BURNSIDE OPERATIONS P/L

ANNUAL EXPLORATION REPORT
MLN 766 and MLN 1060

BRIDGE CREEK GROUP
YEAR ENDING 1st DECEMBER 2004

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

Title Holder: Northern Gold N.L.

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SUMMARY

The Bridge Creek Project comprises MLN 766 and MLN 1060 at Bridge Creek, approximately 125 km SSE of Darwin and 35 km southeast of Adelaide River.

The tenements cover a sector of the Howley Anticline, approximately 12 km along strike north from the Cosmopolitan Howley Gold Mine.

Intensive gold exploration including reverse circulation drilling, diamond drilling, resource modelling and metallurgical test work has been previously carried out on the Bridge Creek primary resource that lies within the tenements. It is now considered to be at a mature stage of exploration and not requiring additional drilling.

Burnside Operations P/L (Burnside) is manager of the tenements following finalisation of a joint venture agreement between Territory Goldfields NL and Buffalo Creek Mines NL in April 2002. The JV merged certain mining assets within a 30km radius of the Brocks Creek mill and includes the Bridge Creek tenements. The assets are managed on a 50-50 basis with Burnside Operations P/L managing the JV.

The Burnside JV was formed to locate mineable gold resources amenable to local treatment at Brocks Creek. Towards this end it has carried out computer block modelling and mine optimisation studies on the Bridge Creek resource. This work concluded that the deposit remains sub economic and should be retained as a strategic resource pending an improvement in local infrastructure and economic conditions.

During the 2004 year the Joint Venture focused its efforts on a $500,000 resource definition diamond drilling at the nearby Cosmo Howley deeps project, [MLN933] where 1 million ounces of global resource has now been outlined by this work. The nearby underground mine at Zapopan has also been subjected to development and underground diamond drilling aggregating some $7 million in costs.

In August 2004 the JV purchased the [2.8Mt/a] mill and tenements at Union Reefs, and concurrently sold the Brocks Creek mill to Tanami Gold NL. This asset change stands to affect the balance of gold economics of JV tenements in the Burnside and Pine Creek region. The schedule of JV gold assets require re evaluation in this context, and the Bridge Creek deposit will be included in this reappraisal in 2005.

During 2005 the Bridge Creek Group tenements will be subject to economic reappraisal and reporting. This work is costed at $500.00.
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1.0 INTRODUCTION
MLN 766 and MLN 1060 are located approximately 125km SSE of Darwin and 35km SE of Adelaide River, on the Burnside (14/2-II) 1:50,000 map sheet. The area was historically associated with alluvial/eluvial gold mining that periodically became active with increases in the gold price.

Northern Gold NL discovered the Bridge Creek primary resource and carried out intensive exploration drilling programs over several field seasons to fully outline the deposit. Resource estimation and modelling demonstrated that the primary mineralisation is extensive but diffuse and low grade.

This report covers exploration activity during the year ended 1st December 2004.

2.0 TENURE DETAILS
MLN 766 of 8.09 ha was granted to W. J. Fisher on the 2nd of December 1974, expiring on the 31st of December 1994. The mineral lease was transferred to Northern Gold N.L. on the 18th of January 1988. Following successful renewal applications, the tenement is due to expire on 31/12/2010.

MLN 1060 of 324.5 ha was granted to Northern Gold N.L. on the 22nd of October 1993 and is due to expire on the 31/12/2011. This tenement encloses MLN 766.

The area was briefly subject to an alluvial treatment agreement with Mr R. J. Edwards. Following rehabilitation programs Northern Gold N.L. withdrew from the agreement in early 2000.

A joint venture agreement was finalised between Territory Goldfields NL and Buffalo Creek Mines P/L in April 2002 that merged certain tenement assets and the Brocks Creek treatment plant under Burnside Operations P/L. The two Bridge Creek tenements are included in the schedule of this agreement.

