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REPORT ON THE SURFACE GEOLOGICAL INVESTIGATION

of

EXPLORATION LICENCE AREA 11/67

STOREY'S CREEK-ROSSARDEN AREA, TASMANIA

by

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of

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for

ABERFOYLE MANAGEMENT

April, 1968

AMG REFERENCE POINTS ADDED

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CONTENTS

FIGURES:

MAPS: (In Folder)

I ABSTRACT

This report covers the result of a geological mapping programme in the Storey's Creek-Rossarden area of north east Tasmania.

Of considerable interest is the fact that the Lutwyche zone of fracturing and quartz veining was traced 2500' south-east of Aberfoyle Rivulet, before it became covered with a variable thickness of Permian rubble. One inch to 3 inch quartz veins with cassiterite selvedges outcrop over a combined strike length of 3300' with individual veins dipping south-west between 40° and 70°.

Minor tectonic and sedimentation structures indicate that the Mathinna sediments have been tightly folded along north-westerly trending axes which plunge both north-west and south-east at less than 30°. Minor overturning of bedding planes to the north east has occurred. The regional interpretation suggests that these tight folds represent parasitic folding developed over gentler regional anticlinorium and synclinorium structures.

Surface mineralised quartz veins all belong to the north-westerly trending group that dip variably south-west.

II INTRODUCTION

During the period 19th February to 10th April 1968, the author mapped the approximately 20 square miles covered by Exploration Licence 11/67 on a scale of 1/4 mile to 1". Preliminary mapping was conducted along approximately north-east to south-west traverses except where traverses followed creeks, road cuttings or other major topographic features. The initial traverse interval of 1000' was reduced to 400 feet in areas of denser outcrop and geologically interesting locations.

No underground workings were investigated and old prospects were briefly examined to reveal attitudes of veining, lithology of host rock and presence of mineralisation.

The majority of the time in the field was apportioned to areas of Mathinna Group metasedimentary and Ben Lomond Granite outcrop. Areas of Permian, dolerite talus, and alluvium cover were not examined in detail.

All work by previous geologists, notably Blisset (1959), Davey (1967), and Hopwood and Collins (1967) was consulted during the course of the mapping, but only the results of the present investigation are included in this report and on the accompany maps.

I am indebted to Mr. Krummei, senior geologist at Aberfoyle, for his close supervision of the project and to Mr. Thomson, geologist at Storey's Creek, for his helpful observations and discussions.

(a) Aims

The aims of this project are:

1. To produce a factual outcrop map of the area covered by Exploration Lease 11/67, to provide target areas for further exploratory work involving detailed mapping, geochemical and geophysical surveys and diamond drilling.
2. To map the Mathinna Group metasediments according to the subdivisions suggested by Hopwood and Collins (1967), and to record any minor sedimentary and tectonic structures that might clarify the complex fold system.
3. The record the attitude and thickness of quartz, and any associated mineralisation or alteration within the Mathinna Group metasediments and Ben Lomond Granite.

(b) Methods and Accuracy

The area was mapped on "blown up" serial photographs at a scale of one inch to ½ mile (1:15,840). All bearings were taken by prismatic compass and refer to magnetic north. Inclinations of bedding planes, plunge of fold areas and dip of quartz veins were measured with a clinometer.

At the higher topographic elevations location of outcrop is plotted to within 120' by the method of triangulation. In the valleys and towards the southern and north-eastern boundaries of the map, where photo distortion becomes significant the combined error may reduce the accuracy of location to within 350'.

All bearings have a possible error of $\pm 1^{\circ}$ and all inclinations were measured to within $2\frac{1}{2}^{\circ}$.

The numbering of the location sheet (Map 1) ranges from 1 to 1115 inclusive and corresponds to the numbering in the field notebook and on rock specimens.

For the purpose of this report the township and mine will be referred to as Storey's Creek and the stream itself as Story's Creek.

Thirteen rock specimens, four maps and five diagrams accompany this report.

(c) Outcrop Density

Approximately 1000 outcrop locations were examined in varying degrees of detail over the 20 square miles mapped. Table 1 summarises the approximate percentages the main rock types occupy by area, and the relative proportion of outcrop for each rock type.

TABLE 1

Rock Type	% of 20 sq. miles occupied.	% Outcrop
Dolerite talus and alluvium	10%	0%
Permian sediments	20%	8%
Mathinna Group	35%	17%
Ben Lomond Granite	35%	55%

The figure for the % occupied by the main rock types are estimated from Map 4 and the % outcrop figures from Map 2.

The flat lying Permian sediments occupying the tops of hills are generally covered by a mantle of broken scree and rubble which obscures downslope lithological variations.

The best exposures occur as cliffs high up on the west bank of Aberfoyle Rivulet and at the granite contact just east of the Aberfoyle No. 3 fault.

Good exposures of Mathinna Group metasediments occur on the steep banks and in the beds of Story's Creek, Nisbet Creek and Aberfoyle Rivulet. Other areas of good outcrop include the recent road cuttings and the top of the plateau in the vicinity of Eastern Hill and Lutwyche Prospect (see Map 3).

Noticeable areas of poor outcrop include the flat-lying, poorly-drained Burn Marsh and the areas just west and south-east of the Mammoth prospect. The gentle slopes e.g. Eastern Hill to the Rossarden-Storey's Creek road, are covered with a variable thickness of soil and clay strewn with quartz and Mathinna rubble.

In the immediate mine and township localities outcrop has been obscured by tailings and slime dumps. The tailings from Aberfoyle mine have been extensively used as a base for forestry department tracks. Such contamination must be allowed for in any intended geochemical or geophysical surveys.

The Ben Lomond Granite has a semi continuous outcrop pattern, with prominent cliffs along creek banks and fault scarps. Colluvial overburden is generally shallow (max 20').

III STRATIGRAPHY

(a) Mathinna Group

The Mathinna Group metasediments of probable Silurian age (Cookson 1936), represent the oldest rocks in the area. Regional trends in the interbedded arenaceous and argillaceous units are north westerly with steep dips to the south-west and north-east. A number of sedimentary structures are exposed in the better outcrops in Story's Creek and Aberfoyle Rivulet.

Regional and contact metamorphic effects due to intrusive granite belong to the quartz-albite-epidote subfacies to the Greenschist facies.

(i) Lithology

Lithologically the Mathinna Group has been subdivided into quartzite, quartz rich psammopelite, psammopelite and pelite (slate) (Hopwood and Collins 1967). These four major lithologies are recognisable in field outcrop mainly by their hardness, grainsize and percentage of quartz.

