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MCNs 377 - 380, 852 - 857, 1035, 3099 - 3115, 3117

2001/02 ANNUAL REPORT

to 31st March, 2002

Burnside (14/2-II) 1:50,000 scale map sheet

Title Holders:- Northern Gold N.L., Territory Goldfields N.L. and Camelot Northern Territory Ltd.
Managed by:- Northern Gold N.L.

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Distribution
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Northern Gold N.L., Adelaide River

Compiled by:-
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SUMMARY

MCNs 377 - 380, 852 - 857, 1035, 3099 - 3115 and 3117 are located approximately 37 kilometres southeast of Adelaide River on the Burnside (14/2-II) 1:50,000 scale map sheet. The claims are known locally as the Howley Ridge Prospect.

Northern Gold N.L. has completed many individual phases of exploration over the mineral claims, including geological mapping, costeaming and channel sampling, RC drilling, RAB drilling, RRMIP geophysical surveys, ground magnetic surveys and sediment sampling.

MCNs 377, 378, 379 and 380 were granted on the 14\textsuperscript{th} of June, 1983, for a period of 10 years. The licences were renewed on the 8\textsuperscript{th} of March, 1994, and again on the 14\textsuperscript{th} of January, 1999, for periods expiring on the 31\textsuperscript{st} of December, 2003. MCNs 852 - 857 were granted on the 18\textsuperscript{th} of January, 1985, for a period of 10 years. The mineral claims were renewed on the 30\textsuperscript{th} of June, 1995, for a period ending on the 17\textsuperscript{th} of January, 2005. MCN 1035 was granted on the 27\textsuperscript{th} of February, 1986, expiring on the 26\textsuperscript{th} of February, 1999. The licence was subsequently renewed for a period expiring on the 31\textsuperscript{st} of December, 2001. MCNs 3099 - 3115 and 3117 were granted to on the 28\textsuperscript{th} of March, 1989, for a period of five years. The titles were renewed on the 30\textsuperscript{th} of June, 1995, for a period ending on the 27\textsuperscript{th} of March, 2004.

MCNs 377, 378, 379 and 380 are held by Northern Gold N.L., and MCNs 852 - 857, 1035, 3099 - 3115 and 3117 are held by Territory Goldfields N.L., which is managed by Northern Gold N.L.

Northern Gold N.L. completed further reviews of existing geological, geochemical and geophysical data, as part of a target generation and ranking exercise, over the Howley Ridge tenements during the 2001/02 year of tenure.

The expenditure for the 2001/02 year of tenure totalled $1,940.
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1.0 INTRODUCTION

MCNs 377 - 380, 852 - 857, 1035, 3099 - 3115 and 3117 are located approximately 37 kilometres southeast of Adelaide River on the Burnside (14/2-II) 1:50,000 scale map sheet. The claims are known locally as the Howley Ridge Prospect. The prospect, which covers an area approximately 749.25 hectares in size, is situated at the northern end of the Howley Line, north of the Big Howley Gold Mine, and south of the Stuart Highway, between latitudes 13°27'30" south and 13°30' south and longitudes 131°18'30" east and 131°20' east (Figure 1).

MCNs 377 - 380, 852 - 857, 1035, 3099 - 3115 and 3117 are situated within the Douglas Pastoral Lease, PL 903, held by Tovehead Pty. Ltd.

Access to the claims is via the Stuart Highway, the Metana Camp road, and via the Cosmopolitan Howley mine site.

MCNs 377, 378, 379 and 380 were granted to Chrisp de Vries and Associates Pty. Ltd. and Talmina Trading Pty. Ltd. on the 14th of June, 1983, for a period of 10 years. The mineral claims were subsequently acquired by Northern Gold N.L. The licences were renewed on the 8th of March, 1994, for a period expiring on the 31st of December, 1998. The licences were again renewed on the 14th of January, 1999, for a period expiring on the 31st of December, 2003.

MCNs 852 to 857 were granted to Frazer E. Henry, Neville J. Walker, Edmund J. Bailey and John G. Wright on the 18th of January, 1985, for a period of 10 years. The titles were transferred from Zapopan N.L. and Harlock Pty. Ltd. to Dominion Gold Operations Pty. Ltd. in May, 1990. Territory Goldfields N.L., which is managed by Northern Gold N.L., subsequently acquired the claims. The mineral claims were renewed on the 30th of June, 1995, for a period ending on the 17th of January, 2005.

