

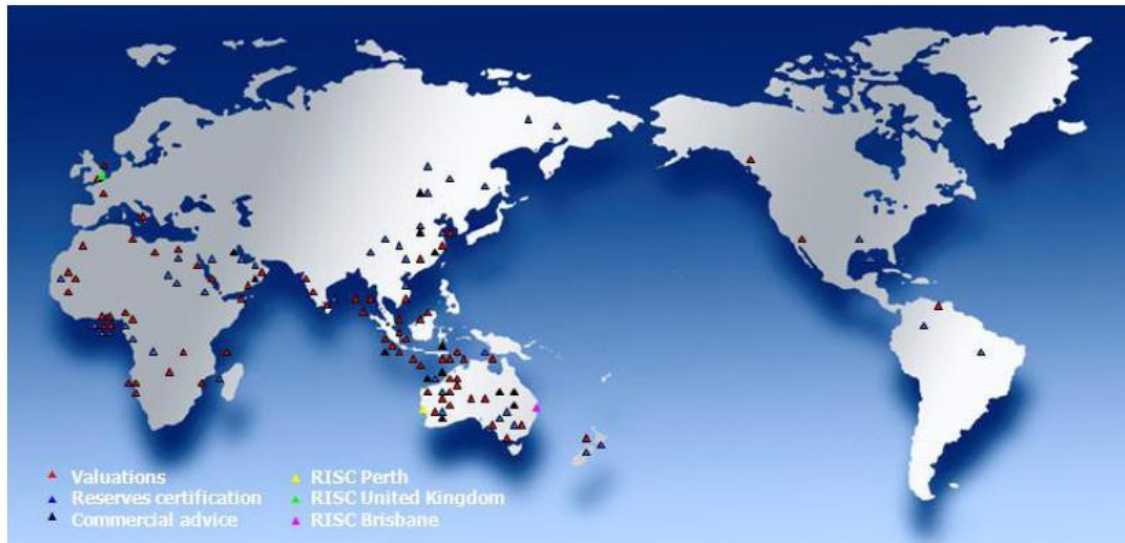
Australian Shale Gas Overview

Date August 2011



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- June 2011, Lazard Australia Private Equity Pty Ltd acquired 41% of RISC Australia Holdings Pty Ltd
- Lazard Pty Ltd's Corporate Advisory business and RISC enter into strategic alliance



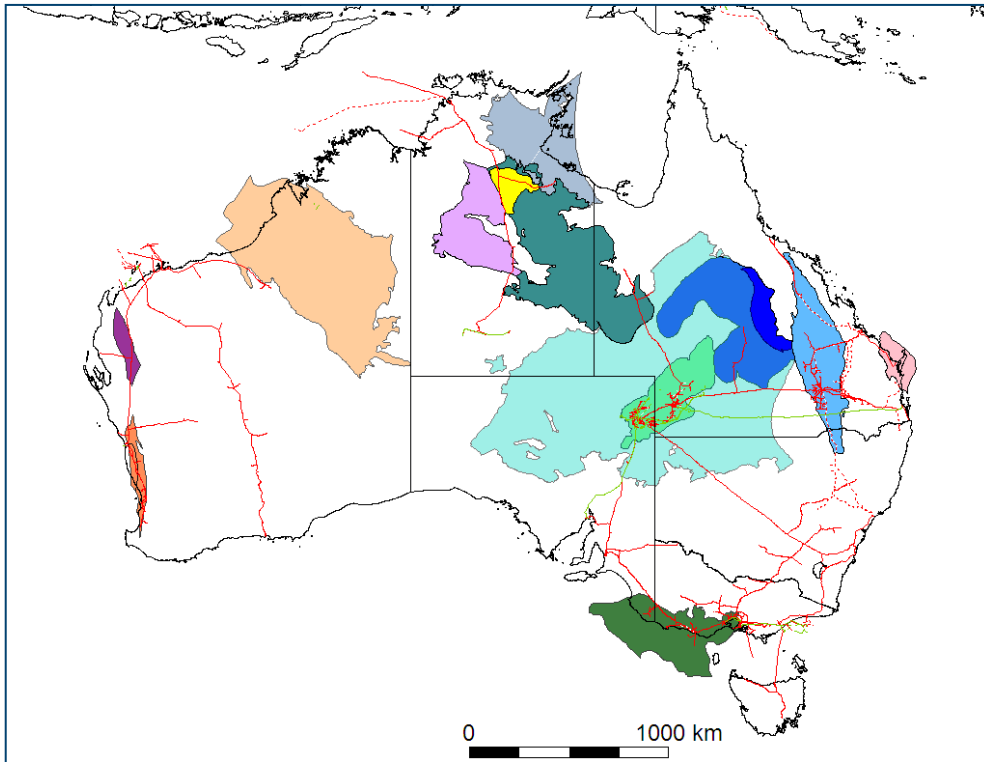
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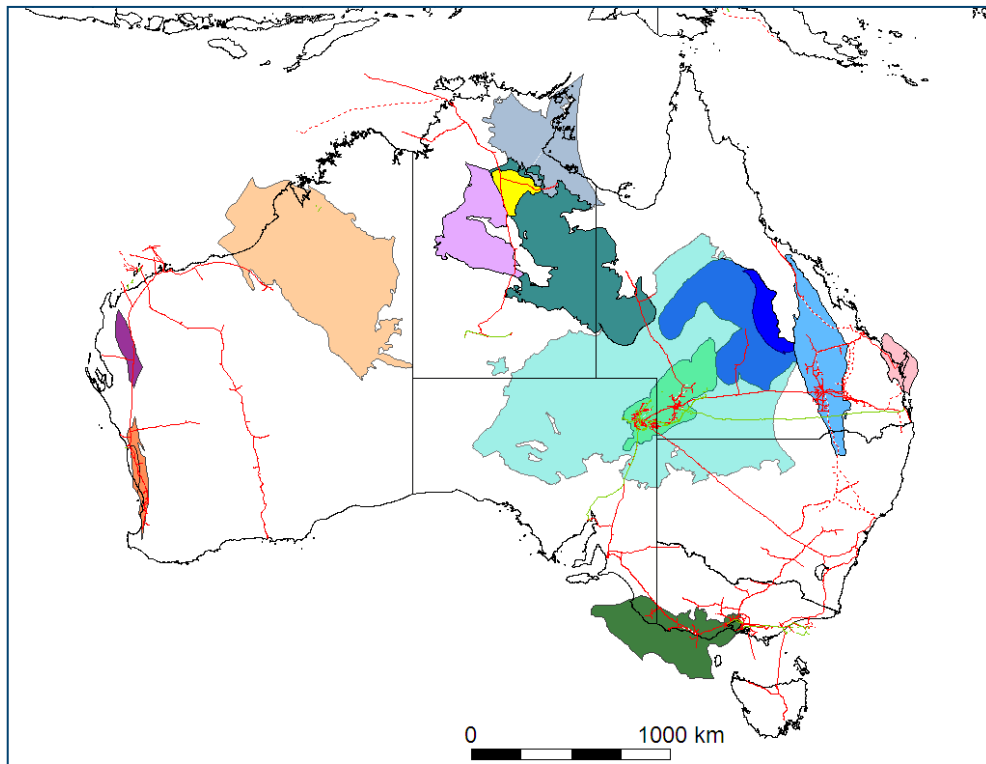
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AUSTRALIAN SHALE GAS

