 23/0         | 1/55 | 31/12    | 2/06        | Repo     | rt 30/9/96  |          |
|          |          | D, Bushall No.5                        | 16.00      | 18/1         | 1/54 | 31/1:    | 2/06        | Repo     | rt 30/9/96  |          |
| •        |          | ·                                      | 8.00       | 10/0         | 8/55 | 31/1:    | 2/06        | Repo     | rt 30/9/96  |          |
|          |          | O WEST EXTENDED                        | 17.00      | 26/1         | 1/56 | 31/1:    | 2/97        | Repo     | rt 7/11/97  |          |
| MLC 19   | PEK(     | D, West Peko 1A                        | 17.00      | 05/0         | 8/58 | 31/1:    | 2/99        | Rene     | wed 78      |          |
|          |          | DEN FORTY                              | 17.00      | 09/0         | 2/59 | 31/1:    | 2/00        | Rene     | wed 79      |          |
| 1        |          | DEN FORTY                              | 9.00       | 02/0         | 1/62 | 31/1     | 2/07        | Rene     | wed 82      |          |
| <u> </u> |          | DEN FORTY                              | 11.00      | 02/0         | 1/62 | 31/1     | 2/07        | Rene     | wed 82      |          |
|          | E .      | DEN FORTY                              | 12.00      | 02/0         | 1/62 | 31/1:    | 2/07        | Rene     | wed 83      |          |
|          |          | D, Bushall No.2 Ext                    | 9.00       | 12/0         | 2/64 | 31/1     | 2/09        | Rene     | wed 85      |          |
|          |          | D, Bushall No.3 Ext                    | 13.00      | 12/0         | 2/64 | 31/1     | 2/09        | Rene     | wed 85      |          |
|          |          | DEN FORTY                              | 10.00      | 03/0         | 6/66 | 31/1     | 2/99        | Rene     | wed 92      |          |
| 1        |          | DEN FORTY                              | 16.00      | 03/0         | 6/66 | 31/1     | 2/99        | Rene     | wed 92      |          |
|          |          | DEN FORTY                              | 10.00      | 08/0         | 7/66 | 31/1     | 2/99        | Rene     | wed 92      |          |
|          | •        | DEN FORTY                              | 15.00      | 08/0         | 7/66 | 31/1     | 2/99        | Rene     | wed 92      |          |
| MLC 125  |          |  | 17.00      | 07/0         | 4/72 | 31/1     | 2/92        | Repo     | rt 24/09/92 |          |
| MLC 126  |          | ······································ |            |              |      | [        |             |          | rt 24/09/92 |          |
|          |          | O, Peko South Extended No.2            | 4          | 1            |      | 1        |             | •        |             |          |

