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PROGRESS REPORT - SEPTEMBER 1978

E.L. 17/77 - WILSON RIVER AREA

WESTERN TASMANIA

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September 1978

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GEOLOGY OF MT MERTON AREA L.J. WATERHOUSE 1914

MAPS

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2	Geology		1:50000
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4	Grid 1 Geochemistry - Sn	Comstaff	1:5000
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6	- Sn	"	"
7	- Cr - Ni	"	"
8	- Ir - V	"	"
9	- Mo	"	"
10	- Bi	"	"
11	- Cu	"	"
12	- Pb	"	"
13	- Zn	"	"
14 a+b	Air Magnetics	Renison	1:20000
15 a+b	Input E.M.	"	"

1. INTRODUCTION

Renison Limited pegged the Wilson River area during 1977 - as E.L. 17/77. It covers the south-eastern part of the Meredith granite and the intruded Cambrian - Devonian sediments and ultrabasic rocks of the Huskisson syncline. The primary exploration targets are: replacement tin deposits (Mt Lindsay - Renison Bell types), and tin deposits within the Meredith granite (greisen, breccias).

2. LAND TENURE

On 2nd November, 1977, Renison applied for the Wilson River area. The licence was finally granted on 8th March, 1978, and covers an area of 129 sq. kms. It remains in force until 8th March, 1979.

3. GEOLOGY

Sedimentary and ultrabasic rocks (Age Cambrian - Devonian) were intruded by an Upper Devonian granite. Mineralisation - both lode and alluvial tin - is associated with the granite and its metamorphic aureole. Alluvial osmiridium, gold, and chromite deposits are derived from the ultrabasics.

STRATIGRAPHIC SEQUENCE

QUATERNARY	Alluvials, fluvioglacials	
UPPER DEVONIAN	Meredith Granite	
SILURIAN - DEVONIAN	Eldon Group	{ Bell Shale Florence Quartzite Austral Creek Siltstone Keel Quartzite Amber Slate Crotty Quartzite
ORDOVICIAN	Junee Group	{ Gordon Limestone Zeehan Conglomerate
CAMBRIAN	{ Dundas Group Ultrabasic rocks Crimson Creek Formation	

Undifferentiated Cambrian rocks (probably correlate with the Crimson Creek Formation) outcrop along parts of the eastern boundary of the exploration licence. The rocks are unfossiliferous argillites, greywacke, shales and siltstones, of probable Upper Proterozoic to Middle Cambrian Age.

Ultrabasic rocks (Middle Cambrian ?) outcrop around the edge of the Huskisson Syncline, and overlie the Crimson Creek Formation - usually with faulted or sheared contacts. Rocks consist of partly or completely serpentinised pyroxinites, gabbros and norites. Along the western side of the syncline the ultrabasics outcrop over a width of 2 kms, while along the eastern margin the outcrop is discontinuous and much thinner. A narrow belt of silicified mineralised ultrabasics formed at the contact with the Meredith granite. Small alluvial gold and osmiridium deposits are associated with the ultrabasics.

The ultrabasics are unconformably overlain by fossiliferous rocks of the Dundas Group. Outcrops are generally confined to the southern section of the exploration licence. Marine fossils of Middle Middle Cambrian age have been found in conglomerates, greywacke and mudstones.

Ordovician rocks (Junee Group - Mt Zeehan Conglomerate and Gordon Limestone) unconformably overlie the Dundas Group. The conglomerate is confined to the southern section of the licence, while the limestone outcrops intermittently round the edge of the Huskisson syncline. Near the Meredith granite, the Gordon limestone has been metamorphosed to a garnet-rich skarn.

Interbedded quartzites, shales and siltstones of the Eldon Group (Silurian - Devonian) conformably overlie the Ordovician sediments. These and the earlier formed rocks were folded to form the Huskisson Syncline.

The Upper Devonian Meredith Granite intruded into the sequence. Composition of the granite is variable - mainly a quartz-orthoclase-biotite granite, but with fine grained phases (greisens, microgranite, etc.). Tourmaline is common in places as nodules, or associated with quartz veins containing minor cassiterite.

Weathering and erosion of the sequence has produced the present land surface, and the small alluvial deposits containing cassiterite, osmiridium and gold.

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4. EXPLORATION HISTORY

Over the last 70 - 80 years the area has been explored for several different minerals - notably gold, tin and osmiridium. Lack of access seriously hampered the development of small scale mining and prospecting.

During the early 1900's prospectors spread out from the mining centres of Waratah, Renison Bell and Rocky River, and located numerous small reef and alluvial deposits. Small quantities of tin, gold and osmiridium were recovered from fields within the exploration licence area.

In 1911 A.D. Merton discovered tin mineralisation at Mt Merton, west of the Huskisson River. Two adits and several costeans located low grade mineralisation (fine-grained cassiterite) in quartzites of the Eldon Group (? Crotty quartzite). The prospect was then abandoned. For details of this prospecting - see Appendix 1.

With the opening of Betts track - connecting Mt Lindsay and Waratah - in the 1930's, alluvial tin fields were discovered near the South Bischoff Mine and in the Yellowband Creek - Little Wilson River area. At the South Bischoff Mine area (north of E.L. 17/77) the alluvial tin was coarse-grained and clean (not contaminated with chromite, gold or osmiridium). While in the Yellowband - Little Wilson River area the tin was finer, and associated with gold, osmiridium and chromite. These minerals indicate the probable source of the alluvial cassiterite was from the sediments and/or ultrabasics overlying the granite. Total tin production for the two areas was about 20 tonnes of concentrate.

During the Second World War drilling of the alluvials near the Yellowband Creek indicated tin grades were uneconomic.

From 1962 to 1969 Aberfoyle Limited (originally Aberfoyle Tin Development Partnership) conducted reconnaissance geological mapping over part of the exploration licence. This consisted mainly of locating, mapping and some rock sampling magnetic anomalies located during their 1965 airborne survey of the Zeehan - Waratah area. Only minor follow-up work was completed; as most of their exploration effort was directed towards drilling the Mt Lindsay Mine. This work was mainly along the contact of the Meredith granite, and failed to locate any major prospect. Several small areas of interest were located - namely sulphides in silicified ultrabasics in the Headwaters of the Harman River, and garnet rocks (skarns ?) near the Wilson - Little Wilson River junction, and along the Wilson River.

Much of the Meredith granite was mapped by the Tasmanian Mines Department in 1963-64. Most of this mapping was to the north and north-west of E.L. 17/77. Their major conclusion was that there was little chance of locating stanniferous greisen zones within the Meredith granite.

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Between 1971 and 1973 Comstaff Pty Ltd explored the Meredith granite - northwards from the Harman River. An airborne radiometric survey of the granite failed to locate any anomalies (breccia zones containing diffuse uranium mineralisation). Soil, rock and panned samples were collected and assayed for various elements.

Rock & Derived Soil Samples	Be, Li, Nb, Y, Sn, W, Cu, Zn, Mo.
Stream Sediment Samples	Cu, Ni, Zn, Mo, Ag, Sn, Be, Li.
Panned Concentrates	Cu, Ni, Zn, Mo, Ag, Sn, W, Nb, Ta, Au.

Mineralisation was located at two areas - "Bit of a Change" Hill outside the exploration licence and Tadpole Hill close to the western licence boundary. At Tadpole Hill auger soil sampling and costeaning indicated tin mineralisation was associated with thin quartz - tourmaline veins and greisen zones - elongated parallel to joint directions. One greisen zone covered an area of 120 x 370 m. Chip sampling of the costeans gave a possible tonnage of 39,660 tonnes per vertical metre at a grade of 0.25% Sn (area 49 x 305 m) - see maps 3 and 4.

Over the 1976-77 field season, the Australia - New Zealand Exploration Company stream-sediment sampled much of E.L. 17/77 (Wilson River area) - originally held as E.L. 3/76. The aim of this programme was to locate tungsten mineralisation within the metamorphic aureole of the Meredith granite. 94 panned concentrate and -80# samples were assayed for W, Cr, Ir, Mo, Ni, Os, Pt, V, Bi, Cu, Pb, Sn, Zn, by semi-quantitative emission spectroscopy (W - by modified Dithiol method). Anomalies located were not investigated, and the area was relinquished. For results of this sampling see maps 5 - 13.

Stream sediment sample anomalies tended to highlight areas of geological importance, i.e. Yellowband alluvial tin area and the Wilson River - Little Wilson River contact zone.

5. RECENT WORK

Since the granting of E.L. 17/77 in March 1978, Renison Limited conducted an airborne (input) E.M. magnetics survey over the area and obtained a complete set of recent colour air photographs. Access tracks and field programme planning has commenced and will be undertaken in conjunction with exploration of the north and north-east corner of E.L. 2/63 - Mt Lindsay area. Due to the lack of access, the exploration programme is expected to cover 4 - 5 years, and extend north-easterly along the Meredith granite contact.

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(i) Results of Airborne Surveys

Plans of the airborne magnetic and Input E - M surveys are included in this report (Maps 14 and 15). Both methods show the area can be sub-divided into four basic areas (correlates with geology):

- (a) Northern area, over the Meredith granite;
- (b) Central area, over the Huskisson syncline sediments;
- (c & d) East and West Sections, covering ultrabasic rocks round edge of Huskisson Syncline.

(a) Northern Area - Meredith Granite

No air magnetic anomalies, but shows a gentle regional trend (widely spaced contours). Several input anomalies occur mainly close to major rivers, i.e. along Harman River (WR 20, 21) and along the Little Wilson River (WR 19 and 25). These anomalies may be due to the depth of weathering or overburden along the river valleys. Of some special interest are the anomalies along the Little Wilson River (WR 19 and 25) which occur along a major structural lineament within the Meredith granite.

(b) Central Area - Huskisson Syncline

General effect over the sediments is a magnetic low although some masking of possible anomalies occurs because of interference from magnetic highs over ultrabasics. Several anomalies occur close to granite contact in geologically interesting areas.

Input E - M anomalies occur close to granite contact (WR 1, 12, 13, 15a and 17) and totally within the sediments (WR 5, 7, 8, 10, 11, and 14). See Table 1 below.

Several anomalies require further investigation, especially those close to the contact of the Meredith granite, e.g. Wilson River - Little Wilson River area.

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Table I Input E.M. Anomalies over Huskisson Syncline

Anomaly No.	Location	Geology	Corresponding Magnetic Anomaly	Cause
<u>CONTACT ANOMALIES</u>				
WR 1	Wilson River - Little Wilson R.	Ultrabasic - Lst - granite contact	Strong	Ultrabasics or sulphides
WR 12	Wilson River	Sandstone close to granite contact	No	Sulphides or surficial anomaly
WR 13	Wilson River	Sandstone close to granite contact	No	Sulphides or surficial anomaly
WR 15a	South of Mount Ramsay	Granite contact with sediments	Yes	Ultrabasics or sulphides
WR 17	Wilson River	Granite contact with sediments	Yes	Ultrabasics or sulphides
<u>ANOMALIES WITHIN HUSKISSON SYNCLINE</u>				
WR 5	Huskisson River	Huskisson Syncline	Weak - edge of UB	River or ultrabasics
WR 7	Huskisson River - Alfred Creek	Huskisson Syncline	Weak	?
WR 8	Alfred Creek	Huskisson Syncline	Weak	River ?
WR 10	Wilson River - Alfred Creek	Huskisson Syncline	No	?
WR 11	Wilson River - Alfred Creek	Huskisson Syncline	Weak	?
WR 14	Webbs Creek	Huskisson Syncline	Edge effect of UB	?

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(c) Western Area - Ultrabasics

A series of intense magnetic highs and lows follow the known outcrop pattern of the ultrabasics, along the western flank of the Huskisson syncline. Some low order magnetic anomalies close to the ultrabasic contact could be masked by these magnetic highs.

Strong Input E - M anomalies also occur over the ultrabasics (WR 1). No exploration is planned for this ultrabasic belt, other than along the contact zone with the Meredith granite.

(d) Eastern Area - Ultrabasics

A zone of magnetic highs follows the eastern side of the Huskisson syncline and correspond to several isolated ultrabasic outcrops. The airmagnetics indicate the ultrabasics are continuous at depth, and appear to swing round to the north-west along the northern side of the Huskisson Syncline. No known outcrops of ultrabasics occur in this area.

Input E - M anomalies (WR 2) correspond to known outcrops of ultrabasics, while anomalies (WR 6 ?, 15 and 17) are thought to occur over non-outcropping ultrabasics. One mapped outcrop of ultrabasics west of Webbs Creek (Map 2) does not have any input or magnetic response, and hence may not exist.

6. FUTURE EXPLORATION PROGRAMME AND EXPENDITURE

The primary target of the programme will be granite contact zone from Parsons Hood to Mt Ramsay, with some secondary investigations of the Meredith Granite.

- | | | | |
|-----|--------------------|-----|---|
| (1) | Exogranite targets | (a) | replacement of carbonate beds within Ordovician - Devonian sediments. |
| | | (b) | replacement of altered or carbonatised ultrabasics. |
| | | (c) | contact deposits within sediments at the granite contact. |
| | | (d) | contact deposits within ultrabasics at the granite contact. |
| (2) | Within the granite | (a) | greisen and/or vein networks e.g. Tadpole Hill. |
| | | (b) | lineaments - possible breccia zones e.g. Little Wilson River. |
| | | (c) | alluvial - low priority e.g Yellowband Creek - Little Wilson River. |

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Due to the inaccessibility of much of the exploration licence, exploration will be long term (4 - 5 years) and extend north and north-eastwards from the northern boundary of E.L. 2/63 as access becomes available. Regional Mapping and Stream Sediment Sampling will be followed by gridding, soil sampling, ground geophysics, and more detailed mapping of any anomalies. Detailed mapping and sampling will then be followed by diamond drilling.

