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SML 477

MOUNT GRAINGER

PROGRESS REPORTS AND FINAL REPORT TO LICENCE EXPIRY/SURRENDER, FOR THE PERIOD 8/10/1970 TO 7/10/1971

Submitted by
Gold Copper Exploration Ltd
1971

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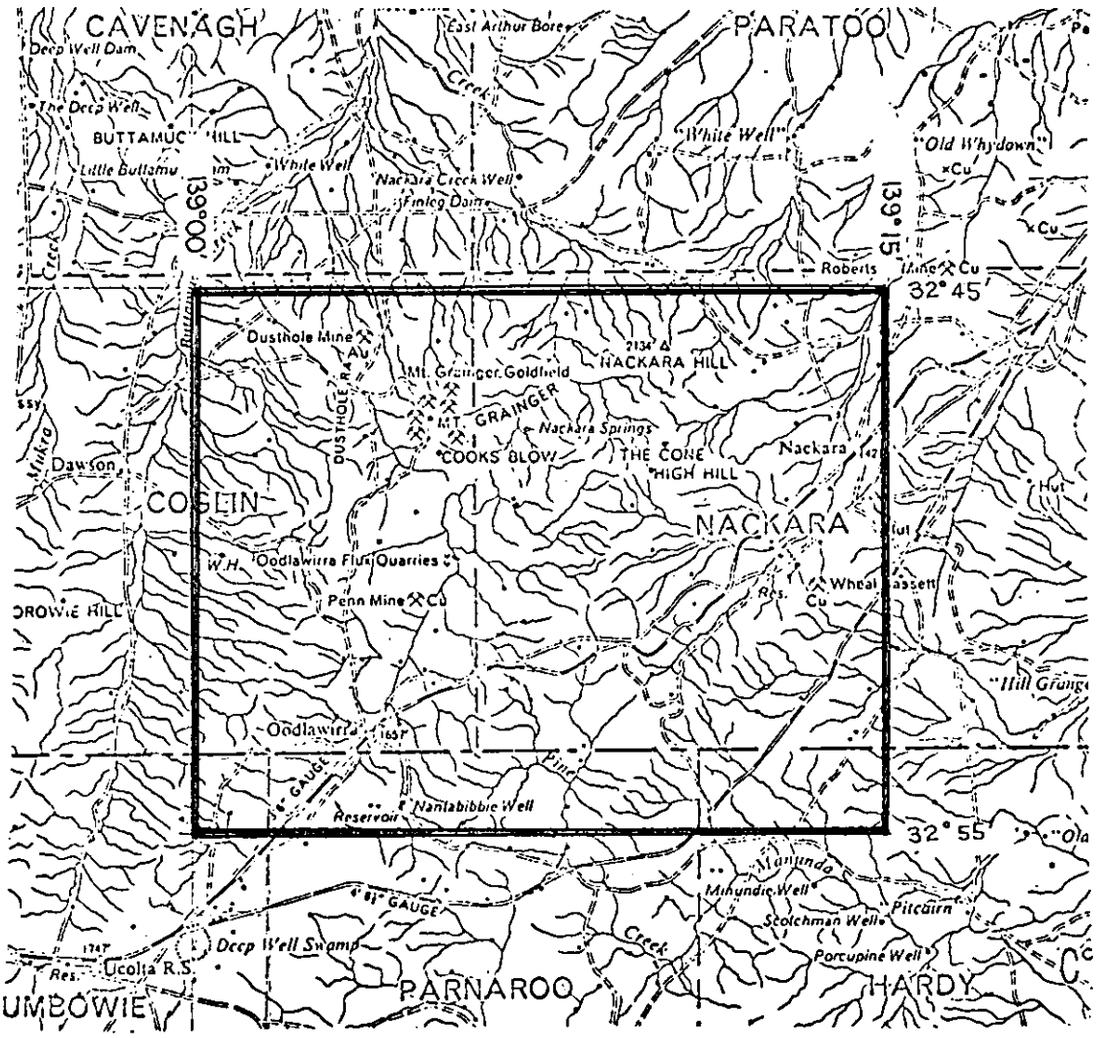
Government of South Australia
Department for Manufacturing, Innovation, Trade, Resources and Energy



SCALE 1:250000

GOLD COPPER EXPLORATION LTD.

DOCKET D.M. 1101/70 AREA 165 SQ MILES

1:250000 PLANS . ORROROO

LOCALITY

S.M.L. No. 477 EXPIRY DATE 7.10.71

80. ~~775~~ ~~267~~ ~~295~~

40. ~~DL5~~ ~~D5~~

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TENEMENT HOLDER: Gold Copper Exploration Ltd.

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Interim 3 month Progress Report on Special Mining Lease 477 (Oodlawirra) on behalf of Gold Copper Exploration Ltd., for the period 8 October, 1970 to 8 January, 1971.

A brief geological appraisal of known prospects was carried out during this quarter.

Gold is the main mineral of interest in the lease area. The exploration for Au presents considerable difficulties. To date exploration has been limited to the examination of outcropping quartz veins and to alluvial panning techniques. The response of Au mineralisation to geophysical and geochemical techniques is very poor, due to the extremely low concentrations of the elements in rocks and sediments. Consequently an orientation survey will be conducted in January, 1971, to develop a practical technique for the location of Au mineralisation using geochemical methods. This will involve the investigation of possible pathfinder elements associated with Au.

The lease area contains 2½ square miles of diapiric breccia. In addition to Au, the area is potentially mineralised in Cu, Zn, Pb, Ag, Ba, Mn and Fe. A regional geochemical stream sediment programme will commence in early February, 1971 and will result in approximately 3,600 samples which will be analysed for Cu, Zn, Pb, Ag, Ba, Mn and Fe. In addition approximately 70 samples derived from major creeks will be analysed by semi-quantitative techniques for 26 elements. Starting in February, 1971 all known prospects will be thoroughly investigated and sampled, while geological and aerial photographic interpretations will be conducted concurrently.

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INTERIM REPORT ON GOLD LEASE MOUNT GRAINGER

FOR

GOLD COPPER EXPLORATION LTD.

1. Introduction

The prospect consists of four 40 acre claims which are situated on Mount Grainger, 8 miles north of Oodlawirra and 20 miles north-east of Peterborough. The prospect is covered by Gold Lease Numbers 2025 - 2027 and 2031.

2. Previous Work.

The first description of the goldfield was that of Jack (1913). He tentatively recognised and described two horizons of tillite. He recognised the major overfold within the rock sequences of the area and suggested that the joints and faults of the area resulted from the deformation,and partially controlled mineralised deposition. The tillite and certain sandstone horizons were recognised as favourable host rocks.

Segnit (1939) studied the stratigraphic successions of the area. He invoked a complex system of strike faults to account for the repetition of a single tillite horizon at both Mount Grainger and the Dustholes area, some two miles to the north-west.

Fairburn and Nixon (1966) have produced a good account of the local and regional geology of the Mount Grainger Goldmine.

3. Present Investigation

The largest working within the area is the Mount Grainger Gold Mine. This Mine together with the North Medora and Jone's shafts are not held within the Gold Leases of Gold Copper Exploration Ltd.

The main workings within the lease areas are the South Medora, Golden Junction and Paddy's Gun.

3.1 The Golden Junction Mine (Fig. 1)

This Mine was first referred to in the Record of the Mines of South Australia (1908, p.219) and subsequently in South Australian Mining Reviews numbered 19, 20, 22, 24, 25 and 26.

In 1900 the Mine consisted of several prospecting pits and shallow shafts with an underlie shaft which penetrated 80 feet into a ferruginous clayslate formation 3 feet wide.

By 1902 a main shaft (12 feet by 4 feet 6 inches) had been sunk to 170 feet and crosscuts had been driven towards the old underlie shaft. At the 170 foot level two drives had been extended 30 feet and 35 feet along the 5 foot lode, and a winze had been sunk 20 feet. Almost 140 tons of ore had been recovered by this time.

After a ten year lapse stoping began again at the 30 foot level in the old underlie shaft. The orebody, which was between 6 inches and 9 inches wide, reportedly carried shoots of gold which locally extended to a depth of nearly 200 feet and had apparently been rich enough to cover the cost of extraction.

By 1914 stoping in the old underlie shaft was concentrated at the 60 foot level where gold occurred within concordant and discordant iron and quartz veins which varied in width from ¼ inch to 2 inches.

About 50 feet southwest of the underlie, a 3 to 4 inch quartz vein was exploited in an open-cut 10 feet long and between 2 feet and 5 feet deep.

By February, 1915, a second underlie in the creek bed had been sunk 93 feet in a thin north-trending vein. A sample from 20 feet down the shaft, where the vein was 3 inches wide, returned 2½ dwt/ton Au, while a sample of a 9 inch vein exposed in a shallow pit gave only a trace. Development of this shaft was apparently hindered by flood water which filled the shaft and dispersed most of the extracted ore downstream. The 2 ton parcel which was salvaged yielded 11 dwt/ton Au.

JUNCTION
MINE
N.T. G.S.

In 1916 it was reported that the main shaft had been deepened to 259 feet, water having been reached at 243 feet. The final report in 1916 gave an excellent description of workings at the 75, 150, and 170 foot levels. Gold was reported in thin ferruginous veins throughout the lode and traces of manganese and specularite were noted.

No further work or production has been recorded.

Total recorded production is 200 tons of ore.

In 1970 Gold Copper Exploration renovated the timbering and collar of the main shaft and erected a head frame.

3.2 Description of workings.

Apart from drives at the 24 foot level all workings in the Golden Junction vertical and inclined shafts remain as described in 1916.

The inclined shaft dips at between 60 and 65 degrees towards the main shaft situated 100 feet westnorthwest. At the 24 foot level one drive extends 20 feet east-northeast while a second drive which extends west-southwestwards is blocked.

At 130 feet beneath the surface, an 18 foot drive follows a 2 foot 6 inch lode composed of several veinlets of quartz and specularite.

A crosscut through barren country rock at 150 feet links the inclined and vertical shafts, and has been driven 21 feet through the footwall. A horizontal drive runs 30 feet northeast and 21 feet southwest.

A vertical winze leads to the 162 foot level at which there is a crosscut to the main shaft and a drive trending north-east for 25 feet along a 6 foot lode of thin quartz-specularite veins. An infilled drive extends southwards and a bell-shaped vertical winze has been opened to a depth of 10 feet in quartz-specularite veins.

3.3 Mineralisation.

Within the vicinity of the Golden Junction Mine mineralisation shows strong lithologic control. There is little evidence of fracture infillings. The main underlie shaft lies within a 3 to 5 foot band of poorly consolidated mudstone which is considerably enriched in limonite, derived partially from plentiful thin veins and pockets of specularite. The veinlets seldom exceed ½ inch in width and are irregularly oriented within this single lithilogical unit. They extend over the full width of the workings (75 feet) and to the lower depths of the mine (195 feet). Samples from prospecting pits apparently indicated that there was little strike extension of the gold mineralisation, which seems therefore to have a blade like distribution.

The gold occurs apparently as native metal within "ferruginous" veins. Locally it was visible to the unaided eye. Manganese oxides are fairly abundant within the lode while sericite is absent and quartz is not plentiful. Mineralisation here appears to be partly the result of hydrothermal replacement, although wall-rock alteration is insignificant.

3.4 Ore Grade

Table 1 lists the published assay and battery returns of grab, channel and bulk samples. They range from a trace to 41 dwt/ton Au; and exceptional grab sample contained 311 dwt/ton.

Recorded production of roughly 200 tons yielded an average 16 dwt/ton An or 160 ozs Au.

Table 1 Assay and battery results from the Golden Junction workings.

Location	Type of sample	Grade (dwt/ton)	Ref.
Underlie shaft	grab	7	1908
" "	"	21	1908
Main shaft	coarse sorted ore	3	1908
" "	" " "	1	1908
" "	fine sorted ore	9	1908
" "	" " "	5	1908
" "	137 ton 9 cwt	8¾	1908
Underlie shaft 30 foot level	grab	10	1913
" " " " "	grab	41	1913
" " " " "	52 ton 3 cwt	28	1914
" " " " "	9 ton 4 cwt	69½	1914
" " " " "	18 inch channel	27	1914
" " " " "	grab	1	1914
" " " " "	grab	5	1914
Open cut	grab	15	1914
Second underlie	grab	2½	1915
" "	2 ton	11	1915
Pit	grab	tr	1915
Main shaft 75 foot level	grab	311	1916
Underlie shaft	3 foot channel	17	1916
" "	4 foot channel	2	1916
" "	4 foot channel	10	1916
" "	6 foot channel	13	1916

053

3.5 Conclusions and recommendations.

Extensive, deep, workings have been made to extract gold at 16dwt/ton which would currently be worth roughly $5,600. Native gold occurs in a hydrothermal setting which appears to be lithologically controlled and possibly form a blade like orebody. Further work would possibly have to extend the mine to deeper levels but a useful volume of ore could be stoped out between the various levels.

Bulk samples over the full width of the lode, and including the hanging wall should be taken at all levels and treated to extract all contained gold.

4.1 Paddy's Gun (Fig. 2)

This group of workings situated 4000 feet north-east of Mount Grainger is noted on the map of Jack but not described in the text. The only reference is that in South Australian Mining Review (number 57).

Gold was reported at the intersections of thin north-south quartz veins and a persistenl ferruginous quartz vein which parallels the east to west striking country rock. Several intersections were revealed in trenches and a 150 foot shaft was sunk in one of them but little gold was recovered owing to the impersistence of the veins. A 150 foot long adit was driven into the hillside along the main vein but this also failed to intersect viable ore. It is nor clear from this report whether work was underway when it was written (1932) and there is nor record of production or grade. (PETER BOROUGH BATTERY PARCEL 640.)

4.2 Geology.

The host rocks in the area are ferruginous, locally crumbly silty mudstones with rare cross lamination. They lie at the northern extremity of the Mount Grainger anticline and strike approximately east/west (Fig. 2).

Description of workings

4.10.A Fifteen foot near-vertical shaft along an 18 inch band of hard sub-parallel limonite veinlets between 1/8 and 1 inch wide within a unit of ferruginous silty mudstones. The shaft lies at the intersection of these with a vertical 2½ inch wide quartz-limonite vein trending 145°. Sample 80259 came from this vein.

4.10.B Contorted deep shaft which lies within a concordant quartz-limonite vein between ¼ and 1 inch wide. The lowest 15 feet is backfilled in the northern side.

4.10.C A 150 foot adit, driven from the creek along a persistent concordant vein of quartz and limonite between 2 feet 6 inches and 3 feet wide, intersects vertical shaft 4.10.C.

4.10.D A 75 foot vertical shaft within a concordant band of limonitic mudstone 2 feet wide. A crumbly veinlet of specularite up to 1 inch wide is exposed down most of the shaft. At the 75 foot level a 7 foot drive to the south exposes irregular quartz veins; a 50 foot crosscut to the north intersects two discordant limonite veins between 1 and 2 inches wide, one 40 feet from the shaft and the other at the distal end. Samples 80257 and 80258 came from these veins.

4.10.E Pit of 120 cubic feet in vertical mudstones traversed by a concordant 10 inch quartz-limonite vein.

4.10.F Shaft with unsafe collar.

4.11.A Pits of 50 cubic feet and 70 cubic feet along a vein which strikes 230 degrees.

4.11.B Blind shaft inclined steeply in a direction of 200 degrees.

4.11.C A 110 foot shaft with a 51 foot crosscut to the south and horizontal drives of 18 feet west and 50 feet east along thin quartz-limonite veinlets up to 1 inch wide which dip southwestward at 60 degrees. The lode is 2 feet wide.

4.11.D Pit of 145 cubic feet which exposes a 12 inch quartz-pyrite vein striking 220° and dipping 38 NW.

4.11.E Pit of 240 cubic feet which exposes a 1 inch quartz vein (228° strike, 63° dip SE) and a 4 inch quartz-limonite vein (035° strike, 54° dip NW)

4.11.F Pit of 100 cubic feet with vein quartz float.

4.3 Mineralisation

Lodes up to 3 feet wide occupy certain bands of silty mudstone and have a lateral extension of up to 150 feet. Each lode contains several thin quartz-limonite or specularite veinlets which lie crudely parallel to the stratification. Native gold was reported at the intersections of thin north-south quartz-limonite veins with these lodes.

The country rock appears to have been selectively enriched in iron oxides by hydrothermal alteration similar to, but less intense than that at the Golden Junction.

4.4 Ore Grade

There is no record of production or assay returns. The workings seem to have attracted attention at times of high unemployment and to have yielded little ore.

4.5 Conclusions and recommendations

Hydrothermal enrichment of silty mudstones has taken place along strike. Native gold has been reported at certain vein intersections but the grade and production are not recorded.

The limited extent of the workings suggests that they were largely prospecting ventures which were abandoned after unencouraging results.

They are unlikely to contain a commercial quantity of ore and no further attention should be paid to them.

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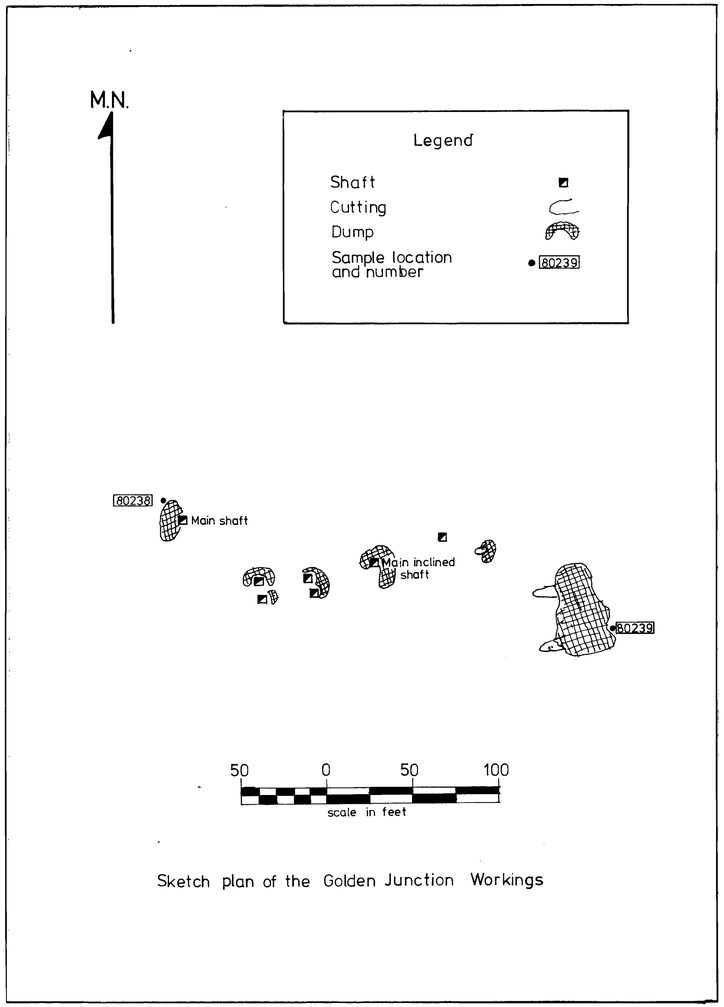
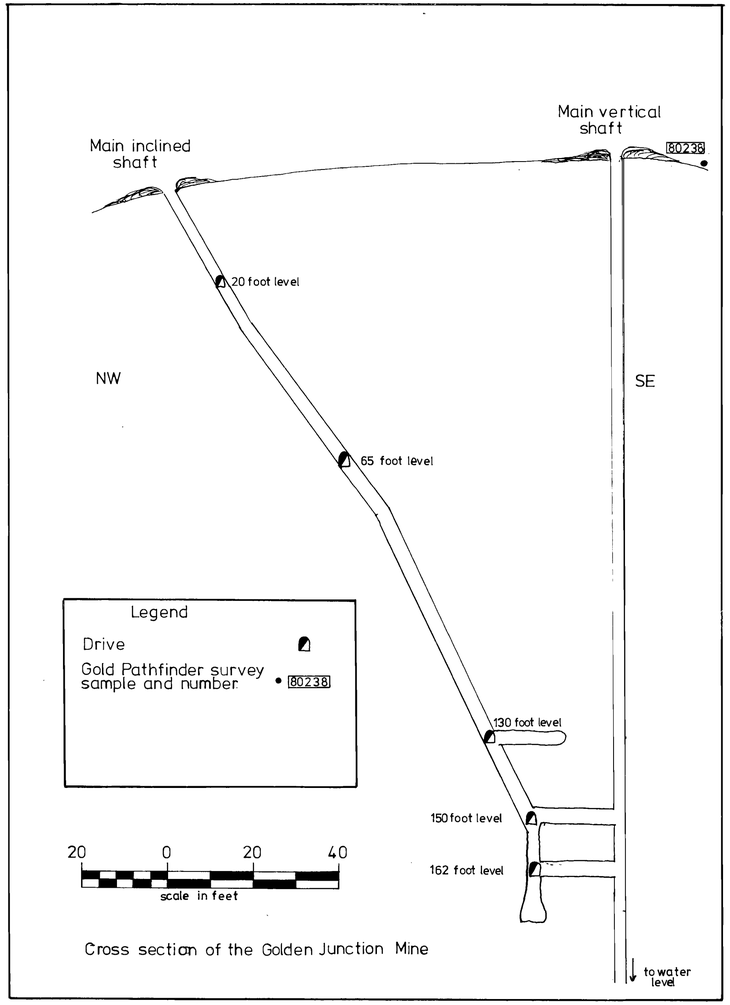
29th March, 1971.

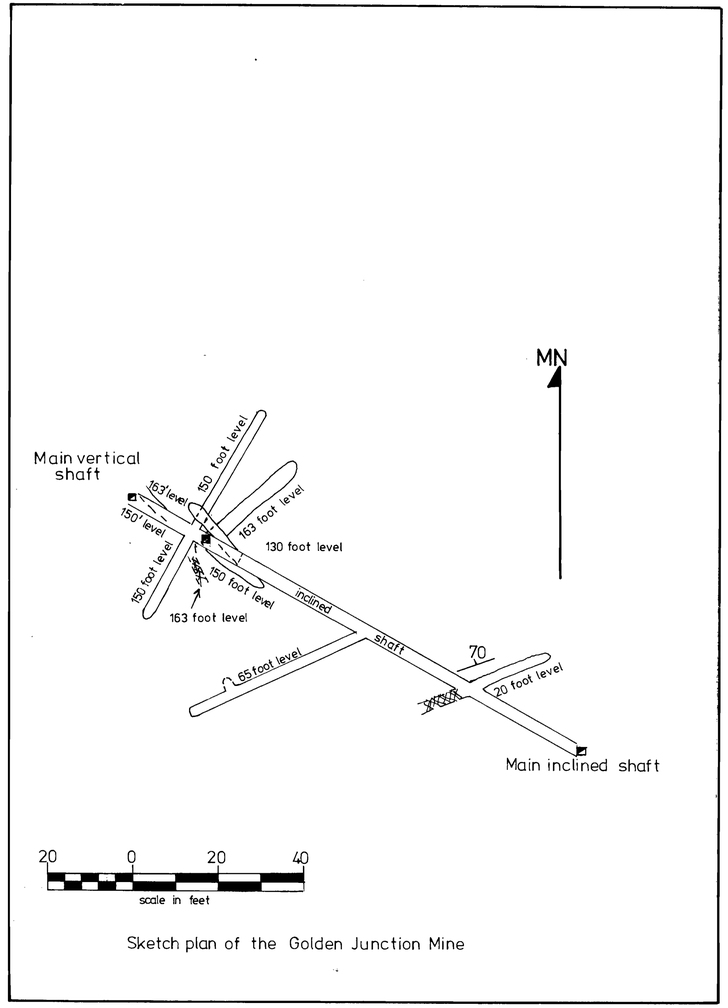
Fig.1 The Golden Junction Mine, S.M.L. 477 [Oodlawirra]



Sketch plan of the Golden Junction Workings



Cross section of the Golden Junction Mine



Sketch plan of the Golden Junction Mine

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1518-18

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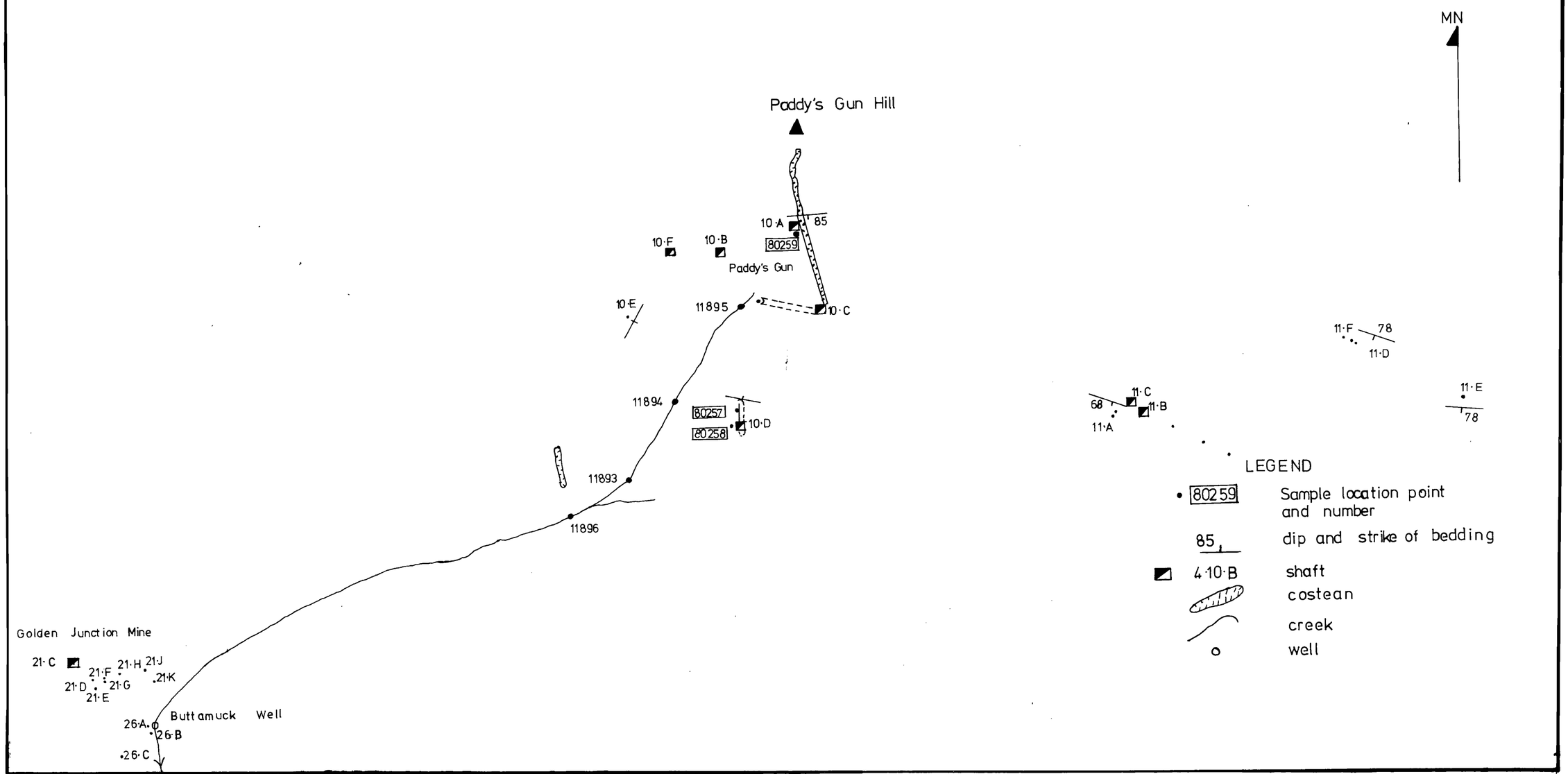
Fig. 2 Paddy's Gun Workings, Special Mining Lease 477 (Oodlawirra)



1518-20

INTERIM REPORT ON THE DUSTHOLES PROSPECT (Gold leases 2015 - 2016)

ON BEHALF OF

GOLD COPPER EXPLORATION LTD.

