# OTTER GOLD NL

## CENTRAL DESERT JOINT VENTURE

## 3RD ANNUAL REPORT FOR EXPLORATION LICENCES EL 8283, EL 8284, EL 8931 & EL 9249

***FRANKENIA AGREEMENT***

**October 1999 to October 2000**

**Compiled by N. Morrow**

**DISTRIBUTION:**

**NT Dept Mines & Energy**
**Anglo Gold Australasia Ltd., Darwin**
**Central Land Council**
**Otter Gold NL, Tanami**

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| **TITLE:** | 3RD ANNUAL REPORT FOR EXPLORATION LICENCES EL 8283, EL 8284, EL 8931 & EL 9249 |
| **PERIOD:** | 13 OCTOBER 1999 TO 12 OCTOBER 2000 |
| **COMPILED BY:** | NICOLE MORROW |
| **LOCATION:** | TANAMI 1:250,000 SE 52-15<br>GRANITES 1:250,000 SF 52-03 |
| **COMMODITY:** | GOLD |
| **DATE:** | FEBRUARY 2001 |
| **KEYWORDS:** | ANTRIM PLATEAU VOLCANICS, FRANKENIA DEED, GRANITES-TANAMI PROVINCE, TANAMI DESERT |

## SUMMARY

Exploration Licences (EL) 8283, 8284, 8931 and 9249 were granted to the Central Desert Joint Venture partners (Otter Gold NL 60% and Acacia Resources Ltd 40%) on October 13th 1997. The four exploration licences are subject to the Frankenia Deed between the CDJV and the Traditional Owners executed 01/08/97.

The Frankenia tenement group comprises a large area of the Granites-Tanami Province where there has been minimal previous exploration. Over the third licence year, the work programmes have primarily constituted data compilation, regolith interpretation, field reconnaissance and regional posthole drilling.

Exploration expenditure on all 4 licences subject to the Frankenia Deed for the period 13th October 1999 to 12th October 2000 was over $39 000.

Work programmes in the fourth licence year will involve geological mapping and rock chip sampling, and may include exploration posthole programmes to determine depth of cover, stratigraphy and suitability for infill soil sampling.

All of the area covered by the subject ELs remains under CDJV title and therefore details covered in this report should remain on **CLOSED FILE**.

# *TABLE OF CONTENTS*


**1.0 INTRODUCTION ..... 1**

1.1 LOCATION AND ACCESS ..... 1
1.2 TENEMENT STATUS ..... 1
1.3 EXPLORATION HISTORY ..... 1
1.4 CENTRAL LAND COUNCIL ..... 3

**2.0 GEOLOGY ..... 3**

**3.0 EXPLORATION ..... 5**

3.1 EL 8283 ..... 6
3.2 EL 8284 ..... 6
3.3 EL 8931 ..... 6
3.4 EL 9249 ..... 6

**4.0 EXPENDITURE ON EXPLORATION LICENCES 13/10/1999 TO 12/10/2000 ..... 9**

**5.0 PROPOSED WORK PROGRAMME ..... 9**

5.1 PROPOSED WORK PROGRAMME ..... 9
5.2 PROPOSED EXPENDITURE ..... 10

**6.0 REFERENCES ..... 10**

## *LIST OF FIGURES*

**Figure 1** Location Map

**Figure 2** EL 8283 Posthole Collar Locations

**Figure 3** EL 9249 Posthole Collar Locations

## *LIST OF TABLES*

**Table 1** Comparison of stratigraphic nomenclature

**Table 2** Proposed Expenditure 2000-2001

**Table 3** Expenditure Summary for Exploration Licences

## *LIST OF APPENDICES*

**Appendix 1** Environment Register

**Appendix 2** EL 8283 Collars, Assays and Logs

EL8283_200102_01_Collars.txt
EL8283_200102_02_Assays.txt
EL8283_200102_03_Logs.txt

**Appendix 3** EL 9249 Collars, Assays and Logs

EL9249_200102_04_Collars.txt
EL9249_200102_05_Assays.txt
EL9249_200102_06_Logs.txt

