

GEOLOGY

REGIONAL SETTING AND TECTONIC HISTORY

The Lower-Middle Cambrian rocks within Exploration Licence 27/76 are known locally as the Lewis River Volcanics and are equivalents of the Mount Read Volcanics which were defined by Campana and King (Banks 1962a), with the type section in the Mt. Read-Red Hills area. They recognised that the volcanics extended south of Macquarie Harbour to Elliott Bay and north to Deloraine, forming an arcuate belt around the Tyenman Geanticline.

Essentially the Lewis River Volcanics consist of a sequence of fine to coarse grained porphyritic quartz-feldspar rhyolitic lavas, pyroclastics, volcanoclastic sediments and a high level intrusive coarse grained rhyolitic porphyry.

The eastern feldspar-quartz-biotite porphyry intrusion is faulted against the Precambrian quartzites, quartz schists and quartz-chlorite schists of the Arthur Group by the north-south trending Lewis Fault. Complex structures within the Precambrian suggest at least three periods of folding.

At Low Rocky Point and the north eastern zone of Elliott Bay the Lewis River Volcanics are intruded by small bodies of feldspar-quartz-biotite granite. The Low Rocky Point Granite is generally finer grained and white coloured in its western portion, becoming pink and coarser grained towards the east. Both granite bodies are characterized by schistose faulted contacts with the surrounding volcanics however detailed mapping on a local scale has shown considerable complexity of the contact especially in the southern portion of the Voyager 1 area. The Low Rocky Point Granite has been dated as Uppermost Cambrian* (McDougall, 1965, Aust. Nat. University) and has been partly deformed by the same tectonism, mainly shearing, as the Lewis River Volcanics.

* 407 million years minimum age, - based on potassium
- argon dating of biotite.