1. Introduction

The prospect consists of two 40 acre gold lease claims with the Gold Lease Numbers 2015 - 2016. The prospect lies 8 miles north of Oodlawirra township, and 20 miles north-east of Peterborough.

2. Previous Work

A mineralised lode has been worked intermittently for gold since 1900.

2.1 Numerous pits and shafts occur over a 600 foot stretch of north-north-easterly trending outcrop. They include the Dustholes, Myrtle and Golden Morn mines and have been referred to in the Record of the Mines of South Australia (1908), in JACK (1913), and in South Australian Mining Reviews numbered 8, 13, 14, 15, 16, 17, 22, 23, 24, 27, 28, 30, 52, 62, and 67.

For this report the workings have been coded and are referred to below and in Fig. 1. by the relevant digits and letter.

2.2 The Records of Mines (1908) describes four well-defined lode formations of which the eastern one was reportedly between 25 feet and 30 feet wide and consisted of ferruginous quartz, quartzite, sandstone and slate all of which carried a little gold. By 1907 numerous costeans had been opened along small auriferous veins of quartz and ironstone which crossed the formation at right angles.

By 1910 a vertical shaft (4.13.B) on top of a 100 foot hill had been sunk 30 feet, and a southwesterly drive at the 20 foot level had been extended 60 feet along a 4 foot lode. Numerous veins each between 3 inches and 8 inches wide, and between 12 inches and 36 inches apart, reportedly intersected the lode perpendicular to its dip. Gold was recorded only from such ferruginous veins.

By March 1911 a crosscut had been driven across the lode at the 50 foot level of an underlie shaft (4.13.a). Samples from small quartz leaders which were intersected in the crosscut assayed only a trace of gold.

By October, 1911 the vertical shaft (4.13.B) had reached 35 feet and the southwesterly drive at the 20 foot level had been extended 95 feet. Assays of 2 dwt/ton Au from samples on the north and south sides of the drive proved gold in the main 4-5 foot vein whereas ore which returned 3 oz 12dwt/ton Au indicated greater concentration in the thinner iron veins.

Work reported early in 1912 included the recent sinking of an underlie 18 inch ferruginous quartz and iron veins. A northerly drive which had been extended 60 feet at the 26 foot level had disclosed several auriferous veins.

By the end of 1912 a new underlie shaft (?4.13.I) had disclosed a ferruginous lode with several seams of quartz and iron to a depth of 100 feet.

Jack observed that the veins in the northern part of the lode contained mica and conformed generally to the strike of the locally sericitised shale but dipped at right angles to them. In the south he recognised more ferruginous veins. He described the workings and recorded that 168.65 tons of ore had by then yielded 94 oz 7 dwt 3 gr Au producing an average grade of 10 dwt 23 gr/ton Au.

In 1914 the ownership of the four leases was transferred and the name of the Dustholes changed to Myrtle.

On McCallum's Claim, immediately south of the Myrtle Mine, several open cuts were worked for a year and two shafts were sunk 15 feet and 30 feet respectively. Drives in both of these followed a lode of ferruginous quartzites reportedly with gold bearing ironstone veins between 3 inches and 12 inches wide. A sample from the northern workings assayed 16 dwt/ton Au with 10 dwt/ton Ag, and ore from the southern group 2 oz 7 dwt/ton Au with 5 dwt/ton Ag.

On Myrtle Extended, immediately south of McCallum's, open cuts and shafts 15 feet and 18 feet respectively were worked in ferruginous quartzite which reportedly carried numerous cross seams of quartz and ironstone veins between 3 inches and 9 inches wide. Few of these appeared to contain any gold; four assays returned traces.

By early 1916 the main shaft (?4.13.I) in the Myrtle Mine had been sunk to 137 feet and a westerly crosscut had been driven 60 feet. The main lode, intersected first at 45 feet, consisted of small quartz and iron veins over 15 feet. On the surface two large open cuts had been excavated. The northerly one (4.13.H) was 8 feet wide and had been driven for 50 feet. The southerly open cut (4.13.J) was 20 feet wide, 40 feet long and had a face up to 14 feet high. Numerous quartz and iron seams between 1 inch and 12 inches wide carried a little gold.

In 1917 total recorded production of gold was reported as 109 oz 6 dwt 23 gr from 282 ton 7 cwt of ore - giving an average of 7 dwt 17 gr/ton Au.

In 1918 plans were made to opencut the Dustholes workings and to process the ore on site. Unsatisfactory progress was reported in 1919, and no further activity was recorded until the 1937 report to Segnit. He suggested that a strike fault zone at the Dustholes had been a feeder of the vein system, and observed that the size and number of the veins diminished at depth. He nevertheless advised a drilling programme to test the depth extension of the veins.

Total production to June 1937 was recorded as 16oz 17 dwt 16 gr from 413t 17 cwt, an average grade of 7 dwt 18 gr/ton Au.

No further production is recorded until 1970 when Gold Copper Exploration dispatched a 30 ton batch of dump material to Peterborough Battery for treatment. A yield of 18gr/ton Au was obtained. An assay of the tailings (which have not been cyanided) indicated a further gold content of 14gr/ton.

The names Mona Lisa, Kontiki and Utopia Mine were applied at this time to the workings south of the Dustholes Mine.

3. GEOLOGY

3.1 Lithology

Workings of the Dustholes Lode extend over 600 feet of gently curved outcrop. The host rock is one of several silty or sandy units up to 25 feet thick which occur within a sequence of less resistant slatey mudstones. Planar, continuouslaminae characterise the mudstones whereas load casts, cross-stratification, ripple marks and small soft-sediment folds are typical of the siltstones. Limonite pseudomorphs after pyrite occur locally.

3.2 Structure

The mineralised lode lies within strata which dip westwards at about 55 degrees on the western limb of the Mount Grainger anticline. Segnit (1938) erroneously suggested that this limb was broken along the lines of several creeks in the Dustholes area by east-west faults. He also mapped strike faults, one of which was mineralised.. The evidence for these is not conclusive; it seems probable that certain sedimentary structures were misinterpreted as tectonic features, while several angular discordances and possibly drag folds are suggestive of faulting in the vicinity of the Dustholes mine itself.

On a stereographic plot of the orientation of 37 veins within the lode (Fig.*1e) it is evident that there are two preferred directions; 207°,75° E56.E and 247°,70° S.E.. Few veins are parallel to the stratification and the majority are clearly infilled tension gashes less than 15 feet long and 6 inches wide which are confined to a single stratigraphic unit. They suggest that this coarser unit has yielded to regional stress by fracture rather than by the development of a strain slip cleavage such as that in the less competent enclosing slatey mudstones.

* strike and dip

3.3 Mineralisation

The main exposures along the lode are :-

4.14.A Fifteen foot vertical shaft with a drive which extends 31 feet south at the 13 foot level along a 2 inch quartz-hematite-sericite vein dipping 72° east. The vein lies at the axial plane of a small antiform in silty sandstone.

4.14.B Thirty foot trench of 200 cubic feet trending 233° and exposing a 1 inch quartz-limonite-sericite vein (050°, 46°S.E.), and a 2 inch quartz-limonite-sericite vein 280°, 45°S).

4.14.C Ten foot trench of 100 cubic feet along a quartz vein trending 245° and dipping 70° southwards.

4.14.D Pit of 150 cubic feet which exposes a quartz-sericite-limonite vein up to 6 inches wide trending 246° and dipping 75° southwards.

4.14.E Three pits of 12 cubic feet which expose a quartz-sericite-pyrite vein trending 248° and dipping 72° southwards.

4.13.A/C A crosscutting adit (4.13.C) 200 feet long extends east-south-east towards the bottom of a 51 foot vertical shaft (4.13.A). The vein complex is intersected 145 feet from the opening and horizontal drives extend 30 feet northwards and 85 feet southwestwards within it. The southwesterly drive follows several discontinuous quartz-sericite veins which have been stoped at several points. At the end of this drive a 12 foot vertical winze leads down to short drives and stopes.

4.13.B/D A 32 foot vertical shaft with a southwesterly drive 81 feet long at the 31 foot level along a vein trending 210° and dipping 70°E.. The vein of quartz, sericite and limonite varies up to 8 inches wide. A blocked drive extends westward from the drive some 75 feet from the shaft. An inclined drive (13.D) extends nearly 50 feet southward towards the shaft along the vein.

4.13.E Inclined drive which extends 12 feet southwards along the strike, and a nearby pit of 80 cubic feet surrounded by quartz-sericite-limonite spoil.

4.13.F Pit of 50 cubic feet which exposes quartz-pyrite-limonite veins up to 6 inches wide.

4.13.G Large open cut 10 feet deep which is approached from the west by a 25 foot trench. Two parallel adits extend northwards for 25 feet and 45 feet in a network of quartz-sericite-limonite veins, some of which have been stoped out.

4.13.H Large open cut 55 feet long, between 4 feet and 12 feet wide and up to 15 feet deep.

4.13.I Deep vertical shaft with unsafe collar.

4.13.J Open cut some 55 feet long, between 8 feet and 20 feet wide, and up to 14 feet deep.

4.13.K A steeply inclined shaft 27 feet deep which leads to a 57 foot drive dipping at about 35 degrees. Three veins were followed by drives up to 11 feet long. The shaft intersects several quartz-limonite-sericite veins up to 6 inches thick.

4.13.L Pit of 60 cubic feet which exposes an irregular quartz vein trending parallel to the strike.

4.13.M Pit of 150 cubic feet which exposes a 2 inch wide quartz-limonite vein striking 245° and dipping South-east at 62°.

4.13.N Open cut and inclined adit 30 feet long of 350 cubic feet trending parallel to the strike along a 6 inch quartz-sericite vein striking 225° and dipping 50° south-eastwards

4.13.O Three small pits with minor quartz-sericite veins.

4.13.P Pit of 120 cubic feet exposing thin quartz veins.

4.14.A Fifteen foot vertical shaft with a drive which extends 31 feet south at the 13 foot level along a 2 inches quartz-hematite-sericite vein dipping 72° east. The vein lies at the axial plane of a small antiform in silty sandstone.

4.14.B Thirty foot trench of 200 cubic feet trending 233° and exposing a 1 inch quartz-limonite-sericite vein (050°, 46°SE) and a 2 inch quartz-limonite-sericite vein (280°, 45°S).

4.14.C Ten foot trench of 100 cubic feet along a quartz vein trending 245° and dipping 70° southwards.

4.14.D Pit of 150 cubic feet which exposes a quartz-sericite-limonite vein up to 6 inches wide trending 246° and dipping 75° southwards.

4.14.E Three pits of 12 cubic feet which expose a quartz-sericite-pyrite vein trending 248° and dipping 72° southwards.

4.15.A Pit of 60 cubic feet with limonite and a trace of sericite.

4.15.B Trench of 225 cubic feet which trends 235° along a 3 to 5 inch quartz vein. A minor quartz-pyrite vein ½ inch wide strikes 165° and dips 64° eastwards.

4.15.C Prospecting hole 15 feet long inclined along a quartz vein between 2 and 8 inches wide trending 204° and dipping 42° eastwards.

4.15.D Two adjacent shafts each 4 feet by 3 feet and between 6 and 7 feet deep along 6 inches wide quartz veins trending 243° and dipping 73° southwards.

4.15.E Trench of 50 cubic feet trending 100° along a quartz vein.

4.15.F Pit which exposes a quartz vein between 2 and 10 inches wide trending 200° and dipping 73° eastwards.

4.15.G Trench of 75 cubic feet trending 117° along a quartz vein.

4.15.H Pit of 210 cubic feet with numerous irregular quartz veins up to 7 inches wide.

4.15.I Shaft 9 feet deep with a 6 foot drive along a 2 inch quartz-sericite vein trending 230° and dipping 75° southeastwards.

4.15.J Two pits of 12 cubic feet along a lenticular quartz vein,

4.15.K Drive inclined 10 feet along 6 inch quartz-limonite vein which trends 228° and dips 65° southeastwards.

4.15.L Trench which trends parallel to the strike and exposes a 4 inch quartz-sericite vein striking 215° and dipping 72° eastwards.

4.15.M Twelve foot trench of 775 cubic feet which exposes several quartz veins trending 16° northwards.

4.15.N Pit of 180 cubic feet which exposes irregular quartz veins and a 6 inch quartz-sericite vein striking 248° and dipping 80° southwards.

4.15.O Pit of 300 cubic feet which exposes a 1 inch quartz vein striking 230° and dipping 80° southeastwards.

4.15.P Steeply inclined shaft, caved at 15 feet, in a quartz-limonite vein up to 8 inches wide which trends 180° and dips 71° eastwards.

4.15.Q Pit of 140 cubic feet which exposes a vertical quartz-sericite vein striking 073°. Short leaders to it dip 35° southwards.

4.15.R Pit of 20 cubic feet with irregular quartz veins and traces of sericite.

4.15.S Pit of 15 cubic feet which exposes a thin quartz vein.

4.16.A Infilled pit of 30 cubic feet.

4.16.B Pit of 50 cubic feet with pod of quartz 18 inches by 12 inches.

4.16.C Trench of 40 cubic feet trending 186° for 10 feet along a quartz-limonite-sericite vein 2 inches wide which dips 67° eastwards. The hanging wall is enriched in limonite. At the western end an 8 foot shaft exposes branching quartz-sericite veins 2 inches and 6 inches wide (065°, and 215°, 18° southwards).

4.16.D Trenches 15 feet and 12 feet long with a 10 foot vertical shaft which exposes a vertical quartz vein trending 250°. Sericitic dump material nearby.

4.16.E Trench of 75 cubic feet trending 234° along quartz vein.

4.16.F Trench of 250 cubic feet exposing 1½ inch vertical quartz vein (070°) and 4 inch quartz vein (200°, 77° eastwards). *

4.16.G Eighteen foot trench of 150 cubic feet trending 100° and exposing 2 inches quartz vein (190°, 58° eastwards).

4.16.H Eighteen foot trench of 125 cubic feet trending 100° and exposing traces of vein quartz.

4.16.I Seven foot shaft exposing 1 inch quartz vein (203°, 68° eastwards), 2 inch quartz vein (203°, 68° eastwards) and ¼ inch quartz-limonite vein (164°, 39° westwards).

4.16.J Trench of 40 cubic feet trending along quartz vein parallel to the strike.

4.16.K Fifteen foot trench of 50 cubic feet trending 100° and exposing 3 inch quartz vein parallel to strike.

4.16.L Hole of 240 cubic feet with 10 foot shaft. A 6 inch quartz-sericite vein trending 225° and dipping 60° southeastwards is followed by a short drive at the 10 foot level.

4.16.M Trench of 12 cubic feet along a quartz-limonite vein trending 060° and dipping 65° southeastwards.

4.16.N Fifteen foot trench of 300 cubic feet with 12 foot shaft at the southwestern end, 4 inch quartz vein (065°, 55° southeastwards) and vertical 2 inch quartz vein trending 183°.

4.16.O Twelve foot inclined shaft which exposes inch wide quartz-limonite-sericite veins (064°, 45° southeastwards and 066°, 63° south-eastwards).

4.16.P Ten foot trench of 75 cubic feet along a quartz-limonite-sericite vein trending 234° and dipping 47° eastwards.

4.16.Q Trench of 90 cubic feet exposing a 3 inch quartz-limonite vein trending 183° and dipping 65° eastwards. A 3 foot long quartz-pyrite leader dips eastwards at 54° off the main vein.

4.16.R Twenty four foot open cut of 1000 cubic feet which exposes a quartz-sericite vein trending 045° and dipping 65° southeastwards.

* STRIKE AND DIP.

3.4 Mineral Assemblages

The introduced minerals within the Dustholes Lode are quartz, pyrite, hematite, sericite and native gold. Kaolinite possibly occurs locally in altered wall rock.

Quartz is generally the chief mineral which infills closely-spaced lenticular tension gashes throughout the lode; locally it may be associated with traces of hematite and pyrite or their alteration product (as limonite).

Native gold is not visible anywhere within the lode. By trial and error, prospectors reportedly found it chiefly associated with "ferruginous" quartz veins but also apparently in the country rock. Vein intersections were reported as favourable locations, but the distribution of gold generally was found to be irregular. The most extensive workings are those in which sericite is most abundant.

Traces of bismuth and silver have been reported with the gold.

4. Ore Grade.

Nine bulk samples of up to 138 tons indicate more reliably the grade of selected ore; they are 2½, 5¾, 6, 8, 6-8, 8½, 20, 25 and 33 dwt/ton Au.

A 30 ton batch of dump material recently taken by Gold Copper Exploration Ltd., from the Dustholes Mine returned 15 gr/ton; its tailings probably contain a further 14 gr/ton.

These results do little more than indicate the irregular distribution of gold and indicate how little in fact has been produced.

5. Ore Reserves

Because gold is very rarely visible and occurs in small quantities, its reserves and distribution cannot readily be tested. Earlier prospectors used panning technique on hand crushed ore which had been taken at close spaced intervals along the lode. They apparently found richer ore in the vicinity of the Dustholes mine. Only in the Dustholes Mine did they stope even small volumes of rock and it must be deduced from this that the results were discouraging.

6. Conclusions and Recommendations

Gold-bearing quartz-veins occur in a lode up to 25 feet wide and 600 feet long. Native gold reportedly occurs within ferruginous quartz veins and also in sericite quartz veins. It is irregularly distributed, but is apparently more plentiful in the vicinity of the Dustholes Mine.

Recorded assay results range up to 8 oz 15 dwt/ton Au. Bulk samples of selected ore have ranged from 2½ to 33 dwt/ton Au. A recent 30 ton sample returned 15 gr/ton Au and probably contained an additional 14 gr/ton Au.

The recorded production is approximately 420 tons of ore which yielded roughly 160 oz of gold, averaging 7.6 dwt/ton. The current value of this gold would be approximately $5,600. Most of this

probably came from several shafts and drives in the vicinity of the Dustholes Mine.

The geological setting and recorded production and grade are not as encouraging as those of the Medora workings, to which priority could be given in any future exploration. The Dustholes Mine and nearby workings could, however, be bulk sampled to assess the overall grade more reliably.

It is doubtful today whether selective mining of the thin veins is feasible. The absence of any large stopes suggests that gold occurs here chiefly in small veins.

It is suggested that some bulk sampling be carried out at the Dustholes Mine to assess an overall ore grade.

The selectivity of previous workings suggest that the ore zones are narrow.

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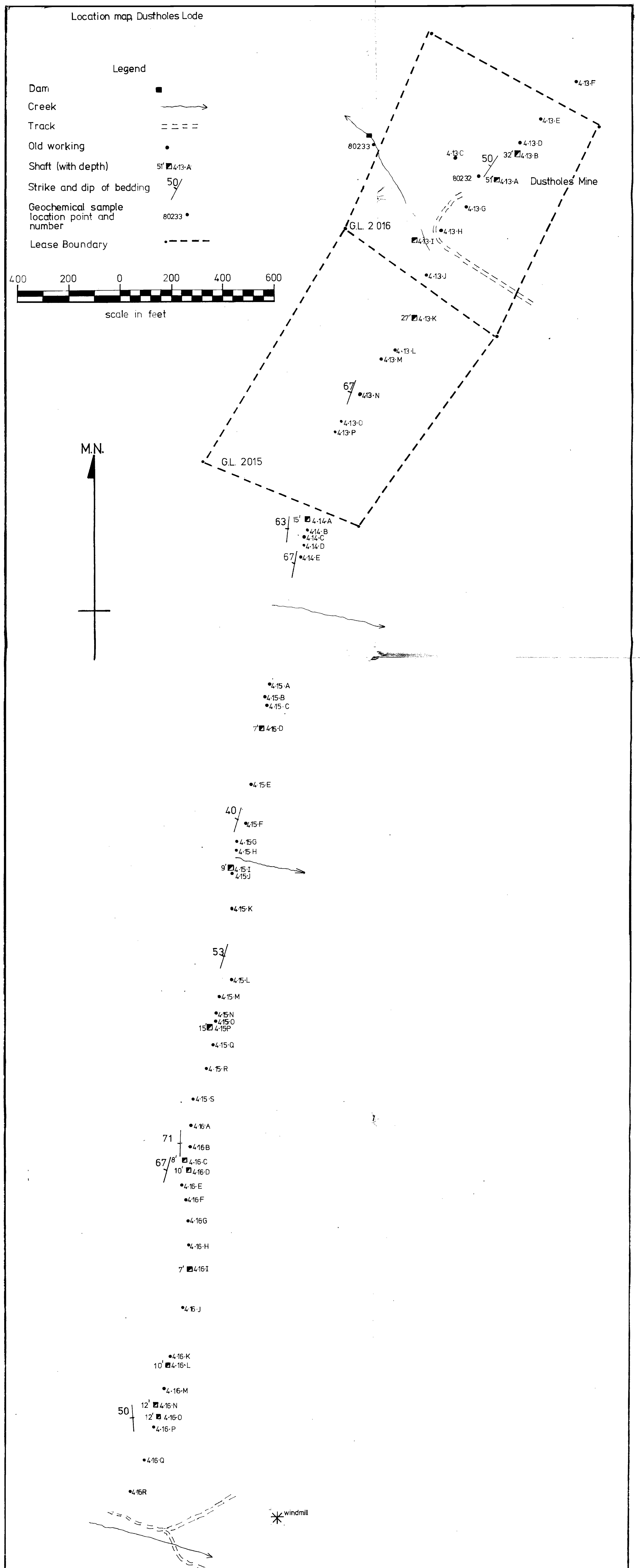
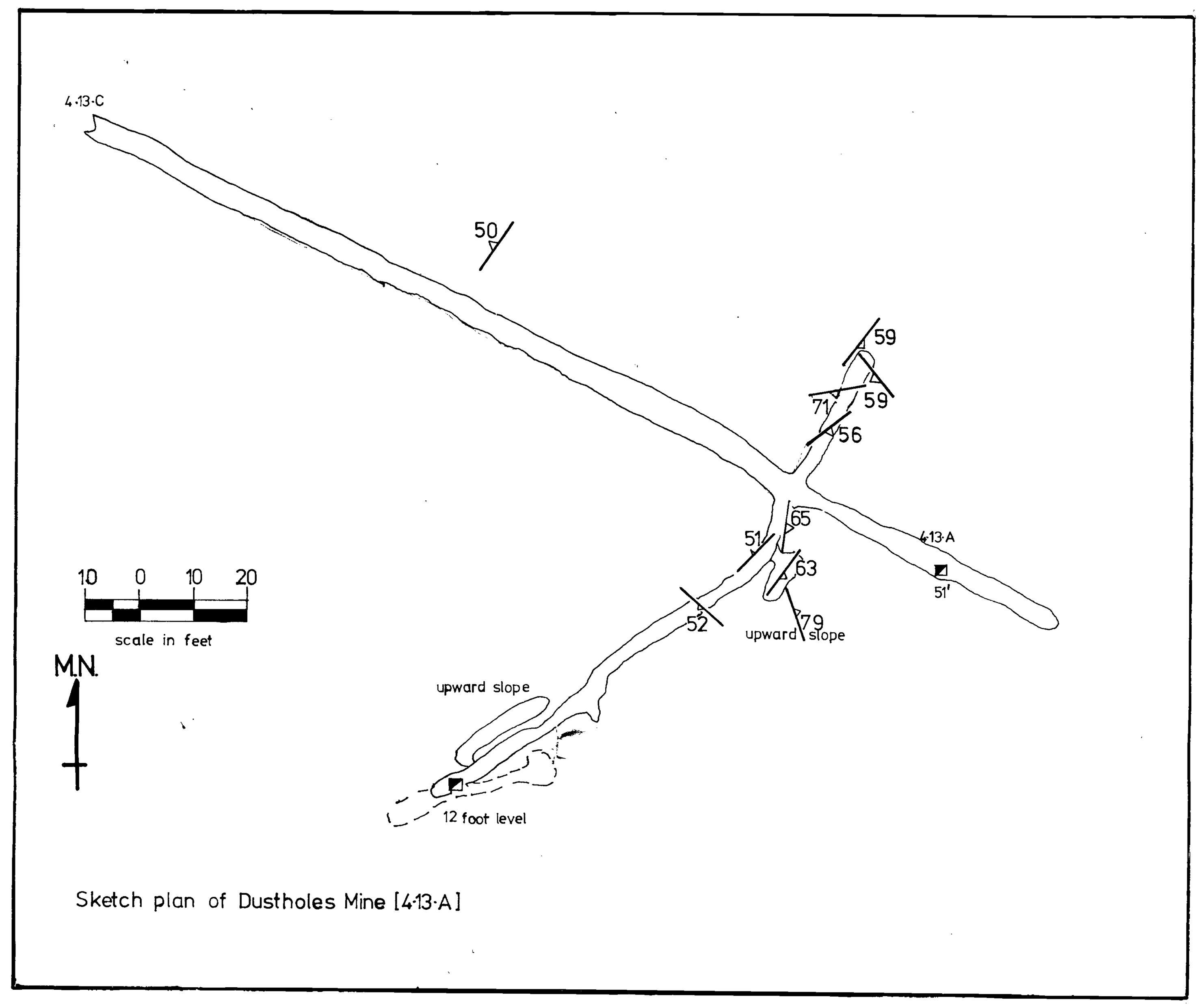
Robertson Research (Aust.) Pty. Ltd.,
31st March 1971.

