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**PROSPECTING, EXAMINATION
&
EVALUATION OF ALLUVIAL GOLD**

**IN THE
SOUTH-EAST PORTION OF
EXPLORATION LICENCE 37/82
SAVAGE RIVER
WESTERN TASMANIA**

FOR

MONIER LIMITED

AMG REFERENCE POINTS ADDED

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PROSPECTING, EXAMINATION AND EVALUATION OF
ALLUVIAL GOLD
IN THE
SOUTHEAST PORTION OF EXPLORATION LICENCE 37/82
SAVAGE RIVER
WESTERN TASMANIA
FOR MONIER LIMITED
LONGWORTH & MCKENZIE PTY. LIMITED

REF: UGT0268/KC/ejw
OCTOBER 1984

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1.0 SUMMARY

Preliminary evaluation of the gold potential of portion of EL 37/82 has been undertaken utilizing panning and bulk sampling of recent alluvial and older gravel deposits. Concentrates were visually inspected and some were subsequently assayed for gold and tin.

This work was concentrated in the southeastern part of the tenement adjacent to the silica flour deposits which were being evaluated at the same time.

The alluvial gold present in the area is derived from a series of old gravel beds stratigraphically below the silica flour deposits which are associated with a sequence of younger gravels. Both gravel types are of surficial origin but were deposited under geologically different environments.

The gold bearing gravels are clay-rich and contain well rounded to subrounded pebbles of quartz and lithic fragments. The gravels represent linear trending paleo drainages which have been subsequently incised by the current river system causing redistribution of the gold into the recent alluvial deposits.

Although the present programme returned sub-economic gold grades, further evaluation of the silica flour deposits may yield further gravel deposits which should be continually monitored for their gold content.

2.0 INTRODUCTION

Longworth & McKenzie Pty. Limited has been engaged by Monier Limited to evaluate the silica flour potential in E.L.37/82 located in the Savage River area in Western Tasmania.

The work programme was designed to incorporate an evaluation of the potential for gold associated with recent paleo-alluvial accumulations in the vicinity of the silica flour deposits.

The testing for alluvial gold was carried out by Dr. K.M. Chan of Peter Goldner & Associates of Sydney, with whom Longworth & McKenzie have a long association.

This report covers the research, sampling procedure, fieldwork and sampling results obtained from the gold evaluation programme. The field work was carried out during 9th - 15th September, 1984 exclusive of travel time between location and Sydney.

3.0 ACKNOWLEDGEMENTS

The essential maps, air-photographs and some references relating to previous gold mining in the area were made available prior to the commencement of field work, during which period information relating to the geomorphology of the area was also researched.

The assistance of Mr. H. Nolan for his local knowledge of the area and other facilities provided is gratefully acknowledged.

4.0 TENEMENT LOCATION AND ACCESS

Exploration Licence 37/82 is located in the Savage River area of Western Tasmania within the 1:100,000 Pieman topographic map and on the N.W. Corinna topographic sheet (1:31680 i.e. 1" = 40 chains) published in 1959.

The area selected for evaluation is located in the southeastern portion of the licence and can be reached via the Waratah-Corrinna Road. Driving time from Wynyard to Savage River is approximately 1 hour 45 minutes for 130 km. of bitumen road and from Savage River to the turnoff into the various localities of interest is approximately 20 minutes on a well packed all weather gravel road.

The turnoff into the various silica deposits is along Old Timber Road and access requires 4 wheel drive vehicles.

5.0 MINING HISTORY

Gold was first discovered in payable quantities in 1879 by H. Middleton, about 1.2 km N.N.E. of Corinna.

The earliest record relating to the Corinna Gold field was in 1894 by Montgomery. Subsequent reports were in 1897 by Smith, 1926 by Scott and 1939 by Blake. These were reports by Geologists to the Secretary of Mines in Hobart.

The localities covered by these reports were the more intensively mined areas situated to the northeast of Corinna at Middleton Creek, Little Plains, Brown Plains and around Blackguard Hill.

The other areas of interest were around Nancy Spur, Lucy Creek, along stretches of the Whyte River and its tributary the Rocky River, where a 243 oz. nugget (the largest found in Tasmania) was found.