# 1.0 INTRODUCTION

As required by the Department of Mines and Energy (DME), this report contains details of exploration activities conducted within EL 8283, EL 8284, EL 8931 and EL 9249 for the period 13th October 1999 to 12th October 2000. The four exploration licences are covered by a Deed between Otter Gold NL and the Traditional Owners, dated 1st August 1997. The tenements are viewed as a single project and were granted this status by the DME on the 13th October 1997. The Frankenia Agreement comprises tenements within the Central Desert Joint Venture (CDJV) between Otter Gold NL (60% and managers) and Acacia Resources (40%).

## 1.1 Location and Access

The CDJV tenements are located approximately 650km northwest of Alice Springs, and 300km southeast of Halls Creek. The Frankenia Agreement comprises four contiguous Exploration Licences covering a large area (569 $km^2$) of the Granites-Tanami Province due east of the Tanami mine site (Figure 1).

Access to the tenements is by the Tanami Track, and the Lajamanu Road. Within the CDJV, access is via exploration tracks and gridded baselines. Access to most areas was limited during the December to May extended wet season.

## 1.2 Tenement Status

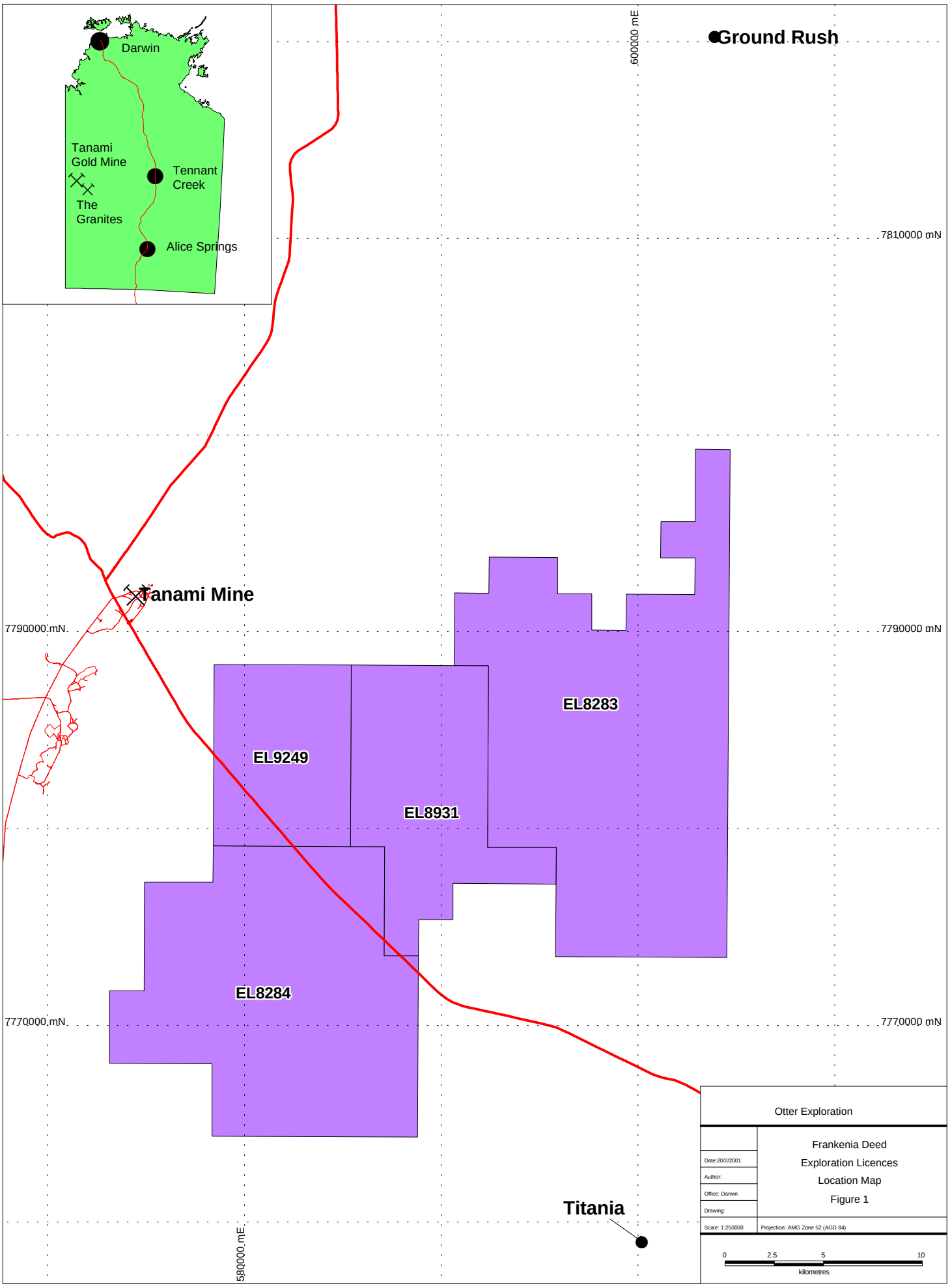
Permission to explore within the Frankenia tenements EL 8283, EL 8284, EL 8931 and EL 9249 was granted to Otter Gold NL on the 13th October 1997 for a period of six years. This report represents the third year of exploration.