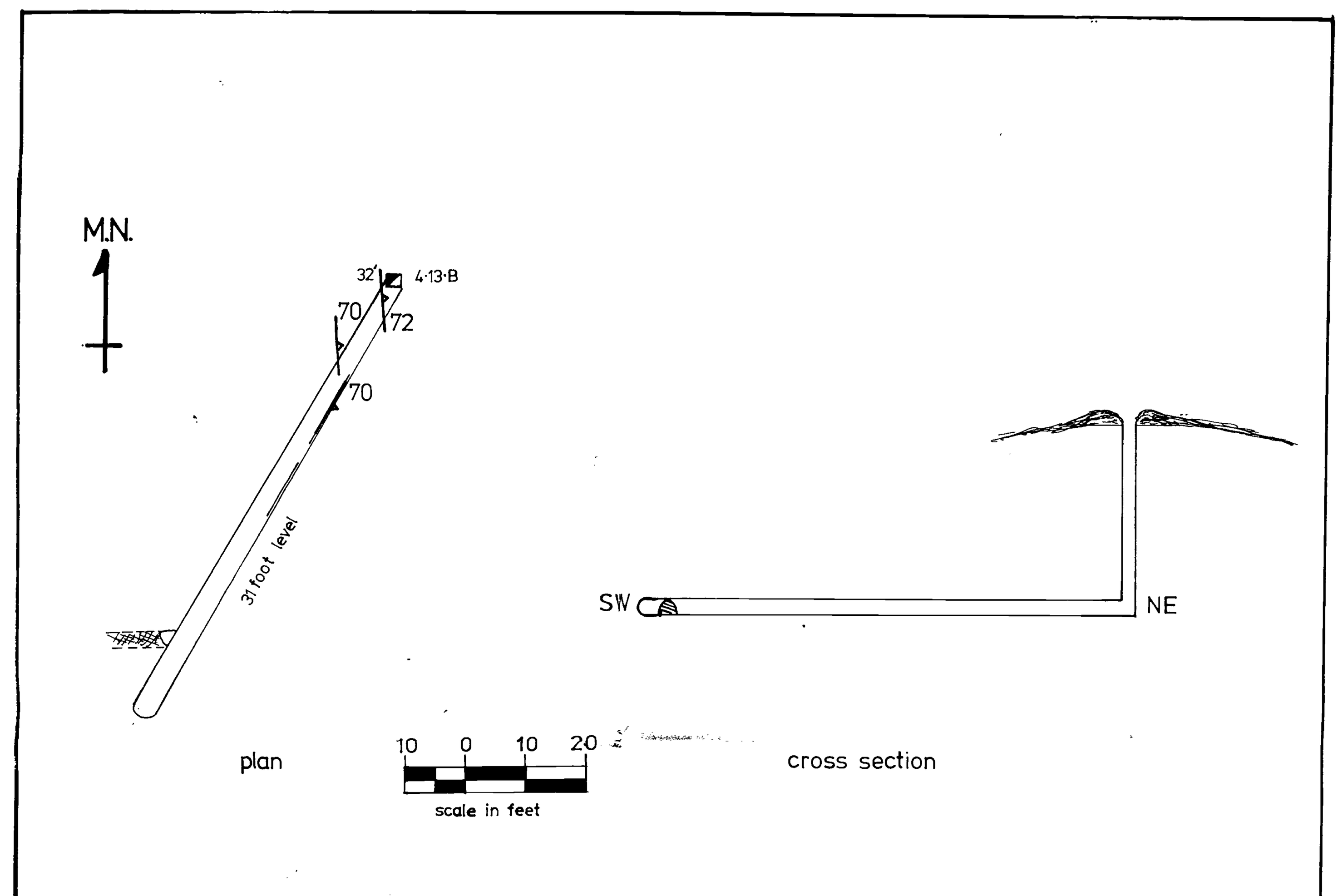
Fig. 1 The Dustholes Lode, Special Mining Lease 477 [Oodlawirra].

1518-19

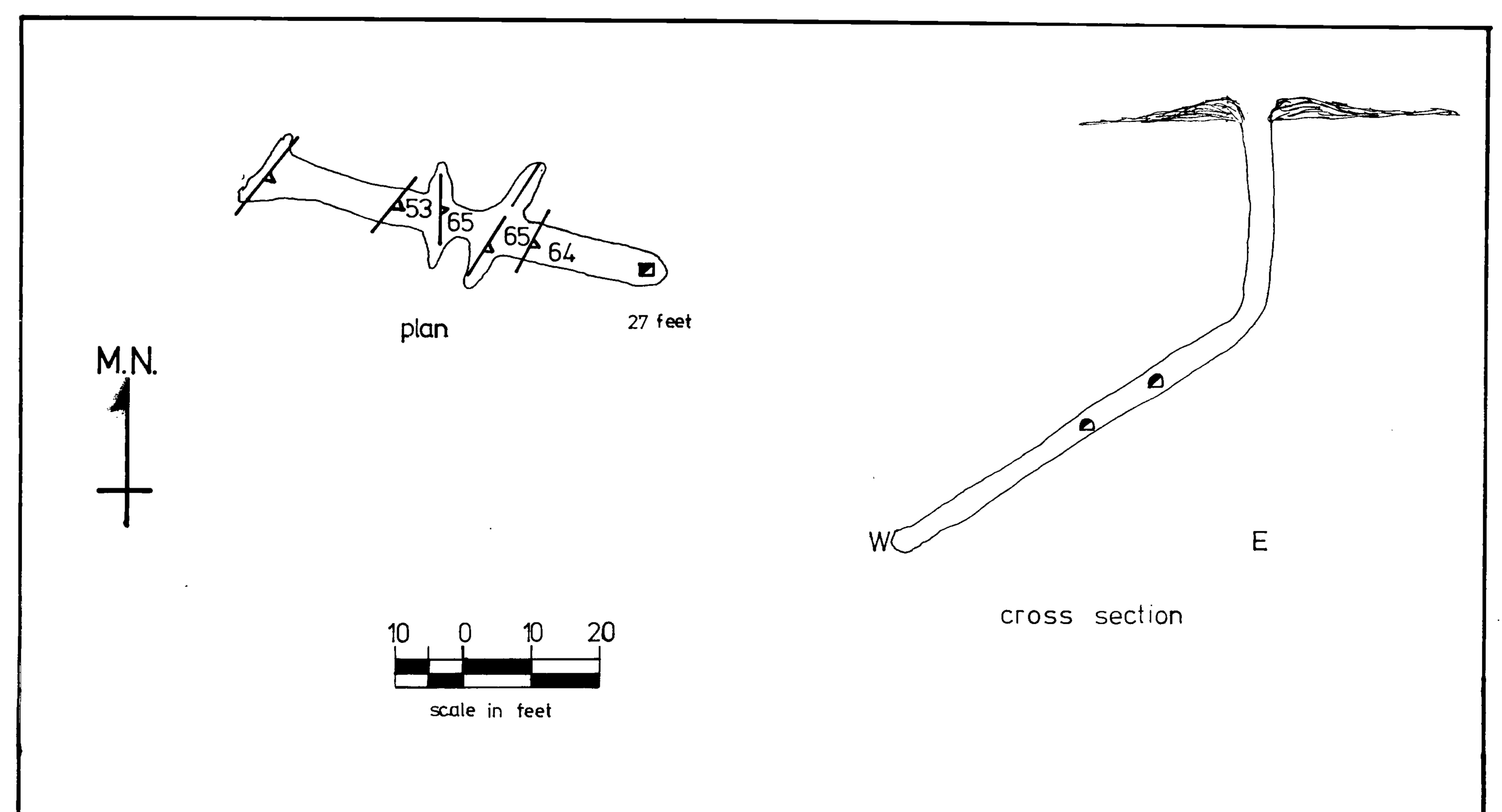




Sketch plan of Dustholes Mine [4·13·A]

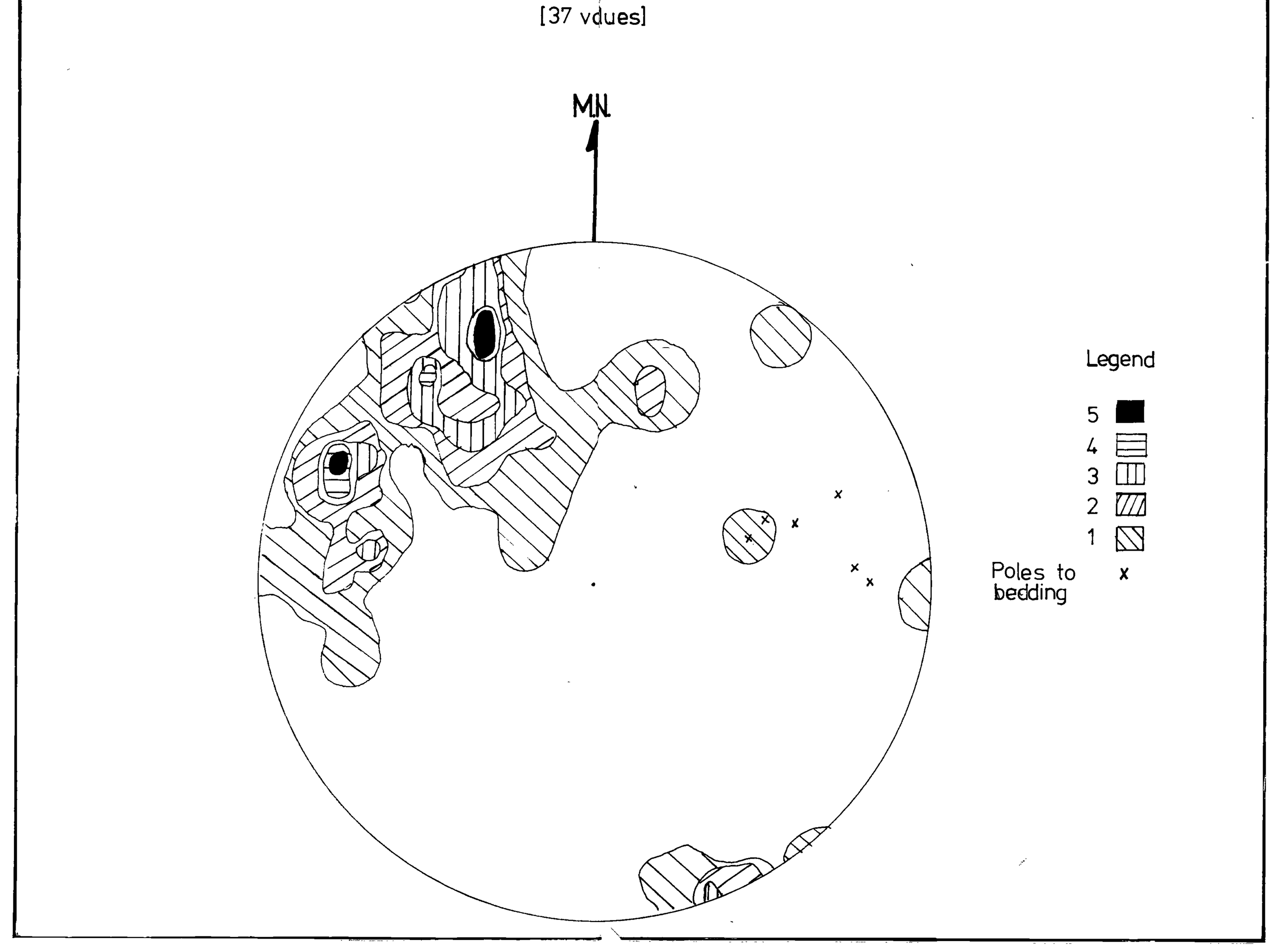


Sketch of workings 4·13·B



Sketch of workins 4·13·K

Southern hemisphere plot of poles to veins within the Dustholes lode [37 values]



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Not.

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INTERIM 3 MONTH REPORT ON SPECIAL MINING LEASE 477 (OODLAWIRRA) ON BEHALF OF GOLD COPPER EXPLORATION LTD. FOR THE PERIOD 8 JANUARY, 1971 - 8 APRIL, 1971.

1. Regional geochemical stream sediment programme

A regional geochemical stream sediment programme has been completed during this quarter. A total of 3667 samples were collected from the lease area of 180 square miles giving a density of 20 samples per square mile. Samples have been dispatched for analyses but no results have been received.

2. Soil sampling programme

2.1 The Wheal Basset Prospect has been geologically mapped. Copper carbonates occur in a shear zone with an indicated strike length of 3,000 feet. Consequently a limited soil sampling programme has been carried out to define extensions of the Cu mineralisation at the Wheal Basset Mine. A total of 211 samples have been sent for analyses but results have not been received. (Fig. 1)

2.2 A second mineralised zone is located 1 mile west of the Wheal Bassett mine and reveals malachitic Cu impregnated breccia. The location of this ore zone is being defined by a soil sampling programme of 263 samples. (Fig. 2)

3. Geological mapping

The Oodlawirra Goldfield has been studied. A comprehensive literature search has been conducted and the three gold-bearing zones - the Aureous Line, the Mt. Grainger zone and the Dustholes line has been studied.

3.1 Mt. Grainger Zone

The Mt. Grainger, the north Medora and Jones shafts are not included in the lease area.

The main workings within the lease area are the South Medora, Golden Junction and Paddy's Gun.

The work completed on the Golden Junction and Paddy's Gun prospects for this period (with maps) has been described in the Interim Report on the Mount Grainger Gold Lease (Nos. 2025 - 2027, 2031) for Gold Copper Exploration Ltd., (29th March, 1971.)

3.2 Dustholes Zone

The work carried out on this area during the quarter is described in the report (with maps) on the Dustholes Gold Leases (Nos 2015 - 2016) for Gold Copper Exploration Ltd., (31st March, 1971).

3.3 Aureous Lode.

(a) Introduction

A northeasterly trending auriferous zone of ½ mile length lies 4,000 feet north-west of Mount Grainger. Four groups of workings are recorded 1 mile north-west of Mount Grainger (Record of the Mines of South Australia, 1908). A fifth group, the Watkins claim (also known as the Dream of Hope) was worked in 1913, 1931 and 1932 (South Australian Mining Review Nos 19, 55 and 57)

(b) Previous Work

(i) Aureous Prospect

By 1901 an ore-bearing formation of quartz, sandstone and slate had been exploited in 2 shafts. One of these (Fig. 3 location 4.19.B) reached 55 feet and the second, a vertical shaft, penetrated the water-table at 75 feet. No production figures are available.

(ii) Stars and Stripes prospect.

By 1901, a ferruginous quartz and iron vein between 6 inches and 8 inches wide had been tested by several trial pits and an open cut (4.17.D) some 45 feet long and 6 feet deep. An 80 foot shaft (4.17.A) had been sunk on the eastern, or underlie, side but the vein extension had been missed. A strong quartz vein was reported at the bottom but it returned poor gold values and the sinking of a second underlie shaft on the open cut was advised.

Gold bearing leaders were reported in adjacent trial pits (4.17.B, 4.17.C and 4.17.E).

Although 20 ton 3 cwt of ore reportedly returned 5 oz 18 dwt 10 gr/ton Au, the quoted average yield suggests that the 5 oz 18 dwt 10 gr was the total return - not the grade.

(iii) Union Jack

By September, 1901, a quartz vein between 2 feet and 4 feet wide had been tested by a 50 foot shaft (4.17.F) and a 6 foot pit (4.17.G.) Ore from these had returned 3 dwt/ton Au and 6 dwt/ton Au respectively. No further work is recorded.

(iv) Wade's Claim

The Inspector of Mines (Records of the Mines of South Australia, 1908) refers to a 200 yard outcrop of siliceous material roughly one mile northwest of Mount Grainger. Seams and veins of reportedly gold-bearing quartz were recorded throughout the iron-stained sandstone and quartzite but a sample from one of the several prospecting pits gave a nil return.

These workings are unlocated.

(v) Watkin's Claim (or Watkin's Show or Dream of Hope)

In 1914 these workings consisted of an opencut (4.18.C) 20 feet long and 8 feet deep which followed a persistent northwesterly dipping quartz vein between 12 and 15 inches wide. A sample taken across the 15 inch vein reportedly gave 11 dwts and one from a parcel of ore at the surface gave 3 dwt/ton Au.

In 1931 a shaft was sunk 14 feet vertically then on the underlie of a small easterly-dipping gossan vein.

By 1932 two 47 foot shafts (4.18.A and 4.18.B) had been excavated and two veins intersected. Two samples from the lower vein returned 9 dwt/ton Au and 8½ dwt/ton Au respectively.

(c) Present work

The Aureous, Union Jack and Watkin's Claim lie on the strike extension of an apparently undistinguished band of thinly bedded or laminated mudstones and silty mudstones. The Stars and Stripes lies 650 feet east of this band in similar rocks. The following workings occur

4.17.A Reportedly 80 feet deep this underlie shaft now has bad air and cannot be descended below 30 feet.

4.17.B Trench trending 210 along strike for 30 feet. No float is present.

4.17.C Trench 5 feet deep along northeastern strike extension of 4.17.B. No veins are present.

4.17.D Irregular open cut 60 feet long with northeasterly trend. Numerous quartz-limonite veins up to 6 inches wide with varied orientation.

4.17.E Pit of 180 cu feet with several quartz-limonite veins up to 4 inches wide.

4.17.F Shaft with unsafe collar. Much quartz float is present.

4.17.G Pit of 100 cu feet on strike extension from shaft 4.17.F.

4.18.A Vertical shaft 41 feet deep with a blocked drive at the 28 foot level along the strike to shaft 4.18.B - 20 feet away. At the bottom drives 3 feet southwest

and 7 feet northeast follow a 4 inch quartz-hematite vein for 7 feet down dip. The upper part of this vein terminates against a bedding plane.

4.18.B Vertical shaft 31 feet deep which exposes a 4 inch wide quartz-limonite vein truncated by a reversed fault parallel to the bedding. Short drives extend 3 feet northeast and 5 feet southwest along the vein at the bottom of the shaft.

4.18.C Infilled subhorizontal drive towards 4.18.B along a vein extending through 4.18.B to 4.18.A.

4.18.D Hole 5 feet by 4 feet inclined along a 4 inch quartz vein for 15 feet.

4.18.E Pit 15 cu feet along strike extension of vein in 4.18.D.

4.18.F Trench of 200 cu feet extending 15 feet along irregular quartz veins up to ¼ inch wide.

4.18.G Pit of 200 cu feet with a northeasterly quartz vein.

4.19.A Vertical shaft to water level at 60 feet. No mineralisation is visible.

4.19.B Shaft with unsafe collar. A blocked inclined drive between 4.19.B and 4.19.A leads into it. Two pits 50 feet and 60 feet south of the shaft have abundant quartz-limonite float.

(d) Mineralisation

Native gold reportedly occurred within ferruginous quartz veins within the lode. Veins in the shafts of Watkins Claim contain specularite and plentiful limonite: elsewhere quartz is the dominant mineral. There is no visible sericite.

The sterographic plot (Fig. 3) shows a scattered distribution of poles to veins within the lode. A lithological control seems probable but exposures and workings are too few to be certain.

(e) Ore grade

Recorded production is only 20 tons of ore which probably averaged 8 dwt/ton Au. Reported assay returns of 3, 6, 3, 11, 9 and 8½ dwt/ton are probably derived from hand-picked grab samples.

(f) Conclusions

A very small quantity of gold has been recovered from several scattered workings. These gold bearing zones probably result from several veins.

Further exploration will be carried out but will have a lower priority than the Mt. Grainger and Dustholes zones.

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14th April, 1971.
Robertson Research (Australia) Pty. Ltd.

No 2

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INTERIM THREE MONTH REPORT ON SPECIAL MINING LEASE 477 (OODLA WIRRA) FOR GOLD COPPER EXPLORATION LTD. FOR THE PERIOD 9th APRIL, 1971 - 8th JULY, 1971.

1. A regional geochemical stream sediment programme was conducted over the 180 square miles of the lease during the previous quarter. Analytical results from the 3667 samples have been received and plotted during the current quarter.

1.1 Copper (Fig. 4.2)

Values are generally 20 to 30 ppm.

Four significant anomalous sections occur. In the south-east a broad zone with values of 35 to 55 ppm and a maximum of 95 ppm (51½-54½'S/10-13'E) extends along the Nackara Dolomite and Minburra Quartzites in an anticlinal core. Lesser anomalies emanate from the Appila Tillite-Tindelpina Shale contact in this area, where the Wheal Bassett Copper Mine is developed.

A wide area with values of 40 to 70 ppm and a maximum value of 310 ppm (46½-48'S/5-7'E) again indicate a source from a variety rocks which vary in sequence from the Appila Tillite to the Tarcowie Siltstone formations and which are located in the nose of the Oodlawirra anticline. This suggests a structural control of mineralisation. The Medina Copper Mine is located in this zone.

A third wide zone with values of 40 to 80 ppm (50-52' S/4-5½'E) occurs in the Minburra Quartzite near the contact with a diapir zone. This anomalous zone includes the Penn Copper Mine.

In the west, the Ulupa Siltstone has several minor anomalies of 40-50 ppm developed along the length of the outcrop, while isolated anomalies are also located in the same formation to the north-east of Oodlawirra (50'S/6½'E and 49½'S/9'E). These minor anomalies suggest a rock type unit with an above average copper content.

1.2 Zinc (Fig. 4.3)

Zinc values are generally 40 to 70 ppm.

Four anomalous zones are present.

West of Mackara Hill (46'S/10½'E) values of up to 240 ppm (45½-46½'S/9-10'E) occur in Ulupa Siltstone while at 49-50½'S/8-10'E, a zone with values of up to 290 ppm occurs in the same formation in the nose of a syncline.

Three miles to the south-west in the same formation values of up to 310 ppm occur in a linear zone along the railway line. Although local contamination of Zn and Pb from the railway may be present, as the railcars carry lead and zinc concentrate from Broken Hill Mine to Port Pirie some of the values appear up to a ½ mile distant from the line and suggest a valid anomalous zone. This zone extends south-westwards to Oodlawirra.

A zone of low anomalous values of 100-130 ppm (47½-48'S/6-7'E) is located in the nose of the Oodlawirra anticline in the same area as anomalous copper. A single value of 170 ppm occurs 1½ miles to the south-west (48½'S/5½'E) in a diapiric zone.

1.3 Lead (Fig. 4.4)

Values are generally 5 to 25 ppm.

The main anomalous zone with values of up to 180 ppm occurs along the railway line in the same area as anomalous zinc. Contamination from railcars is again a possible source of some of this high metal content, although several anomalous values occur up to ½ a mile from the railway line.

A minor anomaly of 40 to 50 ppm (47 S/6½'E) is located in the nose of the Oodlawirra anticline in the same area as the zinc-copper anomaly.

1.4 Silver

There are no silver anomalies.

1.5 Barium (Fig. 4.6)

A single low order anomalous zone of up to 790 ppm is located (47½'S/6'E) in the nose of the Oodlawirra anticline, adjacent to a fault. The zone has no lead or zinc association.

1.6 Iron (Fig. 4.7)

Values are generally 2.5% to 4.0%.

Sporadic higher values of 6.0-8.0% are located in the nose of the Oodlawirra anticline (47-48'S/6'E)

A zone of low anomalous values (4.0-4.5%) extends north-eastwards through Oodlawirra in the same vicinity as anomalous manganese, and the divergence of this anomaly from the rock trend suggests a structural control.

The Ulupa Siltstone has low anomalous zones of 4.0% to 5.0% in the west, and in the north-east, north of Nackara Hill.

1.7 Manganese (Fig. 4.8)

Values are generally 400 to 600 ppm.

Two main anomalous zones are present. To the west of Oodlawirra, a zone of values of up to 2,900 ppm is located overlying the Tarcowie Siltstone, Enorama Shale, Jumbowie Arkose and Appila Tillite formations. The wide range of rock-types suggests a local structural control of mineralisation.

The same rock-types again display anomalous values in the nose of the Oodlawirra anticline where associated anomalous copper, iron and zinc values are present. Further low anomalous values occur in the south-east corner of the lease.

1.8 Conclusion

Anomalous copper is located in the Nackara Dolomite, in the nose of the Oodlawirra anticline and on the margin of the diapir zone.

Zinc is anomalous where the Ulupa Siltstone forms the nose of a syncline. Anomalous zinc north-east of Oodlawirra occurs near the railway line where anomalous lead is also detected and this may be due to contamination. Silver and barium are not anomalous. Iron is weakly anomalous in the nose of the Oodlawirra anticline and in a linear zone south-west of Oodlawirra where manganese values are also anomalous. The latter zone is overlain by alluvium but the transverse trend may indicate a relationship to an underlying tectonic zone. This area is known to coincide with an aero-magnetic anomaly.

2. Prospect Examination

2.1 Penn Copper Mine

2.1.1 Introduction

This prospect lies 3 miles north-east of Oodlawirra township. The mine and surrounding 40 acres are held by other parties but verbal agreement with the owner has been reached to examine the prospect.

