BURNSIDE OPERATIONS P/L

ANNUAL EXPLORATION REPORT

SEL 9591

“BURNSIDE”

YEAR ENDING
30th October 2004

Pine Creek SD 52.08 1:250,000
Margaret River (14/2-I) 1:50,000
Burnside (14/2-II) 1:50,000
Ban Ban (14/3-III) 1:50,000
Fenton (14/5-I) 1:50,000
Burrundie (14/6-IV) 1:50,000

Title Holder:- Northern Gold N.L.

Distribution:
1. DBIRD DARWIN
2. Northern Gold NL Perth Office
3. Burnside Operations P/L, Brocks Creek Office NT
4. Burnside Operations P/L Perth

Compiled by:

John Shaw,
November 2004
SUMMARY

SEL 9591 is centred 120km SE of Darwin, NT, and since April 2002 has been subject to a joint venture agreement between Territory Goldfields NL (Northern Gold NL) and Buffalo Creek Mines P/L. (Harmony Gold (Australia) Pty Ltd.

The principal objective of the joint venture is to locate, develop, mine and treat gold ores within the Burnside Joint Venture area. The management company for the Joint Venture is Burnside Operations Pty Ltd.

The tenement is an amalgamation of a group of exploration licences that had been extensively explored by Dominion Gold Operations Pty. Ltd and by Northern Gold N.L. under previous tenure. It comprises a contiguous link between the joint venture’s other exploration and mining tenements that commonly contain advanced stage gold resources and prospects.

First granted in 1996 the tenement is mature and has been allowed several extensions of term. A further extension in 2004 is not allowed under the Mining Act and an application [SEL24352] has been lodged for a new tenement that includes most components of SEL9591. Some blocks were surrendered and the new application incorporates EL23543.

The licence covers a range of geological structural settings within the Pine Creek Geosyncline sequence and is centred on the late/post orogenic Burnside Batholith. The predominantly metasediment sequence has been strongly folded and faulted. By contrast with the other Burnside JV tenements, known gold deposits are not common within the SEL per se. The reason for this is that it largely covers distal structural extensions to deposits and targets held under separate JV tenure. Moreover, as deposits have been delineated by exploration within the SEL they are usually protected by mining lease applications that effectively excises them from it.

Previous exploration within the area covered by the SEL has included geological mapping, stream sediment sampling, rock chip sampling, soil sampling, costean excavation, vacuum drilling, aircore drilling, RAB drilling, RC drilling, diamond drilling, resource estimates, environmental studies, ground and airborne geophysical surveys, soil studies, rehabilitation and GIS interpretations.

The covenant for 2000-2001 was $150,000 and expenditure totalled $197,806.

During the year ending October 31st 2002 exploration by the newly formed Burnside Joint Venture comprised a program of RC drilling (11 holes for 508m) at the Bons
Rush resource. In addition, two diamond core holes completed previously at Bons Rush, were logged, split and assayed.

A mining lease application was lodged to protect the Bons Rush resource. This was surveyed in 2004 and is proceeding to grant.

For the period **2002-2003** the joint venture focused expenditure on known resources and targets in tenements excised from the SEL. The objective was to outline sufficient mineable resources to warrant a commencement of mining and treatment activities.

The main work activity in this period comprised the improvement of surface infrastructure and decline mine development at Zapopan that attained the 980mRL. Diamond core drilling was carried out underground at Zapopan and from surface at Cosmo Howley. RC drilling was carried out at Chinese Howley, Fountain Head, Woolwonga and Yam Creek-North Point. All advanced stage resources were progressively computer modelled and updated.

During the **2003-2004** report period the SEL was subjected to regional interpretations that will assist in focusing exploration activity on structurally favourable locations. The work also assisted in selection of drop off blocks during the application for new SEL24352. Airborne magnetic data at different scales and enhancements has been interpreted along with radiometrics and SPOT imagery. Images with identified targets are part of this report. A survey was conducted to define the boundaries of application ML23617 with the SEL. The expenditure covenant for 2003-2004 was $35,750, while actual expenditure for the year totalled $26,832.

In August 2004 the joint venture purchased the Union Reefs gold treatment facility and underlying tenements, at the same time selling the Brocks Creek mill. This effectively opened up Burnside’s holding in the Pine Creek mining centre and changed the economic framework of the joint venture holdings in the Burnside Region. The economic effect of the new infrastructure on known resources is the subject of current reviews.
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## APPENDIX 1

CD-ROM of this report and figures.
1. INTRODUCTION

SEL 9591 is a large tenement that surrounds and protects structural extensions to several important gold mining projects and settings that are centred on the Burnside Granite intrusion, 120km SE of Darwin.

These projects and mines, held by the Burnside Joint Venture, include the Brocks Creek field (including the Zapopan Mine), the Cosmopolitan Howley, Chinese Howley and Big Howley mines, the Woolwonga mine, Fountain Head, Yam Creek-North Point, Bridge Creek, Western Arm, Bons Rush, Kazi and Rhodes. All of these gold assets are held within separate mining titles excised from SEL 9591.

The substitute licence represents the amalgamation of several of Northern Gold NL’s previously held exploration titles.

In April 2002 the SEL was included in a joint venture agreement between Territory Goldfields NL and Buffalo Creek Mines NL, an agreement that covers all joint mining assets within a 30km radius of the Brocks Creek Mill.

This report reviews previous exploration and discusses work done in 2004 and proposed work for 2005.

2. TENURE DETAILS SEL9591

The tenement is centred 120km SE of Darwin within the Cullen Mineral Field, on the Margaret River (14/2-I), Burnside (14/2-II), Ban Ban (14/3-III), Fenton (14/5-I) and the Burrundie (14/6-IV) 1:50,000 map sheets.

It comprises 185 blocks that total approximately 596sq.km. Many excised tenements, some held by competitors, reduce the effective total area.

It lies between latitudes 13°14’ south and 13°35’ south and longitudes 131°16’ east and 131°36’ east (Figure 1)

SEL 9591 is situated within Perpetual Pastoral Lease No. 1111, Ban Ban Springs, held by Ban Ban Springs Station Pty. Ltd., Pastoral Lease No. 718, Mount Ringwood, held by W. E. and V. J. Moon, Pastoral Lease No. 903, Douglas, held by Tovehead Pty. Ltd., and Crown Lease (Perpetual) Nos. 1546 and 900, held by the Northern Territory Land Corporation.

The Stuart Highway, secondary roads and station tracks give excellent initial access to the tenement. Access to some off-road areas is restricted to four wheel drive vehicles, especially during the wet season when much of the ground becomes inundated. Other areas include steep sided hills and rugged outcrop.
The SEL is comprised of an amalgamation of 53 exploration licences owned by Northern Gold N.L. (50%) and Camelot Northern Territory Limited (50%), Territory Goldfields N.L. and Star Money Lenders Pty. Ltd.

The tenements previously held by Northern Gold N.L. (50%) and Camelot Northern Territory Limited (50%), and Territory Goldfields N.L., which were covered by the substitute exploration licence, are listed below.

Star Money Lenders Pty. Ltd. held EL 7738 and EL 8898.

**Component Tenements held by Northern Gold N.L. and Camelot Northern Territory Limited (SEL 9591)**

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**Component Tenements held by Territory Goldfields N.L. (SEL9591)**

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SEL 9591 was granted to Northern Gold N.L. on the 31st of October 1996, for a period of four years. A waiver of reduction was granted on the 30th of September 1997, enabling 251 blocks to be retained until the 30th of September 1998. Due to compulsory partial relinquishment, the licence was reduced to 185 graticular blocks in August, 1998.
The licence remained at 185 blocks during 1999, due to a waiver of reduction. A renewal was granted over the licence in November 2000 for a period expiring on the 30th October, 2002. A further application for renewal was granted expiring at the end of October 2004. The expenditure covenant for SEL9591 for this year was $35,750.