## 1.3 Exploration History

Previous exploration of this region has been minimal. Initial investigation of the Tanami area was conducted by Davidson (1905). Davidson discovered gold-bearing quartz reefs. The reefs were mined between 1902 and 1908. Mining was restricted to the wet season due to lack of permanent water.

A gold rush was precipitated by the discovery of slab of stone containing an estimated 180oz of gold in 1909. The rush continued until 1913 and up to 200 men were working the field. Intermittent exploration and mining was conducted between 1913 and 1938, including the construction of an amalgamation plant in 1927. No official exploration was conducted in the Tanami Desert between 1938 and 1965.

In 1985, Harlock Pty. Ltd. commenced exploration within the Tanami mining leases, which led to the commencement of open pit mining in mid-1987. Zapopan NL. acquired the ground and continued mining until March 1994. Otter Gold Mines Pty. Ltd. was granted access to explore around the mine site in 1989. Low-level Au anomalism was discovered in late 1989, which lead to the identification of the Redback Rise area as highly prospective. The Otter screening process also identified the Dogbolter and Jim's Find prospects.


Darwin
Tanami
Gold Mine
The
Granites
Tennant
Creek
Alice Springs
600000 mE
Ground Rush
7810000 mN
Tanami Mine
7790000 mN
7790000 mN
EL8283
EL9249
EL8931
EL8284
7770000 mN
7770000 mN
Titania
580000 mE
Otter Exploration
Frankenia Deed
Exploration Licences
Location Map
Figure 1
Date:20/2/2001
Author:
Office: Darwin
Drawing:
Scale: 1:250000
Projection: AMG Zone 52 (AGD 84)
0
2.5
5
10
kilometres

In September 1990, the Shell Company of Australia Ltd. (Shell) entered into a joint venture with Otter. Management of the project was entrusted to Shell. In August 1993, Shell completed its earning phase (50%) by spending $5 million on exploration. In October 1994, a new joint venture was formed between Otter Gold NL and Acacia Resources Ltd. as a result of Shell divesting its mineral assets. The new joint venture is known as the Central Desert Joint Venture (CDJV), with participating interests 60% Otter and 40% Acacia. Otter Gold NL has management of the project.

### 1.4 Central Land Council

In accordance with the Mining Act and the Aboriginal Land Rights (N.T.) Act 1976 (ALRA), Otter Gold NL negotiated an agreement with the relevant traditional owners via the CLC. This agreement is a "conjunctive" agreement, a copy of which is held by the DME.

## 2.0 GEOLOGY

The Granites-Tanami Block is bounded to the west by the Canning Basin and to the east by the Wiso Basin. The stratigraphy of the Tanami Region has been revised as a result of an intensive study completed by the NTGS in 1999-2000 (Hendrickx et al., 2000). The stratigraphy outlined by Blake et al. (1975; 1979) has had some significant modifications.