Montgomery (1894) was the first to note that some of the gravels in the area were derived from the east, across the Whyte River. He concluded that this must have occurred before the Whyte River cut its present channel and he suggested that the distribution of gold may be related to the earlier drainage courses.

Blake (1939) recorded that the Brookside workings which are within the E.L. were worked prior to 1895. This deposit was described as consisting of Lower Tertiary clays and gravels and was thought to represent portion of a paleo-tributary from the west. The mine was sited near the junction with the main lead and the gold obtained was reported to be coarse. No production figures were available.

In addition to gold, osmiridium was found in gravels from the Whyte River and Savage River which drain serpentinite further north.

6.0 GEOLOGY AND GEOMORPHOLOGY OF THE AREA

The Licence area covers the relatively unmetamorphosed younger Precambrian rocks as indicated on the 1:250,000 Burnie Geology sheet. The sequence consists of mudstone, sandstone, orthoquartzite, quartzwacke, turbidite, conglomerate, dolomite and basalt lava.

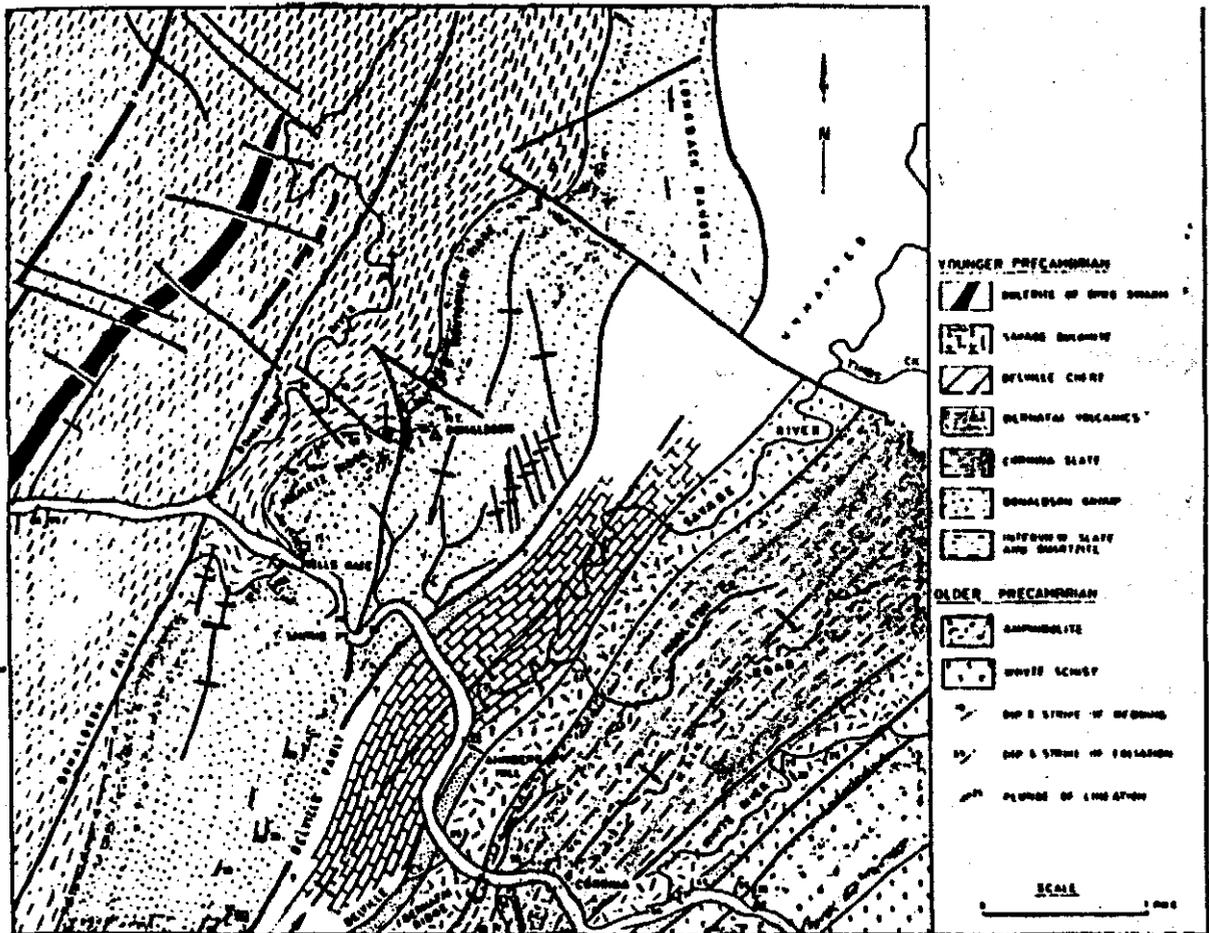
The area selected for the present investigation (on account of the presence of silica flour), falls in the southeastern portion of the licence. The geology of this area is shown on Figure 1 which is based on a map by Spry (1962).

