ANNUAL REPORT ON THE MINING AND
EXPLORATION ACTIVITIES IN EL 4836,
HOWLEY PROJECT AREA - 1989/90

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## FIGURE

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## ENCLOSED

**ENCLOSURE 1**  
Exploration and Mining Operations, 1989 to 1990, EL 4836, Howley Project Area.
1 SUMMARY

The EL 4836 is a lease in the southwest of Metana's Howley Project Area where mining of gold bearing alluvial gravels has been carried out since 1986. The EL covers drainage systems shedding northwestward off the mineralised Howley Anticline. Field mapping, costeasing and pan sampling have generally indicated that most of the gravels in the main creek system (informally named 'West Creek') are auriferous while the thinner gravels in small tributaries in the EL are barren or sub-economic. The best prospects were identified by geomorphological analysis on the main part of West Creek (Enclosure 1). During the year 1989-90, road building and maintainence together with some costeasing in the eastern part of the EL have been the main activities. This exploration was begun in 1989 in the leases to the east of EL 4836 (Zopopan N.L. ground) which cover the mineralised ridge and has extended into the present lease to evaluate the gravels shedding from the Howley Ridge. A total expenditure of $3,000 has been made on the EL in the past year.

This report summarises the past years work in EL 4836 (1989/90). It provides some background information on the Howley Project Area, and gives details of the gravels in the EL.
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 and mining has been carried out on Mining Claims further from the plant site. Bulk testing of gravels from Exploration Leases has continued.

The EL 4836 is a lease in the southwestern part of the Howley Project Area (Fig. 1). The EL lies immediately west of the Chinese Howley hard rock deposit on the mineralised crest of the Howley Anticline. Much of Metana's earlier mining activities were concentrated on the alluvial gold shedding eastward from this source into the Howley Valley. Pan sampling and geomorphological evaluation has indicated that good grades may also be expected in the creeks draining westward from the same mineralised zone in EL 4836. The drainage in the EL is dominated by West Creek and although the coarse gravels are buried beneath silt in this area, they are expected to be gold bearing.

3 GRAVEL DEPOSITS IN EL 4836

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 fluvial geomorphological features and the mapping was carefully checked in the field and corrected where necessary. The mapping shows creek systems draining northeastward and southwestward off the Howley Ridge. The major drainages swing northward as they move away from the main ridge into the Howley Creek to the east and Bridge Creek to the west. From the mapping and a detailed examination of the gravels in costean exposures and in creek incisions, it has been concluded that the alluvial deposits are poly-cyclic with two main phases of deposition:

1) 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 gravels on the floor of the West Creek channel in the EL 4836 probably consist of this material. They have been generally compacted by lateritisation.

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. Most of the surface gravels in the upper reaches of the creeks in the EL consist of this material and belong to the later fluvial phase. They are generally sub-economic or completely barren.

4 EXPLORATION AND MINING

Work in EL 4836 in the year 1989/90 involves costeaming, geomorphological evaluation of the gravel body and road building and maintainence. This evaluation work was necessary before bulk sampling can begin in the EL. Further costeaming and bulk sampling will probably begin in the present dry season. The costeaming done in the past year in EL 4836 showed that a thick layer of heavy, mudflow type gravels occurred at the bottom of the gravel profile in West Creek. However, a thick layer of overburden probably makes the gravels sub-economic in EL 4836. Given all available information, the likely extent of the older, high grade gravels was estimated in EL 4836 and is mapped on Enclosure 1.

A considerable gravel reserve probably occurs under the silt in EL 4836. The volume of gold bearing gravels in EL 48 3/5 is presently estimated at 850,000 BCM's of which a large proportion occurs in West Creek. These gravels will probably be sub-economic while the gravels in the feeder creeks to the east, particularly from Elbow Creek, may be economic. Approximately 100,000 BCM's may fall into this category. Total expenditure in the EL in 1989/90 has been $3,000 divided evenly between road construction and maintainence and costeaming.