<table>
<tr><th colspan="7">Blake et al (1979)</th><th colspan="3">Hendrickx et al (2000)</th></tr>
<tr><td colspan="2" rowspan="3">Birrindudu Group</td><td colspan="5">Coomarie Sandstone</td><td rowspan="3">Birrindudu Group</td><td>Coomarie Sandstone</td><td rowspan="3">Suplejack Downs Sandstone</td></tr>
<tr><td colspan="5">Talbot Well Formation</td><td>Talbot Well Formation</td></tr>
<tr><td colspan="5">Gardiner Sandstone</td><td>Gardiner Sandstone</td></tr>
<tr><td colspan="7">Suplejack Downs Sandstone</td><td colspan="3" rowspan="3">Nanny Goat Creek Volcanics<br>Mount Winnecke Group<br>Mount Charles Formation</td></tr>
<tr><td colspan="7">Mount Winnecke</td></tr>
<tr><td colspan="7">Pargee Sandstone</td><td>Pargee Sandstone</td></tr>
<tr><td rowspan="2">Tanami Complex</td><td>Mt. Charles Beds</td><td>Killi Killi Beds</td><td>Nanny Goat Creek Beds</td><td>Nongra Beds</td><td>Helena Creek Beds</td><td></td><td rowspan="2">Tanami Group</td><td colspan="2">Killi Killi Formation<br>Twigg Formation<br>Dead Bullock Formation</td></tr>
<tr><td colspan="6"></td><td colspan="2">MacFarlane Peak Group</td></tr>
<tr><td colspan="7">Archaean</td><td colspan="3">Browns Range Metamorphics<br>"Billabong Complex"</td></tr>
</table>

Table 1. Comparison of stratigraphic nomenclature.

The oldest rocks are Archaean and consist of the Billabong Complex and the Browns Range Metamorphics. The Browns Range Metamorphics are exposed on the southern margin of the Browns Range Dome. They comprise granitic gneiss and muscovite schist intruded by fine-grained granite, thin granitic sills, aplite and pegmatite. The banded granitic gneiss of the Billabong Complex has been intercepted in drill core at The Granites mine and has been noted to outcrop in Mount Solitaire.

The Palaeoproterozoic MacFarlane Peak Group unconformably overlies the Archaean basement. It comprises a thick, structurally complex sequence of mafic volcanic, volcaniclastic and clastic sedimentary units, which possess a distinctive magnetic and gravity signature. The sequence occurs around the margin of the Frankenia Dome, along the southern margin of the Coomarie Dome and at MacFarlanes Peak Range. It is considered to have a tectonic contact with the overlying Tanami Group.

The Tanami Group is a basin-fill sequence subdivided into three formations based on the main lithological associations. The Dead Bullock Formation occurs at the base of the Tanami Group and is dominated by siltstone, mudstone, chert and banded iron lithologies. The rocks outcrop at Dead Bullock Soak, Lightning Ridge and Officer Hill. At The Granites, the rocks have been metamorphosed to amphibolite facies to form schists. Gold mineralisation at The Granites and Dead Bullock Soak is hosted in the Dead Bullock Formation.

Killi-Killi Formation conformably overlies the Dead Bullock Formation and is the most extensive formation in the group. The sequence of turbidites varies from micaceous to quartz-rich lithologies, interbedded with siltstone, mudstone and occasional thin chert beds. Detrital mica indicates a granitic provenance. The Killi-Killi Formation is metamorphosed to lower greenschist facies, however, east of the Granites Goldfield, the rocks have a strong schistose fabric representing amphibolite facies metamorphism.

The Twigg Formation has been included in the Tanami Group based on structural similarities with the Killi-Killi and Dead Bullock Formations. Twigg Formation is confined to a narrow package of rocks immediately west of the Tanami Mine corridor. The formation comprises a sequence of interbedded purple siltstone with thin-bedded chert and minor medium bedded greywacke. Chert beds are thin bedded or banded, white or red and occasionally contain nodules similar to those in the Dead Bullock Formation. The relationship between the other Tanami Group rocks is uncertain as the boundaries are fault controlled but a lateral or distal equivalent is inferred.