- An industry in its infancy with very little data on gas contents of specific shales.
- Many basins and shale sections but very few purpose designed flow test.
- Tipped by some to be the next major country in the world to develop shale gas
- Many recognised source rock sections for conventional exploration are now targeted for shale gas
- Some very old rocks (eg Mesoproterozoic 1400 Ma) appear to have excellent potential
- This presentation discusses main activity in Australian Basins. Potential may exist in basins not mentioned.

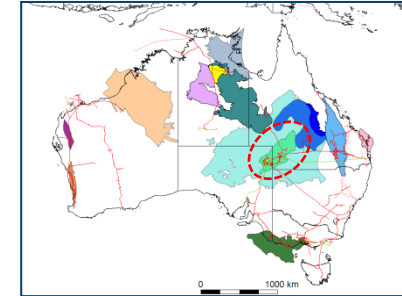
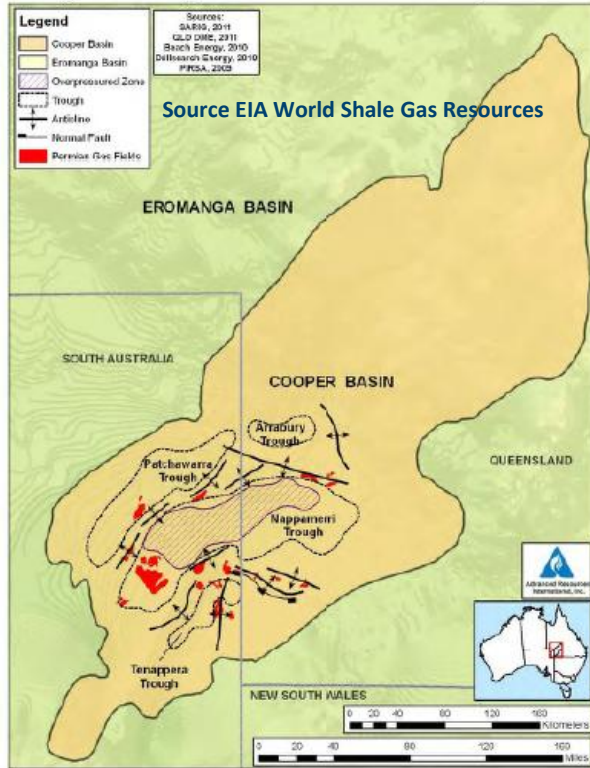


AUSTRALIAN SHALE GAS

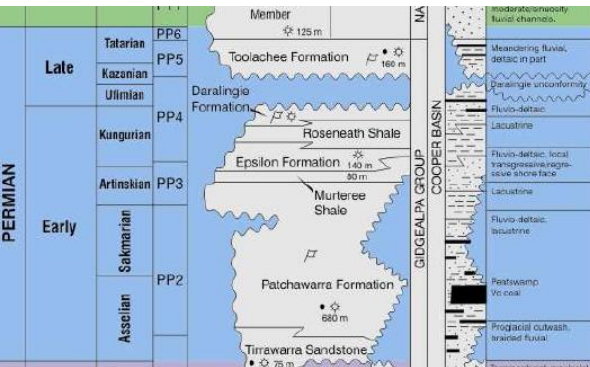


- Cooper Basin most advanced – long conventional history, plus tight gas
- Wells drilled and cored in the Perth Basin
- Deals happening in the Canning and Beetaloo Basins with major work programs to commence in the next 12 months
- Drilling in the Southern Georgina
- Potential identified in the Otway Basin
- Bowen and Maryborough Basins being targeted
- Land grab in McArthur, Wiso, Georgina, Eromanga
- Unknown potential in Darling, Drummond & Others
- Key descriptors:
 - Thick Shale units often with richer sub-units
 - High organic content (TOC >1 %)
 - Within late oil/gas mature window
 - Preferably low clay (marine) and brittle
 - “Containing” beds above and below
 - Over-pressure provides higher IPs
 - Liquid rich kerogen may be an advantage
 - Liquids most likely to come from wet gas rather than oil