The tenements, which total 332.09ha, lie between latitudes 13°26’S and 13°27’S and longitudes 131°18’E and 131°20’E (Figure 1). They are situated within Pastoral Lease No. 903, Douglas, held by Tovehead Pty. Ltd.

The Stuart Highway passes through the tenements providing excellent access to a track that links northward to a crossing of the Darwin-Adelaide Railway. This track connects through to Burnside Operations’ northern prospects but needs upgrading.
3.0 GEOLOGICAL SETTING

3.1 Regional Geology
MLN 766 and MLN 1060 are situated within the Pine Creek Geosyncline, a tightly folded sequence of Lower Proterozoic rocks, 10km to 14km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga. The sequence is dominated by pelitic and psammitic (continental shelf shallow marine) sediments with minor inter-layered tuff units. Pre-orogenic mafic sills of the Zamu Dolerite event (~1.87Ga) intruded the lower formations of the South Alligator Group.

During the Top End Orogeny (Nimbuwah Event ~1.87-1.85Ga) the sequence was tightly folded and pervasively altered with metamorphic grade averaging greenschist facies to phyllite. The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic batholiths into the sequence in the period ~1.84-1.80Ga. These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies, and created more extensive biotite and andalusite hornfels facies.

Less deformed Middle and Late Proterozoic clastic rocks and volcanics have an unconformable relationship to the older sequences. Flat lying Palaeozoic and Mesozoic strata along with Cainozoic sediments and proto-laterite overlie parts of the Pine Creek Geosyncline lithologies. Recent scree deposits occupy the lower hill slopes while fluviatile sands, gravels and black soil deposits mask the river/creek flats areas.

3.2 Local Geology
MLN 766 and MLN 1060 cover a sector of the axis of the Howley Anticline, approximately 12km along strike north from the Cosmopolitan Howley Gold Mine (Cosmo Howley).

The lithologies in the tenement area are similar those found at Cosmo Howley and comprise units of the South Alligator Group sedimentary sequence that is interlayered with sills of Zamu Dolerite.

Exploratory drilling at Bridge Creek intersected lower to middle units of the South Alligator Group. These are represented by foliated, sulphidic and carbonaceous black mudstones and wackes of the Koolpin Formation, which is overlain by foliated epiclastic and volcanoclastic tuffaceous rocks of the Gerowie Tuff Formation. These lithologies lie between sub-vertical limbs of semi concordant Zamu Dolerite that brackets the axis of the Howley Anticline.
The contact zone between the Zamu Dolerite and the Gerowie Tuff is strongly deformed with some apparent tectonic interleaving of lithologies.

Sulphide rich, quartz porphyries, probably of Cullen vintage, cut the sequence. Generally these are massive to weakly deformed and appear to occur as near-vertical, dyke like bodies that locally are bedding parallel.

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, sub-parallel to the axial plane.

The Howley Anticline is a macroscopic fold structure, which has been traced from the Cosmo Howley Gold Mine in the south to Mount Paqualin in the north, a distance of 30km. The fold is a doubly plunging, upright, asymmetric, tight, non-cylindrical fold, that plunges north in the vicinity of the Cosmo Howley mine and to the south (approximately at 12°) in the Bridge Creek area.

3.3 Gold Mineralisation

Recent studies (Sener 2003) show that the Pine Creek gold mineralising event was superimposed post folding and post granitoid at around 1720Ga and is related to plate cratonising events that affected southeast Australia at this time.

At Bridge Creek primary gold occurs as three different styles, which post-date the F<sub>1</sub>-F<sub>3</sub> regional folding events.

- In quartz-sulphide (pyrite-arsenopyrite) stockwork zones and associated alteration haloes within the pyritic and carbonaceous black shales of the Upper Koolpin Formation (the dominant style).

- In quartz-sulphide impregnated shear zones at the contact between the Gerowie Tuff and the Zamu Dolerite.