Unconformably overlying and younger than the Tanami Group, the Pargee Sandstone and Mt Charles Formation are considered to be of similar age but deposited in different tectonic environments.

Pargee Sandstone is exposed west of the Coomarie Dome extending into Western Australia. It is characteristic of deposition is interpreted to have been deposited in a shallow marine environment, initially under high-energy conditions. The Pargee Sandstone comprises thick-bedded quartz and lithic sandstones and conglomerates, with pebbly sandstone and conglomerate at the base. Clasts are generally subangular to subrounded and comprise vein quartz, greywacke and siltstone derived from Killi-Killi Formation.

Mount Charles Formation (Tanami Mine Sequence) comprises an intercalated package of subaqueous basalt and turbiditic sedimentary units, interpreted to be deposited in a narrow continental rift setting between 1840 and 1810 Ma. The Mount Charles Formation is host to structurally controlled, vein-hosted gold mineralisation in the Tanami Mine Corridor. The package is well exposed in the open pits along the mine corridor, but outcrop is confined to small, isolated, silicified exposures on the western side of the Frankenia Dome. Sedimentary units include sandstone, mudstone, carbonaceous mudstones and intraclast conglomerate. The basalts are predominantly massive units with pillow basalts and basaltic breccias also evident.

In the northeast, the Nanny Goat Volcanics and Mount Winnecke Group unconformably overlie the Tanami Group. The Mt Winnecke Group comprises siliciclastic sediments and volcanic feldspar-quartz porphyry. The clastic sediments comprise coarse grained, poorly sorted quartz sandstone and gritstone sourced from felsic volcanic material.

The Nanny Goat Volcanics are characterised by predominantly subaerial, felsic volcanic rocks including quartz-feldspar ignimbrite, feldspar ignimbrite, rhyolite lava, basalt and minor siliciclastic sediments. These rocks outcrop in the vicinity of Nanny Goat Creek, east of Suplejack Downs and Birrindudu and may be intimately associated with the Mt Winnecke Group. Contemporaneous intrusive activity occurred with the Nanny Goat and Mt Winnecke volcanism, including the emplacement of the Coomarie, Frankenia, Winneckie and Browns Range Suite granites.

The Birrindudu Group comprises three units with Gardiner Sandstone at the base, overlain by Talbot Well Formation and Coomarie Sandstone. The Suplejack Down sandstone is interpreted to belong to this group but its relationship is unclear. The Birrindudu Group lie unconformably over the Browns Range Metamorphics, MacFarlane Peak Group, Tanami Group, Pargee Sandstone, Nanny Goat Creek Volcanics and Mount Winnecke Group.

The Cambrian Antrim Plateau Volcanics consist of intensely weathered basalt capped by pisolitic laterite. The basalts are mainly sub-aerial, extrusive basalts, although the occurrence of pillow structures south of Browns Range Dome suggests that some basaltic extrusion occurred in sub-marine conditions. Cenozoic laterite, silcrete, calcrete, and Quaternary debris cover 60 – 70% of the Tanami Desert. The Quaternary sediments are generally unconsolidated, representing the most recent phase of erosion and deposition of sands, gravels and lithic fragments.

## 3.0 EXPLORATION

Exploration in Year 3 comprised regional posthole geochemistry, regolith studies and interpretation of surface geochemistry results from the regional sampling programme carried out in early 1999. All four exploration licences are essentially underlain by granite. At the surface, Cenozoic laterites, sands and silt with minor Antrim Plateau Volcanics predominate.

### 3.1 EL 8283

Two phases of posthole drilling were carried out on EL 8283 for a total of 123 metres (Figure 2). Five postholes (BH959 to BH963) were drilled as part of a programme to follow-up a residual posthole anomaly of 190ppb Au just north of the tenement margin within the Frankenia Granite. One hole (BH944) was drilled as part of a regional walkabout programme to confirm stratigraphy and depth of cover. All postholes intersected granite and no continuous anomalism was defined.

