

Long-Lost Tungsten Mines in Central Victoria

**Is there a major tungsten (+tin-molybdenum-
gold) province present?**

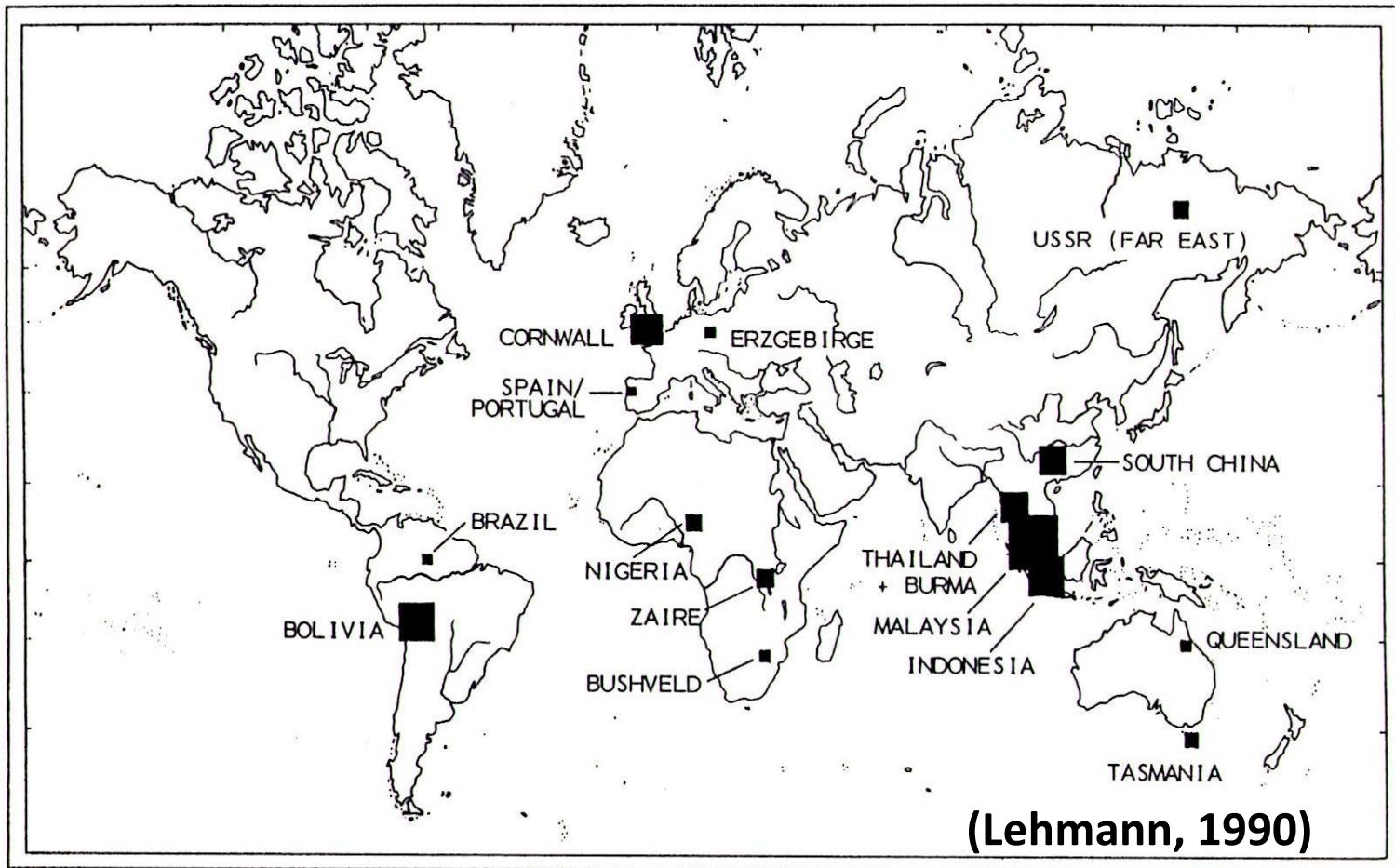
Allan Rossiter

Outline of talk

- **Why might there be significant tungsten (+ tin, molybdenum and gold) deposits in central Victoria?**
- **How can these have been overlooked for so long?**
- **Specific prospects**
 - Wilks Creek
 - Tin Creek
 - Monkey Gully
 - Britannia Creek
- **Conclusions**

Why Might There Be?

Because there is a world-class Sn-W province not very far away

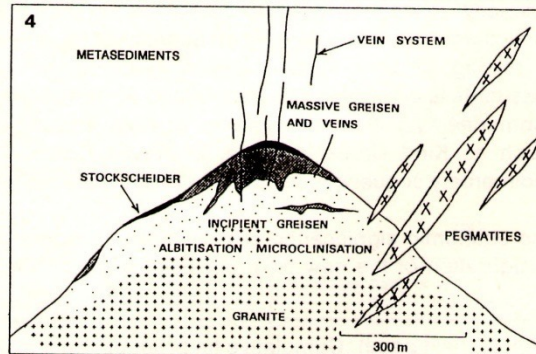
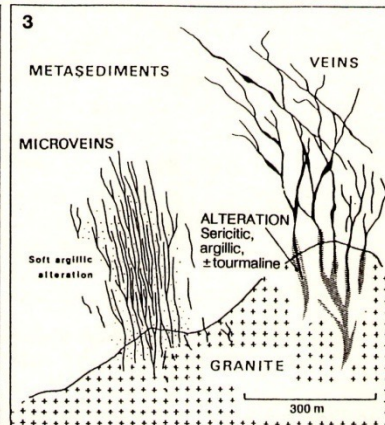
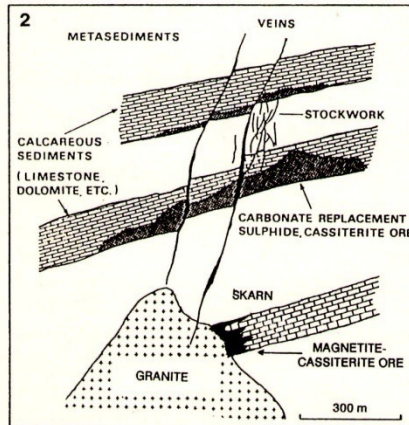
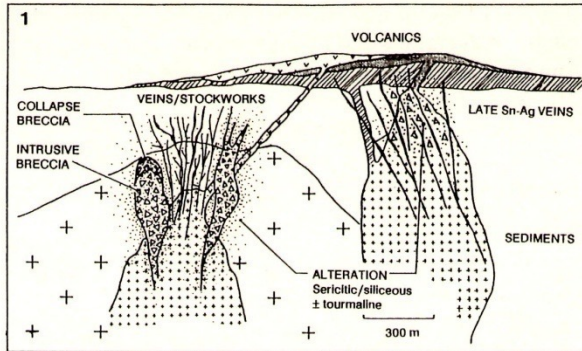


Tasmanian Sn-W deposits production + resources

(Collins & others, 1989)

Deposit	Mt	Grade	Type
Renison	42.3	1.08% Sn	Replacement
Mt Bischoff	10.3	1.13% Sn	Replacement
King Island	16.9	0.78% WO ₃	Skarn
Cleveland	10.3	0.78% Sn, 0.33% Cu	Replacement
Foley Zone	3.0	0.28% WO ₃	Stockwork
Zeehan	7.3	0.7% Sn	Replacement
St Dizier	5	0.5% Sn	Skarn
Moina	26	0.1% WO ₃ , 0.1% Sn	Skarn
Kara	2.2	0.8% WO ₃	Skarn
Aberfoyle	2.1	0.91% Sn, 0.28% WO ₃	Sheeted veins
Storeys Creek	1.1	1.09% WO ₃ , 0.18% Sn	Sheeted veins
Anchor	5.4	0.25% Sn	Greisen

Types of Sn-W deposit



1. Porphyries & stockworks
2. Skarns & replacements
3. Veins & sheeted veins
4. Greisens

(Lehmann, 1990)

Ages of Tasmanian granites

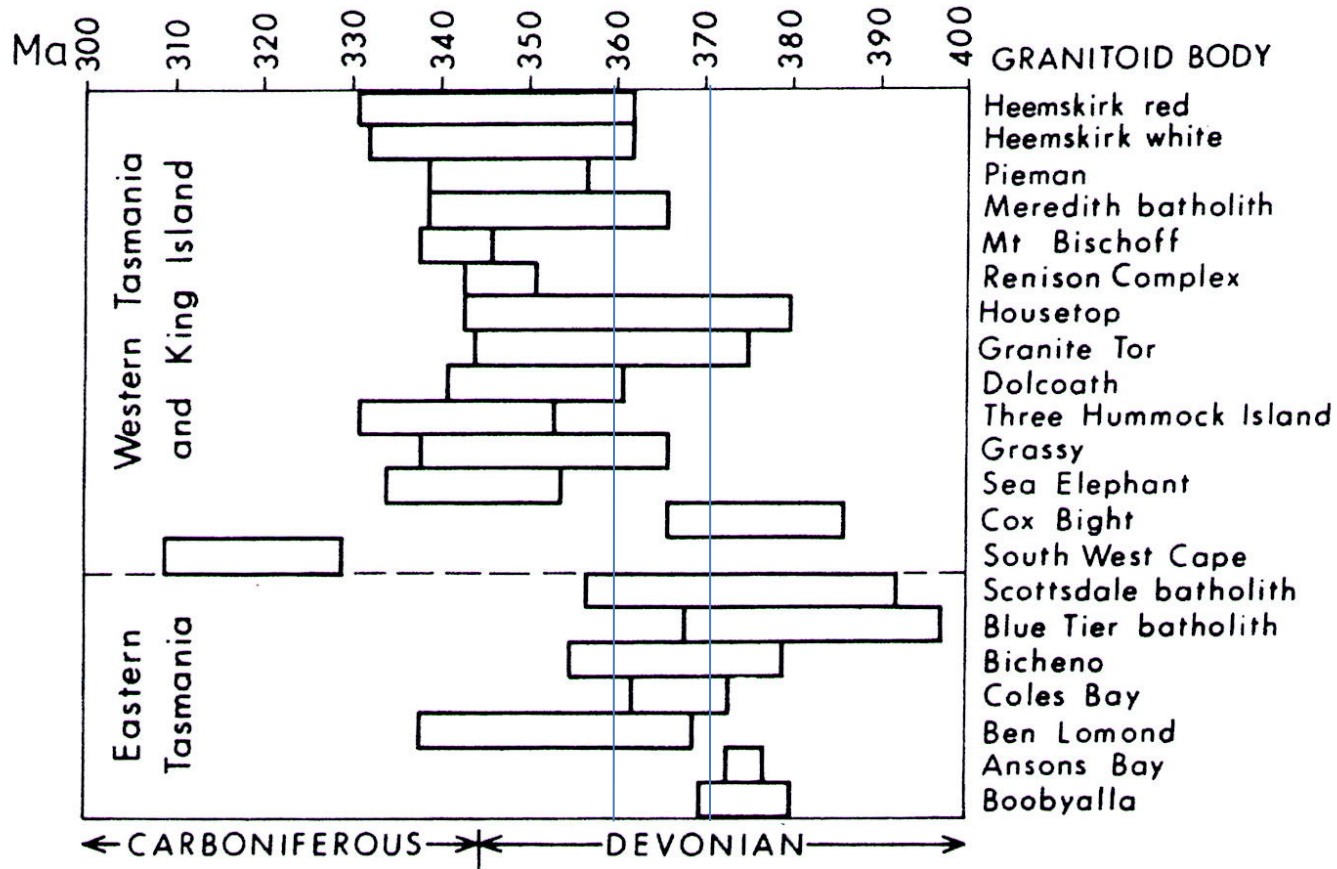


Fig. 7.6 Maximum range of Rb-Sr and K-Ar ages for Tasmanian granitoid bodies. Data from McDougall & Leggo (1965), Brooks (1966a,b), Brooks (recalculated unpublished data, 1971), Cocker (1982), Turner *et al.* (1986) and Mackenzie *et al.* (1987).