- In quartz-sulphide veins within the Zamu Dolerite. The veins appear to be arranged as a fracture cleavage set around the hinge zone of the Howley Anticline. Veins on the east side of the anticline appear to dip west, those on the west side appear to dip east.

Sener demonstrated that gold mineralisation in the Burnside and Pine Creek region was best developed in the biotite hornfels metamorphic aureole of the Cullen suite. The association is apparently due to optimal rock qualities acquired from Cullen contact thermal influences.

The association of gold with pre-existing anticlinal structures is likely to be due to favourable structural preparation. The coincidence of older brittle quartz veins,
reverse and radial faults and solution-ponding effects in anticlines all would contribute. The late stage Shoobridge fold event probably played a part by inducing cross folds normal to the earlier Nimbuwah Event. In addition, anomalous concentric fold axes trends had been generated by the late stage Burnside Batholith.

At Bridge Creek a series of NE dextral fractures cut the Howley Anticline axial zone. These have been noted to be associated with gold at Western Arm and at Bons Rush in the same region.

4.0 PREVIOUS EXPLORATION

Historic activity

Small deposits of alluvial gold were first worked near the Metropolitan Howley mine in 1883, following the discovery of primary gold there in 1873. Further primary deposits were located at Metropolitan and Chinese Howley. Alluvial mining quickly spread to Chinese Howley, Bridge Creek and Mount Paqualin. Alluvial mining by Chinese indentured labour continued until about 1896, when the lease arrangements with the Mandarins expired and were not renewed. The alluvial deposits were then only intermittently mined, on a small scale until Metana Minerals N.L’s Bridge Creek operation in 1986 and later by Mr R.J. Edwards in 1996-1997.

Modern Exploration

In 1976 a BHP/Homestake joint venture carried out an extensive exploration program in the area around Cosmopolitan Howley. Their work included testing of the alluvial deposits. Estimates of less than 300,000 cu/m of gravel grading 0.5 to 1.0 g/cubic metre were reported.

In 1984 some highly anomalous gold values were obtained from stream sediment samples and in 1984, a joint venture between Hunter Resources N.L. and Northern Gold N.L. carried out further stream sediment and alluvial testing. This was focused in the Cosmopolitan and Chinese Howley area, to the west of the present Stuart Highway. A total of 73 channel samples were collected from costeans and analysed in the laboratory for gold. The program outlined about 900,000 cubic m of gold bearing gravels beneath a similar volume of overburden (about a 1:1 stripping ratio). Gravel thickness was variable but an average of 1.3 m was obtained. In terms of grade, the assay results were inconclusive but most samples returned values of less than 0.3 grams per cubic m.
During 1996 reverse circulation drilling was conducted over MLNs 766 and 1060 to test the bedrock gold resources in the central and northern sector of the prospect. This comprised 50 holes for a total of 3,641m. Five diamond core holes were also drilled.

A computer resource block model was created for the Bridge Creek prospect using a 3 dimensional geological solid to constrain the model and inverse distance squared interpolation. Each block was a 2.5m cube. A top cut of 15.0g Au/t was used in the assay averages.

Estimates were made of resource size in the measured, indicated and inferred categories.

Measured had a strike of 20m, 3m across strike and 20m down dip.

Indicated had a strike of 40m, 6m across strike and 40m down dip.

Inferred had a strike of 60m, 8m across strike and 60m down dip.

Bulk densities from diamond core used for the calculations comprised 2.05g/cu cm down to 75RL ranging up to 2.8g/cu cm below 20RL.

A global resource of 1,569,240 tonnes at 1.58 g Au/t was estimated.

Waste rock characterisation studies were carried out using RC chips along with some diamond core. The samples were sent to Assaycorp in Pine Creek for whole rock analysis and acid generating properties.