The Mining Act does not allow any further extensions of term so an application was made for a new SEL. The new application required several blocks to be dropped off and the incorporation of the area of granted EL23543.

SELA24352 comprises 195 blocks totalling a nominal 627.9 sq km.

3. GEOLOGICAL SETTING

SEL 9591 is situated within the Pine Creek Geosyncline, a tightly folded sequence of fine to coarse grained clastic basinal sediments of Lower Proterozoic age.

In the report area the sequence has been regionally metamorphosed to greenschist facies and has been intruded by pre to post orogenic granitoid intrusions. These intrusions imparted thermal contact metamorphic effects and in the case of forcefully emplaced late to post orogenic plutons such as the Burnside Batholith, had a strong influence on outcrop pattern and structure. The granites of the slow cooling Cullen event contributed to the deposition of a range of economic minerals in structurally permissive prepared sites, particularly the axial zone of antclinal folds.

Less deformed Middle and Late Proterozoic sedimentary and volcanic sequences unconformably overlie the Lower Proterozoic. Cambo-Ordovician lavas and sediments, as well as Cretaceous strata, have overlapped or blanketed the older sequences.

Cainozoic sediments, proto-laterite and Recent alluvium have obscured parts of the Pine Creek Geosyncline lithologies, but exposure of the Precambrian rocks is generally fair to good apart from within alluviated blacksoil floodplain areas.

3.1 Local Geology

The area enclosed by the SEL comprises rock sequences low in the Lower Proterozoic stratigraphic column, and these surround the post-orogenic Burnside Granite in a roughly concentric manner.

Geological Groups from oldest to youngest comprise, Mt Partridge Group (Wildman Siltstone), South Alligator Group and Finniss River Group (Burrell Creek Formation).
The three Formations comprising the South Alligator Group represent a low to medium energy depositional sequence in a progressively deepening basin. The Group hosts most of the gold deposits in the region.

The **Koolpin Formation** at the base comprises carbonaceous mudstones, iron formation, nodular chert and siltstone. The **Gerowie Tuff** conformably overlies the Koolpin and is characterised by thin to medium bedded cherty tuff, mudstone and siltstone. The conformably overlying **Mt Bonnie Formation** comprises largely siltstone, mudstone and subordinate greywacke. The Mt Bonnie Formation is overlain by greywacke and siltstone of the Burrell Creek Formation, a higher energy sedimentary unit within the Finniss River Group.

The South Alligator River Group (and Wildman Siltstone) has been intruded and dilated by multiple pre-orogenic semi concordant sills of quartz dolerite, named the Zamu Dolerite.

The Pine Creek Orogeny deformed the above sequences into tight upright to overturned folds with northerly to north westerly axial trends. Axial failure and directed stress from the SW imparted an asymmetric geometry to many of the folds with the east limbs generally steep to overturned and west limbs with shallower dips. The Howley Anticline and the Brocks Creek-Zapopan Zone are the two better known gold producing fold structures within the region. The Hayes Creek Fault and the Pine Creek Tectonic Zone are other important structures associated with gold mineralisation which also transect the SEL. See Figs. 2-5.

Granite intrusion by phases of the Cullen Batholith accompanied and post-dated the folding. Thermal effects and geophysical interpretation suggest there are several blind granitoids in the region as well as a probable granite substrate to much of the area. The Burnside Granite is the geometric centre of SEL9591 and has had a substantial impact on local structure. It post dated the main fold events, but pre dated the waning phases of orogeny. The Burnside Batholith comprises part of a north east trending chain of intrusions linked at depth and imparted a thermal aureole and concentric outcrop pattern on the sequence and warped pre existing fold structures. It also appears to have been a buttress against which late stage directed stresses from the SW and SE were refracted.

### 3.2 Economic Geology

The mining of gold, tin, lead, zinc and copper has occurred in the Burnside district since the early 1870's. Gold deposits occur preferentially in units of the South Alligator Group and to a lesser extent in the Burrell Creek Formation. Furthermore, gold has an association with the axial zones of regional anticlinal folds.
The largest gold deposits in the area are located on the Howley Anticline. This major fold hosts the Cosmopolitan Howley, the Chinese Howley group and Big Howley mines as well as smaller deposits at Bridge Creek, Western Arm, Ios and Santorini. Significant deposits are also hosted by the Brocks Creek-Zapopan shear zone, the Hayes Creek Fault system and the Pine Creek Tectonic corridor.

Field observations indicate that gold deposits occur within or just outside the contact metamorphic haloes of the younger granites, such as the Burnside Granite. The Cullen granite intrusive event was regionally widespread and blind intrusions underlie substantial portions of the metasediment cover. The slow cooling intrusions imparted extensive hornfels effects and/or cordierite-andalusite-biotite spotting to the mineralised regions.

Regional structures, particularly anticlines associated with duplex thrust fault systems, appear to be favoured sites for mineralisation. All of the gold mineralisation in the Howley District has either a spatial or direct association with D₂, or D₄ deformation zones, and is late in the tectonic sequence, favouring precursor structures that had been reactivated.

On a regional scale, gold, and to some extent base metal mineralisation, has a heterogeneous distribution, and is concentrated in elongate zones associated with regional folds and shear zones, suggesting that the dominant control on mineralisation is structural rather than lithological.

Many deposits appear to be related to domal structures on the D₂ anticlines, which, as discussed above, may be related to late stage compression from the SE. Duplex thrusts may have acted as feeders for hydrothermal fluids into the anticlines and adjacent trap sites. The late phases of the Cullen Batholith are a likely source of hydrothermal fluids that were either auriferous in their own right or scavenged gold from the sedimentary pile during periods of hydrothermal efflux. Gold is typically associated with a chalcophile suite of metals, including sulphides of iron, copper, arsenic, bismuth, lead and zinc. Silicates such as tourmaline and accessories such as fluorite are also common vein associates that are commonly associated with the late volatile phases of felsic plutonism.

4. PREVIOUS EXPLORATION

The area of SEL 9591 was extensively explored by Dominion Gold Operations Pty. Ltd and Northern Gold N.L. under earlier tenure. Northern Gold NL has continued exploration in the substitute tenement up to the present day.
4.1 **Exploration Prior To Grant of SEL9591**

**EL 7120 - Northern Gold N.L. 1992-1995**

In 1992-1993 Northern Gold N.L. conducted a soil sampling, mapping and rock chip sampling program over the tenement.

In 1994/95 Northern Gold N.L. completed a reconnaissance aircore drilling program comprising 48 aircore drill holes for 392m. These areas were RAB tested by 63 holes for 1,086m.

Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and used in conjunction with aerial mapping and site visits to determine the best method of exploration to be used on the licence.

**EL 7231 - Dominion Gold Operations Pty. Ltd & Northern Gold N.L.**

Dominion Gold Operations Pty. Ltd. completed a literature review of previous exploration, aerial photographic and airborne magnetic interpretation, a ground magnetic survey, geological mapping, gridding, soil sampling and vacuum drilling.

Landsat and SPOT Imagery and AGSO mapping were obtained and used in conjunction with photo interpretation determine the best methods of exploration.

**EL 7364 - Dominion Gold Operations Pty. Ltd.**

Dominion Gold Operations Pty. Ltd. completed aerial photographic interpretation, airborne and ground magnetics, regional stream sediment sampling, geochemical soil sampling, vacuum drilling and RAB drilling, on a 1,000m by 50m grid.

**EL 7492 - Northern Gold N.L.1994-1995**

Northern Gold N.L. completed regional soil sampling during the 1994 field season. A total of 95 samples, including duplicates, were collected along 5 soil lines. Highly anomalous results were returned.