2.1.2 Previous Literature

Two shafts were sunk to a depth of 227 feet. Discontinuous ore veins of up to 10 inches in width trend perpendicular to the bedding (Mining Review, Nos. 23, 25, 67). No grade or production figures are recorded. Further workings were recorded 200 feet south of the Penn Mine on small veins.

2.1.3 Geology

The workings extend along the strike of bedrock and appear to follow an impersistant quartz vein, concordant to the northerly trending bedding. In addition, former workings also followed quartz-iron veins transecting the bedding at right angles.

2.1.4 Geochemical Soil Survey

Approximately 70 geochemical soil samples have been collected on a grid in the environment of the Penn Mine and associated workings to test the lateral extension of known mineralisation and also in an attempt to locate further lodes. The analytical results have not yet been received.

2.2 Medina Copper Mine

2.2.1 Introduction

This mine is situated 8 miles north of Oodlawirra.

2.2.2 Previous Work

A shaft was sunk to a depth of 100 feet and workings followed a 3 feet wide lode. No production figures are available (Record of the Mines of South Australia, 1908, p.80).

2.2.3 Geochemical Soil Survey

Geochemical soil samples have been collected on a grid over the Medina Mine area and have resulted in a total of 44 samples. Analytical results have not yet been received.

2.3 Wheal Basset Mine

2.3.1 Introduction

The Wheal Bassett Mine and adjoining four 40 acre claims are not held by Gold Copper Exploration Ltd. These claims extend 3,600 feet south-westwards along the bedrock strike. Nevertheless, the Mine area has been studied as mineralisation probably extends north-eastwards from the Mine into the lease area.

2.3.2 Previous Literature

The Record of the Mines of South Australia (1908, p. 147) indicates that four shafts were sunk on a zone containing copper-bearing veins.

Production consisted of only small parcels of hand selected ore, and the prospect was not regarded as promising.

In 1966, McPhar Geophysics carried out a brief induced polarisation programme over the mine area. The results indicated a definite open-ended anomalous zone of 1,500 feet in length located on and to the south-west of the present workings.

In 1966, Ausminda Pty. Ltd., carried out a geochemical soil survey, and an open-ended copper anomaly was located in the same zone as the I.P. anomaly. The zone was then tested by a diamond drill hole, and pyritic shales were intersected with very minor chalcopyrite and covellite veinlet mineralisation.

2.3.3 Geology (Fig. 4.14)

The area lies on the western limb of a north-east trending anticline. The sedimentary rocks of the area comprise sandstone, gritty sandstones and shales. The rocks strike 40° and dip steeply to the east and shearing is developed parallel to the bedding. The mine is sited on a zone of strongly sheared siltstone. Thin bands of malachite of less than $\frac{1}{2}$ an inch in thickness are present along the shear. Local small-scale folding has resulted in cavities which have been infilled by siderite, hematite quartz and malachite.

A small shaft is located 1,700 feet south-west of the main mine and appears to be sited on the same shear zone, but only minor malachite is present as coatings on joint faces in sandstone. A further 1,300 feet to the southwest, the same shear zone contains thin irregular veinlets of malachite.

Seven channel samples have been collected across the shear zone at various localities but analyses have not yet been received.

2.3.4 Geochemcial Soil Survey

A total of 120 soil samples were collected over the mine environments on the boundaries of the excluded claim blocks to determine possible extensions of mineralisation into the lease area. Analytical results have not yet been received.

2.3.5 Conclusion

Previous work indicates that the copper mineralisation is sited in a shear zone of up to 2 feet in width. Previous induced polarisation and geochemical surveys indicate a north-east trending anomalous zone 2,000 feet long, which

is open-ended at both ends, and is parallel to the bedding trend. The Mine lode and the mineralisation extension of 3,600 feet to the south-west are outside the lease area but the possible continuation of the shear zone to the north-east beyond the claim boundaries is being checked by soil geochemistry. Future programming must await the analytical results.

2.4 Wheal Basset West (Fig. 4.15)

2.4.1 Introduction

An area with copper mineralisation occurs 1 mile west of the Wheal Bassett Mine. Approximately 80 acres of the area are pegged by other parties and are not held by Gold Copper Exploration Ltd.

2.4.2 Previous Literature

No references in the literature relate to these workings.

2.4.3 Geology

The rock types are laminated sandstones and siltstones which are assigned to the Tarcowie Siltstone Formation. The rocks strike at 30^{o} and dip at a high angle to the west. The rock is brecciated parallel to the bedding and these brecciated shear zones contain malachite mineralisation.

Two shafts have been sited in siltstones 2,000 feet north-east of the main exposed mineralisation. The western shaft contains no mineralisation while the eastern shaft intersects one concordant vein of 2 inches in width carrying malachite.

In a third zone, 800 feet south of the main mineralised breccia, copper is located as joint staining in shales, over a mineralised width of 2 feet.

2.4.4 Geochemcial Soil Survey

A geochemical soil sampling programme has been carried out over the mineralised area. A total of 340 samples were collected at 50 foot intervals along lines at 200 foot spacing. Analytical results have not yet been received.

2.4.5 Conclusion

Mineralisation occurs at 3 locations in a zone 2,400 feet in length. The mineralisation is similar to the Wheal Bassett Mine with malachite developed in shear zones and veins which are parallel to the bedding.

The future programme must await appraisal of the analytical results.

3. Recommendations

The various anomalies detected during the geochemical stream sediment survey require to be investigated in the field to determine the source of the anomaly.
It is anticipated that this work will require a geologist for 5 days. Depending on the results of this investigation, follow-up geochemical soil sampling, followed by costeaning can be anticipated in any promising area. This work would involve the collection of several hundred soil samples with analyses for the relevant elements. Future programming would depend on the results of this phase of work.

The results of the soil sampling programmes conducted at each copper prospect require to be assessed. The mineralisation at surface suggests that the lodes are narrow and dip steeply. It is hoped that the mineralisation may extend into the bedrock adjacent to the veins, or that the grade of mineralisation is locally enriched. It is necessary to channel sample the mineralisation at each prospect and this would require approximately 120 rock samples which should be analysed for copper and associated mineralisation. Depending on the analytical results and the suggested surface dimensions of the lodes as shown by the geochemical programme, further assessment of these prospects can be carried out.

Detailed geological mapping is required in two structurally promising zones. The Oodlawirra anticline nose is preferentially mineralised in gold, copper and zinc. An area of approximately one square mile should be geologically mapped initially on a grid basis and this would require a geologist for 5 days.

A zone of managanese and iron mineralisation extends for approximately 3 miles to the west of Oodlawirra. The zone has an associated aeromagnetic anomaly. This area requires initial geological mapping and would require a geologist for 5 days.

In addition, the flux quarry prospect requires to be studied. Gold is known to be associated with the iron oxides and is also present in the adjacent overburden.

Preliminary geological mapping of the deposit is required with sampling of both the iron oxide mineralisation and the overburden. This would require a geologist initially for 4 days and would result in approximately 50 samples.

3.1 Goldfields

Detailed geological mapping on a surveyed grid has been completed in the vicinity of the following mines:- Sth. Medora, Nth. Medora, Mt. Grainger, Golden Junction, Paddy's Gun, Heather Bell, Wallaroo United, Medina and Dustholes. A total of 124 bulk (1 cwt. approximately) samples are being collected from the mineralised zones, and will be analysed for gold.

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9th July, 1971.

FINAL THREE MONTHLY REPORT ON SPECIAL MINING LEASE 477 (OODLAWIRRA) FOR GOLD COPPER EXPLORATION LTD. FOR THE PERIOD 9TH JULY, - 8TH OCTOBER, 1971.

CONTENTS

I. A. Gold Mines

1. Introduction

The Oodlawirra Goldfield (Fig. 1) is an assembly of four distinct areas of mineralisation - the Dustholes Lode in the west, the Aureous Line, the Mt. Grainger Group and the Flux Quarries, occupying an area of approximately 10 square miles within Gold Cooper Exploration's S.M.L. 477, Oodlawirra. It was worked between 1894 and 1916 and produced 3,600 ounces of gold averaging 9.9 dwt. per ton. There is no active mining at present, but the Mt. Grainger and North Medora Gold Mines, the main producers in that period, are under a gold lease held by another party pegged prior to the granting of the current Special Mining Lease. However, as the auriferous lode continues from these workings to the South Medora Mine, and is well documented, reference will be made to it.

2. Geology.

2.1 Physiography and Surveying.

Most of the Goldfields area consists of low undulating hills covered by dense Mallee scrub, broken by the outcrop of the tillites round Mt. Grainger and the Dustholes which form higher rounded hills. On the lower ground, outcrop is fairly poor but some of the numerous creeks have broken through the soil cover allowing reasonable observation. The hilly area provided good outcrop and the sandstone-quartzite beds of the various stratigraphical horizons are excellent markers forming prominent ridges throughout the area.

Two maps have been prepared on a scale of 1 inch to 200 feet (Figs. 2 and 3) showing an interpretation of the geology in particular the structure, the workings, sample locations and assay results. These have been tied to control lines which are three miles long and one mile wide and lie at right angles to a 2 mile base line bearing 015°M from Cooks Blow.

All the workings in the Goldfield were allocated reference numbers and the following are the principal groups mentioned in the Reviews of the Department of Mines with the reference shown on the maps:-

Mt. Grainger group:		
North Medora	4.32	A-B
South Medora	4.30	A-L
Golden Junction	4.21	A-N
Paddy's Gun (Iron Clad)	4.10	A-H
Heather Bell	4.22	A-P
Wallaroo United.	4.11	A-E
Appleby's claim	4.52	A-D
The Dykes	4.17	A-E
Aureous Line:		
Stars and Stripes	4.17	A-E
Union Jack	4.17	F-G
Watkin's Claim	4.18	A-G
Aureous Mine	4.19	A-B
Dustholes Lode:		
Myrtle or Golden Morn	4.13	A-P

McCallum's	4.14	A-E
Myrtle Extended	4.15	A-S
	4.16	A-R
	4.50	A-F

2.2 Regional Geology

The area under investigation is located at the nose of the steeply plunging Mt. Grainger Anticline which forms a north trending appendage of the overall north-east strike in the region. The core of this anticline has been intruded by brecciated diapiric material probably along the Oodlawirra fault (Binks 1968) and this in turn has been intruded by several andesite dykes.

The country rocks are unmetamorphosed shales, sandstones, siltstones and tillites of the Adelaide system, the oldest rocks exposed being the dark grey silts and shales of the Burra Group. These are overlain with apparent conformity, by the Appila Tillite which consists of lithic feldspathic sandstones with occasional small pebbles, siltstones and tillite. Finely laminated, black pyritic shales of the Tindelpina Shale Member form the basal unit of the Tapley Hill Formation and are associated with copper mineralisation at the Medina Mine. Above the Tindelpina Shale Member monotonous flaggy siltstones make up the remainder of the Tapley Formation followed by sandstone, limestone and shales of the Tarcowie siltstone, Etina Limestone and Enorama Shale respectively, forming extensive wooded flats before reaching the Dustholes Range. This range is composed of sandstones, siltstones and tillites of the Pepuarta Tillite and the Grampus Quartzite. The structure of the area is complex as the Mount Grainger Anticline has been thrust against the Oodlawirra Syncline eliminating the eastern limb of the anticline. This thrusting probably led to the overturning of the anticline to the east and considerable buckling in the nose of it (Binks 1968). Fairburn and Nixon (1966) found that the statistical fold axis in the vicinity of the Mt. Grainger Mine plugged at 40^{o} in a direction of 243^{o}.

It should be noted that Johnson and von Sanden (1969) disagree with the statement that the core of the anticline was diapirically emplaced, and suggest that the core contains conformable shales, cherts and dolomites all heavily fractured owing to their position on the culmination of the fold and which are, as a consequence, deeply weathered.

However Binks (1968), who had access to Whitten's 1966 M.Sc. Thesis seems to be convinced that the origin of the core is diapiric.

2.3 Regional Aspects of Mineralisation.

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Gold mineralisation in the area appears to be associated with tillite and sandstone horizons suggesting a stratigraphical control; however it is more likely that the rocks were suitable hosts for the influx of vein material into fractures formed during flexure of the beds.

Fairburn and Nixon (1966) recognised a zone of hydrothermal wallrock alteration in the Mt. Grainger Mine. In all the other occurrences mineralisation is confined to veins generally of quartz but some times with specularite and pyrite, which are structurally controlled by local direction of folding and shear jointing. Wright (1966) places these veins as Lower Palaeozoic and refers to a later set of barren quartz veins which may have been intruded as a result of late Tertiary movement. This movement may also have been responsible for brecciation of the earlier gold bearing veins in the centre of the nose and he suggests that deep weathering and laterization has produced a compact limonite matrix in these veins.

Microscopic examination of the pyrite in Mt. Grainger by Wright did not show gold, although he does claim to have seen primary gold in the quartz as particles rarely greater than 0.0025 mm diameter. This very fine gold has also been referred to in the Dustholes Lode - hence its name. However the great proportion is thought to occur as purer secondary gold in thin films and fractures in the host rock as a result of hydrothermal deposition.

3. Description of Workings and Sampling.

The purpose of the recently completed phase of prospect examination was to relate the workings to the regional geology and undertake a programme of preliminary sampling to define suitable areas for further investigation.

A series of 116 bulk samples, of 2 hundredweights each, was therefore collected from different lithologies throughout the Goldfield, and after preliminary grinding were split and despatched as 1 hundredweight samples to AMDEL's Adelaide Laboratories for analysis.

3.1 South Medora Workings (Figs. 2 and 4)

Previous Work.

In 1908, six tons of ore were recovered from costeans and shafts sited on a continuation of the North Medora lode. The lode was described as 30 feet wide and reportedly contained payable gold in all prospecting pits. An average of 13.6 dwt/ton gold was recorded.

Jack (1913) briefly described the workings as a continuation of the North Medora lode but a fault or fold was postulated to account for the offset of the line of lode from the North Medora area. Gold was reportedly present in ironstone veins which traverse the tillite formation at right angles.

The Workings:-

Eight shafts and three costeans are present, together with a number of small prospectors pits. From north to south, with sample numbers, these are:

4.30.B.	a small costean with no veining visible, but with some quartz material in the dump which did not contain identifiable gold (sample 88098).
4.30.C	A costean exposing crosscutting quartz-limonite up to 2 inches thick perpendicular to the hanging wall vein. A 2½ foot channel sample across these veins proved negative. (sample 88097).
4.30.D.	The South Medora Mine, Fig. 4, shows the sample locations. The mine consists of a 70 foot underlie shaft with some development of the first 35 feet. Previous sampling of the dump had been encouraging and 13 samples were taken: however, only four contained detectable gold, all of which were less than 2 dwt/ton and were taken from between 20 and 35 feet. The two higher values, 1.8 and 1.0 dwt/ton, were taken from the hanging wall vein between a

tillite horizon and the overlying siltstone, and the lower values, both of 0.8 dwt/ton, were channel samples along the tillite bed and across perpendicular veins. Samples of the tillite and veins from near the surface and at greater depth, together with samples from the overlying siltstone and underlying Burra Group shales were all inconclusive.

4.30.E. A 20 foot underlie shaft exposing a narrow tillitic zone crosscut by quartz veins. No gold was detected. (sample 88099).

4.30.F. A collapsed shaft.

4.30.G. A 15 foot underlie shaft similar to 4.30.E exposing the hanging wall vein. No gold was detected in a bulk sample. (sample 88101).

4.30.H. 12 foot underlie shaft as above but with extensive quartz-limonite veining, however no gold was detected. (sample 88083).

4.30.J. 100 foot underlie shaft with no driving or stoping, exposed the hanging wall vein and a 3 foot wide zone of crosscutting quartz-limonite veins. Bulk samples were taken from both sides of the shaft in this zone together with the dump, but no gold detected.

4.30.K. Vertical shaft in poor condition. A dump sample did not reveal any gold.

4.30. L. A 100 foot long costean in tillitic siltstone. A ten foot channel sample did not detect any gold.

Some other samples were taken from the area and the locations are shown in Fig. 4. However none contained detectable gold.

Mineralisation:

The Arkosic Tillite formation, described by Fairburn and Nixon (1966) as the basal horizon of the Appila Tillite forming the host rock for mineralisation in the Mt. Grainger Mine, extends into the South Medora workings, and has been prospected within Gold Cooper Exploration Ltd's lease over a strike length of 2,000 feet. There is evidence of drag folding, probably caused by faulting, in the creek south of the North Medora Mine which has resulted in the displacement, by about 100 feet east, of the South Medora workings.

The high gold content of the Mt. Grainger Mine was attributed to hydrothermal alteration of the wall rock in addition to the host Arkosic Tillite and a considerable amount of sericitisation was found. There is no evidence of this in the South Medora and mineralisation is confined to a network of quartz-limonite veins both parallel and perpendicular to the bedding, formed as a result of interstratal movement during folding of the Mt. Grainger Anticline. The perpendicular fractures pinch out after a few feet towards the fold axis.

Conclusion:

Sampling would indicate that mineralisation is not extensive and that the majority of shafts are just exploratory. Most development is confined to the 30 foot level of the main shaft and the remaining ore is of low value. Mineralisation does not appear to persist at a depth and results from adjoining pits indicate only localised distribution of low value.

3.2 Golden Junction Workings (Figs. 2 and 5).

Previous Literature:

The Mine is referred to in various issues of the South Australian Mining Review (Numbers 19, 20, 22, 24, 25 and 26). By 1902 it consisted of several shallow prospecting pits and shafts together with an underlie shaft penetrating into a ferruginous clayslate formation 3 feet wide. This had been joined by a 170 foot vertical shaft with crosscuts to the underlie shaft. Almost 140 tons of ore had been removed by this time.

By 1914 stoping was concentrated at the 60 foot level where gold occurred within concordant and discordant iron and quartz veins which varied in width from ¼ to 1 inch; they had also continued the main shaft to 259 feet reaching water at 243 feet and 1916 report describes the 75, 150 and 175 foot levels in detail.

No further work or production has been recorded and the total recorded production is 200 tons of ore at 16.6 dwt/ton.

A fairly detailed analysis of Assay and Battery returns indicates that the richest production came out of the 30 foot level while the highest recorded value (311 dwt/ton) is from the 75 foot level.

The Workings:

4.21.C	The main vertical shaft.
4.21.H.	The main underlie shaft

Fig. 5 shows the relationship of the shafts and the locations of the 15 samples taken during the present programme. Water is now at about the 200 foot level and the workings were therefore only investigated down to the 170 foot level. Previous sampling had only referred to the 75 foot level and above, so the majority of samples are from below that level; however, no gold was detected.

Samples from the 20 and 30 foot levels reached 0.6 dwt/ton but those from the 60 foot level were below the limits of detection. (samples 88132 - 88146).

4.21.K)
4.21.L)
)

These are adits revealing quartz-specularite veins in shales and tillite to the south-east of and below, the main workings. Channel samples of the veins and rock did not reveal any gold. (samples 88110- 88112).

The rest of the surface workings investigated were primarily pits and shallow shafts located on a wide network of concordant brecciated quartz-manganese veins. None of those sampled contained gold. (samples 88113 - 88121).

Mineralisation:

Within the vicinity of the Golden Junction Mine mineralisation shows a strong lithological control, although its limited width may have been determined by a nearby fault. The main underlie shaft lies within a 3 to 5 foot band of poorly consolidated mudstone which is considerably enriched in limonite; there is no evidence of fracture infillings. The veinlets seldom exceed ½ inch in width and are irregularly orientated within this lithological unit. They extend over the full width of the workings (75 feet) and to the lower depths of the mine (195 feet). The gold apparently occurredas native metal within these veins; manganese oxides are fairly abundant while sericite is absent and quartz is not plentiful.

Conclusions:

Mineralisation appears to be due to hydrothermal activity although wall rock alteration is insignificant; it is of limited width, and, despite the depth of the veins and workings, is also confined to a limited vertical horizon. The early battery returns generally refer to hand picked ore while the recent returns are for fairly long channel samples which are naturally of lower value. At least 2,000 tons of rock were moved in order to obtain 160 ozs. of gold and any future work would require a similar proportion.

3.3 Paddy's Gun and Wallaroo United (Fig. 2)

Previous Literature:

The South Australian Mining Review of 1932 refers to a 150 foot shaft sunk on the intersection of a concordant ferruginous quartz vein with a series of "leaders" dipping steeply to the east. Gold was obtained at and close to the contact but nothing more than a few colours were found in either vein away from that point. A 150 foot adit was driven

into the hillside towards the shaft. Further prospecting in the form of shaft sinking and trenching was reported and additional gold found at these intersections. However, it was concluded that the veins were so small, and the length of the payable proportion so short, that the raising of profitable tonnage would be impossible. Eight tons of ore had been treated by 1908 yielding 28 dwt/ton.

The Workings:

4.10.A	A near vertical shaft at the intersection of two thin quartz-limonite veins in a ferruginous siltstone. A bulk sample of the two veins (the intersection had been mined) assayed 2.8 dwt/ton (sample 88127).
4.10.B	A deep vertical shaft on similar quartz-limonite veins. A sample of one of these did not detect gold (sample 88126).
4.10.C	A vertical shaft at the end of a 175 foot adit parallel to the bedding exposing a thin quartz-limonite vein. A 20 foot sample of this vein contained 0.2 dwt/ton of gold, although a second 20 foot sample close to shaft did not detect gold. Gold was also found in the grey siltstone 30 feet from the entrance to the adit, although in a low amount (0.2 dwt/ton), this could be indicative of more extensive hydrothermal wall-rock mineralisation (samples 88122-88124).
4.10.D	A 75 foot shaft sunk on a limonitic mudstone band 2 feet wide. Drives at the 75 foot level follow irregular quartz veins up to 2 inches thick. A sample of vein material did not contain any detectable gold. (sample 88128).
4.10.G	A 150 foot long adit towards 4.10B. No veins were visible and a 20 foot channel sample of the siltstone did not reveal any gold (sample 88125).
4.11.B	A 100 foot inclined shaft on the hillside about 1,000 feet east of the above workings, following a 1 foot wide limonitic vein. Dump material of this vein assayed 0.4 dwt/ton (sample 88129).
4.11.D and 4.11.E	Are pits on quartz-manganese veins to the east of the above shaft and do not contain detectable gold (samples 88130-88131).

Mineralisation:

Most of the gold contained in the workings occurs at the intersection of gold bearing east-west veins with perpendicular quartz-limonite veins. These east-west veins lie in siltstone bands up to 3 feet wide and 150 feet long and which contain a moderate amount of iron oxide as a result of hydrothermal enrichment.

There is no indication of depth but the dimensions of the payable ore are such that it would need to be considerable to

achieve a profitable venture. 026

3.4 The Heather Bell Workings lie to the north of Mt. Grainger on the strike extension of the Mt. Grainger lode and at the intersection with a north-west trending fault. The Record of Mines 1908 describes them as being exploratory and containing "more or less" gold.

3.5 The Dykes lie to the east of these workings in Burra group shales on a quartz-limonite vein although Prospect 4.17.E lies on a shear zone containing some limonite and sericite. Only limited shaft sinking and trenching has been carried out and there are no records of production.

3.6 Apoleby's claim lies north of the Golden Junction in iron rich shales of the Tindelpina shale member. There are some iron stained siliceous veins together with some plain quartz veins.
A 25 foot shaft has been sunk and a short adit driven but were soon abandoned. There are no records of production.

3.7 Roy's Reward lies to the west of Mt. Grainger at the intersection of two thick quartz-limonite veins. Some small pits had been dug but analysis did not reveal any gold (samples 88147 - 88148).

3.8 Aureous Line (Fig. 6)

Previous Literature:

The various workings are described by the Record of the Mines of South Australia (1908) and in various issues of the South Australian Mining Review (Nos. 19, 55 and 57).

The Aureous Mine was developed as two shafts down to a depth of 95 feet in a sandstone and slate formation. No production figures are recorded.

On the Stars and Stripes Mine, a shaft and several pits were sunk by 1901 on a quartz-iron vein but only poor gold values were located. A total of 20.2 tons of ore appear to have averaged 5.9 dwt/ton gold.

A 50 foot shaft and pit were sunk at the Union Jack Mine and by 1901 ore averaged 4.5 dwt/ton gold.

At Wade's Claim ore returned no gold values.

Watkin's (Dream of Hope) Mine was developed on a vein of 15 inches in width. Returns in 1914 gave 18 and 3 dwt/ton of gold respectively, while in 1932 samples from shaft of 47 feet in depth gave 8½ and 9 dwt/ton of gold respectively.

The Workings:

Stars and Stripes

4.17.A — An 80 foot shaft which is reportedly intersected by a quartz vein near its foot. It now contains bad air and is unsafe. A sample of the quartz in the dump did not contain any detectable gold (sample 88205).

4.17.D — A nearby irregular open cut 60 foot trending north-east parallel to the strike, containing numerous quartz-limonite veins up to 1 foot wide with variable orientation. One of these, from the north end of the cut, contained 1.6 dwt/ton (sample 88204).

Union Jack

4.17.C — A small cut (100 cubic feet) on the strike extension of the, now unsafe, shaft exposing a 1 foot thick quartz-limonite vein which contained 0.6 dwt/ton (sample 88203).

Watkin's Claim

4.18.D. — A shallow pit and undercut on the strike extension of a 4 inch quartz-limonite vein, also exposed in 4.18.A and 4.18.B which go down 41 feet and 31 feet respectively. The shortness of the drives in these shafts suggests that gold content was extremely variable. A sample from the pit contained 1.8 dwt/ton (sample 88201).

4.18.F — A moderate size trench exposing a number of quartz veinlets and one 3 inch vein crosscutting the host sandstone. This was sampled but did not contain any gold.

Aureous Mine

4.19.A — Is a vertical shaft with no visible mineralisation and may have been a well.

4.19.B — An unsafe vertical shaft with a blocked incline drive leading to it. There are other trenches around it. Some quartz vein material from the dump contained 0.4 dwt/ton (sample 88206).