Rapid changes in lithology across the north-westerly strike indicate that individual quartzite and psammopelite beds have an average thickness of two to three feet. In the thicker quartzite units individual bedding planes cannot be distinguished, but jointing sub-parallel to the bedding gives an approximate strike direction.

One such quartzite unit exposed on the west bank of Story's Creek 300' south of its junction with Nisbet Creek (Loc. 420-421) is over 250' thick.

The average thickness of slate beds is three to four inches. They occur as fissile bands interbedded with predominantly quartzitic or psammopelitic horizons. On the south bank of Nisbet Creek the slate bands are so closely spaced as to form the predominantly lithologic unit with quartzite and psammopelite as minor interbedded bands and lenses.

This predominantly slaty unit can be traced for half a mile along strike and then grades into a psammopelitic unit towards the south-east.

As the scale of the mapping is too small and outcrop too sparse to plot individual beds all outcrops have been classed as belonging to one of the six following lithologic units:

1. Quartzite
2. Psammopelite
3. Slate
4. Quartzite and interbedded slate
5. Quartzite and interbedded psammopelite
6. Psammopelite and interbedded slate

The width of such units may vary from tens to hundreds of feet, but have an average width of 200 to 300 feet.

(ii) Sedimentary Structures

Recognition of graded bedding, current bedding, load casts, convolute bedding, flame structures and intrastratal breccias is possible only in the better exposed outcrops occurring in the central and upper reaches of Story's Creek and Aberfoyle Rivulet.

Facing data is best obtained by taking graded bedding in conjunction with micro-current bedding. Only a limited number of such determinations could be made but the majority of beds measured faced the right way up. Overturning to the north-east occurs in an interbedded quartzite-psammopelite sequence at location 281 where load cast and flame structures of psammopelite in quartzite indicate the degree of overturning.

At location 247 on the east bank of Story's Creek, rounded and drawn out pieces of slate are set in a fine quartzitic matrix. The rock probably represents a former intrastratal breccia indicating that changes of lithology along strike within a bed or unit do occur.

(iii) Metamorphism

Regional metamorphism associated either with the period of intense folding or due to the intrusion of the granite is responsible for the production of slates and phyllites from the pelitic assemblages. The occurrence of minor chlorite, sericite and epidote indicates that the degree of regional metamorphism is extremely low.

The narrow zone of hornfels produced along the margins of a psammopelitic roof pendant at location 299 is probably the only indisputable effect of the contact metamorphism associated with the intrusion of the granite.

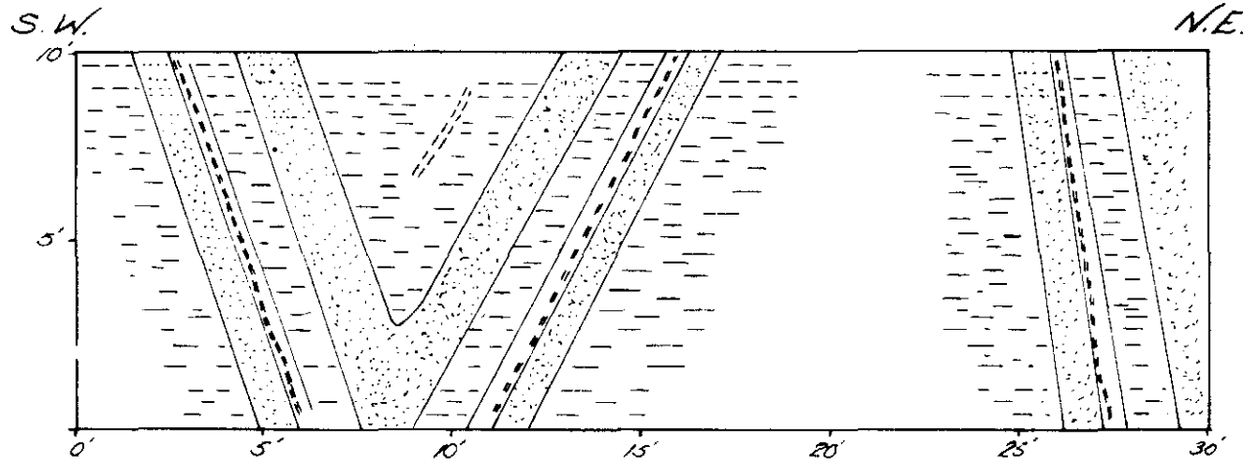
Spotting, although more intense along the Mathinna - granite contact, was found to be sporadically developed (see Map 2) in pelitic and psammopelitic assemblages. The spots appear to be due to the alteration of fine biotite and hematite, leaving a limonitic stain. The widespread locations and the predominantly pelitic assemblages in which spotting was found suggests that the origin of the spots is probably a combined effect of original mineralogical composition and metamorphism, both regional and contact, associated with the intrusion of the granite.

(iv) Major Structures

The strike of the bedding planes vary from 295° to 355°, but the predominant trends range between 310° and 330° magnetic. The only regional trend to come out of the mapping is a 30° swing in strike from 320° in the southern extension of Aberfoyle Rivulet to 350° in the vicinity of Aberfoyle Mine. North and west of Aberfoyle the strikes retain their predominant 310° to 330° trend.

The beds rarely dip less than 50° and more usually dip between 65° and 85° to the north-east and south-west. The rapid alteration in the direction of dip as seen in cliff faces and road cuttings (Fig. 1) indicates that the Mathinna metasediments have been tightly folded along north-westerly trending axes. The amplitude of the folding has been measured at 25' with a wavelength of approximately 30'. From the underground measurements of folding in Story's Creek Mine the figures quoted above probably represent the minimum amplitude and wavelength obtained in the Mathinna metasediments.

Fold axes plunge from 5° to 30° north-west in outcrops along Nisbet Creek and the Lutwyche line of fracturing but plunge up to 30° south in the central strip, notably in the outcrops on Eastern Hill.



VERTICAL SECTION LOC.38

Showing style of folding in an interbedded sequence of quartzites, psammopelites and minor slates. Fold axis plunges 10° in a direction of 300°.

Amplitude of folding ~ 24'

Wavelength of folding ~ 28'

Scale : 1" = 5 feet

5 cm

Slaty cleavage is well developed in the peletic beds. Strike of cleavage may be parallel to the strike of bedding, but generally deviates from it by up to 40° to the north-east. Dip of slaty cleavage is invariably steeper than dip of the bedding planes.

The cross-sections A-B and C-D (figs. 2 and 3) show the difficulty in interpreting the rapid variations in lithology, both along strike and with depth. Although not discernible from surface outcrop it is expected that the synclinal structures shown in the cross sections consist of a tightly folded sequence of beds, probably on a similar scale to the folding shown in Fig. 1.