The silica flour deposits delineated so far overlie the Corinna Slate, which occurs at the crest of an anticlinal structure with a fold axis trending N.E. - S.W. Both sides of the slate are flanked by the Bernafai Volcanics and to date, no known silica flour deposits occur over this unit.

In the prospect area the youngest geological unit on the Burnie sheet is Tertiary Basalt and no details are available regarding the gravels, and other younger surficial deposits, which are the prospective units as far as the current work program is concerned.

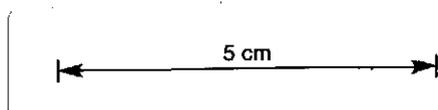
The geomorphology of the area remains obscure and would require detailed work before a clear understanding could be obtained. Montgomery (1897) proposed that the gravel deposits are the result of progressive uplifting of the land surface after planation, with the topographically highest gravel being the oldest and also the most strongly cemented. This view presupposes cementing of the gravel as a function of time, but does not incorporate the more recent understanding of the redox boundaries which can influence the precipitation of salts and cementing materials which may have been important in lithifying the gravels.

Lewis (1945), Carey (1947) and Hill & Carey (1949) developed concepts that the Tasmanian landscape is related to Tertiary faulting. Davies (1962) extended this theory and proposed a series of stepped erosion surfaces produced by intermittent uplift. Davies, 1959, recognised five major erosion surfaces as follows:



Geology of part of the Lower Pieman Area (After Spry 1962)

Fig-1



Higher Plateau	3,900 - 4,300 ft
Lower Plateau	3,000 - 3,500 ft
St. Clair Surface	2,400 - 2,700 ft
Higher Coastal	1,200 - 1,500 ft
Lower Coastal	300 - 900 ft

According to this scheme the silica flour deposits fit into the Lower Coastal category, and part of the Middleton alluvial gold horizon falls below the Lower Coastal level of (300 ft) 91.5m.

A Neogene age was suggested for the five levels by Davies (1962), although a late Cretaceous age is possible for the Higher Plateau Level.

It is conceivable that older surfaces dating from the Precambrian (at the close of the Penguin Orogeny), to post Lower Devonian (Tabberabberan Orogeny) would be difficult or impossible to recognise on the current landscape.

The origin of primary gold, tin and quartz which subsequently developed into placers may date back to the Precambrian but would not be later than the major post-tectonic granite, the Meredith granite, which covers an area of 300 km² and occurs east of the area under examination.

It is possible that the erosion of the detrital tin, gold and quartz may date back to between the Cambrian to Lower Carboniferous. A very significant erosion event after this period is the wide spread glaciation during Lower Permian. This glaciation could have substantially modified and redistributed the high energy deposits previously formed. Alluvial gold deposits of similar geological history and age are observable in the more readily accessible areas in Northern Victoria near Beechworth, Rutherglen and Chiltern.

Evidence for geologically more recent glaciation is better exposed at higher altitudes. During the Pleistocene, the second largest complex glacier was centred on the west coast range and with glaciation extending to the upper part of Pieman River near Mt. Lindsay (20km E.S.E. of Corinna).

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6.1 Tertiary Basalts

Tertiary Basalt outcrops are present along sections of the Savage River - Corinna Road. Isolated outcrops of basalt have been mapped between the Savage and Main River north of Timbs Creek. The only inferred presence of basalt within the prospect area is at the gravel quarry, near the main road along the entrance to silica flour localities Nos. 4 & 5.

6.2 Surficial Deposit Within the Area

The alluvial gold and silica flour deposits are in essence associated with unconsolidated deposits although a limited section of gravel may have been cemented to form conglomerate. In order to facilitate description three lithological units are proposed.

