Eromanga Basin

SW QUEENSLAND - NE SOUTH AUSTRALIA, ONSHORE

Reservoir:

Hutton and Namur sandstones, Poolowanna Formation

Seal:

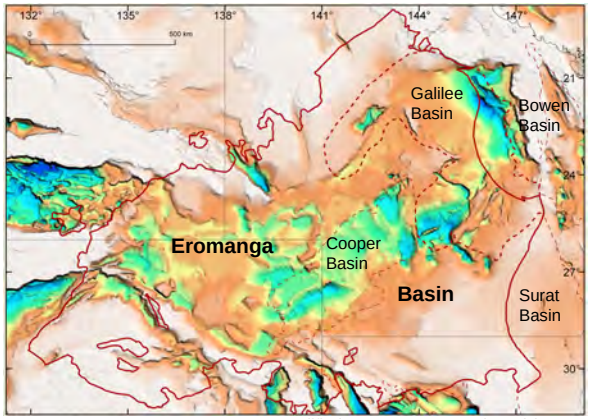
Birkhead and **Wallumbilla Formation**

HYDROCARBON POTENTIAL

CATEGORY 1 and 2 (OGRA 2005)

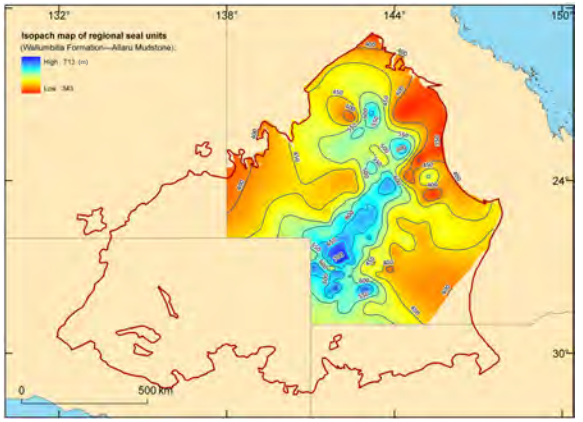
Crude oil	MMBL	50.99
Condensate	MMBL	0.50
LPG	MMBL	0.40
Sales gas	Tcf	0.02

STRUCTURAL ELEMENTS



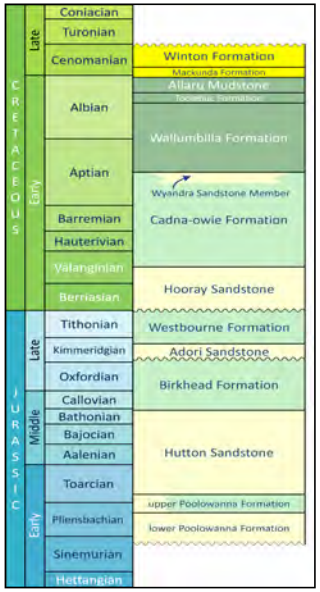
Modified OZ SEE-BASE™ (2005) image

REGIONAL SEAL AREA



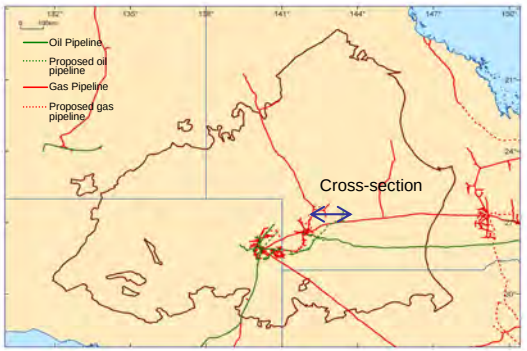
(Refer to Bradshaw et al., 2009)

STRATIGRAPHY

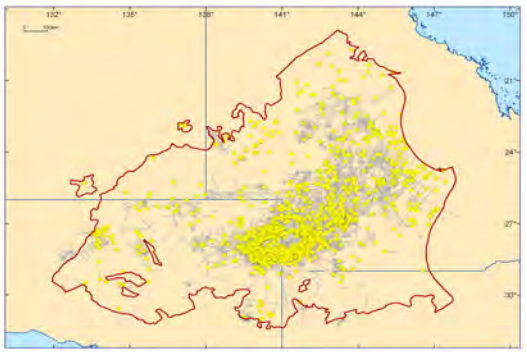


(Bradshaw et al., 2009)