MCN 1035 was granted on the 27th of February, 1986, expiring on the 26th of February, 1999. The licence was subsequently renewed for a period expiring on the 31st of December, 2001.

MCNs 3099 - 3115 and 3117 were granted to Northern Gold N.L. on the 28th of March, 1989, for a period of five years. The titles were transferred to Dominion Gold Operations Pty. Ltd. and renewed on the 30th of June, 1995, for a period ending on the 27th of March, 2004. The mineral claims were subsequently acquired by Territory Goldfields N.L., which is managed by Northern Gold N.L.

Northern Gold N.L. completed further reviews of existing geological, geochemical and geophysical data, as part of a target generation and ranking exercise, over the Howley Ridge tenements during the 2001/02 year of tenure.

The expenditure for the 2001/02 year of tenure totalled $1,940.
2.0 GEOLOGY

2.1 Regional Geology
The mineral claims are situated within the Pine Creek Geosyncline, a tightly to isoclinally folded sequence of mainly pelitic and psammitic Lower Proterozoic sediments with interlayered tuff units. All the lithologies in the area have been metamorphosed to low, and in places, medium grade, metamorphic assemblages. For the purpose of this report, the prefix meta- is implied, but omitted from the rock names and descriptions.

The sequence has been intruded by pre-orogenic dolerite sills of the Zamu Dolerite and a large number of late syn-orogenic to post-orogenic Proterozoic granitoids. Largely undeformed Middle and Late Proterozoic, Palaeozoic and Mesozoic strata, as well as Cainozoic sediments and laterites, overly the Pine Creek Geosyncline.

2.2 Local Geology
The structural geology of the Howley area is dominated by two macroscopic structures, the Howley Anticline and a series of anastomosing brittle-ductile shear zones with associated quartz veining (Farrelly, 1997).

The Howley Anticline is a macroscopic fold structure, which has been identified from Cosmopolitan Howley in the south to Mount Paqualin in the north. Primary bedding \((S_0)\) in the sedimentary units is the form surface to the fold. The fold is best described as a doubly plunging upright, asymmetric, tight, non-cylindrical fold which plunges to the north in the vicinity of the Cosmo Howley mine and plunges to the south in the Bridge Creek area (Farrelly, 1997).

An anatomising series of north to northwest trending, sub-vertical, ductile-brittle shear zones deform the earlier fold structures. The shear zones strike north to northwest and dip 80° to the west and offset both \(S_0\) and \(S_1\) structures (Farrelly, 1997).

Outcrop on the claims consists of lithologies of the South Alligator Group, which have been tightly folded to form the Howley Anticline. These lithologies can be subdivided into two distinct groups (Farrelly, 1997).

The lithologies belonging to the Gerowie Tuff lie stratigraphically above the rocks of the Koolpin Formation and occur in the northern part of the claims. The eastern limb of the anticline comprises a monotonous sequence of bedded cherts and mudstones. The western limb of the fold is defined by a series of bedded cherts, yellow claystones and mudstones. The lithologies on the western limb strike 335°
and dip 65° to the west whereas the rocks forming the eastern limb strike 002° and dip from 80° to the west to vertical (Farrelly, 1997).

The rocks which comprise the Mount Bonnie Formation occupy the southern part of the area covered by the claims, and are stratigraphically above the cherts, which form the Gerowie Tuff. The first occurrence of the Mount Bonnie Formation is taken to be a coarse-grained greywacke, which forms a distinctive marker horizon along the eastern limb of the anticline. The main rock types consist of alternating mudstones, greywackes and thin BIF horizons. The lithologies on the western limb strike 335° and dip 65° to the west whereas the rocks forming the eastern limb strike 002° and dip from 80° to the west to vertical (Farrelly, 1997).

2.3 Mineralisation

Gold mineralisation along the Howley Ridge occurs in all lithological units, though best grades are associated with iron and carbonaceous rich sedimentary units and dolerite. The mineralisation is associated with tension fractures, stockwork zones and laminated quartz veins. Gold mineralisation has a heterogeneous distribution, and is confined to elongate zones associated with regional folds or shear zones (Farrelly, 1997).