- i) Residual Deposits
- ii) Old Gravel Deposits
- iii) Young Gravel & Silica Flour Deposits

i) Residual Deposits

These are represented by yellow to dark coloured clay mixed with non-fluvial angular lithic fragments that form cappings and scree over bedrock of Precambian age. Limited transportation of these deposits could have occurred due to sliding and slumping along steep slopes. The top of these deposits is often represented by black bands of carbonaceous lignitic and humic material which often emit gaseous components when exposed by excavation.

The high organic and iron content of these deposits indicates terrestrial conditions during deposition and the irregular thickness indicates deposition on a rugged terrain. (See Photo 1 & 2).

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ii) **Old Gravel Deposits**

These are represented by a mixture of boulders, well rounded gravels, sand and clay, deposited by a geologically older, palaeo drainage system. It would be difficult to determine the relative age of these units. Some better exposed sections are shown in Photographs 3, 4, 5 and 6. Panning indicates that not all old gravels contain gold.

On account of its composition and nature of deposition the old gravels are considered to be derived from a high energy fluvial and/or glacial-fluvial system.

The old gravel originally occurred with a linear trend, and is now segmented by erosion due to cross cutting by more recent drainage systems. It is of vital interest to note that the gold was remobilised whenever these new drainage systems intersected gold leads. The recognition of these erosion points, will therefore assist in the location of the gold leads.

The presence within the gravels of lithic types which do not occur along the present drainage system leads to the conclusion (by Montgomery) that old drainages must have traversed from east to west to drain rock types which contributed to the various type of lithologies present in the old gravels.

iii) **Younger Gravel and Silica Flour Deposits**

The younger gravel and silica flour deposits are characterised by a mixture of well rounded, well sorted predominantly quartz pebbles derived from a matured drainage system and silica sand and silt of high purity SiO_2 . The gravel and silica are believed to have been mixed prior to deposition. These

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deposits are generally poorly stratified and if any size sorting does occur (i.e. the separation of flour from sand) it appears to do so without clearly stratified horizons. Generally these gravels and sands are very low in clay and iron oxides and hence have a distinctive white colour. The only exception to this is at the gravel quarry near the entrance to the deposits. The high clay and iron content of this quarry is believed to be due to post depositional contamination derived from the weathering of overlying basalt.

The poor stratification of the gravels and sands (which contain suspended pebbles in a matrix of sand) and their low iron content, suggest that they were deposited in near shore alluvial fans, with a high hinterland generating a high volume depositional system in well flushed, well rinsed and well drained shallow marine conditions.

The separation of sand and silica flour from the gravels was post depositional and may have taken place under subaqueous conditions. The gravel piles were mainly subaqueous channels where the drainage entered the sea and the sand and silica flour piles were drawn out as flowing slurry under the influence of current and tides.

High quality silica flour is very pure with low heavy mineral content. Pan concentrates from the gravel rich parts of the deposit produce heavy concentrates consisting mainly of spinels with minor magnetite, tourmaline and very rarely tin. Occasionally rare pebbles of granite and red quartzite occur. These gravels are believed to have been remobilised from the old gravel described previously. So far no gold has been identified within this unit.

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7.0 METHOD OF EVALUATION

The primary purpose of the programme was the evaluation of Silica Flour deposits with a subsidiary aim of locating and evaluating any alluvial gold which might be present.

Perusal of the available literature and publications indicates that the main gold mining activities within the area were to the southeast and northeast of Corinna.

The Brookside workings are located within the licence and are drained by two creeks, one at the foot of Silica Flour Site One and the other below Silica Flour Site Four. Both tributaries were prospected by panning using a 4.9 litre pan. One small grain of gold (approx. 200 micron) was detected from the Silica Flour Site One Tributary, and one from the Old Dump at the Brookside workings. In addition, the creek near Site 5 and Site 3 was also similarly prospected by panning. The prospected locations are shown on Fig.2. (Sample & Pit Locations are shown without prefix A)

In addition to panning along the creeks, sluicing of gravels was carried out from three separate pits, as follows:-

Pit A1. A pit near the timber ramp above the Brookside workings and exposed wash zone (see Photo No. 4) which returned 5 grains of fine gold from sluicing of 150 litres of loose material.