Both sections show a series of shallow easterly dipping quartzites and slates on the east side of Story's Creek. These beds cannot be correlated with the steeply dipping massive quartzites and psammopelites on the west bank unless some thrust or transcurrent movement is envisaged. It seems probable that some dextral displacement has occurred along a fault or shear zone situated along the line of the creek.

(b) Ben Lomond Granite

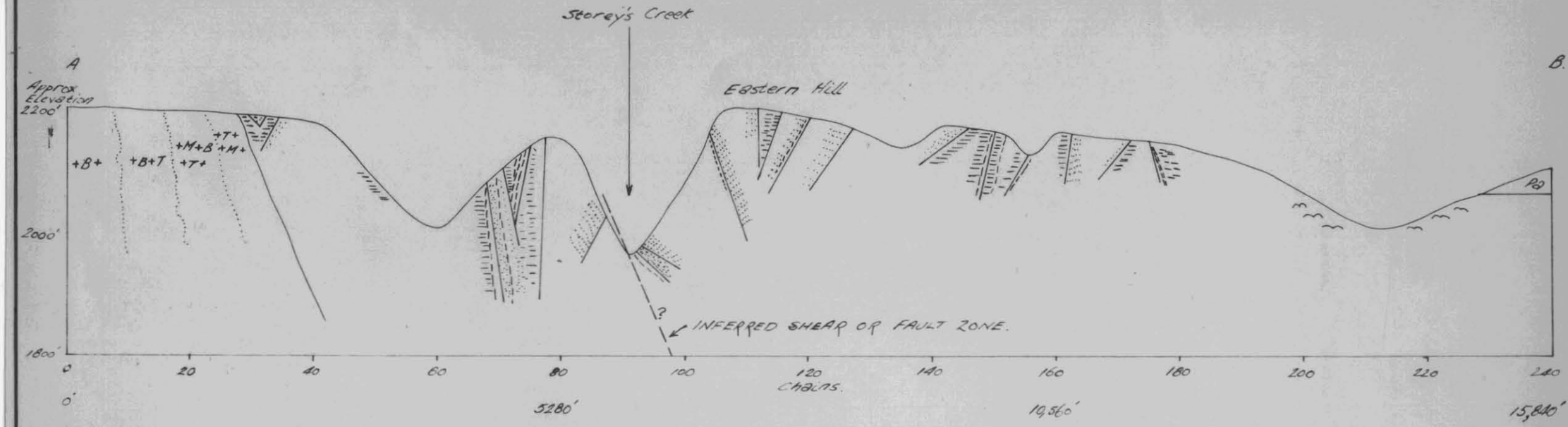
The Ben Lomond Granite has a semi-continuous outcrop pattern in the western and southern margins of the Exploration Licence. The main granite block has a variable range in grain size and abundance of minor elements but appears to have a uniform composition and degree of alteration.

Map 2 shows the position of the outcrops that are predominantly porphyritic in quartz and feldspar and the location of the tourmalinised zones with relative abundance of muscovite and biotite. Granodioritic segregations and pegmatite veins are also shown.

The dip of the Mathinna-granite contact appears to be steeper along the north-south contact east of the Storey's Creek road than at the Rossarden bridge where it dips north at 35°.

(i) Mineralogy

The course grained and porphyritic varieties have euhedral phenocrysts of feldspar up to two inches across (orthoclase?) and anhedral quartz grains set in a finer grained mass of quartz and feldspar with up to 7% biotite and/or muscovite and tourmaline.

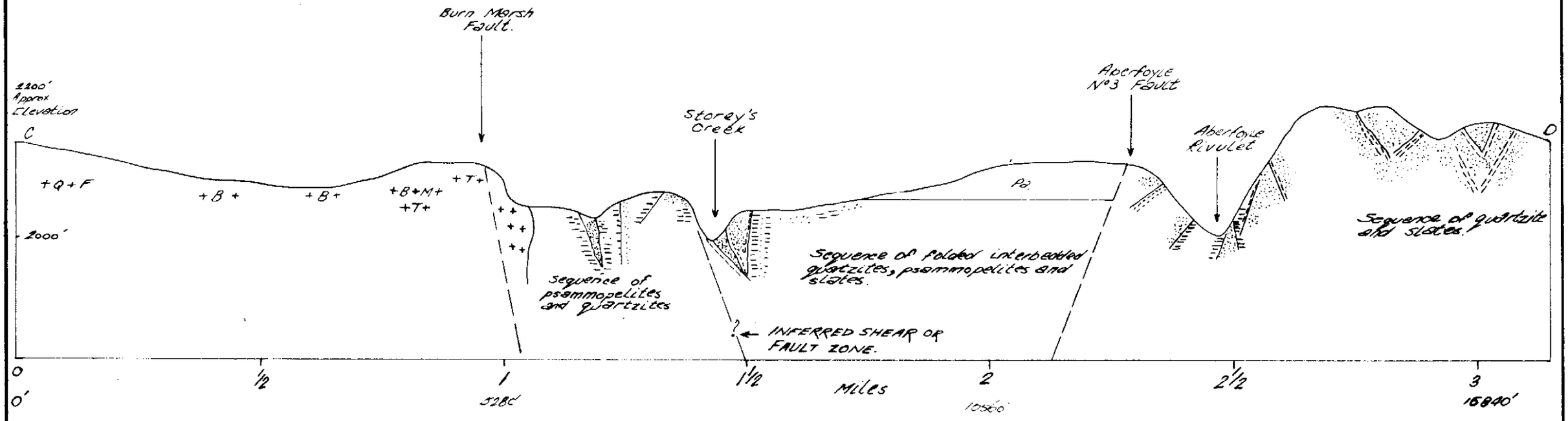


DIAGRAMMATIC CROSS-SECTION AB (SEE MAP 2)

Scale 1" = 1/4 mile

For legend : (see map 2)