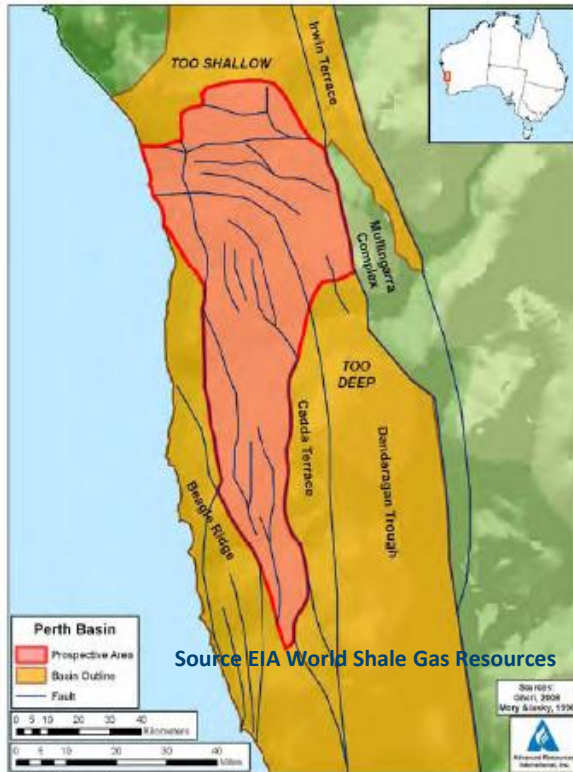
COOPER BASIN



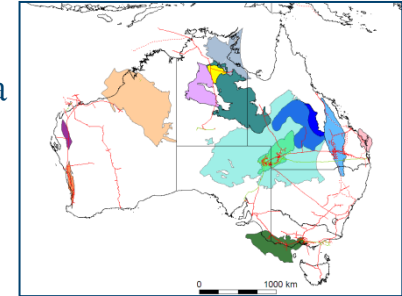
- Focus in Nappamerri Trough, to date better defined in SA
- Permian Roseneath and Murteree shales with interbedded Epsilon (tight sandstone section) – collectively “REM”
- Target areas defined by shale thickness and maturity levels
- Additionally over-pressured (deeper) areas may prove to have higher IP’s (>~3,000m)
- Main player is Beach – 2 wells drilled, target zones thicker than expected (300-400m) & gas saturated, cores being analysed. One well tested & flowed at 2 MMcfd being analysed. Announced contingent resource of 2 Tcf based on 100 km² around each well
- Senex drilled one well with 100m of shale, liquids rich gas shows with further wells planned
- Major company with holdings include Beach, Santos, Drillsearch, Senex, Adelaide, Icon
- Many companies holding acreage
- Recent Transaction
 - BG Group acquiring 60% of ATP 940P (Drillsearch): staged entry to a gross \$130mm program (BG paying first \$90mm) + back costs. Options issued to BG potentially providing 9.9% ownership in Drillsearch.
 - Beach buying Adelaide Energy stock



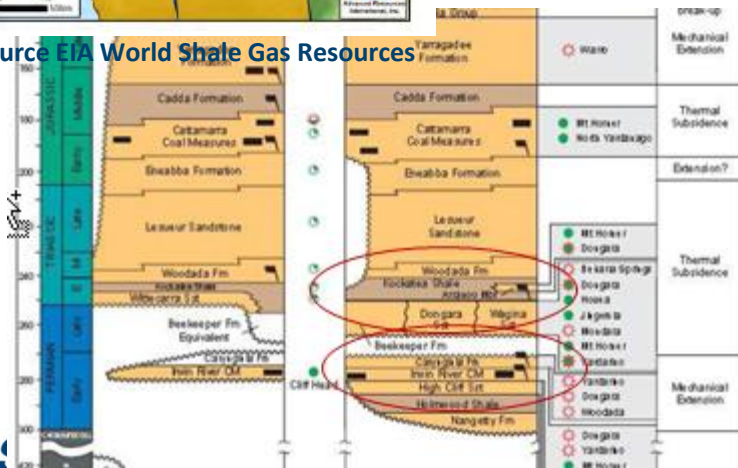
PERTH BASIN



- Focus in Dandaragan Trough
- Targets in Permian Carynginia Shale and Triassic Kockatea Shale
- Tight gas potential in adjoining formations
- Target areas defined largely by maturity levels with some areas that may be overmature and too deep
- Main players are AWE and Norwest – to date two wells drilled.
- Arrowsmith-2 well intersected 450m Kockatea and 250m Carynginia. Awaiting stimulation and testing in September. Woodada Deep being analysed.
- Other companies with holdings include Origin and Empire
- Recent transaction – Indian multi-billion \$ company BPRL farmed into EP413 (Norwest) funding \$10mm of shale gas exploration costs to earn 50% of Norwest’s 55.6% interest.

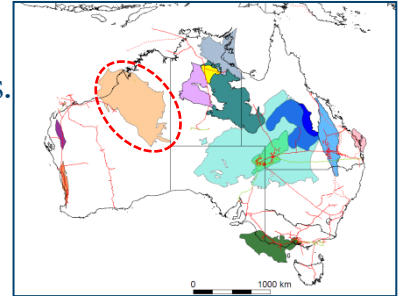
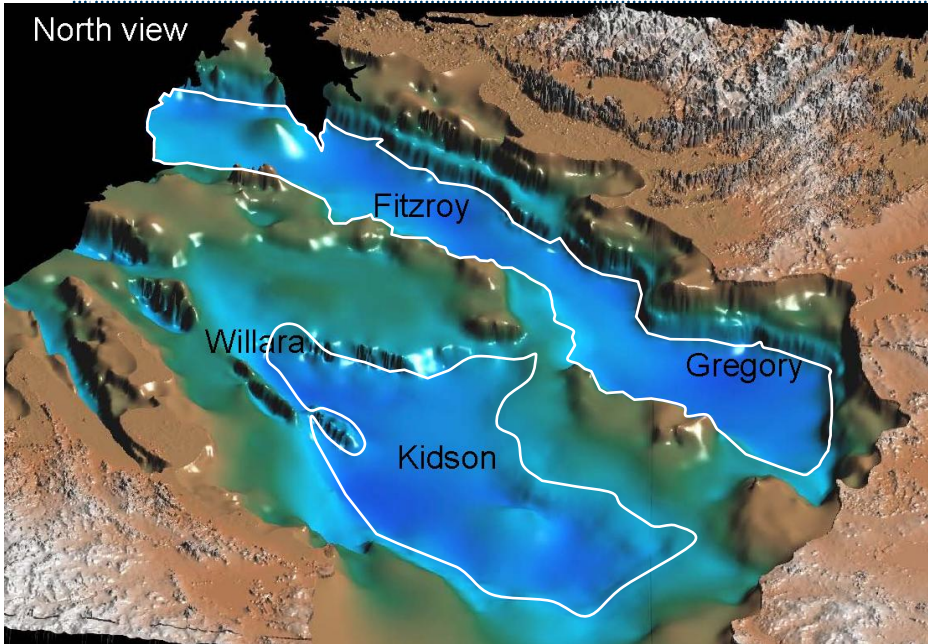