In 1995 they completed a reconnaissance RAB drilling program. A total of 90 holes were completed for 794m.

Landsat and SPOT Imagery and AGSO mapping were obtained and used in conjunction with air photo interpretation and site visits to determine the best method of exploration.


Work included aeromagnetic interpretation, gridding, soil sampling and vacuum drilling.

The soil sampling program involved the collection of 86 samples. The peak gold response returned was 6.9 g/t. The vacuum drilling programs comprised a total of 215 holes drilled for 992.5m.

Northern Gold N.L. completed a work program based on digital data acquisition and processing. Landsat, SPOT Imagery and AGSO mapping were obtained and used in conjunction with air photo interpretation to determine the best method of gold exploration.

**EL 7601 - Dominion Gold Operations Pty. Ltd. 1994-1995**

Exploration consisted of stream sediment, rock chip and soil sampling. Stream sediment sampling produced peak responses of 250 ppb Au, 350 ppm As, 358 ppm Cu, 20 ppm Pb and 58 ppm Zn. Soil sampling returned peak values of 193 ppb Au, 87 ppm Cu, 170 ppm As, 28 ppm Mo and 2,110 ppm Mn.

**EL 7623 - Dominion Gold Operations Pty. Ltd. 1994**

Dominion carried out a program of gridding, soil sampling, vacuum drilling and RAB drilling. Values to 180ppb Au were returned from the soil sampling, and 50ppb Au was returned from a vacuum hole. A high value of 390ppb Au, from a RAB sample, was also recorded.

**EL 7701 - Dominion Gold Operations Pty. Ltd. 1995**

Exploration by Dominion Gold Operations Pty. Ltd. consisted of aerial photographic interpretation, airborne and ground geophysics, regional stream sediment sampling and one RC drill hole that targeted a magnetic (bullseye) high.

Results for this phase of exploration were disappointing. Exploration over the northern most graticular block involved the collection of 111 geochemical soil samples and 12 vacuum drill holes for 41m. The results from both programs were generally disappointing and downgraded the northern section of the tenement.

**EL 7738 - Solomon Pacific Resources and Northern Gold N.L. 1995-1996**

In 1995, Solomon Pacific Resources provided a re-evaluation and presentation of soil and rock chip results from the previous years work over EL 7738.

Exploration completed by Northern Gold N.L. included digital data processing and interpretation.
A regional RAB drilling program and a reconnaissance soil sampling program were completed. RAB drilling consisted of 369 holes for 1,802m. Results returned coincident anomalous values up to 780 ppb Au and 1,300 ppm As.

A total of 155 soil samples were collected. The results confirmed the Au and As anomaly identified by the RAB drilling, returning maximum values of 505 ppb Au and 190 ppm As.

**EL 7786 - Northern Gold N.L. 1992-1996**

During the 1992/93 season, Northern Gold N.L. completed a reconnaissance stream sediment sampling program with the aid of enhanced geophysical data and mapping. The stream sediment sampling results identified several anomalous soil values.

In 1994 Northern Gold N.L. completed geological mapping, structural interpretations and soil sampling in the southern and eastern part of EL 7786. The soil sampling identified several areas of anomalous soil values, ranging from 5 ppb to 26 ppb Au.

In 1994/95, infill soil sampling was completed over two areas. A total of 402 samples were collected. The sampling reconfirmed the soil anomalies identified by the previous regional soil sampling program. Infill sampling in the southern area identified two Au and As anomalies with assays up to 490 ppb Au and 650 ppm As. Results from infill soil sampling the northern area returned spot highs up to 104 ppb Au.

During the 1995/96 season, Northern Gold N.L. completed 347 RAB drill holes over the previously identified soil anomalies. The RAB drilling of the northern anomaly identified three NNE trending gold and arsenic bedrock anomalies up to 500m in strike length and 80m width. Drilling on the southern anomaly identified a coincident north trending gold and arsenic mineralised zone with a strike length of 1,400m and up to 100m width. At least two other separate anomalous zones lie to the immediate west.

**EL 7866 - Dominion Gold Operations Pty. Ltd. 1994**

Dominion Gold Operations Pty. Ltd. completed 156 vacuum drilling for 631 metres. Results were disappointing, with a maximum result of 5 ppb Au.

**EL 7769 - Northern Gold N.L. 1993-1996**

Northern Gold N.L. conducted soil sampling programs, RAB drilling, aircore drilling, RC drilling, diamond drilling, GIS and remote sensing studies, and resource evaluations.
Exploration programs were directed toward prospect areas originally identified by Western Mining Corporation (W.M.C.), prior to Northern Gold N.L.’s acquisition of the tenement area. These areas were renamed by Northern Gold N.L.

- Kazi Gold Prospect (W.M.C. Quest 150)
- Rhodes Gold Prospect (W.M.C. Quest 155)
- Santorini Gold Prospect (W.M.C. F17 Stockwork Prospect)
- Ithaca Gold Prospect (W.M.C. 9000 North Prospect)

**EL 7926 - Dominion Gold Operations Pty. Ltd. 1994**

Dominion completed geophysical interpretations, gridding, soil sampling and vacuum drilling.

The soil sampling program (39 samples), returned a peak response of 150 ppb Au. Vacuum drilling (29 holes for 101 metres) produced peak results of 57 ppb Au, 280 ppm As and 91 ppm Cu.

Further vacuum drilling was conducted in 1994. Peak responses for the program were 26 ppb Au, 200 ppm As, 69 ppm Cu, 160 ppm Pb and 3 ppm Bi.

**EL 8003 - Dominion Gold Operations Pty. Ltd. 1994**

Gridding, 9.2 line km, soil sampling (318), rock chip sampling (33), stream sediment sampling (10 BLEG), aircore drilling (51 holes for 135.5m) and RC percussion drilling (3 holes for 141m), were carried out during the 1994 field season. The results returned for Au, As and base metal geochemistry, were weak.

**EL 8049 - Dominion Gold Operations Pty. Ltd. 1994**

Soil sampling was confined to areas of subcrop and outcrop within the tenement. A total of 155 samples were collected, returning a peak response 45 ppb Au.

A total of 96 vacuum drill holes were completed for 472m. The drilling yielded a maximum result of 11 ppb Au.

**EL 8053 - Dominion Gold Operations Pty. Ltd.**

Soil sampling [158 samples] was conducted in the western half of EL 8053. Gold results were generally less than detection.

Vacuum drilling [269m] returned gold results generally less than detection.

**EL 8082 - Northern Gold N.L.1994-1995**
Soil sampling was completed over EL 8082. A total of 340 samples were collected and analysed for Au, As and base metals. The program produced two highly anomalous zones, with values up to 520 ppb.

An infill soil sampling program resulted in the collection of 414 samples that reconfirmed the anomalies, returning gold values up to 1,650 ppb and arsenic values up to 860 ppm.


Northern Gold N.L. completed a scout RC drill program to locate the source of the Au soil anomaly, highlighted by previous soil sampling, on ERL 95. A total of 11 scout RC drill holes were drilled. The best intersections returned were 3m @ 23.67 g/t Au from 20m in AC11 and 8m @ 3.41 g/t Au from 42m in AC06.

Northern Gold N.L. completed a comprehensive exploration program in 1994/95, which included costean excavation, geological mapping and sampling, and a pattern of resource RC drilling.

Two costeans were excavated and sampled over 1m intervals with a total of 290 samples submitted for 50g fire assay. Anomalous grades were returned from costean 1, close to the Zamu Dolerite contact, with 2m @ 2.53 g/t Au from 139m, surrounded by a halo of 28m @ 0.54 g/t Au from 133m. Rock chip samples from costean 2 returned anomalous values, with 2m @ 0.75 g/t Au from 107m.