Pit A2. This pit is near Silica Site 4. Sluicing of 100 litres of gravel returned no visible gold.

Pit A3. Near Silica Flour Site 5. A 70 litre sample was sluiced and returned one fine angular shaped grain of gold (approx. 250 micron size). The shape of the gold suggests the non alluvial nature of the gold although the wash contained reasonably well-rounded gravels.

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AMG342450E
5391600N

Savage River

Clubbrook
Creek

Brookside
Gold
Workings

AREA 1/2

AREA 4

AREA 5

Sledge
track

GRAVEL
QUARRY

Continues to
Savage River

AREA 3

E.L. 37/82

AMG343550E,
5389900N

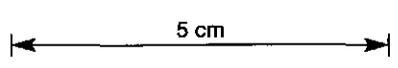
GRAVEL
QUARRY

AMG REFERENCE POINTS ADDED

LEGEND

③ Au Sample location

AREA 2 Silica Flour location



PETER GOLDNER & ASSOCIATES

MONIER LIMITED

**LOWER PIEMAN AREA
SAMPLE LOCATION MAP**

All the heavy concentrates obtained from panning and sluicing were examined with a binocular microscope for visible gold and other heavy minerals. Selected concentrates were sent to S.G.S. laboratories in Sydney for recovery of fine gold by amalgamation followed by tin assay. The results have been converted to weight per volume in accordance with normal alluvial practices and are given in Section 8.

8.0 SAMPLING RESULTS

The location of the various sample sites are shown on Fig.2 and the results of the examination and assay of the concentrate are given below in Table 1.

TABLE 1

SUMMARY OF CONCENTRATE

Sample No.	Vol. of wash (litres)	Visible gold	Au(mg)	Equiv./m ³ Sn (g)	Remarks
A1	150	1mm x 2 0.6mm x 2 0.3mm x 1	16.8	0.15	Wash zone, fine flakes gold
A2	100	Nil	0.05	0.31	
A3	70	0.6mm x 1	29.0	-	one gold grain granular
A4	10	Nil	0.2	0.16	
A5	4.9	Nil			Not assayed
A6	4.9	Nil			"
A7	4.9	Nil			"
A8	4.9	Nil			"

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9.0 DISCUSSION

Analytical and prospecting results obtained during the current prospecting and evaluation programme returned sub economic values of gold. Grains of gold were detected in sluicing and panning at the Brookside workings, a pit near the timber ramp, and west of Silica Flour Site 5.

All the concentrates returned low grades of gold and tin. It is concluded that the present sampling programme has confirmed the presence of gold within the area. For this reason it is suggested that the gold content of any future discoveries of old gravel deposits within the area is continually monitored.

The nature of gold in sample A1 and the size of gravel wash zones suggests possible occurrences are likely to be small.

This programme also demonstrated that the gold occurring within the area is not always coarse grained and one small grain from sample 3 had a granular shape indicating a limited transport distance.

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10.0 CONCLUSION AND RECOMMENDATIONS

The current programme has identified the presence of gold in some old gravel and wash zones within EL 37/82.

Although the grades returned are sub economic it is recommended any future operations continue to test for the presence of gold in any new gravels outlined. Such testing can take the form of panning of the samples collected from zones considered to be wash.

The accessibility of the area is very restricted and the current programme can claim to have only tested the more accessible part of the licence. The greater part of the licence area has not been evaluated for the presence of alluvial gold deposits.