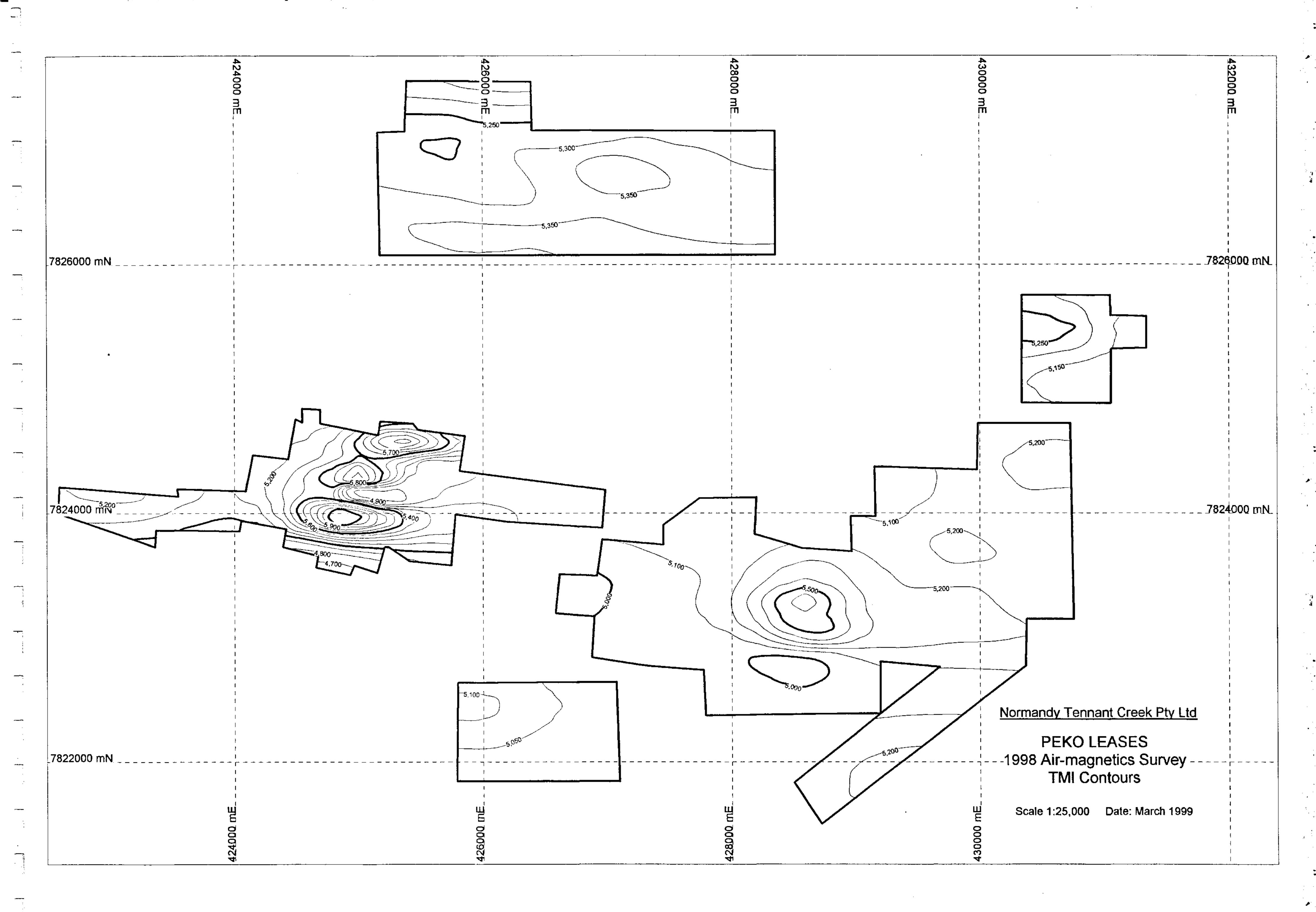
|          |  | 47.00     | 04/04/70 | 24/42/00     |                      |
|----------|--|-----------|----------|--------------|----------------------|
|          |  |           |          |              | Renewed 98           |
| <u></u>  |  |           |          |              | Renewed 98           |
|          |  | 1_        |          |              | Renewed 98           |
| 1        |  |           |          |              | Renewed 98           |
| ·        |  |           |          |              | Renewed 98           |
|          |  |           |          |              | Renewed 98           |
|          | GOLDEN FORTY                           |           |          |              | Renewed 98           |
|          |  |           |          |              | Renewed 98           |
| MLC 138  |  |           |          |              | Renewed 98           |
| MLC 139  |  |           |          |              | Renewed 98           |
|          |  |           |          |              | Renewed 98           |
| MLC 141  | • • <b></b>                            |           |          |              | Renewed 98           |
| MLC 142  | GOLDEN FORTY                           | 17.00     | 04/01/73 | 31/12/98     | Renewed 98           |
| MLC 143  | GOLDEN FORTY                           | 17.00     | 04/01/73 | 31/12/98     | Renewed 98           |
| MLC 144  | GOLDEN FORTY                           | 17.00     | 04/01/73 | 31/12/98     | Renewed 98           |
| MLC 146  | GOLDEN FORTY                           | 15.00     | 13/06/72 | 31/12/92     | Report 24/09/92      |
| MLC 147  | GOLDEN FORTY                           | 16.00     | 13/06/72 | 31/12/92     | Report 24/09/92      |
|          |  | 16.00     | 13/06/72 | 31/12/92     | Report 24/09/92      |
|          |  | 17.00     | 13/06/72 | 31/12/92     | Report 24/09/92      |
|          | <u> </u>                               | .L        |          |              | Report/Rent 24/10/95 |
|          |  |           |          |              | Report/Rent 24/10/95 |
|          | · · · · · · · · · · · · · · · · · · ·  | I I       |          |              | Report/Rent 24/10/95 |
|          | KIA-ORA, R17                           |           |          | [ <u></u>    | Report/Rent 24/10/95 |
|          | •                                      | 7 1       |          | <del> </del> | Report - 30/10/97    |
| 1        | ,                                      | 1         |          |              | Report - 30/10/97    |
|          | 1 — — — —                              | 1         |          |              | Report - 30/10/97    |
| <b>,</b> | 1                                      | I I       |          | <u> </u>     | Report - 30/10/97    |
|          | 1                                      |           |          | <u> </u>     | Report - 30/10/97    |