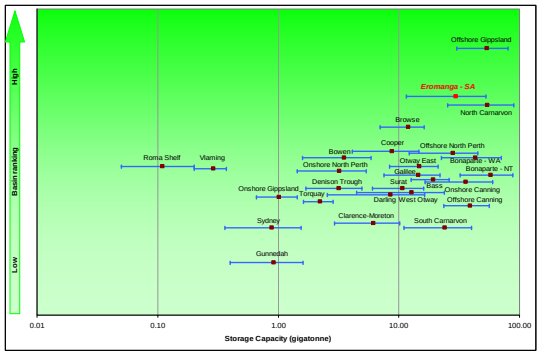
OIL AND GAS FIELDS



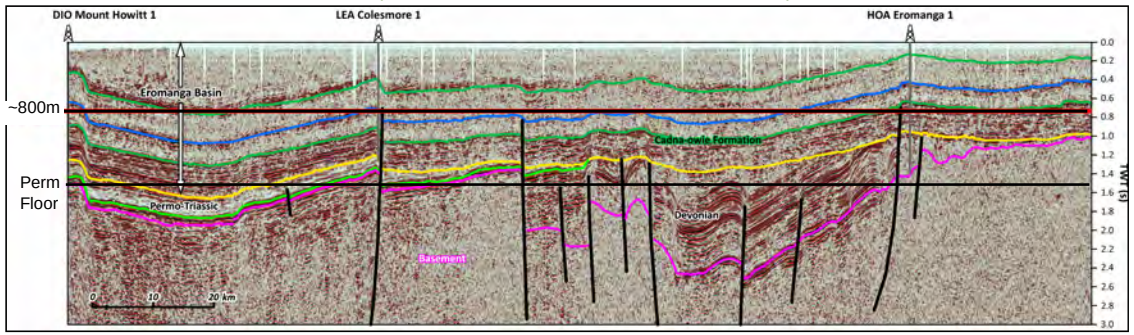
WELLS AND SEISMIC COVERAGE



BASIN RANKING VS. CAPACITY

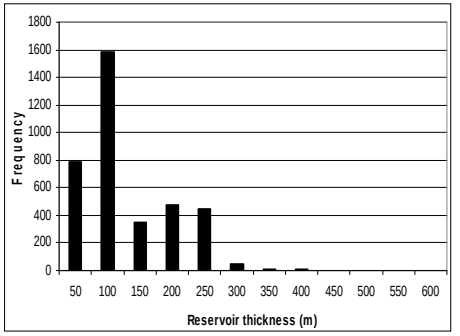


REGIONAL CROSS SECTION (LOCATION IN OIL AND GAS FIELDS MAP)



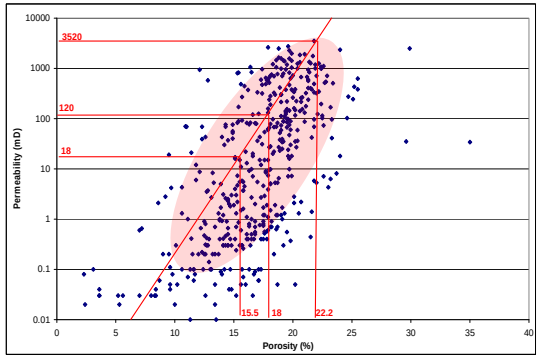
(After Bradshaw et al., 2009)

RESERVOIR THICKNESS

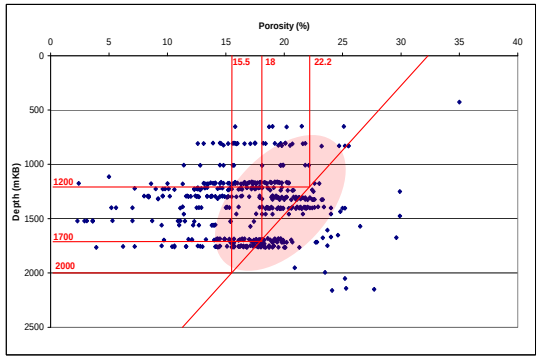


Eromanga Basin

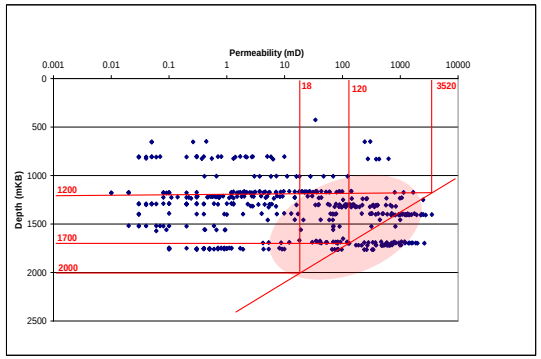
POROSITY VS. PERMEABILITY *Values from SA dataset



