Bass Basin

BASS STRAIT, TASMANIA, OFFSHORE

Reservoir:

Eastern View Formation

Seal:

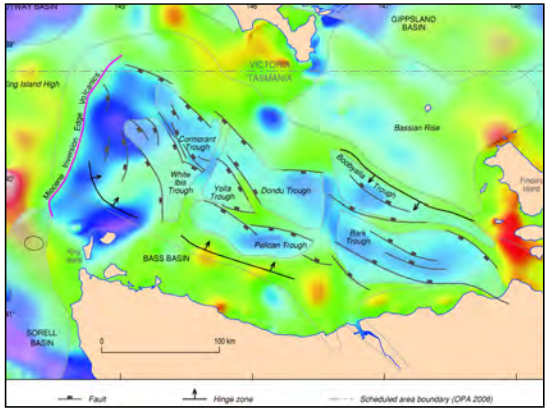
Demons Bluff Formation

HYDROCARBON POTENTIAL

CATEGORY 2 (OGRA 2005)

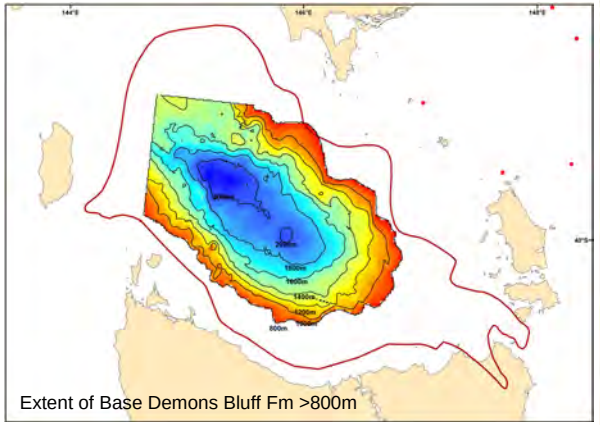
Crude oil	MMBL	13.28
Condensate	MMBL	43.26
LPG	MMBL	58.55
Sales gas	Tcf	0.52

STRUCTURAL ELEMENTS



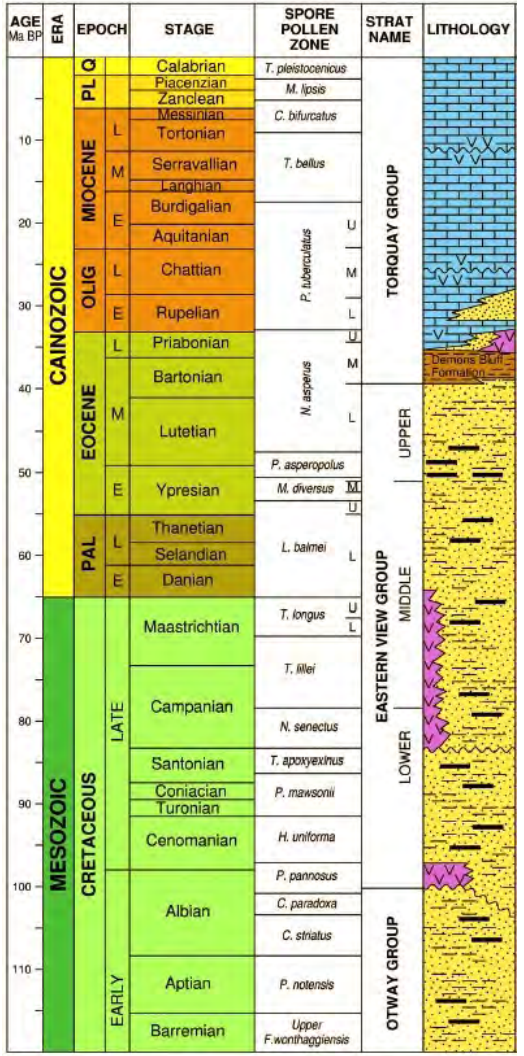
(After Blevin et al., 2005)