| <u></u>  | BROLGA, R13                            | l .       |          | <u> </u>     | Report - 30/10/97    |
|          | BROLGA, R13                            |           |          | i            | Report - 30/10/97    |
|          | BROLGA, R13                            | <u>1l</u> |          | l            | Report - 30/10/97    |
|          | BROLGA, R13                            | 1         |          | 1            | Report - 30/10/97    |
|          | GOLDEN FORTY                           | 1         |          | 1            | Report - 30/10/97    |
|          | GOLDEN FORTY                           | 1         |          |              | Report - 30/10/97    |
|          | GOLDEN FORTY                           | 1         |          |              | Report - 30/10/97    |
|          |  | <u> </u>  |          |              | Report - 30/10/97    |
|          | GOLDEN FORTY                           | 1         |          |              | Renewed 84           |
| MLC 507  |  | <u> </u>  |          |              | Renewed 93           |
|          | PEKO, Peko West                        |           |          |              | Renewed 93           |
| į.       | PEKO, Peko East                        | ì         |          | 1            |                      |
|          | PEKO, Peko North                       |           |          |              | Report 24/09/92      |
| <b>;</b> | GOLDEN FORTY                           |           |          |              | Renewed 92           |
|          | GOLDEN FORTY                           |           |          |              | Renewed 92           |
| <u> </u> | GOLDEN FORTY                           |           |          | <u>,</u>     | Renewed 98           |
|          | GOLDEN FORTY                           |           |          |              | Renewed 98           |
|          | GOLDEN FORTY                           |           |          |              | Renewed 98           |
| MLC 587  | · · · · · · · · · · · · · · · · · · ·  |           |          |              | Renewed 98           |
|          | KIA ORA                                |           |          | <u> </u>     | Renewed 98           |
|          | NOBLES NOB                             |           |          | <u> </u>     | Report - 30/10/97    |
| MLC 651  |  |           | <b>.</b> |              | (Authority 19/6/87)  |
| 1        | PEKO HOUSING                           |           | <u> </u> |              | Report 30/09/94      |
| MLC 665  | PEKO RESIDENTIAL 3                     |           |          |              | Renewed 79           |
| MLC 666  | PEKO RESIDENTIAL 2                     |           |          | <u> </u>     | Renewed 79           |
| MLC 667  | PEKO RESIDENTIAL 4                     | 3.00      | 20/10/59 | 31/12/99     | Renewed 79           |
|          | ······································ |           |          |              |                      |