Place names (Geoscience Australia)

Warburton & Warrugul 1:250 000 Sheets

- **2 Tin Creeks**
- **2 Tin Mine Creeks**
- **1 Tin Mine Hill**
- **1 Tin Mine Cove**
- **1 Tin Mine Point**
- **1 Tungsten Creek**
- **1 Wolfram Creek**

Known W-Sn mineralisation

Warburton & Warrugul 1:250 000 Sheets

- **Wilks Creek tungsten mine**
- **Britannia Creek tungsten mine**
- **Opas Creek alluvial tungsten field**
- **Tin Creek alluvial tin field**
- **Bunyip River alluvial tin field**
- **Upper La Trobe River alluvial tin field**
- **Beenak alluvial tin field**
- **Wilson Promontory alluvial tin field**
- **Toora alluvial tin field**
- **Prospecting pits Monkey Gully (molybdenum)**

How overlooked? (1)



How overlooked? (2)



How overlooked? (3)



How overlooked? (4)



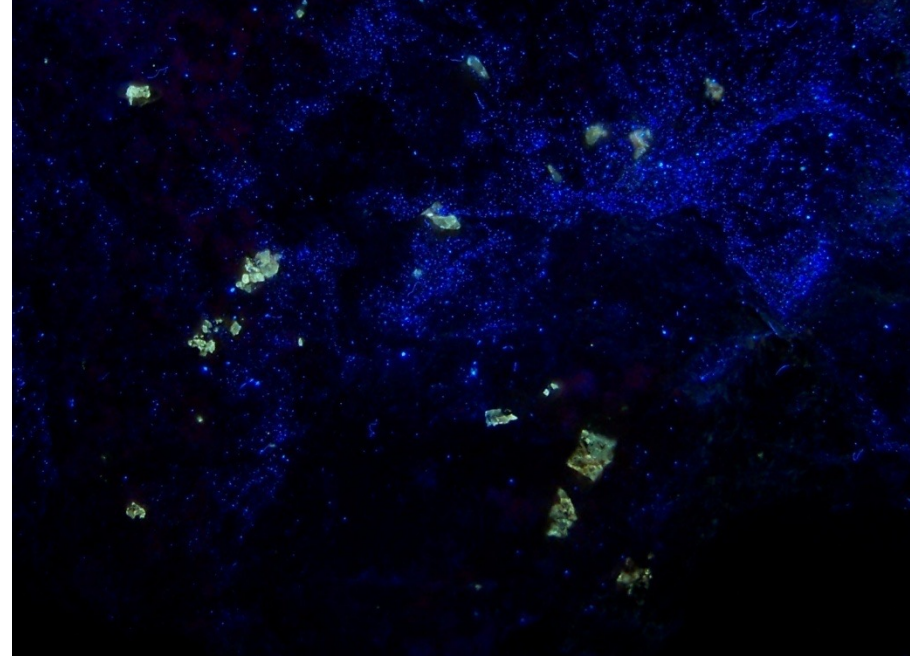
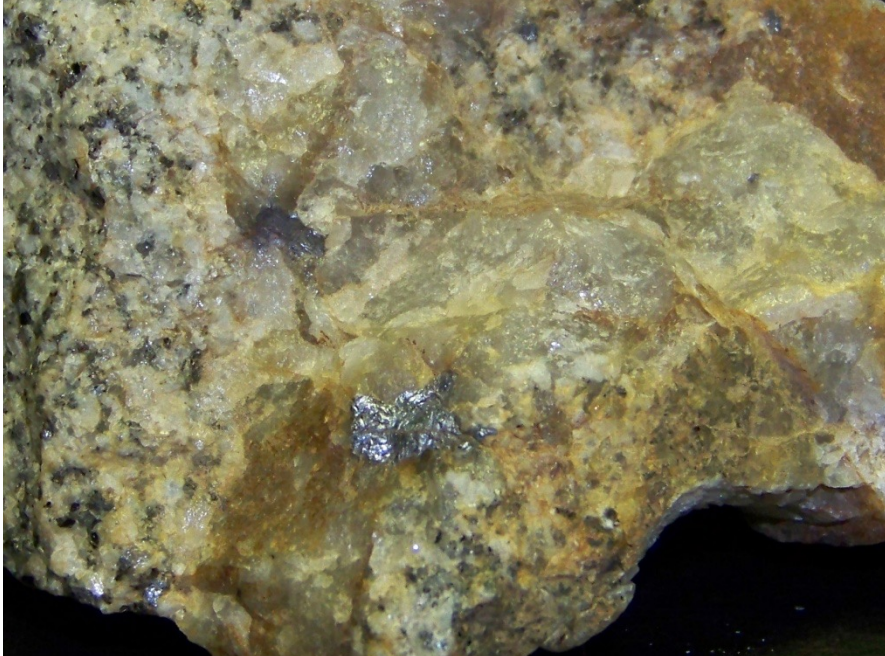
How overlooked? (5)



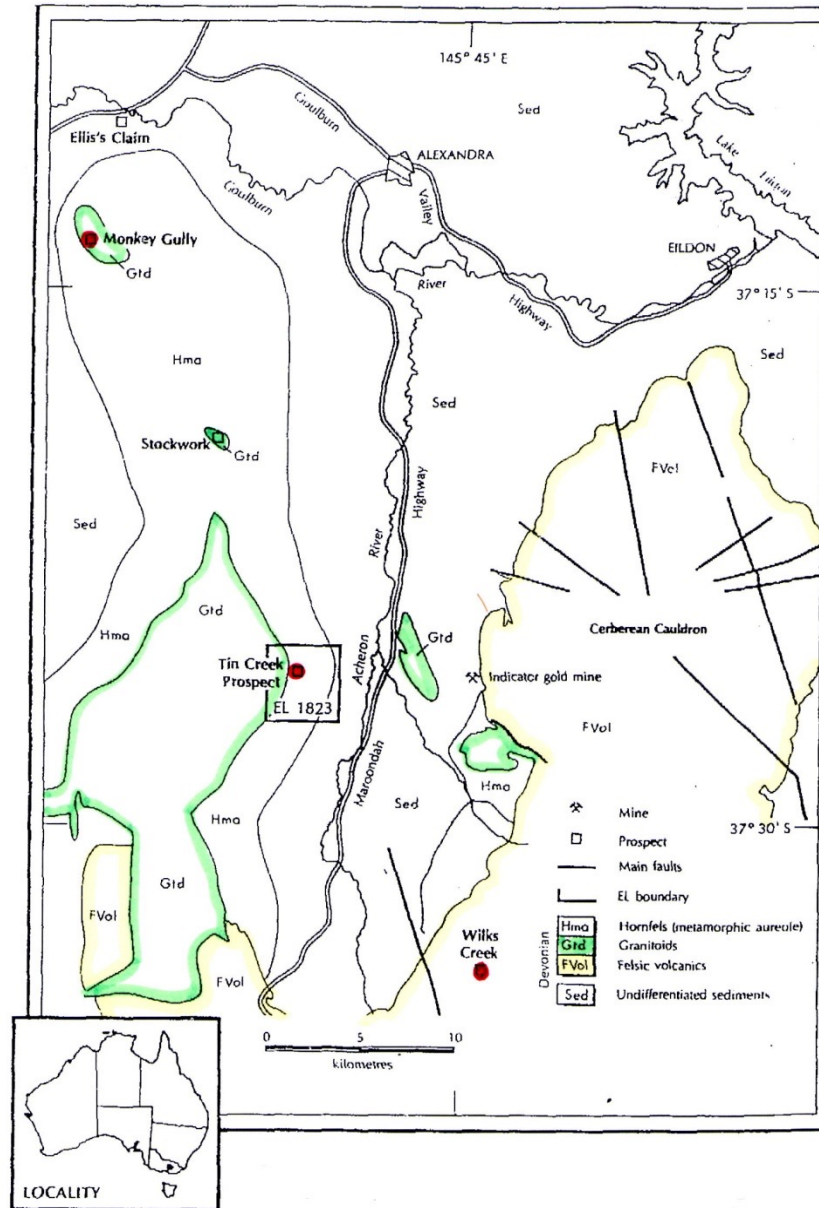
How overlooked? (6)



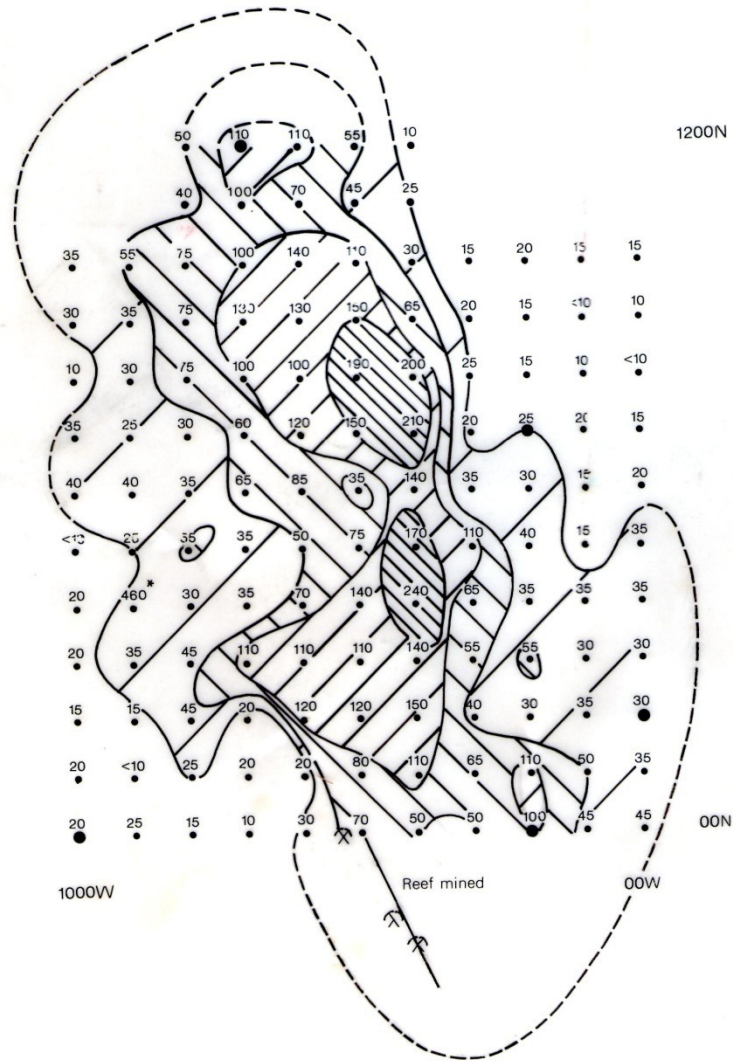
How overlooked? (7)



Wilks Creek regional geology



Wilks Creek W soil sampling



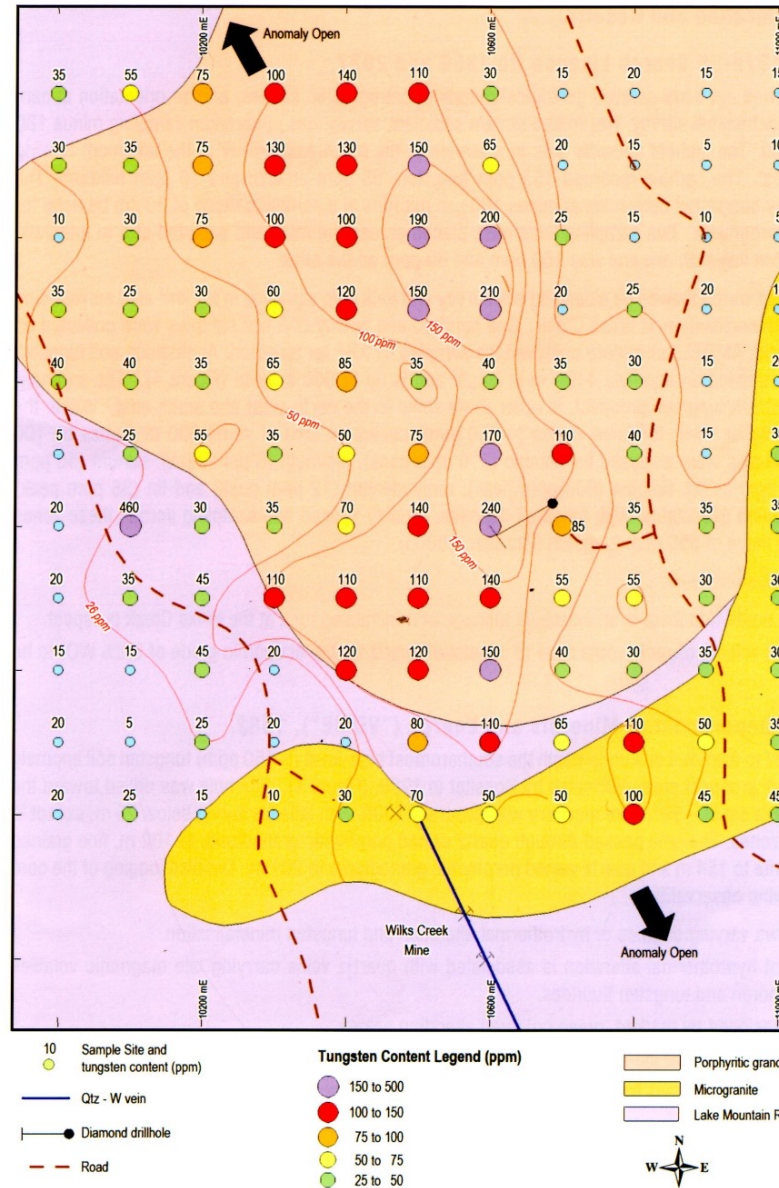
240
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Sample site and tungsten content [ppm]

