3: P2O5 abundances are very useful for local and regional correlations within the Mount Read Volcanics . This is because much of the MRV is composed of high-K andesites and shoshonitic basalts which have generally high P2O5 contents (0.2-1.5%) that are directly proportional to REE abundances. Also, there is a strong indication from my work that in a given pile of basalts (eg W of Hellyer) that P2O5 abundances generally increase upwards in the pile.

4: Cr abundances are also useful, both for judging how 'primitive' a lava is in the absence of MgO data, and for differentiating between lava units/suites that have similar Ti/Zr and P2O5 contents. For instance in the Mines Department Mount Charter hole MCH-1, there is a 150m-thick unit of Hellyer-type basalts with Ti/Zr = 34-44, P2O5 ~ 0.35%, but very low Cr abundances (<70ppm). In the Placer holes that penetrated the same stratigraphic section W of the Murchison Hwy, there are quite a few units of basaltic lavas with similar Ti/Zr and P2O5 contents as this MCH-1 unit, but the Placer basalts have Cr abundances usually in excess of 500ppm; and cannot be the same unit.

5. Of the major elements, MgO is probably the most useful, as it gives an indication of the degree of differentiation of the sample, and can be used in a general way to infer SiO2 abundances. CaO, Na2O and K2O are generally highly mobile, and are only useful in assessing extents and styles of alteration; they are of little or no use in regional or local correlation.

Some examples of the utility of the selected elements and element ratios mentioned above are shown below, using data from the MRV. Figure 1a-d shows how simple element ratios such as Ti/Zr and TiO2/P2O5 can effectively discriminate the main lava suites within the Mount Read Volcanics. Figure 2 shows how similar 'diagnostic' element ratios and abundances can clearly separate different lava units within a single drillhole (Placer BRD-05) through the thick lava sequence beneath the Que River Shale west of Hellyer.