REGIONAL SEAL AREA



Extent of Base Demons Bluff Fm >800m

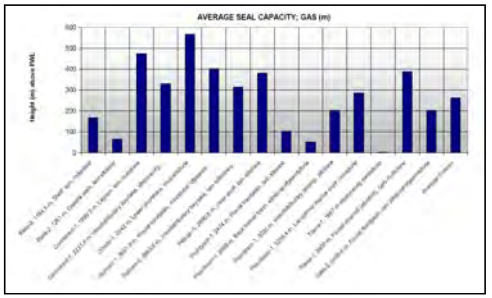
STRATIGRAPHY



(After Lennon et al., 1999)

OIL AND GAS FIELDS

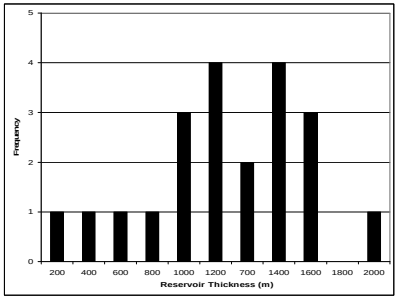
TOP SEAL POTENTIAL



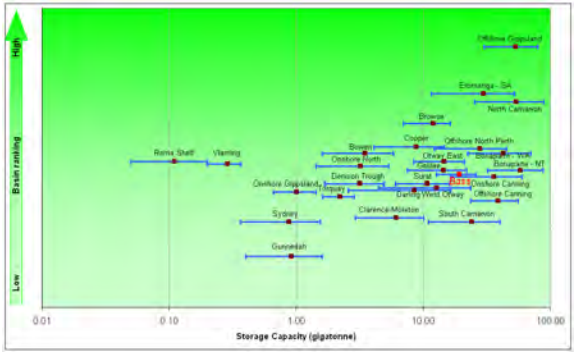
(After Blevin et al., 2003)

WELLS AND SEISMIC COVERAGE

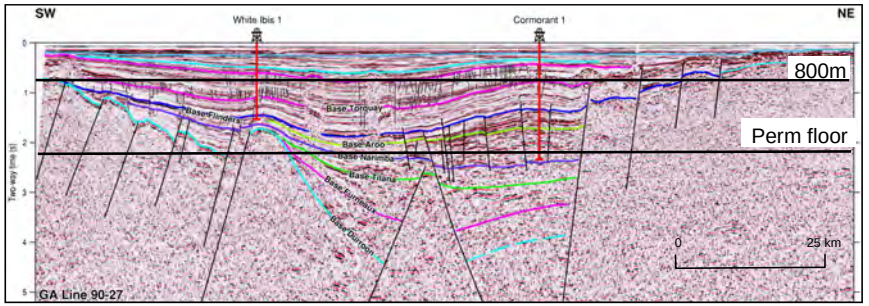
RESERVOIR THICKNESS



BASIN RANKING VS. CAPACITY

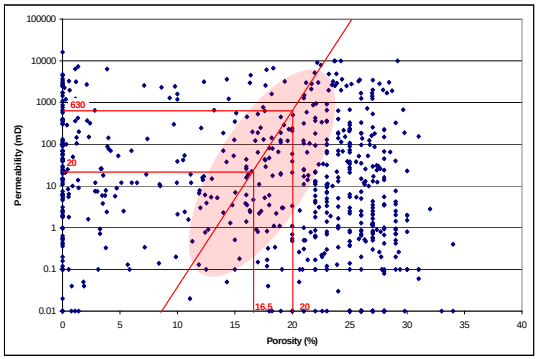


REGIONAL CROSS SECTION (LOCATION IN OIL AND GAS FIELDS MAP)