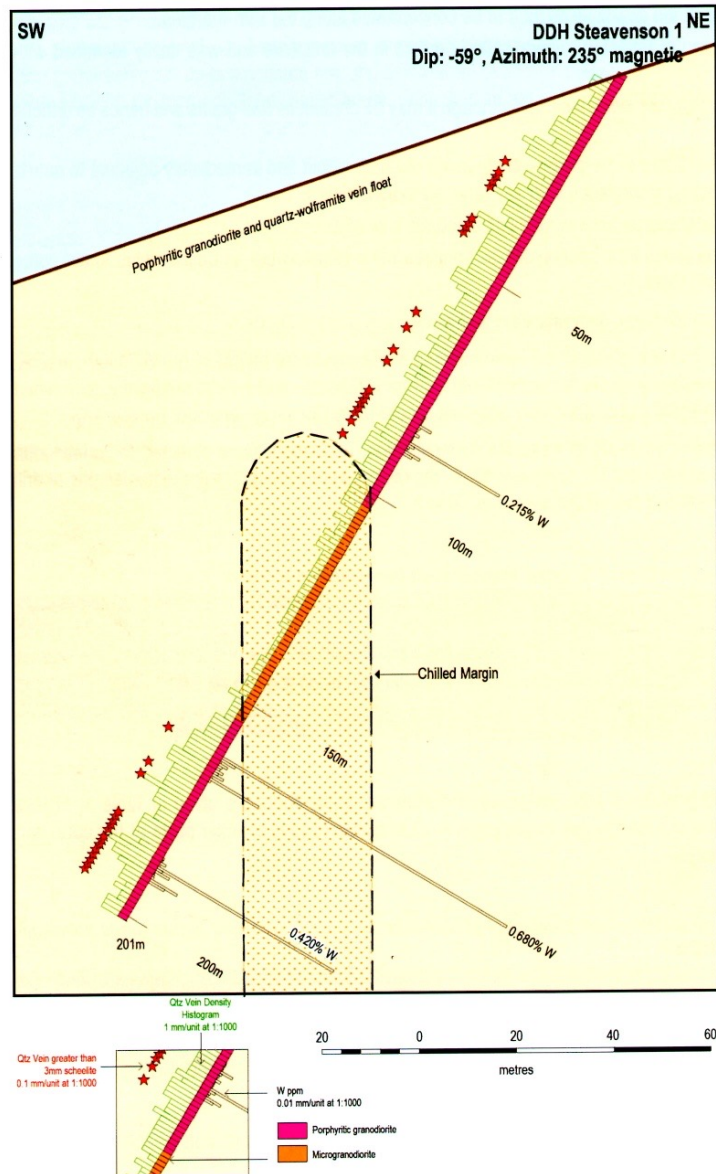
Wilks Creek big tree



Wilks Creek detailed geology

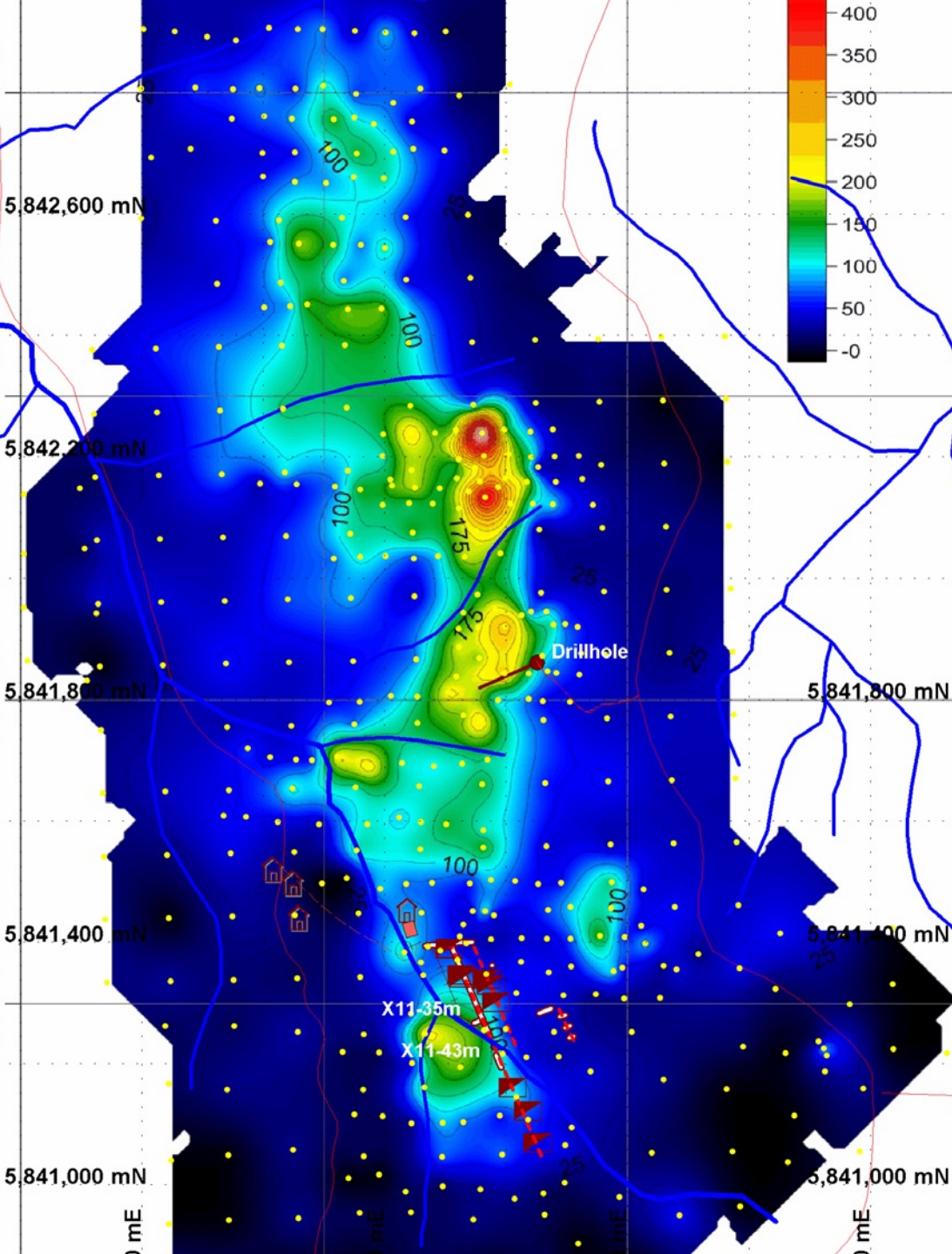


Wilks Creek drilling



Wilks Creek W soil sampling

Tungsten Australia Pty Ltd



Wilks Creek Dunn report

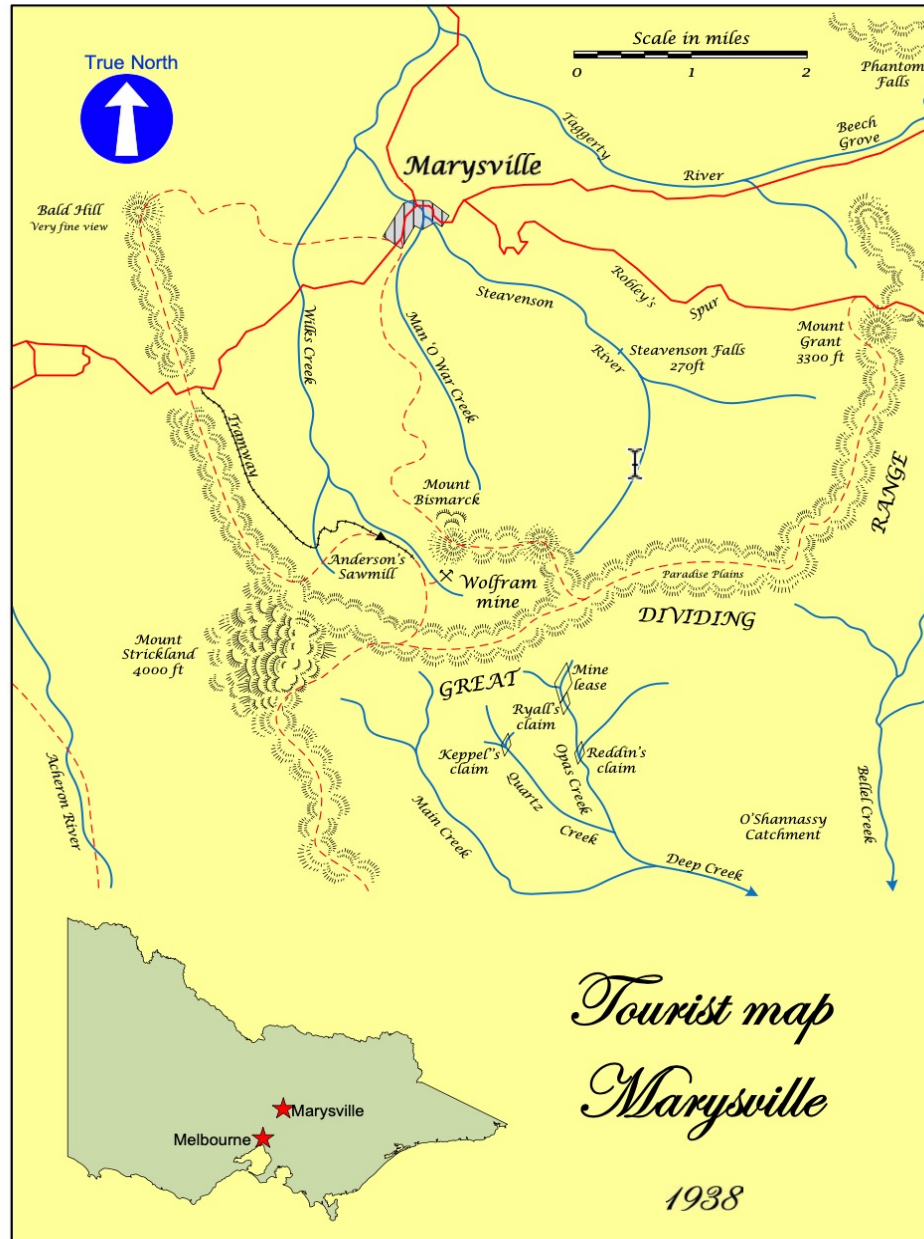
WOLFRAM DEPOSITS NEAR MARYSVILLE.

By E. J. Dunn, F.G.S., late Director, Geological Survey.

About 5 miles in a direction E. 20° S. from Marysville is Mr. Ryall's camp. The country rock at Marysville is Silurian slates and sandstones, but at 1½ miles east it consists of about one mile of dacite (?) (along the dray-road); then granodiorite extends over the whole area where wolfram is being worked. Mr. Ryall's workings are just below his camp on a point between the junction of a small creek running in from the east and joining Opas Creek. These creeks flow into the Yarra. The small creek has been worked for alluvial wolfram for about 4 chains above its junction with Opas Creek, and Opas Creek has been worked for alluvial wolfram for 5 chains below the junction and for 3 chains above it. In Opas Creek a width of about half-a-chain was taken along the creek course and the depth of alluvial material ranged from 3 to 6 feet. There is a considerable proportion of quartz in the wash-dirt, and still more abundant is a breccia of quartzite and fibrous tourmaline. This breccia is said to occur as a broad belt about one mile higher up on the watershed. The wolfram is nearly all fine-grained and from the area sluiced about 1 ton of wolfram has been obtained. The bottom is decomposed granodiorite.

A chain below the hut a lode has been opened up. The strike is N.

