Burial history models were constructed using the thickness and chronology of the stratigraphic units (van Hinte 1978, Sclater and Christie 1980) observed at the locations studied. Burial curves for the investigated section were generated for Flinders 1 (TD of 2700 metres subsea in *L.balmei*) and Pelican 5 (TD of 4267 metres subsea in *T.lillei*) as well as for an extrapolated Pelican Deep location (estimated depth to basement of 6000 metres subsea).

Empirical modelling methods (Katz, *et al.*, 1988) suggest that vitrinite reflectance profiles across stratigraphic unconformities can be used as an estimation of the amount of eroded section. Applied to the Bass Basin values in the range of 500-1000 metres have been applied based on estimated removal of section from seismic data and the basin's tectonic history.

Geohistory models, including palaeo-sea levels, were not attempted because of the rapid burial and relatively small sea-level variations likely to have affected the mainly non-marine sediments of the Eastern View Coal Measures.

10.5   Thermal History

The thermal history is vital to both maturity modelling (Section 10.6-10.7) and kinetic modelling (Section 10.8). It is important to determine whether a potential source rock contains organic matter that is thermally immature, mature or overmature with respect to oil and gas generation. A good control on temperature will aid in this determination as a change from kerogen to oil and gas is fundamentally controlled by heat input. Changes in maturation and kinetics occur exponentially with respect to temperature while changes occur linearly with respect to time.

The present-day estimated mean surface temperature of the offshore Bass Basin was taken at 10°C, and with subsurface data, was used to generate a temperature-depth profile for the Flinders 1 and Pelican 5 wells (Figure 10.1). Subsurface temperature data were derived from DSTs, which are the most accurate, and from BHTs of logging suites derived from Horner Plots. The calculated and measured data show a good fit, thus adding confidence to a good heat flow/maturity model.