The RC drilling program consisted of a total of 35 infill resource holes drilled for a total of 2,048m. The best intercepts were 3m @ 2.44 g/t Au from 70m in LB24, 15m @ 1.60 g/t Au from 51m in LB07 and 2m @ 8.60 g/t Au from 27m in LB20 and 2m @ 2.28 g/t Au from 6m in LB35.

**EL 8129 - Northern Gold N.L. 1994-1996**

In the 1994/95 Northern Gold N.L. completed a soil sampling program. A total of 176 samples were collected and submitted for analysis of Au, As, Cu, Pb, Zn, and Ag.

A regional RAB drilling program was completed in 1995/96. A total of 168 holes were completed for 977 metres. The program returned anomalous results from 28 holes, with results in excess of 100 ppb Au, all with anomalous arsenic.

Dominion completed shallow RAB drilling and LAG sampling programs. The RAB drilling program comprised 23 holes for a total of 97m. Samples were analysed for Au, Cu, Pb, Zn, Ag, As, Bi, Fe and Mn. Gold results were low.

LAG sampling covered the southern two thirds of the tenement. A total of 140 samples were collected and submitted for analysis of Au, Cu, Pb, Zn, Ag, As, Fe, Mn, and Bi. Several zones of weakly anomalous gold geochemistry were identified.

Northern Gold N.L. completed a work program involving digital data acquisition and processing. Landsat Imagery, SPOT Imagery and AGSO mapping were obtained and interpreted in conjunction with aerial photography.

**EL 8444 - Dominion Gold Operations Pty. Ltd. 1994**

Exploration completed by Dominion comprised aeromagnetic interpretation, plus vacuum, aircore and vertical RAB drilling.

Vacuum and aircore drilling program was carried out during May 1994 that had severe problems with clays and gravels from the Margaret River system. In all, only 3 samples were collected for analysis. To remedy the problem RAB drilling was used. Only one sample was collected from a total of five holes.

**EL 8521 - Northern Gold N.L. 1996**

A regional soil sampling program was completed comprising 33 samples. These were submitted for Au, As and base metal analysis but low results were obtained.

They also completed 60 RAB drill holes for 623m. Ten samples had anomalous results, over 40 ppb Au).

**EL 8529 - Northern Gold N.L. 1995-1996**

Northern Gold N.L. conducted a regional soil sampling program, covering all five graticular blocks. A total of 473 samples, including duplicates, were collected.

The regional soil sampling produced a northerly, trending Au and As anomaly with assay values to 63 ppb Au and 83 ppm As. A series of coincident As and base metal anomalies, with maximum assay values to 220 ppm As, 458 ppm Pb, 444 ppm Zn and 86 ppm Cu were also identified.

**EL 8550 - Northern Gold N.L. 1995-1996**

Work. included soil sampling, aircore drilling, and remote sensing

The soil program comprised 75 samples, that were analysed for Au and As. The results returned were generally low.
An aircore drill program consisted of 11 holes drilled for 39m. The results were generally anomalous. Of the 11 samples collected, 4 were anomalous for Au (>20 ppb), and As was generally elevated for the whole area tested, with 6 of the samples exceeding 100 ppm.

During 1995/96 they completed geological mapping, regional soil sampling, RAB drilling, an infill RAB drilling program and a scout RC drilling program.

A first pass RAB program consisted of 158 holes drilled for 1,912m. All samples were assayed for Au and As. Results outlined a northerly trending zone of highly anomalous coincident Au and As bedrock mineralisation, over a strike distance of 1,200m and width of 400m that was open to the north and south.

Regional soil sampling produced a 2,000m by 1,000m northerly trending Au and As anomaly, with assay values up to 80 ppb Au and 1,190 ppm As.

A total of 298 infill RAB holes were drilled for 2,810m. The drilling identified a series of high coincident Au and As anomalies along the length of the area drilled, with best results including 14m @ 1.17 g/t Au from 5m, and 2m @ 1.38 g/t Au from 3m.

A further 26 RC drill holes were completed for 1,443m. Best results were returned from holes PQ17 and PQ18, recording 4m @ 3.41 g/t Au from 2m, 4m @ 3.72 g/t Au from 29m, and 4m @ 3.87 g/t Au from 43m.

EL 8579 - Dominion Gold Operations Pty. Ltd. 1995

A total of 120 soil samples were collected returning Au results ranging up to 250 ppb gold with a corresponding As value of 480 ppm.

A total of 27 RAB drill holes were also completed for 171m over the northeast corner of EL 8579. The results obtained gave a peak response of 12 ppb Au and 330 ppm As.

EL 8683 - Dominion Gold Operations Pty. Ltd. 1995

Exploration consisted of soil sampling, vacuum and aircore drilling.

The soil sampling comprised 174 samples, which were assayed for Au, As, Bi, Pb and Cu. Results of up to 58 ppb Au were returned in the SE of the tenement.

A total of 50 vacuum drill holes were completed for 202m. The results returned were generally weak.

Aircore drilling was carried out in the eastern sector, comprising 50 holes for 248m. Results were up to 8 ppb Au.

EL 8835 - Metana Minerals N.L. and Northern Gold N.L.
Metana mined a total of 277,000 loose cubic metres of gravels in the Bridge Creek area. An average grade of 0.4gAu/LCM was obtained. They also carried out mapping based on aerial photographs.

Northern Gold N.L. completed geochemical soil sampling for gold over parts of EL 4737, which was later held as EL 8835. A total of 117 samples were collected at 50m intervals, along 3 traverse lines.

**EL 8886 - Northern Gold N.L. 1995**

A total of 103 RAB holes were completed for 333m. Anomalous Au and As values were returned over a 2,000m NW trending zone.

**EL 8898 - Northern Gold N.L. 1995**

Two northwest trending, low order, gold soil anomalies were identified by a soil sampling program, returning Au values up to 41 ppb. Weakly anomalous values for As, Cu, Zn and Pb were also returned, with maximum values of 101 ppm As, 85 ppm Cu, 115 ppm Zn and 143 ppm Pb.

**EL 8927 - Northern Gold N.L. 1995**

A regional soil sampling program for Au-As was completed comprising 319 samples. Results for both Au and As identified the area around the Howley Ridge as highly anomalous, with values up to 315 ppb Au and 240 ppm As.

**EL 6995 - Dominion Gold Operations Pty. Ltd. 1991**

The work completed consisted of airborne geophysical interpretations, aerial photographic interpretations, geological mapping at 1:10,000 scale, stream sediment sampling, composite soil sampling, rock chip sampling and 66m of RC drilling.

The rock chip, stream sediment and soil sampling programs failed to return any results of significance. The RC drilling program intersected zones of anomalous Cu and Zn, with values ranging from 200 to 2000 ppm. The Au results returned were generally below detection.

**EL 9484 - Northern Gold N.L.**

The work program comprised digital data acquisition and processing and RAB drilling.

The RAB drilling program was completed over EL 7786. A total of 13 holes extended into EL 9484, and were drilled for 68m. The highest result returned was 1m @ 2.24 g/t Au from BB45.
4.2 Previous Work SEL 9591 (Current Tenure)

1996/97

Northern Gold N.L. completed MMI geochemical soil sampling, two phases of RC drilling, ore resource estimates, mining feasibility studies and an environmental study. The prospects covered by these work programs were Kazi, Ios, and Sikonos, in the Mount Paqualin area, the Western Arm Extension, the Bridge Creek area, and McCallums Creek.

At the McCallums Creek Prospect MMI geochemical soil sampling was carried out over 5 lines, 1,500m in length, to test two drainage anomalies. A total of 315 samples, including duplicates, were submitted to Amdel for MMI Au, Ag, Pd, Co and Ni analysis.