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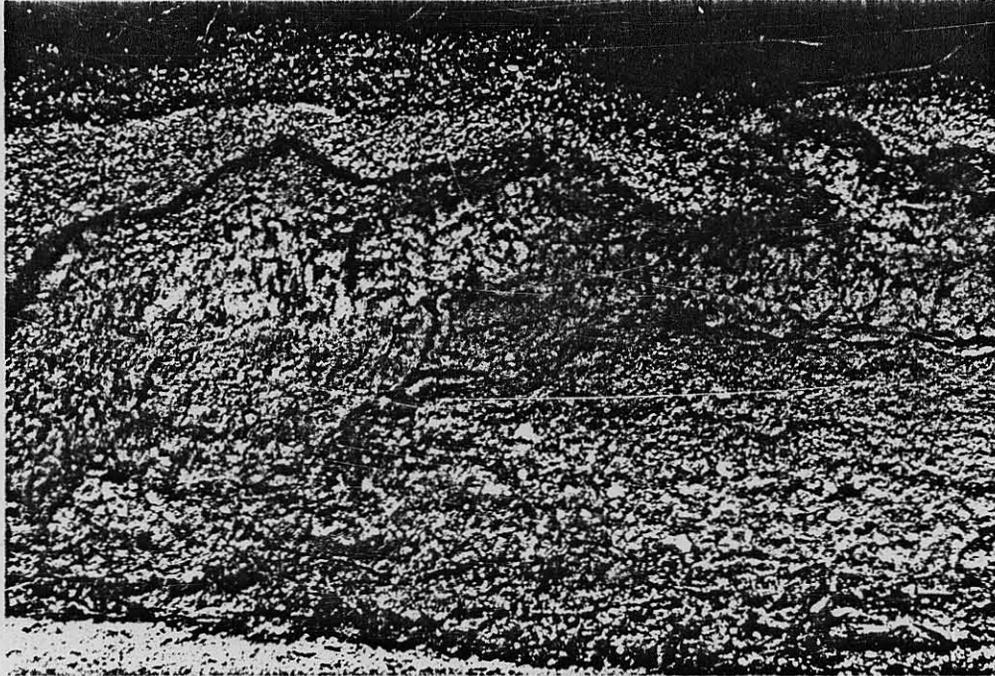


Photo 1
Residual deposit (below Pick) with gradual transitions
to quartz rich, soil poor, young gravel (above Pick).
Corinna Road Side below turnoff to Silica Flour Deposits. Photo KMC



Photo 2
Residual and weathered bedrock with carbonaceous top
overlain by well rounded, well sorted, unstratified
quartz gravel pile. Corinna Roadside. Photo KMC

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Photo 3
Old Terraced (?) Gravel near saw mill.
Corinna Road site. Photo KMC

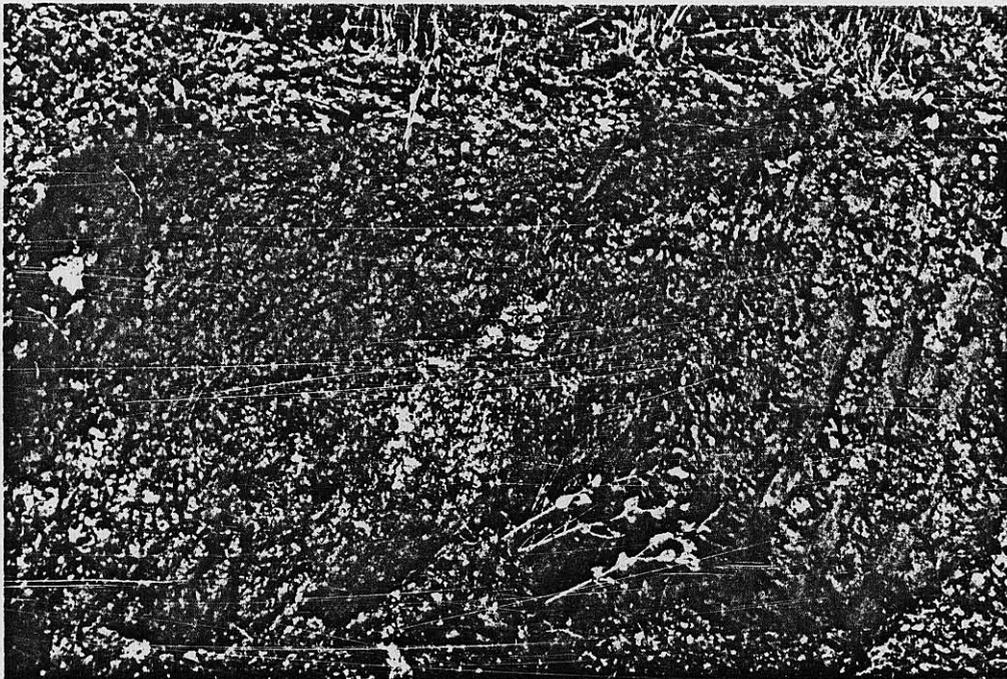


Photo 4
Gold bearing wash zone (grey) overlying residual clay
exposed in pit near Timber ramp, Brookside workings.
Note high clay and pebble content of wash. Photo KMC