Wilks Creek tourist map 1938



Wilks Creek underground sampling



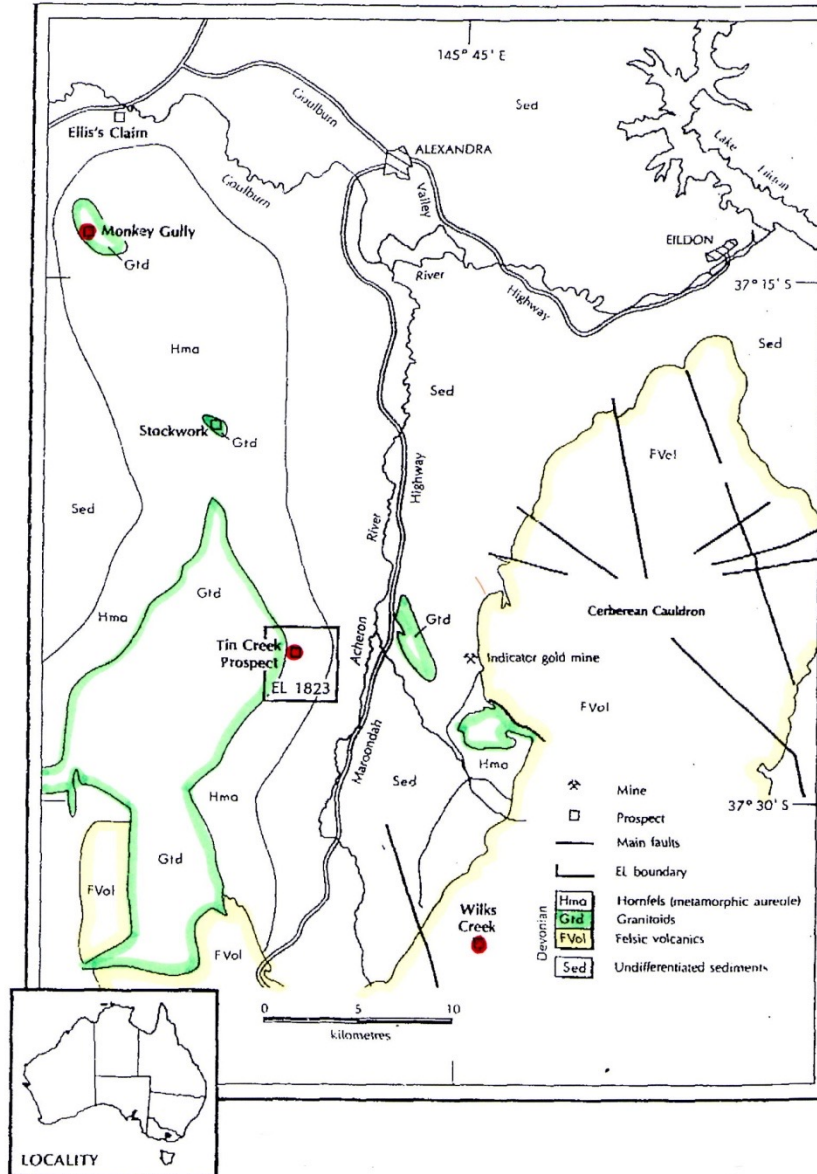
Wilks Creek old mill site after 2009 fire



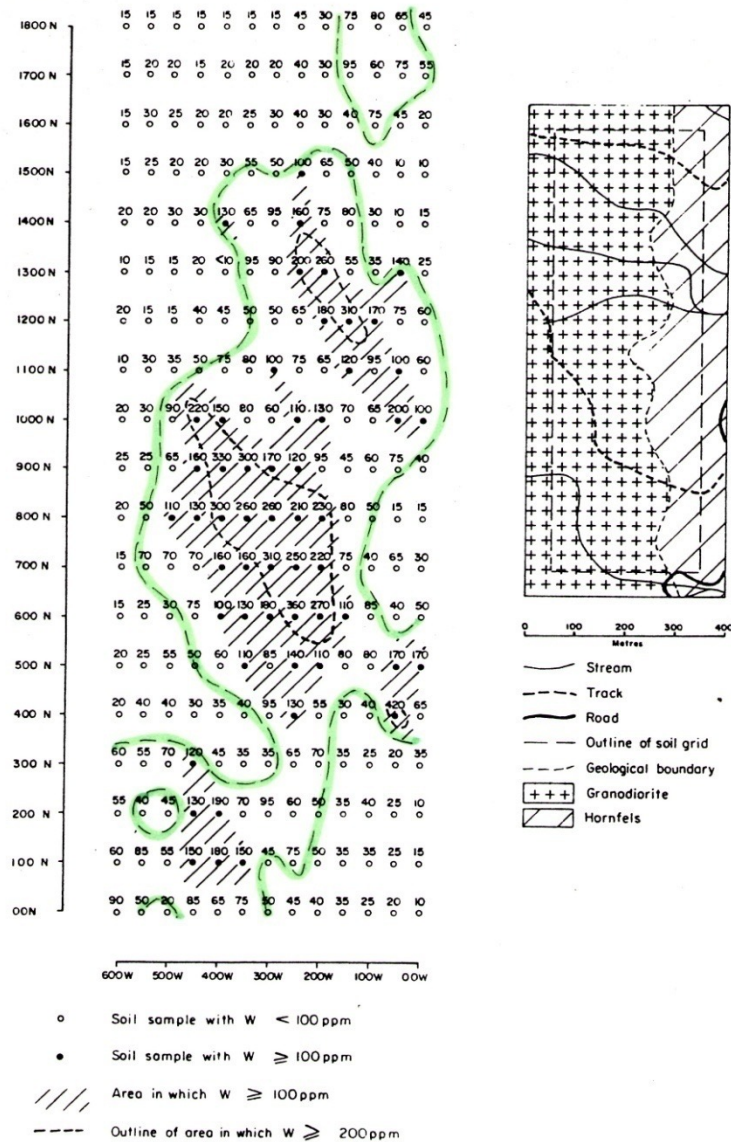
Wilks Creek drillsite after 2009 fire



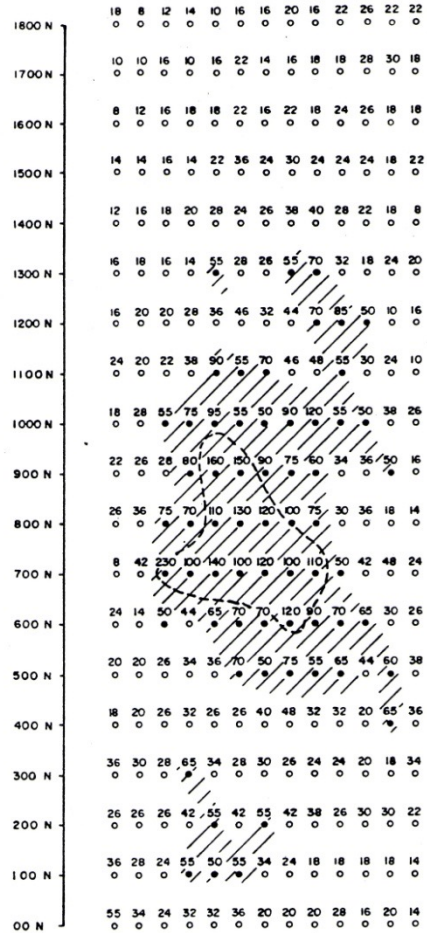
Tin Creek regional geology



Tin Creek W soil sampling



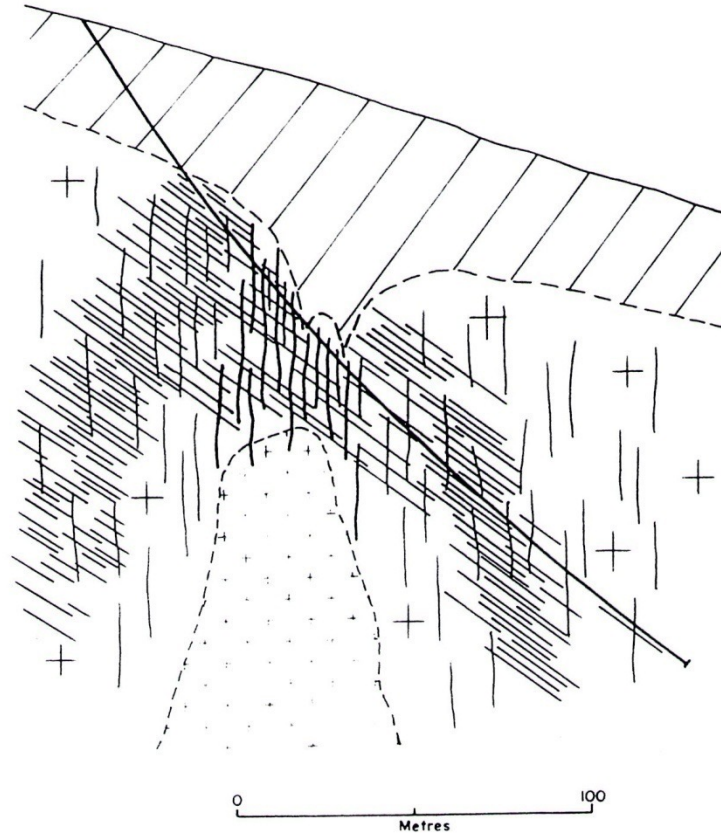
Tin Creek Sn soil sampling



600 W 500 W 400 W 300 W 200 W 100 W 00 W

- Soil sample with Sn < 50 ppm
- Soil sample with Sn ≥ 50 ppm
- //// Area in which Sn ≥ 50 ppm
- Outline of area in which Sn ≥ 100 ppm

Tin Creek drilling (1)



 Weathered zone

 Granitic cupola

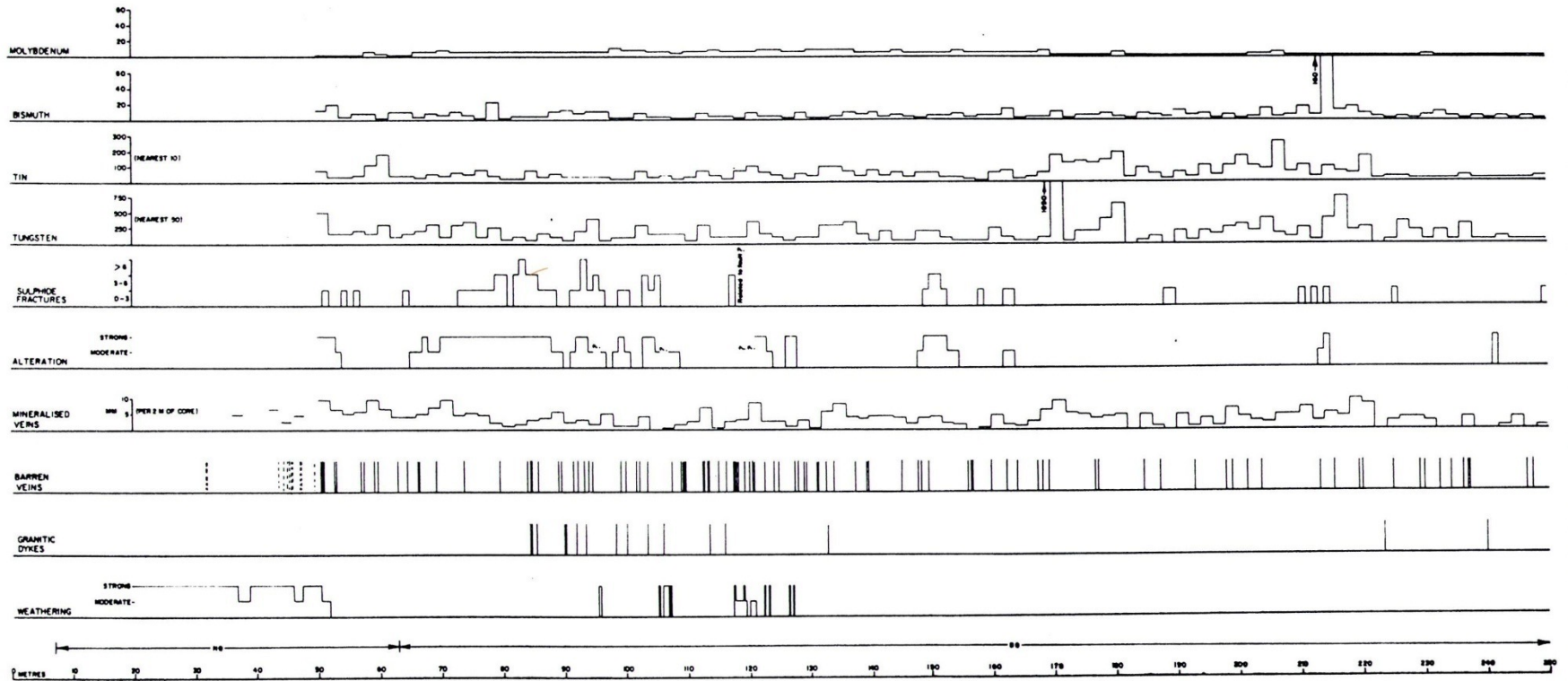
 Granodiorite

 Tungsten-bearing veins

 Barren quartz-feldspar veins

 Granitic dykes

Tin Creek drilling (2)