### 3.2 EL 8284

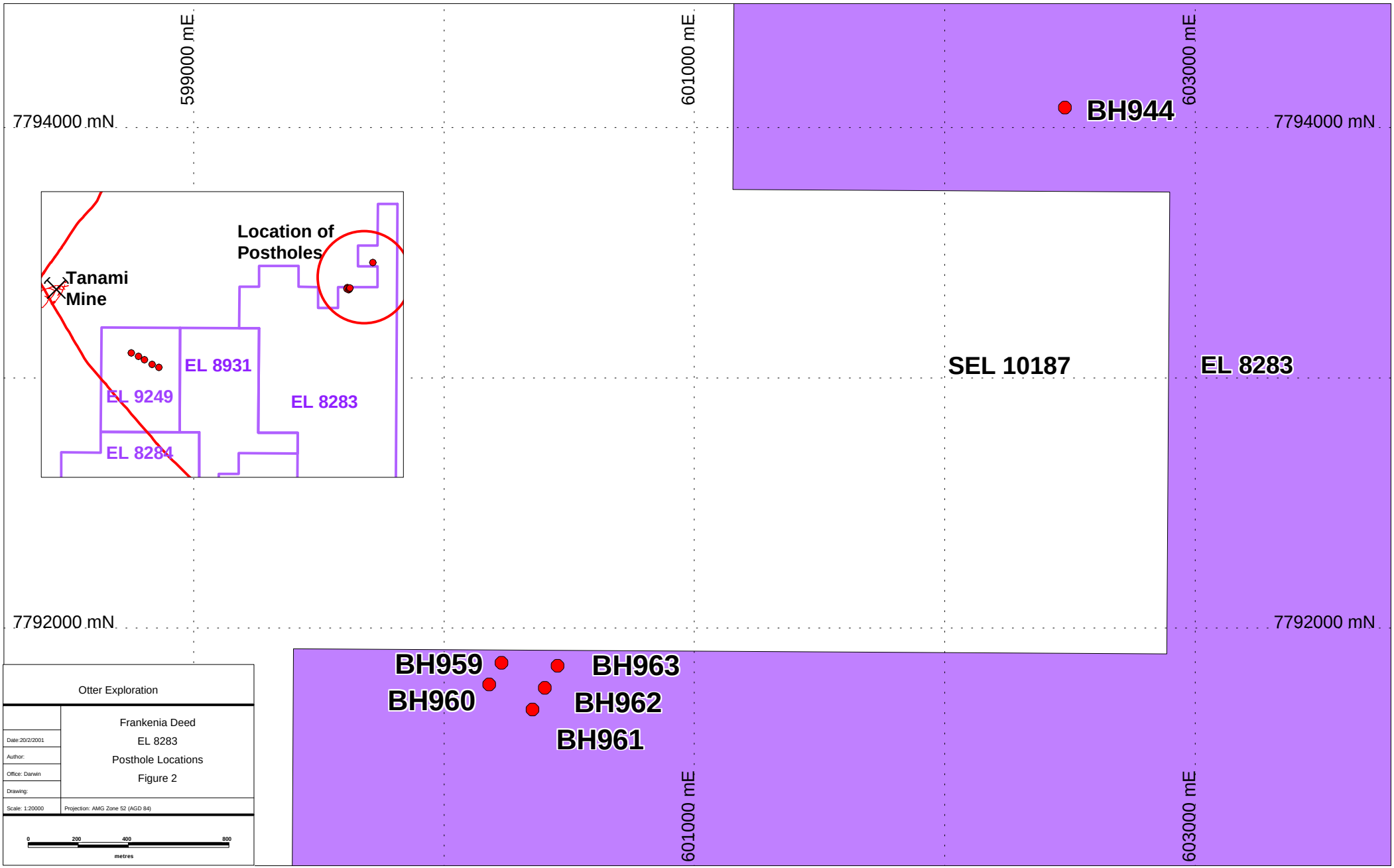
Exploration on EL 8284 was limited to field reconnaissance and interpretation of the surface sampling results and regolith data.

