# Palaeo-Water Depth during the Late Cretaceous to Palaeocene in the Northeast Offshore Canning Basin

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The Offshore Canning Basin is the least explored and understood basin in the North West Shelf. The study area, the northeast part of the basin, covers the Offshore Fitzroy Trough and part of the Rowley Sub-basin. The Upper Cretaceous to Palaeocene succession in the study area consists of three sub-units bounded by seismic events C1-1, C6-2, C13-1 and T4-1. Different scales of valleys and channels were noted in the succession. The most evident valleys are associated with C6-2 and C13-1, with dominant north-south and northeast trends that are different from the dip of the slope (northwest).

The palaeo-water depth history of the Upper Cretaceous to Paleocene succession is achieved through the integrated use of seismic stratigraphy and geohistory modelling, in the absence of good regional well coverage. The palaeo-water depth was estimated at various times from the height and migration of sediment progrades on dip-orientated seismic lines. One-dimensional subsidence modelling, using a simple thermal-sag model, was then carried out for the East Mermaid 1 well, and some other locations in the basinal area, where more complete Albian to Paleocene successions were recorded. Palaeo-water depths were subsequently obtained by adjusting one-dimensional models to fit simple thermal-sag tectonic subsidence curves. The conclusion drawn from this analysis is that Senonian to Paleocene water depths for the basinal valley/channel area range from 600 to 800 metres. Moreover, low sedimentation rate is indicated as a major contribution to the deepening of water. Therefore a dominant deep water environment is prevalent, and the origin of the valleys and channels are probably associated with sub-marine erosion, with possibly sediment sliding as indicated from seismic sections.