Source EIA World Shale Gas Resources

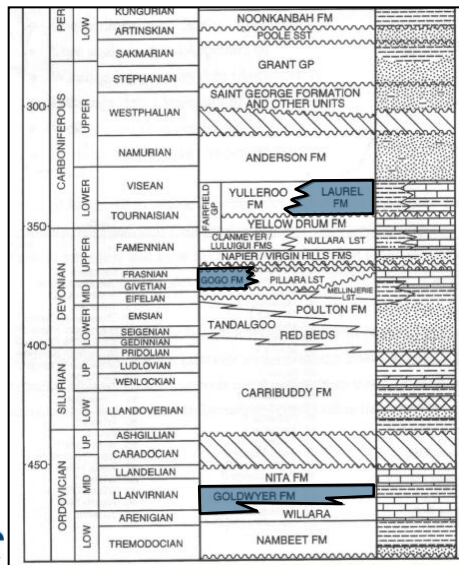


CANNING BASIN

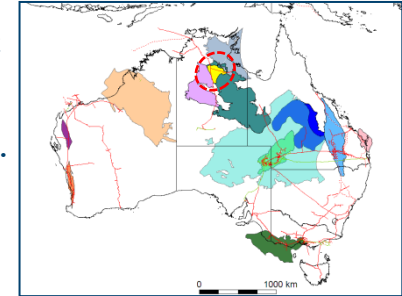
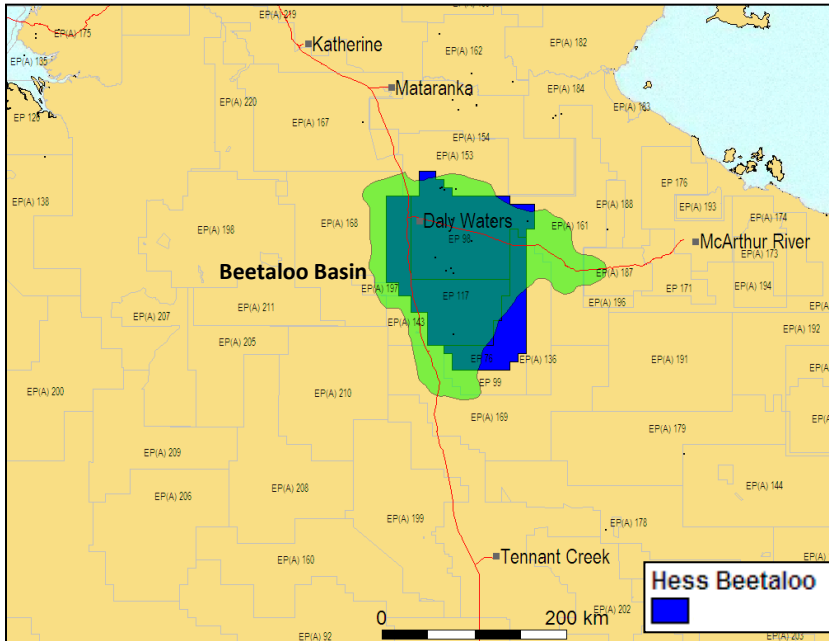
North view



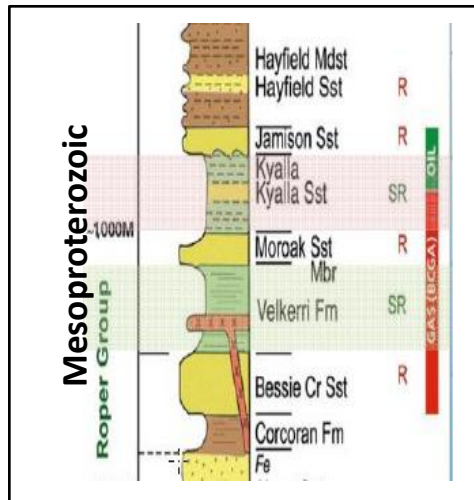
- Very under-explored with large areas being very remote even from road access.
 - Weather windows exclude the wet season monsoon period
 - Different key targets in the two structural troughs.
 - Laurel and Anderson Formations are being targeted in the Fitzroy/Gregory Troughs. Gogo and Goldwyer Fms may also contribute. Note - some acreage is vacant
 - Goldwyer Fm is the target of the Kidson Trough
 - Key players are Buru/Mitsubishi in the Fitzroy trough and New Standard Energy and Kingsway in the Kidson.
 - Other Formations such as the Nambett, Willara Caribuddy and Noonkanbah Fms may have potential.
- Apart from the Laurel and Anderson, all units are marine in origin (positive for fracability – Low clay)
- Recent Transaction – ConocoPhillips funding up to \$110mm in a phased program earning up to 75% interest from New Standard Energy. First phase 2012.