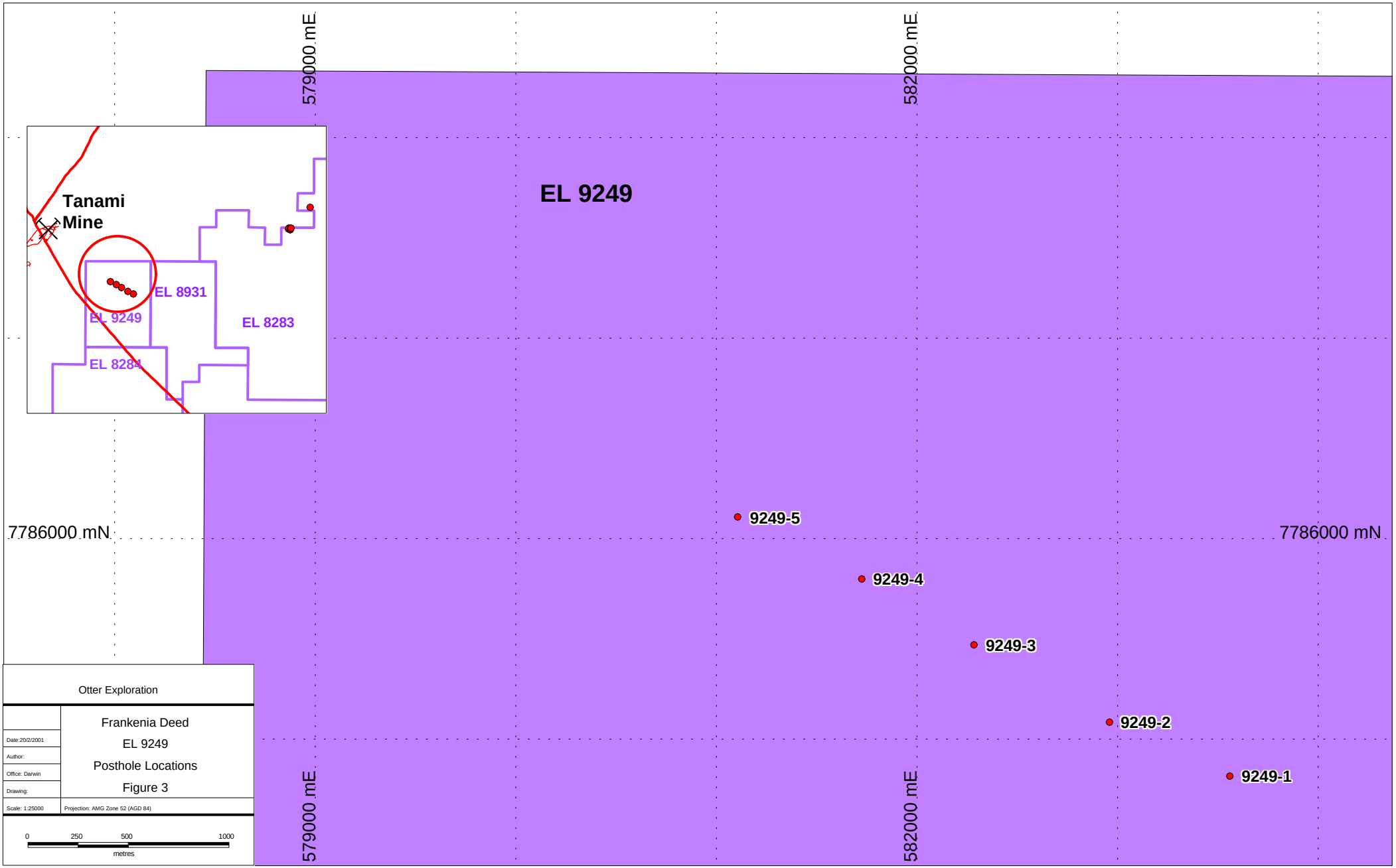
### 3.3 EL 8931

Exploration on EL 8931 was limited to interpretation of the surface sampling results and regolith data.