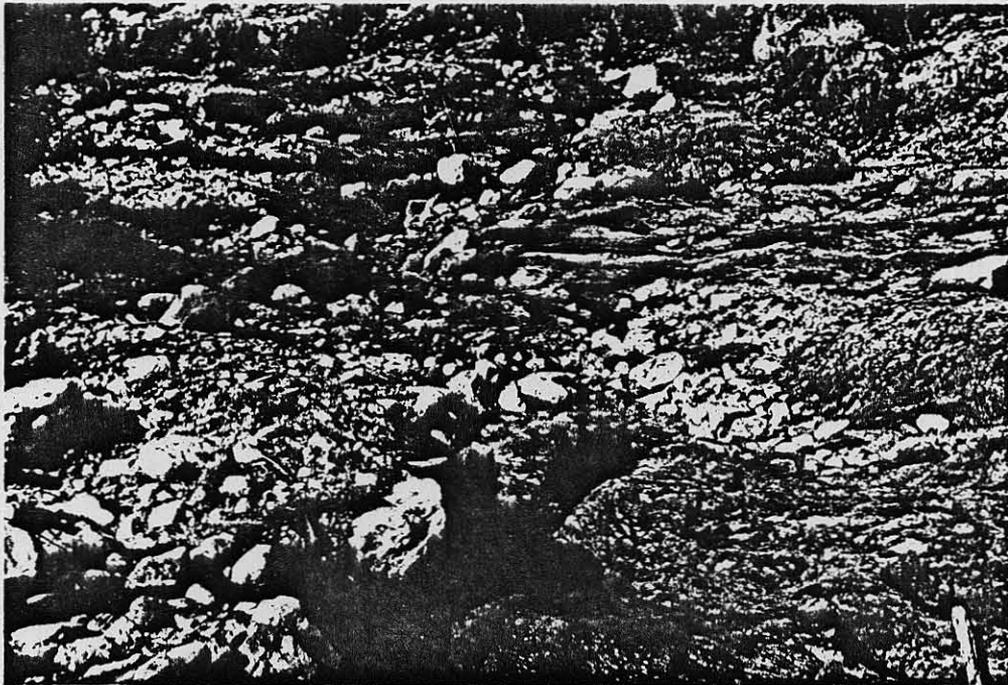


Photo 5

Gold bearing gravel, note large size subrounded
predominantly quartz boulders and pebbles, poor in sand,
but associated with high bedrock level (Schist).
Near Blackguards Hill. Photo KMC

