

**THE GEOLOGY, PETROLOGY AND GEOCHEMISTRY
OF THE PROTEROZOIC INLIER,
SOUTH OF MYPONGA, FLEURIEU PENINSULA,
SOUTH AUSTRALIA.**

by

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ABSTRACT

The study area is located within the Yankalilla-Myponga Proterozoic Inlier, approximately 60km south of Adelaide. The basement rocks are comprised of a mixture of metasediments and intrusives. The metasediments predominantly comprise of quartz-biotite gneisses and schists. They are intruded by basic dykes, pegmatites and an aplite/microgranite.

The basic dykes have oceanic basalt affinities and could originally been formed during an 'aborted rifting' event, but the more felsic rocks are more likely to be within plate granites. The origin of the 'Houghton' granulite is difficult to ascertain, because it has a varied internal composition and is closely comparable to a diorite and a shale.

The basement inlier rocks are found within the overlying unconformable upper Proterozoic Adelaidean System. They have undergone at least four phases of deformation and metamorphism. Mineral assemblages found in the rocks indicate metamorphism reached at least upper amphibolite facies.

The maximum pressure and temperature conditions were calculated from microprobe data. They range from 8-10 kb at 550 -650 C.

U-Pb isochron dating was performed on the aplite /microgranite of the area and was found to be 1578 ± 22 Ma, which places a minimum age on the inlier rocks.

This date obtained and the deformation processes recognized are comparable to other basement rocks in South Australia; noticeably the Gawler Craton and the Olary Province. This may indicate a homogeneous terrain once spanned most of South Australia during the lower Proterozoic.