

## METHODS OF CORRELATION

The section of Holocene tephra at Democrat Road, Rerewhakaaitu (N86/934824)\* of Vucetich and Pullar (1964) was taken as a standard for the region, and the sequence at each unknown section was compared with it. Once tephrae were identified, samples were taken vertically at 15cm intervals from selected localities of the Rerewhakaaitu, Waiohau, Kaharoa, and Tarawera Formations. Mafic mineral contents were determined and found to be distinctive for each tephra. This method was then used to confirm correlation in areas where field determinations were difficult, and to correlate tephrae with pyroclastic or lava-flow rocks of the same formation.

## DESCRIPTIONS OF FORMATIONS

Type or standard sections of the pyroclastic members of the four formations described were taken where they were  $1\frac{1}{2}$ –2m thick; a convenient thickness for examining vertical changes in lithology and lateral variation around the vent.

*Rerewhakaaitu Formation*

The type section of the Tephra Member (Rerewhakaaitu Ash of Vucetich and Pullar, 1964: 57) is in Democrat Road, Rerewhakaaitu (N86/934824, Fig. 2, Section 3).

	Thickness (cm)
Brown ash with lapilli up to 5cm in diameter (buried soil)	15–37
Shower-bedded fine ash, coarse ash and lapilli	52–74
Distinct lapilli bed	7–13
Shower-bedded coarse ash and lapilli	25–37

The Tephra Member is exposed in the “pumice washes” on the south side of Mount Tarawera, where it is up to 50m thick. It is weakly shower-bedded and contains many blocks of pumiceous rhyolite and partly expanded obsidian in a matrix of coarse ash.

The Koa Rhyolite Member is apparently interbedded with the Tephra Member on the south-west side of Mount Tarawera. No standard section can be given, but there is an outcrop of the rhyolite at the head of one of the pumice washes to the south of Koa Trig (N77/960908).

*Mineralogy:* The Rerewhakaaitu Tephra Member contains a mixture of two types of lapilli (Table II); pumice and obsidian with a low crystal content (Type A); and pumice and obsidian with a high crystal content (Type B). The volumes of each are approximately equal.

Type A: The crystal content averages 3 percent and consists of small resorbed crystals of plagioclase (0.5–1mm in diameter), hypersthene, and magnetite. The glass is pumiceous with some granophyric aggregates in it.

Type B: The crystal content averages 19 percent and includes plagioclase, quartz, hornblende, and biotite. Both plagioclase and quartz are large (up to 3.5mm) and are often surrounded by a rim of small feldspar microlites. The quartz is usually strongly resorbed. Mafic minerals are green hornblende and biotite, which are of medium size (< 1mm), and are often intergrown together or with plagioclase. The biotite is commonly more strongly pleochroic around the margin than in the centre. The glassy groundmass is full of small laths of plagioclase with some small biotite flakes and hornblende crystals. In the crushed lapilli and ash both types A and B contribute mafic minerals, so that biotite, green hornblende, hypersthene, and magnetite are present in approximately equal amounts (Table III).

The major rock type of the Koa Rhyolite Member resembles pumice of Type A with a few small crystals of plagioclase and hypersthene. However, large “xeno-

\* New Zealand Grid Reference (North Island Sheet 86).