Mineralisation:

Gold occurs in the quartz-limonite veins which lie in a sandstone siltstone formation. These may be infilled tension gashes developed during folding of the Mt. Grainger Anticline; although a stereographic plot of the vein orientation shows a considerable scatter, there is a poor tendency to a north-easterly trend subparallel to the bedding. Veins in the shafts of Watkin's Claim contain specularite and plentiful limonite; elsewhere quartz is the dominant gangue mineral. There is no visible sericite.

Conclusion:

A small quantity of gold has been recovered from a series of individual veins up to 1 foot thick with an irregular orientation. The workings lie along an approximate north-east lode but are not closely related.

3.9 The Dustholes Lode (Fig. 3)

Previous Literature.

The Record of Mines (1908) describes a large lode formation with well defined outcrop traceable over a mile. Practically no sinking had been done on it but almost 139 tons of ore at 8 dwt/ton had been treated.

By 1911 a vertical shaft (4.13.B) had been sunk to a depth of 35 feet and a drive extended 95 feet, at the 30 foot level, south-west along the intersection of a 4 foot lode with numerous perpendicular ferruginous veins between 3 inches and 8 inches wide. Assays of 2 dwt/ton from the sides of the drive proved the presence of gold, while the intersections contained ore returning 72 dwt/ton. An additional crosscut (4.13.C) intersected small quartz leaders but these contained only traces of gold.

In 1913 Jack observed that the veins in the northern part of the lode contained mica and conformed generally to the strike of the bedding, but dipped at right angles to it. He recognised more ferruginous veins in the south and described the workings, noting that production was 168.7 tons of ore containing 11 dwt/ton of gold.

In 1914 the mine changed hands and became known as Myrtle. Immediately south of this, in McCallum's Claim, several opencuts were worked for a year, and two short shafts sunk to drives following gold bearing ironstone veins of 3 inches and 12 inches respectively. Samples from the claim assayed 16 dwt/ton gold with 10 dwt/ton silver from the northern workings, and 47 dwt/ton gold with 5 dwt/ton silver from the southern workings.

The adjoining lease to the South, Myrtle Extended, also worked veins in ferruginous quartzite but few contained any gold.

In 1917 a well , by the Myrtle Mine (4.13.I). had been sunk to 137 feet without meeting water so a crosscut was driven 60 feet west intersecting the main lode at 45 feet over a 15 foot length. There are no records of assay results for this and its location is not definite. Two large opencuts had also been commenced on numerous quartz and iron seams south of the main mine.

Plans to extend the open cutting of the Dustholes Lode were proposed but soon fell through.

No further activity took place until 1935, when the mine was renamed the Golden Morn. Between 1935 and 1936, 23 tons of ore was treated and 9.3 dwts. of gold per ton recovered. Segnit (1937) observed that veins had an extensive outcrop but that one of the main ones was seen to pinch out 20 feet below the main level of workings, and that the number also diminished at depth. He suggested that a strike fault zone had been the feeder of the vein system.

Geology:

The shafts and pits are all situated on the outcrop of a 25-30 foot thick sandstone-quartzite member of the Gumbowie Arkose. This is one of a number of these horizons, which occur within a shaley sequence dipping west at about 55°, forming the western limb of the Mt. Grainger Anticline.

The bedding strikes at approximately 025°, and a stereographic plot of the orientation of 37 veins within the lode, indicates two preferred strike directions of 027° and 067°. Most of the veinlets crosscut the bedding and the majority are infilled tension gashes of less than 15 feet in length and 6 inches in width. The tension cracks suggest that the sandstone unit has yielded to regional stress by fracturing while the less competent shales have developed strain slip cleavage.

Certain angular discordances and possible drag folds, in the vicinity of the Dustholes Mine, appear to have been misinterpreted by Segnit (1939) as part of a complex sequence of strike faults, which he proposed to account for the repetition of the Pepuarta Tillite, which overlies the shales.

The Workings:

4.13B/D	A 32 foot vertical shaft - the original one with a south-westerly drive 130 feet long starting at the surface (D) and meeting B at the 31 foot level. Samples of the quartz-sericite-limonite vein up to 8 inches thick which crosscuts the bedding contained 1.0 dwt/ton and 0.2 dwt/ton gold. (samples 88149 - 88150).
4.13.A/C	A crosscutting adit (C) 200 feet long which joins a 51 foot vertical shaft (A) comprise the entrances to the main workings. Horizontal drives 30 feet northwards and 85 feet south-westwards follow a vein complex of several discontinuous quartz-sericite veins which have stoped at several points. A sample of the veins contained 0.8 dwt/ton while a sample in the stoped out intersection of quartz-limonite veins contained 3.2 dwt/ton gold. A 12 foot winze at the end of the south-westerly drive contained a vein pinching out to the east in ferruginous shales. A sample across this contained 0.8 dwt/ton gold. Channel samples of the shales and host sandstone-quartzite did not contain detectable gold (samples 88151-88155).

4.13.G An open crosscut leads to two large north-easterly stopes and a network of crosscutting quartz-limonite veins up to 1 foot thick. A 4 inch vein in the western most stope contained 8.0 dwt/ton gold while a sample from a 1 foot vein in the east stope contained 1.0 dwt/ton gold. A channel sample across a brecciated fracture zone in the crosscut did not detect any gold. (Samples 88156 - 88158).

4.13.H. This is a further opencut about 10 feet below 4.13G along a single 6 inch quartz-limonite vein north-east for about 50 feet. A sample of the vein contained 7.8 dwt/ton gold. (Sample 88159).

4.13.K A steeply inclined shaft 27 feet deep leading to a 57 foot drive dipping at about 35°. It intersects several quartz-limonite-sericite veins and short drives follow these. A sample from the dump contained 0.2 dwt/ton (sample 88160).

4.13.N A north-east trending opencut and adit 30 feet long following a barren 8 inch quartz vein striking 045° and dipping 50° south-east (sample 88161).

4.14.A A fifteen foot shaft with a 31 foot south-westerly drive along a 2 inch quartz-limonite-sericite vein dipping 72° east. A sample of this vein and part of the small antiform in which it lies contained 1.4 dwt/ton gold. (sample 88162).

4.14.C A ten foot trench exposing a 1 foot wide quartz-limonite-sericite vein containing 1.4 dwt/ton gold (sample 88163).

4.14.E Three small pits on a 20 foot long out-crop of quartz-pyrite-sericite vein striking 070° and dipping south at 72°. A sample of the vein contains 1.2 dwt/ton gold. (sample 88164).

4.15.C A 15 foot trench along a 4 - 8 inch wide quartz-limonite vein striking 025° and dipping 42° east. The vein contained 1.2 dwt/ton gold. (sample 88165).

4.15.D Two adjacent six foot shafts on six inch quartz-limonite veins containing 0.4 dwt/ton gold. (sample 88166).

4.15.H A small pit exposing numerous intersecting quartz veins. A sample contained 0.2 dwt/ton gold. (sample 88167).

4.15.K A 10 foot drive south-west along a 6 inch quartz-limonite vein striking 050° and containing 1.4 dwt/ton gold. (sample 88168).

4.15.N/O A group of pits on quartz veins striking 055° up to 1 foot thick. A sample of the dumps contained 0.6 dwt/ton gold. (sample 88169).

4.15.P A steeply inclined 15 foot shaft in a quartz-limonite vein striking 180°. A dump sample did not contain any detectable gold. (sample 88170).

4.16.D	A 10 foot vertical shaft leading to a 35 foot drive along a 6 inch quartz-limonite vein striking 220°. This opens up to a system of intersecting veins and some stoping has taken place. A sample from these veins contained the highest result obtained of 9.6 dwt/ton gold. (sample 88171).
4.16.E	An underlie shaft exposing a 3 inch limonite vein striking 055° and containing 1.0 dwt/ton gold (sample 88172).
4.16.F	A trench on a 4 inch barren quartz vein (sample 88173).
4.16.I	A 7 foot shaft exposing a 1½ inch quartz-limonite-sericite vein striking 023° and dipping 68° east. A sample contained 0.6 dwt/ton gold. (sample 88174).
4.16.L	A ten foot shaft intersecting a 1 foot wide vein striking 045° containing quartz-limonite-sericite and 1.4 dwt/ton gold. (sample 88175).
4.16.N/O/P	A group of pits exposing a number of quartz-limonite-sericite veins up to 4 inches thick. A sample of dump vein material contained 0.2 dwt/ton. (sample 88176).
4/16/R	A large opencut 12 feet deep exposing a quartz-sericite vein trending 045° and dipping 65° east. A sample contained 0.8 dwt/ton gold. (sample 88177).

About 1,000 feet south of these pits is a further group of shafts and pits exposing quartz-limonite veins (4.50.A/B/C/D), none of which contain detectable gold. (samples 88178 - 88181). However, 4.50.E is a ten foot shaft exposing alimonite-sericite vein containing 3.6 dwt/ton gold. (sample 88182).

Mineralisation:

Gold occurs, together with traces of silver and bismuth, in association with ferruginous and sericitic quartz veins which have filled a number of lenticular tension gashes in a 25 foot thick sandstone unit. The veins rarely exceed 1 foot in width and the highest return for such a vein was 8.0 dwt/ton. Although clusters of veins do occur, the major veins are generally widely spaced and the associated wallrock appears to be barren.

On the basis of the above results, quartz veins including sericite contain an average of 1.0 dwt/ton gold while quartz-limonite veins without sericite contain 4.1 dwt/ton gold; unfortunately, the old records do not contain any information to confirm this. The northern workings of the Myrtle Mine are sericitic together with the southermost group of workings and the central group, particularly the area round the open-cuts 4.13.C/H, are non-sericitic and contain the higher values. However, it should be noted that the open-cuts were apparently abandoned for technical reasons while the underground workings were probably worked out. This may lead to a bias in the results.

Conclusions:

Gold bearing quartz veins occur in a lode up to 25 feet wide and 2 miles long but are irregularly distributed, the greatest concentration being in the vicinity of the Myrtle Mine at two open-cuts. A large vein 200 feet by 25 feet by six inches might contain 250 tons of material at 7 - 8 dwt/ton gold, but mining would have to be highly selective and it is doubtful whether such an operation is feasible.

I B. Alluvial Gold

4. Mt. Grainger Colluvial, Eluvial and Alluvial Gold Sampling

4.1 Introduction:

A preliminary sampling programme of the sediments in the vicinity of the Mt. Grainger Mine was proposed to test the possibility of locating any alluvial gold.

4.2 Sampling:

Samples were taken from alluvium adjoining the creeks draining the Mt. Grainger Mine, the Golden Junction and Paddy's Gun, the Dykes and the Medoras, together with colluvial and eluvial samples from lines set out on the flats to the east of Mt. Grainger. Sample locations are shown on Fig. 2.

Analytical results indicate an average of < 0.2 dwt/ton gold.

5. Conclusions:

The results of the mine sampling programme are discouraging; the highest value obtained was 9.6 dwt/ton from an isolated portion of the Dustholes line.

Mineralisation in the South Medora Lode is confined to a narrow zone of quartz-limonite veins up to 3 feet wide and does not appear to extend below the 35 foot level. The line of workings are considered to have been exploratory as no gold was detected in any of them.

The Golden Junction has a similar blade like distribution with most of the gold extracted from above the 65 foot level. The recent sampling did not reveal any gold below the 30 foot level although earlier records indicated some very high values. During the present survey, no values of greater than 2 dwt/ton were obtained from either mine.

The Paddy's Gun workings lie at the intersection of two vein systems and only 8 tons of ore at 28 dwt/ton were mined. A sample with 2.8 dwt/ton gold was found in veins close to such an intersection, but mineralisation falls off away from it. Traces of gold were detected in the wall rock close to a vein but the zone was not extensive.

A series of individual veins in a siltstone formation have contained a small amount of gold in the Aureous Line and the highest value obtained was 1.8 dwt/ton gold.

Mineralisation is irregularly distributed along the Dustholes Lode in quartz-limonite-sericite veins crosscutting the sandstone formation in which they occur. A gold content of around 1 dwt/ton is most common for these veins, but higher values have been obtained at the intersection of veins and also in a pair of opencuts to the south of the Myrtle Mine. Mining has not been pursued at depth and mineralisation appears to be confined to a 30 foot horizon.

In general, mineralisation in the goldfield is not nearly so extensive as the workings would indicate; there is no evidence of extensive wallrock alteration as occurred in the Mt. Grainger Mine, and the gold is confined to narrow veins containing less than 2 dwt/ton. At current prices, this is equivelant to $4 per ton and no economic form of mining can be invisaged.

No further work on the goldfield is warranted. The results of the alluvial sampling programme are also not encouraging.

1C.

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II Flux Quarries

1. Introduction:

The Oodlawirra Flux Quarries lie about 4 miles north-east of Oodlawirra in Gold Cooper Exploration's S.M.L. 477. They are situated on irregularly spaced ironstone outcrops over a length of approximately 2½ miles . (Fig. 7a).

2. Previous Work:

Jack (1922) indicates that a total of 18,000 tons of +51% Iron was hand picked and removed for use as flux by B.H.P. until 1903, when production ceased. A further 50 tons of ochre was removed from the number 1 quarry and an area to the south-east of No. 2 workings had been tested for alluvial gold.

Whitten (1964), in a comprehensive account of the iron ores of South Australia, described the quarries in some detail and estimated reserves in the range 20 - 50,000 tons of 51% iron.

3. Geology:

Whitten (1964) states that the quarries are located in the southern part of the supposed Mt. Grainger diapir in sandstones, shales and limey shales with minor quartzites, which have been brecciated along the core of a major fold. This fold was crossed by a fault, and he believes that replacement occurred when a breccia zone crossed favourable beds. Much of this replacement is limonite, with minor hematite, forming a number of disconnected medium grade iron ore bodies, while at some locations the replacement is siliceous, resulting in quartzite breccia "blows". He suggests that the limonite is related to the existing land surface and hence Tertiary to Recent weathering.

4. Description of Workings: (Fig. 7b)

4.1 Quarry 1 consists of 3 cuts and a number of pits which worked narrow zones of limonite. There is a 108 foot shaft with a U - shaped drive at 95 feet exposing 22 feet of yellow ochre.

4.2 Quarry 11 is the main open cut 450 feet long, up to 50 feet wide and 40 feet deep at its southern face, where some limonite remains exposed. Some parallel veins to the west have been opened but do not appear to have been worked.

4.3 Quarry 111 is a single cut in siliceous limonite on the banks of the Nackara Creek. A 300 foot long adit drives west into the hillside in apparently similar material.

4.4 Quarry 1V consists of 3 small cuts in relatively rich ore, however, none would appear to have been removed.

5. Geochemical Sampling

5.1 Gold is known to occur in a clay gravel to the south-east of Quarry 11, and the ironstone and some surrounding outcrops were initially sampled as a possible source for this gold. There was detectable gold in only one sample.

5.2 It was also considered possible that this was a favourable zone for base metal mineralisation and a comprehensive sampling programme was instigated.

The highest copper value in rock sampling was 0.06% and the highest zinc value obtained was 0.03%. Tests for gold and lead were negative and silver was very low, however, there is a slight rise in arsenic content towards the north.

Copper values were highest in the No. 1 Quarry, with a mean of 0.035%; while zinc values increased towards No. 3 Quarry, giving a mean of 0.027%.

5.3 Panning of the clay-gravel alluvium to the south-east of Quarry 2 had revealed "colors" of gold in most samples and a programme to determine the approximate extent and value of mineralisation was carried out.

The approximate limits of alluvium have been shown on Fig. 7b and the area can conveniently be divided into three blocks.

Block A is the western most, and may contain more eluvial material. It reaches a maximum width of 250 feet and depth of 10 feet in the east and thins up the hillside to the west for 430 feet. It therefore contains approximately 10,000 cubic yards of surface material.

Block B, in the centre, contains the deepest and most extensive workings in the creek bed shown and may extend over to the south-east. On this assumption there are 31,000 cubic yards in this block.

Block C, from there to the edge of the Nackara Creek, is composed of recent sediments up to 20 feet thick, with a thin basal gravel. No gold has been seen in this block yet although one shaft has been sunk in it. Upwards of 150,000 cubic yards of sediment are included, but the volume of the basal gravel would be considerably less. Analytical values for alluvial gold average less than 0.2 dwt/ton.

6. Conclusions and Recommendations:

1. The source of the alluvial gold has not been confirmed. However, the presence of gold in one rock sample suggests that gold exists in the limonite, but in very low quantities which may have been concentrated in the alluvium.

2. There are two possible sources of base metal mineralisation. The first could be attributed to leaching from the country rock and hence secondary deposition in the favourable fault zone; alternatively, the limonite is of a gossanous nature related to sulphide mineralisation at depth.

3. The most suitable method of testing mineralisation is by drilling.

4. Extensions of this mineralised zone are suspected in the vicinity of the Penn Copper Mine.

Any future work should take the two prospects as a whole.

5. Alluvial gold values discourage further work.

III. Penn Copper Mine area

1. Introduction:

Permission had been granted from the owner to examine this mine. The mine belongs to Mr. Deuter of Peterborough.

The Penn Copper Mine is located approximately 2 miles north-east of Oodlawirra and is at present under two privately held leases, the owner of which has given verbal permission for surface and underground sampling if required.

2. Previous Work:

The Mining Review of 1915 describes a formation of clay slates traversed by a series of quartz veins at right angles, with two 227 foot shafts, 100 feet apart. No tonnages are indicated but £2,000 worth of high grade ore was said to have been removed.

The Mining Review of 1937 refers to a re-opening of one of the shafts, and describes the ore as being in small pockets in the clay slates immediately adjacent to the wider portions of the veins.

About ten tons of ore had been removed but the mine was evidently not paying. The quartz veins were sampled for gold and silver but neither was present.

3. Geology and Workings: (Fig. 15).

The mine lies in clay shales of the Burra group which are overlain by the Appila Tillite to the west. The rocks strike north and dip steeply to the west. The main shaft and numerous prospecting shafts lie on the same strike, at the intersection with crosscutting ferruginous quartz veins. The workings extend over half a mile, but only the main shaft area would appear to have been developed. Traces of copper have been observed in a slightly metamorphosed siltstone to the north-west of the mine, but a 20 foot shaft did not intersect further subsurface mineralisation.

A band of brecciated quartzite about 30 feet wide outcrops over a short distance about 1,000 feet to the east of the mine, and a quartzite conglomerate, similar to that lying to the east of the Flux Quarries, can also be seen. This area is covered by fairly thick alluvium and further extensions of the band are not visible. A small amount of copper and zinc is known to occur in the Flux Quarries, and sampling there indicated that the copper content was increasing southwards.

4. Geochemical Sampling:

Stream sediment sampling by Gold Copper Exploration tends to confirm this possibility; although two reconnaissance soil sample lines suggest that, as at the Flux Quarries, there is an irregular distribution. (Fig. 15).

The stream sediment sampling indicates an anomaly about a mile long, to the east of the mine, swinging round to the north of it, and possibly extending further north, as indicated on the Mines Department (Binks 1968) stream sediment survey map.

A soil sample grid (Fig. 16) of 126 samples was laid over the mine area which confirmed the north-south trend of mineralisation. Values up to 800 ppm copper were obtained about 700 feet south of the main shaft.

5. Conclusions and Recommendations:

1. Although the mine itself is not considered a good proposition, its presence is encouraging.

2. Stream sediment and soil sample values are not particularly high, but cover a fairly large area.

3. Future work should involve further widely spaced soil sample lines to identify a possible lode; followed by a more detailed investigation, with consideration being given to the probable relationship with the Flux Quarries.

IV. Medina Copper Mine

1. Introduction:

The Medina Copper Mine lies on the eastern limb of the Mt. Grainger Anticline, approximately 7 miles north-north-east of Cadlawirra. It is covered by Gold Copper Exploration's S.M.L. 477.

2. Previous Work:

The Review of Mines 1908 described a 100 foot shaft with 50 feet of driving at 75 feet, revealing high grade malachite down to 40 feet, giving way to pyrite in black shale.

The ore was in irregular bunches over a width of 3 feet and was exposed over a strike length of 600 feet. No production figures are given.

Wright (1966) noted some ¼ inch pyrite-quartz veinlets in pyritic carbonaceous shale, and Binks (1968) described the shales as containing sulphides which were probably syngenetic, but have since been recrystallised along bedding planes. Chalcopyrite occurs as rare inclusions within pyrite comprising around 1% of the total sulphide content. The mine most likely worked a zone of secondary enrichment.

3. Geology and Workings: (Fig. 8).

The mine is located in black pyritic shales of the Tindelpina Shale Member of the Tapley Hill Formation, within 100 foot of its contact with the top of the Appila Tillites. The beds strike about 025°M and are overturned, dipping steeply to the west. The main shaft has been filled, but another 60 foot shaft has been sunk about 40 feet to the north, however, no ore was encountered. Some exploratory shafts and pits were dug along the strike and some small patches of mineralisation revealed. A further pit about 1,000 feet to the north-east contained some traces of malachite in the dump.

4. Geochemical Sampling:

4.1 Mines Department 1968.

(a) Stream sediment sampling in the area revealed moderate copper and low lead-zinc anomalies. These extend to the north-east off the strike.

(b) A 350 foot rock chip sampling line in the creek by the mine, revealed a low anomaly (300 ppm) on the strike of the mine, and a moderate anomaly (800 ppm) 80 feet south-east of it. This would appear to occur in a slightly folded brecciated zone, less than 10 feet wide, containing moderate quantity of pyrite/goethite mineralisation together with some distinct ¼ inch pyrite horizons. No copper mineralisation was visible.

(c) Stream sediment sampling by Gold Copper Exploration in 1971 revealed some low order anomalies in the vicinity of the mine and one high anomaly some distance downstream from it. This is believed to be the result of the dispersion of the old dump downstream.

(d) Soil sampling (Fig. 8) consisted initially of four 500 foot lines across the strike of the main lode with a sample interval of 50 feet. The anomaly would appear to lie about 200 feet east of main lode in the south moving west slightly, widening and decreasing towards the north.

Two 1,000 foot reconnaissance lines, with a 100 foot sample interval, were also carried out; the first, extending east from the workings, reveals a low anomaly 700 foot along it which may be related to a quartz vein outcropping on the hillside. The second across an anomalous creek to the north-east begins at a small copper show. The anomalies revealed are weak (110 ppm copper).

5. Conclusions:

The fairly high background copper content is probably due to the chalcopyrite inclusions in the pyritic shales. Local concentration may be due to secondary enrichment in bedding planes, together with minor faulting and folding.

No widespread mineralisation has been observed and the minor shows are of little importance. A small programme of rock sampling, and possibly costeaning, would be conclusive.

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Alastair G. Brown

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Senior Geologist
Gold Copper Exploration Limited

12th October, 1971.