Results defined two sub-parallel, northwest trending zones, with high response ratios over an area 500m long, and up to 200m in width. A peak value of 48 ppb Au, with a response ratio of 384, was returned.

At the Kazi Prospect a total of 142 MMI samples were collected from two traverses at 5m intervals. An anomalous gold zone was located along the southern traverse.

At the Ios Prospect an RC drilling program was completed comprising 5 holes for 640m. Best intersections were 7m @ 1.71 g/t Au from 27m, 4m @ 2.06 g/t Au from 84m, and 2m @ 1.09 g/t Au from 87m.

A second phase RC drilling program was completed. A total of 14 holes were completed for 1,759m. The best intersections were 15m @ 4.0 g/t Au from 59m, 10m @ 4.84 g/t Au from 95m, and 7m @ 3.11 g/t Au from 76m. The drilling confirmed the presence of interesting gold grades, but suggested that mineralisation was discontinuous.

Northern Gold N.L. also completed an MMI geochemical sampling program at the Western Arm Gold Prospect. A total of 24 samples were collected along the extensions of four traverses, at 5m intervals. A peak result of 6.29 ppb Au was reported. Resource estimates were made for the Kazi, Ios and Sikonos Prospects.

The Kazi Prospect was estimated to contain the following mineral resource at a 0.7 g/t cut off grade down to -85 metres RL.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Tonnes</th>
<th>g/t Au Cut (15) g/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazi Measured</td>
<td>993,520</td>
<td>2.12</td>
</tr>
<tr>
<td>Kazi Indicated</td>
<td>118,830</td>
<td>1.81</td>
</tr>
</tbody>
</table>
The Ios Prospect was estimated to contain the following mineral resource at a 0.7 g/t cut off.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Tonnes</th>
<th>g/t Au Cut (15) g/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ios Measured</td>
<td>396,520</td>
<td>1.55</td>
</tr>
<tr>
<td>Ios Indicated</td>
<td>223,340</td>
<td>1.62</td>
</tr>
<tr>
<td>Ios Inferred</td>
<td>192,450</td>
<td>1.63</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>812,310</strong></td>
<td><strong>1.59</strong></td>
</tr>
</tbody>
</table>

The Sikonos Prospect is estimated to contain the following mineral resource at a 0.7 g/t cut off grade.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Tonnes</th>
<th>g/t Au Cut (15) g/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sikonos Measured</td>
<td>282,890</td>
<td>1.93</td>
</tr>
<tr>
<td>Sikonos Indicated</td>
<td>85,270</td>
<td>2.07</td>
</tr>
<tr>
<td>Sikonos Inferred</td>
<td>33,520</td>
<td>2.28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>401,680</strong></td>
<td><strong>1.97</strong></td>
</tr>
</tbody>
</table>

A Public Environmental Report (PER) was prepared by AGC Woodward - Clyde Pty. Ltd. for Northern Gold N.L., in March 1997. The report was written to cover possible mining operations at Kazi, Western Arm and Bridge Creek.

**1997/98**

**Geophysics**

Northern Gold N.L. completed a detailed airborne magnetic survey and interpretations, gravity surveys, rock chip sampling programs, infill soil sampling programs, costean excavation, RC drilling, geological mapping, soil studies and rehabilitation over SEL 9591.

Northern Gold N.L. commissioned World Geoscience Corporation Ltd. to conduct an airborne magnetic/radiometric survey over the Howley Anticline. The data was interpreted.
Modelling of the extent and depth of a sub-surface granitoid, to the north of Chinese Howley, was completed using newly acquired gravity and magnetic data. This study indicated a body approximately 12km long and 4km wide, at a depth of less than 1km.

**Soil Sampling**

Infill soil sampling programs were completed over prospects in the northwest and south of SEL 9591.

The prospects covered by soil sampling in the northwest were Big Red Blob, Bons Rush, Santorini East, Santorini South and 8550 East.

**The Big Red Blob Prospect** infill soil sampling program outlined a north northeast trending mineralised structure with maximum values to 1,540 ppb Au.

Results from the **Bons Rush** soil sampling returned moderate to highly anomalous soil values to 1,710 ppb Au.

Infill soil sampling at **Santorini East** was successful in outlining north trending, southern and northwestern anomalous zones. The southern zone returned highly anomalous assay values to 1,140 ppb Au. The north western zone returned assay values to 2,960 ppb Au.

The infill soil sampling at **Santorini South** outlined two parallel, southeast trending anomalies. The more western anomaly returned maximum assay values to 280 ppb Au and the eastern anomaly returned maximum assay values to 150 ppb Au.

At the **8550 East** prospect the peak results returned from the infill soil sampling program were 430 ppb Au and 270 ppb Au.

The infill soil sampling program, completed over the **Big Howley West** Prospect, returned peak results of 260 ppb Au and 170 ppb Au.

The soil sampling program completed over the **Chinese West Fault Block** returned peak results of 30 ppb Au and 21 ppb Au.

**Rock Chip Sampling**

The **Bons Rush** rock chip sampling program results were disappointing, with only one sample returning a value above the detection limit of <0.01 ppm.

The **Chinese East Prospect** returned peak results of 17 ppb Au and 14 ppb Au.

At **F16 Prospect** rock chip sampling returned a peak response of 1.16 ppm Au while the rock chip sampling at the **Kazi Prospect** returned peak results of 0.86 ppm Au and 0.95 ppm Au.
Rock chip sampling at **North Mount Bonnie** returned a peak gold result of 15.8 g/t Au (Sample No. 190572, 8503904N : 777025E). The peak base metal results returned from this area were 1,680 ppm Zn, 196 ppm Pb, 1220 ppm As, and 93 ppm Cu from sample number 190578 ( 8503962N : 777021E).

**Trenching F16**

Northern Gold N.L. completed a trenching program, consisting of mapping and channel sampling, over F16 Prospect. A total of 7 trenches were excavated for a length of 681m with composite samples collected over 3m intervals.

The best intersections obtained from the trench sampling program were 3m @ 1,850 ppb Au from 9m in F16-04, 6m @ 1,405 ppb Au from 39m in F16-05, 3m @ 1,480 ppb Au from 33m in F16-06, and 3m @ 1,985 ppb Au from 24m in F16-07.

**RC Drilling Liberator Prospect**

Northern Gold N.L. completed a short program of RC drilling over the Liberator Prospect to test mineralisation in the continuing southerly extension of Chinese Howley, both in the hinge zone and in the strike extension of the No.3 pit. The RC program consisted of 5 holes drilled for 304m. The results from the RC drilling program were generally disappointing, with a peak intersection of 1m @ 0.63 g/t from 13m.

**Geological Mapping**

Geological mapping programs were completed over the North Mount Bonnie, North Howley Siding, Kazi and Chinese East Prospects. These programs were aimed at identifying structural features and sources of anomalous results, and to aid in the determination of gold potential.

Northern Gold N.L. also received the findings of a black soil formation and dispersion study of the Western Arm and Kazi areas. The study found that the enhanced mobility, and subsequent wide dispersion haloes, of As, Sb, W and Mo, in goethitic horizons, make these elements useful indicators of underlying mineralisation.

Northern Gold N.L. completed rehabilitation programs over the F16 and Liberator Prospects, and over the Mount Paqualin area. The rehabilitation involved backfilling costeans at F16 and sub-surface capping drill holes at Liberator and around the Rhodes, Kazi, Santorini, Ithaca and 8550 prospects.

