Mineral Resources Tasmania

Laboratory Report
LJN2020-080

PETROLOGY AND MINERALOGY ANALYSES, CYGNET AREA

An unpublished Mineral Resources Tasmania Report for:

MRT & C Drayton

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Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

SUMMARY

Seven samples from this area include a pan concentrate; gold-rich and base metal rich, mineralised limonite; a limonite tube; crushed pyrite; black chert; hematitic mudstone; and a brooch.

INTRODUCTION

Seven samples from this area, collected by C Dayton, were submitted for identification. Details are shown in Table 1.

Table 1: Sample details.

Reg No.	Location	Process	Description
C113904	Forsters Rt	pxrf	Heavy cons
C113905	Mt Mary mine	pxrf	crushed limonite
C113906	Mt Mary mine	pxrf	crushed pyrite
C113907	Petcheys bay	Mic	limonite pipe?
C113908	Petcheys bay	Mic	black chert
C113909	Petcheys bay	Mic, pxrf	red ironstone
C113910	Petcheys bay	Mic, pxrf	brooch

PROCESS

To determine the nature of the samples, some were tested by pXRF and some were subsampled and representative parts of the material were studied by low power stereomicroscopy in the Mineral Resources Tasmania (MRT) Laboratories, Rosny Park. Park and Mornington, for chemistry and mineralogy.

DESCRIPTIONS

C113904 Forsters Rt Heavy cons

In hand specimen this rock looks like a medium grained sand (Fig. 1) .

Fig. 1 C113904. Heavy Pan concentrate. FOV ~80mm.

C113905 Mt Mary mine crushed limonite

In hand specimen this rock looks like a fine grained crushed limonite (Fig. 2).

Fig. 2. **C113905. Crushed limonite**. FOV ~80mm.

C113906 Mt Mary mine crushed pyrite

In hand specimen this rock looks like crushed pyrite (Fig. 3):

Fig. 3 C113906 Crushed pyrite. FOV ~80mm.

C113907 Petcheys bay limonite pipe?

In hand specimen this rock looks like a limonite pipe or tube (Fig. 4). These can form around plant stems and roots in wet swampy areas with high Fe contents.

Fig. 4 C113907. Limonite tube.. FOV ~60mm.

C113908 Petcheys bay black chert

In hand specimen this rock looks like a brecciated chert or grey-billy, typical of that found at the base of basalt flows.

Fig. 5 ***C113908. Chert****. FOV ~80mm.*

C113909 Petcheys bay red ironstone

In hand specimen this rock looks like a fine grained Permian pyritic mudstone that has been altered to hematite, possibly by hydrothermal activity related to gold mineralisation, though no gold could be seen.

Fig. 6. C113909. red ironstone. FOV ~80mm.

C113910 Petcheys bay brooch

In hand specimen this item is a brassy metal ornament (coppery, not pure gold) with some leaching and oxidation.

PXRF

The drillcore was analysed every 50mm for major and trace elements using an Olympus Vanta M Series pXRF. The instrument uses a 4-Watt X-ray tube with application optimized anode material (rhodium Rh and tungsten W): 8-50 kV with a large area Silicon Drift Detector. The instrument uses the built-in Olympus Vanta analysis software version 3.12.34.

The results are shown in Appendix 3.

Table 2: Geochemical Summary

Reg No.	Location	Description	Geochemistry anomalies
C113904	Forsters Rt	Heavy cons	Ti, Cr, V, Zr, Ba
C113905	Mt Mary mine	crushed limonite	Fe, S, Zn, As, Cu, Pb, Se, Ag, Au, Sb, Cd
C113910	Petcheys bay	brooch	Cu, Zn, Hg, Au, Mo, Se, Ni

SUMMARY AND DISCUSSION

C113904 is rich in heavy minerals, high in Ti and Zr. No gold or base metals were detected.

C113905 is S-rich limonite, very rich in gold and various metals, especially Zn, As, Cu and Pb, and is also anomalous in Ag, Sb, Se and Cd. It is a potential environmental issue.

C113906 is pyrite.

C113907 is a limonite tube that appears to have grown around plant roots and stems due to a high Fe content of the muds in the sediments near the Forsters Rivulet mouth.

C113908 is a black chert, typical of the “greybilly” silcrete that typically forms below basalt flows and may relate to the sapphires found in the area.

C113909 is a fine grained Permian pyritic mudstone that has been altered to hematite, possibly by hydrothermal activity related to gold mineralisation, though no gold could be seen.

C113910 is a weathered brooch, largely Cu and Zn (brass) but with some Au suggesting it may have had some gold plating, or the Hg content may suggest some coating from amalgam.

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Appendix 1: pXRF Report

Client: C Drayton
Sample Source: Cygnet district
MRT Job Number: LJN2020-080
Analysis: Chemistry
Methods: pXRF

Results (anomalous values highlighted)

Sample no	C113904	C113905	C113908	C113910
info	Pan con	Gossan	green? Chert?	brooch
Date	29/7/20	29/7/20	29/7/20	29/7/20
Method Name	Soil	Soil	Soil	Soil
Units	PPM	PPM	PPM	PPM
S Concentration		25699	1688	1592
S Error1s		386	151	66
K Concentration		10512	735	1468
K Error1s		115	47	26
Ti Concentration	2423	593	210	364
Ti Error1s	52	17	9	5
V Concentration	343	95	10	13
V Error1s	25	3	2	1
Cr Concentration	669	62	11	31
Cr Error1s	23	5	3	2
Mn Concentration	92	177	346	173
Mn Error1s	8	5	8	3
Fe Concentration	4875	344326	3495	6266
Fe Error1s	30	1657	25	42
Ni Concentration	5	-9	2	136
Ni Error1s	2	5	2	4
Cu Concentration	33	869	10	25464
Cu Error1s	2	10	1	104
Zn Concentration	26	1962	10	13474
Zn Error1s	1	16	1	57
As Concentration	5	709	0	14
As Error1s	1	9	1	1
Se Concentration	-1	24	0	57
Se Error1s	0	1	0	0
Rb Concentration	104	34	2	7
Rb Error1s	1	1	0	0
Sr Concentration	525	89	10	0

Sr Error1s	9	5	1	4
Y Concentration	19	9	0	-6
Y Error1s	2	4	1	2
Zr Concentration	2131	17	-1	3
Zr Error1s	23	3	1	3
Nb Concentration	32	0	1	8
Nb Error1s	2	1	1	2
Mo Concentration	6	2	-3	25
Mo Error1s	4	3	1	4
Ag Concentration	1	38	-1	-1
Ag Error1s	1	3	1	3
Cd Concentration	-2	28	-3	2
Cd Error1s	2	3	2	4
Sb Concentration	-1	29	-2	-6
Sb Error1s	4	6	3	8
Ba Concentration	850	227	273	96
Ba Error1s	17	18	13	22
Au Concentration	-1	8	0	110
Au Error1s	1	3	1	1
Hg Concentration	2	-2	1	642
Hg Error1s	1	4	1	4
Pb Concentration	12	1466	1	18
Pb Error1s	1	11	1	1
Th Concentration	23	2	2	5
Th Error1s	5	4	2	5