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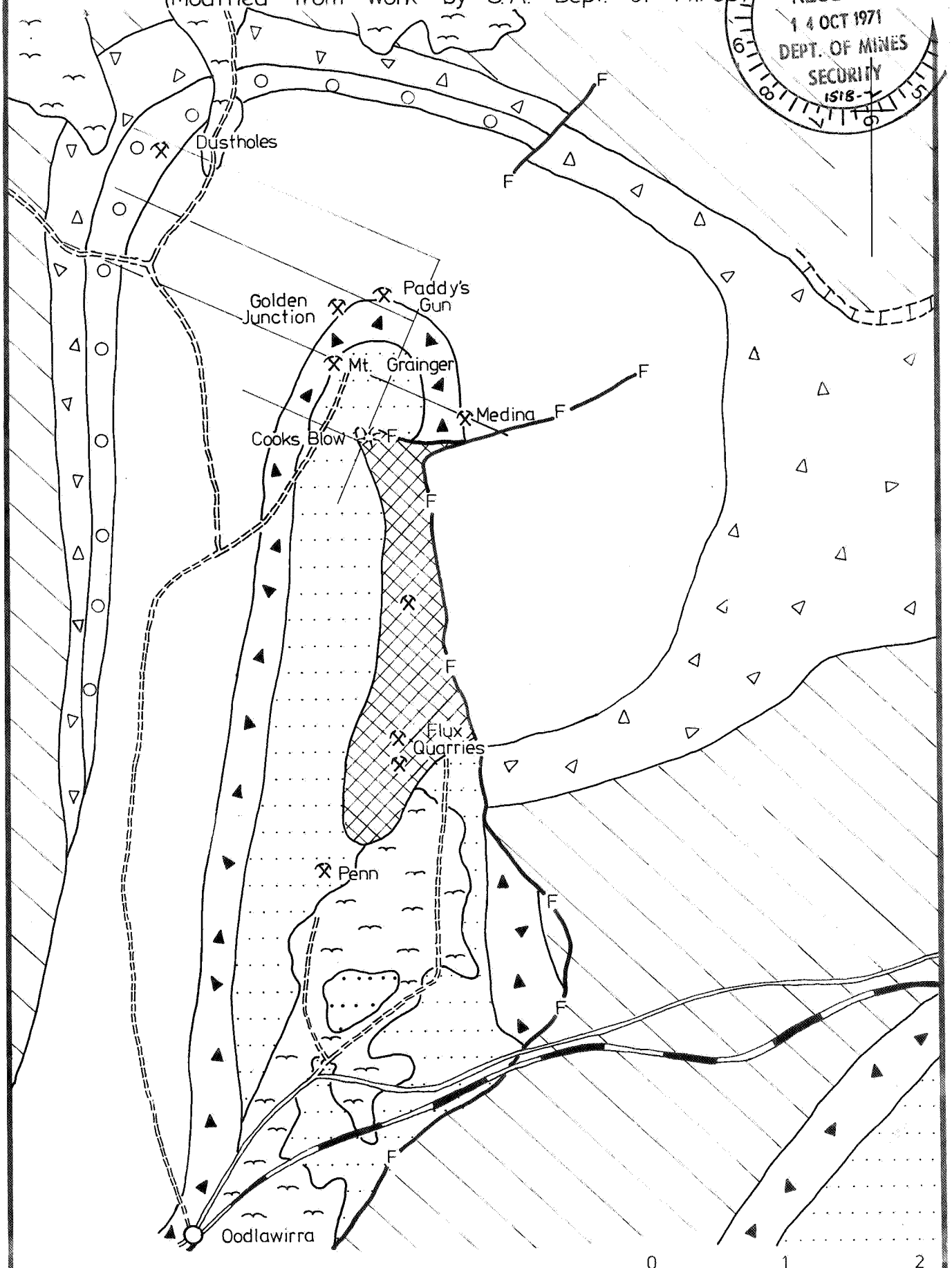
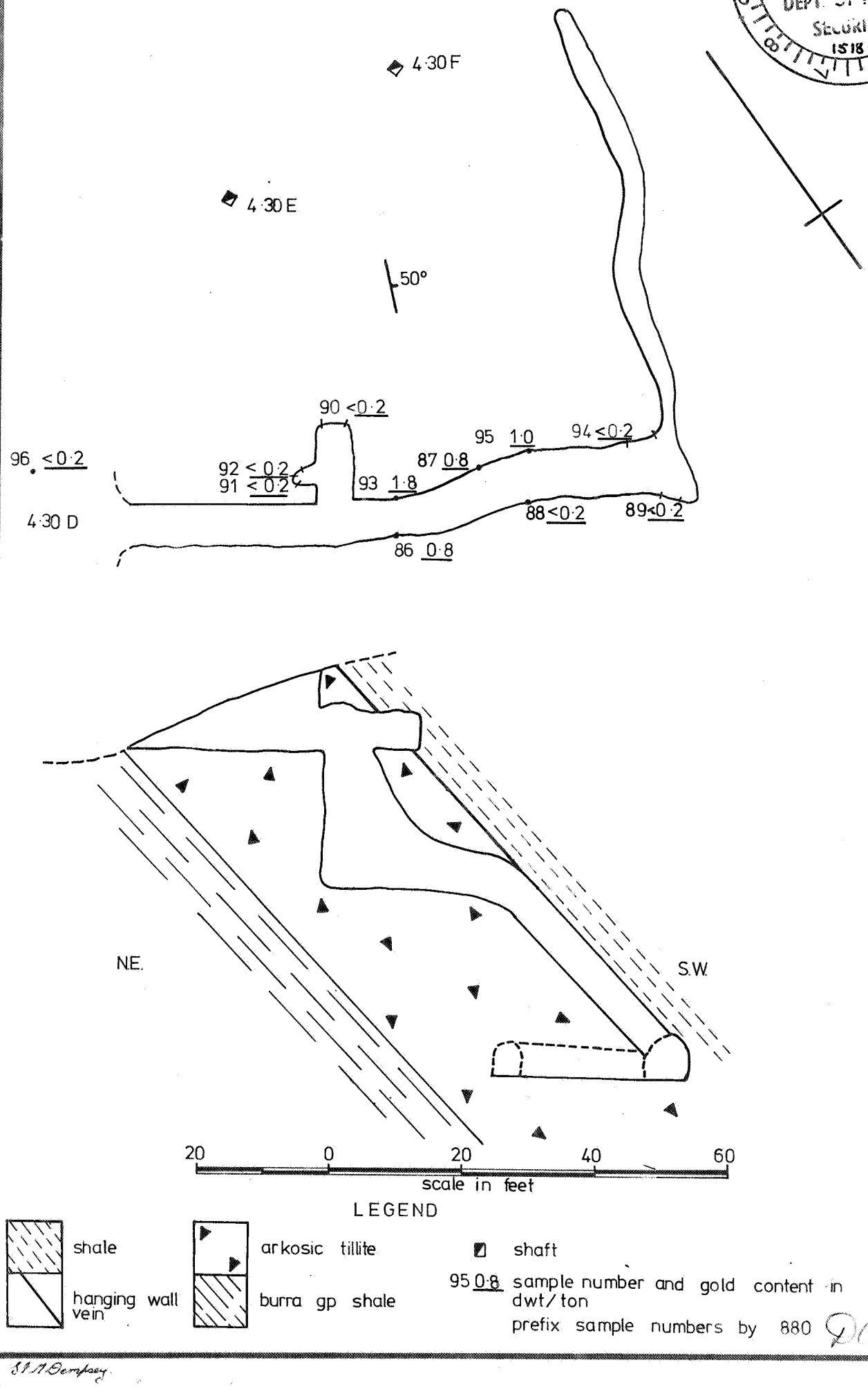
Fig.1 The Oodlawirra Goldfield

(Modified from work by S.A. Dept. of Mines)



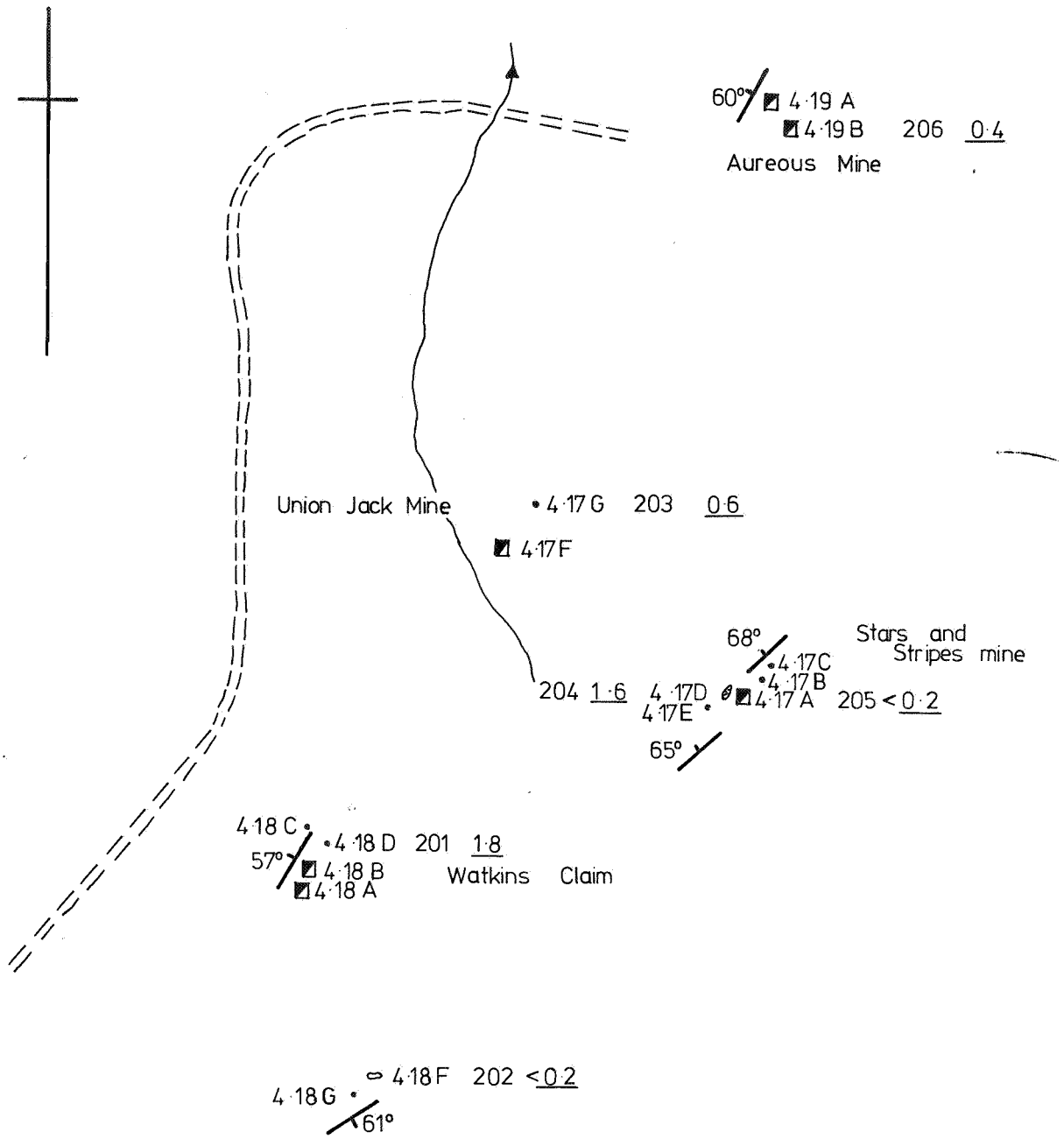
B. Crack

Fig. 4 South Medora Mine



S.A. Dempsey

Fig. 6 Aureous Line



LEGEND

- • 4·17 D — pit identification
- ◪ — shaft
- 62° — dip and strike of bedding
- creek
- track
- 206 1·8 — sample number and gold content in dwt/ton
- sample numbers pretixed by 88

Fig. 7a Oodlawirra Flux Quarries Locality Map

047

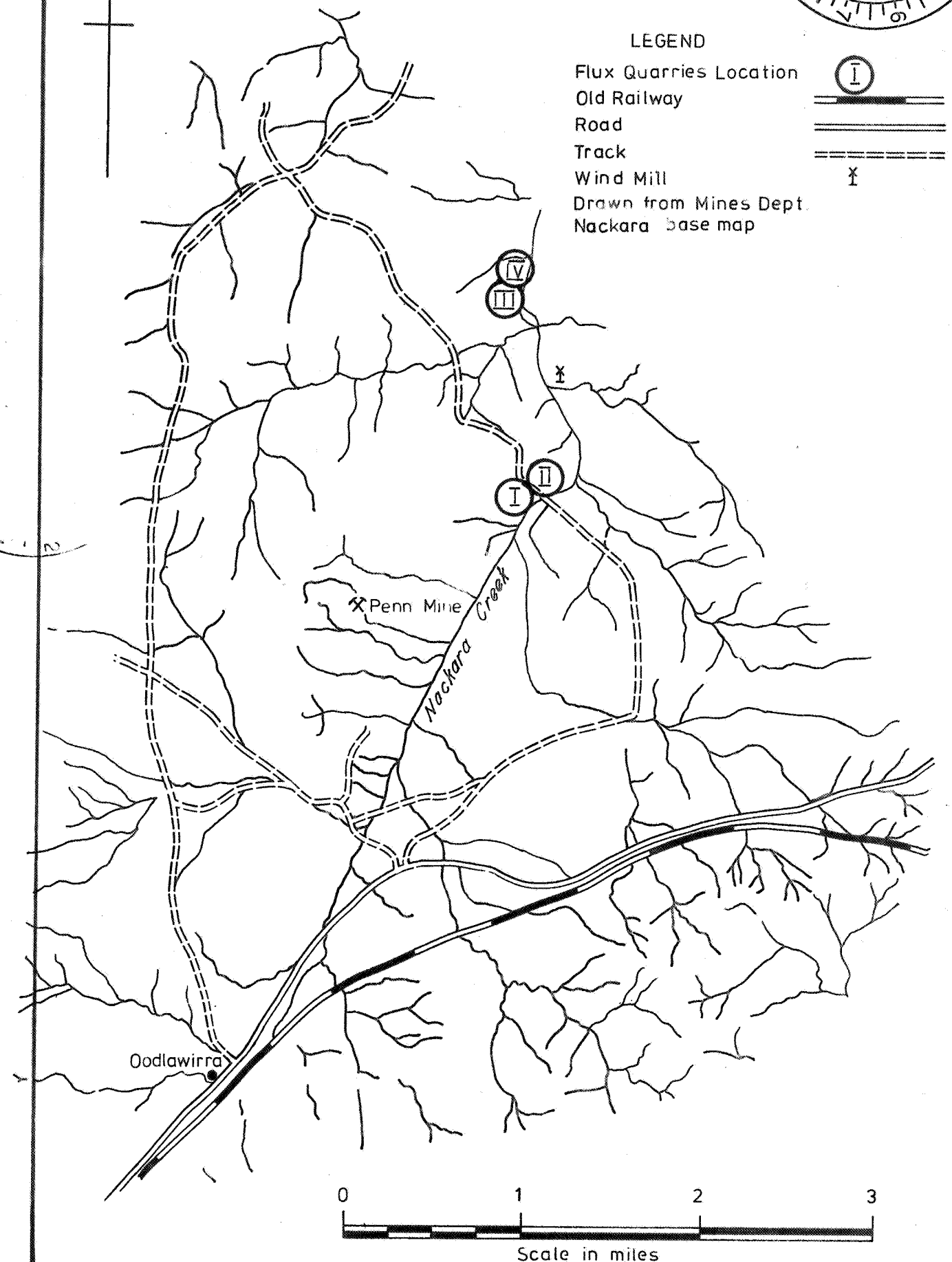


Fig. 16 Soil sample location, Penn Mine

Soil Cu Content (p.p.m.)

25	110	40	150	70	55
20	140	90	130	80	50
25	160	210	150	70	40
25	70	150	120	65	50
30	40	190	130	75	50
25	25	200	200	70	45
25	15	270	150	100	70
25	15	140	140	140	80
30	10	30	200	50	65
30	15	25	85	30	90
25	5	45	55	30	70
25	5	40	55	60	90
30	10	20	50	150	95
25	10	20	30	400	150
30	15	15	140	490	250
40	15	20	25	480	340
30	5	30	20	520	270
35	15	25	20	560	320
30	25	30	5	720	380
25	40	25	20	860	460
30	40	30	10	470	380

Base line

Penn Mine

LEGEND

shaft

45 • sample location and value

200 0 200 400 600

scale in feet

Fig. 2 MOUNT GRAINGER GOLDFIELD: GEOLOGY WORKINGS AND SAMPLE LOCATION PLAN

Mt. Grainger

Paddy's Run

Wallaroo Limited

Golden Junction

Baker Well

Dam

The Dykes

North Iredare Workings

South Iredare Workings

MEDINA

Fine Quartzite

Shale

Diapir

to Oodlawirra

base line

line 2

line 3

line 4

To 60W

LEGEND

appilla tillite

quartzite

undifferentiated siltstone & shale

strike and dip of bedding
vertical bedding
vertical vein
strike and dip of veins
observed geological boundary
inferred " "
fault inferred
vertical shaft
inclined shaft
•88150 1.4 sample number and gold value in dwt/ton
•45130 0.2 sample number and gold value in dwt/cubic yard

adit
opencut
trench
working identification and rock sample number
colluvial/alluvial sample number
survey line and peg number
lease peg
track
windmill
creek
dam
fence

200 0 200 400 600 800
scale in feet

1518-1

Fig. 3 Dustholes Lode, Geology and Sample Location Plan

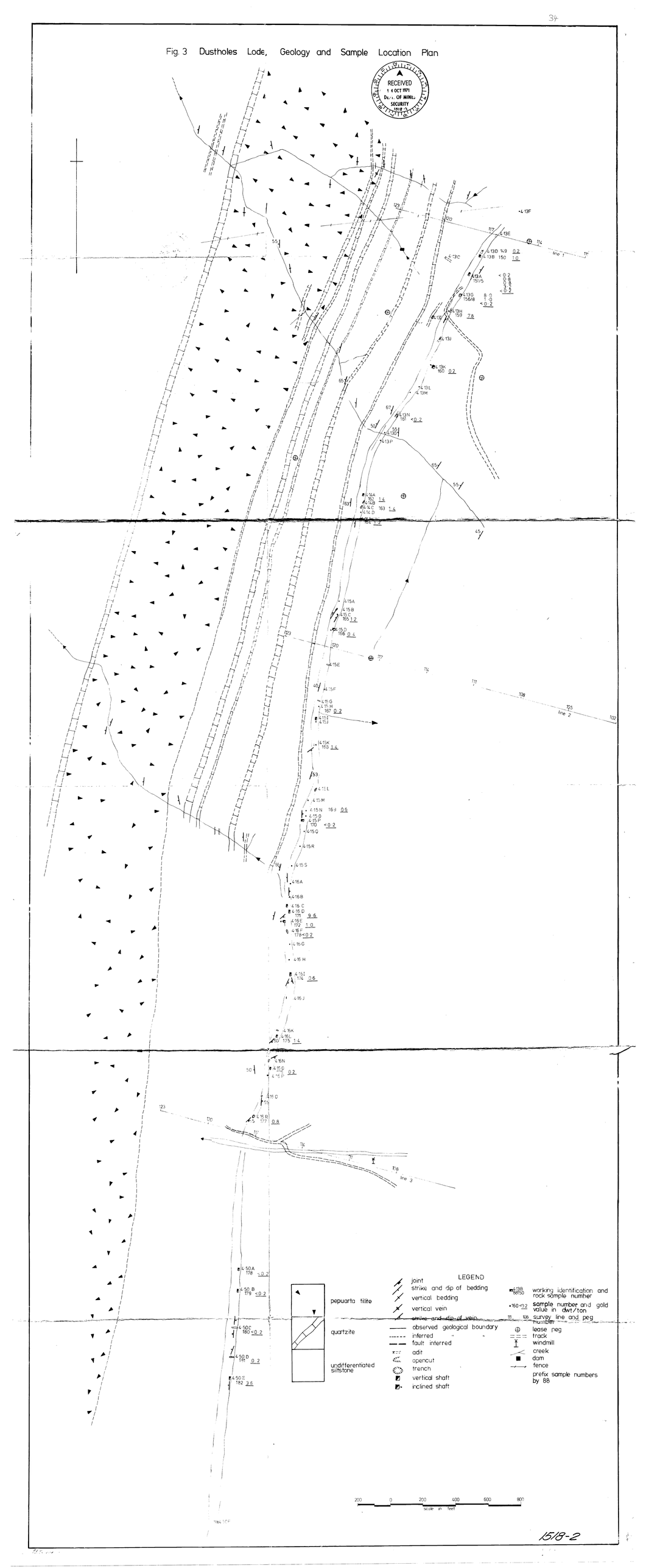
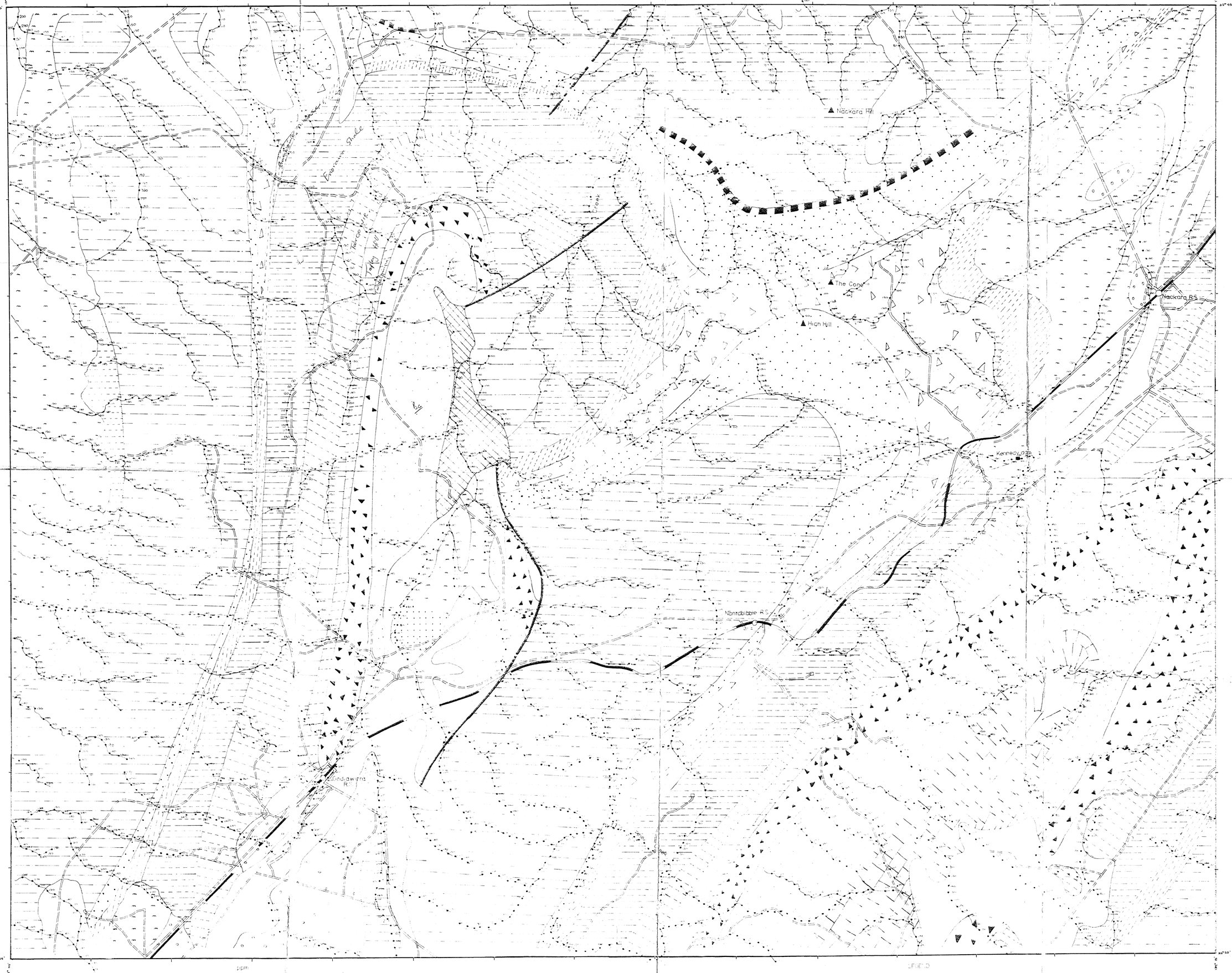


Fig.4·6

Geology and distribution of Ba (p.p.m.) in stream sediments, Special Mining Lease 477 (Oodlawirra).

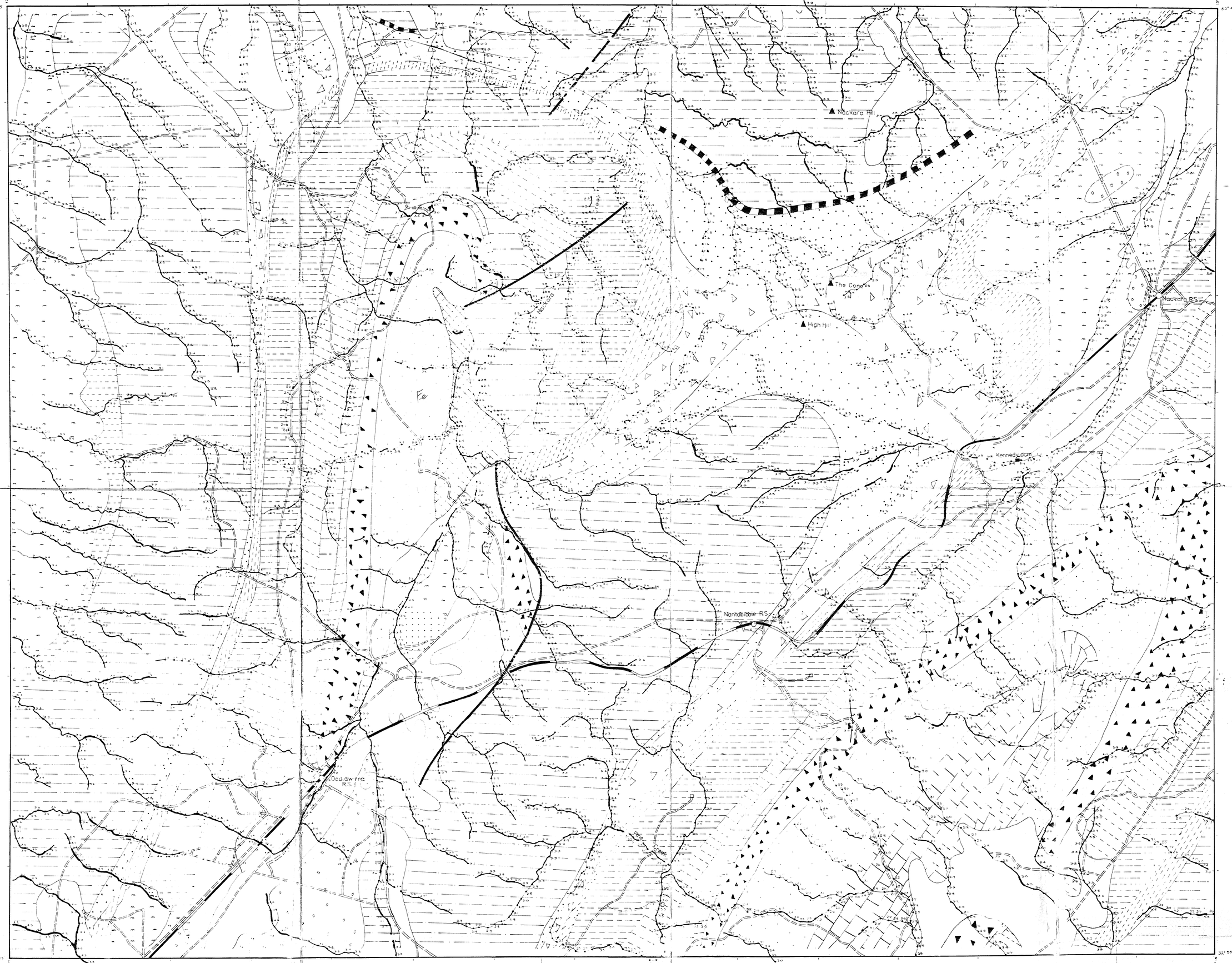


1518-3

1518-3

Fig. 4·7

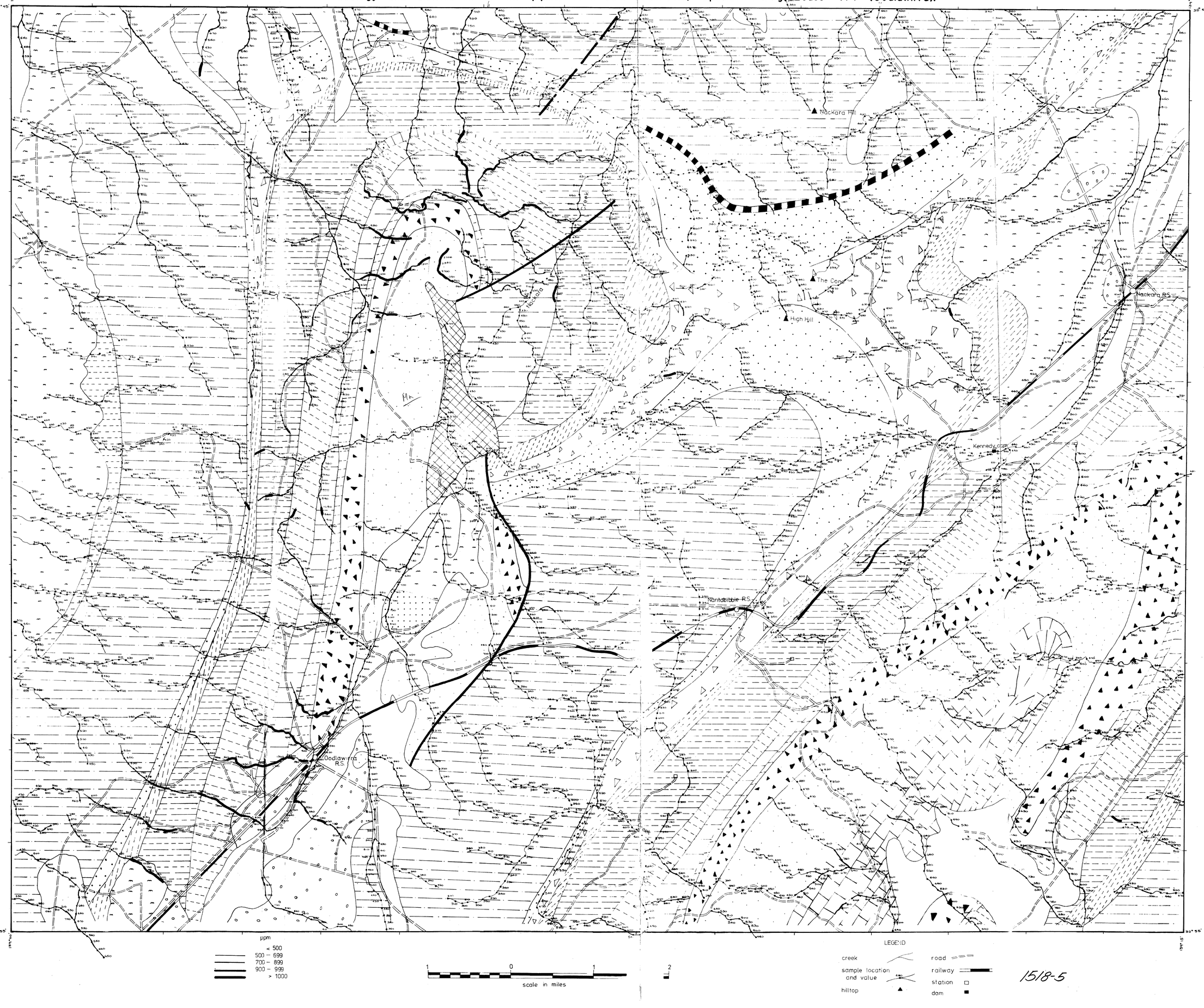
Geology and distribution of Fe (%) in stream sediments, Special Mining Lease 477 (Oodlawirra).