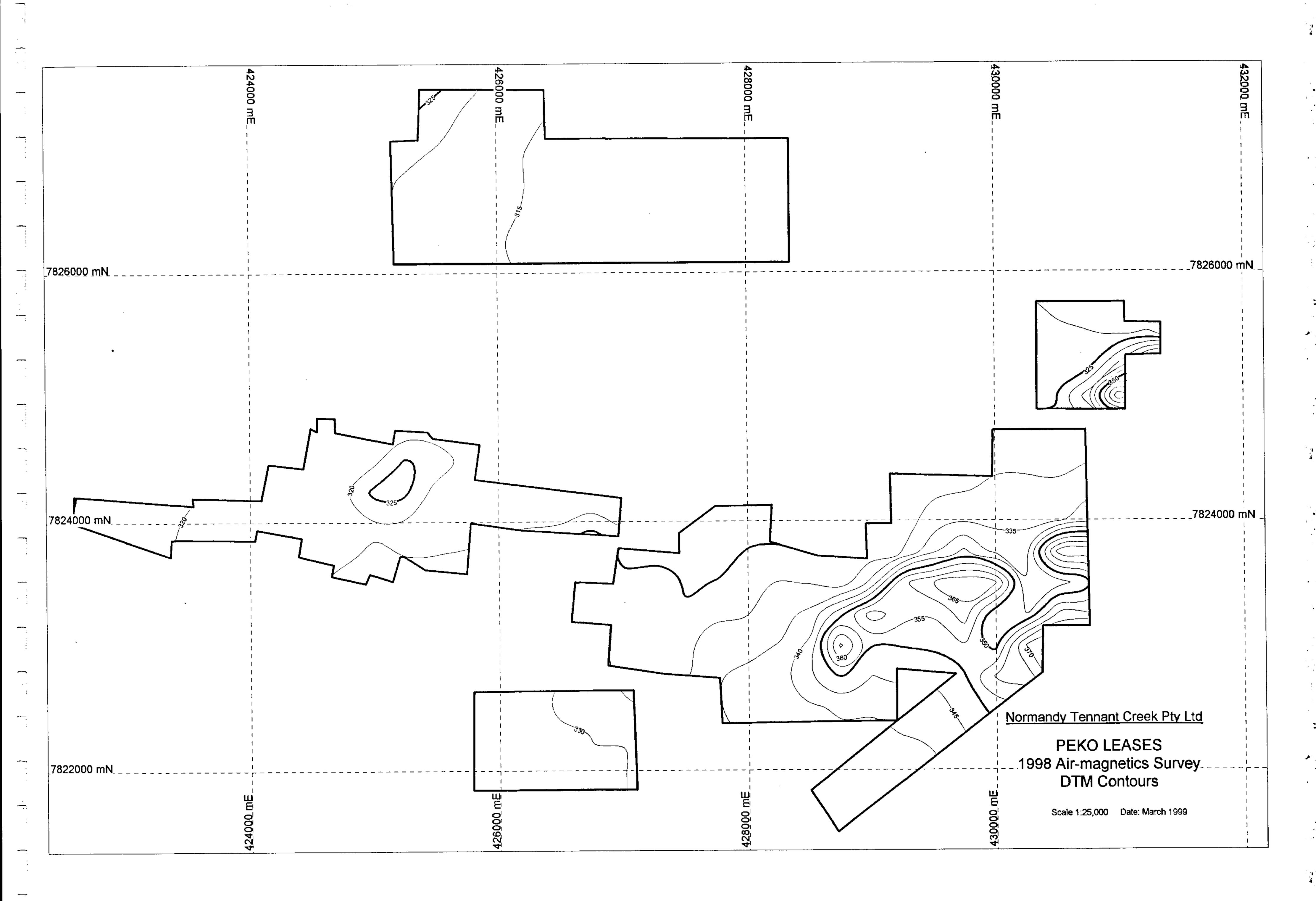
# Tenure Summary for the Peko Leases Reporting Group (Part 2)

