

4 **GEOLOGY**

4.1 **Regional Setting**

The Bass Basin is one of a series of basins along the southern margin of Australia that were formed as a result of Cretaceous rifting between Australia and Antarctica, and subsequently modified by Late Tertiary compression.

The Pelican and Cormorant Troughs are the two major depocentres of the Bass Basin (Figure 2). The King 1 well lies on the large Cormorant anticline which was formed by structural inversion near to the centre of the Cormorant Trough during the Late Tertiary.

4.2 **Regional Stratigraphy**

The stratigraphic succession in the Bass Basin includes sediments which range in age from the Early Cretaceous to Recent (Figure 3). The Early Cretaceous Otway Group rests unconformably on pre-rift Mesozoic and Palaeozoic rocks but has not been penetrated by any wells in T/18P. The nearest control is provided by Durroon 1, located approximately 175km to the southeast, which penetrated an Early Cretaceous sequence of clastic and volcanoclastic fluvial and deltaic sediments comprising sandstone, siltstone, shale and coal. The Otway Group is considered to be less prospective than the overlying Eastern View Coal Measures on the basis of reservoir and source potential.

The Late Cretaceous to Late Eocene Eastern View Coal Measures (EVCN) unconformably overly the Otway Group and comprise a thick sequence of sandstone, siltstone, shale and coal deposited in fluvial, deltaic and lacustrine environments occasionally subjected to marine inundation. The EVCN are thickest in the centre of the major troughs where seismic data suggest a total thickness greater than 5000m. The thickest sequence drilled is at Pelican 5 (T/25P) where 2507m was penetrated. The EVCN thins markedly towards the basin margins and exhibits both onlap onto basement and erosional truncation following uplift.

A three fold stratigraphic subdivision of the EVCN is recognised based on palynological and microfossil assemblages and unconformities recognised on seismic. The intra-formational unconformities are most apparent over basement highs and near to the basin margins, but are less obvious in the centres of the major troughs where continuous deposition occurred. Each of the unconformities corresponds to a period of structural movement accompanied by volcanic activity.