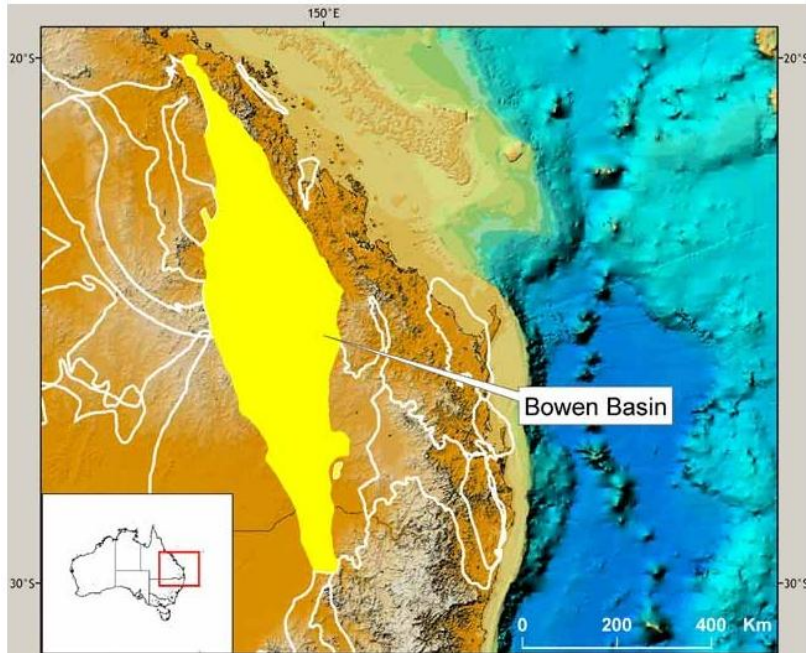
BEETALOO BASIN



- Very rich organic shales in Mesoproterozoic (1.4 billion years old) sections
- Two shale zones –Kyalla and Velkerri shales.
- Both zones are thick (gross section for each of 800m) with TOCs to 12%). World class potential source rocks - potential for both gas and liquids
- Located over existing gas pipeline
- Most of the basin is held by Falcon Oil and Gas.
- The Basin was previously considered a sub-basin of the McArthur Basin
- Recent Transaction - Hess farmin to 3 of 4 Falcon blocks. Hess paid \$20mm to Falcon and in a phased program will undertake a \$40mm seismic program in 2011 with an election for a 5 well program. Falcon will issues warrants to Hess, and Hess will take 62.5% interest

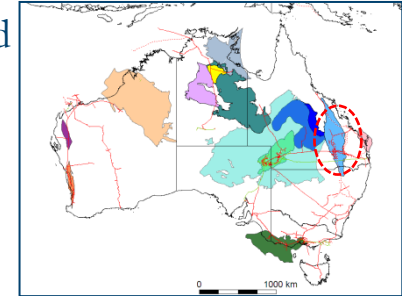


BOWEN BASIN



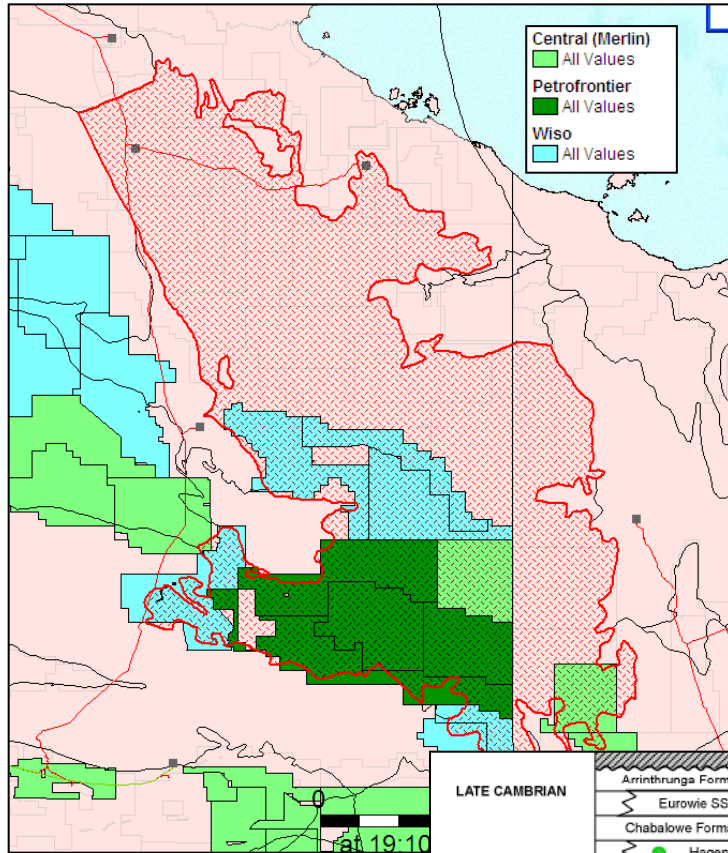
Source: Geoscience Australia

- The basin is the centre for concentrated CSG exploration and development
- Maximum sediment thickness of 10,000 m in two N trending troughs (Taroom and Denison)
- Conventional exploration to date has seen only minor success with the largest single issue being reservoir quality
- The late Permian sequence contains at least one marine shale sequence which may have potential for shale gas
- There are many companies operating in the basin
- Current proposal to drill a well to test the shale gas concept.
- Blue Energy mention shale gas potential in the Moranbah Coal Measures of Late Permian age



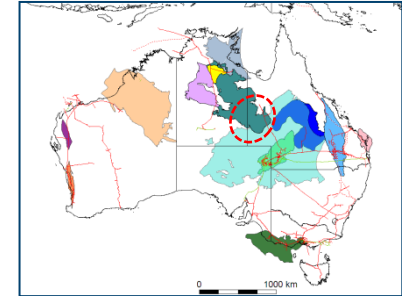
PERMIAN	LATE	Bandanna Formation	Bandanna Formation	Blackwater Group	Baralaba Coal Measures	"Kanga Formation"
		Black Alley Shale	Black Alley Shale	Black	Durunga Formation	Back
		Martian Formation	Martian Formation			
		Peakwaddy Formation	Peakwaddy Formation		Creek	
		Catherine Sandstone	Muggleton Formation	Group	Group	
	Ingelara Formation	Ingelara Formation				
	Freitag Formation	Freitag Formation				
	EARLY	Arbuckle Sandstone	Arbuckle Sandstone	Group	Group	
		Cattle Creek Formation	Cattle Creek Formation			
		Fleets Dome Beds	Fleets Dome Beds			
CARBONIFEROUS		Combaranga Volcanics	Carboon Andesite	?	?	?
DEVONIAN		Roma Granite				
		Timbury Hills Formation	Timbury Hills Formation			