**1998/99**

Northern Gold N.L. completed surveying, geological mapping, infill soil sampling, aircore drilling, RAB drilling and rehabilitation over SEL 9591.
They commissioned GHD Surveys Pty. Ltd. to re-establish old Western Mining Corporation baselines (Local Grid: -10600E and 11400E) with a tie line along 16000N (local grid coordinates).

**Geological mapping** programs were completed over the Big Red Blob and Bons Rush Prospects. These programs were aimed at identifying structural features and sources of anomalous results, and to aid in the determination of gold potential within the prospect areas.

An infill **soil sampling program** was completed at the Big Red Blob prospect on the eastern side of the Howley Anticline. The samples were collected at 50m intervals along nine lines, spaced 200m apart. A total of 108, -5# size fraction, B-horizon, soil samples, including duplicates, were submitted to Assaycorp, in Pine Creek, for analysis of Au, using low level fire assay technique, and Ag, As, Cu, Pb and Zn, using G400M method. A further split from the original sample was analysed for Au and Ag, using the BLEG method. The peak results returned were 70 ppb Au and 90 ppb Au

**RAB drilling** programs were completed over both the Big Red Blob and Bons Rush prospects. A total of 181 blade and hammer holes were completed over the **Big Red Blob Prospect** for 2,716m and 131 blade and hammer holes were completed over the **Bons Rush Prospect** for 1,918.8m. Three-metre composite samples were assayed for Au and As. The best intersections returned from the RAB drilling over the Big Red Blob Prospect were 6m @ 1.11 g/t Au from 3m, including 3m @ 1.7 g/t Au from 3m and 9m @ 2.51 g/t Au from 6m.

The **Bons Rush Prospect** returned peak intersections of 3m @ 2.81 g/t Au from 9m, 3 metres @ 3.56 g/t Au from 3m, and 3m @ 33.25 g/t Au from 6m.

Northern Gold N.L. also completed **aircore drilling** in the southern area of the Bons Rush Prospect, to penetrate bedrock through unconsolidated alluvium. A total of 5 aircore drill holes were completed for 93.5m. Three-metre composite samples were submitted to Assaycorp, in Pine Creek, for analysis of Au and As.

The results from the aircore drilling program were generally disappointing.

Rehabilitation programs were completed over the Big Red Blob and Bons Rush drilling areas.

**1999/2000**

Northern Gold N.L. conducted further gold exploration activities over SEL 9591 during the 1999/2000 season. The work completed included data reviews, rock chip
sampling, regional and infill soil sampling, RAB drilling, RC drilling, diamond drilling and rehabilitation.

A comprehensive literature review, aimed at evaluating previous exploration results over the East Burnside area and the Howley Anticline, was completed at the Northern Territory Department of Mines and Energy. Various company reports were obtained in both digital and hard copy format for compilation into Northern Gold N.L.’s data base as part of a target generation and ranking exercise. All surface geochemical sampling, RAB/aircore drilling, RC drilling and diamond drilling, in addition to lithological and structural information, has been compiled for use in Micromine and Mapinfo software packages to aid in work program development (Mottram, 2000).

**Rock chip samples** were collected from the Bons Rush, Ios, Ithaca and Kazi prospects. Disappointing results were obtained from the Ithaca and Kazi prospects, however results of 1.1 ppm Au and 1.27 ppm Au were returned from the Ios Prospect, and values to 3.78 ppm Au were returned from the Bons Rush Prospect

The **regional soil sampling program** over the North Burnside Prospect targeted the extension of the Howley Anticline, north from F16 to Goodall, and the northwest trending regional structures associated with the Pine Creek Shear Zone, north of the Burnside Granite. The program was successful in outlining both NNE and NW trending soil anomalies. The peak results returned were 180 ppb Au (Sample Nos. 182780 and 182781, 8535419.00N : 758039.99E), 94 ppb Au (Sample No. 182773, 8534623.01N : 757631.99E) and 29 ppb Au (Sample No. 182834, 8531371.01N : 762200.00E).

**Infill soil sampling** programs were completed over both the Kazi and Quest Far South Prospects, targeting previously defined gold and arsenic anomalism.

The soil sampling program conducted south of the Kazi Prospect was not successful in either reproducing the original soil gold BLEG anomaly or outlining new anomalous zones, however the sampling in the northwest outlined a 500m by 80m north trending extension to the Kazi Northwest soil anomaly, with peak results to 11 ppb Au and 554.6 ppm As returned over black soil.

The results from the soil sampling over the Quest Far South Prospect were successful in extending the existing northeast trending soil anomaly, in addition to identifying further anomalous gold/arsenic zones, associated with distinct north striking magnetic lineaments. The peak values returned were 360 ppb Au, 240 ppb, and 190 ppb Au.
RAB drilling and resampling programs were completed over both the Big Red Blob and Bons Rush prospects, targeting previously identified soil and RAB gold anomalies. A total of 234 blade and hammer holes were completed for 4,102.5m.

A **RAB drilling** program over the **Big Red Blob Prospect** identified north to northeast striking zones of gold and arsenic bedrock mineralisation hosted by dolerite. The peak results were 9m @ 0.93 g/t Au, from 3m, including 3m @ 1.32 g/t Au from 3m, and 3m @ 1.3 g/t Au from 9m, in BRRB539, and 6m @ 0.64 g/t Au from surface in BRRB525.

The RAB drilling program over the **Bons Rush Prospect** was successful in identifying north, northwest and northeast trending zones of gold bedrock mineralisation. Peak intersections returned included 25m @ 1.95 g/t Au, from 5m, including 7m @ 4.16 g/t Au from 7m; 16m @ 1.3 g/t Au, from 6m; 14m @ 1.45 g/t Au from 3m; and 3m @ 19.25 g/t Au, from 9m.

Two phases of **RC drilling** were conducted over the **Bons Rush** Prospect, targeting RAB gold anomalies. The programs were successful in confirming gold in bedrock coincident with previously identified soil and RAB drilling anomalies.

The +75µm fraction samples analysed by Amdel Laboratories, in Kalgoorlie, utilising FAS1 method, confirmed the presence of coarse gold at the Bons Rush Prospect.

**Diamond drilling** was also completed over the **Bons Rush** Prospect to examine structural and geological features within the main zone of mineralisation. Two HQ holes were drilled for 150.3m including 41.3m of RC pre-collar.

Bons Rush is associated with quartz-carbonate veins that dip shallowly (~25-30°) to the northeast. The mineralised zone is hosted by a carbonated, sulphidised, sericitised and occasionally silicified granophyric phase of the **Zamu Dolerite**.

Northern Gold N.L. completed **rehabilitation** programs over the Big Red Blob and Bons Rush prospects in compliance with the Mining Act.

**2000-2001**

Northern Gold N.L. conducted infill soil sampling, RAB drilling, RC drilling and rehabilitation over SEL 9591.

**RC drilling** programs were carried out over the **Bons Rush** Prospect, targeting gold soil and bedrock anomalies, associated with fold closures of the Howley Anticline, and higher grade dolerite-hosted gold previously identified by surface sampling and RAB drilling programs.
Holes were drilled at dips of -60° and azimuths of 087° and 267°, over six, east-west lines.

A total of 13 angled face-sample hammer RC holes (BRRC033-043, BRRC046, BRRC047) were completed for 921.5m.

The RC drilling intercepted promising grades of gold mineralisation.

The higher grades are associated with a zone of quartz veining, chloritisation, pyrite, arsenopyrite and minor pyrrhotite, hosted within a shear zone in the hanging wall of the Upper Zamu Dolerite Sill.