5 cm

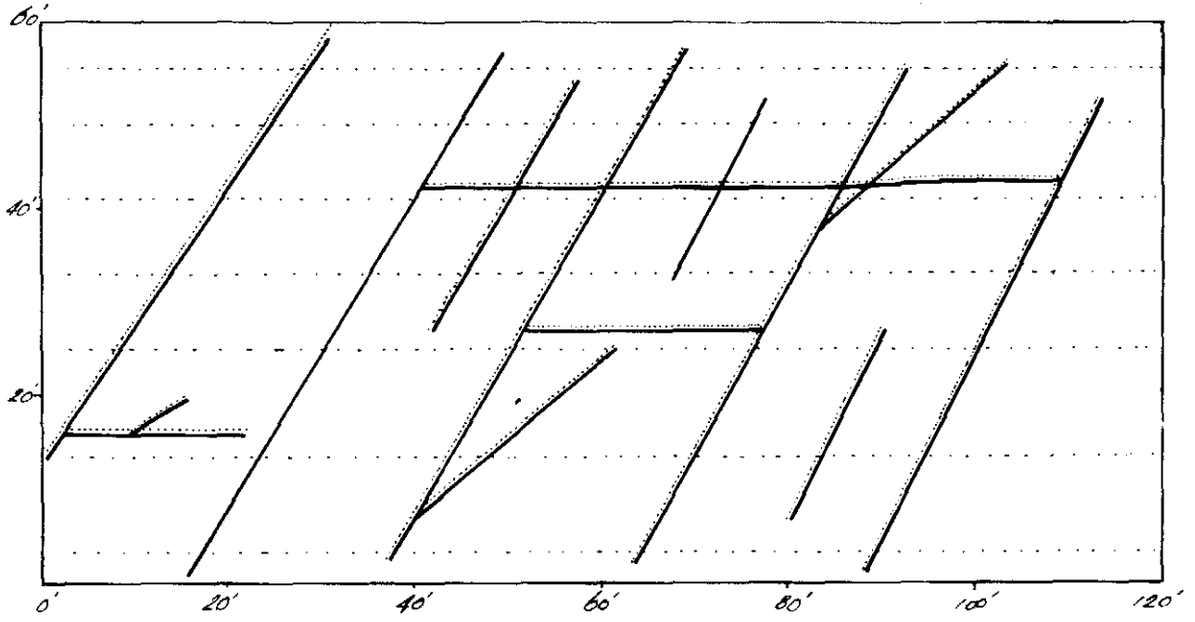


DIAGRAMMATIC CROSS—SECTION CD (SEE MAP 2)

Scale 1" = 1/4 mile

For legend : (see map 2)

5 cm



VERTICAL SECTION LOC.240

Showing joint controlled barren quartz veining in quartzite.

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The degree of tourmalisation becomes more intense towards the north-south contact with the Mathinna sediments. As the intensity of tourmalinisation increases the amount of muscovite increases and biotite decreases.

The greyish black hornblende? biotite granodioritic segregations are easily distinguished from the pinkish cream granite, but in situ, outcrops of the former are small and poorly exposed.

Pinite, fluorite and occasionally traces of sulphide (pyrite) make up the minor accessories.

(ii) Pegmatites and Veining

Irregular pegmatitic veins and coarse grained segregations rarely exceed eight inches in width. They consist of quartz-tourmaline, quartz-feldspar-tourmaline and quartz-muscovite-tourmaline in varying abundance. No tin-tungsten mineralisation was found to be associated with these pegmatite segregations or with the locally more abundant quartz-tourmaline and muscovite tourmaline clots.

Unmineralised fine grained granitic dykes intrude the coarser granite at the Mathinna-granite contact in Story's Creek and at the Tasmanian United Uranium Prospect.

(iii) Zoning

No definite zone boundaries can be delineated but an increase in the degree of tourmalinisation associated with an increase in muscovite and decrease in biotite is responsible for mineralogical zoning approximately parallel to the north-south Mathinna-granite contact.

Where the Mathinna-granite contact crosses Misbet and Tasmania Creeks the marginal variety of the granite is finer grained, but where the contact outcrops in Story's Creek the granite is feldspar porphyritic.

(iv) Alteration

Surface outcrops of granite are everywhere decomposed and the decomposition is due to the combined effects of sericitisation, greisenisation weathering and kaolinisation. The feldspar phenocrysts are creamy-white and brittle indicating incipient sericitisation.

Greisenisation, the process of pneumatolytic alteration due to the interaction of mineralising fluids on the host rock, does not appear to have gone to completion. The mineralising fluids, as evidenced from the abundance of tourmaline and lack of fluorite, must have been boron rich. Chemical interaction broke down the feldspar to form pinite and favoured the production of muscovite from biotite. Tourmaline crystallised from

the predominantly boron rich fluids.

The effects of kaolinisation and weathering were induced later by circulating meteoric waters and the elements of erosion.

(v) Structure

The main structural feature of the granite is its joint system. Narrow zones of closely spaced foliation surfaces occasionally occur and probably represent minor shear zones. No mineralogical banding or foliation is produced.

The dominant joint direction trends 320° and a lesser set is developed at 290°. Near surface horizontal joints are probably exfoliation surfaces.

(c) Permian

Permian sediments unconformably overlie the Mathinna Group metasediments in the north-east and east of the area mapped and cover extensive areas of the granite and granite-Mathinna contact in the south.

The individual lithologic horizons (Table 2) vary in thickness from place to place and individual horizons may not be developed at all in some areas. The maximum thickness of Permian cover in the area mapped appears to be of the order of 500'.

TABLE 2.

Lithology	Description
Prospect Creek Mudstone	Cream, cherty mudstone
Mistletoe Sandstone	Pale grey, fossiliferous
Burnt Cully Limestone	Grey, fossiliferous
Castle Carey Mudstone	Creamy fissile mudstone
Aberfoyle Formation	Basal conglomerate, quartz grits, pebbly sandstone, pebbly mudstone.

The Permian beds are horizontal or dip at less than 5° north. The outcrop extent as shown on Map 4 is somewhat different from Blisset's map and was plotted by considering predominant rubble type as well as in situ material. A more accurate lithologic subdivision could probably be obtained by replotting the outcrop data onto accurate contour base maps.

The basal conglomerate member of the Aberfoyle formation contains rounded blocks, boulders and pebbles of Mathinna Group metasediments, quartz, granite and aplite (loc. 649).

(d) Tertiary and Quaternary

Boulder beds up to 6' thick of probable Tertiary age occur in the middle reaches of Story's Creek and the upper reaches of Mistletoe Creek. Thicker deposits of alluvium occur in Aberfoyle Rivulet just north and south of its junction with Mistletoe Creek and in the central part of Story's Creek.

(e) Intrusives

Jurassic dolerite talus slopes extend from the Ben Lomond Plateau to cover the north-western portion of the area mapped. At location 122 a 15' dyke of fine grained, manganese stained dolerite probably represents an off-shoot from the main sill feeder.

IV STRUCTURE

(a) Folding

The Mathinna Group metasediments form a tightly folded sequence whose axial planes strike between 315° and 335° with dips steeply south-west and north-east. The minimum amplitude and wavelength of folding (Fig. 1) is respectively 25' and 30'. The fold axes plunge at less than 30° to the north-west and south-east. Overturning of bedding planes to the north-east was recorded near the granite contact in Story's Creek, but does not appear to be as common as suggested by Blisset (1959).