| Title                                 | Tenement Name                  | Area     | Date     | Date     | Comments             |
|---------------------------------------|--------------------------------|----------|----------|----------|----------------------|
|                                       |                                | (ha)     | Granted  | Expires  |                      |
| MLC 588                               | KIA-ORA                        | 8.00     |          | 31/12/98 | Renewed 95           |
|                                       | KIA-ORA, R17                   | 15.00    |          |          | Report/Rent 24/10/95 |
|                                       | KIA-ORA, R17                   | 15.00    | 06/05/75 | 31/12/95 | Report/Rent 24/10/95 |
|                                       | KIA-ORA, R17                   | 16.00    | 06/05/75 | 31/12/95 | Report/Rent 24/10/95 |
|                                       | KIA-ORA, R17                   | 16.00    | 09/05/75 | 31/12/95 | Report/Rent 24/10/95 |
|                                       | PEKO CENTRAL                   | 2.00     | 17/06/87 | 16/06/00 | LOVE                 |
|                                       | PEKO WEST                      | 9.00     | 24/04/87 | 23/04/97 |                      |
|                                       | PEKO WEST                      | 3.00     | 24/04/87 | 23/04/97 |                      |
|                                       | PEKO EXTENDED 1                | 17.00    | 02/05/51 | 31/12/92 | Report 24/09/92      |
|                                       | PEKO, Bushall No.1             |          |          |          | Report 30/09/94      |
|                                       | PEKO NORTH EXTENDED            | 12.00    | 11/05/53 | 31/12/94 | Report 30/09/94      |
|                                       | PEKO No.5                      | 15.00    | 22/10/54 | 31/12/95 | Report/Rent 30/09/95 |
| · · · · · · · · · · · · · · · · · · · | PEKO, Bushall No.4             |          |          | <u> </u> | Report 30/9/96       |
|                                       | PEKO, Bushall No.3             |          |          |          | Report 30/9/96       |
|                                       | PEKO, Bushall No.2             | 13.00    | 23/01/55 | 31/12/96 | Report 30/9/96       |
|                                       | PEKO, Bushall No.5             |          |          |          | Report 30/9/96       |
|                                       | PEKO NORTH EXTENDED 2          | <u> </u> |          |          | Report 30/9/96       |
|                                       | PEKO WEST EXTENDED             |          |          |          | Report 7/11/97       |
|                                       | PEKO, West Peko 1A             |          | <u> </u> |          | Renewed 78           |
|                                       | PEKO, Bushall No.2 Ext         |          | <u> </u> |          | Renewed 85           |
|                                       | PEKO, Bushall No.3 Ext         |          |          |          | Renewed 85           |
| MLC 125                               |                                |          |          | ·        | Report 24/09/92      |
| MLC 126                               |                                |          |          |          | Report 24/09/92      |
|                                       | PEKO, Peko South Extended No.2 |          | <u> </u> |          | Report 30/09/92      |
| MLC 507                               |                                |          |          | <u> </u> | Renewed 84           |
|                                       | PEKO, Peko West                | 9.00     |          |          | Renewed 93           |
|                                       | PEKO, Peko East                | 8.00     |          |          | Renewed 93           |
|                                       | PEKO, Peko North               |          |          |          | Report 24/09/92      |
|                                       | PEKO HOUSING                   |          |          |          | Report 30/09/94      |
| <u> </u>                              | PEKO RESIDENTIAL 3             |          | 14.45    |          | Renewed 79           |
|                                       | PEKO RESIDENTIAL 2             |          |          | <u> </u> | Renewed 79           |
| <u> </u>                              | PEKO RESIDENTIAL 4             | 3.00     | 20/10/59 | 31/12/99 | Renewed 79           |
|                                       | SHAG, GULL                     |          |          |          | Report 29/9/95       |
|                                       | SHAG, GULL                     |          |          | <u> </u> | Report 29/9/95       |
|                                       | SHAG, GULL                     | 20.00    | 02/01/91 | 01/01/96 | Report 29/9/95       |
|                                       | SHAG, GULL                     |          |          |          | Report 29/9/95       |
|                                       | SHAG, GULL                     |          |          |          | Report 29/9/95       |
|                                       | SHAG, GULL                     | 20.00    | 02/01/91 | 01/01/96 | Report 29/9/95       |
|                                       | SHAG, GULL                     | 20.00    | 02/01/91 | 01/01/96 | Report 29/9/95       |
|                                       | SHAG, GULL                     |          |          | <u> </u> | Report 29/9/95       |
|                                       | SHAG, GULL                     | <u></u>  |          | 9        | Report 29/9/95       |
|                                       | SHAG, GULL                     |          |          |          | Report 29/9/95       |
|                                       | SHAG, GULL                     |          | <u> </u> | <u></u>  | Report 29/9/95       |
|                                       | SHAG, GULL                     | L        | <u> </u> | ·        | Report 29/9/95       |
|                                       | SHAG, GULL                     |          | <u></u>  | <u> </u> | Report 29/9/95       |
|                                       | SHAG, GULL                     |          | ·        |          | Report 29/9/95       |
| ***                                   | SHAG, GULL                     |          |          |          | Report 29/9/95       |
| 10100 071                             |                                |          |          |          | <u></u>              |