The possible timing and proposed expenditure is illustrated in Table II

Table II Future Exploration Programme E.L. 17/77

Work	1978 - 1979	1979 - 1980	1980 - 1981	1981 - 1982	Total Expenditure
ACCESS Main Tracks Drill Tracks Cost	35,000	35,000	5,000	5,000	80,000
GEOLOGICAL Regional					
MAPPING Detailed Cost	5,000	5,000	3,000	3,000	16,000
GEOCHEMICAL Regional					
SAMPLING Detailed Cost	5,000	5,000	2,000	2,000	14,000
GEOPHYSICS Cost	5,000	15,000	10,000		30,000
PHOTOGRAPHIC INTERPRETATION Cost	15,000				15,000
DIAMOND DRILLING Cost			120,000	120,000	240,000
TOTAL COSTS	65,000	60,000	140,000	130,000	395,000

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APPENDIX 1

REPORT ON MT MERTON AREA

Extract from Tas. Mines Dept. Bull. No. 15

Stanley River Tin Field L.J. Waterhouse 1915

pp 168 - 176

and "cutting-grass." An investigation revealed the presence of an intrusive dyke of granite-porphry, whose presence had previously been unsuspected. The approximate position of this is shown on the accompanying plan.⁽¹³⁰⁾ A further examination showed the presence of some dense magnetite in some of the altered slate, and in the thick scrub on the eastern bank of the creek, some 10 chains north of the outcrop of the main ore-body in the creek, some highly pyritic banded material was discovered *in situ*, showing biotite in the groundmass. This locality should certainly be prospected, as it is not unlikely that a parallel ore-body may be discovered, which may or may not carry tin values.

One matter which has proved rather puzzling to some on the field is the alleged absence of any alluvial tin shed from the Mt. Lindsay ore-body. It is contended, and justly, that since the creek has cut through and denuded such a large portion of the ore-body some tin oxide must have been derived from it. The writer is doubtful whether such has been carefully prospected for. Tulloch Creek itself, with its steeply graded rock bottom, offers no encouragement for the lodgment of any quantity of detrital matter, and it is not very surprising that very little alluvial tin has been discovered in this creek. Where it enters Four-mile Creek, however,⁽¹³¹⁾ which is a tributary of the Wilson River, there is an alluvial flat, apparently not of any great extent. This creek does not appear to have been prospected, but it is possible that some of the tin oxide shed from the Mt. Lindsay lode may have found a lodgment under these more favourable conditions. The flat is certainly well worth prospecting.

Another portion of the lease which should also be prospected, is the eastern portion, on the eastern fall of the south-east spur, and near the western boundary of the adjoining section, 5200m.

Magnetite and pyritic material were found on this boundary by the writer.⁽¹³²⁾

(3)—ROSEBERY PROSPECTING COMPANY, NO LIABILITY.

This company holds 318 acres, comprised in the following mineral sections:—5552m, 80 acres; 5553m, 78 acres; 5554m, 80 acres; 5832m, 40 acres; 5847m, 20 acres; and

⁽¹³⁰⁾ Vide Plate VI.

⁽¹³¹⁾ Vide Plate II.

⁽¹³²⁾ Vide description of Section 5200m, page 198.

5931m, 20 acres—and a water-right, 1250-w, for 10 sluice-heads on a creek flowing into the Wilson River.

On one of these sections, 5552m, two men were employed at the time of my visit, and being informed that no work whatever had been done on any of the others, these were accordingly not visited.

This group of sections is situated to the east of the Wilson River, and between that river and the Huskisson, both tributaries of the Pieman. The position of the sections is shown approximately only⁽¹³³⁾ on the accompanying map; they are not charted, and were only connected with other points in the field by bearings taken by prismatic compass to points whose position had been fixed.

Section 5552m includes a tin-bearing formation known as the Mt. Merton Mine. The mine is situated about 3 miles (in a direct line) north-east of the Pieman River suspension-bridge near the junction of the Wilson and Pieman Rivers, and until recently was reached by a foot-track from Renison Bell, about 10 miles distant, crossing the Pieman River by a cage. Towards the end of 1912 a bridge was built over the Wilson River by the Government, and a corded pack-track constructed for 2½ miles from the bridge eastwards. The bridge referred to crosses the Wilson River a few chains above its junction with the Pieman, and about ½-mile beyond the Pieman suspension-bridge. At this point the Mt. Merton track branches off from the main track to the Stanley River and Mt. Lindsay.

From the 2½ mile-point on the track, where the cords end, it is about 3 miles to the mine, following a blazed track.

The tin occurs in Silurian sandstones, and a few chains north of their junction with the serpentine and basic Devonian rocks previously described.⁽¹³⁴⁾ The section comprises members of the sedimentary Silurian rocks, slates, sandstones, and probably limestones, described in another part of this report.⁽¹³⁵⁾ Serpentine does not appear in the section, the south-western corner peg being within about 2 chains of the contact. The sandstones and slates are fossiliferous; the strike varies from north 88° east to south 80° east, and dip south at from 55° to 65°. The average strike is about east and west, and dip south at 60°. The sandstones weather to a white sand, the slates to a yellow or brown clay.

⁽¹³³⁾ Vide Plate II.

⁽¹³⁴⁾ Vide page 18, *et seq.*

⁽¹³⁵⁾ Vide page 51, *et seq.*

noticed. The rock is much decomposed, being soft and thoroughly kaolinised. Particles of fresh quartz are still distinguishable in the material, and although the rock is much too decomposed for exact determination, it appears to represent a quartz-porphry, or perhaps a granite-porphry. The occurrence is significant, and points to a connection with an acidic magma.

In this adit several narrow veins (up to 1 inch in width) carrying galena were noticed, strike and dip corresponding with that of the sedimentaries.

This hard quartzite and sandstone is said to carry tin in small amounts through it, though the softer material is said to be more favourable.

From a point several chains south-east from No. 1 adit, and near the eastern boundary of the section, an adit (No. 3) had been driven for about 100 feet. This was in bad repair, and could not be examined in detail, but the material passed through appeared to be similar to that already described, normal slates and sandstones, and some hard sandstone with abundant irregular cavities containing carbonaceous material, and said to carry fair tin values. This has been driven from the south-western slope of the ridge, where it is cut through by one branch of the creek. The bearing of the adit is 292°. Subsequent reports show that this adit was continued to 160 feet after the writer's visit, and that lignite seams were intersected.

In the approach to this adit a vein of galena of about 1 inch in width was cut, conforming apparently to the strike and dip of the country-rock.

In addition to the underground work referred to, a good deal of surface trenching has been done, seven or eight trenches having been cut at various points along the crown of the ridge, from about 1 to 5 chains in length. Although these trenches disclose a considerable amount of detrital material, no further information regarding the lode-formation was to be gained from them.

With regard to the lode-formation, the information available seems to point to the fact that there is a wide zone probably approaching 100 feet in width which has been subjected to alteration, and which appears to have been slightly mineralised throughout. At no point noticed had mineralisation been intense. Nowhere was tin oxide seen *in situ*, but it would appear to be disseminated through a wide zone, and probably to be associated with a little pyrite. The tin oxide is said to be always grey

to reddish-brown in colour, and always extremely fine. It would consequently be difficult to save in actual working operations.

The association of tin with basic igneous rocks appears at first sight to be rather anomalous, for we are accustomed to associate it with granite and acidic rocks. However, when it is remembered that both the basic and acid rocks of the district are derived from the same parent magma it is not so strange. And if the decomposed igneous dyke-rock referred to above be really a quartz-porphry, as it appears to be, then the genetic connection of the deposit with the granitic rocks at depth is fairly well established.

The ore (if such it may be called) is really a hardened sandstone. The writer is of opinion that during the final stages of the consolidation of the magma which gave rise both to basic and acid rocks, gaseous solutions were expelled, and finding their way through some minute fissures or planes of weakness gradually deposited their metallic contents. This probably took place subsequent to the consolidation of the basic rocks which have given rise to the serpentine.

There is nothing in the nature of the ore to indicate whether in certain zones the metal will be concentrated, *i.e.*, whether certain zones of enrichment are likely to occur. They may or may not occur. There is some reason to expect, if the assumption made with regard to the mode of origin be correct, that richer veins may be met with in the course of exploratory work. On the other hand, the introduction of cassiterite may have taken place without the formation of any very rich veins of sufficient size to be of economic value. I am given to understand that in prospecting the detrital matter, and alluvial in the creeks, no nuggets or rich specimen pieces have been located which justify the assumption that such rich veins do actually occur in the ore-body.

It is the mining engineer who by careful sampling and assaying can decide the matter as to whether the tin is too widely disseminated throughout the body to be of any economic value.

The development work carried out up to the present time is limited, but appears to have been justified by prospects obtained from alluvial in the creeks, and from the surface detrital matter. If, however, from actual assay values of samples systematically taken by a competent man over the whole ore-body, as already opened up, the com-

pany has not good reason to believe that certain zones are likely to carry payable tin. then further prospecting work in the hope of finding enrichments is scarcely to be recommended.

(b) *The Stanniferous Detrital Matter.*—The surface-trenching carried out on the property has already been referred to. Although it gave little real information of value with regard to the lode-formation, it showed that there exists a large body of detrital matter which carries a certain amount of very fine tin oxide, along the Mt. Merton ridge. The depth varies considerably, but seems never to have been systematically determined over the property. The work carried out, however, would seem to indicate that it is from 2 to 10 feet, with a general average of about 4½ feet on the summit, and 2 to 3 feet on the slopes of the spur. This "wash" (as it has been called) is reported to be tin-bearing throughout, and it has been shown to extend well beyond the boundaries of the section.

The formation has been described as a true alluvial drift, in which the tin has been collected and concentrated by water action.

The writer cannot agree with this view. An examination of the material exposed in the various trenches shows that no foreign detrital matter is represented; all fragmental types present are to be seen *in situ* in the workings. While most frequently the material is a white sand with no coherence, where fragments of rock are present they are subangular, and no more rounded than could be accounted for by ordinary weathering agencies. Again, in the undisturbed sections afforded by some of the trenches, the detrital material exhibits no signs of stratification. The solid pieces lie at all angles, and are mixed indiscriminately with finer material and sand. I am informed that there is apparently no concentration of tin values in the lower layers of drift.

The writer is of opinion that the formation is simply the result of the action of atmospheric weathering agencies. Throughout the district, wherever the Silurian rocks are exposed at the surface they yield subangular fragments and non-coherent white sand, if sandstones, or clays if slates are predominant. The writer holds that the sedimentaries have weathered *in situ*, and that little transportation and redistribution of material has occurred. The material from the highest parts must gradually find its way down the slopes, and so a slight concentration is likely to have taken place, the lighter material being car-

ried off first, the heavier remaining in close proximity to its source. The cover of button-grass and other vegetation would reduce this action to a minimum. However, if tin were disseminated through the original rocks, this slight concentration extended over a long period would probably be sufficient to make the tin values of the residue appreciably higher than those of the original rock from which they were derived.

But the point should be emphasised that although the mode of origin is different from that of a true alluvial drift the formation may nevertheless be amenable to the same methods of treatment which would be applied to a body of alluvial wash.

The writer can give no opinion as to whether tin is present in sufficient quantities to pay for such treatment. Much work is necessary before sufficient data are available to enable a definite opinion to be formed. The detrital formation could be systematically prospected by methods usually employed for alluvial, shafts or bores, to determine depth and values. The extremely fine nature of the tin is likely to militate against success.

With regard to power, it seems impracticable to get water on to the property, and storage and pumping would probably have to be resorted to, reusing tail-water.

Inadequate transport facilities would also be a serious drawback if it were decided to get any machinery on the property. The methods of access at the present time have already been referred to.

However, the essentials to be given first consideration would be—

- (a) Careful and systematic prospecting by a competent man to determine extent of detrital formation and its actual tin values.
- (b) Experimental work to determine what proportion of the actual values could be saved, and what would be the best class of plant to effect the maximum recovery.

The theory that the formation is truly a detrital one formed *in situ*, and not by transportation and water-concentration, is likely to mean—

- (a) That the extent of the formation is likely to be large, although the depth will probably be limited.
- (b) That the value of the formation will depend on the (still unknown) extent and value of the underlying lode-formation.

If any further surface prospecting be carried out, it should be remembered that the tin content of the detrital matter is a factor of the underlying lode-formation. If rich local concentrations be found in the former, there will be a high incentive to active prospecting of the lode-formation in that particular locality.

(4)—OTHER WILSON RIVER SECTIONS.

Referring to the other sections taken up in the same locality, and which are shown on the plan accompanying this report, being informed that no work of any kind had been done on them, the writer did not visit them.

These are Sections 5574M, 75 acres, and 5575M, 80 acres, applied for by J. A. Lawler and T. Brosnan, and 5576M, 80 acres, and 5577M, 80 acres, applied for by T. O'Shea and J. Lawler. These sections appear to have been taken up in the hope that payable tin-bearing ground might be proved in the Rosebery Prospecting Company's sections.

I could not hear of any tin values being shown to exist on the sections. However, they are all situated near the junction of the serpentinite with the Silurian strata, and conditions therefore, may be considered to be in a general way similar to those on the reward section, and some of the remarks made on the occurrence in that section may be found applicable to the other sections of the group.