During 1996-97 Mr R. J. Edwards treated alluvial tailings and tailings oversize at a small screening plant, located on the old Metana Minerals plant site within MLN 1060, under an agreement with Northern Gold N.L. The plant consisted of a trommel, feed bin and conveyor, generator set, water supply pump and gold concentrator. The plant capacity was 30 loose cubic m/hr. Mining was by face-digging the existing oversize tailings dumps with a front end loader. A sized gravel product was created with (10%) –3mm material returned to the tailings area.

In March 1997 a Public Environmental Report (PER) was prepared by AGC Woodward - Clyde Pty. Ltd., for Northern Gold N.L. The report was written to cover mining operations at Kazi, Western Arm and Bridge Creek, in response to guidelines provided by the Northern Territory Department of Mines and Energy. The PER was structured to generally follow these guidelines.

During 1998-99, rehabilitation programs were carried out over the mineral leases in compliance with the conditions of the Mining Act and the Mine Management Act.
During 2000 the alluvial agreement with Mr Edwards was terminated and no field work was carried out on the tenements.

During 2001 database validation and multiple indicator kriging estimates of the resource within a strike length of 1.5km were carried out by R. Hague.

In April 2002 a joint venture agreement was finalised between Northern Gold NL and Buffalo Creek Mines Pty Ltd. This agreement merged certain mining tenements and capital assets of the two companies with the objective of mining gold resources and treating ore at the Brocks Creek Mill. This joint venture operates under the management of Burnside Operations Pty Ltd and includes the Bridge Creek tenements.

A reinterpretation of the total Bridge Creek project was undertaken during June 2002 (Gillman A. 2002). The project involved the review of 300 RC drill holes and 5 diamond core holes some of which extend onto the Bridge Creek North tenements.

Gillman produced a block model following a grade sectional interpretation that used a 0.7g Au/t lower cutoff and a top cut of 10.0g Au/t. A steep structural control was interpreted in line with most previous workers.

Hague’s interpretation favoured saddle reef style bodies above and within the dolerite sill, and steep dipping bodies within the core and limbs of the fold.

The model was taken to –70RL from a maximum surface RL of 90. The global resource captured by the model was 667,727t @ 1.97g Au/t (42,297oz gold)

This resource model was first-pass optimised (Skelton 2002)

Between January 1st 1996 and July 30th 2002 a total of $456,275 had been spent on exploration activities within MLN1060 and MLN766.

During the year ended December 1st 2002 the review and resource modelling incurred a total expenditure of $2,300. No work apart from reporting and review was conducted in 2003. The JV focused its efforts on the Zapopan decline development and on diamond drill evaluating the deeper extensions of the Cosmo Howley mine.

5.0 EXPLORATION YEAR ENDING 1ST DEC. 2004

The detailed resource modelling in 2002 demonstrated that the gold resource was sub economic at average gold prices for 2003, and as a consequence the Bridge Creek resource was ranked as a strategic resource for future mining when economic conditions allowed.

During the period up to December 2004 the joint venture focused on developing high grade underground ore from the Zapopan gold mine and a decline access to the 980m
RL (-100m) was achieved by mid 2003. Underground diamond drilling programs in 2003 extended the high-grade resource down plunge. Some 10,000t of development ore was trucked to Union Reefs for treatment.

A diamond drilling program budgeted at $500,000 was completed at the Cosmo Howley mine deeps in 2003-2004. At the conclusion of this project modelling outlined a resource containing 1million ounces of gold.

During the year work was limited to reporting and low level reviews. This work was costed at $400.00.

6.0 FORWARD PROGRAM 2005

During August 2004 the joint venture purchased the Union Reefs mill (2.8Mt pa capacity) and underlying tenements. It concurrently sold the Brocks Creek mill to Tanami Gold NL. This effectively changed the economics of all JV gold deposits within the Burnside and Pine Creek region. The Bridge Creek deposit will be reviewed in the light of the new economic factors when these are established. This review with reporting is costed at $500.00
7.0 REFERENCES