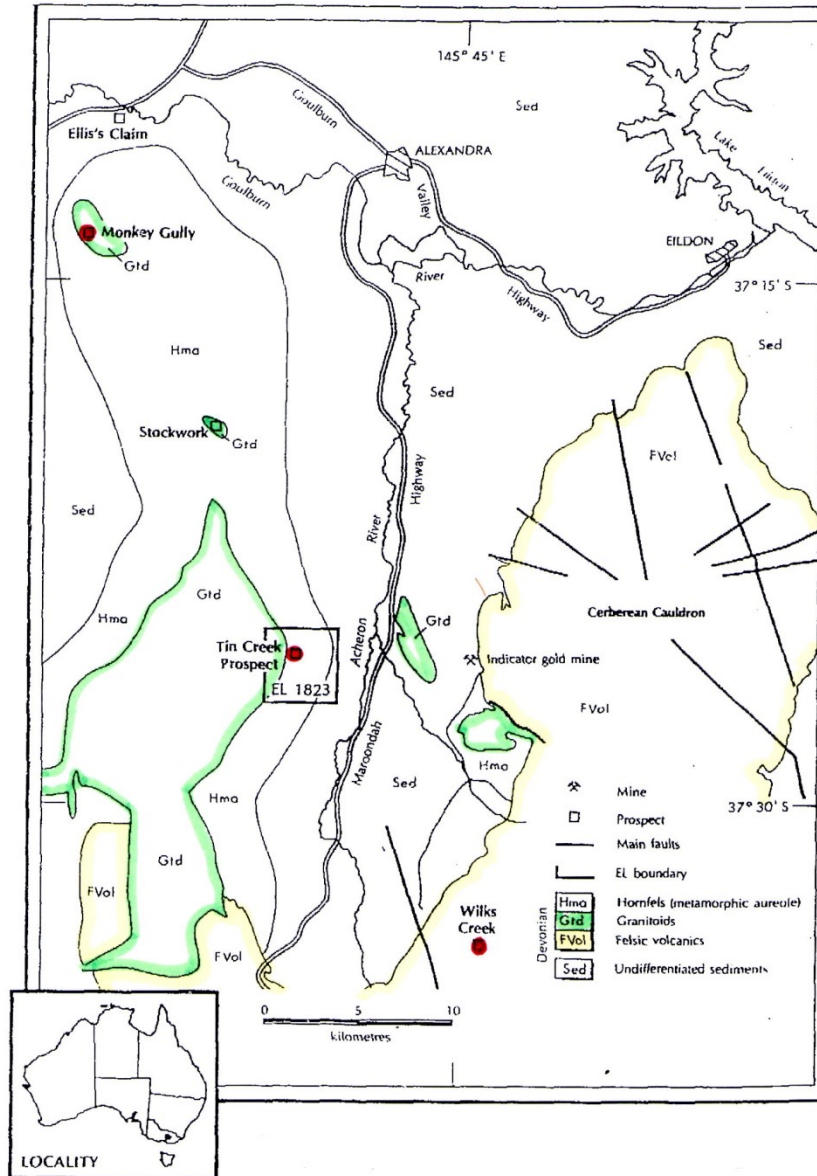
Tin Creek drilling rig mobilisation



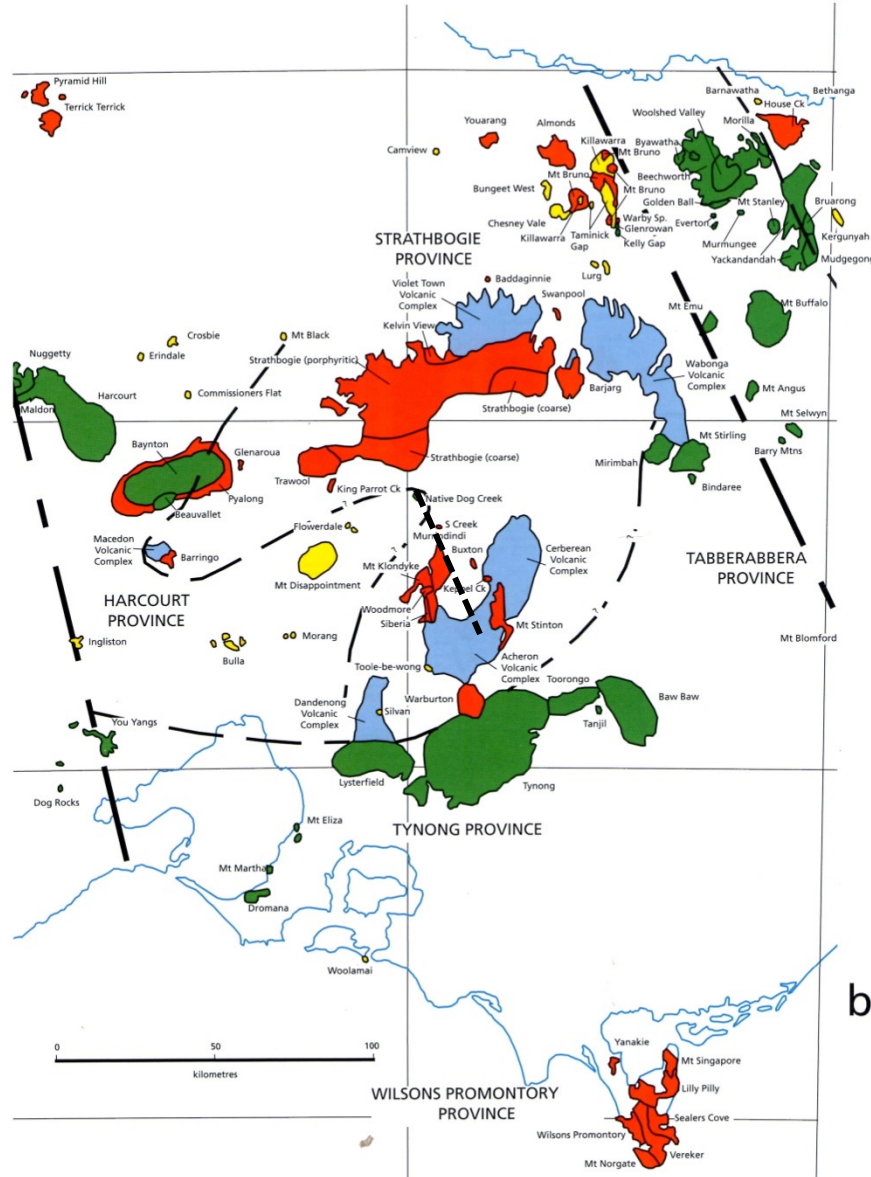
Tin Creek drilling rig positioning



Monkey Gully regional geology

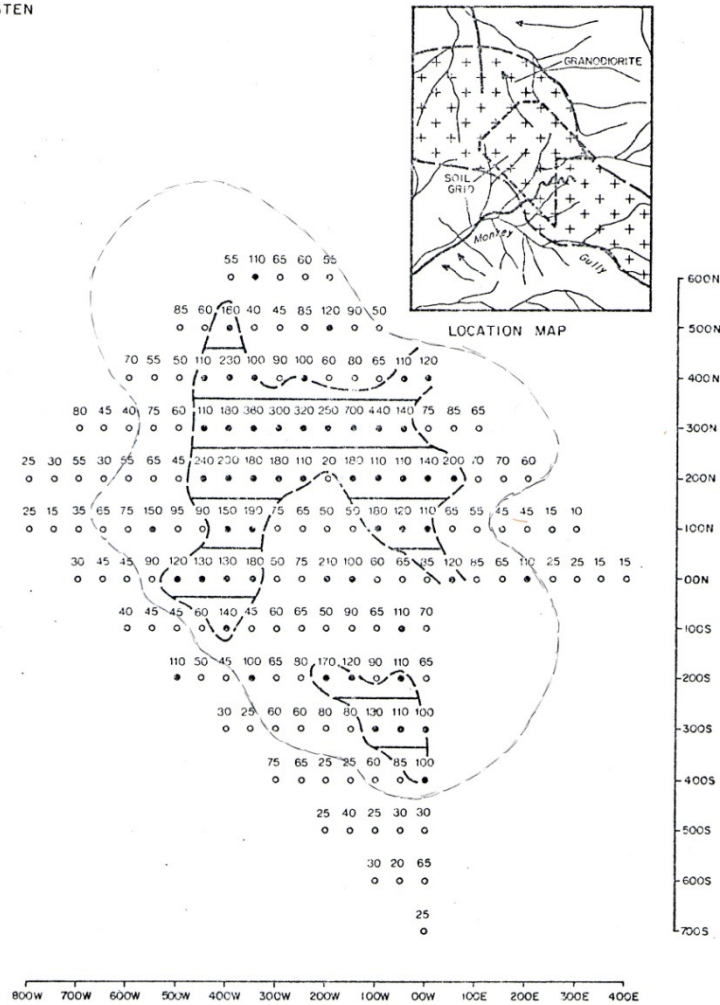


Selwyn Block



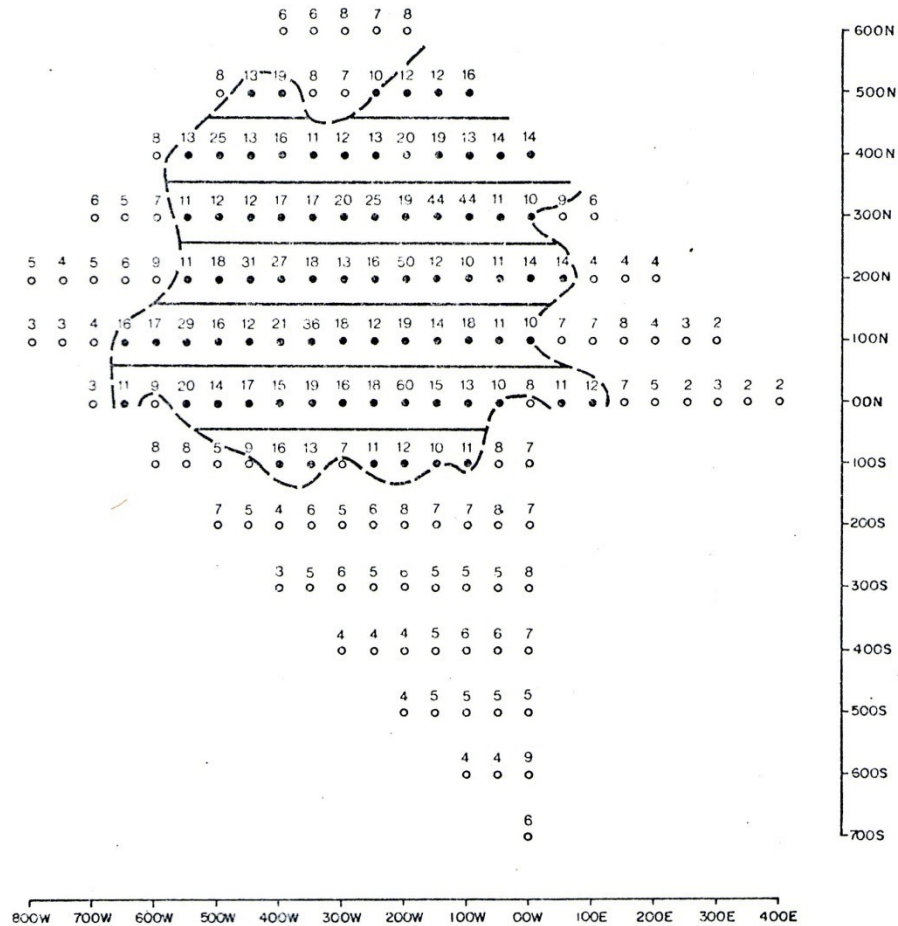
Monkey Gully W soil sampling

TUNGSTEN



- Soil sample with W < 100ppm.
- Soil sample with W ≥ 100ppm.
- ⊖ Main concentration of W in soil.