SOUTHERN GEORGINA BASIN



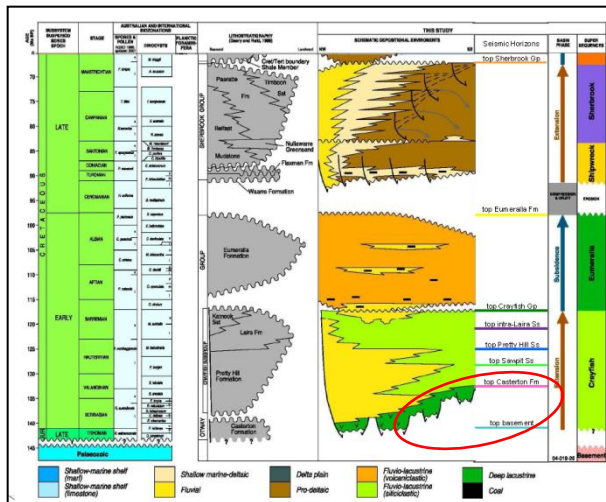
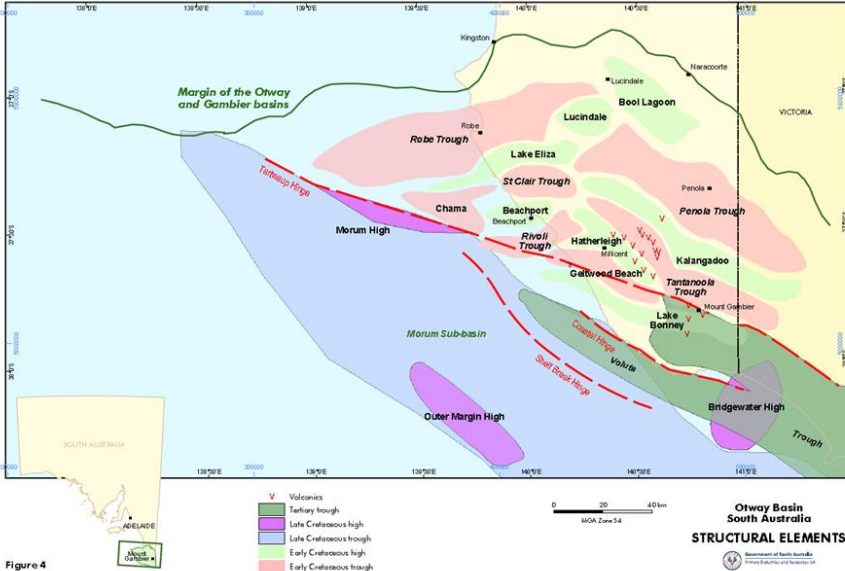
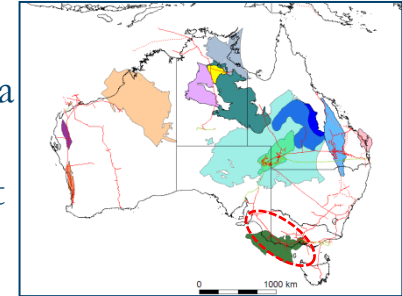
LATE CAMBRIAN	Arintheta Formation
	Eurowie SS Member
	Chabalowe Formation
	Hagen Member
MIDDLE CAMBRIAN	Arthur Creek Formation
	Arthur Creek Shoal
	"Hot Shale"
	Thorntonia Limestone
EARLY CAMBRIAN	Red Heart Dolostone
	Mount Baldwin Formation
NEOPROTEROZOIC	Elker Formation
	Mopunga Group

- Emerging new play in the highly organic rich Cambrian Arthur Creek marine shales
- The richest section is up to 25m thick with TOCs up to 16%
- Petrofrontier is the main player with a drilling rig currently mobilised to drill 2 wells targeting the Arthur Creek shales
- Petrofrontier draw parallels with the Bakken Shale (shale oil)
- Ryder Scott (2010) quote P50 OOIP for Petrofrontier's four blocks of 269 billion bbls.
- Central Petroleum and Wiso Oil hold applications over blocks. Central quotes mean prospective resources (rec) of 15Tcf Upper Arthur Ck
18Tcf Lower Arthur Ck
5 billion bbls Lower Arthur Ck

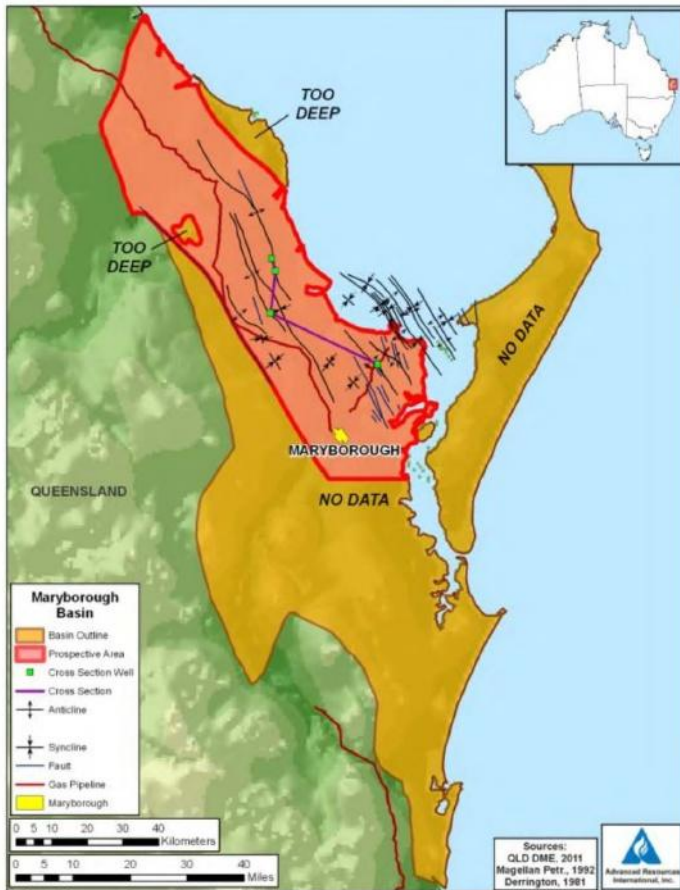


OTWAY BASIN

- The basin is untested for shale gas but has known conventional source rock intervals in a number of troughs.
- Shale sections are present in the lowermost Casterton Fm and within the Sawpit Fm.
- The shales are lacustrine, providing a potential concern on clay content, and lessened brittleness.
- Few wells intersect the Casterton unit however TOC's indicate potential. Generally low HI's suggest gas will be dry.
- RISC estimate up to 100 TCF GIP potential for the Casterton shale from a number of troughs across the basin.
- The basin occupies an area of higher density habitation and environmental issues may be significant
- The main potential players are Beach, Somerton, Adelaide, Rawson and possibly Bass Strait Oil