**RC Drilling Program Peak Intercepts**

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>AMG Coordinates</th>
<th>From (m)</th>
<th>Interval (m)</th>
<th>Grade (g/t Au)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRRC040</td>
<td>8526845.24N 752531.39E</td>
<td>14</td>
<td>16</td>
<td>3.00</td>
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<tr>
<td></td>
<td></td>
<td>38</td>
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<tr>
<td></td>
<td></td>
<td>59</td>
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<td>3.87</td>
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<tr>
<td>BRRC042</td>
<td>8526844.94N 752561.40E</td>
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<tr>
<td>BRRC046</td>
<td>8526649.07N 752139.26E</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>31</td>
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<tr>
<td>BRRC047</td>
<td>8526649.32N 752114.25E</td>
<td>23</td>
<td>2</td>
<td>10.16</td>
</tr>
</tbody>
</table>

**RAB drilling** was carried out over the **Quest Far South** Prospect, targeting north and northeast trending gold anomalism, associated with distinct north striking magnetic lineaments.

A total of 146 vertical and angled, blade and hammer holes (QFSRB001-0142, QFSRB083A, QFSRB084A, QFSRB085A, QFSRB105A) were completed for 2,726m on nine east-west traverses.

The drilling program delineated a north trending bedrock gold/arsenic anomaly 1,400m by 500m. The results are interpreted to be associated with a moderate northerly trending magnetic anomaly.
The peak intersections returned were 6m @ 102.ppb Au from surface: 6m @ 347ppb Au from surface and 3m @ 584ppb Au from 12m.

**Rhodes Prospect**

Previous **soil sampling** programs conducted by Western Mining Corporation and Northern Gold N.L. outlined moderate to strong soil anomalies NW of the Rhodes gold resource and coincident with an aeromagnetic anomaly. These anomalies remain open to the east and immediate north of the current resource. A total of 30 BLEG soil samples, consisting of approximately 4kg of B horizon soil, sieved to a –5mm size fraction, were collected at 40m intervals along six, 200m spaced lines. These were assayed for gold and multi elements by ICP methods.

The BLEG method soil sampling program failed to confirm the gold anomalies.

**Rehabilitation programs** were completed over the Bons Rush and Quest Far South prospects.

### 4.3 Work Undertaken 2001-2002 (Formation of Burnside Joint Venture)

The tenement was incorporated into a joint venture between Northern Gold NL and Buffalo Creek Mines P/L in April 2002. This agreement has the prime objective of locating and developing gold resources within an economic radius of the Brocks Creek gold treatment plant. As a priority the joint venture focused on refurbishing the Brocks Creek and Cosmopolitan Howley infrastructure to a point where gold production could commence at Brocks Creek and staff office and accommodation/messing support was at a satisfactory standard.

In addition the joint venture commenced underground decline development at the Zapopan Mine adjacent to the Brocks Creek mill.

Reverse circulation drilling programs were carried out at Chinese Howley, and Yam Creek-North Point near Grove Hill. Resource reviews and computer modelling of resources were completed for Bridge Creek, Princess Louise (Yam Creek) and were in progress at Rising Tide, Cosmopolitan Howley main pit and deeps.

Within SEL 9591 the joint venture carried out RC drilling at Bons Rush, completing 11 holes for an advance of 508m (BRRC-44 – 56). Results were encouraging, with intercepts including 20m @ 3.02g/t from 44m, but suggested insufficient internal continuity to proceed to mining at this stage.
Two previously drilled core holes were split and re-sampled. A 16m interval averaged 3.08g/t Au from 31m in BRDDH 001 and a 13m zone in BRDDH 0002 averaged 3.01g/t Au from 55m.

4.4 Work Undertaken 2002-2003

Within the Burnside Region the joint venture completed the first phase of underground development at the Zapopan Mine mid 2003. A decline and two levels were installed at 980m and 1000m RL. Some 10,000t of development ore was custom milled. Exploratory diamond core drilling was undertaken from the two levels to increase controls on the resource geometry and grade. New surface core drilling has been commissioned for late in 2003. In the year to the end of June 2003 exploration expenditure of $322,000 and mining expenditure of $7,500,000 was reported for the Brocks Creek tenement group alone.

In addition to Zapopan, much activity has been devoted to computer modelling of the Cosmo Howley “deeps” resource, upgrading the Rising Tide resource model, the Woolwonga resource model and working on the Fountain Head resource, preparatory to refurbishing the mill and committing to going to full production. Expenditure on modelling and support costs for the period was reported as totalling $72,611.

Exploratory drilling was also carried out at Yam Creek-North Point earlier in 2002, and at Chinese South and Mottrams, on the Howley trend. At Mottrams and Chinese South during November 2002 a total of 2,854m of RC drilling was completed. With assays and support costs the expenditure was $151,912.

During 2002-2003 the economic parameters for gold mining deteriorated in Australian dollar terms, particularly for a fledgling operation in the NT. The joint venture decided to defer expenditure on gold exploration in the area pending a turn around in economic conditions. The joint venture also needed more time to fully evaluate the economics and optimum mining method for the Zapopan.

5. Exploration Completed 2003-2004

5.1 Structural Interpretation

The process of structural interpretation and target definition was commenced in the previous year and this was continued through 2003-2004. The lineament interpretation for the region surrounding the Burnside Batholith was enhanced and added to using a combination of:

Visible lineaments interpreted from SPOT images

Lineaments interpreted from total magnetic intensity image
Lineaments interpreted from thorium drape over TMI.

Lineaments interpreted from First Vertical Derivative magnetics.

The interpretations are presented as composite lineament sets, with different colours for each type. The relationship of the linears to known mineralisation and prospects within SEL9591 and within tenements excised from the SEL is also shown in Figures 2 to 5.

The enhanced interpretation was partly induced by the requirement to surrender blocks from SEL9591 as part of the process of outlining a new SEL application. A new application was required because further extensions of term were not allowed under the Mining Act. New SELA24352 was lodged in mid 2004.

In addition, further understanding of geological controls on gold mineralisation is necessary for targeting of exploration and ranking of prospects both within the SEL and in the recently granted exploration licences held by the Burnside Joint Venture.

The interpretation led to several conclusions and reinforced observations made in the previous year.

a) Within the Burnside Region the largest and historically most productive gold mines discovered to date lie on either the BKZ structure (Brocks Creek-Zapopan) or on the Howley Anticline trend. What these two groups of deposits have in common is alignment along a plunging anticlinal axial zone with a steep to overturned NE limb. The strike of the axial zones is 290 degrees in the case of the BKZ and 315-320 degrees in the case of the Howley structure.

b) The productive anticlines have been formed within sediments of the South Alligator Group, (Koolpin Fm, Gerowie Tuff and Mt Bonnie Fm) and include contact zones with pre orogenic Zamu Dolerite sills.

c) Cross cutting structures appear to have interacted with the primary anticlines at a high angle. These structures include linear fracture swarms striking 230-235 magnetic and these fractures could be related to late stage cross folding or doming that have induced slight plunge reversals at intervals along the primary anticlines. This combination of fracture swarms and plunge reversals appear important in localising gold along the favoured anticlinal axes.

d) Both the BKZ and the Howley Anticline have been influenced by strike-parallel reverse faulting dipping SW. At least five major reverse faults are interpreted to be present between the Howley Anticline and the BKZ. The net effect of this faulting, which is a result of directed stress from SW to NE, has been
to imbricate the South Alligator sequence, sub parallel to bedding, along south west dipping slip planes. (See Figs.). From observations in the field most of these faults have dips around 60 degrees to 80 degrees. The bedding traces implied from 1st Derivative magnetics support this interpretation.

e) The late-syn to post orogenic Burnside Batholith has had the effect of distorting the pre existing fold/fault patterns as well as acting as a buttress and refracting late stage movements. The net effect has been to cause a swing in strike of the main reverse faults from 315 at the Howley Anticline to 290 at the BKZ and to 270 degrees at the Rising Tide deposit near the granite contact.

f) Directed stress has contributed to other linear features. A diagonal set of (dextral?) accommodation faults striking 340 magnetic have developed half way between the Howley Anticline and the BKZ. In addition, a fault striking 50 degrees magnetic separates linear, contact suite rocks adjacent to the SE side of the Burnside Batholith, from folded South Alligator rocks. A similar fault of lesser displacement lies on the north western side of the batholith. Several other linears have been interpreted with this trend between the Hayes Creek Fault in the south east and the Burnside Batholith. The refolding of fold axes plus possible accommodation structures in this zone could imply crustal shortening and compression in a NW-SE direction, buttressing against the Burnside Batholith. Such compression could have caused the domal cross folding on the BKZ and Howley Anticline.

g) In the north east of SEL9591 a north west striking corridor of sheared and folded sediments occurs. This is known as the Pine Creek Tectonic Zone, and is a strike-extensive entity that has its origins in the fundamental structure of the Pine Creek Geosyncline. In the area studied it has an average width of 3km and passes between the Burnside Granite and the Margaret Granite. A late stage dolerite dyke described as the ‘Great Dyke’ meanders along its course for some tens of kilometres.

