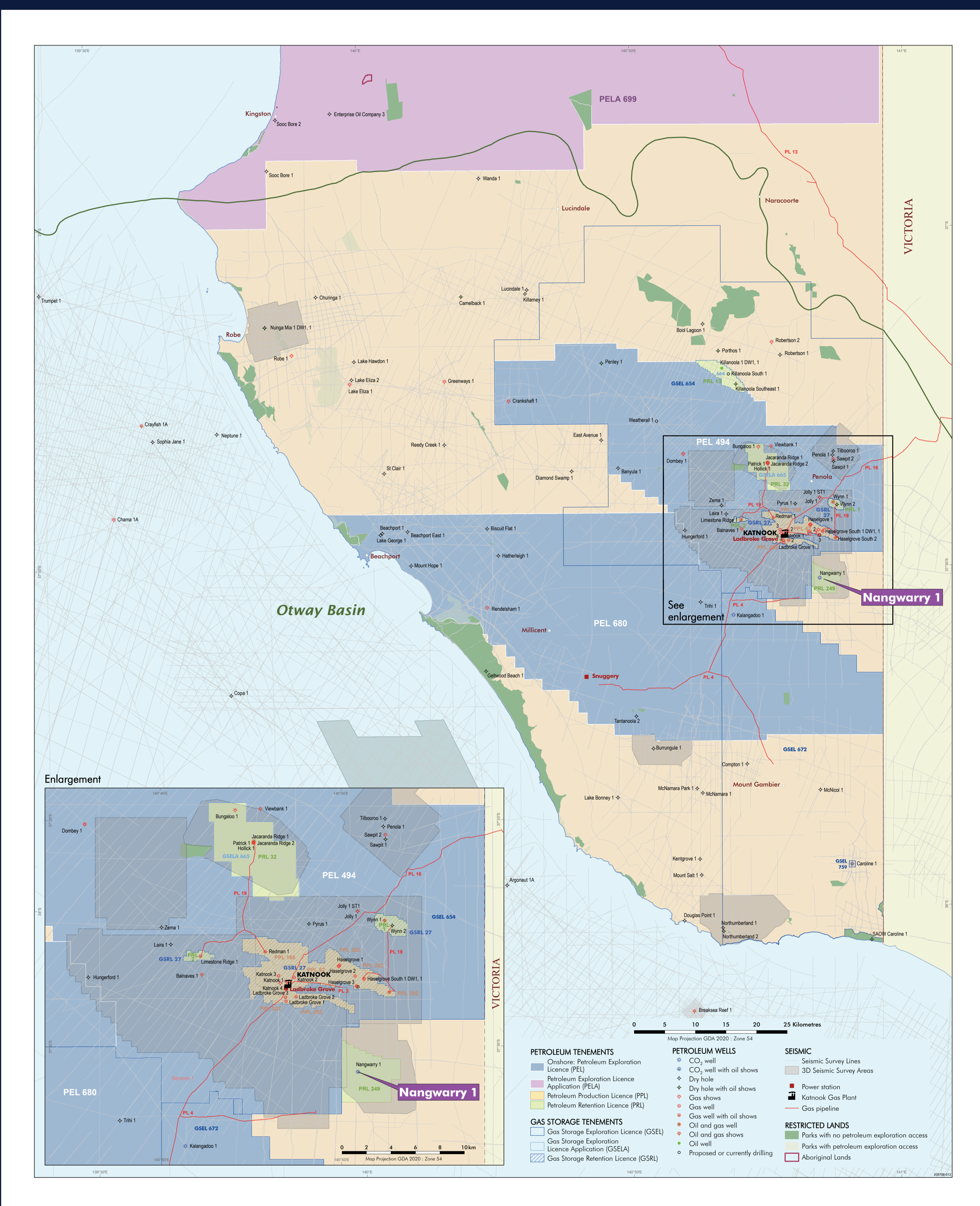


RAILIA

OTWAY BASIN



Prospectivity

The Early Jurassic – Late Cretaceous Otway Basin contains both mature and immature conventional gas play trends in five prospective troughs, with potential for oil discoveries.

Petroleum Systems Model

ERD-DEM are developing a petroleum systems model of the Early Cretaceous sequence incorporating new and revised data sets which is due for release in Q4 2023.

Despite decades of successful exploration and production of hydrocarbons from the Penola Troughs the existing lithostratigraphic characterisation of the basin is poor, particularly with respect to the Early Cretaceous Crayfish Group and Jurassic Casterton Formation.

Repetition and juxtaposition of largely similar lithological packages are unable to be resolved using well log correlation, or palaeontological data.