1518-4

Fig. 4·8

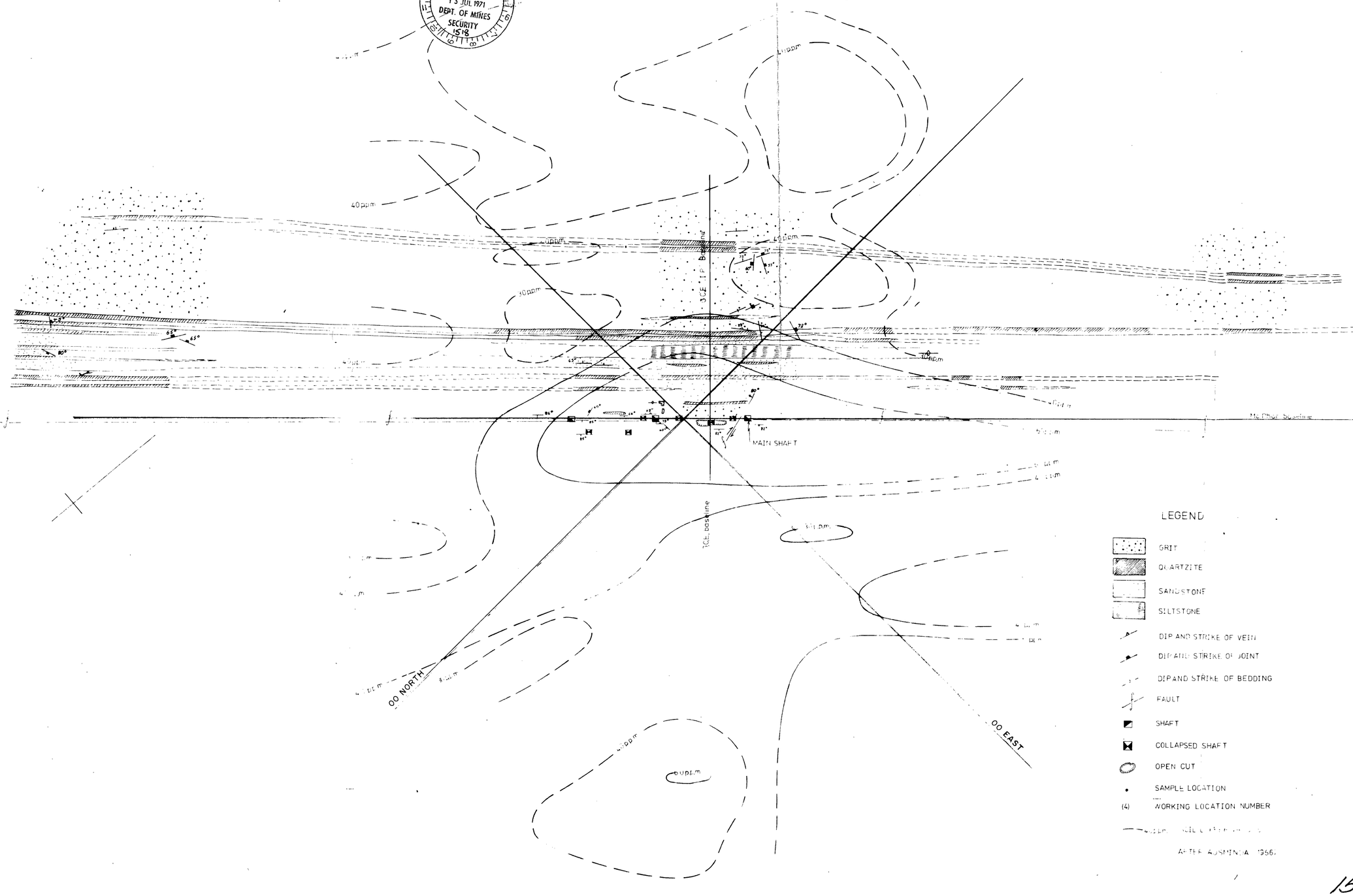
Geology and distribution of Mn (p.p.m.) in stream sediments, Special Mining Lease 477 (Oodlawirra).



1518-5

1518-5

Fig. 4·14 Geology of Wheal Basset Prospect

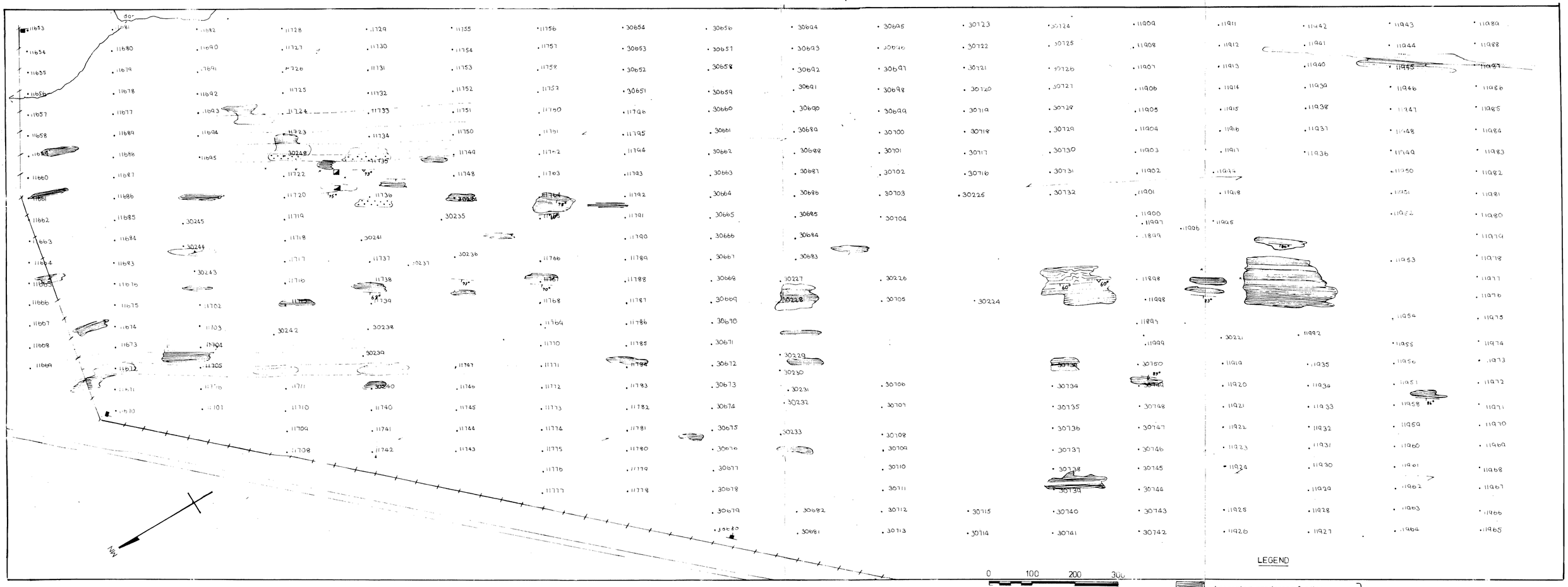


AFTER AUSMINDA 1966

1518-6

Fig.4·15

Geology and soil sample location, Western Wheal Bassett (Oodlawirra).



1518-7

Fig. 5 The Golden Junction Mine

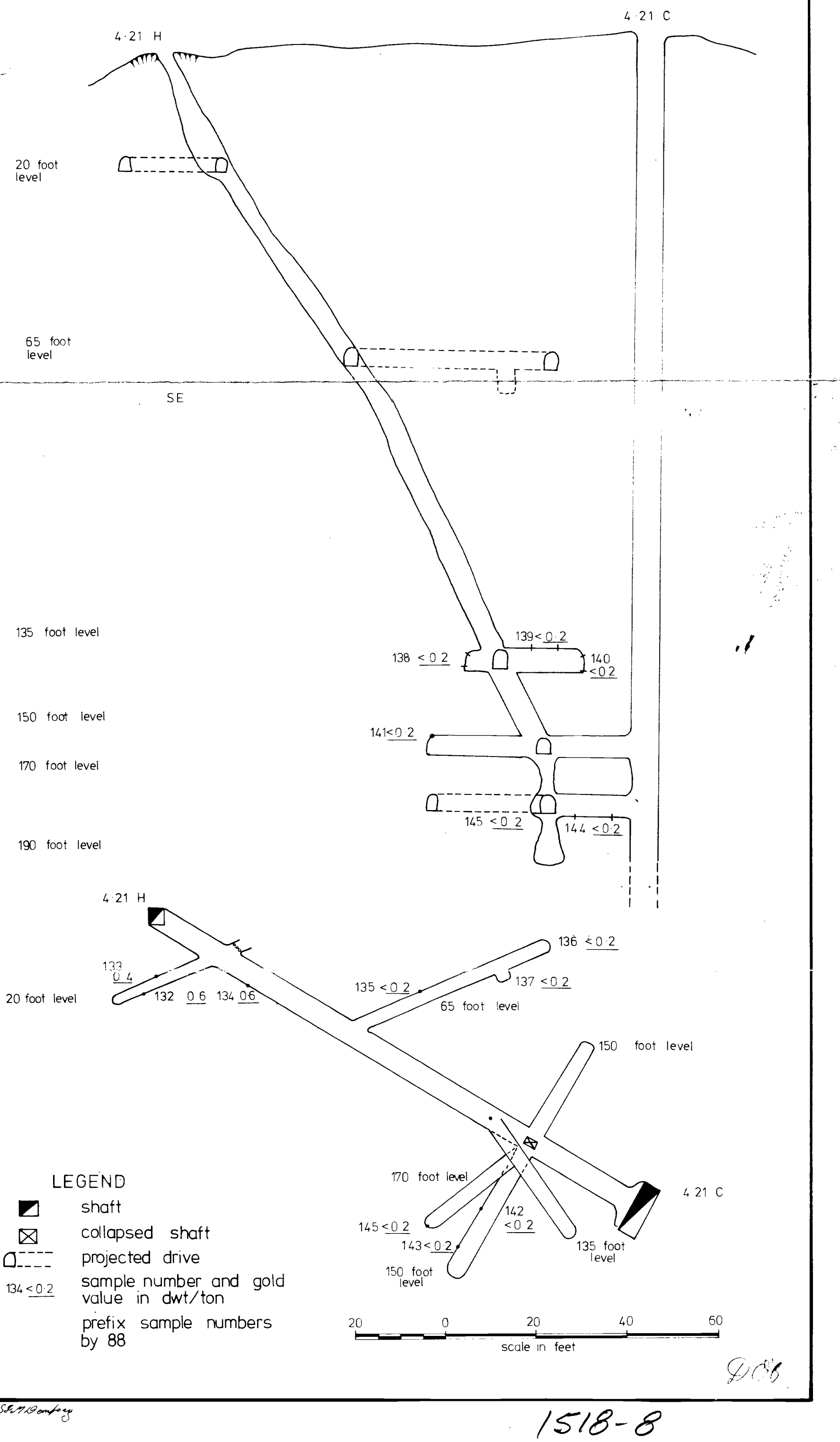
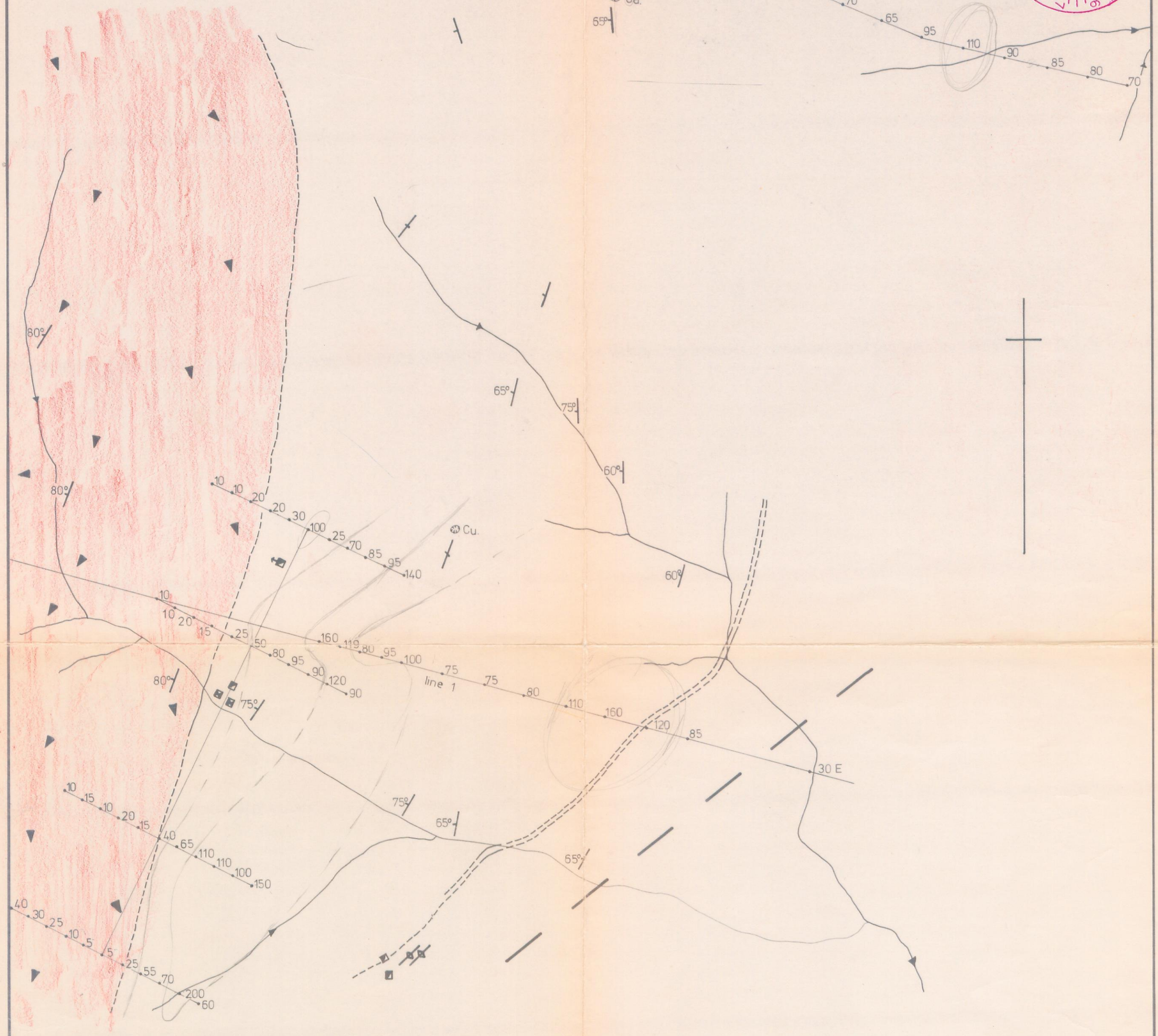


Fig. 8 Medina Copper Mine, S.M.L. 477



appilla tillite

shale

quartz

LEGEND

- vertical bedding
- anticline axis
- 65° strike and dip of bedding
- inferred fault
- vertical shaft
- inclined shaft
- collapsed shaft
- Cu pit with copper
- creek
- 30 60 / line 1 soil survey line with Cu. content in ppm.

200 0 200 400 600
scale in feet

S&J Dempsey.

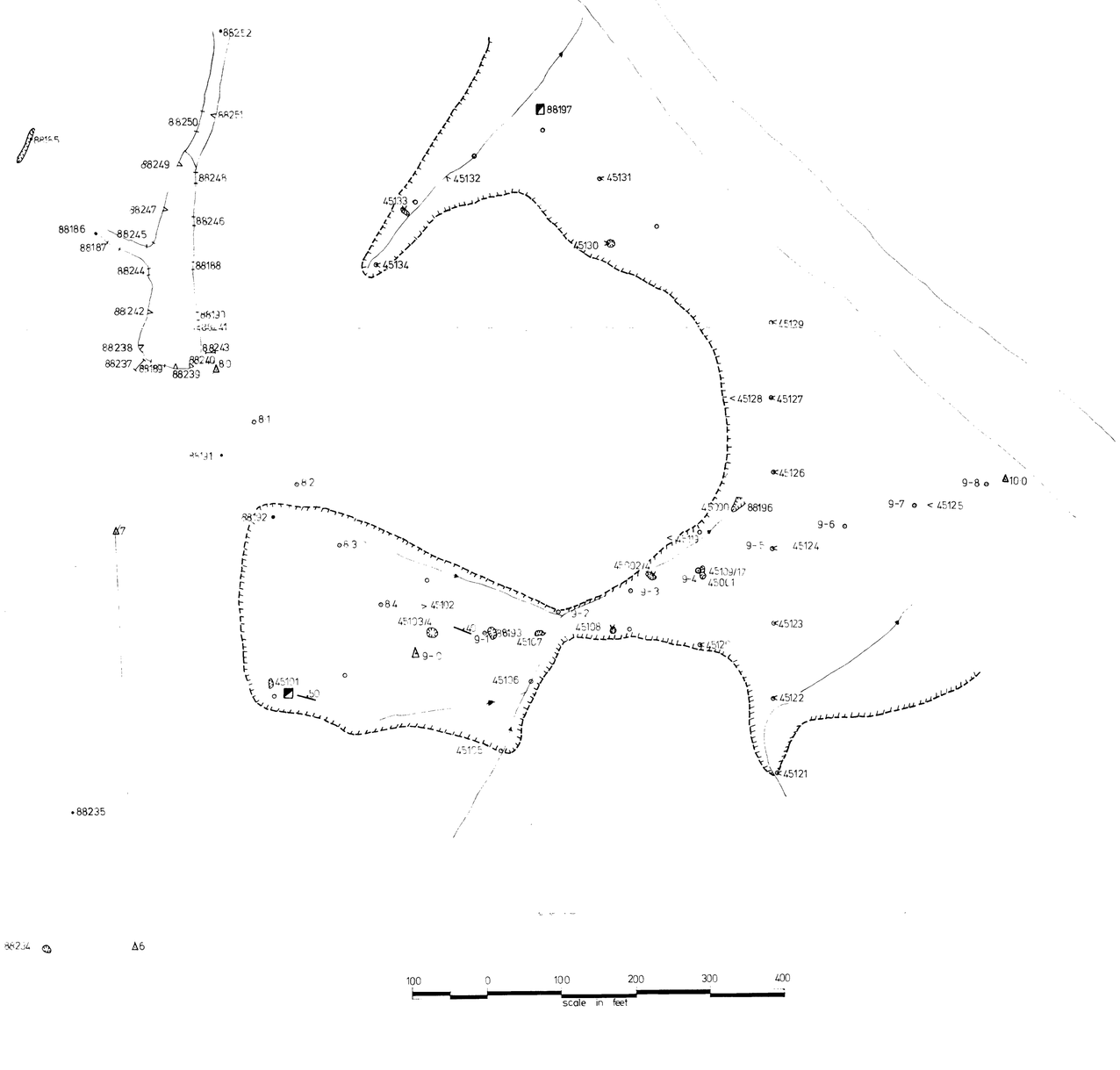
1518-9

1518-10

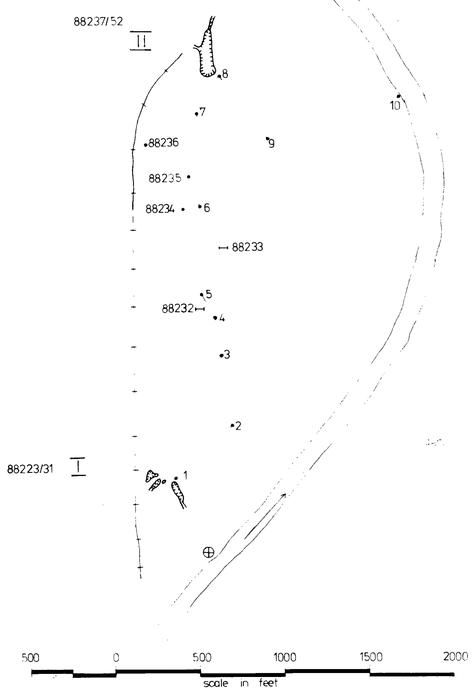
Fig. 7b FLUX QUARRIES: S.M.L. 477 OODLAWIRRA

Oodlawirra Flux Quarries Locality Map

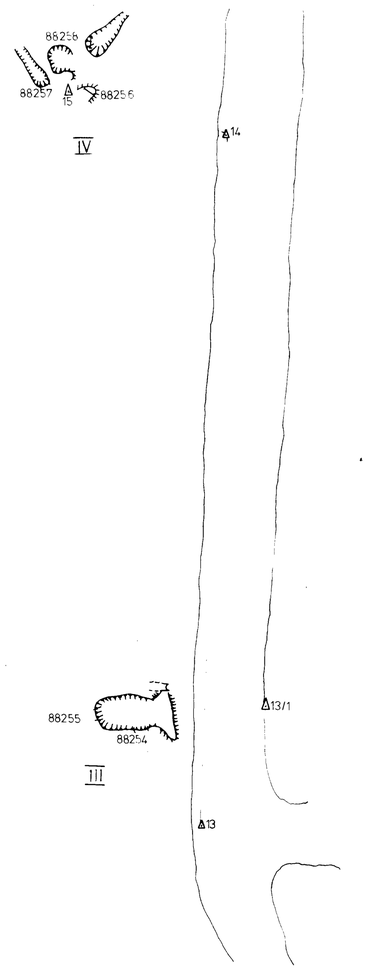
Flux Quarry II Rock Sample Location and Alluvial Sample Location



Flux Quarry I Rock Sample Location



Flux Quarries III and IV Rock Sample Location



LEGEND

- vertical shaft
- adit
- cutting
- pit
- lease peg
- survey picket
- peg
- dump sample
- horizontal channel sample
- vertical channel sample
- approx. limits of alluvium
- minor creek
- major creek
- disused railway line

Fig. 15 Penn Copper Mine: Plan of Workings and Geology

Cu.

