2. JURASSIC ELANG-ELANG (I) PETROLEUM SYSTEM (Sahul Syncline, Flamingo High)

The Jurassic Elang-Elang (I) petroleum system is located in the northern region of the Bonaparte Basin, extending across the Nancar Trough, Sahul Syncline, Laminaria High, Flamingo High and Flamingo Syncline, as well as the Banks of the adjacent Londonderry High and Sahul Platform. The Nancar Trough and Sahul Flamingo synclines act as source pods sourcing the adjacent structural highs. Source rocks in the northern Bonaparte Basin include the Frigate Group and the Elang, Plover and Flamingo formations. The Elang Formation is the dominant source for hydrocarbons and is mature for generation and expulsion within the study area. The Elang Formation is a sheeted marly to sandy shale unit, 150 to 650 m thick, consisting of organic-rich laminae and wackestones with TOC up to 4%. Reservoirs include the Plover and Elang formations with the Elang Formation being a primary exploration target. Reservoirs are sealed intraformationally or by the Echuca Shoals Formation regional seal.

The structure contour map at the "Top Elang" surface emphasises Late Jurassic depocentres and highs in part of the study area. The Nancar Trough and the Flamingo High represent the regions top porosity. The source rock contribution to hydrocarbon fields in the Northern Bonaparte Basin is largely determined by maturity and access to suitable reservoirs. The thick claystones overlying the Top Elang surface restrict access to the underlying Elang and Plover formations. The interbedded nature of the Elang formation and reservoirs is totally accurate or complete. Therefore you should not rely solely on this information when making a commercial decision.

Figure 1: Structure contour map of the "Top Elang" surface. The Echuca Shoals Formation, Flamingo Group and northern boundary of the Flamingo Group are outlined. Field distributions of Bayu-Undan and Trucal. Figure 2: Temperature map of the "Top Elang" surface, showing 120°C isotherms which are effective limit for expulsion of hydrocarbons from Elang and Plover formations. Also shown is the line of section detailed in Figure 5 (Corallina to Bayu 1). The Elang and Flamingo High indicate a more marine input into the system, likely sourced from the Flamingo Group. The key references are shown including seal, reservoir and source. The petroleum-geochronology of oil and gas fields in the Northern Bonaparte Basin offshore northern Australia. APPEA Journal 40(1), 257-282.