This presentation focuses on the utility of studying melt inclusions in primitive mineral phases to gain access to the initial stages of magmagenesis that drive the formation of lithospheric crust within an intra-oceanic arc setting. The Hunter Ridge in the Southwest Pacific is an ideal location in which to study the nature and composition of primary mantle-derived magmas. Atypical subduction dynamics have lead to the eruption of voluminous primitive rocks that have in turn preserved melts as olivine-hosted melt inclusions. The preserved melts from two mafic volcanic endmembers from the southern segment of the Hunter ridge and a recently formed rift zone have been systematically studied using high temperature heating experiments, electron probe micro-analysis for major and minor element contents and laser ablation-inductively coupled plasma mass spectroscopy for trace element geochemistry. The results indicate that multiple and distinct primitive magmas series were preserved in each of the volcanic samples. Numerical modelling was used to calculate parental melt compositions that suggest multiple contributions to a depleted mantle source including subducted sediment- and slab-derived partial melts and partial melts from a backarc basin basalt source produced the range of magma compositions observed. The primary nature of these melts indicates that we have sampled the initial stages of mantle partial melting that may have been triggered by a range of subduction-related inputs within an atypical, young and anomalously hot subduction environment. The preservation of such geochemical diversity further indicates that the tectonic conditions facilitate the rapid transportation and ascent of newly formed melts.