# APPENDIX TWO

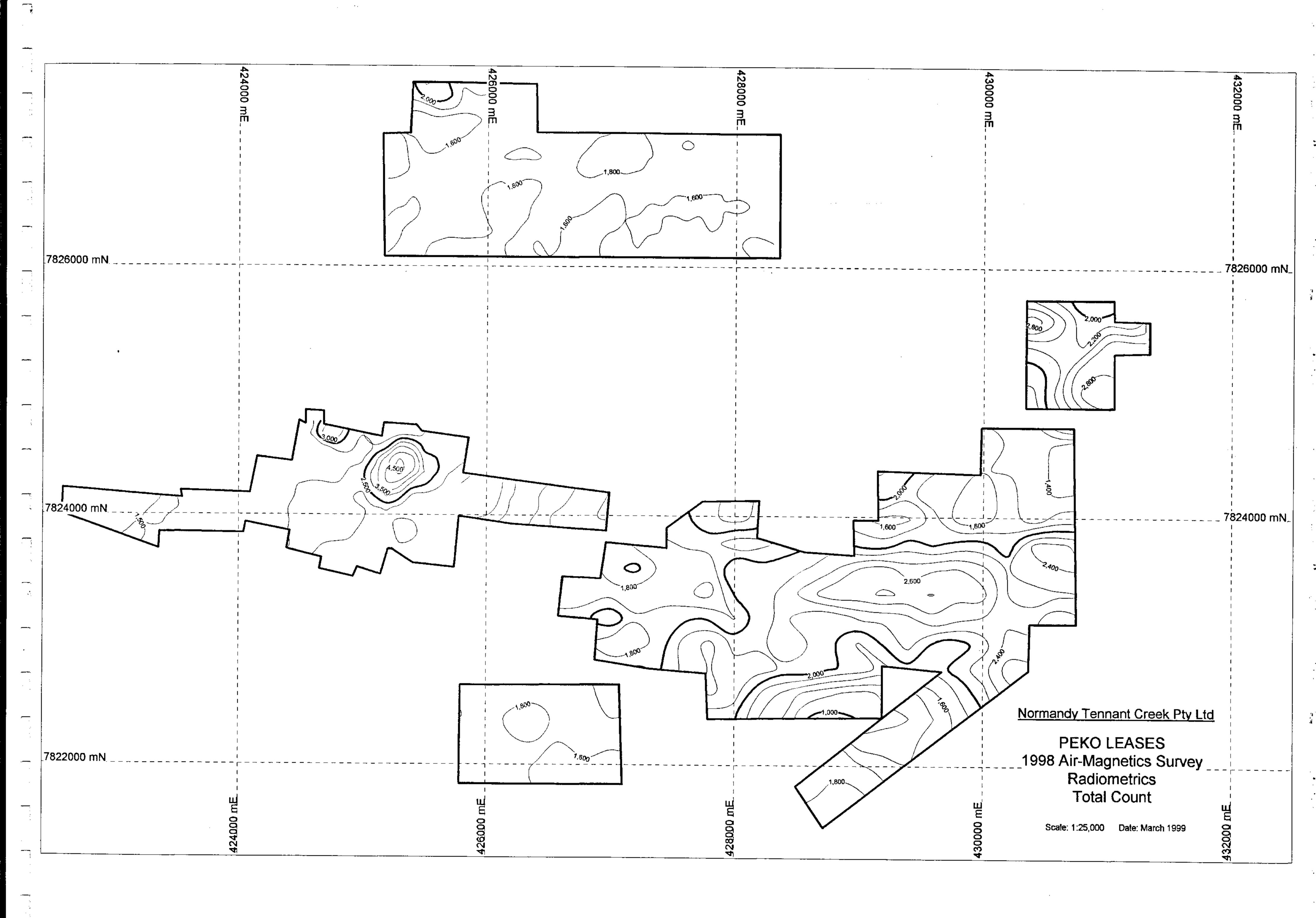
1998 Airborne Magnetics Survey Contour Figures (including: TMI, DTM, TC Radiometrics)





# APPENDIX THREE

# BIBLIOGRAPHIC DATA SHEET



#### **BIBLIOGRAPHIC DATA SHEET**

**REPORT NUMBER:** 

TENNANT CREEK: 99016

ADELAIDE: 23812

**REPORT NAME:** 

ANNUAL REPORT FOR MLCs 3, 6-14, 19, 32, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510, 519, 576, 577, 584-586, 588, 598, 652, 664-667 AND MCCs 66, 67, 213, 239, 240, 925-944 FOR THE YEAR ENDING 25 FEBRUARY 1999, NOBLES NOB REPORTING GROUP, PEKO LEASES, TENNANT CREEK 1:250,000 MAP SHEET NO SE53-14,

VOLUME 1 OF 1.

PROSPECT NAMES:

PEKO, GOLDEN FORTY, BROLGA, ROCKY RANGE,

GOLDEN KIWI, SHAG-GULL.

**TENEMENT NUMBERS:** 

MLCs 3, 6-14, 19, 32, 35-37, 43, 44, 53-56, 125, 126, 128, 130-144, 146-149, 235-238, 343-355, 507, 509, 510,

519, 576, 577, 584-586, 588, 598, 652, 664-667.

MCCs 66, 67, 213, 239, 240, 925-944.

OWNER/JV PARTNERS:

NORMANDY TENNANT CREEK PTY LIMITED

AGREEMENT:

AREA OF INTEREST AGREEMENT

**COMMODITIES:** 

GOLD, COPPER

**TECTONIC UNITS:** 

TENNANT CREEK INLIER

STRATIGRAPHIC UNITS:

WARRAMUNGA FORMATION

1:250,000 MAP SHEET:

**TENNANT CREEK SE53-14** 

1:100,000 MAP SHEET:

**TENNANT CREEK 5758** 

**KEYWORDS:** 

AERIAL MAGNETIC SURVEYS, GEOPHYSICAL INTERPRETATION, GEOPHYSICS, EXPLORATION

**REVIEW**