2012 PETROLEUM OPPORTUNITIES IN SOUTH AUSTRALIA

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Crude Oil Resources

- Modest, declining resources and production
- Only 0.3 % of world oil reserves
- Net imports of liquid fuels ~50% of consumption

- Exploration potential
  - vast frontier areas
  - Bight Basin?
  - Shale oil plays (e.g. Hess in Betaloo Basin)

Source: AERA 2010
Condensate Resources

- Condensate and LPG associated with offshore gas
- Exploration potential – vast frontier areas

Source: AERA 2010
Conventional Gas Resources

- Anticipated growth off northern Australia
- 6th largest exporter of LNG

- Exploration potential
  - Outer Browse Basin
  - Roebuck Basin
  - Outer Carnarvon Basin
  - Perth Basin

Source: AERA 2010

From T. Bernecker, Geoscience Australia, February 2012
Unconventional Hydrocarbons

From T. Bernecker, Geoscience Australia, February 2012

[Map of Australian Basins with Coal Seam Gas Potential]

[Map of Potential Tight Gas Basins in Australia]

[Map of Potential Shale Gas Basins in Australia]
Expanding global demand for LNG, net back ~twice that of eastern Australian domestic gas
Upwards pressure on domestic gas prices
Exploration to add supply-side competition, new unconventional plays opening up (e.g. Cooper Basin)
Gas storage expanding to buffer supply: demand / to manage ramp gas

<table>
<thead>
<tr>
<th>Metric</th>
<th>West Australia</th>
<th>Eastern Australia</th>
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</thead>
<tbody>
<tr>
<td>Average Wholesale Gas Price (ex-plant for new contracts)</td>
<td>~$8 / GJ</td>
<td>~$4 / GJ</td>
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<td>Producing basins with discrete infrastructure supplying wholesale gas</td>
<td>3</td>
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<td>Independent JVs in wholesale gas supply chain</td>
<td>5</td>
<td>16</td>
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<td>Interconnection of pipeline infrastructure to supply population centres</td>
<td>Limited</td>
<td>Extensive</td>
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South Australia’s Major Mines

2004 – 4 mines

Major Active Mines

2011 – 18 mines
South Australia’s Mining Pipeline

Major Mines
1. *Olympic Dam
2. *Challenger
3. Beverley
4. Middleback Range’s
5. Leigh Creek
6. *Malu
7. *Angas
8. *Honeymoon
9. Jacinth-Ambrosia
10. Beltana
11. White Dam
12. Cairn Hill
13. Iron Chieftain
14. Ankata
15. Kanmantoo
16. Beverley North
17. Peculiar Knob
18. *Wigerup

Major Projects
- Arckaringa (CTL)
- Bramfield (Fe2O3)
- Beverley South (U3O8)
- *Bird-in-Hand (Au)
- *Carrapateena (Cu-Au)
- Clinton (CTL)
- Crocker Well (U3O8)
- Flinders-Reliance (Zn)
- *Four-Mile (U3O8)
- FuturGas (CTL)
- Gum Flat (Fe2O3)
- Hawks Nest (Fe2O3)
- Hillside (Cu, Au)
- *Kalkaroo (Cu-Au-Mo)
- *Menninnie Dam (Pb-Zn-Ag)
- *Mullaquana (U3O8)
- Mutooroo (Cu-Co)
- Mutooroo (Fe2O3)
- Oban (U3O8)
- Olympic Dam Expansion (Cu-U-Au-Ag)
- Poochera (Kaolin)
- *Portia (Au)
- Project Magnet P2 (Fe2O3)
- Razorback (Fe3O4)
- Tripitaka (HM)
- *Tunkillia (Au, Ag)
- Warramboo (Fe3O4)
- Wilcherry Hill (Fe3O4)

* PACE Co-funded
- Conventional oil and gas
- Frontier and mature basins
- 9 unconventional plays being chased by 24 JVs:
  - shale gas, tight gas
  - coal seam gas
  - coal gasification plays
- Gas storage
- Work program bidding - onshore Cooper and Otway
- Frontier onshore basins - over the counter at any time.
LAND ACCESS AGREEMENTS

A variety of access agreements with native title claimants and indigenous owners are in place for 46 PELs (6 new PELs granted last year)

Agreements cover exploration and production phases and are public domain

Agreements are fair to indigenous people and sustainable for petroleum E&P
Cooper Basin Acreage

CO2011

- New release planned for mid 2012 of relinquished acreage from PEL 111

CO2010

- closed March 2011: 11 bids on all 3 blocks
- winners – SAPEX (568 & 569), Ambassador (570)
- Bid total: $52.7m, $48.3m guaranteed: 12 wells, 1,300 km 2D, 200 sqkm 3D

UPSIDEx:

- More structures and stratigraphic traps to be found
- New unconventional gas plays (shale gas, deep & shallow coal gas, tight gas, shale oil?)
- Cambro-Ordovician Warburton Basin potential (Ordovician black shales untested)
Cooper Basin oil success rate

- South Australia – oil success rate

- Acrasia 1 (2002)
- New exploration phase

Cooper Basin gas success rate

- Gas discoveries
- Gas exploration wells
Shale gas, tight gas and CSG plays

Beach Energy: PEL 218
Holdfast 1 flowed gas at up to 2 MMscf/d after seven stage fracture stimulation of gas saturated Early Permian succession.
Beach estimate potential 300 TCF gas in place in PEL 218 (Nappamerri Trough) – ~100 TCF in shales and >200 TCF in sands (basin centred gas)

Santos PPLs:
Booked 2C (contingent, probable, recoverable, Santos share) unconventional gas resources (shale gas, tight gas, deep coal) of ~2.22 TCF (2,345 PJ)

Senex Petroleum, PEL 516: Estimate 75-110 TCF gas in place in shales and coals

Strike, Beach, PELs 94, 95, 96: Mean prospective resource estimate 12.39 TCF gas and 113 MMbbls liquids in coals and shales
2012 PROPOSED Offshore Release Areas
Otway Basin

- 2012 relinquishments (PELs 186, 154, 155) will be offered for work program bidding later in 2012
- Some operators are interested in farm in deals
- Oil and gas play trends, shale oil and unconventional gas potential
- Pipeline infrastructure - access to SE Australian gas market
- Proposed offshore block, release in May 2012
EPPs 37 to 40 granted to BP in Jan 2011
- Primary program $605m (11,400 km² 3D; 4 wells to 2014)
- Seismic acquisition in progress

EPPS 41 & 42 granted to Bight Petroleum in July 2011
- Primary program $67.6 m (768 km² 3D, 235 km 2D; 1 well)

Proposed 2012 offshore areas to be released at APPEA2012
EASY ACCESS TO DATA
PEPS ONLINE
– FREE DATABASE
Comprehensive, includes production data
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