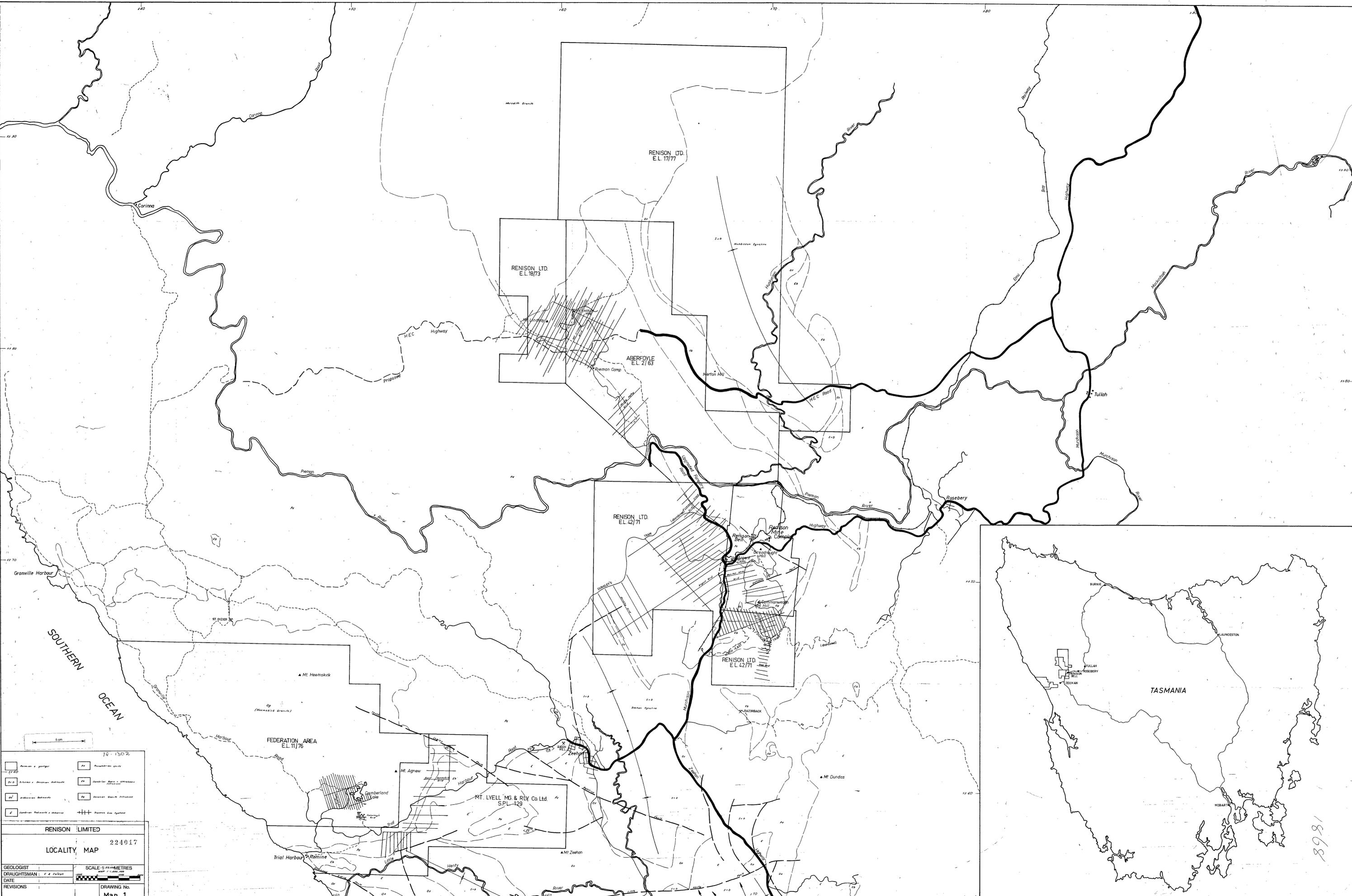
(5)—SECTION 4771M, 39 ACRES.

This section is charted in the names of E. G. Roberts and N. Conroy. It adjoins the Mt. Lindsay consolidated lease on the west, being on the western slope of the Mt. Lindsay spur. About half the section (the northern portion) is granite, the remainder being occupied by members of the Pre-Silurian sedimentaries, hardened and altered owing to their proximity to the granite contact. The junction is approximately marked by New's Creek.⁽¹³⁶⁾ A small branch of this creek, heading just below the Mt. Lindsay western adit, has been worked for tin by sluicing with water brought by a short race from New's Creek. The quantity of ground available was small, both in extent and depth, but some good tin was won, mainly in the form of subangular nuggets, many of which showed attached gossan. From an examination of the class of detrital material in the tailings-heap, and the descrip-

(136). *Vide* Plates II. and VI.



PHOTO. 7.—View on Wilson River, showing Parson's Hood Mt. in background, looking West. (L. L. Waterhouse, Photo.)



1:50,000

50m

□	Asbestos + gangue	□	Quartzite
□	Asbestos + gangue	□	Quartzite
□	Asbestos + gangue	□	Quartzite
□	Asbestos + gangue	□	Quartzite
□	Asbestos + gangue	□	Quartzite
□	Asbestos + gangue	□	Quartzite

RENISON LIMITED
224017
LOCALITY MAP

GEOLOGIST: []
DRAUGHTSMAN: C. A. []
DATE: []
REVISIONS: []

SCALE: 1:50,000 METRES

DRAWING No. **Map 1**

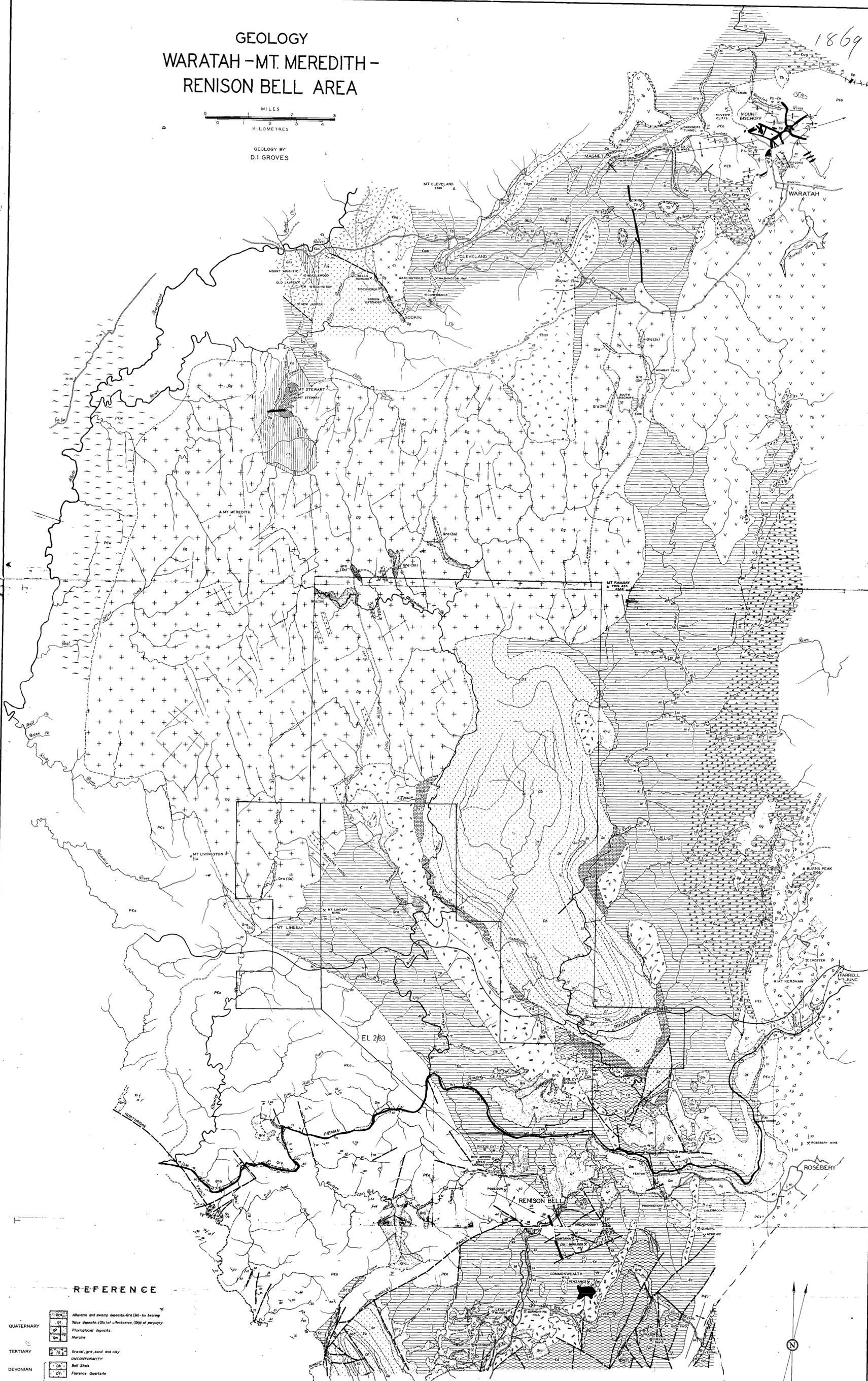
1898

GEOLOGY WARATAH - MT. MEREDITH - RENISON BELL AREA

1869

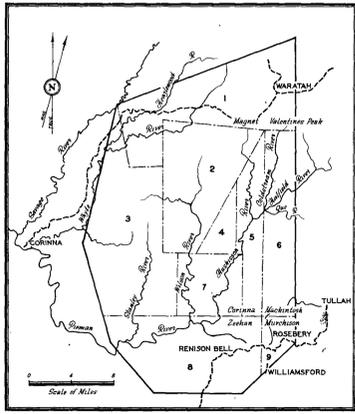


GEOLOGY BY
D.I. GROVES



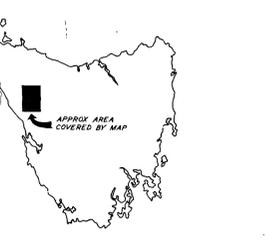
REFERENCE

<p>QUATERNARY</p> <ul style="list-style-type: none"> Abundant and swamp deposits (Qa) (to bearing) Recent deposits (Qb) or ultrabasic (Qc) or porphyry Fluvioglacial deposits Marine <p>TERTIARY</p> <ul style="list-style-type: none"> Gravel, grit, sand and clay UNCONFORMITY <p>DEVONIAN</p> <ul style="list-style-type: none"> Bell Shale Fluorite Quartzite <p>SILURIAN</p> <ul style="list-style-type: none"> Austral Creek Siltstone Keel Quartzite Amber Slate Crofty Quartzite <p>SILURIAN-DEVONIAN</p> <ul style="list-style-type: none"> Undifferentiated quartzite, siltstone and shale <p>ORDOVICIAN</p> <ul style="list-style-type: none"> Barren Limestone McZeals Conglomerate <p>CAMBRIAN</p> <ul style="list-style-type: none"> Dundas Group and correlatives Greywacke conglomerate-sandstone and mudstone sequence Greywacke sandstone and mudstone sequence of the Waratah River Mudstone and greywacke sequence of the Coldstream River Red mudstone and sandstone sequence of the Arthur River Crimson Creek Formation Probable correlates of Crimson Creek Formation Undifferentiated sedimentary sequence Rosebery Group minus Staff Quartzite UNCONFORMITY <p>PRECAMBRIAN</p> <ul style="list-style-type: none"> Quartzite, mudstone and dolomite of Mt. Bischoff Duch Quartzite and Slate Staff Quartzite Whyte Schist <p>IGNEOUS ROCKS</p> <p>TERTIARY</p> <ul style="list-style-type: none"> Basalt <p>JURASSIC</p> <ul style="list-style-type: none"> Dolerite <p>DEVONIAN</p> <ul style="list-style-type: none"> Quartz porphyry Porphyritic granite Microgranite dyke with tourmaline nodules Meredith Granite <p>CAMBRIAN</p> <ul style="list-style-type: none"> Preferentially quartz and feldspar porphyries (Mt. Renison) (volcanic) Intermediate igneous suite (albite syenite and granophyre) Basic igneous suite (gabro, diorite, gabbro, and agglomerate (Gai)) Ultrabasic igneous suite (pyroxenite and peridotite) Serpentinite Undifferentiated predominantly igneous rocks 	<ul style="list-style-type: none"> Geological boundary - approximate Geological boundary - inferred Strike and dip of beds Strike and dip of beds - overturned Strike and dip of cleavages Fold axis Fault - approximate position (Downthrow side indicated) Major faulting in granite Mine or prospect Trend line (Photo-interpretation) Trap station Road Vehicular or pack track Railway Tramway Lake or dam
---	---



SOURCE OF INFORMATION FOR GEOLOGIC MAP

1. Detailed and regional mapping D.I. Groves (1962-1967)
2. Regional and reconnaissance mapping D.I. Groves and R. Jack (1964)
3. Photo-interpretation with scattered information from L.C. Waterhouse (1964) and G. Grayson (1964)
4. Photo-interpretation D.I. Groves (1967)
5. Compilation of mapping by Rio Tinto Australian Exploration Pty. Ltd.
6. Mock-up (1 mile to inch map sheet, Tasmanian Dept of Mines (1968) with some modifications)
7. Compilation of traverses by B.L. Taylor (1964)
8. Zircon (1 mile to inch map sheet, Tasmanian Dept of Mines (A.H. Birseff and A.B. Rutledge 1962)
9. Sketch map from information by G. Luffa - Hills and R.L. Brault (1967)