Although the change in the style of folding with depth could not be determined the zones of repeated similar lithologies shown on Map 4 may represent regionally gentler folds on which the tightly folded parasitic structures were developed.

(b) Faulting

The major faults shown on Map 2 were recorded only where surface evidence such as down faulted Permian sediments, granite brecciation (Specimen G.B.) or fracturing and silicification (loc. 915) can verify their existence. The interpretation sheet (Map 4) shows their

probable extent as inferred faults.

The main fault structure in the area is the down faulted Aberfoyle trough. The trough is bounded by the Burn Marsh Fault on the west, Aberfoyle No. 3 Fault to the east, Kookaburra Fault on the north and the inferred extension of the Egan Creek Fault to the south.

The survey did not include the measurement of elevation, making actual vertical displacements difficult to estimate. The order of magnitude however appears to be between 200 and 500 feet.

The north-easterly trending Burn Marsh and Aberfoyle No. 3 Faults dip steeply towards the centre of the trough (Fig. 3) making the region a normal block-faulted area. The north-easterly Kookaburra fault dips steeply north, but no evidence for the other two major north-westerly trending faults inferred by Blisset (1959), could be found.

Minor north-westerly trending strike faults with dextral movement of up to six feet, occur in Story's Creek.

(c) Jointing and Fracturing

Jointing and fracturing is generally well developed in the quartzite beds and units. Major joint trends are sub-parallel to bedding planes. Where the joint surfaces are widely spaced (Fig. 4) fracturing is generally minor and the joint planes may or may not contain barren quartz veins.

In closely jointed quartzitic units, fracturing is more pronounced and any associated quartz veining does not appear to be joint controlled. The Lutwyche and Rifle Range prospects occur in such zones of close jointing and intense fracturing.

V QUARTZ VEINING AND MINERALIZATION

(a) In Mathinna.

The outcrop distribution of quartz veins is centred about two main areas. The first lies south and south-east of Storey's Creek mine and the second lies north and north-east of Aberfoyle Mine (see Map 3).

The quartz veins plotted on Map 3 can be seen to trend in two main directions. The north-westerly trending set consists of quartz veins whose strikes vary from 295° to 360° with the majority dipping south-west from 30° to 75°. The north-easterly trending set consists of veins with strikes ranging from 20° to 90° and dipping both north-west and south-east from 35° to 65°.

Figure 5 is a Schmidt polar projection of 100 quartz veins belonging to both the above groups. It shows that the greatest concentration of quartz veins and all mineralised quartz veins, investigated in surface outcrop, (dashed line in Fig. 5) belong to the north westerly trending set with dips to the south west.

The average width of quartz veins in outcrop is two to three inches and rarely exceeds eight inches.

(i) Lutwyche Prospect

The area outlined as Lutwyche Prospect on Map 3 consists of a fractured quartzite zone containing a series of tin tungsten mineralised quartz veins striking from 310° to 330° and dipping south west from 40° to 75°. It also includes the Kookaburra line of fracturing.

Specimens 256, 334 and 335 contain wolfram and cassiterite mineralisation as it occurs in situ on the west bank of Aberfoyle Rivulet. Specimens 356 and 356A contain cassiterite crystals up to 2 mm as selvedges in 2 inch quartz veins from the east bank of Aberfoyle Rivulet.

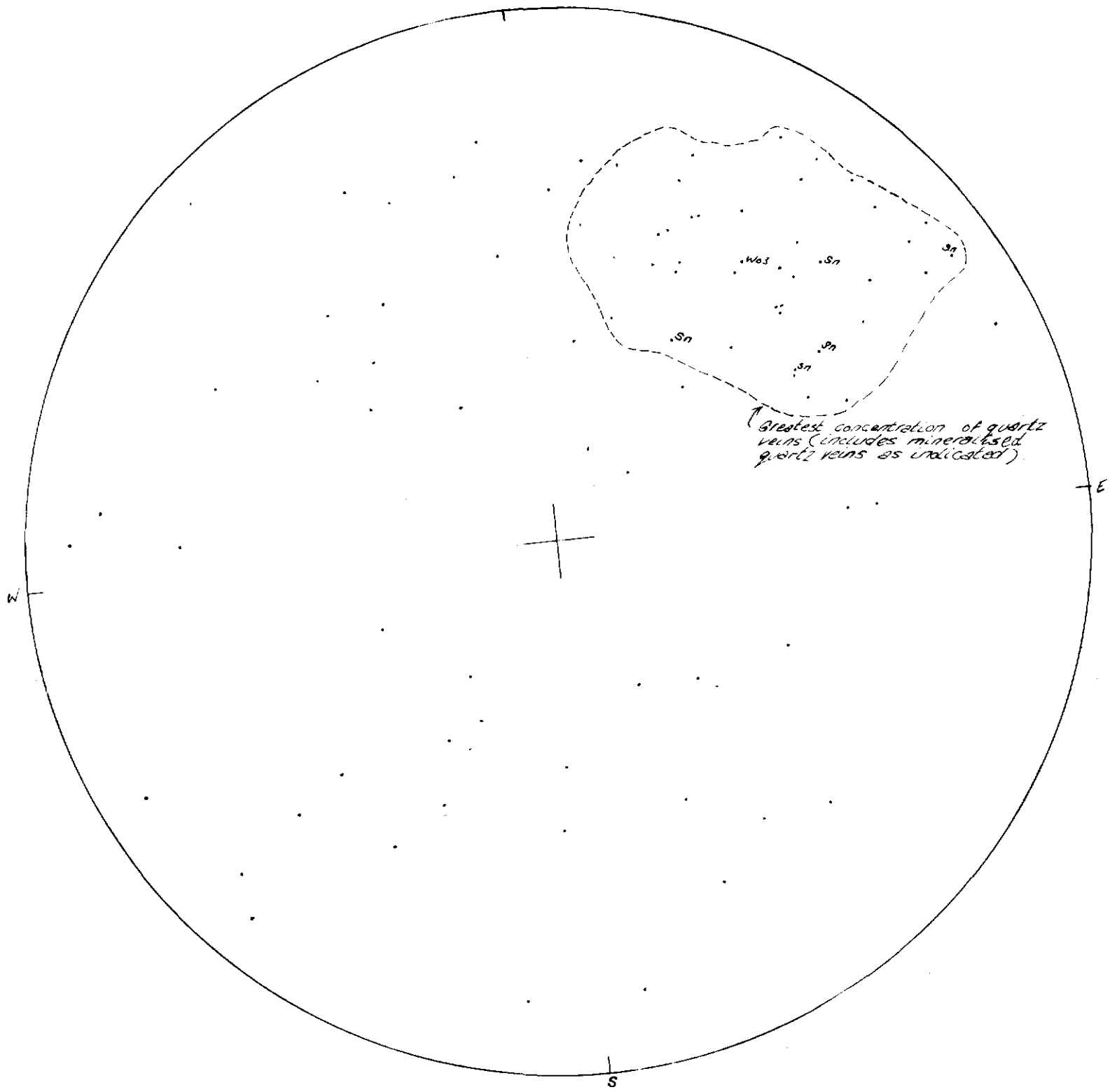
Mineralisation occurs over a strike length of 3,300' and over a width of 1320'. The veins have a thickness of three inches on the west bank of Aberfoyle Rivulet, but thin to 1 inch or less 3000' to the south-east. Even these narrow veins contain some cassiterite or arsenopyrite mineralisation.