20535

20541

20536

base line

line 2

362 (50) 361 (45) 360 (55) 359 (50) 358 (50) 357 (50) 356 (50) 355 (50) 354 (50) 353 (45) 352 (55) 351 (50)

line 1

350 (55) 349 (110) 348 (90) 347 (95) 346 (100) 345 (95) 344 (100) 343 (75) 342 (55) 341 (50) 340 (45) 339 (40)

LEGEND

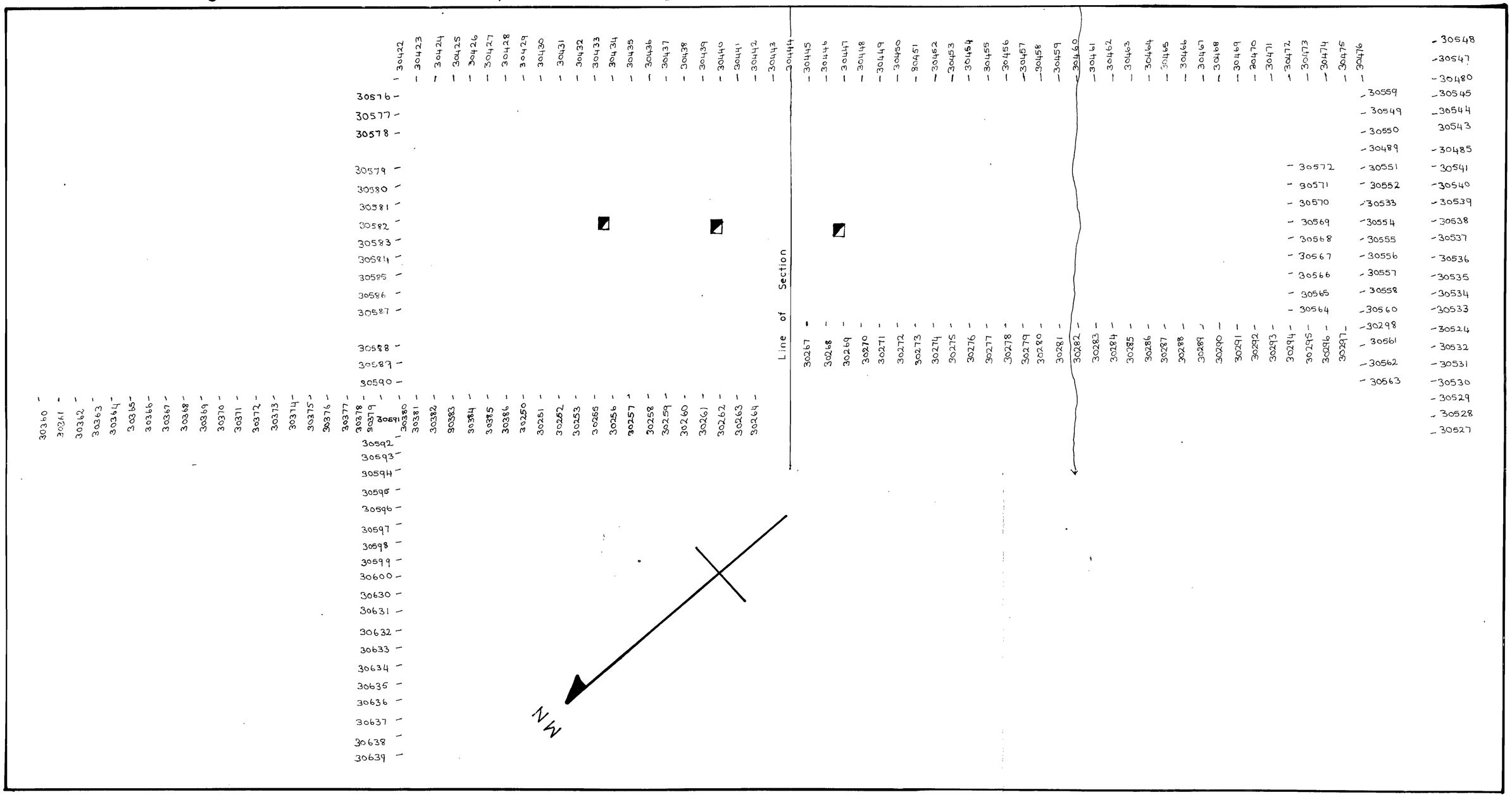
- appila tillite
- burra shale
- quartzite
- callana conglomerate

- dip and strike of bedding
- dip and strike of vein
- vertical shaft
- inclined shaft
- dump
- pit
- lease peg
- stream sample peg
- 343 (75) 342 — soil sample location and Cu. results (75) in ppm.
- creek
- prefix soil sample numbers by 45

200 0 200 400 600 800
scale in feet

1518-11

Fig. 1 Soil Sample Locations, Wheal Basset



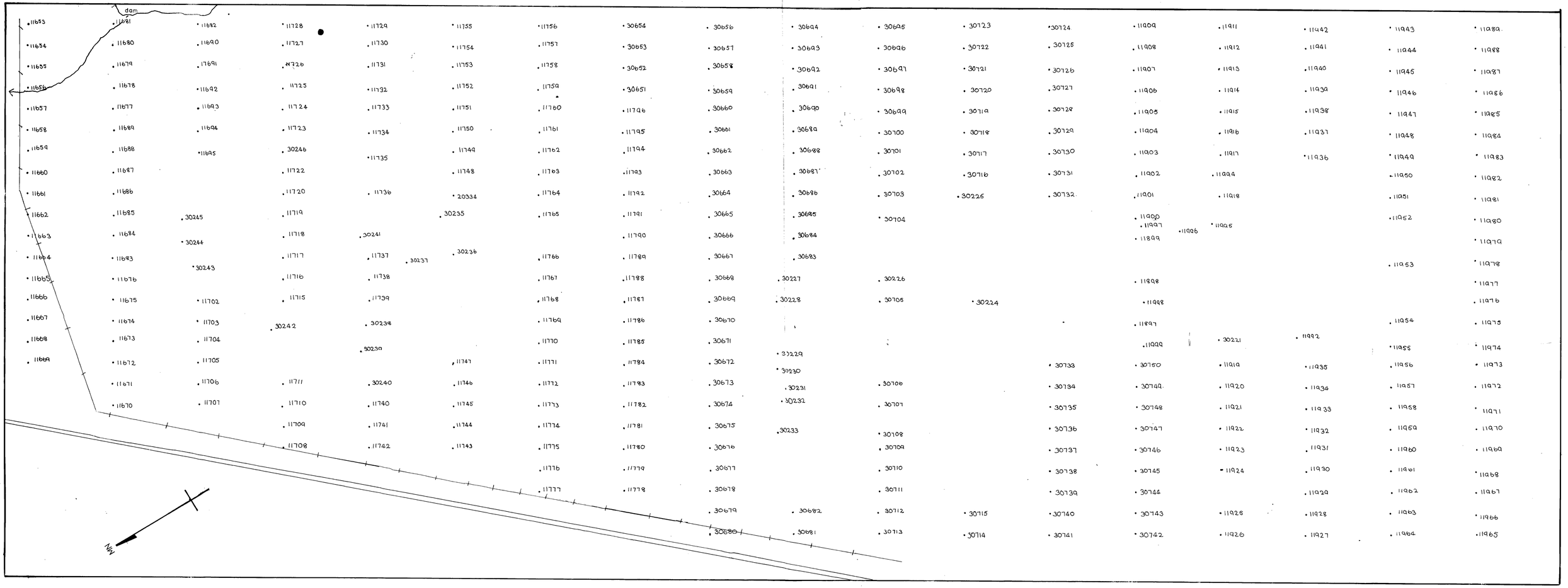
Legend

- 30423 Sample Locations and Numbers
- Stream
- Main Shaft

0 200 400
Scale in Feet

1518-12

FIG. 2 LOCATION OF SOIL SAMPLES, WHEAL BASSET WEST



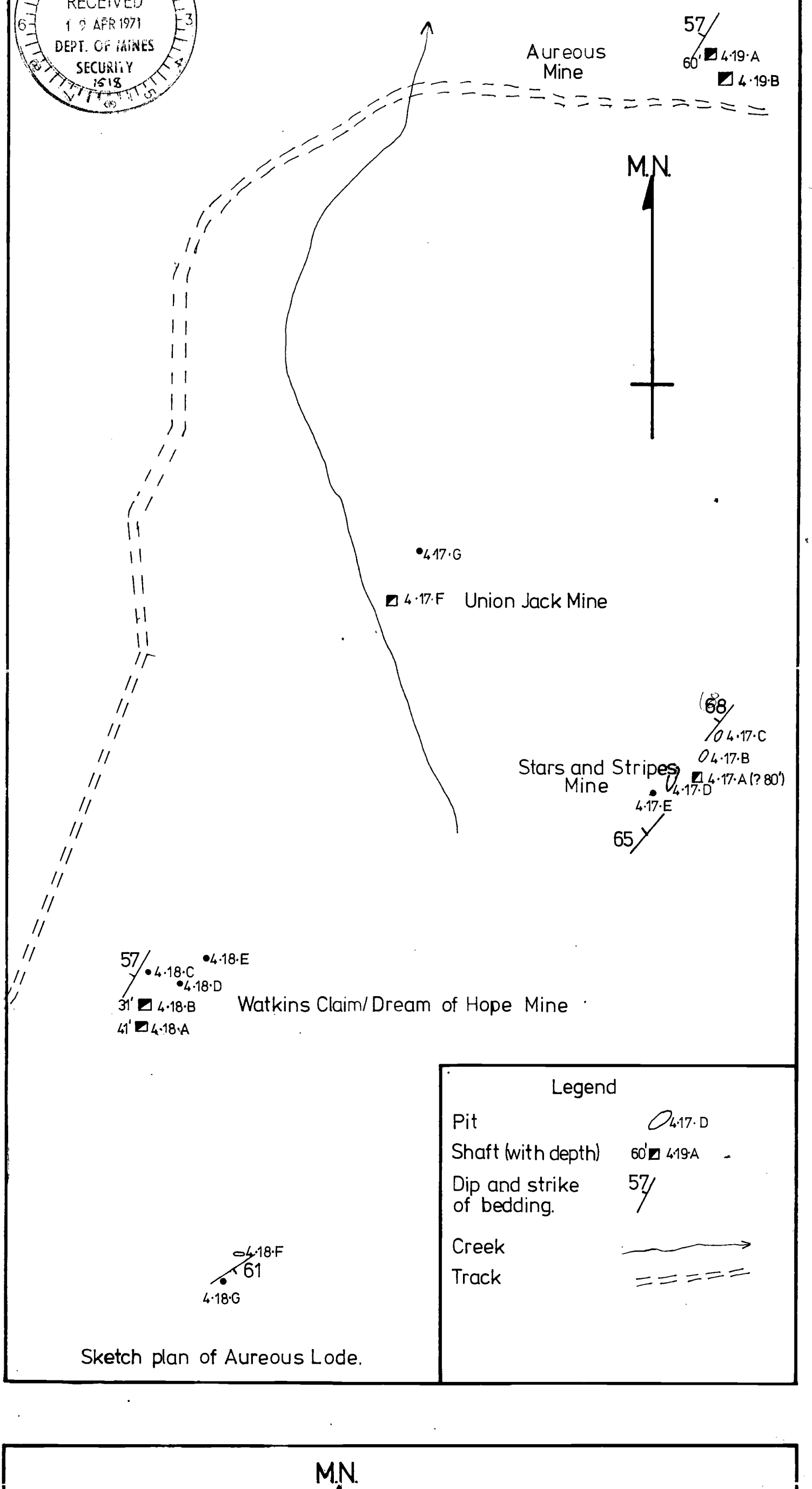
LEGEND

- 12345 sample locations and number
- road
- fence
- stream
- bore

0 10.0 20.0 30.0
scale in feet

1518-13

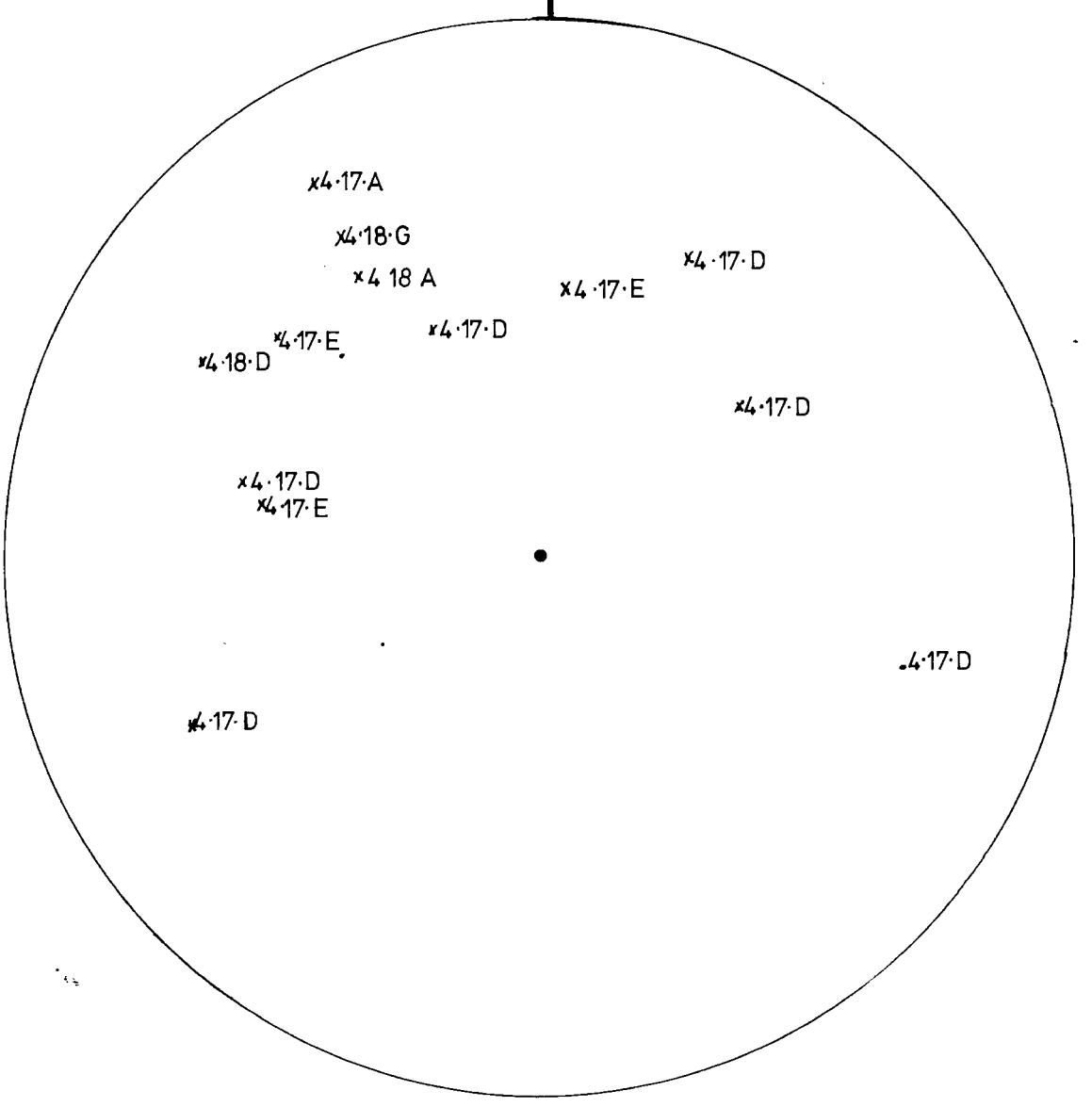
Fig. 3 Aureous Lode, S.M.L. 477 [Oodlawirra]



Legend

Pit	4·17·D
Shaft (with depth)	60' 4·19·A
Dip and strike of bedding.	57/
Creek	
Track	

Sketch plan of Aureous Lode.

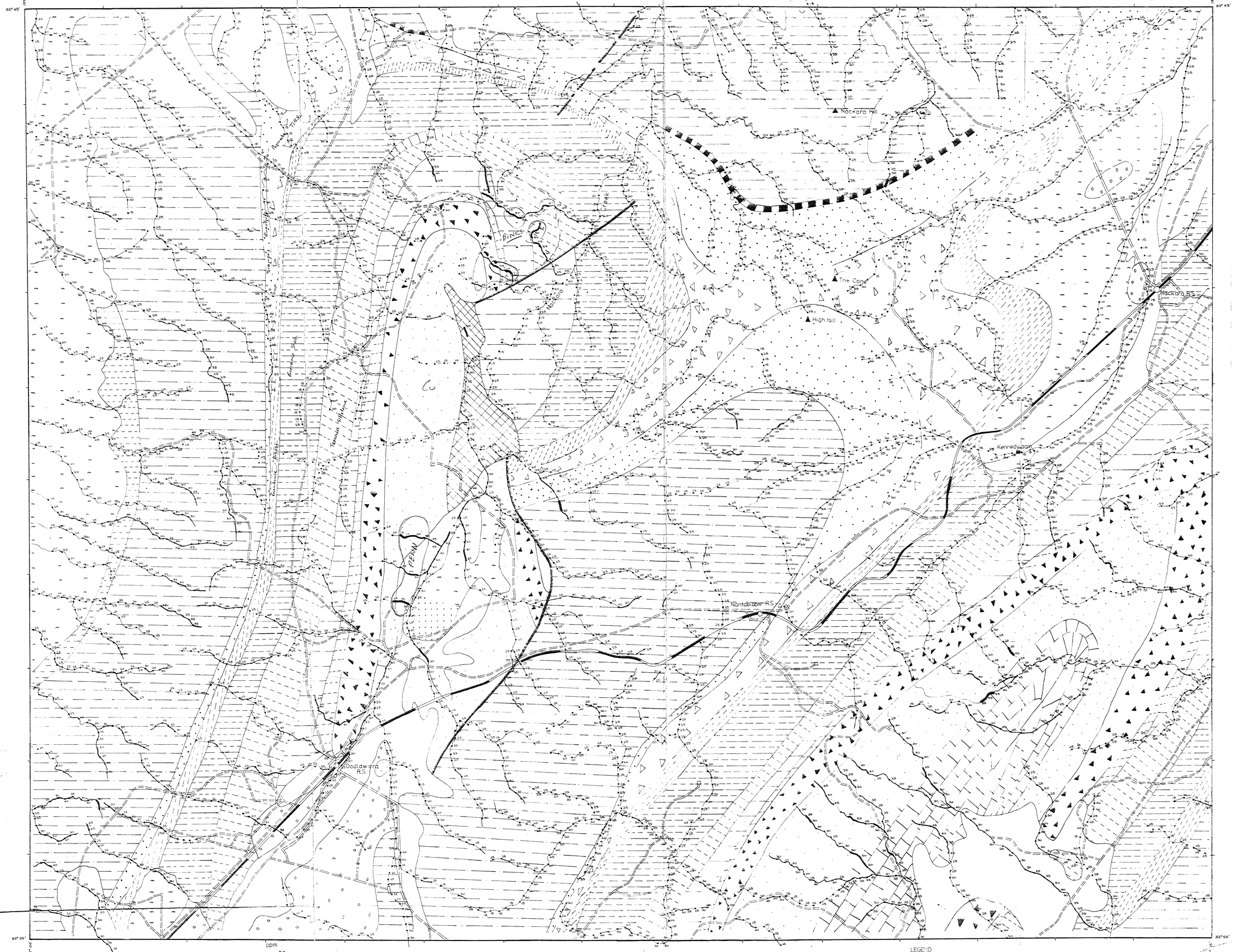


Southern hemisphere plot of poles to veins within the Aureous lode.

1518-14

Fig. 4·2

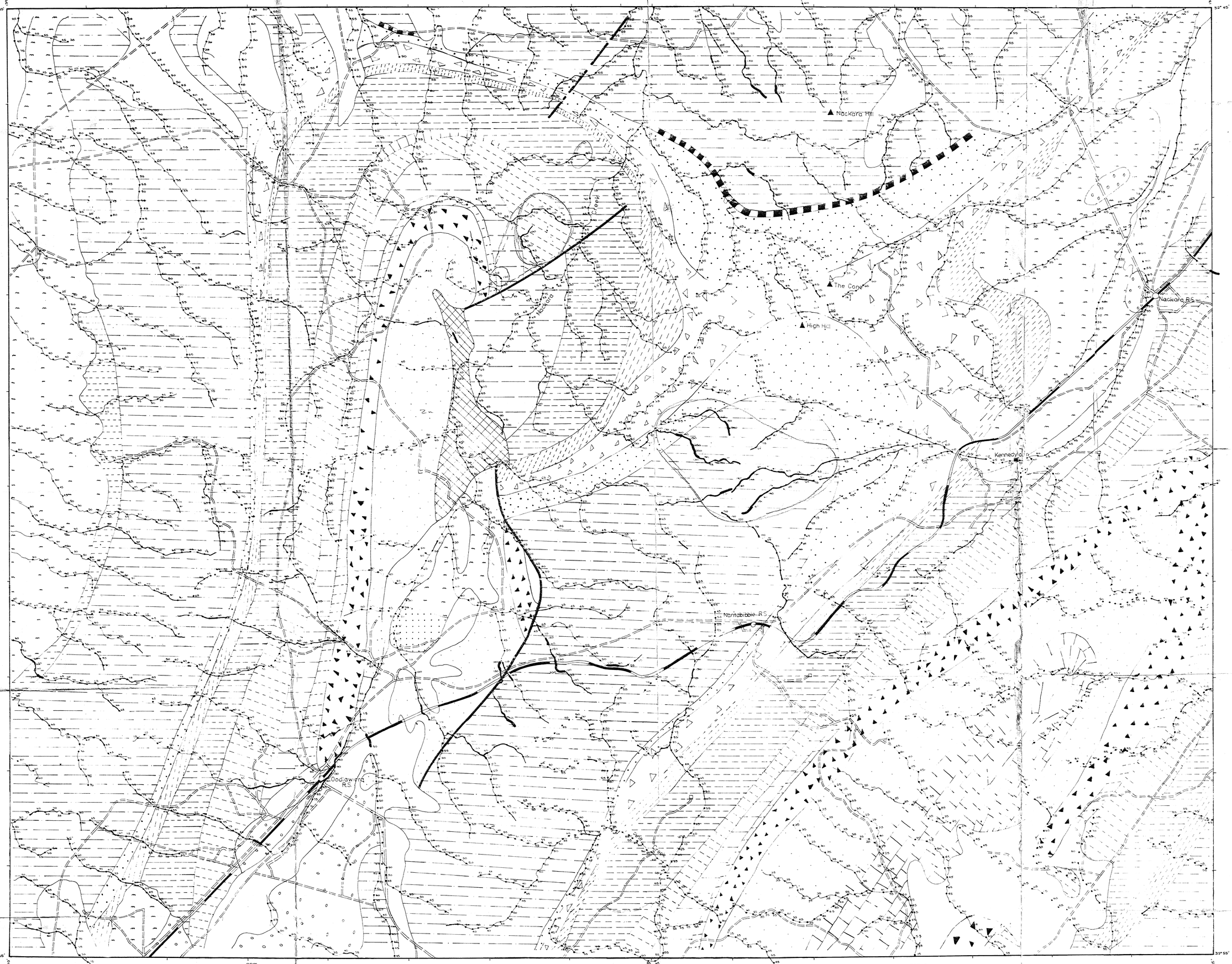
Geology and distribution of Cu (p.p.m.) in stream sediments, Special Mining Lease 477 (Oodlawirra).



1518-15

Fig.4·3

Geology and distribution of Zn (p.p.m.) in stream sediments, Special Mining Lease 477 (Oodlawirra).

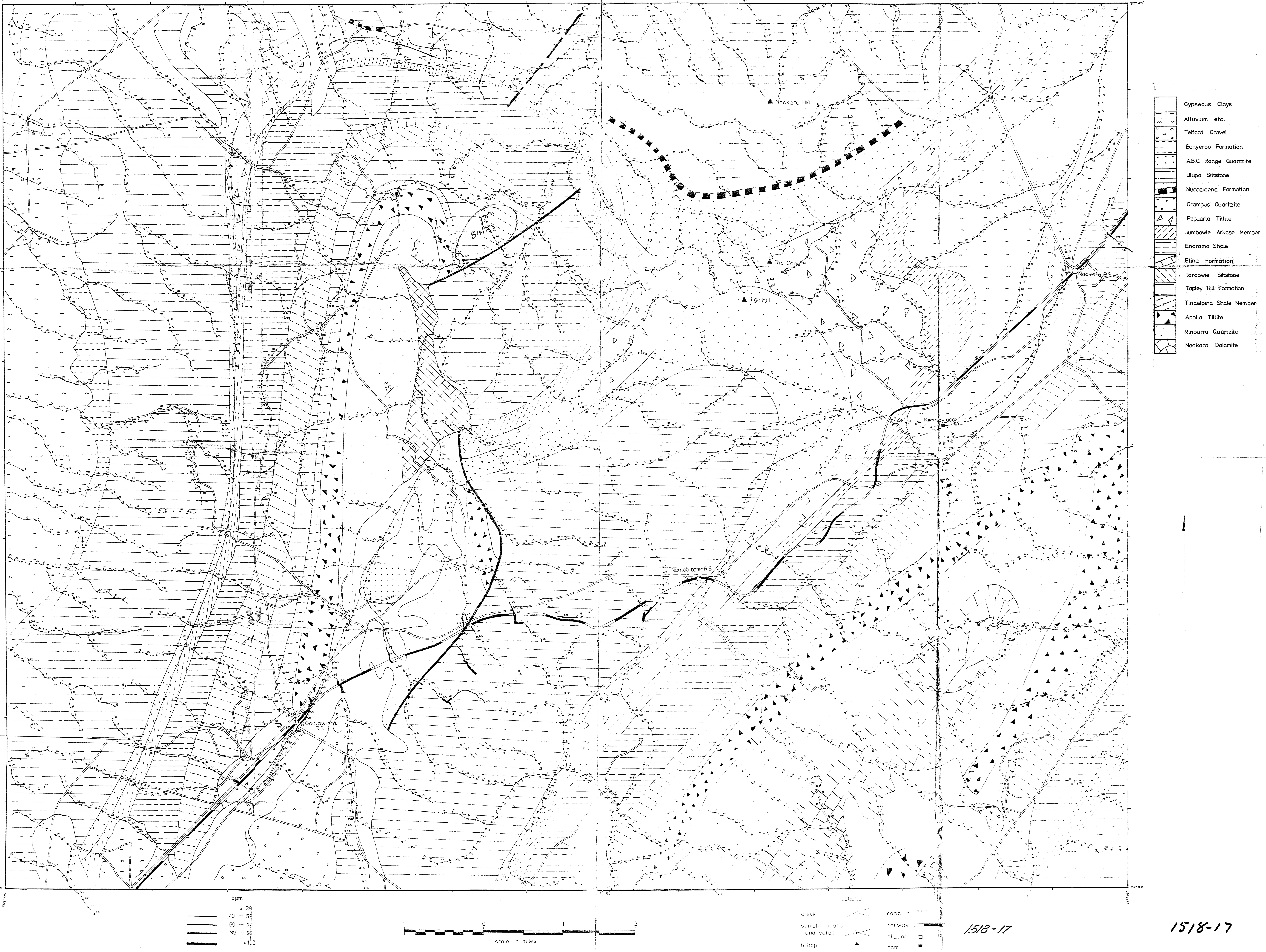


1518-16

1518-16

Fig. 4·4

Geology and distribution of Pb (p.p.m.) in stream sediments, Special Mining Lease 477 (Oodlawirra).



1518-17

1518-17