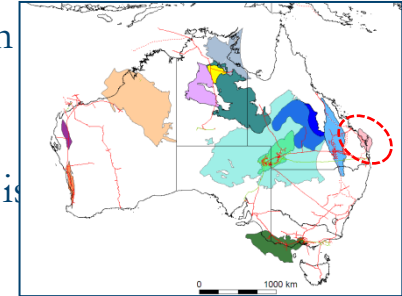


MARYBOROUGH BASIN

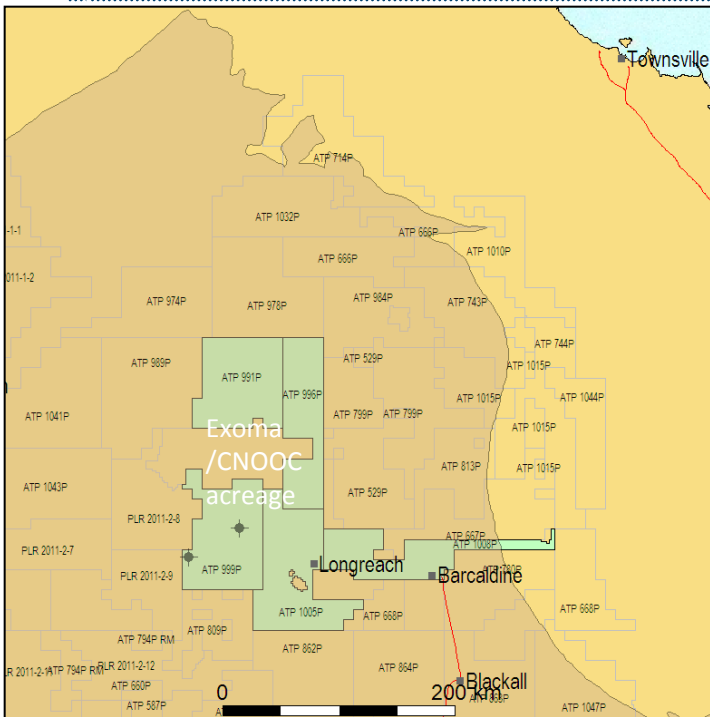
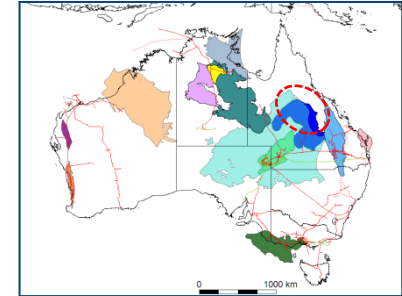


Source EIA

- A review by US Energy Information Administration identified shale units in the E. Cretaceous
- TOC's are around 1.5% with maturities in the gas window. Geological detail is sparse and confirmation is required
- Blue Energy and Adelaide Petroleum are the only two companies in the Basin. Blue Energy are earning in to three Adelaide permits (two of which are awaiting award)
- Blue mention the EIA report in presentations, but do not provide work program details
- EIA estimate GIP of 77 Tcf with recoverable volumes of 23 Tcf