The corridor is important in an economic sense due to the higher intensity of structural preparation that has occurred there and the potential for deep plumbing of fluids. There does appear to be a greater frequency of gold occurrences within and adjacent to it. Both the Pine Creek Gold field and the Union Reefs Goldfield lie within the corridor and the Woolwonga and Goodall pits lie just outside it. Also within the corridor are several recorded soil and rock anomalies, including the McCallums Creek prospect and the gold resource at Great Northern. It is
interpreted that northerly or easterly trending structures cutting the corridor would be the most prospective settings.

h) In the north-western sector of the SEL the local structure is dominated by late orogenic north east striking (30-40 degree magnetic) fault sets. These cut the northern extension of the Howley Anticline axis that strikes N-S in this area and are the sites of several gold prospects along the axial zone. These include Howley Ridge, Bridge Creek, Ios, Sikinos-Ithaca, and Santorini.

In addition the axes of folds east of the Howley Anticline have been caught up and aligned with dextral faults of the NE event. This setting has generated several gold prospects in the sector, including Kazi, Rhodes, Bons Rush and several geochemical anomalies.

5.2 Exploration Targeting

Within SEL9591 the above analysis suggests several structural settings that would appear to have superior opportunities for the development of gold deposits. These settings vary according to the stress patterns around the Burnside Batholith and the relationship of anticlinal fold axes, plunge reversals and litho-facies to important cross cutting linear features such as faults and fracture swarms.

a) South Western Sector of SEL9591

This area appears to have inferior potential for gold deposits. The Howley Anticline and strong reverse faulting lies immediately to the north east along with some of the better gold deposits in the field. The magnetic signature suggests that fold axes and faults of sufficient magnitude to generate significant settings for gold mineralisation are only weakly developed. The stratigraphy also appears to be dominated by Burrell Creek Formation coarse clastics, a less prospective host rock in this vicinity. Despite reasonable outcrop few anomalies have been reported despite proximity to the Howley Anticline. The area of the Midway Anomaly (rock chip anomaly) needs further investigation.

b) Eastern Sector of SEL9591

Geographically this area extends northwards from the vicinity of Mt Bonnie to just beyond Woolwonga pit. It surrounds the Glencoe deposits and takes in a broad swath of country to the south east of the Burnside Batholith.

The sector is bounded to the east by the tenement boundary and the Pine Creek Tectonic Zone.
The zone is attractive because it lies within the NE striking corridor that links the Howley deposits, the BKZ deposits, Glencoe and Woolwonga. This alignment, bracketed by NE fracture patterns, highlights an area of SEL9591 measuring 5km in width and extending NE for 10km.

Prime areas for search would be between Glencoe and Woolwonga and north east of Fountain Head to the tenement boundary. Secondary search areas lie along the trend of the NE extensions of the Hayes Creek Fault to the tenement boundary and to the north west of Woolwonga pit, along the southern margin of the Tectonic Zone.

These areas are extensively masked by Recent alluvium of the Margaret River and its tributaries.

c) North Eastern Sector of SEL9591

This area is dominated by the Pine Creek Tectonic Zone that passes north westwards between the Burnside and Margaret Granites. Several anomalous locations have been documented in terms of soil and rock chip and the McCallums Creek prospect lies within this sector. This corridor comprises a structurally prepared metasedimentary suite that is most likely to be mineralised at settings where either northerly or easterly trending fracture systems intersect it. Areas marginal to the Tectonic Zone, on its south west side, are also prospective.

d) North Western Sector of SEL9591

North striking stratigraphy and fold axes are the dominant feature of the western margins of the licence. Elements of the Burrell Creek Formation in the far west pass eastwards into slices and axially positioned segments of South Alligator Group rocks exposed in the Howley Anticline and parasitic structures.

Further east again, less folded arenite-turbidite suites of the Burrell Creek Formation dominate the stratigraphy. Late stage north east striking dextral faults have transected the axial zone of the Howley Anticline creating some sites favourable for gold deposition. These are listed as Howley Ridge, Bridge Creek, Ios, Sikinos, Western Arm and Santorini.

To the east of the Howley Anticline, drag and multiple axial plane failure has occurred along these faults and generated some pervasive parallelism in all structures. This setting has generated further sites for gold mineralisation, in particular at Bons Rush, Big Red Blob, F16, Kazi and Rhodes. The latter group appear to have superior structural settings and better gold grade characteristics.
5.3 Surveying Activity

During the year the joint venture commissioned a boundary survey on mineral lease application 23617. When granted, this lease will effectively excise the Bons Rush and Big Red Blob mineralisation from the SEL. The cost of this survey has been allocated to SEL9591 and totalled $12,367.

6. EXPENDITURE STATEMENT 2003-2004

The following sets out the main cost centres of expenditure on SEL9591 during the year ended October 30th 2004.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Wages geology</td>
<td>$12,175</td>
</tr>
<tr>
<td>Contractors computer</td>
<td>$1,700</td>
</tr>
<tr>
<td>Contract surveying</td>
<td>$12,367</td>
</tr>
<tr>
<td>Consumables</td>
<td>$590</td>
</tr>
</tbody>
</table>

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TOTAL $26,832

7. FORWARD EXPLORATION PROGRAM 2004-2005

With the acquisition of the Union Reefs mill and tenement package in August 2004 the economic framework of the Burnside Regional tenements has changed. Advanced stage resources outlined by RC and diamond drilling within the Burnside Joint Venture tenements require an update to their economic status and ranking. It is expected that several deposits including the Zapopan underground resource will be brought to readiness for mining in the short term. Deposits at Pine Creek, Union Reefs, Fountain Head and North Point also stand to benefit from the mill acquisition. The Cosmo Howley deposit which has been extensively diamond drilled and modelled in the past two years is scheduled for Phase 2 development

SEL9591 represents a back up pool of gold targets that are discrete or represent extensions to known deposits excised from the tenement. This suite of targets will require progressive evaluation and ranking followed by geochemical field surveys and mapping. The joint venture logically expects to devote most of its expenditure in the coming year to advanced stage resources that can be brought to production in the short term. Targets in SEL9591 will receive less attention at this stage, but are considered important in the medium term. It is planned that the SEL will continue to be technically evaluated in the light of increasing understanding and updating of structural controls.
A program of review, reporting, interpretation, field traverses and sampling will be carried out in the 2004-2005 season. *This work has been costed at $35,000.*
8.0 REFERENCES


VAN NOORT, E., (1996). Gold and Trace Element Dispersion in Black Soil Profiles, Western Arm, Northern Territory. Unpublished report to the University of Western Australia, Department of Geology and Geophysics.