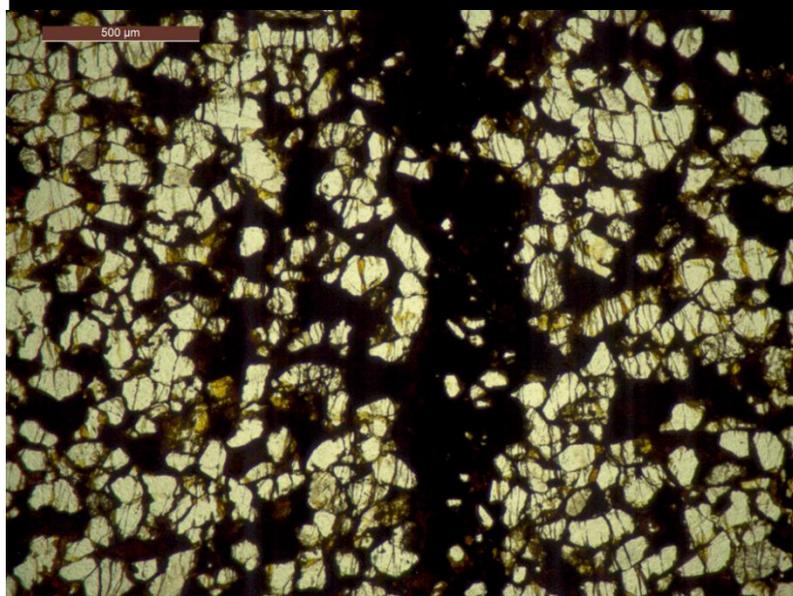


Mineral Resources Tasmania

Laboratory Report

LJN2021-071

PETROLOGICAL ANALYSES, SANDSTONE, PITTWATER



An unpublished Mineral
Resources Tasmania Report for:
**C. Mazengarb,
MRT**

By: R.S. Bottrill
Date: 30 August 2021

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SUMMARY

The sample is a strongly ferruginised, weathered, hornfelsed and sheared Triassic or late Permian sandstone.

INTRODUCTION

One rock sample was collected from the Pittwater area by Colin Mazengarb and submitted for petrological analysis, with details shown in Table 1. The main issue is to determine the rock classification and origin.

Table 1: Sample details.

Reg. No	Location	Description	Process
E203260	Pittwater sea-star habitat	Hard, dark red-brown ?iron-stone concretion	TS

SAMPLE PREPARATION

The sample was examined by stereomicroscopy, prepared for thin sections by the Utas, and described petrographically at MRT.

SAMPLE DESCRIPTIONS

E203260 is a hard, indurated, flaggy, red-brown ferruginous sandstone (Fig. 1).

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Fig. 1. E203260. Ferruginous sandstone, with red paint, cut. Red is paint. FOV 180mm.