(ii) Rifle Range Prospect

The Rifle Range Prospect is marked by a zone, trending 320°, of fractured quartzites and interbedded psammopelites with abundant quartz vein rubble. The three inch quartz veins strike from 310° to 330° and are unmineralised in tin or tungsten. The quartz float contains pyrite and limonite in vugs indicating oxidation in the surface zone.

(iii) Other Prospects

Surface mineralisation in the form of micaceous cassiterite selvedges is common in quartz veins adjacent to mine areas and at the Eastern Hill line of workings. The occurrence and type of veining at the numerous other abandoned workings (see Map 3) has been described previously (Blisset 1959) and will not be re-iterated here.



SCHMIDT POLAR PROJECTION OF 100 QUARTZ VEINS WITHIN THE MATHINNA GROUP

An area similar to the Rifle Range Prospect occurs on a north westerly trend approximately 1½ miles north east of Storey's Creek. Minor pyrite and limonite occurs in vugs and holes in quartz float material.

(b) In Granite

Quartz veining in areas of granite outcrop is difficult to recognise due to the decomposed nature of the outer surface. The narrow (about 1 inch) barren veins occupy zones of closely spaced joints or shears while the larger veins with near vertical dips bear no apparent relationship to control surfaces in the granite mass.

The fifteen inch barren quartz vein outcropping at location 250 in Story's Creek may be the same vein worked at the Ivanhoe prospect further to the north-east.

The unnamed workings just east of the road and two miles south of Storey's Creek are in an extremely quartz-porphyritic zone within tourmalinised granite. Minor pyrite and limonite occurs in tailings, but no signs of tin-tungsten mineralisation was found.

VI INTERPRETATION

The thinly bedded, tightly folded lithologies of the Mathinna Group metasediments cannot be traced for any distance along strike nor can the same unit be identified across strike. Interpretation on the scale of the bedding is rendered impossible because of the sparcity of outcrop and rapid variation in lithology.

For purposes of interpretation the outcrop sheet (Map 2) shows the dominant lithologic units, and map 4 shows the interpreted regional zones of predominantly quartzitic and psammopelitic units.

One interpretation for such a regional pattern could be an underlying north-westerly system of gentler folding, the evidence for which is obscured by the tighter parasitic fold system. This interpretation is similar to the anticlinorium system forwarded by Blisset (1959).

The granite-Mathinna contact near the Rossarden bridge dips north at 35°, while the north-south contact further to the west appears to dip nearly vertical. The contacts show little or no signs of metamorphism suggesting that during intrusion the temperature difference

between the two rock types was low. The mineralogical variation marginal to the granite contact was probably the result of interaction between mineralising fluids and host rock and did not necessarily occur during the emplacement of the granite.

Mechanical uplift of a partly solidified granite magma could account for the low grade metamorphic effects and some of the jointing and fracturing in the Hathinna Group but no attempt to reconcile major joint trends with possible directive pressures was made.

All major faulting is of post Permian age and probably related to the intrusion of Jurassic dolerite.

VII RECOMMENDATIONS

It is strongly recommended that prior to further geological exploration including mapping, geochem and geophysics, a topographic base map be prepared. The map could be on a scale of 1" to 660 ft. with a contour interval of 100 ft. An accurate contour map on this scale would ensure accurate location when used in conjunction with aerial photographs and would aid the planning of traverses for geochemical or geophysical surveys. Contours could also be transferred to geological fact maps already prepared and so aid in the interpretation of geological data.

Possible areas for further investigations:

(1) Lutwyche South-east Extension.

South-east of Aberfoyle Rivulet, away from the steep banks, the Lutwyche zone of fracturing and quartz veining is covered by an essentially shallow soil and rubble cover. Costeaning and detailed mapping of the exposed area are recommended prior to choosing a drill site. Access to this area is by a rough track which leaves the Mangana road just east of the Mistletoe bridge.

(2) Half Mile North-east of Storey's Creek.

No tin-tungsten mineralisation was found in surface outcrop, but abundant quartz vein rubble containing limonite filled vugs over fractured interbedded quartzites and psammopelites suggests more extensive subsurface quartz veining. Some costeaning and detailed mapping is recommended.

Within the main granite block no immediate locations suggest the possibility of economic mineralisation. Greisenisation does not appear to have gone to completion and so the conditions do not favour a large extent of low grade disseminated cassiterite.

A number of smaller areas, however, will require some further work.

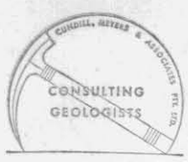
(a) Detailed sampling and possibly some thin section work is recommended for those areas intruded by granodiorite.

(b) Some sampling and analyses should be undertaken on the pinitised zone containing minor sulphides at location 1064. The original shafts and stopes have partly collapsed and filled with water.

As indicated by figure 5, nearly all the mineralisation found at the surface is associated with the north westerly trending quartz veins that dip south-west. For this reason, quartz vein systems with similar attitudes should receive prior recognition in any intended exploratory or development work.

If a geochemical survey is planned as part of the exploration programme, it is considered that the colluvial soils over semi-continuous granite outcrop areas would be suitable for analyses of the more mobile Cu, Pb and Zn elements. The sample depth should be between 12 inches and 18 inches with a sample every 400 feet on north-north-easterly traverses spaced at 1000'.

J. Linden



VIII REFERENCES

Blisset, A. H.	1959	The Geology of the Rossarden-Storey's Creek district, Geol. Surv. Bull No.46
Brave, A. P.	1967	The Geology of the Rossarden-Tower Hill Area (Unpublished Thesis)
Cookson, I. C.	1936	The Occurrence of Fossil Plants at Warrentina, Tasmania. Pap and Proc. Roy. Soc. Tas. 13-77
Hopwood, T. P. and Collins, A. R.	1967	Report on the Stratigraphic Sequence and Structure of the Metasedimentary Rocks at Storey's Creek, Tasmania. (Unpublished Company Report.)

