Catching Australia’s Unconventional Gas Wave

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Santos operated Moomba 191 in Cooper Basin, Central Australia
Key Messages

- Large unconventional resource base
- Growing domestic and proximity to Asian LNG demand
- Politically stable development opportunity

- Australia is well positioned to convert unconventional gas potential

- Majors are early movers in the development life cycle
  - Australia is well placed to adapt U.S. shale commercialisation lessons
  - Major international E&P companies are taking large acreage positions

- Early commercialisation will depend upon access to infrastructure and market
  - Infrastructure limited to existing developed basins
  - Processing and marketing capacity important
Putting the Australian opportunity in context

**United States of America**

- Land Area: 3.79 million mi²
- Natural Gas Demand: 24.37 Tcf/yr (Net Imports 1.94 Tcf/yr)
- Gas Resource Potential: 2,203 Tcf
- Gas Prices (US$/MMBtu): $10 → $3

**Australia**

- Land Area: 2.97 million mi²
- Natural Gas Demand: 2.09 Tcf/yr (Net Exports 1.0 Tcf/yr)
- Gas Resource Potential: 820 Tcf
- Gas Prices (US$/MMBtu): $5 → $9

**Ability to Deliver**

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>AUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigs</td>
<td>1,800</td>
<td>50</td>
</tr>
<tr>
<td>Wells</td>
<td>37,000</td>
<td>1,200</td>
</tr>
<tr>
<td>Processing(3)</td>
<td>600</td>
<td>25</td>
</tr>
<tr>
<td>Pipelines (mi)</td>
<td>350,000</td>
<td>20,000</td>
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</tbody>
</table>

1. Technically recoverable resources
2. Total demonstrated gas resources
3. Number of plants

Australia’s enormous unconventional gas potential

1. Total demonstrated resources
2. Technically recoverable resources
Source: BREE 2012 Gas Resource Assessment & EIA World Shale Gas Resources 2011

Shale Gas Estimates\(^2\) (Tcf)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Gas (Tcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>1,275</td>
</tr>
<tr>
<td>2</td>
<td>United States</td>
<td>862</td>
</tr>
<tr>
<td>3</td>
<td>Argentina</td>
<td>774</td>
</tr>
<tr>
<td>4</td>
<td>Mexico</td>
<td>681</td>
</tr>
<tr>
<td>5</td>
<td>South Africa</td>
<td>485</td>
</tr>
<tr>
<td>6</td>
<td>Australia</td>
<td>396</td>
</tr>
</tbody>
</table>
Early moving majors are taking material positions

**Australia**

<table>
<thead>
<tr>
<th>Date</th>
<th>Basin</th>
<th>Buyer</th>
<th>Deal Value ($MM)</th>
<th>$ / acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 2013</td>
<td>Cooper</td>
<td>Chevron</td>
<td>349</td>
<td>900</td>
</tr>
<tr>
<td>Dec 2012</td>
<td>McArthur</td>
<td>Santos</td>
<td>71</td>
<td>15</td>
</tr>
<tr>
<td>Sep 2011</td>
<td>Canning</td>
<td>ConocoPhillips</td>
<td>110</td>
<td>13</td>
</tr>
<tr>
<td>Jul 2011</td>
<td>Cooper</td>
<td>BG Group</td>
<td>125</td>
<td>324</td>
</tr>
<tr>
<td>Jul 2011</td>
<td>Georgina</td>
<td>Statoil</td>
<td>210</td>
<td>26</td>
</tr>
<tr>
<td>Jun 2010</td>
<td>Canning</td>
<td>Mitsubishi</td>
<td>150</td>
<td>18</td>
</tr>
</tbody>
</table>

**United States**

<table>
<thead>
<tr>
<th>Date</th>
<th>Play</th>
<th>Buyer</th>
<th>Deal Value ($MM)</th>
<th>$ / acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 2011</td>
<td>Fayetteville</td>
<td>BHP/Chesapeake</td>
<td>4,750</td>
<td>9,754</td>
</tr>
<tr>
<td>Nov 2010</td>
<td>Marcellus</td>
<td>Chevron</td>
<td>4,315</td>
<td>-</td>
</tr>
<tr>
<td>Oct 2010</td>
<td>Eagle Ford</td>
<td>Statoil/Tailsman</td>
<td>1,325</td>
<td>13,660</td>
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<tr>
<td>Aug 2010</td>
<td>Cordova</td>
<td>Mitsubishi</td>
<td>428</td>
<td>6,336</td>
</tr>
<tr>
<td>May 2010</td>
<td>Marcellus</td>
<td>Shell</td>
<td>4,700</td>
<td>6,631</td>
</tr>
<tr>
<td>Jun 2009</td>
<td>Haynesville</td>
<td>BG Group</td>
<td>1,055</td>
<td>17,583</td>
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Source: Barclays "Global Natural Resources" 13 December 2012, IHS Herolds database, Santos analysis
Note: All figures presented are in US dollars
Australia’s opportunity underpinned by Asian LNG demand

Current unmet demand in 2020 is ~90mtpa, growing to ~170mtpa by 2025

New sources of LNG supply will be required – between 20 and 40 LNG trains

CSG-to-LNG projects at Gladstone have long-term binding off-take agreements

Fixed oil linkage prices for the life of the contract

Source: Wood Mackenzie, ACIL Tasman and Santos analysis
LNG supply represents contracted supply from existing and sanctioned projects
Assuming LNG train nominal capacity of 4mtpa
Santos poised to commercialise Cooper’s unconventional position

- Large unconventional gas resource $85^{(1)}$ Tcf
- 9 well, $200MM^{(2)}$ work program over 2 years
- Encouraging initial results
  - Moomba 191 (Shale Play) sustained average gas flow at 2.3mmscf/d
  - Gaschnitz-1 (Basin Centred Gas) confirms c.1,000m gas saturated section
- Existing infrastructure to aid timely conversion from resource to production

Making unconventional gas development in Australia an attractive investment

1. Gross Cooper Basin technically recoverable resource estimate
2. Australian dollars
Source: EIA World Shale Gas Resources 2011
Key Messages

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