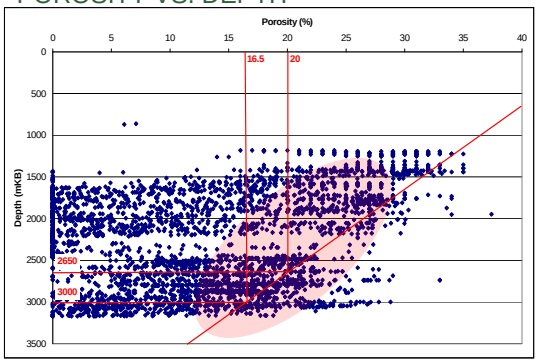


Bass Basin

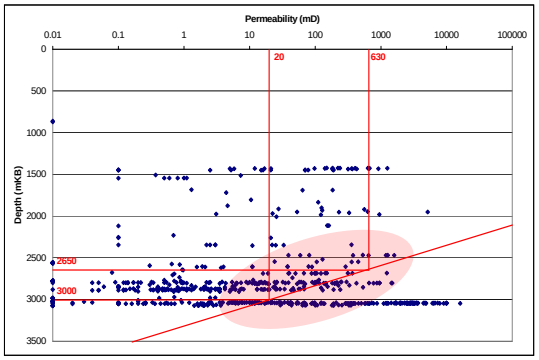
POROSITY VS. PERMEABILITY *Values from basin-wide dataset



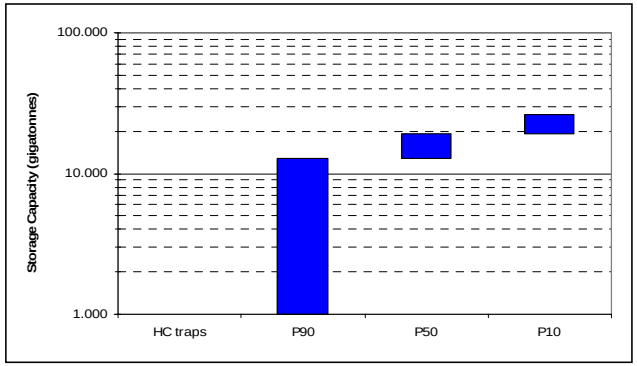
POROSITY VS. DEPTH



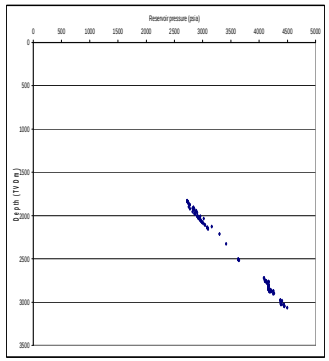
PERMEABILITY VS. DEPTH



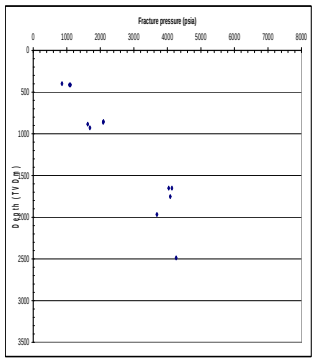
STORAGE CAPACITY



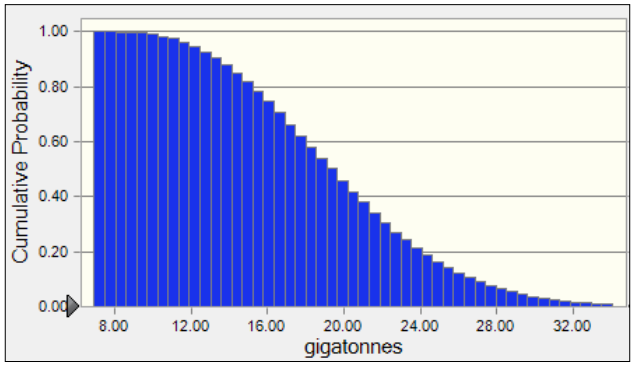
RESERVOIR PRESSURE VS. DEPTH *CSIRO PressurePlot