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OUTCROP AND SPECIMEN LOCALITY SHEET

MAP I

STOREY'S CREEK

nisbet creek

tasmania creek

tiger creek

aberfoyle rivulet

ABERFOYLE

ROSSARDEN

AMG 561090mE, 5389450mN

AMG 559380mE, 5386650mN

TASMANIA UNITED URANIUM

MN

STOREY'S CREEK —— ROSSARDEN AREA, TASMANIA

CHAINS 0 2 10 20 30 40 CHAINS

FEET 0 250 1000 2000 FEET

GEOLOGY BY J.J. LINDEN
OF
CUNDILL, MEYERS & ASSOCIATES PTY LTD.

APRIL 1968

• 700 LOCATION AND NUMBER OF OUTCROP AS IN FIELD NOTEBOOK

•+53 LOCATION 1053

ROADS

TRACKS

STREAMS

5 cm

AMG REFERENCE POINTS ADDED

ABERFOYLE MANAGEMENT
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GEOLOGICAL OUTCROP SHEET (WITHOUT INTERPRETATION).

128026 MAP 2

STOREY'S CREEK —— ROSSARDEN AREA, TASMANIA

CHAINS 0 2 10 20 30 40 CHAINS
FEET 0 250 1000 2000 FEET

GEOLOGY BY J.J. LINDEN
OF
CUNDILL, MEYERS & ASSOCIATES PTY LTD.

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Superficial Deposits

- Dolerite talus
- Alluvium

Permian Sediments

- Pp — Prospect Creek Mudstone
- Pm — Mistletoe Sandstone
- Pb — Burnt Gully Limestone
- Pc — Castle Carey Mudstone
- Pa — Aberfoyle Formation
  - Pam — pebbly mudstone
  - Pas — pebbly sandstones
  - Pag — quartz grits
  - Pac — basal conglomerate

? Silurian Sediments

Mathinna Group

- Quartzite
- Psammopelite
- Slate
- Quartzite (dominant) & Slate
- Quartzites with interbedded psammopelites
- Psammopelites with interbedded slates

Devonian Granite

- +++ Normal medium or coarse grained
- +Q+ Quartz porphyritic
- +F+ Feldspar porphyritic
- +F+Q Quartz & Feldspar porphyritic
- +B+ Biotite rich
- +B+M Biotite & Muscovite rich
- +T+ Tourmalinised
- +M+T Muscovite & tourmaline rich
- +G+ Partly greisenised
- YYY Granodioritic

- Geological contact
- Strike & dip of bedding
- Strike & dip of cleavage
- Vertical bedding & cleavage
- Strike, dip & facing of bedding plane
- Plunge of fold
- U/D Relative movement on established fault
- Horizontal movement along shear or fault plane
- Abandoned mine &/or prospect
- Diamond drill hole
- N/O No outcrop
- Roads
- Navigable tracks
- Streams

5 cm

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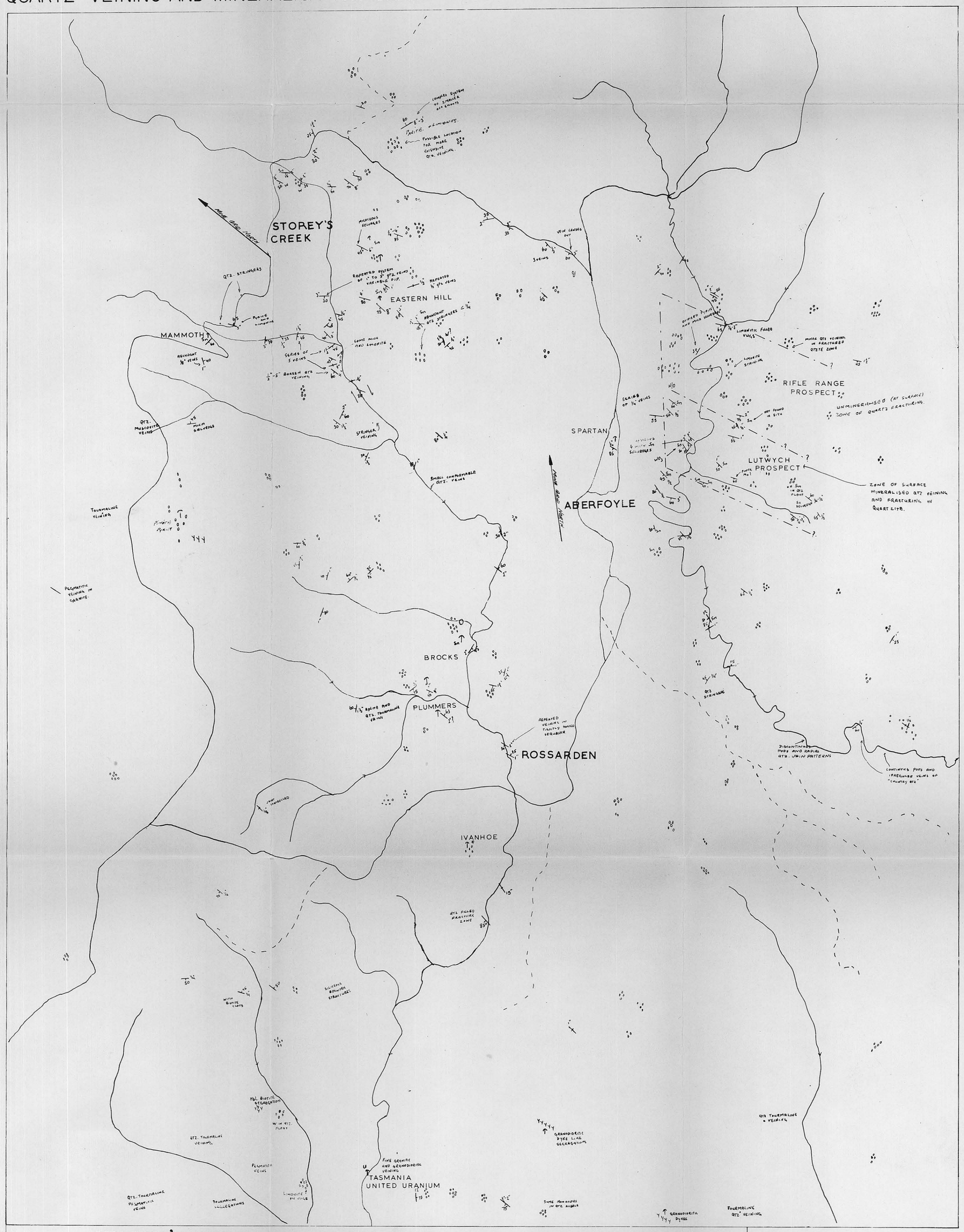
QUARTZ VEINING AND MINERALISATION SHEET