Recent mapping suggests that the dominant control on mineralisation is structural rather than dependent on rock type. The mineralisation generally occurs in quartz veins parallel to shear fabrics, in stockwork zones, where quartz veins occur as tension fractures which have been formed synchronously with shearing, and also parallel to either bedding or an axial planar cleavage or as disseminated gold within sheared alteration zones (Farrelly, 1997).
3.0 PREVIOUS EXPLORATION

In 1983/84 an intense program of geological mapping, costeining and sampling, percussion drilling, RRMIP geophysical survey, and sediment sampling was completed in conjunction with work on the Bridge Creek Prospect. Twenty RC holes (A1-4, B1-4, C1-4, D3, E3, F3, and G1-5) were drilled. This program highlighted the prospectivity of the area with better RC intersections of 3 metres @ 6.3 g/t in B6, 16 metres @ 1.5 g/t in B4, and 5 metres @ 2.5 g/t in C4 (Richardson & Kater, 1984).

Four costeans were excavated in the claim areas. The results did not reflect anomalous results in the RC drilling. A full presentation of results are contained in Richardson & Kater, 1984.

In 1985/86 an additional RC drill hole was completed in the region of the previous drilling (BCP 86/8). The hole contained significant low-grade anomalous gold values, but results were considered too widespread to be encouraging. This hole is shown in detail in Bravo, 1986.

During 1987/88, soil sampling and drilling was conducted. A geochemical soil sampling program over the claim areas was used as a pre-cursor to the drilling program. Results of the program showed a high level gold anomaly over the anticlinal hinge zone of up to 295 ppb Au, using BLEG analysis, and 2.8 ppm Au, from fire assay (Ronk, 1988).

Sixteen RC holes (HR1-HR16) were drilled in the claim areas. The drilling results were encouraging with best results of 3 metres @ 2.4 g/t in HR10 and 4 metres @ 2.16 g/t in HR12. Results of this program are given in detail in Ronk, 1988.

Northern Gold N.L. also completed geochemical soil sampling over MCN 1035, during 1988. The soil sampling program over the claim was part of a broad-scale program conducted by Northern Gold N.L. over the Howley Anticline. The samples were collected at 10 metre intervals and composited to 50 metres, and submitted for BLEG Au analysis. The program identified numerous anomalous Au values, up to 409 ppb Au, in areas closely associated with the anticlinal axis (Stokes, 1989).

During the 1989 to 1991 field seasons, fifty-three RC holes were drilled on MCNs 377-380 for a total of 2,878 metres (HR17-59). These holes were drilled on an azimuth of 86° magnetic (grid east). Following promising results from HR22 and HR49, ten additional holes were drilled to depths of 20 to 35 metres for a total of 395 metres. These holes were spaced 10 metres apart and were drilled at 45°. Six holes were drilled on an azimuth of 86° magnetic and 4 holes on an azimuth of 266° magnetic (Stokes & Partington, 1991).
Initial drilling identified several discontinuous pods of mineralisation with intersections varying in width from 1 metre to 5 metres with grades varying from 0.7 g/t Au to 200 g/t Au (Stokes & Partington, 1991).

Duplicate samples sent to Analabs, numbered NUG 0101 - NUG 1030, correlated well with those original samples analysed by AAL. However a small, but significant, number of samples returned spurious results suggesting coarse gold was present.

To test for coarse gold, as suggested by the duplicate assays, three high grade assay samples received from HR4923, HR4924 and HR2224 were manually panned in the field. All three samples produced a well defined gold tail and a total of 6 grams of gold nuggets were panned from approximately 7 kilograms of sample. This exercise confirmed the presence of coarse gold in the area, and also suggests that the assay technique significantly underestimated the gold content of some of the high grade samples.

The zone containing the high grade mineralisation appeared to be continuous along strike for at least 100 metres and open to the south with the highest grades concentrated at 18 metres true vertical depth.

The initial high grade intersections appear to be related to a quartz vein which is 6 metres wide and trends 350°. The vein dips 60° to the east at its northern end, but is vertical at its southern end. This variation in dip direction complicates the interpretation of the initial drilling. The high grade zone is 1-2 metres wide and is situated on the hanging wall side of the vein (Stokes & Partington, 1991).