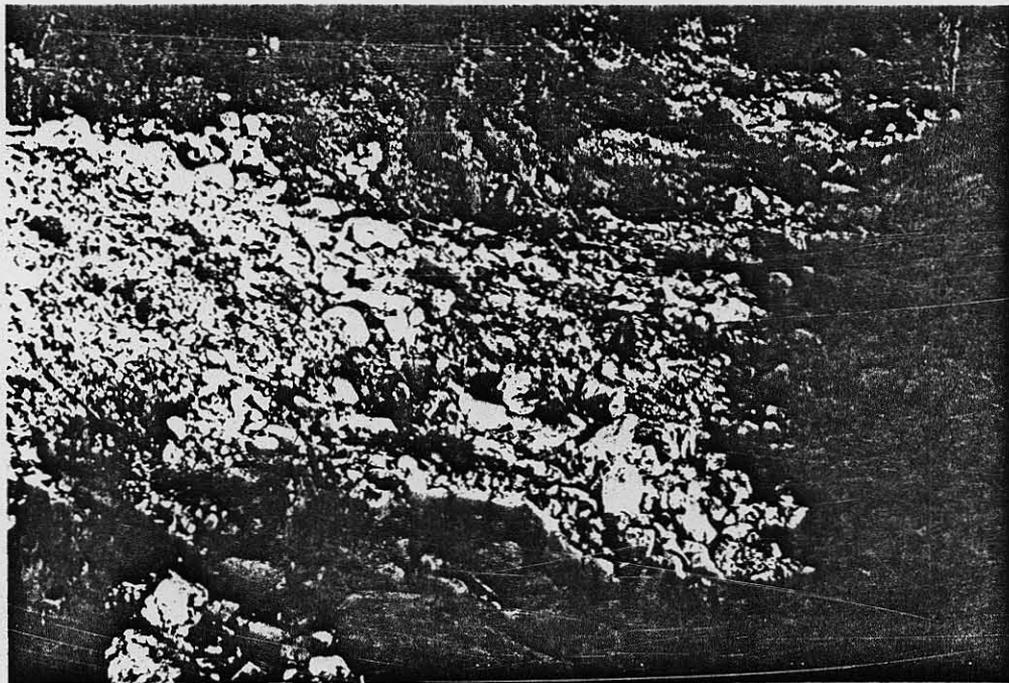


Photo 6

Locality same as Photo 5. Photo KMC

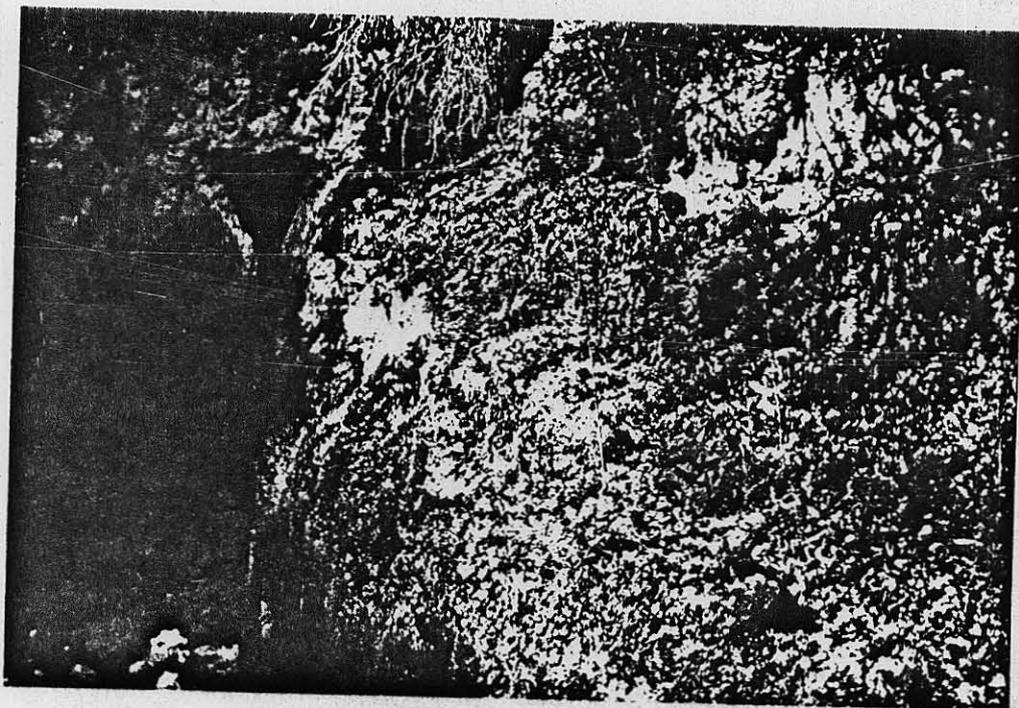


Photo 7

Silica Flour (low pebble content) over humic rich residual deposits. Note cave-in due to seepage of water and slurry (silica flour) from just above permeability barrier. Photo KMC

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Our ref LA 3313
Your ref
Date received 19. 9.84
Date completed 28. 9.84
Issued at SYDNEY

October 2, 1984

ANALYSIS OF SAMPLES SUPPLIED

ANALYTICAL REPORT

Sample Ref.	Dry Weight	mg Au	Sn %				
1	(g)						
2	A 1	9.71	0.20	0.23			
3							
4	A 1 - II	43.62	<0.001	0.02			
5							
6	A 2	102.04	0.005	0.03			
7							
8	A 2 - 2	37.52	<0.001	0.01			
9							
10	A 4	15.90	0.002	0.01			
11							
12			Amalgamation/ AAS	D 6 AAS			
13				0.01			
14							
15							
16							
17							
18							
19							
20							

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