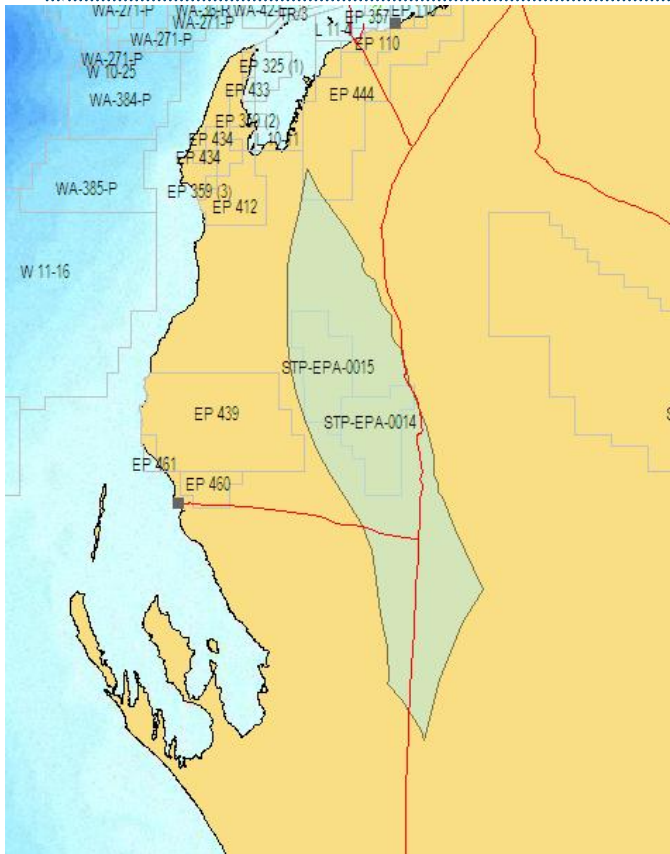
NORTHERN EROMANGA/GALILEE



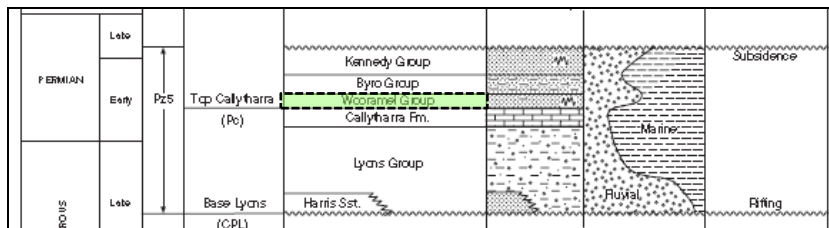
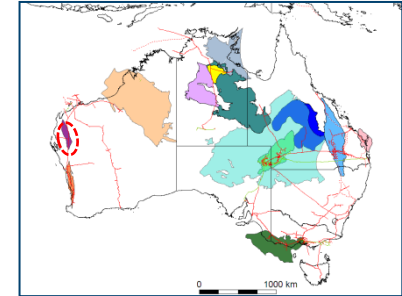
- The Galilee Basin underlies the Eromanga and is currently being explored for CSG
- A secondary effort is aimed at the Cretaceous Toolebuc shale in the Northern Eromanga Basin
- The Toolebuc is a high TOC shallow marine shale occurring at shallow depths (<700m). Oil slicks are common drilling through the Toolebuc
- The shale ranges in thickness from 20 to 45 metres with TOCs to 18%
- The main player is Exoma with farmin partner CNOOC
- Two wells have been drilled in the last month – Bessies and Euston. Bessies encountered 40 m of shale at 883m with gas shows and free oil from the overlying shale. Euston encountered 32 m of shale at ~ 600m with evidence of gas release
- Exoma estimate around 25Tcf potential in its permits (assumed recoverable)
- Given the shallow depths of the shale, the relatively young age and the lack of deep burial, issues such as the level of induration of the shales and consequent receptiveness to fracturing will need to be addressed
- Recent Transactions – CNOOC are farming into 50% interest in 5 blocks and contributing \$50mm (CSG and oil shale) in costs. CNOOC has an option to purchase 19.9% of Exoma

Early Cretaceous	Rolling Downs Group	Surficial deposits
		Winton Fm
		Mackunda Fm
		Allaru MS
		Toolebuc
		Walumbilla
		Cadna-Owie
		Hooray SS
		Westbourne
		Adori SS
Birkhead Fm		
Hutton SS		
Jurassic		

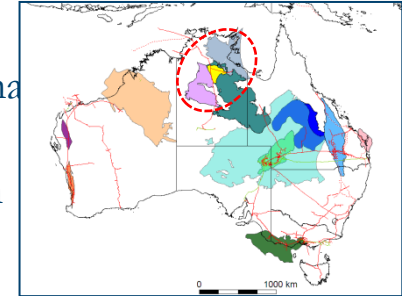
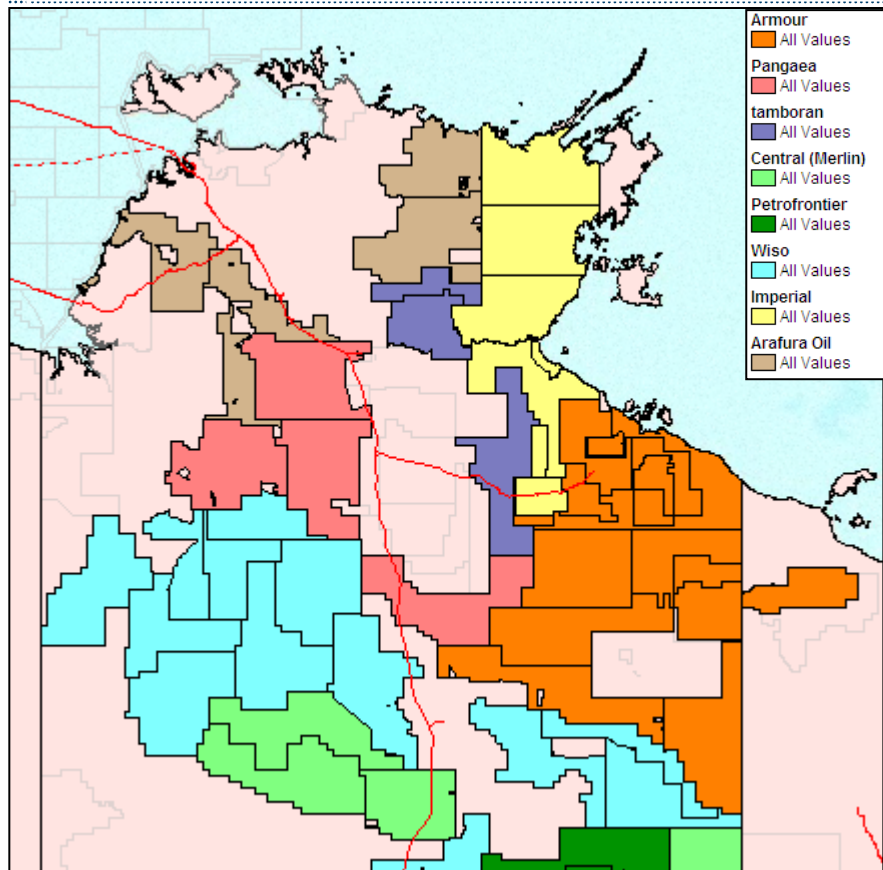
MERLINLEIGH SUB-BASIN



- An onshore extension of the Carnarvon Basin untested for shale gas with few wells drilled
- Source rock potential is recognised in the Permian sequence, particularly from the Wooramel Group
- TOC av 6-7%
- up to 300m thick at depths up to 2,000m
- within interpreted gas window
- Two provisional licences have been taken out by New Standard Energy. Surface geochemistry has been undertaken.
- Potential yet to be demonstrated



NORTHERN TERRITORY BASINS



- The McArthur, Northern Georgina and Wiso basins have many current applications blocks which have been taken out by a number of small companies including Central, Armour, Pangaea, Tamboran, Wiso, Imperial, Arafura
- These old basins have organically rich shale zones with oil shows. However the knowledge level is low and there may be large requirements for relatively high cost data gathering before traction is gained

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