

SOUTHWEST TASMANIA ELLIOTT BAY TO TOWTERER BEACH

High grade metamorphics, possibly up to sillimanite grade, but largely retrogressed to muscovite during cooling. Deformed into east and west closing (i.e. mainly N-S striking) recumbent folds (Delamerian-Tyennan – c. 520-515 Ma = Early Cambrian); refolded by upright, generally N trending folds (Tabberabberan 1 – c. 395-390 Ma = Mid Devonian) and refolded again by upright, NW trending folds (Tabberabberan 2 – c. 380 Ma = Middle to early Late Devonian).

Stratigraphy of the metamorphics probably reflects the broad stratigraphic subdivision of the similarly-aged Rocky Cape Group – i.e. pelitics (at base), quartzite, mixed pelitics and quartzite, and quartzite (at top). Garnet-bearing amphibolites are scattered through the pelitic schists.

A major fault (cataclasite) zone separates the high grade from low grade metamorphics in NW Nye Bay. The fault strikes NNW, dips west, has a strong down-dip lineation, and is clearly a normal fault (based on the juxtaposition of the metamorphic grades). The fault rocks are overprinted by a mild fabric (in thin section), indicating that the fault existed prior to Tab 1 deformation.

Just east of the fault the high grade metamorphics are intruded by a small granite body with an age of 508 +/- 9 Ma (Middle Cambrian, possible “early” Mt Read Volcanics). The granite also has a mild fabric.

The low grade rocks west of the fault are deformed by upright Tabb 1 folds with a strong, steep cleavage. This cleavage is folded by Tabb 2 structures.

The contact between the low grade metamorphics and the Mt Read Volcanics in the NE corner of Elliott Bay is faulted. This fault strikes c. N-S, dips steeply east and is probably a major Tabb 1 reverse fault. Its trace is slightly sinuous and at the coast it is cut by a strong Tabb 2 cleavage, which refracts spectacularly from the metamorphics into the volcanics. To the north the fault appears to cut obliquely across the normal fault in the metamorphics.

Argon/argon dating of muscovites in the high grade metamorphics shows that they underwent minor cooling (resulting from uplift and erosion) at c. 503 Ma (early Late Cambrian), corresponding to MRV time, and massive cooling at c. 490 Ma (late Late Cambrian), corresponding with the deposition of the Owen Conglomerate. Another significant cooling event is recorded at c. 430-426 Ma (late Early to Middle Silurian) and coincides with an absence of fossils in the Palaeozoic record of Tasmania. This corresponds with the Benambran Orogeny in Victoria, which it now appears may have caused either a depositional hiatus or period of erosion in central and western Tasmania.

We have also followed the base of the Palaeozoic sediments from Mulcahy Bay into the lower Giblin valley. The basal conglomerate is generally less than 2 m thick and overlain by flaggy sandstone, beyond which there is no outcrop. The unconformity extends along the east side of the valley, while there appear to be some large faults between the metamorphics and sediments along the west side of the valley.



Coarse grained albite-garnet schist, south end Towterer Beach



Coarse grained muscovite-garnet garnet schist, east of Brier Holme Head



Recumbent folds in quartzite, refolded by Tabberabberan 1 upright folds



Isoclinal Delamerian folds in interbedded quartzite and pelitic schist, Wreck Bay.
These structures are located on the west limb of a large Tabberabberan 1 fold.



Quartz-muscovite schist with Delamerian isocline and Tabberabberan 1 crenulation folds



Garnet amphibolite body in knotted schist and quartzite with Tabberabberan 1 folds



Typical open, upright Tabberabberan 1 folds in knotted pelitic schist, Towterer Beach



Cataclasite (fault) zone between high and low grade metamorphics, Nye Bay.



Low grade metamorphics with Tabberabberan 1 folds and slatey cleavage.



Volcanics with strong Tabberabberan 2 cleavage, just west of the fault contact at the western margin of the low grade metamorphics, NE Elliott Bay.



Tabberabberan 2 cleavage cutting across the fault contact between low grade quartzite (top left) and volcanics (bottom right), NE Elliott Bay.



Thin basal conglomerate, Palaeozoic succession, north of Mulcahy Bay