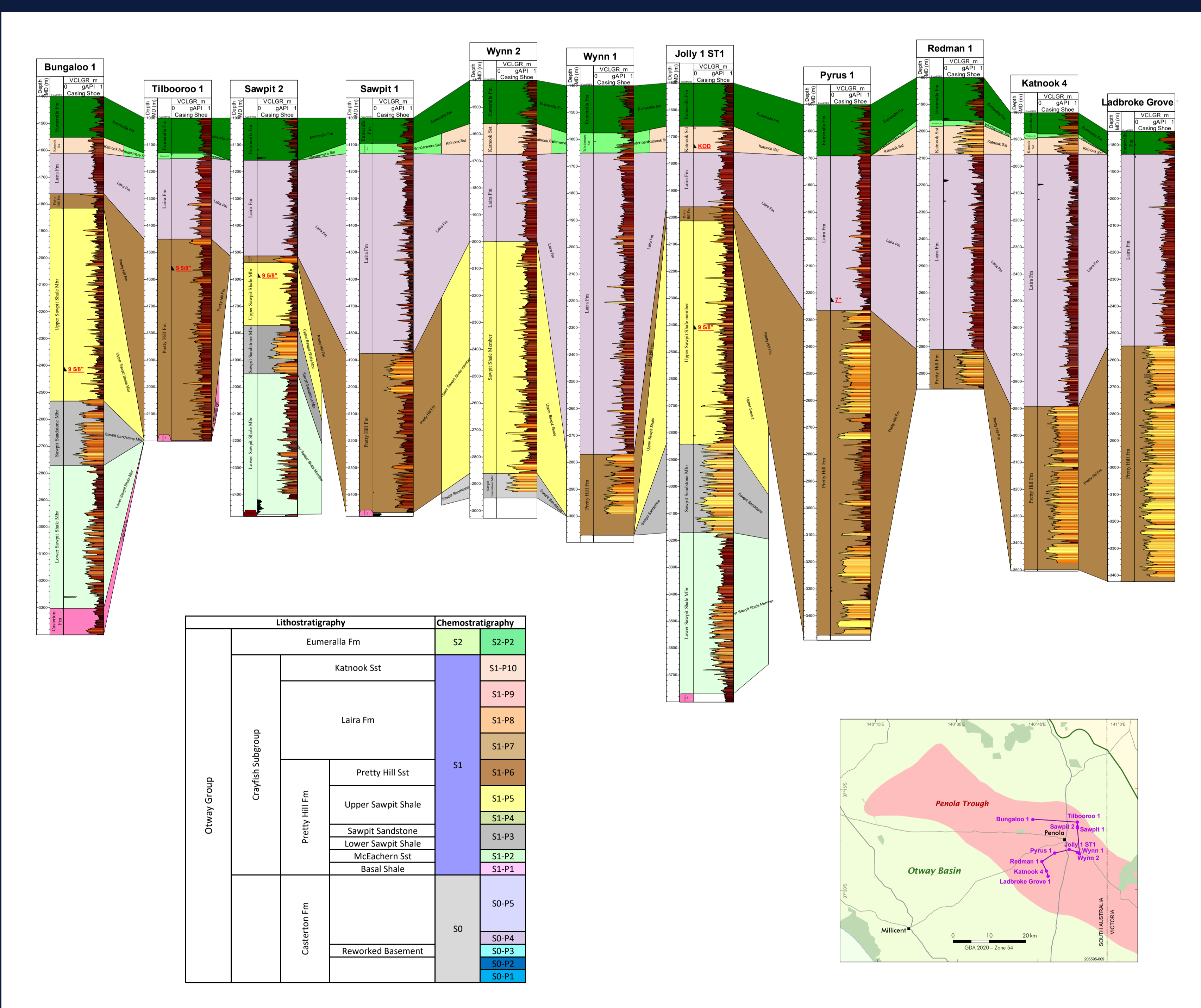
ERD-DEM have applied a rigorous chemostratigraphic approach to investigate the problem, expanding on the work of Forbes et al, (2020) and Bendall et al, (2020 & 2021).

Chemostratigraphy is able to consistently identify and characterise the Crayfish Group as a single sequence with 10 diagnostic packages (S1-P1 through S1-P10). The Casterton Formation is characterised as a separate sequence with 5 diagnostic packages (S0-P1 through S0-P5).