40 N

BL

30 N

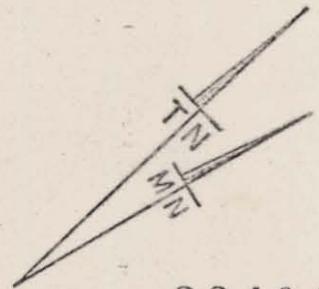
20 N

15 N

10 N

LEGEND

-  Biotite granite
-  Quartz-tourmaline-muscovite greisen
-  Tourmaline-quartz veins
-  Observed outcrop boundary, approx.
-  Inferred outcrop boundary
-  Strike and dip of joint vein
-  Trench

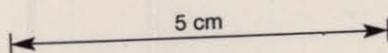


224019

COMSTAFF PROPRIETARY LIMITED

MEREDITH GRANITE PROJECT
 1972/73 SUMMER SEASON REPORT
 GRID 1, GEOLOGY

DRAWN MAY 73 <i>R. Paterson</i>	COMPILED G.P.	SCALE 1:5,000	DWG. No. TAS-2-475
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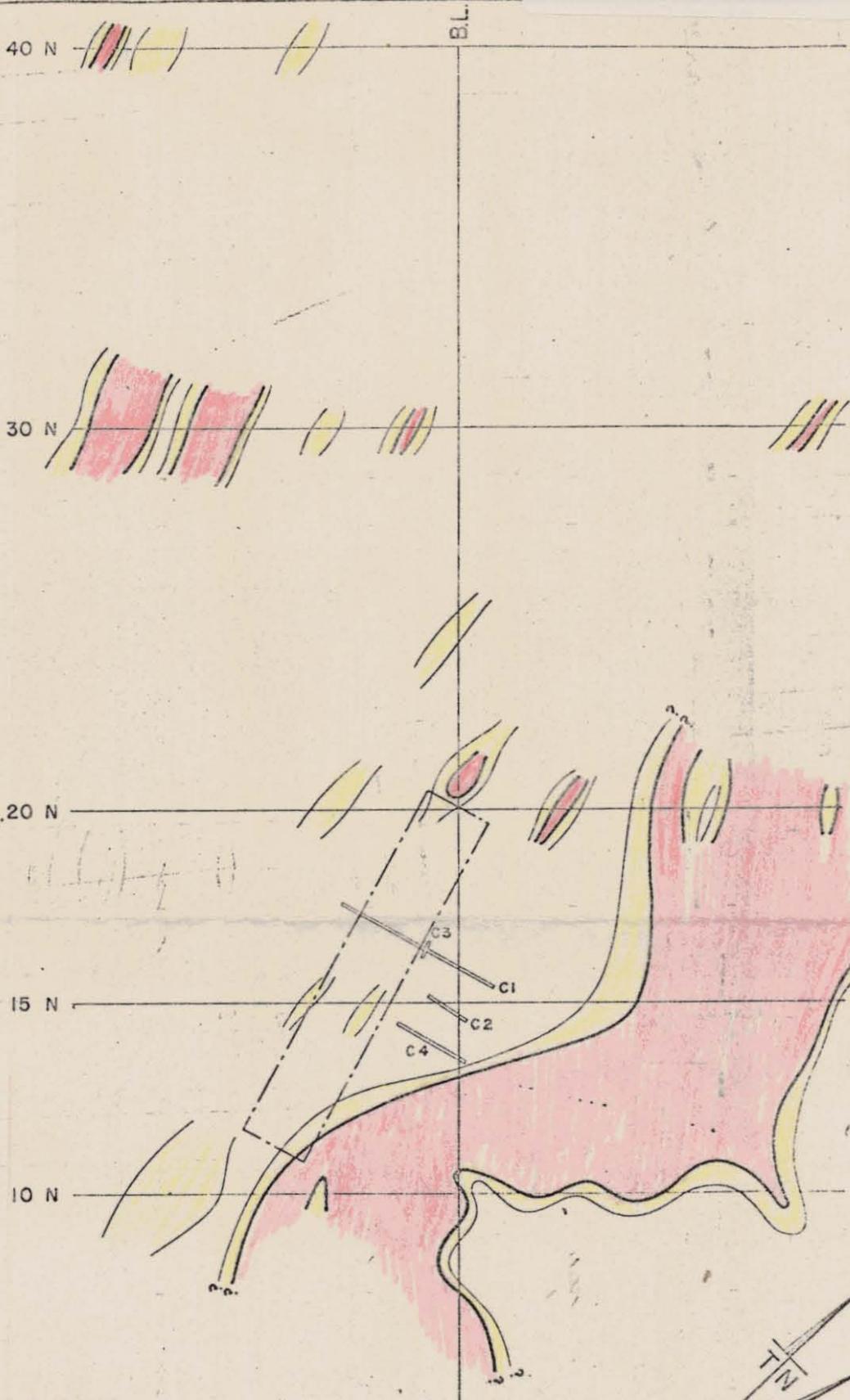


78-1302

Map 3

1870

5 cm



LEGEND

-  100 ppm Sn contour
-  200 ppm Sn contour
-  C1 Trench
-  0.246% Sn extrapolated from trench

224920

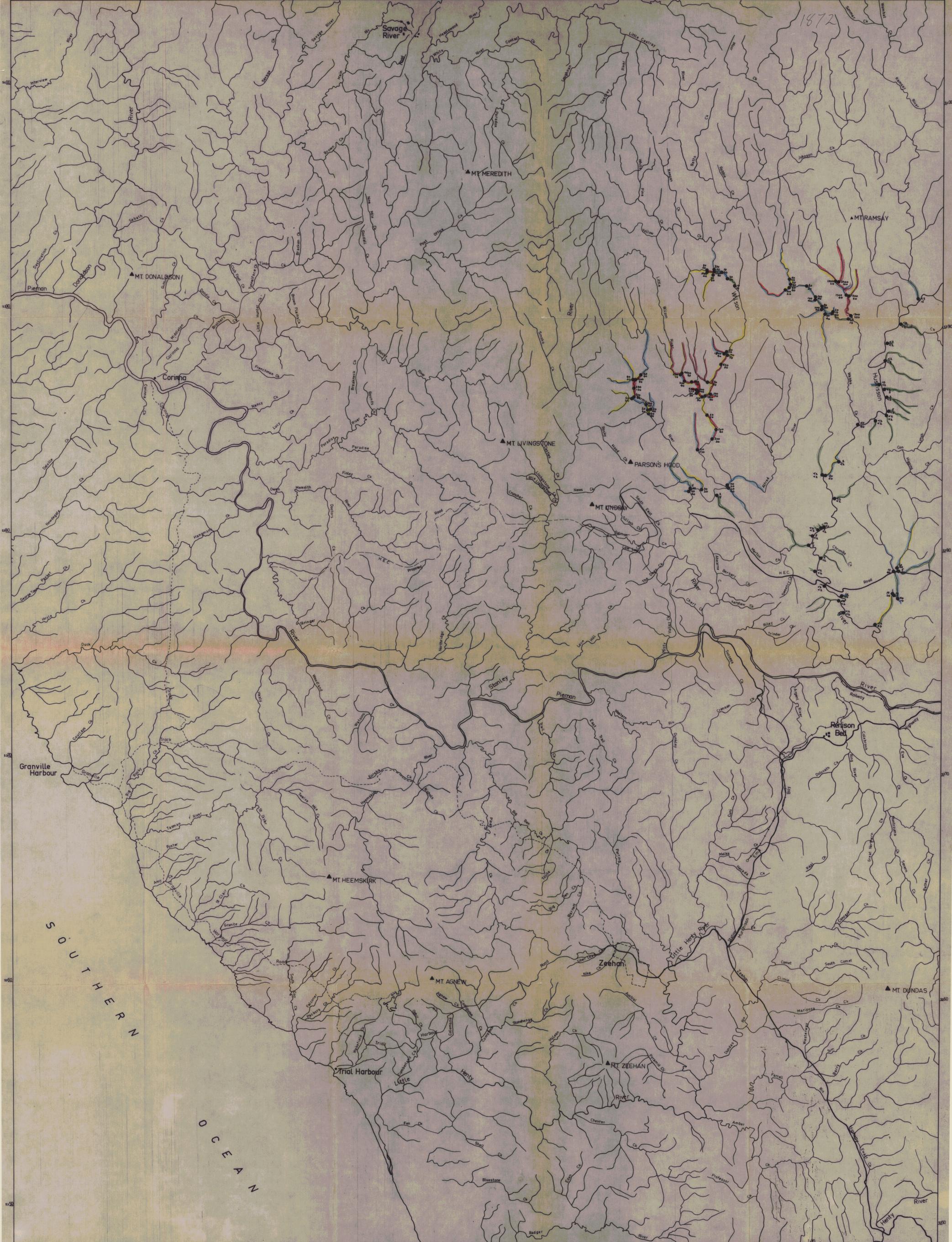
COMSTAFF PROPRIETARY LIMITED			
MEREDITH GRANITE PROJECT			
1972/73 SUMMER SEASON REPORT			
GRID 1, SOIL GEOCHEMISTRY - Sn			
DRAWN MAY 73 <i>R. Paterson</i>	COMPILED G.P.	SCALE 1:5,000	DWG No. TAS-2-472

78-1302

Map 4

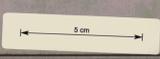
1871

1872



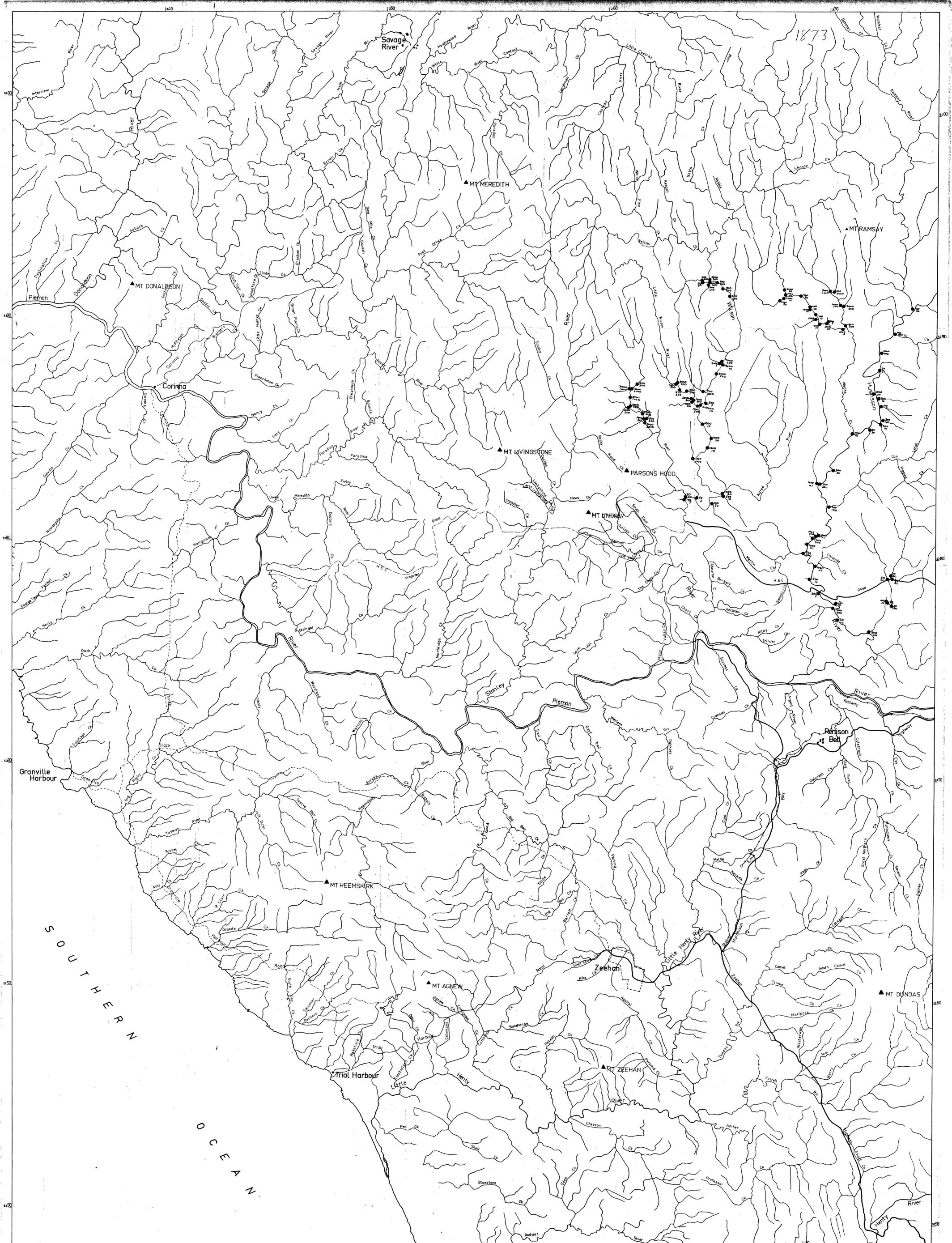
KEY

- River and Stream
- Road and Track
- Sample Location AN.Z. Expl. Co 1976
- Assay Value - Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples.