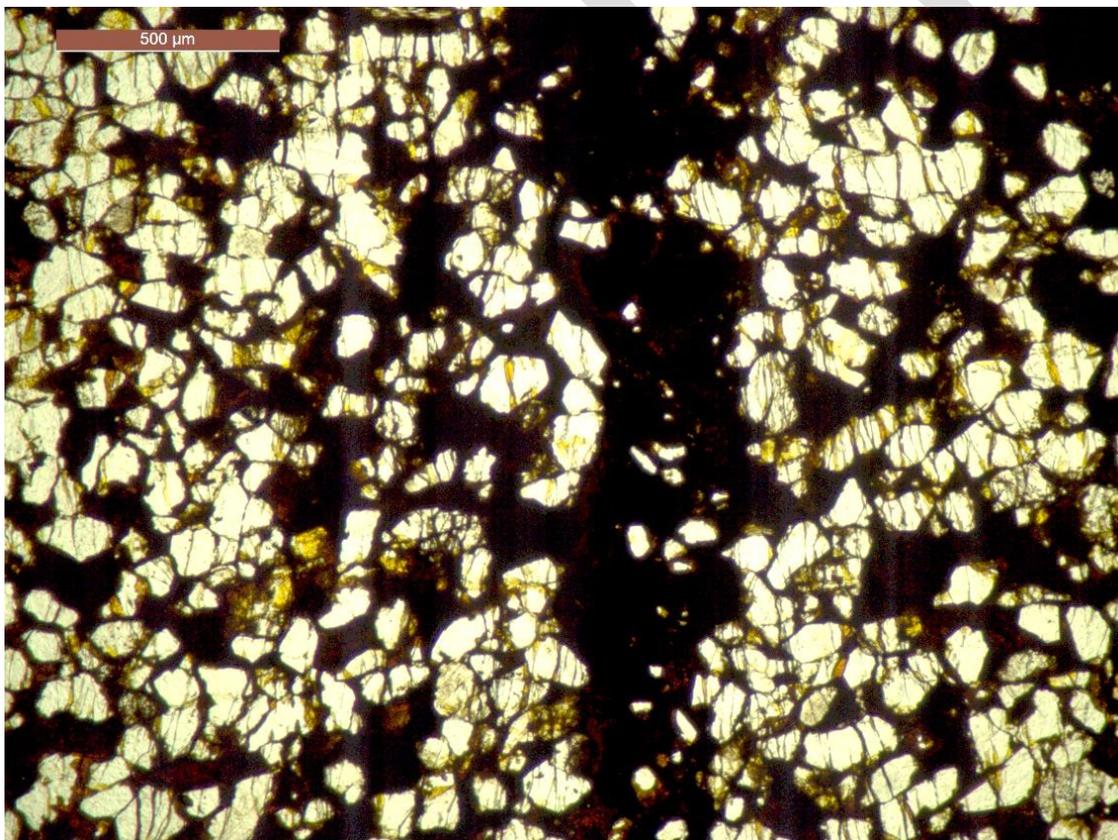


Fig. 2. E203260. Ferruginous sandstone, with fractured quartz grains and a (vertical) limonite-rich fracture. PPTL (Plane polarised transmitted light).

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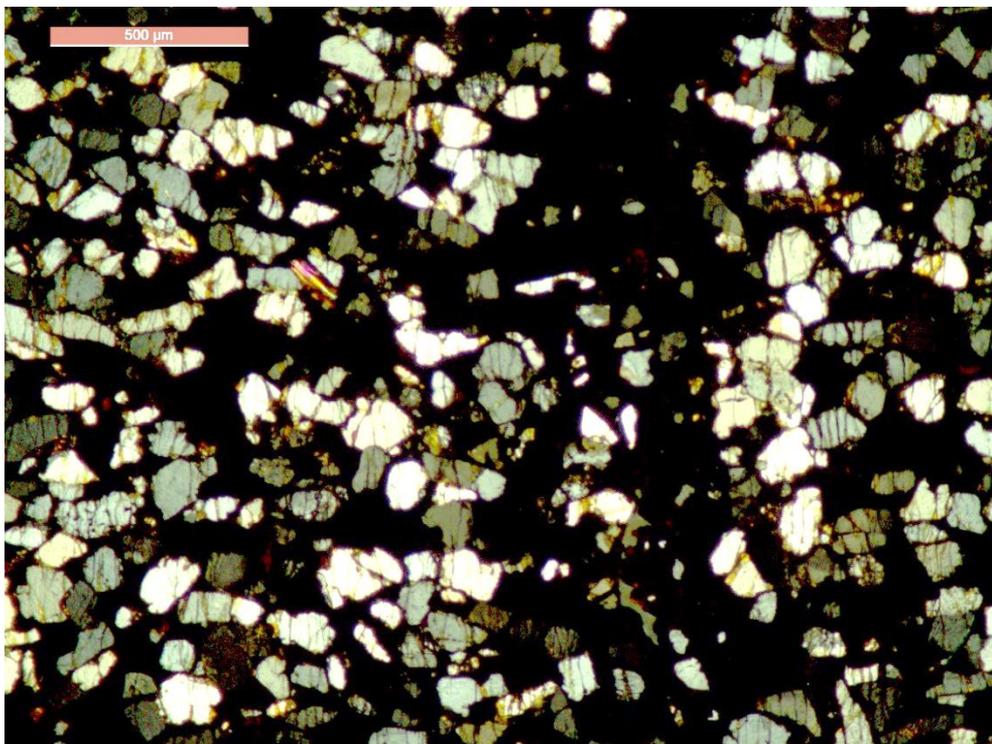


Fig. 3. E203252. Ferruginous sandstone, with fractured quartz grains, minor feldspar, trace muscovite and a limonite-rich band. XPTL (Cross polarised transmitted light).

