



Government of South Australia
Department of State Development

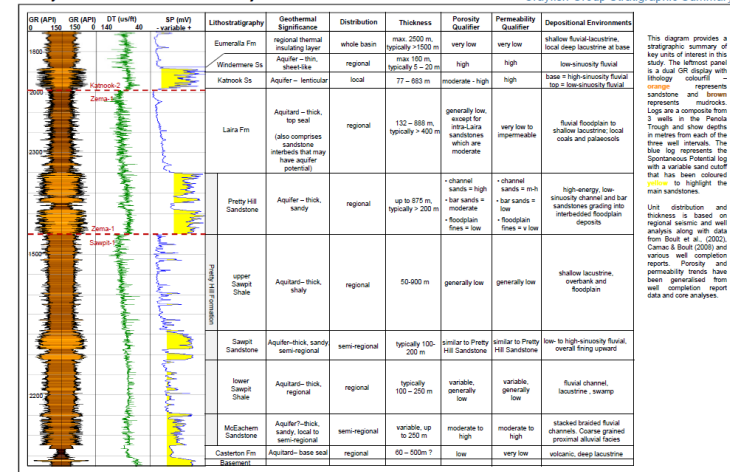
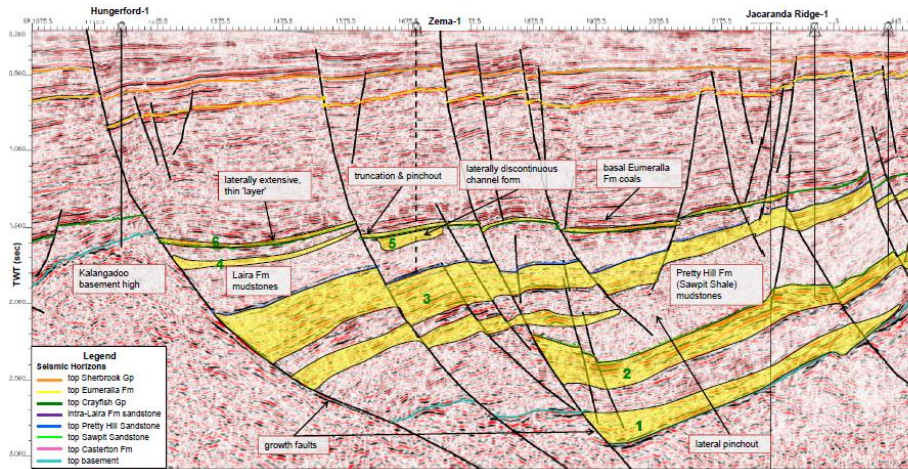
Roundtable for Oil and Gas Projects in South Australia - Working Group 3

Update on the status of regional aquifer studies
in the Otway & Gambier Basins, South Australia