Monkey Gully Mo soil sampling

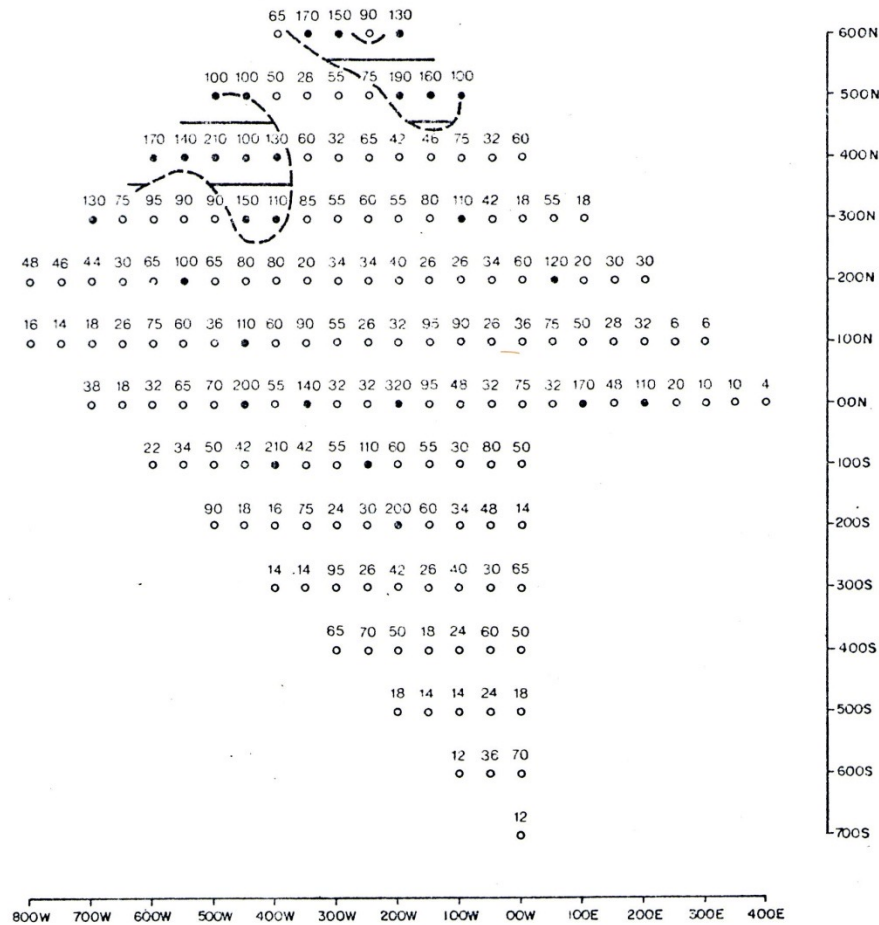


○ Soil sample with Mo < 10 ppm.

● Soil sample with Mo ≥ 10 ppm.

 Main concentration of Mo in soil.

Monkey Gully Cu soil sampling



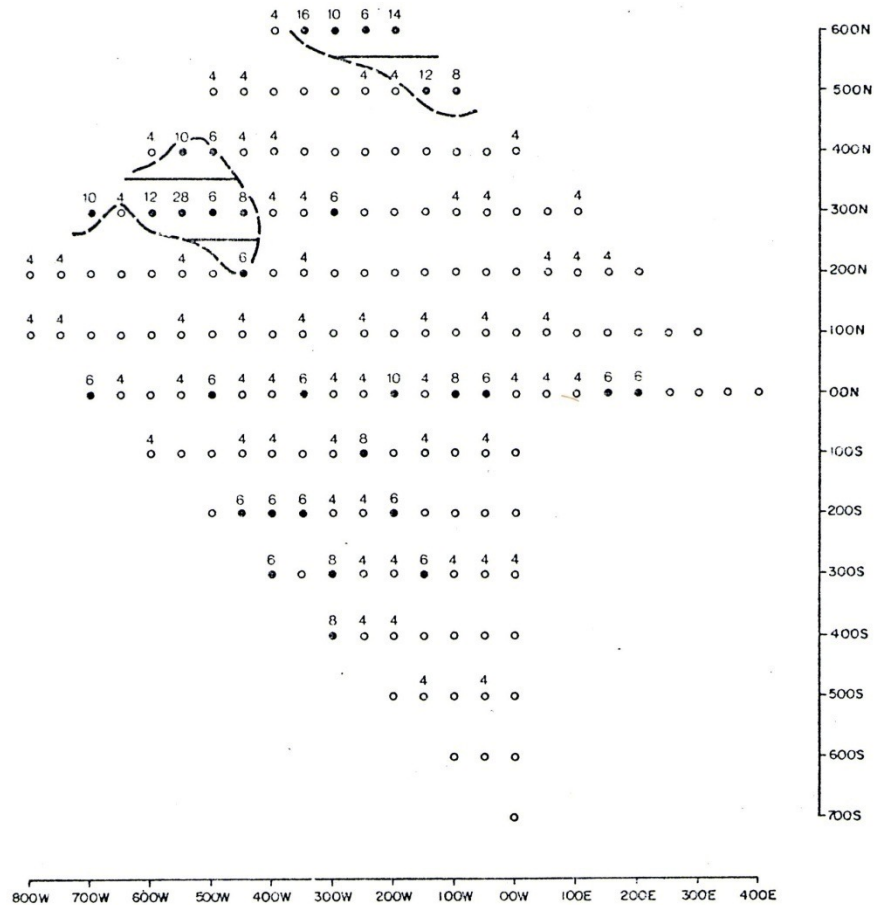
○ Soil sample with Cu < 100ppm.

● Soil sample with Cu ≥ 100ppm.



Main concentration of Cu in soil.

Monkey Gully Bi soil sampling



- Soil sample with Bi < 6ppm.
- Soil sample with Bi ≥ 6ppm.
- ⊖ Main concentration of Bi in soil.

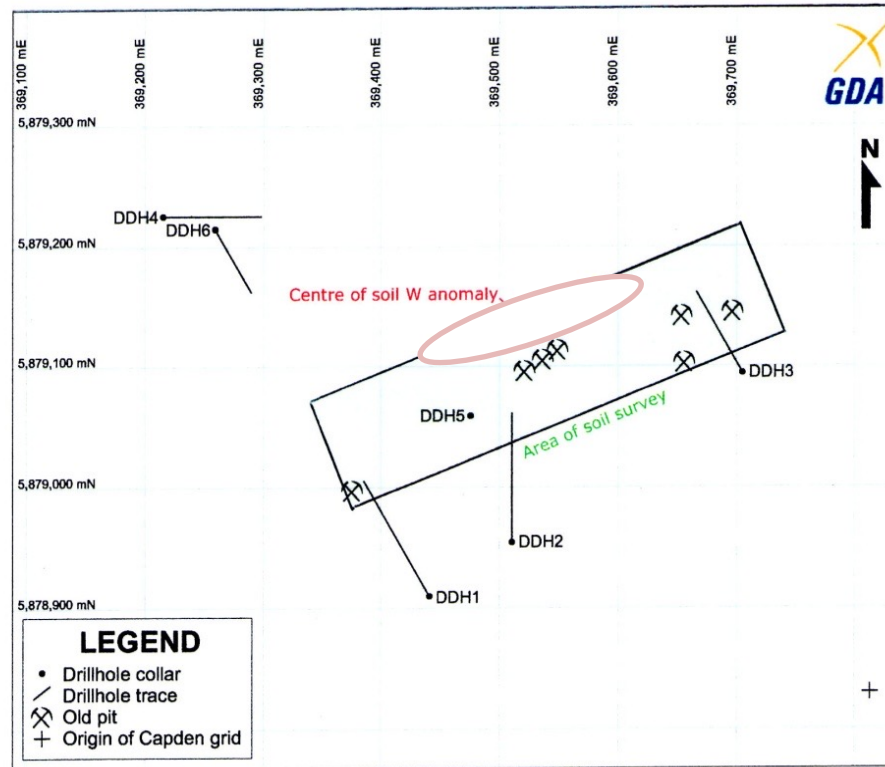
Monkey Gully outcrop (1)



Monkey Gully outcrop (2)



Monkey Gully drillhole plan



World Minerals Pty Ltd	
Date: 27/1/2010	EL5103 Fig. 5. Drillhole Plan
Author: AGR	
Scale: 1:5,000	Datum/Grid: GDA94/MGA94 Zone 55

Monkey Gully DDH1



Monkey Gully DDH2



Monkey Gully DDH3



Monkey Gully drilling (1)

Drill hole	Interval (m)	WO3 (%)	Mo (%)
DDH-1	28-36	0.15	
	32-36	0.21	
	54-56	0.14	
	118-120		0.26
	138-140		0.20
	138-142		0.13
	150-152		0.14
DDH-2	54-56	0.14	
	54-58	0.13	
	100-106	0.43	
	100-110	0.33	
	140-142		0.15

Monkey Gully drilling (2)

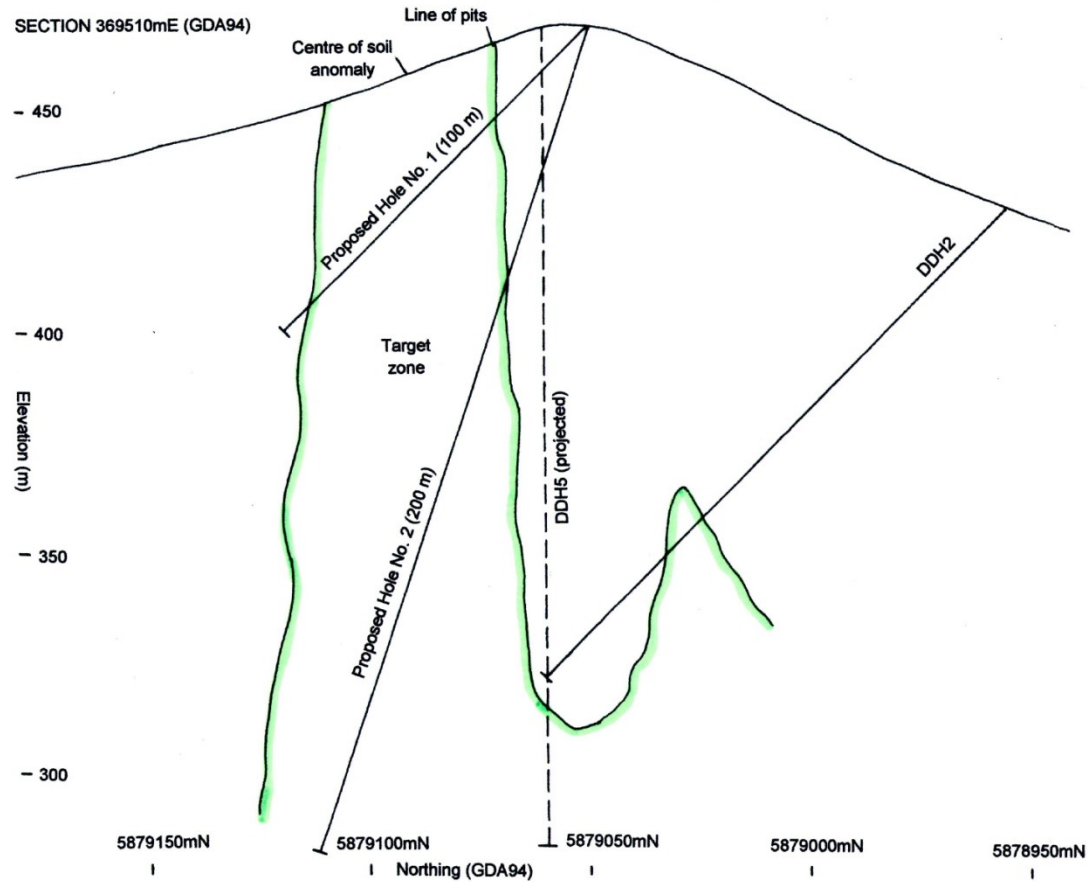
Drill hole	Interval (m)	WO3 (%)	Mo (%)
DDH-3	66-68	0.19	
	82-86	0.16	
DDH-5	2-4	0.15	
	5-7	0.21	
	18-22	0.13	
	74-80	0.18	
	86-88	0.16	
	134-136	0.19	
	138-140		0.39
	144-146		0.23
	160-162	0.16	