### 3.4 EL 9249

Five walkabout exploration postholes (9249-1 to 9249-5) were drilled on EL 9249 for a total of 108 metres (Figure 3). The programme tested low level surface geochemistry and basement geology, however no anomalous results were detected. The drilling intersected Antrim Plateau Volcanics and sedimentary units, possibly from the Mt. Winnecke Formation.


599000 mE
601000 mE
603000 mE
7794000 mN
7792000 mN
BH944
SEL 10187
EL 8283
Location of Postholes
Tanami Mine
EL 8931
EL 9249
EL 8283
EL 8284
BH959
BH960
BH963
BH962
BH961
Otter Exploration
Frankenia Deed
EL 8283
Posthole Locations
Figure 2
Date:20/2/2001
Author:
Office: Darwin
Drawing:
Scale: 1:20000
Projection: AMG Zone 52 (AGD 84)
0
200
400
800
metres


579000 mE
582000 mE
EL 9249
Tanami
Mine
EL 8931
EL 9249
EL 8283
EL 8284
7786000 mN
9249-5
9249-4
9249-3
9249-2
9249-1
7786000 mN
579000 mE
582000 mE
Otter Exploration
Frankenia Deed
EL 9249
Posthole Locations
Figure 3
Date:20/2/2001
Author:
Office: Darwin
Drawing:
Scale: 1:25000
Projection: AMG Zone 52 (AGD 84)
0
250
500
1000
metres

## 4.0 EXPENDITURE ON EXPLORATION LICENCES 13/10/1999 TO 12/10/2000

Table 2 summarises the work programme for the third licence year and the associated costs.

**Table 2 Expenditure Summary for Exploration Licences**

| | EL 8283 | EL 8284 | EL 8931 | EL 9249 |
|---|---|---|---|---|
| | | | | |
| **Geology** | -- | 874 | 584 | 874 |
| **Geophysics** | -- | -- | -- | -- |
| **Geochemistry** | -- | -- | -- | -- |
| **Surveying** | -- | -- | -- | -- |
| **Drilling** | 1 147 | -- | -- | 964 |
| **Assays** | 221 | 36 | -- | 143 |
| **Field Costs** | 875 | 1 451 | -- | 677 |
| **Administration** | 7 497 | 11 669 | 3 816 | 8 892 |
| | | | | |
| **TOTAL** | **$ 9 740** | **$ 14 030** | **$ 4 400** | **$ 11 550** |

## 5.0 PROPOSED WORK PROGRAMME

### 5.1 Proposed Work Programme

Within the Frankenia Exploration Licences, potential exists for mineralisation in enclaves of prospective Tanami stratigraphy within the Frankenia Granite and around small intrusions. Forecast work programmes will involve geological mapping, rock chip sampling, and exploration posthole programmes to determine depth of cover, stratigraphy and suitability for infill soil sampling. If the areas are amenable, soil sampling will be carried out over several low order anomalies, if not, further posthole geochemistry will be considered.

### 5.2 Proposed Expenditure

The proposed programme and expenditure commitment is summarised in Table 3.

**TABLE 3 Proposed Expenditure 2000-2001**

| | EL 8283 | EL 8284 | EL 8931 | EL 9249 |
|---|---|---|---|---|
| **Geology** | 1500 | 1500 | 1000 | 1500 |
| **Geophysics** | 500 | 500 | 500 | 500 |
| **Geochemistry** | 2500 | 5000 | 2000 | 2300 |
| **Surveying** | 2000 | 2000 | 1500 | 1500 |
| **Drilling** | 3500 | 4500 | 2100 | 3000 |
| **Assays** | 1500 | 2000 | 900 | 1200 |
| **Field Costs** | 1000 | 1500 | 1000 | 1000 |
| **Administration** | 2000 | 2500 | 2000 | 2000 |
| | | | | |
| **TOTAL** | **$14 500** | **$19 500** | **$11 000** | **$13 000** |

## 6.0 REFERENCES

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