SANDY CAPE	ARTHUR RIVER	HELLYER
CONICAL HILLS	PIEMAN	SOPHIA
CAPE SURELL	FRANKLIN	

RENISON LIMITED 224021
PIEMAN
GEOCHEMISTRY
 TUNGSTEN (ppmW)
 SCALE 1:50,000 METRES
 DATE
 SCALE 1:50,000
 DRAWING No.
 Map 5



1873

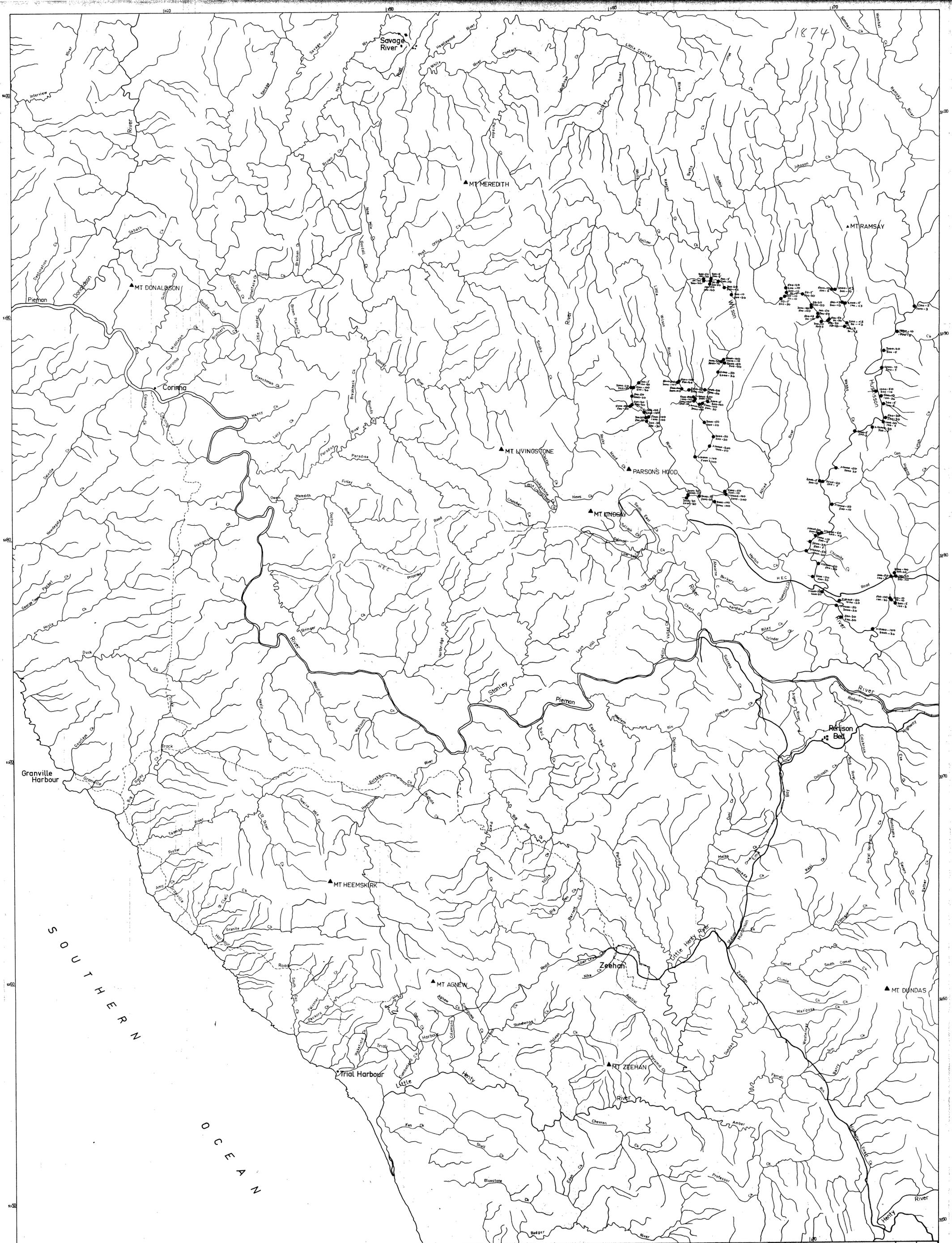
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KEY
 River and Stream
 Road and Track
 Sample Location A.N.Z. Explⁿ. Co 1976
 Assay Value - Semi-Quantitative Emission Spectroscopy
 on Panned and Stream Sediment Samples.

SANDY CREEK	ARTHUR RIVER	HELLYER
CONICAL ROCKS	PIEMAN	SOPHIA
CAPE SORRELL	FRANKLIN	

224022	RENISON LIMITED	DRAWN
	PIEMAN	TRACED
	GEOCHEMISTRY	DATE
	TIN (p.p.m.Sr)	SCALE 1:50,000
	SCALE 1:50,000 METRES	DRAWING No.
		Map 6

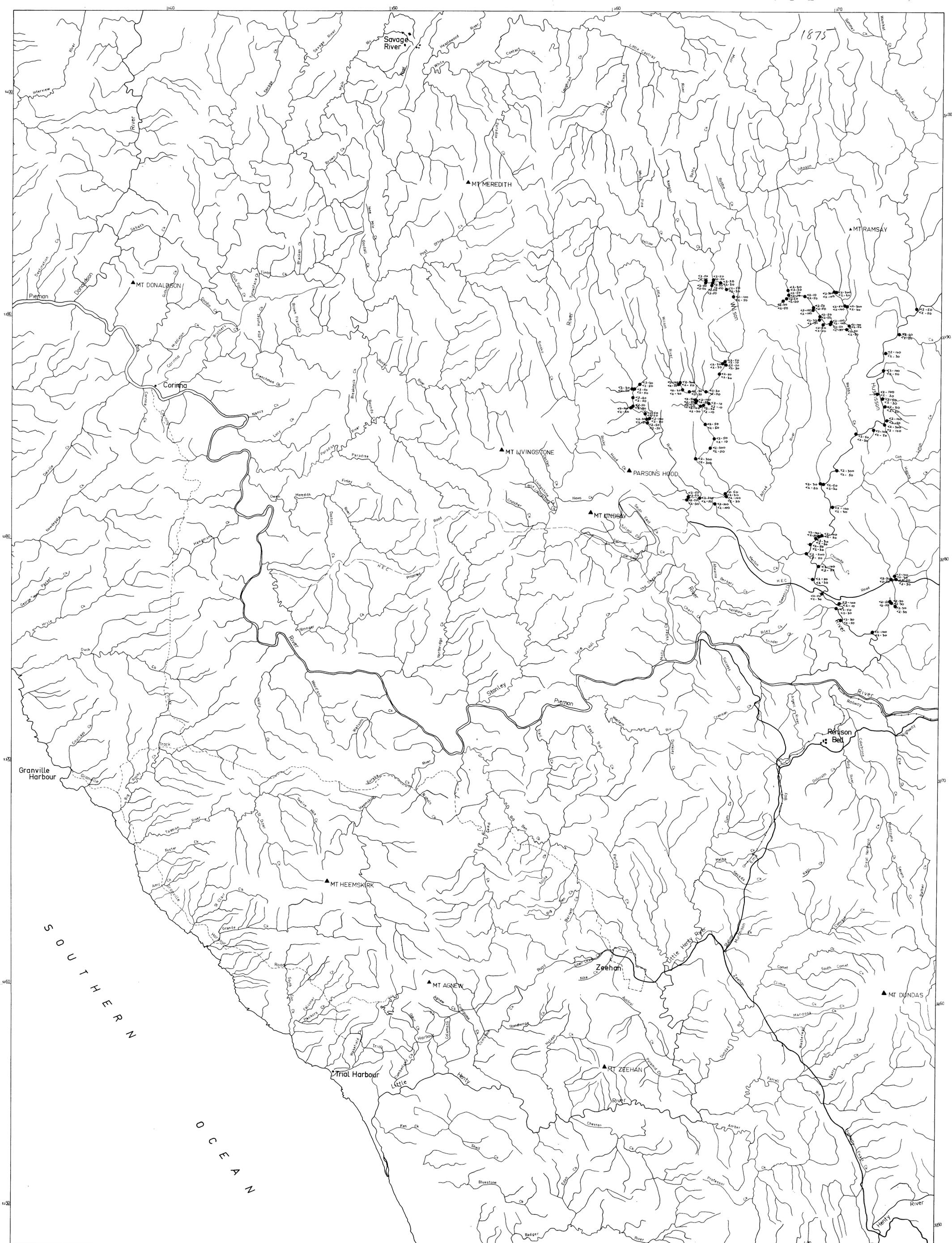


1874

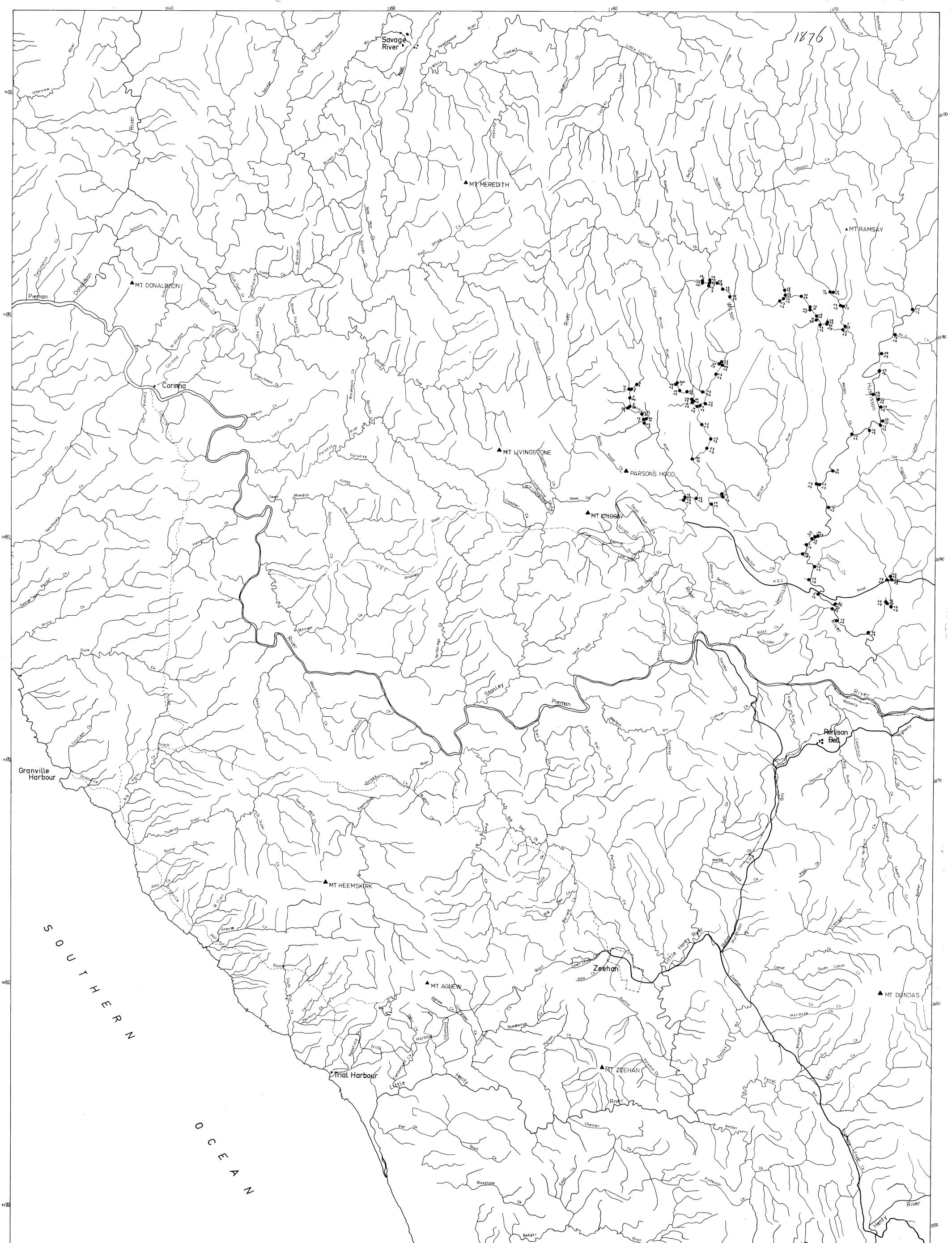
KEY
 River and Stream
 Road and Track
 Sample Location
 Assay Value - Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples.
 Samples assayed for Osmidium and Platinum - all results <10ppm

SANDY CAPE	ARTHUR RIVER	HELLYER
CONICAL ROCKS	SOPIA	FRANKLIN
CAPE SORRELL		

22495 RENISON LIMITED
 PIEMAN
GEOCHEMISTRY
 CHROMIUM (ppm Cr) - NICKEL (ppm Ni)
 SCALE: 1:50,000 METRES
 DRAWN: []
 TRACED: []
 DATE: 78-1302
 SCALE: 1:50,000
 DRAWING No. []
 Map 7