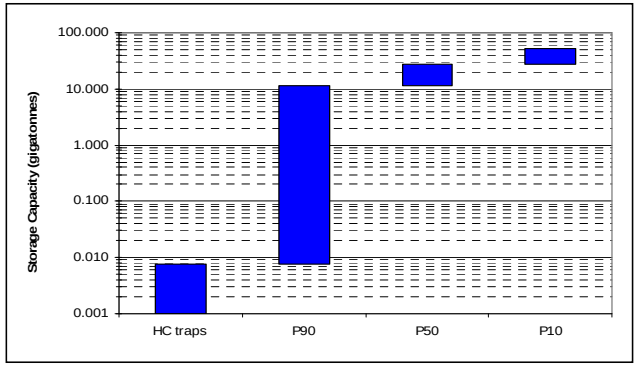
POROSITY VS. DEPTH



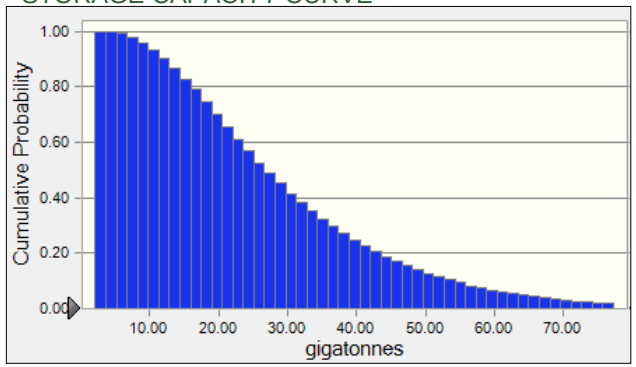
PERMEABILITY VS. DEPTH



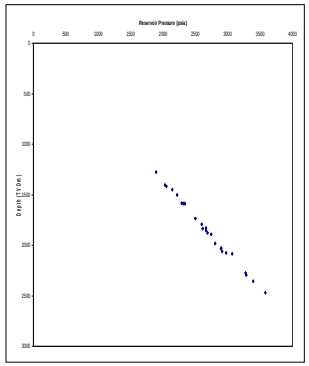
STORAGE CAPACITY



STORAGE CAPACITY CURVE



RESERVOIR PRESSURE VS. DEPTH *CSIRO PressurePlot



Insufficient data for the following items:

- Fracture Pressure vs. Depth Graph
- Top seal Potential Graph

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	Limited	3	0.14
Hydrogeology	Good	3	0.04
Geothermal	Warm Basin	1	0.05
Hydrocarbon potential	Large	4	0.05
Maturity	Over-mature	5	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	Onshore	3	0.00
Climate	Desert	2	0.00
Accessibility	Acceptable	3	0.00
Infrastructure	Extensive	4	0.00
CO_2 sources	Major	4	0.00
Knowledge level	Extensive	4	0.05
Data availability	Excellent	4	0.05
Overall Ranking			**2**

STORAGE CAPACITY ESTIMATE

Parameter	Unit	Score (P90)	Score (P50)	Score (P10)	Distribution
Area of storage region	km^2	20000	40000	120000	Triangular
Gross thickness of saline formation	m	15	100	250	Triangular
Average porosity of saline formation over thickness interval	%	14	17	20	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	11.6	26.8	52.5	

POTENTIAL INJECTION PARAMETERS

Parameter	Unit	Shallow	Mid-Depth	Deep
Depth base seal	m	1150	1600	1850
Formation thickness	m	50	100	150
Injection depth	m	1200	1700	2000
Porosity	%	22.2	18	15.5
Absolute permeability	mD	3520	120	18
Formation pressure	psia	1730	2450	2885
Fracture pressure	psia	2870	4070	4790

** No data, estimated from adjacent Cooper Basin

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

Bradshaw, B.E., Spencer, L.K., Lahtinen, A.C., Khider, K., Ryan, D.J., Colwell, J.B., Chirinos, A. and Bradshaw, J., 2009. Queensland carbon dioxide geological storage atlas.

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

OZ SEEBASE™ STUDY, 2005. OZ SEEBASE™ structural GIS, version 2. FrOG Tech Pty Ltd, project code GA703.