ANNUAL REPORT ON THE MINING ACTIVITIES IN
THE EXPLORATION LEASE EL 4737,
HOWLEY PROJECT AREA.
1988/89

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FIGURE

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ENCLOSURE

ENCLOSURE 1 Bridge Creek Alluvial Deposits in EL 4737, Howley Project Area.
1 SUMMARY

The Exploration Lease EL 4737 covers a large area in the northern part of the Howley Project Area. The EL lies on both the eastern side of the Howley Ridge, where the Howley Creek is the main drainage, and the western side which is drained by Bridge Creek and its headwaters. The gravels in headwaters of Bridge Creek shedding from the ridge immediately east of the Stuart Highway crossing of Bridge Creek (an area called 'Bridge Creek') are auriferous and the mining activities of the past year in the EL have been focussed on this area. In the south, the EL originally extended over the lower parts of Horse Creek and Army Creek which are now covered by the ERL 83. A possible auriferous gravel resource exists on the western side of the Howley Ridge to the south of the Bridge Creek deposit and a separate ERL application is being made by Metana Minerals to cover this prospective barren area. In the rest of EL 4737, the gravels are either barren or sub-economic.

The work in EL 4737 was carried out in 1988 between the beginning of the permit year on 1/7/88 and the granting of an ML to cover the Bridge Creek area in August. Commissioning of the wet treatment plant began in March 1988 and continued through the period covered by this report. A total of 277,000 LCM's was extracted from the Bridge Creek area and stockpiled. Two water holding dams were constructed. A grade of 0.4 g/LCM has been obtained from the gold bearing gravels.
2 INTRODUCTION

The Howley Project Area is situated about 30km southeast of Adelaide River on the Stuart Highway (Fig. 1). It consists of a group of Exploration Leases, Mining Leases and Claims held by Northern Gold N.L. Metana Minerals have negotiated a production agreement with Northern Gold for the alluvial mining rights. Alluvial mining began in 1986 using a 100 cubic metre per hour plant situated about 1km east of Chinese Howley. Ore was run through the plant which had been mined from mining claims in close proximity to the plant site. In 1987, a second 100 cubic metres per hour plant was added giving an annual mining capacity of 800,000 cubic metres. Exploration for more gravels in the surrounding EL's has continued such as the work described here in EL 4737 and mining has been carried out on Mining Claims further from the plant site. This group of five claims follows a palaeochannel which flowed eastward from the Howley Ridge. This report deals with the mining activity in the MCN's in the year 1988 to 1989.

3 GRAVEL DEPOSITS IN MCN's 1007 to 1011

Initial photo-mapping was based on 1:15,000 colour air photographs and was carried out as part of an overall survey covering the whole Project Area. The photo-mapping focussed on geomorphological features and the mapping was carefully checked in the field and corrected where necessary. The mapping shows extensive alluvial tracts in the valley floors with fluvial deposits extending onto the Howley Ridge in headwaters of the Howley and Bridge Creeks. From the mapping and a detailed examination of the gravels in costaean exposures and in creek incisions, it has been concluded that the alluvial deposits are poly-cyclic with two main phases of deposition:

i) An early alluvial phase in which a thick layer of coarse, poorly sorted material was deposited. Matrices are clay-rich and the gravels are indurated and compact. Gold occurs throughout the profile but the best results are obtained on or near the floor. Grades of 0.6 LCM have been obtained in this material. Most of the material in the lower parts of the Bridge Creek gravel profile consists of this 'old' material.

ii) A later fluvial phase in which a thinner, better sorted layer of gravels was laid down. These materials are lighter and more rounded than the older gravels, matrices are sandy and the gravels are loosely compacted. Good gold grades are panned from the contact between the upper and lower gravel layers (about 0.3 to 0.6 g/LCM) but higher in the upper gravel layer, the grades drop off. Much of the surface gravels in the
Fig. 1 Location Map
Bridge Creek area and the materials in their narrow headwater creeks consist of this 'younger' material.

The Bridge Creek alluvial gold bearing gravels occur on a right bank tributary of the main Bridge Creek. The gold bearing gravels are shed from mineralised zones along the Howley Anticline where Northern Gold N.L. have conducted drilling to assess the hardrock potential. The Bridge Creek deposit occurs within EL 4737 but an older mining lease, ML 766, covers part of the area (Enclosure 1). Eleven costeans were cut by Northern Gold in 1985 to test the thickness and areal extent of the gravels. Thirty 'bulk' samples were taken during this programme of between 4.5 and 10 cubic metres. Metana's work in 1986 and '87 has involved air photo and field mapping of the deposits and a geomorphological evaluation. The areal limits of the resource were defined and the origin of the different types of gravel evaluated. Five bulk sample pits were excavated from which a total of 20,040 LCM's were extracted in nine samples. An average grade of about 0.38 g/LCM was obtained. The results of the mapping and the location of the gravel body together with all the exploration activities are shown on Enclosure 1 at the rear of this report. Details of the gravels and their distribution are presented in the report 'Mining Proposal, Bridge Creek Alluvial Deposit', 7th March 1988.

4 MINING ACTIVITIES

Mining in EL 4737 has been carried out only in the Bridge Creek area prior to the final approval of the mining claim covering the area. Prior to mining, the bulk sampling programme mentioned above was carried out on the gravels to establish grade and volume (see report 'Bridge Creek Alluvial Deposit' of 7th March 1988). A conservative estimate of volume and grade was given at 455,532 LCM's with an average grade of 0.32 g/LCM. Mining to date suggests that both these figures are likely to be considerably exceeded.

One of Metana's wet gravity alluvial plants was moved from Chinese Howley to Bridge Creek in early 1988. A total of 277,000 LCM's were stockpiled during the commissioning of the plant. Two water holding dams were constructed in mined-out areas. Initial processing of the gravels during commissioning showed a return of 0.4 g/LCM. Since the granting of the Mining Lease in August, mining and processing of the gravels has proceeded and the planned rate of 400,000 LCM's per annum is being approached. An environmental impact statement and details of the planned rehabilitation programme are contained in a separate report and can be supplied on request.

No further exploration work or mining has been carried out in the EL during the past year as the gravels are
considered to be either barren or sub-economic due to a thick layer of overburden. Application for an Exploration Retention Lease in the area to the south of Bridge Creek is being made by Metana. A separate report is presented in this regard.