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POSTER PRESENTATION

Geometry and Distribution of Latest Cretaceous / Paleocene Turbidites and their Prospectivity, Great South Basin, Offshore SE New Zealand

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The Great South Basin, situated to the southeast of New Zealand's South Island, has seen growing interest in the global oil and gas industry. The frontier basin, with under 10 wells drilled in its entire history, is still largely under explored since the award of its first licence in 1969. The basin holds a variety of common, globally understood conventional plays with a working petroleum system as demonstrated by the Kawau 1A discovery of 1977, but the remoteness and harsh environment has discouraged operators in the past. However, could taking a big risk lead to a big reward and unlock this deep-water basin?

The Great South Basin was formed as a result of rifting from the break-up of Gondwanaland in the Cretaceous [1]. This formed syn-kinematic packages against large NE-SW extensional faults. Within the Great South Basin, there are four distinguishable groups, the Hoiho, Pakaha, Rakiura and Penrod. Each of these represents a tectonic regime from extension in the Hoiho Group, a passive stage of post rift subsidence in the Pakaha and Rakiura, to a compressional phase in the Miocene [2]. Identified also is a small pulse of compression within the Pakaha group in the Paleocene, inverting some of the NE-SW faults in this study area, creating prospectivity.

Latest Cretaceous to Paleocene turbidites are also apparent within the study area and appear to be fed by submarine channels. The relationships between aggradational style channel systems and erosional ones have different implications for sediment deposition in the subsequent submarine turbidite fans.

Within the study area, turbidite fans with potentially good reservoir properties have been draped over a basement high due to post-rift subsidence creating an area of interest, as well as a channel system folded against a large fault due to Paleocene inversion.

Hydrocarbon exploration has been successful in the basin in terms of shows and a small discovery, but there has been no development. The identification that turbidites are present and that they possibly hold large accumulations demonstrates potential both inside and outside the study area.

This poster analyses the structure and stratigraphy of the basin as well as zooming in to a study area covered by high quality 3D seismic, assessing local structure and channel and turbidite geometries. Furthermore, using IHS Markit EDIN data, the poster will also showcase numerous prospects which have been mapped in the basin, outlining further basin potential.

References

[1] Beggs, J. Depositional and tectonic history of the Great South Basin. *South Pacific sedimentary basins in Sedimentary basins of the World,* **2**, 365-373. 1993.

[2] Cook, R. A., Sutherland, R., et al. Cretaceous-Cenozoic geology and petroleum systems of the Great South Basin, New Zealand. Institute of Geological & Nuclear Sciences. 1999.