Tony Hill – Principal Geologist, Energy Resources Division

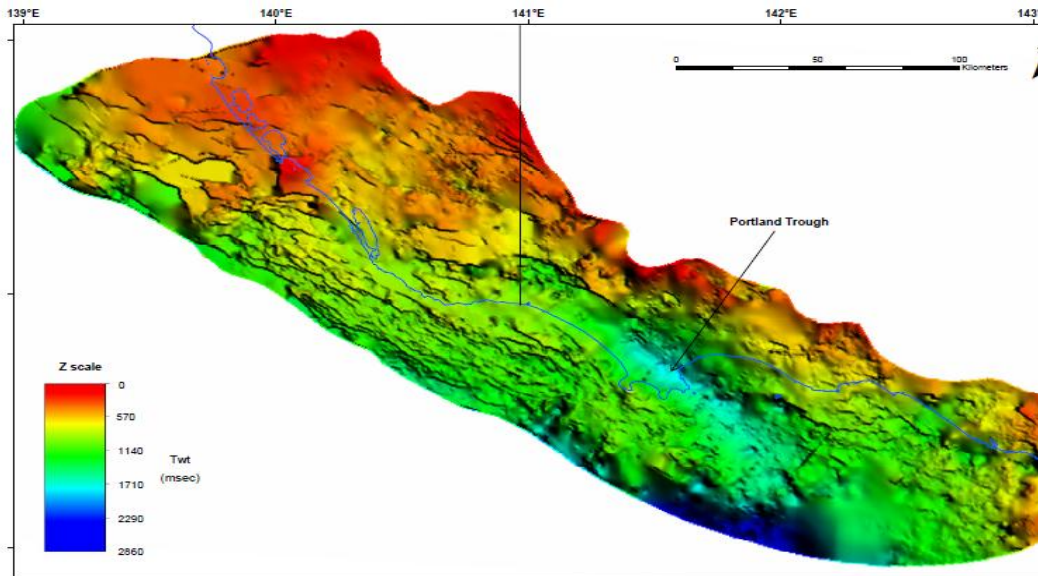
Background/Past Studies

- Otway Basin Hot Sedimentary Aquifer & SEEBASE Study 2010
 - FrOGTech Report commissioned by PIRSA, VicDPI and Geoscience Australia DEWNR, SA Water and DSD
 - <https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DD/RB201000010.pdf>
 - Stage 1 provided a regional stratigraphic and structural framework over the entire Otway Basin as a baseline for characterising aquifers from surface to basement in order that government can make informed decisions and respond accordingly to all water affecting activities.
 - Stage 2 provides an opportunity for State water agencies, petroleum and geothermal explorers to develop detailed aquifer characterisation.



This diagram provides a stratigraphic summary of key units of interest in this study. The leftmost panel is a dual GR display with lithology colourbar - orange represents sandstone and brown represents mudrocks. Logs are a composite from 3 wells in the Portland Trough and show depths in metres from each of the three well intervals. The blue log represents the Spontaneous Potential log with a variable sand cutoff that has been coloured orange to highlight the main sandstones.

Unit distribution and thickness is based on regional seismic and well analysis along with data from Bohl et al., (2002), Carnac & Booth (2000) and various well completion reports. Porosity and permeability trends have been generalised from well completion report data and core analyses.



Current Projects

- SE Water Quality Monitoring, Evaluation and Reporting Program
 - **Lead Agency: EPA with input from DEWNR, SA Water and DSD**
 - Final Draft Report from Jacobs SKM submitted 21 October
 - Baseline studies gathered and recommendations for future monitoring network to gather water quality data including natural background gas in prospective hydrocarbon exploration areas
 - A key aspect of the proposed MER program is creating links between the SAEPA groundwater quality monitoring, the Department of Environment, Water and Natural Resources (DEWNR) groundwater status reporting and groundwater MER works undertaken by the SE NRM Board (the Board).

Current Projects

- Framework for a Regional Water Balance Model for the SA Limestone Coast Region
 - **Lead Agency: Goyder Institute or Water Reserach, NCGRT, DEWNR, CSIRO, Flinders Uni, U of A, UniSA (Harrington & Lamontagne (Eds)**
 - Phase 1 completed and forms part of a longer term research program which will also address 3 tasks:
 - 1. Develop a regional water balance framework
 - 2. Assess the spatial variability and indicative fluxes of groundwater discharge to the marine environment
 - 3. Assess the role of geologic faults on regional groundwater flow and inter aquifer leakage
 - http://www.goyderinstitute.org/uploads/South_East_Water_Balance_Final%20for%20web_high.pdf

Current Projects

- Characterisation of deeper undeveloped aquifers in the Penola Trough region
 - **Lead Investigator: Beach Energy**
 - Beach has ongoing engagement with community to discuss findings.

Proposed Projects – across the border

- The Geological Survey of Victoria within the Department of State Development, Business and Innovation is currently undertaking a tender process for the provision of a 3D geological framework model of the onshore Otway Basin. This will involve interpretation of seismic, well and potential field data. This work will support Victoria's water science studies in order to provide a response to government on the potential impact on onshore gas on the State's water resources.

Opportunities

- DSD is keen to engage with Geological Survey of Victoria and relevant state and federal agencies and industry to cost share the consolidation of baseline studies that will provide regional potentiometric surfaces (using latest knowledge of fault polygons) and salinity maps for at least the Tertiary Unconfined and Confined Aquifers.
- A longer term aspiration is to facilitate the full characterisation of all aquifers from surface to basement so that government can fully respond to the potential impact of any activities on the State's water resources and realise potential new water supplies.