

# The Galilee Basin: a potential CO<sub>2</sub> storage site in Queensland

S. Edwards<sup>1</sup>, B. Ainsworth<sup>1</sup>, B. Vakarelov<sup>1</sup> and J. Kaldi<sup>1</sup>

**Keywords:** geosequestration, Queensland, Galilee Basin, Betts Creek beds, Bandanna Formation, Colinlea Sandstone

The carbon dioxide storage sites closest to the industrial and population emission sources in Queensland are located along the east coast of Queensland. These basins (including the Bowen and Surat basins and the Dennison Trough) are also the sites of major coal and gas accumulations meaning resource conflicts occur between the energy resources and the greenhouse gases. The Galilee Basin of central Queensland has no known energy resources, making it a site worthy of closer scrutiny. One resource conflict that must be given careful consideration during this study is the presence of abundant potable water resources which must not be impacted upon by the storage of CO<sub>2</sub>.

Within several hundred kilometres of emissions from Mt Isa, Gladstone, Bundaberg and Rockhampton is the Galilee Basin, a large and relatively unfaulted potential storage site in central Queensland. Existing infrastructure for the Bowen Basin/ Denison Trough gas fields may be extended to transport emissions from the coast or from Mount Isa to the basin for long term carbon storage.

The Galilee Basin is an extensive intracratonic basin covering 234,000 km<sup>2</sup>. It contains up to 2,800 m of Late Carboniferous-to-Middle Triassic strata. The basin has a long but relatively

unsuccessful petroleum exploration history dating back to the mid 1950s. Initial examination of the exploration data of the Galilee Basin reveals a data-poor basin with low resolution seismic, few electrical logs, little core and limited exploration activity since the late 80s. More recently the basin has begun being re-examined for the purpose of coal seam methane (CSM), yielding a new generation of data. The availability of this new data may provide more insights into an under-utilised basins.

Of interest for potential CO<sub>2</sub> storage are the Late Permian siltstones, sandstones, shales and potentially coals of the fluvial Betts Creek beds, paludal Bandanna Formation, lagoonal to restricted lacustrine Black Alley Shale and fluvial Colinlea Sandstone.

Current uncertainties with regard to CO<sub>2</sub> storage in the Betts Creek beds, Colinlea Sandstone, Black Alley Shale and the Bandanna Formation are the heterogeneity of the potential reservoir formations, seal capacity, lateral variability within the reservoir across the basin and the widespread presence or absence of baffles and barriers and their influence on CO<sub>2</sub> migration.

Recent work has focused on the facies variations within the Betts Creek beds, Bandanna Formation and Colinlea Sandstone. Detailed facies analysis will show the distribution and variability within the reservoir sandstones and the presence of suitable sealing formations.

<sup>1</sup> CO2CRC, Australian School of Petroleum, University of Adelaide, SA 5005  
sedwards@co2crc.com.au