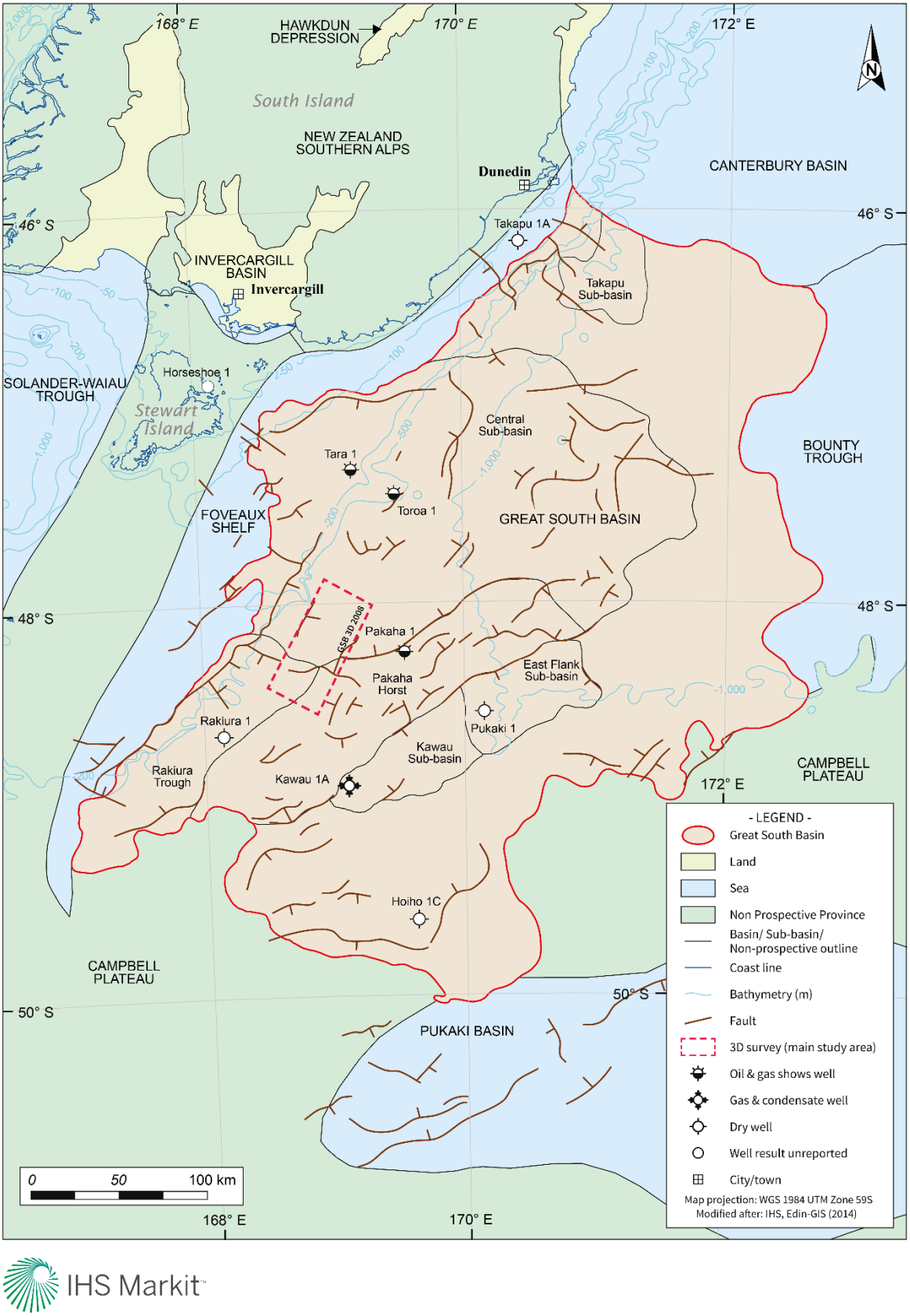

Figure 1. Structural framework map of the Great South Basin. The red rectangle shows the position of the 3D survey which acted as the main study area.

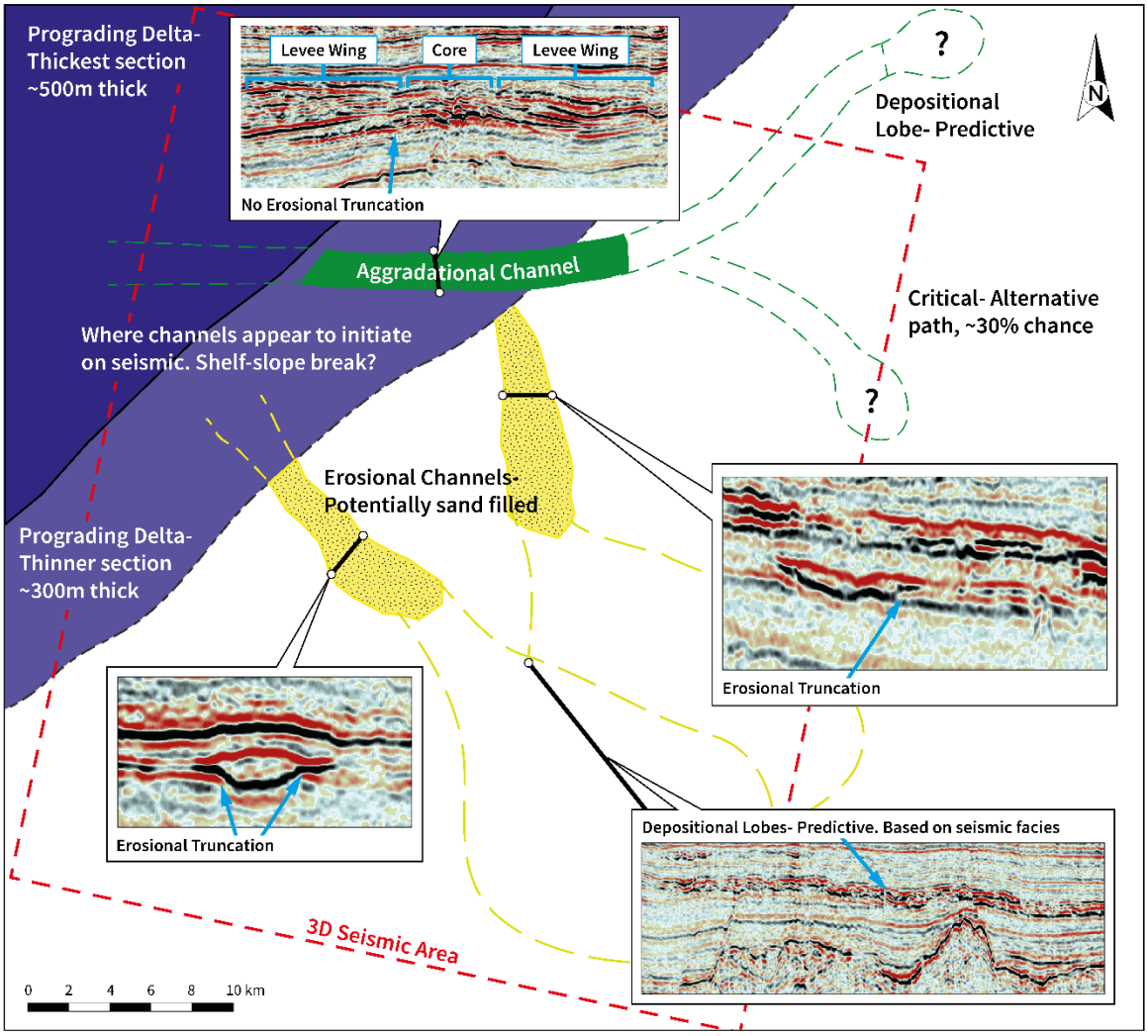

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Figure 2. Late Cretaceous / Paleocene GDE map, showing seismic sections from the 3D seismic.