DDH-8

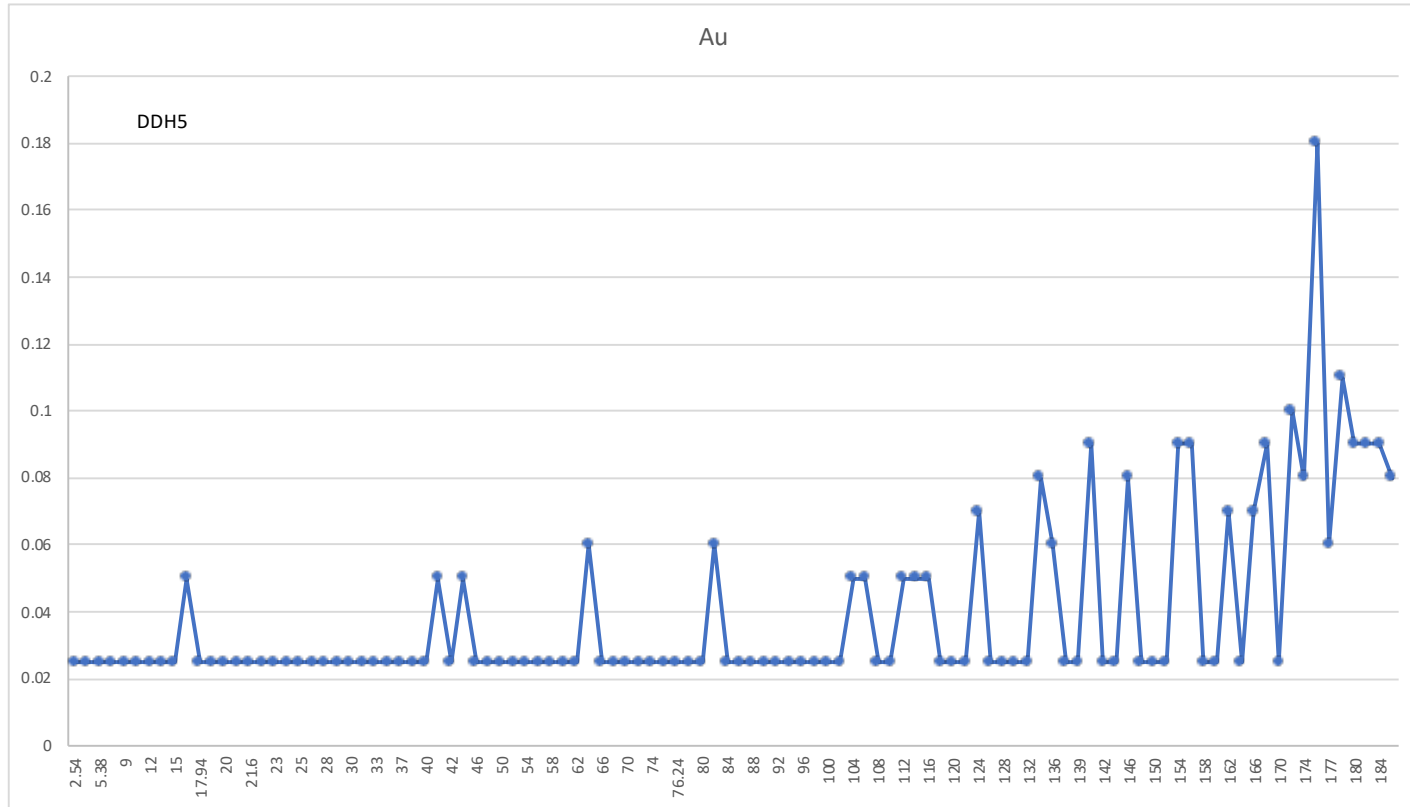
110-118

0.34

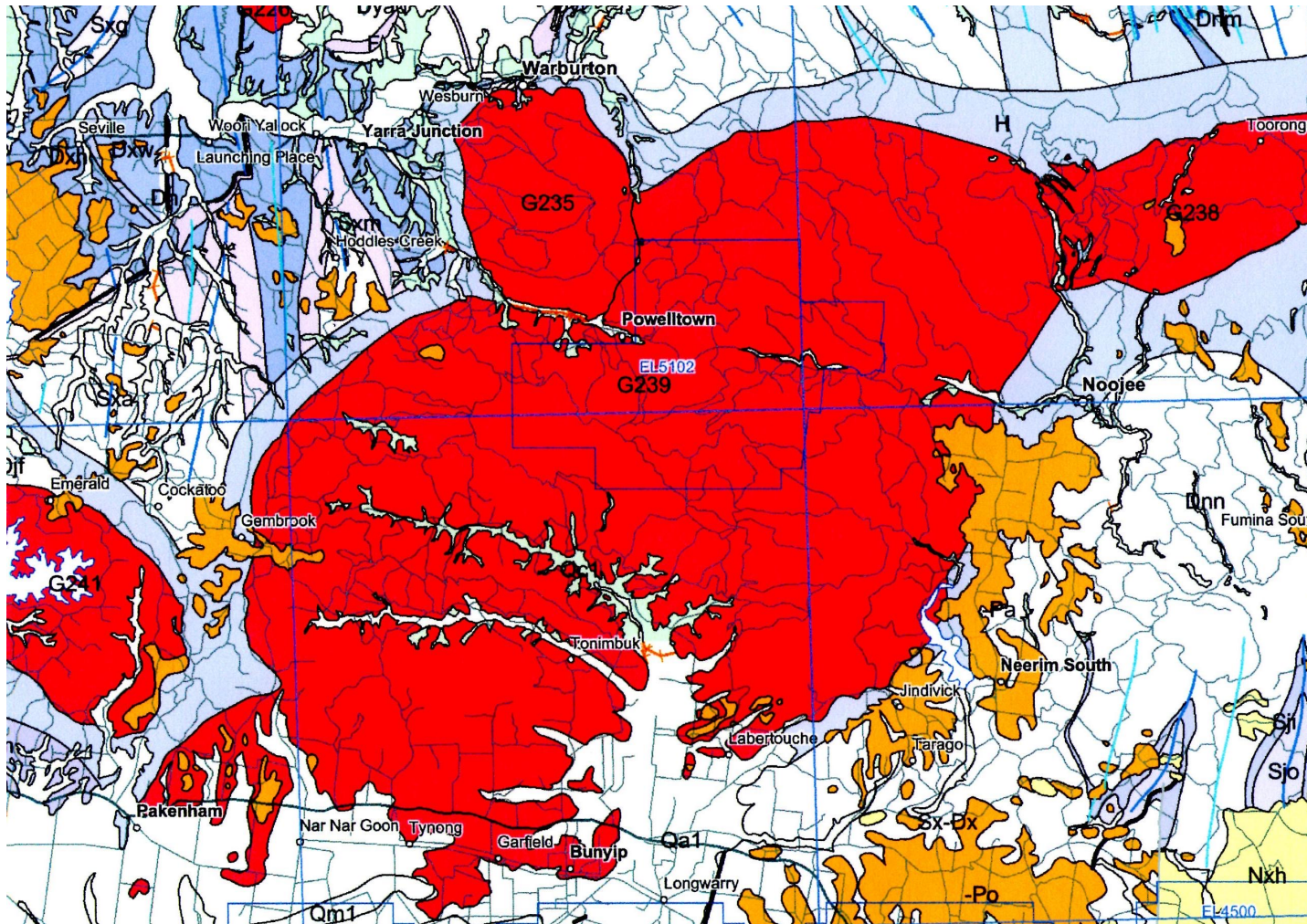
Monkey Gully cross section



Gold in Monkey Gully DDH5

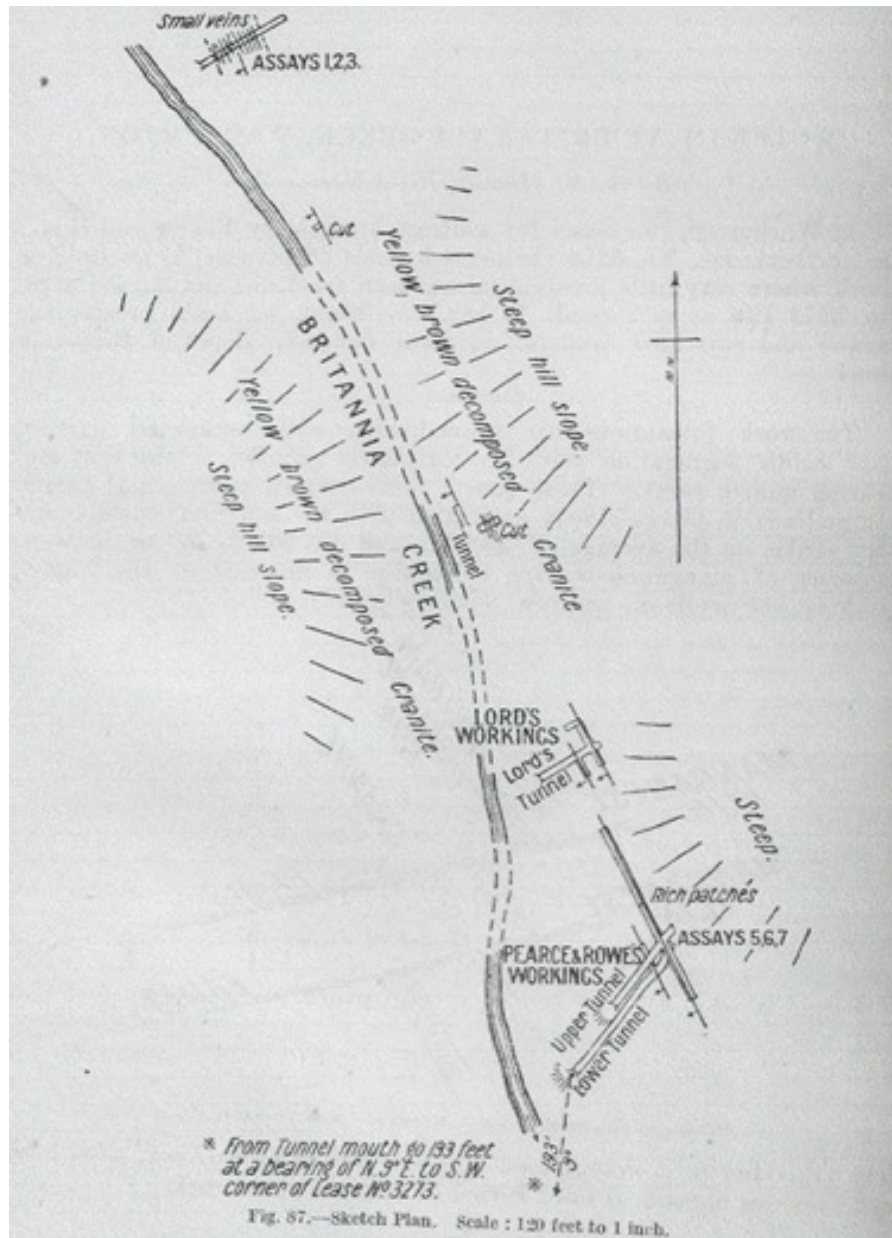


Britannia Creek regional geology



(GeoScience Victoria)

Britannia Creek Howitt report



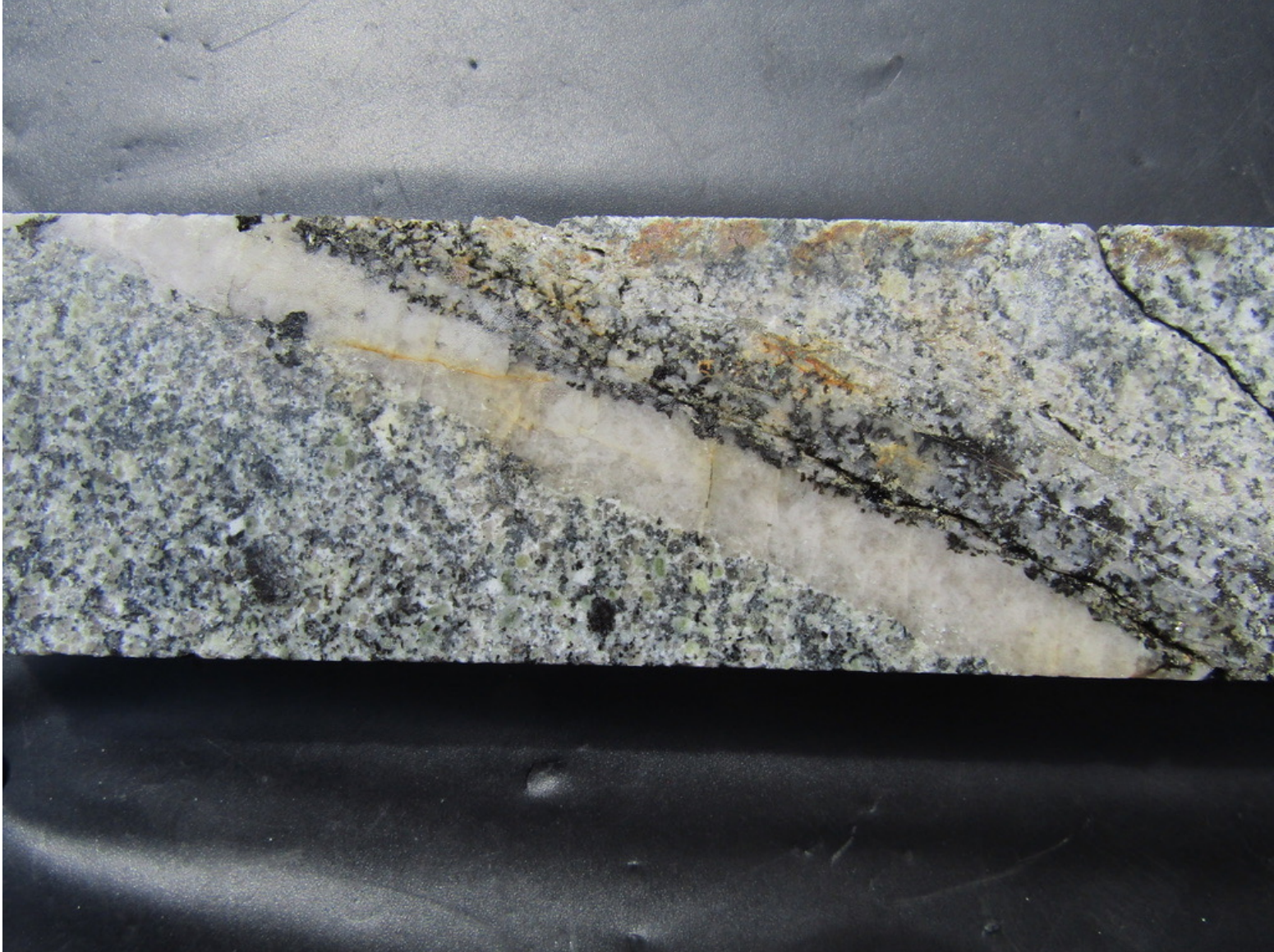
Britannia Creek drilling 2022



Britannia Creek drillcore (1)