FRACTURE PRESSURE VS. DEPTH *CSIRO PressurePlot



STORAGE CAPACITY CURVE



BASIN RANKING

Category	Description	Score	Weighting
Tectonics (Seismicity)	Medium/Low	4	0.00
Size	Very Large	4	0.06
Depth	Intermediate	3	0.10
Type	Non-marine and Marine	2	0.04
Faulting intensity	Moderate	2	0.14
Hydrogeology	Intermediate	2	0.04
Geothermal	Moderate	2	0.05
Hydrocarbon potential	Medium	3	0.05
Maturity	Exploration	2	0.05
Coal and CBM	Deep	3	0.00
Reservoir	Good	4	0.16
Seal	Good	4	0.18
Reservoir/Seal Pairs	Excellent	4	0.03
Onshore/Offshore	Shallow Offshore	2	0.00
Climate	Temperate	5	0.00
Accessibility	Acceptable	3	0.00
Infrastructure	Minor	2	0.00
CO_2 sources	Moderate	3	0.00
Knowledge level	Good	3	0.05
Data availability	Good	3	0.05
Overall Ranking			**16**

STORAGE CAPACITY ESTIMATE

Parameter	Unit	Score (P90)	Score (P50)	Score (P10)	Distribution
Area of storage region	km^2	6700	13000	17000	Triangular
Gross thickness of saline formation	m	250	400	600	Triangular
Average porosity of saline formation over thickness interval	%	13	16	19	Triangular
Density of CO_2 at average reservoir conditions	$tonne/m^3$	0.5	0.6	0.7	Triangular
E-storage efficiency factor (% of total pore volume)	%	4	4	4	
Calculated storage potential	gigatonnes	12.7	19.1	26.1	

POTENTIAL INJECTION PARAMETERS

Parameter	Unit	Shallow	Mid-Depth	Deep
Depth base seal	m	N/A	2150	2400
Formation thickness	m	N/A	500	600
Injection depth	m	N/A	2650	3000
Porosity	%	N/A	20	16.5
Absolute permeability	mD	N/A	630	20
Formation pressure	psia	N/A	3895	4410
Fracture pressure	psia	N/A	5895	6675

DISCLAIMER

The purpose of these montages is to aid a high level evaluation of the geological storage potential of Australia's sedimentary basins for future CO_2 emissions. The evaluations are based on core analysis and other data derived from Geoscience Australia and other sources. However due to time constraints, it has not been possible to carry out the detailed evaluation of the data, which will be required for the next phase of analysis.

In this exercise, we sought to recognise a range of characteristics within each basin by identifying three sets of parameters at different locations and depths in the basin. The intent is to generate an indication of a range of storage capacity and potential injection rates. These capacities and rates are being used in high level reservoir modelling work to generate injection tariffs* and capacity estimates. All of this work feeds into a process that provides indicative, conceptual transport and storage tariffs for CO_2 emissions captured in various parts of Australia.

This 'top down', simplistic approach seeks to describe the magnitude and range of potential costs for transport and storage in Australia, at a 'conceptual' level of accuracy. Clearly, any final investment decision would call on an increased understanding and level of accuracy through the usual project development process.

* Cost per tonne of CO_2 avoided, calculated using the net present value of cash flows over a 25 year asset life.

REFERENCES

Blevin, J. (Compiler), 2003. Petroleum geology of the Bass Basin. Interpretation Report. An Output of the Western Tasmanian Regional Minerals Program. Geoscience Australia, Record 2003/19.

Blevin, J.E., Trigg, K.R., Partridge, A.D., Boreham, C.J. and Lang, S.C., 2005. Tectonostratigraphy and potential source rocks of the Bass Basin. The APPEA Journal, 45(1), 601-621.

Lennon, R.G., Suttill, R.J., Guthrie D.A. and Waldron, A.R., 1999. The renewed search for oil and gas in the Bass Basin – results of Yolla-2 and White Ibis-1. APPEA Journal 39(1), 248-262.

Petroleum and Marine Division, Geoscience Australia, 2007. Oil and Gas Resources of Australia 2005. Geoscience Australia, Canberra.