128027 MAP 3



STOREY'S CREEK —— ROSSARDEN AREA, TASMANIA

CHAINS 0 2 10 20 30 40 CHAINS
FEET 0 250 1000 2000 FEET

GEOLOGY BY J.J. LINDEN
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5 cm

45/1½"	Strike, dip and width (inches) of quartz vein
6 y/ repeated	Series of three or quartz veins with same strike, dip and width as vein indicated
	Quartz vein rubble, no in situ veining
Plummers ↑	Abandoned mine, prospect or diggings
Sn	Cassiterite mineralisation
W	Wolfram mineralisation
U	Pitchblende?
	"Country" quartz indicated as pods and associated quartz stringers
Yyy	Granodiorite dykes and segregations within granite
	Roads
	Tracks
	Streams
	Arbitrary boundary outlining zones of fracturing within quartzite.

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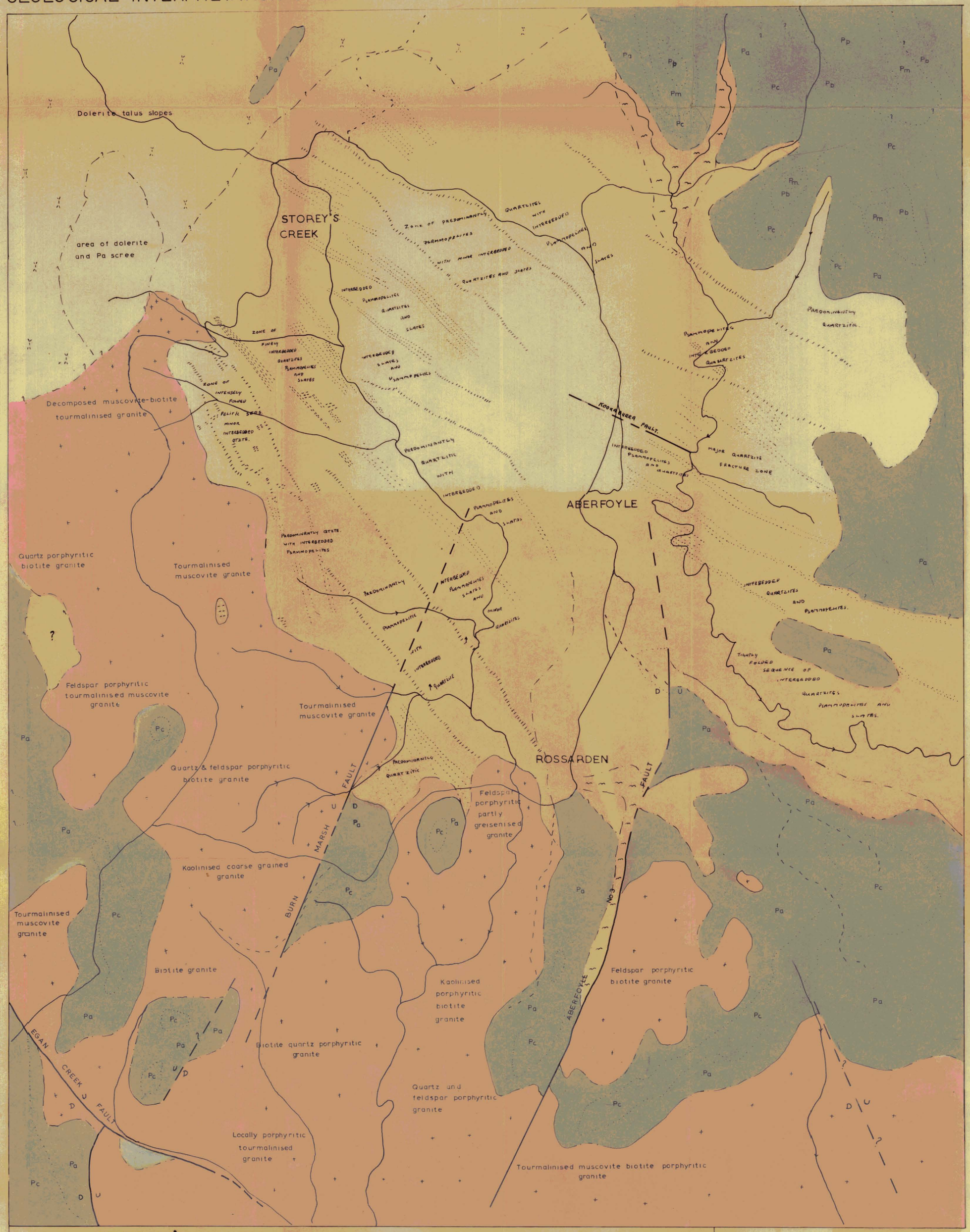
GEOLOGICAL INTERPRETATION SHEET

128028 MAP 4



STOREY'S CREEK —— ROSSARDEN AREA, TASMANIA

CHAINS 0 2 10 20 30 40 CHAINS
FEET 0 250 1000 2000 FEET

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5 cm

- ALLUVIUM AND SOME TERTIARY CONGLOMERATES
- DOLERITE TALUS
- PERMIAN SEDIMENTS
  - Pp PROSPECT CREEK MUDSTONE
  - Pm MISTLETOE SANDSTONE
  - Pb BURNT GULLY LIMESTONE
  - Pc CASTLE CAREY MUDSTONE
  - Pa ABERFOYLE FORMATION MUDSTONES, SANDSTONES GRITS AND CONGLOMERATE
- ? SILURIAN SEDIMENTS. MATHINNA GROUP
- PREDOMINANTLY QUARTZITIC LENSES AND 2'-3' BANDS OF PSAMMOPELITE AND/OR SLATE
- PREDOMINANTLY PELITIC MINOR 2' QUARTZITE AND 3'-12" SLATE BANDS
- PREDOMINANTLY SLATE
- +++ GRANITE
- DEFINITE GEOLOGICAL BOUNDARY
- PROBABLE GEOLOGICAL BOUNDARY.
- —?—?— INFERRED GEOLOGICAL BOUNDARY FROM PREDOMINANT RUBBLE TYPES
- U/D ESTABLISHED FAULT WITH RELATIVE DISPLACEMENT
- PROBABLE EXTENSION OF ESTABLISHED FAULT
- —?— INFERRED FAULT
- Pc FORMLINES DISTINGUISHING THE DIFFERENT FORMATION SEDIMENTS.
- ROADS
- TRACKS
- STREAMS

4727

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