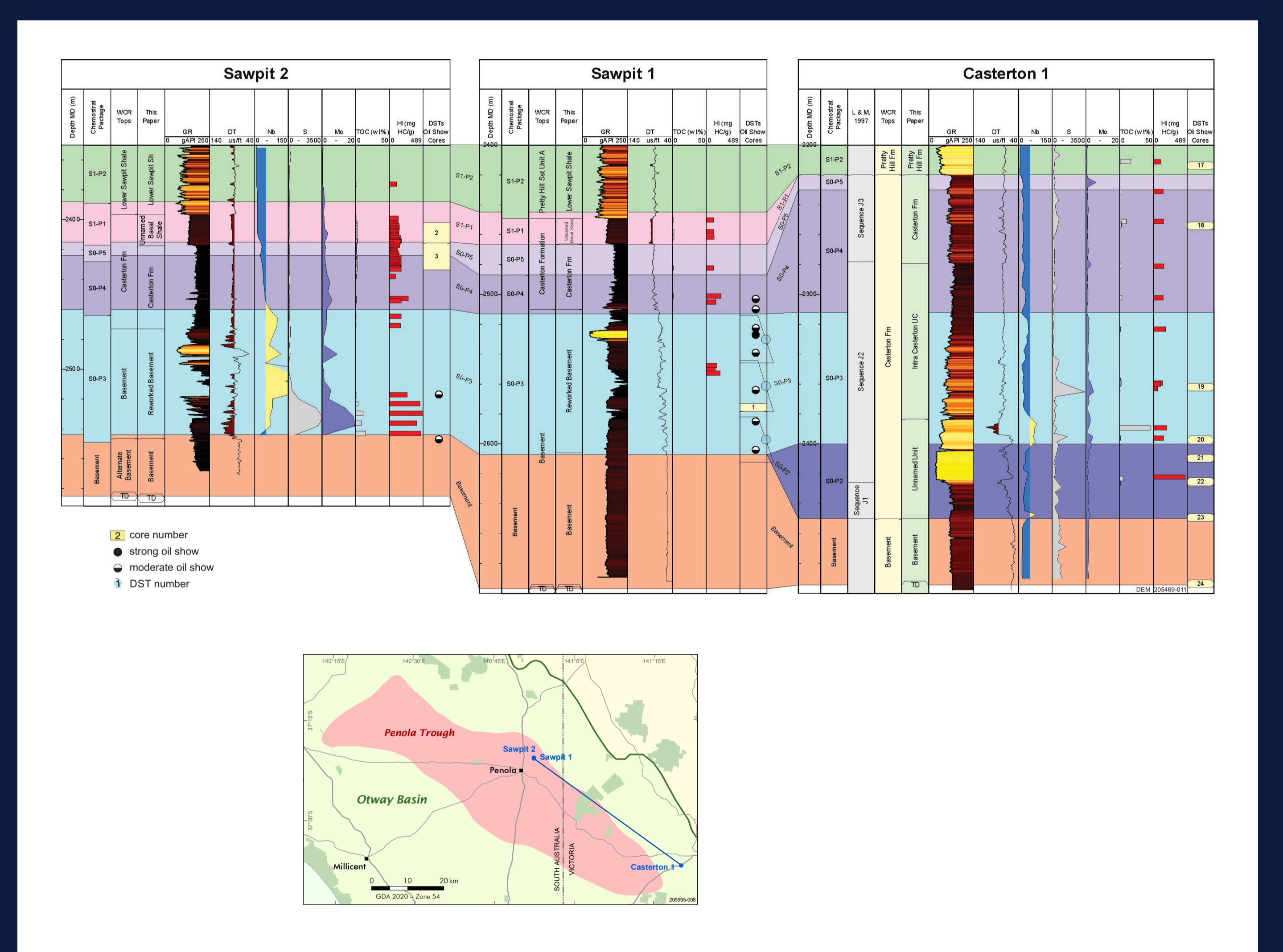
Reinterpretation of the stratigraphy in the Penola Trough using the chemostratigraphic scheme has led to a more geologically sensible structural model and clearly distinguishes the distribution of 3 potential sandstone reservoirs within the Crayfish Group (i.e. Pretty Hill Sandstone, Sawpit Sandstone, McEachern Sandstone).

The chemostratigraphic model is applicable across the entire Otway Basin enabling correlation between SA and Victorian geology.

Lithostratigraphic Correlation



New Source Rock



Underlying the Casterton Formation shales, an unnamed Late Jurassic syn-rift sequence of interbedded metasediments, tuffaceous sediments and organically-rich shales has been chemically characterised as SOP3.

A low Sulphur, medium-gravity, paraffinic oil was recovered from SOP3 in Sawpit 1 well in the Penola Trough.

Subsequent Total Organic Carbon and Rock-Eval analyses for SOP3 in Sawpit 2 identified a source rock containing algal organic matter though to be related to a deep anoxic lake environment.