KEY River and Stream Road and Track Sample Location A.N.Z. Expl. Co 1976 Assay Value — Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples.		<table border="1"> <tr> <td>SANDY CAPE</td> <td>ARTHUR RIVER</td> <td>HELLYER</td> </tr> <tr> <td>CONICAL ROCKS</td> <td>PIEMAN</td> <td>SOPHIA</td> </tr> <tr> <td>CAPE SORELL</td> <td>FRANKLIN</td> <td></td> </tr> </table>	SANDY CAPE	ARTHUR RIVER	HELLYER	CONICAL ROCKS	PIEMAN	SOPHIA	CAPE SORELL	FRANKLIN		<table border="1"> <tr> <td>RENISON LIMITED</td> <td>22402</td> <td>DRAWN</td> </tr> <tr> <td>PIEMAN</td> <td>78-1502</td> <td>TRACED</td> </tr> <tr> <td colspan="2">GEOCHEMISTRY</td> <td>DATE</td> </tr> <tr> <td colspan="2">IRIDIUM (ppm Ir) — VANADIUM (ppm V)</td> <td>SCALE 1:50000</td> </tr> <tr> <td colspan="2">SCALE: 1:50,000 METRES</td> <td>DRAWING No.</td> </tr> <tr> <td colspan="2"> </td> <td>Map 8</td> </tr> </table>	RENISON LIMITED	22402	DRAWN	PIEMAN	78-1502	TRACED	GEOCHEMISTRY		DATE	IRIDIUM (ppm Ir) — VANADIUM (ppm V)		SCALE 1:50000	SCALE: 1:50,000 METRES		DRAWING No.			Map 8
SANDY CAPE	ARTHUR RIVER	HELLYER																												
CONICAL ROCKS	PIEMAN	SOPHIA																												
CAPE SORELL	FRANKLIN																													
RENISON LIMITED	22402	DRAWN																												
PIEMAN	78-1502	TRACED																												
GEOCHEMISTRY		DATE																												
IRIDIUM (ppm Ir) — VANADIUM (ppm V)		SCALE 1:50000																												
SCALE: 1:50,000 METRES		DRAWING No.																												
		Map 8																												



1876

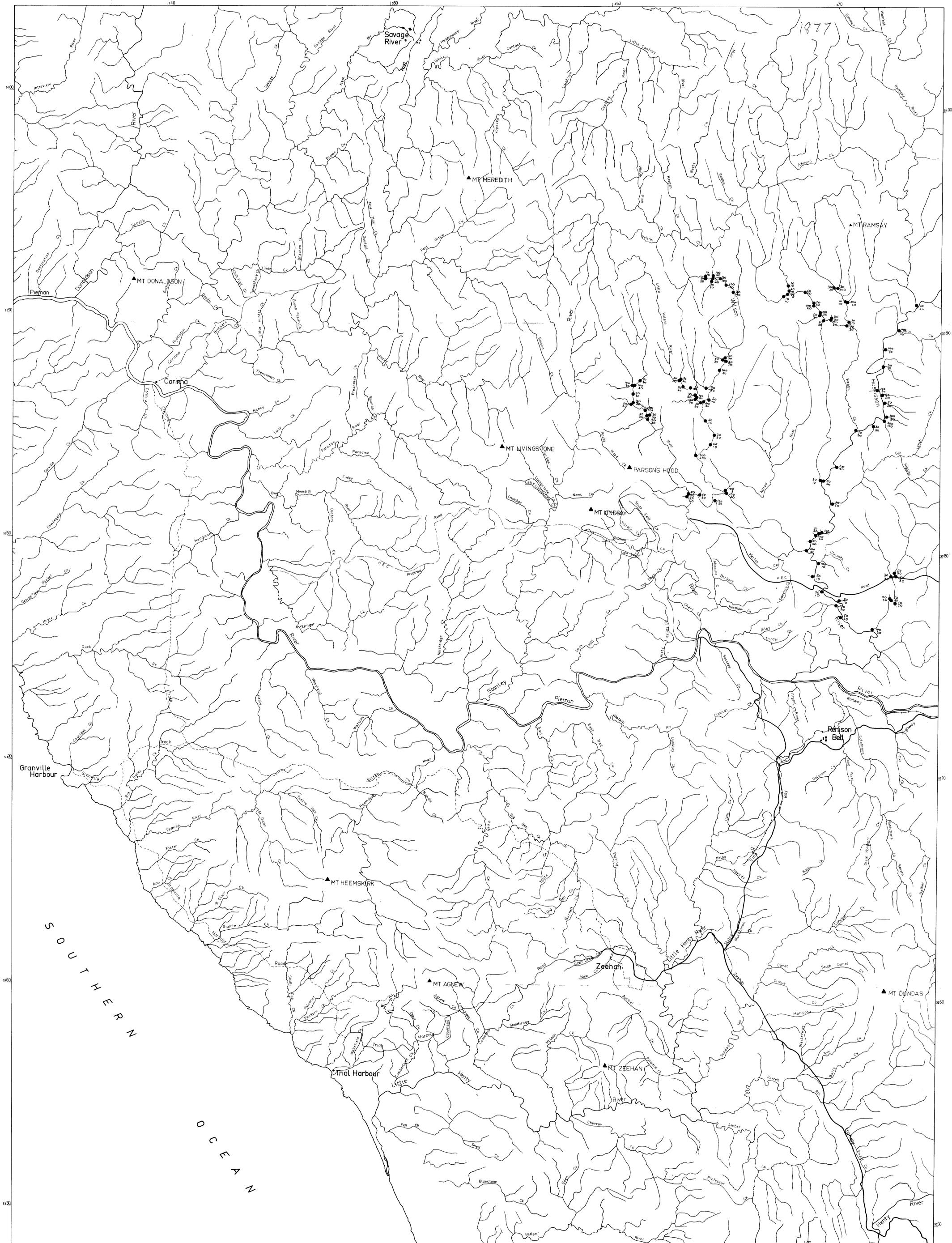
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KEY
 River and Stream
 Road and Track
 Sample Location
 Assay Value - Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples

SANDY CARE	ARTHUR RIVER	HELLYER
CONICAL ROCKS	PIEMAN	SOPHIA
CAPE SORELL	FRANKLIN	

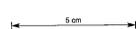
REINSON LIMITED		DRAWN
PIEMAN		TRACED
78-1302		DATE
GEOCHEMISTRY		SCALE 1:50000
MOLYBDENUM (ppm/Mo)		DRAWING No.
SCALE: 1:50,000 METRES		Map 9

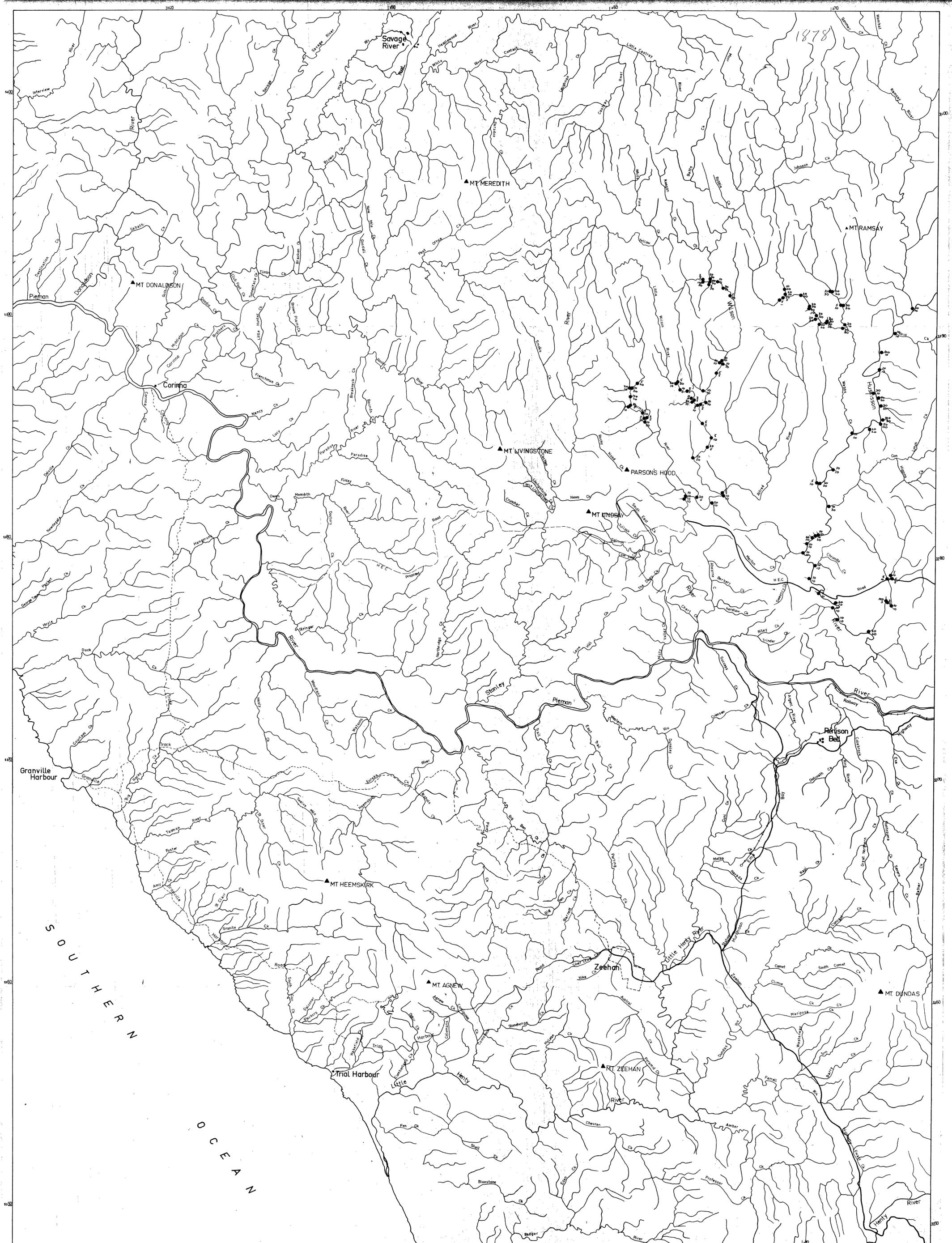


KEY
 River and Stream
 Road and Track
 Sample Location A.N.Z. Expl. Co 1976
 Assay Value — Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples.

SANDY CAPE	ARTHUR RIVER	HELLYER
CONICAL HILLS	PIEMAN	SOPHIA
CAPE SORELL	FRANKLIN	

2240 RENISON LIMITED
PIEMAN
GEOCHEMISTRY
 BISMUTH (ppm Bi)
 SCALE: 1:50,000 METRES
 DRAWN: []
 TRACED: []
 DATE: []
 SCALE: 1:50,000
 DRAWING No. []
 M: 10





1878

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KEY
 River and Stream
 Road and Track
 Sample Location A.N.Z. Expl^o. Co 1976
 Assay Value — Semi-Quantitative Emission Spectroscopy
 on Panned and Stream Sediment Samples



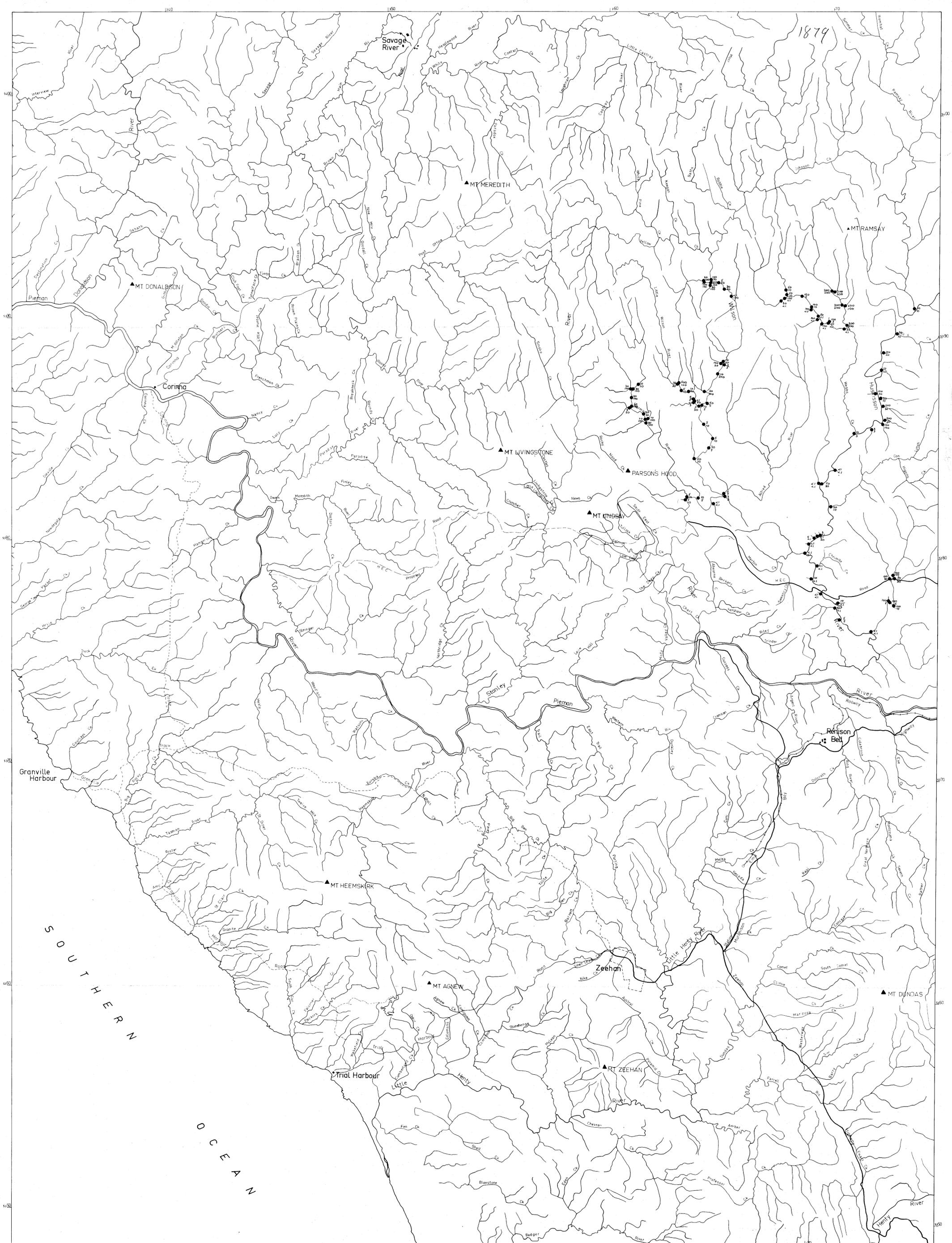
SARDY CAPE	ARTHUR RIVER	HELLYER
CONICAL ROCKS	PIEMAN	SOPHIA
CAPE SORELL	FRANKFURT	

224027 RENISON LIMITED
PIEMAN
GEOCHEMISTRY
 COPPER (ppm Cu)
 SCALE: 1:50,000 METRES
 1980

DRAWN	
TRACED	
DATE	78-1302
SCALE	1:50000
DRAWING No.	