Samples were initially panned off site however no visible gold was recorded from these later holes. Ten additional holes NUG01-NUG10 were drilled to test the extent of the high grade mineralisation (Stokes & Partington, 1991). The assay results confirmed the extent of mineralisation but no high grade zones were reported. The drilling has discounted the continuity of the two high grade pods between drill lines. However the geometry, dimensions and grade of the high grade pods remains unclear.

A full discussion and presentation of results and methods is contained in Stokes & Partington, 1991.

In 1994, Northern Gold N.L. completed a resource RC drill program, following a re-evaluation of data obtained from all previous drilling. The aim of the drill program was to test the northern and southern strike extent of the 'Nugget' resource, and to close off mineralisation to the east (Hardy, 1994).

All drill holes were planned with azimuth 90°, and inclined at -60°. The drilling was initially carried out on a drill spacing of 20 metres across strike, closing down to 10 metres on infill lines, and 25 metre drill spacing between drill lines. A total of
60 RC holes (HR78 - 137), for a total of 3,582 metres were drilled. Samples were collected every metre, resulting in 3,582 samples being submitted to Assaycorp, in Pine Creek, for 50 gram fire assay quartz-flush analysis (Hardy, 1994).

The best intersections from the drilling program were 3 metres @ 12.02 g/t Au from 52 metres in HR80, 3 metres @ 10.44 g/t Au from 22 metres in HR101 and 5 metres @ 4.7 g/t Au from 18 metres in HR126 (Hardy, 1994).

During the 1996/97 exploration season, Northern Gold N.L. completed a close spaced vertical RC drilling program to allow inferences to be drawn about the continuity of mineralisation in this region, and to indicate structural ranges for use in kriging an ore resource block model. Reconnaissance RAB drilling was also completed to the south of the RC drilling (Farrelly, 1997).

The aim of the RC drill program was to establish the continuity of gold mineralisation. A total of 103 RC holes (HRGC138 - 240) were drilled for a total depth of 2,241 metres at 5 metre spacings along 10 metre spaced drill lines. Samples were collected every metre, resulting in 2,241 samples being submitted to Assaycorp for 50 gram fire assay quartz-flush analysis (Farrelly, 1997).

The best intersections from the RC drilling program were 4 metres @ 2.64 g/t Au from 13 metres in HRGC228, 2 metres @ 4.28 g/t Au from 12 metres in HRGC191, 2 metres @ 5.06 g/t Au from 15 metres in HRGC183 and 3 metres @ 42.7 g/t Au from 13 metres in HRGC170 (Farrelly, 1997).

A total of 170 RAB holes were drilled for 891 metres. The best intersection from the RAB drilling program was 10 metres @ 26.3 g/t Au from 1 metre in HRS97 (Farrelly, 1997).

This data was then used to determine geostatistical parameters, which were used to develop a constrained ore body block model (Farrelly, 1996).

During the 1998/99 year of tenure, Northern Gold N.L. upgraded the datum plate, corner posts, lockspits and boundary lines of MCN 1035, to comply with Regulation 19 (8) of the Northern Territory Mining Regulations (Mottram, 1999).

4.0 2001/02 WORK COMPLETED

No physical exploration was completed by Northern Gold N.L. over the Howley Ridge tenements during the 2001/02 year of tenure.

Work was restricted to further reviews of existing geological, geochemical and geophysical data as part of a target generation and ranking exercise. This was followed up by field verification through a series of reconnaissance field visits across the licences.

5.0 2001/02 EXPENDITURE

The expenditure over MCNs 377 - 80, 852 - 57, 1035, 3099 - 115 and 3117, during the 2001/02 year of tenure, totalled $1,940. Details of this expenditure are listed below as Table 1.

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<th>AMOUNT</th>
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<td>Tenement Management</td>
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<td>Data Review</td>
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<td>Motor Vehicle Expenses and Fuel</td>
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<td>Administration @ 20%</td>
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<td>TOTAL</td>
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6.0 2002/03 PROPOSED WORK PROGRAM

The program proposed for the 2002/03 year of tenure will include further reviews of all historical geophysical, geochemical and geological exploration data, for compilation into a standardised digital database.

An estimate of the expenditure required to complete the data review is given below in Table 2.

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<td>700</td>
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<td>TOTAL</td>
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7.0 REFERENCES