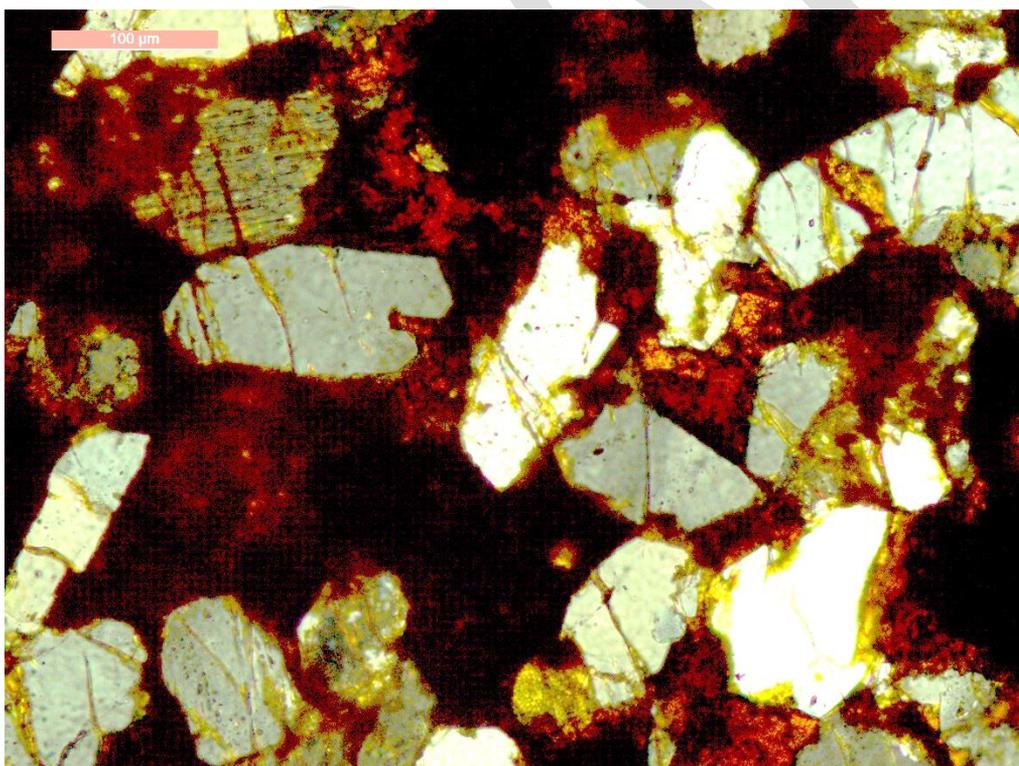


Fig. 3. E203252. Euhedral to subhedral, prismatic, well-crystallised quartz grains in a limonite matrix, and an altered feldspar grain in the upper left. XPTL (Cross polarised transmitted light).

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In thin section this sample contains well crystallised quartz with minor feldspar and trace muscovite in a fine grained limonite matrix (Figs. 2 - 4). The rock contains:

- Quartz (~70%), euhedral – subhedral, prismatic, (<0.1 mm).
- Limonite, (~25%), black-red-yellow (amorphous, matrix).
- Feldspar, (~4%), colourless, equant, subhedral, (<0.1 mm).
- Lithics (~2%), siliceous, fine-grained clasts (<0.1 mm).
- Muscovite: ~1%, tabular (<0.1 mm).

The quartz grains are mostly euhedral, or at least partly bounded by crystal faces, and are well crystallised with no visible strain. This indicates the rock has undergone complete recrystallisation at high temperature and is a typical texture in sandstones closely contacting dolerites. The limonite matrix is possibly replacing feldspar, cordierite or another metamorphic mineral.

The sample contains a limonite-filled fracture or vein ~0.5 mm thick, parallel to the platy fabric of the rock. The quartz grains are mostly fractured parallel to this vein, suggesting it is a tectonic, fault-related fabric.

DISCUSSION AND CONCLUSIONS

This sample is a fine-grained, hornfelsed sandstone, which contains recrystallised quartz with minor feldspar and trace muscovite in a very fine-grained limonite matrix. The limonite is a replacement of pre-existing matrix material, possibly cordierite and/or feldspars. It was probably a Triassic, or late Permian, feldspathic, lithic, argillaceous sandstone, which was strongly hornfelsed and recrystallised, probably from an intruding Jurassic dolerite body, or perhaps a Cenozoic basalt. It has a limonite vein and a parallel fracture fabric due to weak tectonism.

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