Map 11

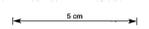
1879

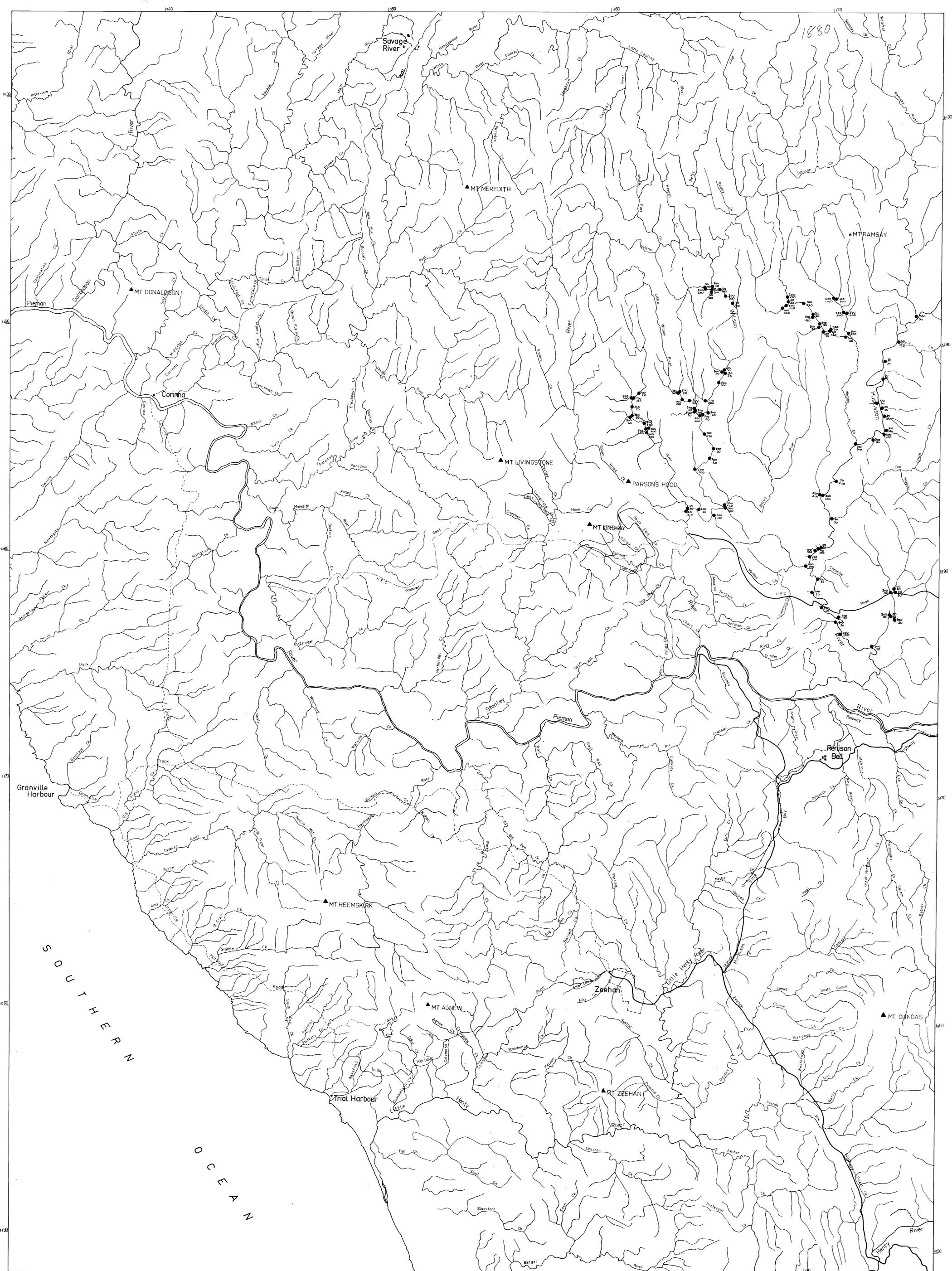


KEY
 River and Stream
 Road and Track
 Sample Location A.N.Z. Expl. Co 1976
 Assay Value — Semi-Quantitative Emission Spectroscopy
 on Panned and Stream Sediment Samples

SANDY CAPE
 ARTHUR RIVER
 CONICAL ROCKS
 HELLYER
 SOPHIA
 FRANKLIN

22402S RENISON LIMITED
PIEMAN
GEOCHEMISTRY
 LEAD (ppm Pb)
 SCALE: 1:50,000 METRES
 DRAWN: []
 TRACED: []
 DATE: []
 SCALE: 1:50,000
 DRAWING No. []
 Map 12





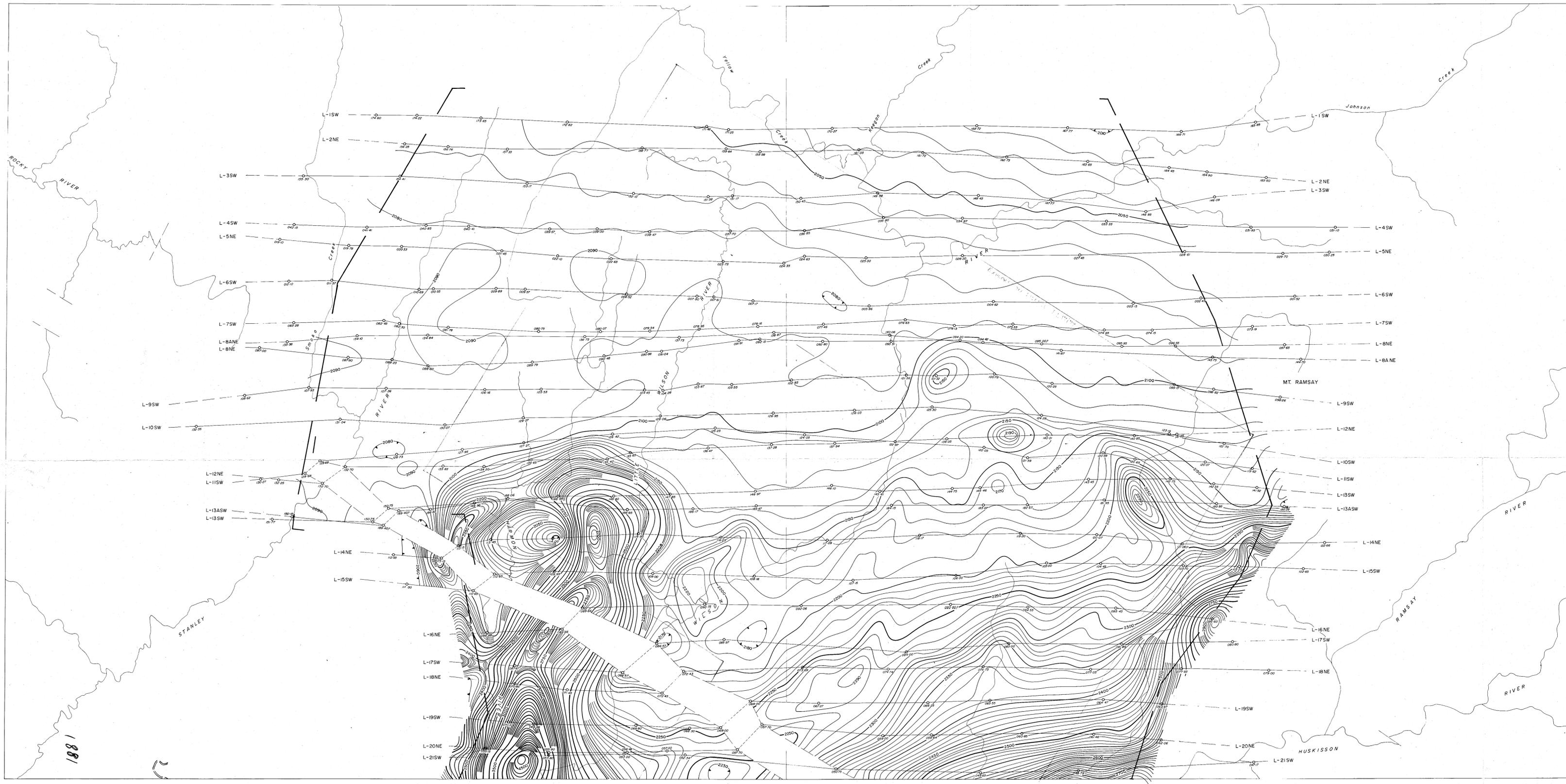
1880

KEY
 River and Stream
 Road and Track
 Sample Location
 Assay Value - Semi-Quantitative Emission Spectroscopy on Panned and Stream Sediment Samples

SANDY CAPE	ARTHUR RIVER	HELLYER
CONICAL ROCKS	PIEMAN	SOPHIA
CAPE SIRELL		FRANKLIN

RENISON LIMITED 22/10/24
PIEMAN
GEOCHEMISTRY
 ZINC (ppm Zn)
 SCALE: 1:50,000 METRES
 1000 1000 2000
 DRAWN: []
 TRACED: []
 DATE: 7/2/2024
 SCALE: 1:50,000
 DRAWING No. []
 Map 13





LEGEND

250 GAMMAS

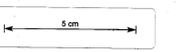
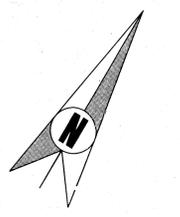
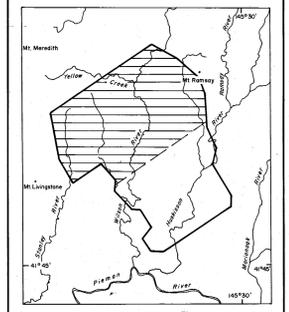
50 GAMMAS

10 GAMMAS

CONTOUR INTERVAL 10 GAMMAS

MAGNETIC LOW

LOCATION MAP
SCALE 1:250,000



COMBINED AIRBORNE EM AND MAGNETOMETER SURVEY
BARRINGER "INPUT" ELECTROMAGNETIC SYSTEM

ISOMAGNETIC CONTOUR MAP

WILSON RIVER AREA
TASMANIA

for 78-1302

RENISON LIMITED

SHEET 1

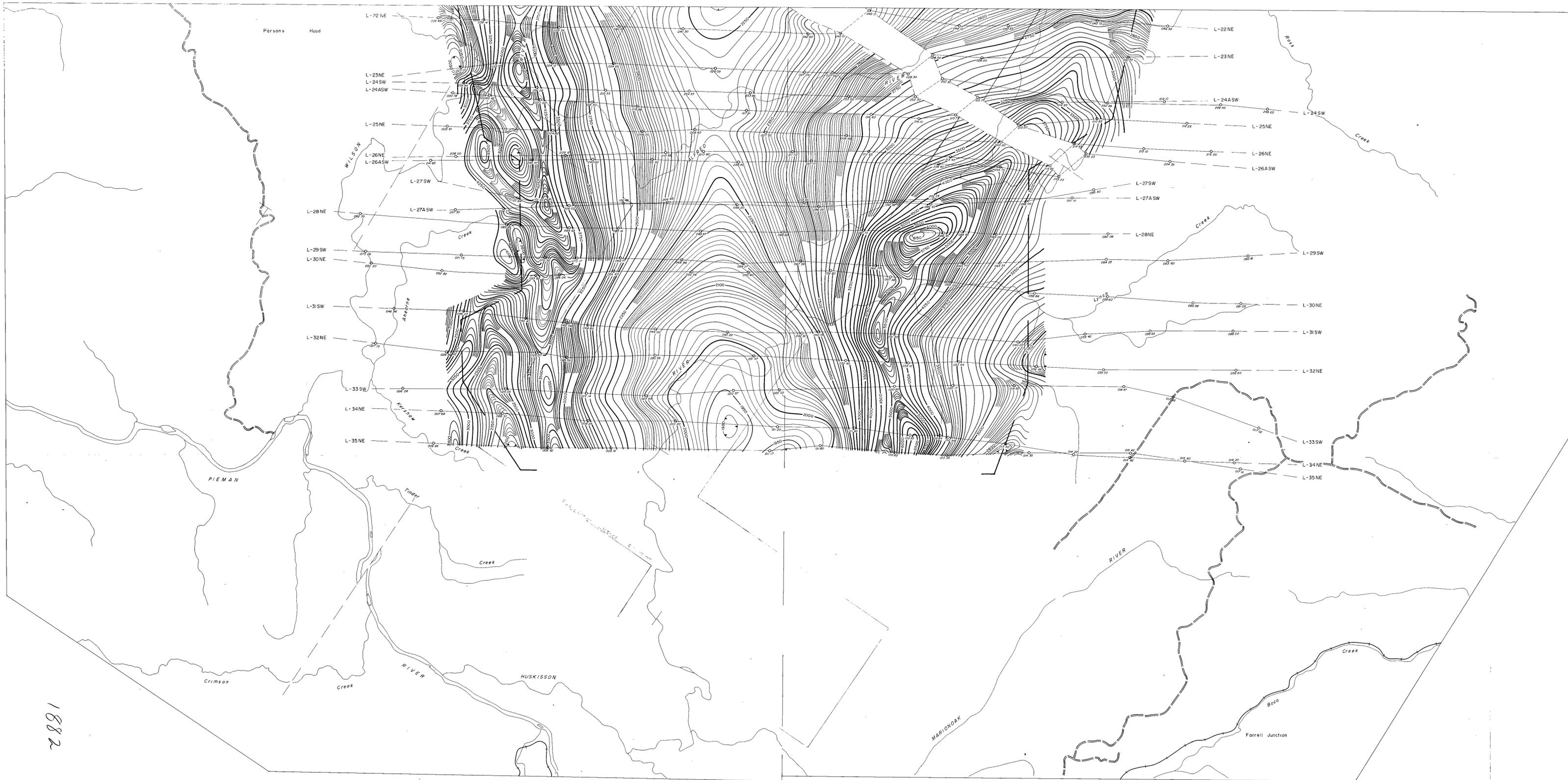
SCALE 1:20,000
0 0.2 0.4 0.6 0.8 1.0
KILOMETRES