Where intersected, this unit can be correlated across the entire Otway Basin using chemostratigraphy.

Data

- access to free downloads
- Seismic TWT and Depth grids
- well log LAS files
- well completion reports
- geological and geophysical reports
- PEPS database
- ESRI ArcGIS Project
- selected SEG-Y seismic line data.

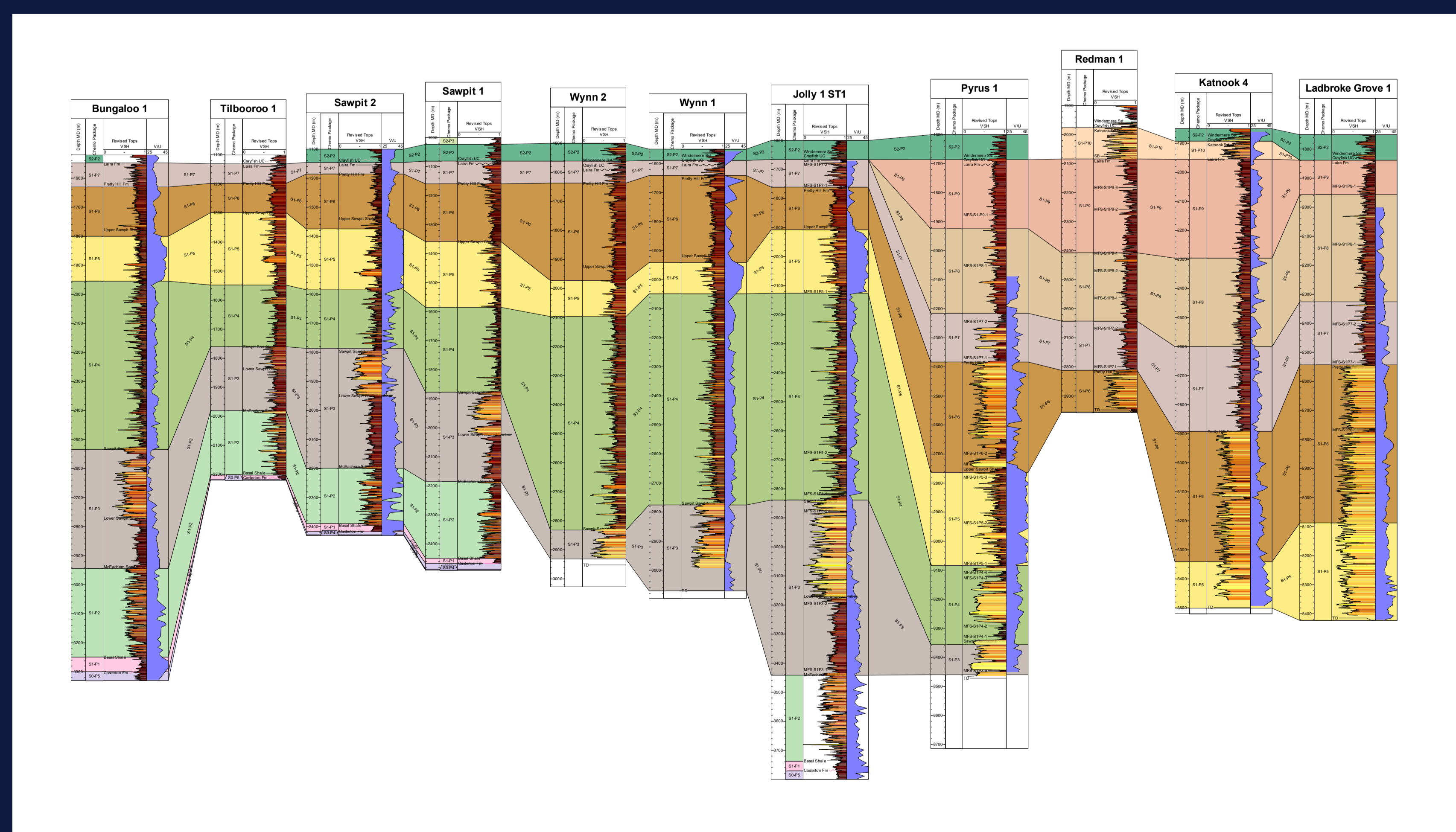
GISERA

In 2017 the South Australian Government partnered with CSIRO's Gas Industry Social and Environmental Research Alliance (GISERA) for a three-year in-depth study.

GISERA have engaged local stakeholders as well as industry and regulators to research social and environmental issues related to natural gas operations.

Visit: <https://gisera.csiro.au>

Chemostratigraphic Correlation



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