**ABSTRACT**

Permeability derived from well test analyses varies greatly between adjacent wells. Heterogeneity exists at different scales and can be attributed to coal seam distribution and continuity, composition, diagenesis, geomechanical characteristics and reservoir stress evolution. Variations in permeability between wells cannot be estimated with confidence. Current modelling practices are unsatisfactory.

**LITERATURE REVIEW**

**Geological Controls**
- cleating, composition, rank, diagenesis, thickness, structure (anticlines, faults), shrinkage, stress history

**Operational Aspects**
- Well Design, Drilling, Completion, Damage

**Measurement Techniques**
- Core, Logs, Geophysics, Well Tests, Production Data, Analysis, History Matching

**Modelling**
- Static, Grid size, Correlation, Properties, Upscaling, Geostatistics, Dynamic

**EARLY INSIGHTS**

**New Measurement Techniques:** directional logging while drilling tools

**Improved correlation:** onshore sequence stratigraphy

**Better data interpretation:** wells tests, production data, logs, combined data sets, seismic attributes

**Improved geostatistics:** multi-point, non-linear, spatio-temporal

**PRELIMINARY SPATIAL MODELS**

Way forward: i) better ways to use existing data and ii) improved modelling practice

Acknowledgments: Santos has provided data