Britannia Creek drillcore (2)



Britannia Creek rehabilitated drillsite



Conclusions (1)

**Potential for porphyry/stockwork W (+Mo+Sn+Au?)
deposits associated with granodiorite**

Deposit	Country	Type	Size (Mt)	Grade (%WO₃)
Shizhuyuan	China	Skarn	175	0.40
Cantung	Canada	Skarn	48	1.01
Lianhuashan	China	Porphyry	40	0.8
Xingluokeng	China	Porphyry	116	0.25

Conclusions (2)

Potential for sheeted vein/greisen Sn-W deposits associated with syenogranite

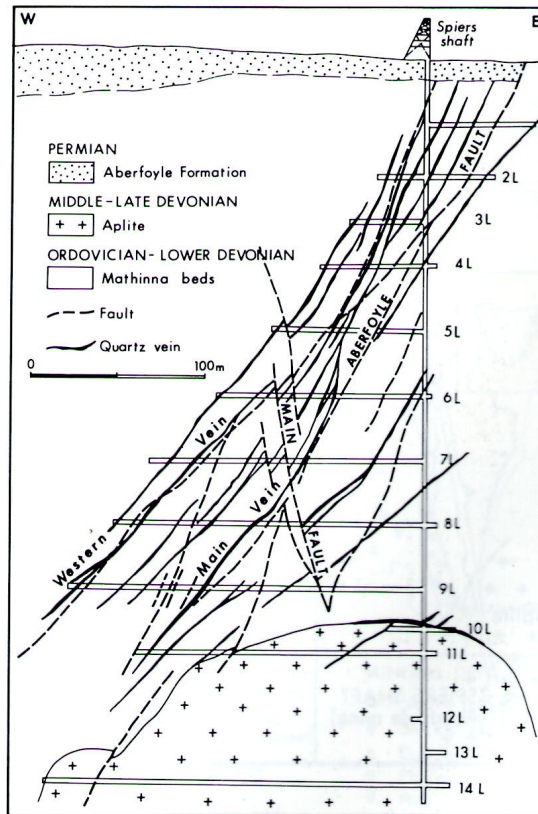


Fig. 7.19 Cross section of the Aberfoyle mine, Rossarden (modified after Blissett, 1959; Kingsbury, 1965).

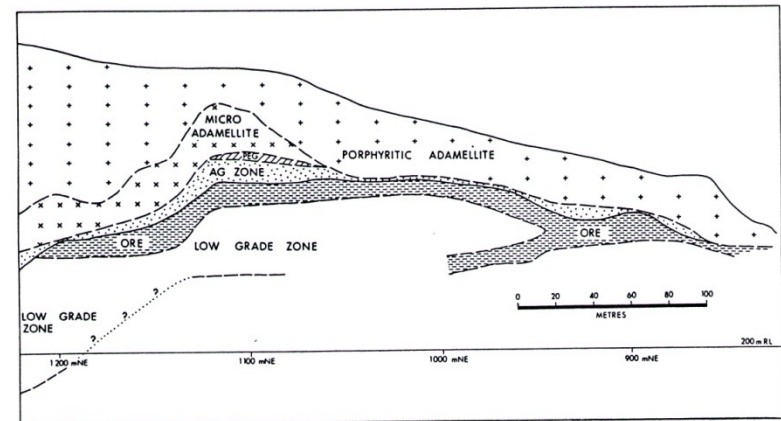


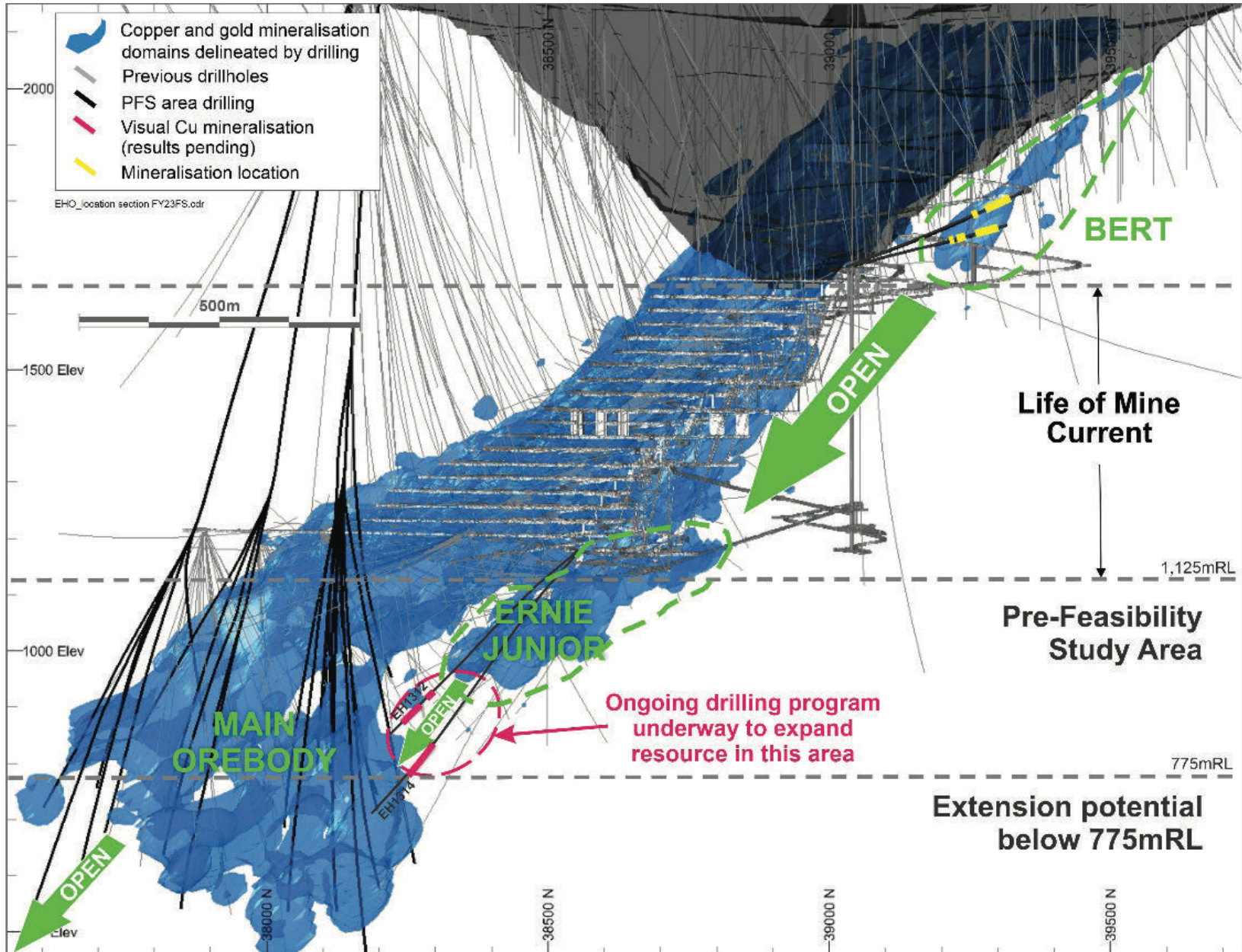
FIG. 4. Anchor Mine Long-Section (Baker, 1990)

Yaogangxian 22 Mt @ 1.2% WO₃
Panasqueira 10 Mt @ 0.24% WO₃

Conclusions (3)

- **At least four large W-rich mineralised systems are associated with central Victorian granites. These extend the Tasmanian W-Sn province.**
- **They have been woefully underexplored with three of them having been tested by only a single drillhole.**
- **Only one hole (at Britannia Creek) has penetrated more than 200 m vertically.**
- **There has been no significant government involvement or interest since 1982.**

Ernest Henry drilling



Rushworth LidAR

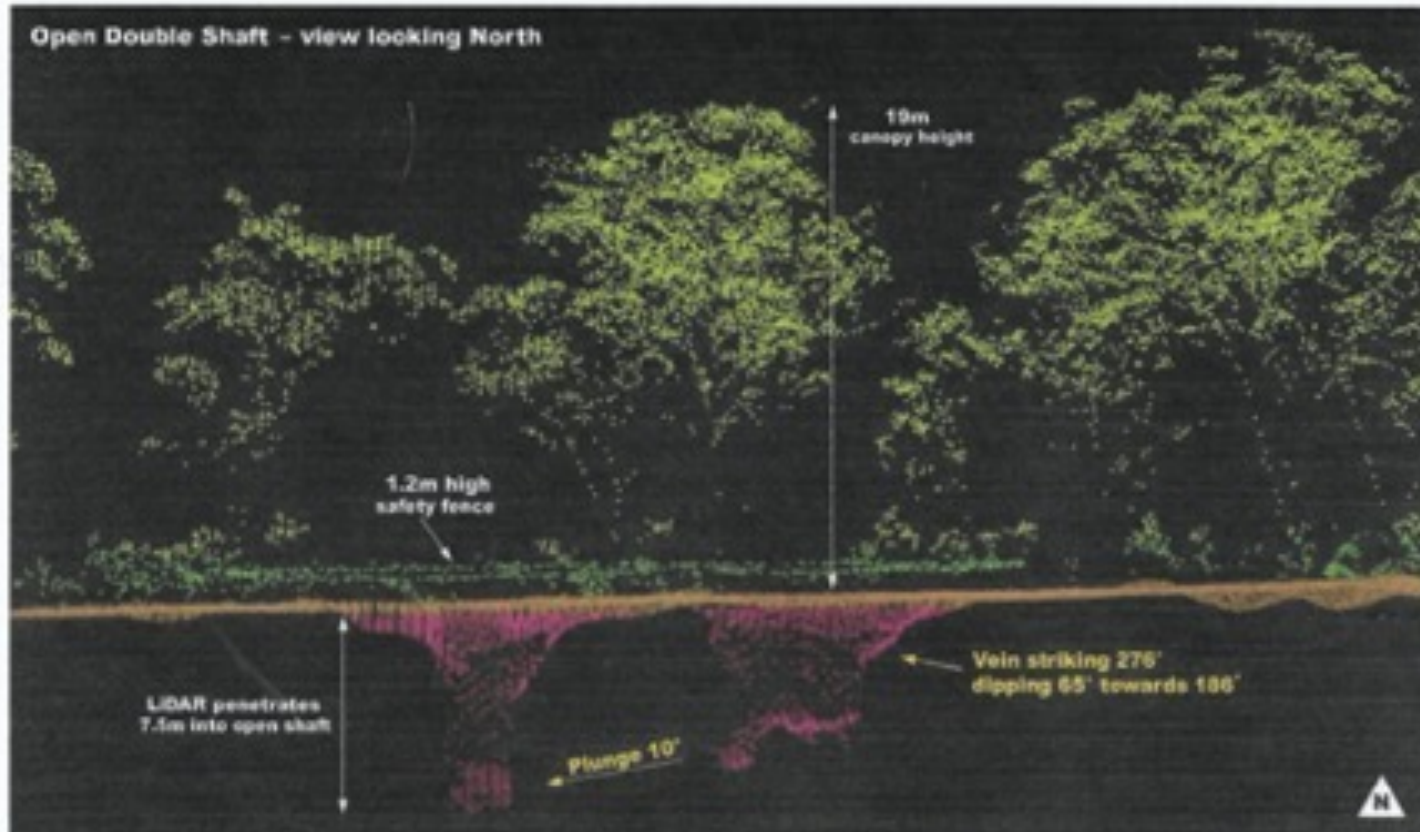


Figure 5 – Cross-section of LiDAR data point cloud across surface workings at Rushworth, showing a shaft and open underhand stope where LiDAR beams have penetrated the workings, effectively mapping the open underground development. This information provides important details as to the depth of development of some workings, as well as demonstrating important structural orientations which can be determined remotely.