geotrex
SYDNEY

FLOWN IN MAY 1978. JOB No 63-283

Map 14a

1881

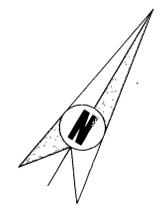
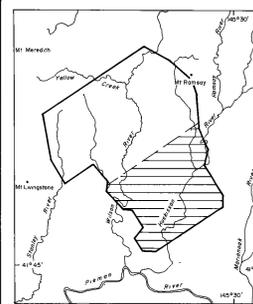


1882

LEGEND

- 250 GAMMAS
- 50 GAMMAS
- 10 GAMMAS
- CONTOUR INTERVAL 10 GAMMAS
- MAGNETIC LOW

LOCATION MAP
SCALE 1:250,000



5cm

COMBINED AIRBORNE EM AND MAGNETOMETER SURVEY
BARRINGER "INPUT" ELECTROMAGNETIC SYSTEM

ISOMAGNETIC CONTOUR MAP

WILSON RIVER AREA
TASMANIA

FOR
RENISON LIMITED

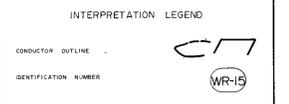
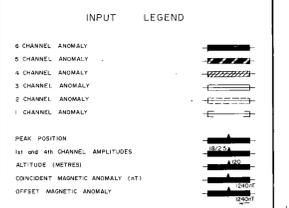
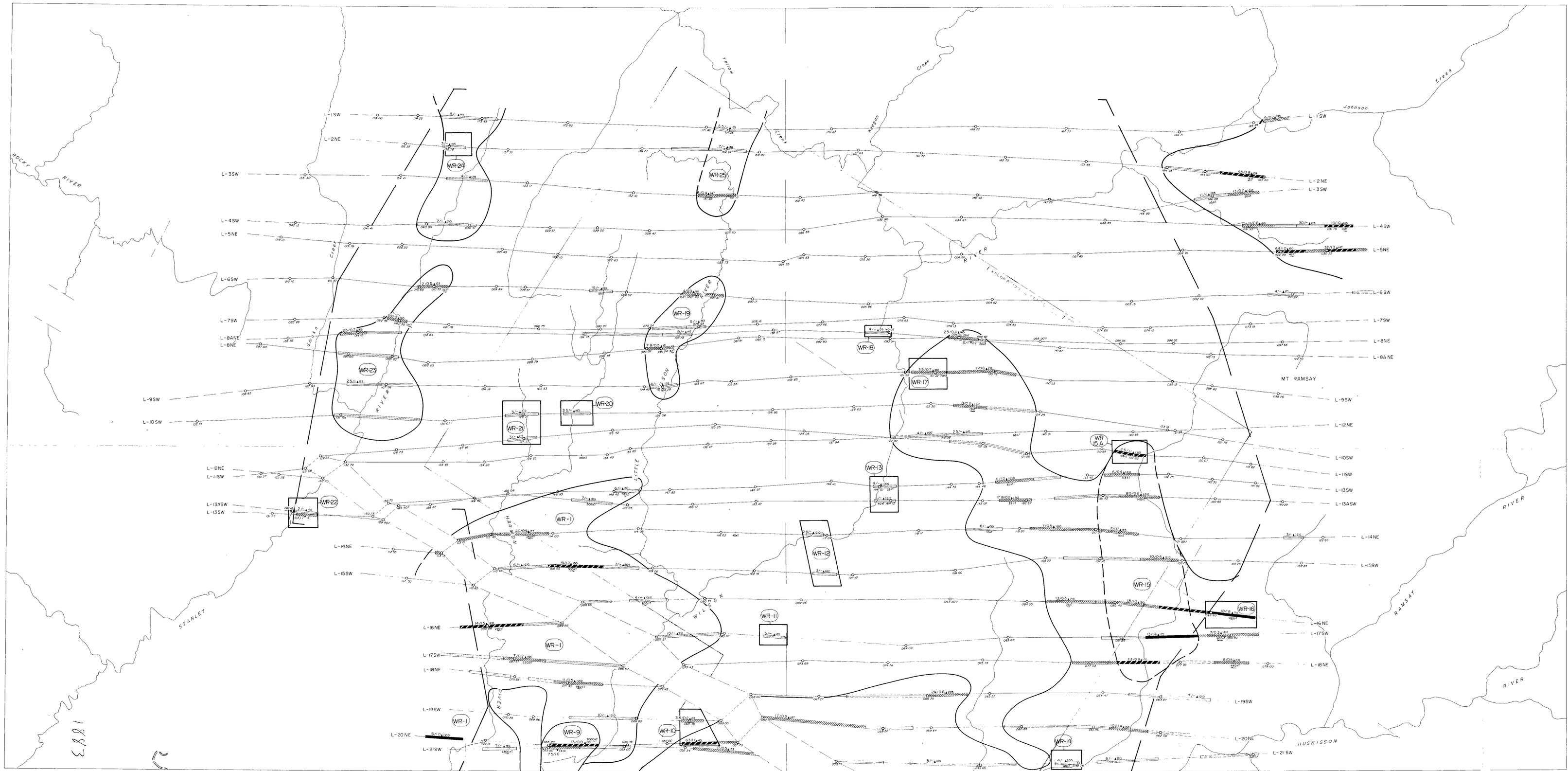
SHEET 2

SCALE 1:20,000
0 2.5 5 7.5 10
KILOMETRES

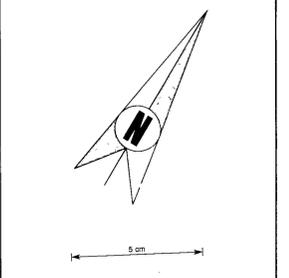
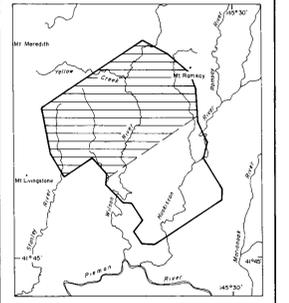


FLOWN IN MAY 1978 JOB No 63-283

Map 14b



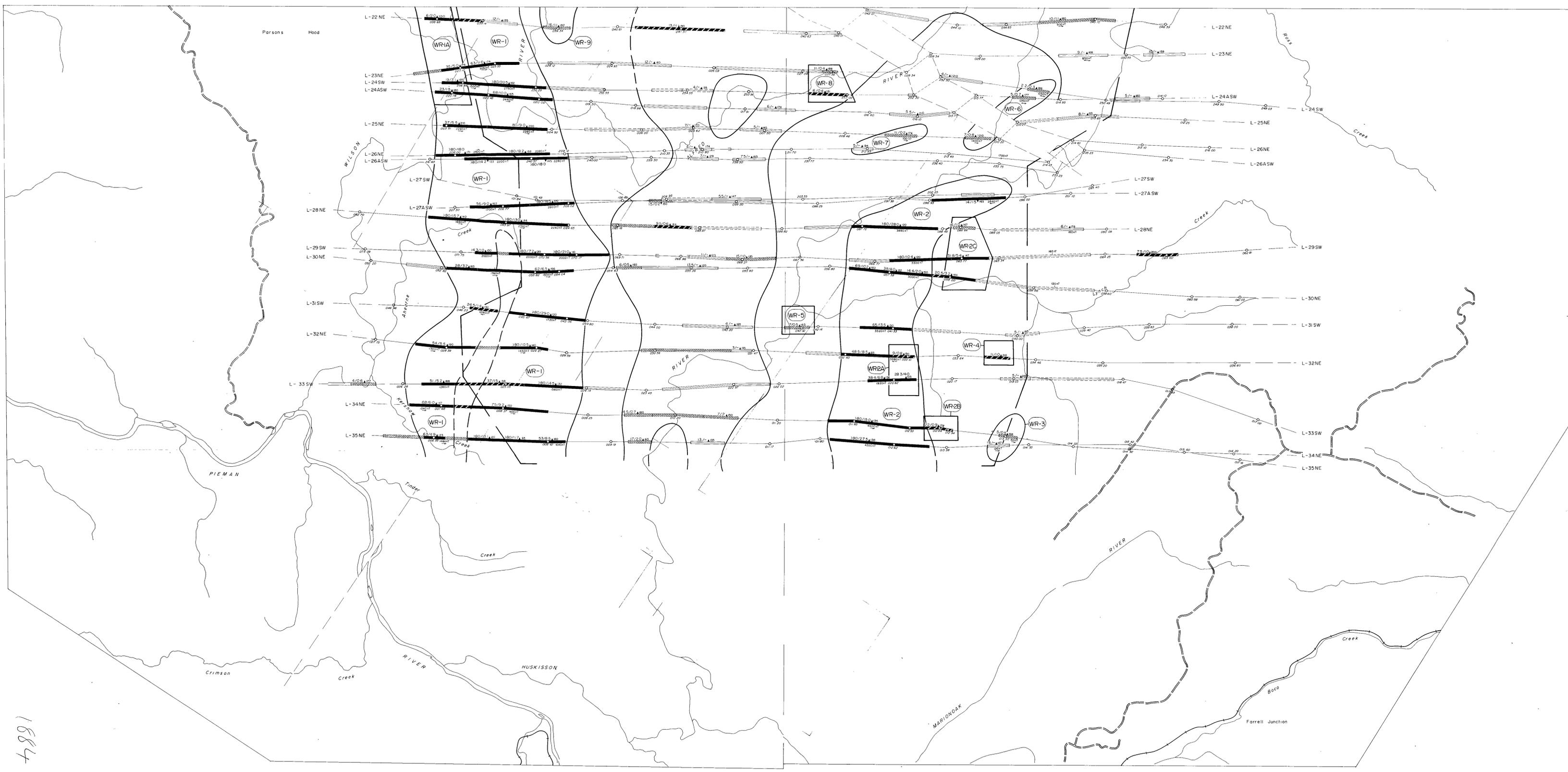
LOCATION MAP
SCALE 1:250,000



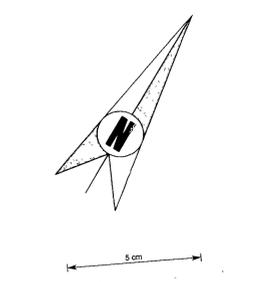
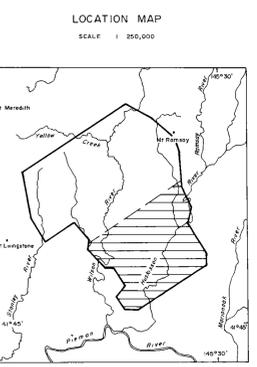
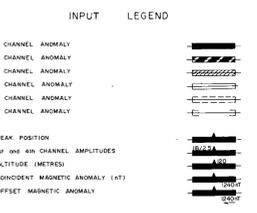
COMBINED AIRBORNE EM AND MAGNETOMETER SURVEY
BARRINGER "INPUT" ELECTROMAGNETIC SYSTEM

EM PLAN MAP
WILSON RIVER AREA
TASMANIA
for 78-1302
RENISON LIMITED
SHEET 1
SCALE 1:20,000
0 0.2 0.4 0.6 0.8 1.0
KILOMETRES
geotrex
SYDNEY
FLOWN IN MAY 1978
JOB No 83-283

1883



1884



COMBINED AIRBORNE EM AND MAGNETOMETER SURVEY
 BARRINGER "INPUT" ELECTROMAGNETIC SYSTEM

E M PLAN MAP
 WILSON RIVER AREA
 TASMANIA
 FOR 78-1302
 RENISON LIMITED
 SHEET 2
 SCALE 1:20,000
 0 2 4 6 8 10
 KILOMETRES

geotrex
 FLOWN IN MAY 1978 JOB No 83-283
 Map 15 b