

2 **REGIONAL GEOLOGY**

2.1 **Tectonic Evolution**

The progressive dissection of eastern Gondwana occurred through five separate seafloor spreading episodes (Falvey, 1981). The intracratonic Bass Basin is one of a series of basins along the southern margin of Australia that were formed as a result of Cretaceous-Early Tertiary rifting between Australia and Antarctica. In particular episodes recognised in the Gippsland Basin (Lowry, 1991) are likely to be the key tectonic events in the Bass Basin's development. These are Southern Ocean rifting and spreading (from 120Ma to present) and the Tasman Sea rifting and spreading (from 98Ma to 52Ma).

The Bass Basin was initiated by NE-SW lithospheric extension, largely during the Early Cretaceous. The extensional stage was followed by a Late Cretaceous to Pliocene thermal subsidence stage and a late stage of compressional tectonic overprinting (Etheridge, 1985).

Major NW to SE longitudinal normal faults occurred in the Early Cretaceous rifting creating asymmetric depressions which dominated sediment accommodation until the early Eocene. Thereafter regional basin sag occurred more or less uninterrupted until the present day. Basin inversion in areas such as Cormorant is related to a compressional event during the Miocene. The present day major tectonic elements are presented in Figure 2.1 and detailed structural features are defined in Figure 2.2. A schematic cross section showing structural style is shown in Figure 2.3.

2.2 **Stratigraphy**

The stratigraphy of the central Bass Basin is only known from well control, however this together with the available regional seismic data allows correlation with subcropping rocks and well bores from the generically similar Otway and Gippsland Basins.