Australia – The Future for Oil and Gas

Philip Aiken
President and CEO
BHP Billiton Petroleum

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Production profiles of individual Australian fields and cumulative production forecast at 50 per cent probability derived from industry data.

Source: T Powell AGSO 2001, ABARE
Australia – production vs consumption

Production profiles of individual Australian fields and cumulative production forecast at 50 per cent probability derived from industry data.

Source: T Powell AGSO 2001, ABARE
Australia – some future liquids developments

<table>
<thead>
<tr>
<th>Field name</th>
<th>Product</th>
<th>Liquids reserves</th>
<th>Startup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gorgon</td>
<td>Gas/condensate</td>
<td>316 MMbbl</td>
<td>2009</td>
</tr>
<tr>
<td>Mutineer/Exeter</td>
<td>Oil &amp; Gas</td>
<td>120 MMbbl</td>
<td>2006</td>
</tr>
<tr>
<td>Stybarrow</td>
<td>Oil &amp; Gas</td>
<td>Appraisal</td>
<td>2006</td>
</tr>
<tr>
<td>Enfield</td>
<td>Oil &amp; Gas</td>
<td>43 MMbbl</td>
<td>2005</td>
</tr>
<tr>
<td>Cliff Head</td>
<td>Oil</td>
<td>25 MMbbl</td>
<td>2005</td>
</tr>
<tr>
<td>Yolla</td>
<td>Gas/condensate</td>
<td>24.5 MMbbl</td>
<td>2004</td>
</tr>
<tr>
<td>Kipper</td>
<td>Oil &amp; Gas</td>
<td>13 MMbbl</td>
<td>2006</td>
</tr>
<tr>
<td>Egret</td>
<td>Oil</td>
<td>11 MMbbl</td>
<td>2005</td>
</tr>
</tbody>
</table>

Source Wood Mackenzie, Nov 02.
Global Materiality

Australia...not a place to rush to for oil

Size of the button reflects average discovery size (MMboe, 1995-1999)

Source: IHS Energy Group/Wood Mackenzie
Australia – maturity in shallow waters

Reserves Additions (MMboe)

Number of Wells per Year

- Oil & Condensate
- Oil
- Wells

Timeline:
- 1960
- 1964
- 1968
- 1972
- 1976
- 1980
- 1984
- 1988
- 1992
- 1996
- 2000
Australia – activity in maturing areas

- Shallow water basins are well explored
- Infill exploration close to infrastructure will continue
  - ‘new’ technology application (3D seismic)
  - incremental reserves
- New plays in existing shallow water
  - eg. Enfield area in WA-271-P

But these are unlikely to yield material quantities of hydrocarbons…
Australia – the potential of frontier basins

- Browse/Beagle Basin
- South West WA Basins
- Great Australian Bight
- Great Australian Bight
- Deepwater Bass Strait
- Townsville Trough
- Lord Howe Rise
Australia – oil

**Trends in industry:**
- Declining liquids production
- Industry focus is diverging
  - Minors focus on mature areas, generally smaller prizes
  - Majors focus on larger opportunities
- Australia regarded as maturing, and lacking prospectivity
- Some untested frontier areas, mainly offshore

**Responses:**
- Funding for technical data
- Review of fiscal terms
Australia – history of gas production

Includes: Gippsland, Cooper, Carnarvon, and other

Source: AGA
Gas consumption by State*

* Includes ethane, non-commercial natural gas and methane produced from other than natural gas fields.

** Includes ACT. Source: AGA
Australia – progressive inter-linking of markets

- 10 Years Ago
  - Bass Strait gas sold in Victoria
  - Cooper Basin sold in NSW & South Australia

- Now
  - Eastern Gas Pipeline
  - Tasmania supply - July 2002
  - South Australia pipeline to be completed by 2004
  - Other interconnection proposals
  - Timor Sea & PNG discussion

![Map of Australia showing inter-linking of markets](image-url)
Australia – domestic gas

Trends in industry:
• Continuing increase in number of upstream suppliers
• New gas supply source likely to be required for SE Aust. ~ 2010/15
  - Including necessary transmission pipeline investment
• Gas pipeline network growing without Govt. sponsorship/incentives
• Emerging role of coal bed methane
  - Level of ongoing investments dependant on supply experience and available market
• Continued retail and pipeline consolidation
• Gas market remaining relatively immature and shallow
Australia – gas resources

Remaining Reserves (AGA 2002)
(Commercial 37 KPJ)

Production 2002 1.2 KPJ
Major Gas Trade Movements
Trade flows (billion cubic metres)

Source: BP Statistical Review of World Energy 2002
LNG – continues to grow

Source: Poten Partners
LNG – world imports, 2002 (million tonnes)

- North & South America: 5.2
- Europe: 28.5
- Korea: 17.6
- Taiwan: 5.1
- Japan: 53.1

Source: ABARE
LNG – supply to Asia, 2002 (million tonnes)

- USA: 1.2
- UAE: 4.6
- Qatar: 11.2
- Oman: 4.8
- Malaysia: 14.9
- Brunei: 6.6
- Indonesia: 25.1
- Australia: 7.3

Source: ABARE
LNG – Asian demand projections (million tonnes per annum)

<table>
<thead>
<tr>
<th>Country</th>
<th>2001</th>
<th>2010</th>
<th>2015</th>
<th>2015 high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>16.7</td>
<td>25.0</td>
<td>31.6</td>
<td>34.8</td>
</tr>
<tr>
<td>Korea</td>
<td>4.7</td>
<td>9.5</td>
<td>13.5</td>
<td>14.9</td>
</tr>
<tr>
<td>Taiwan</td>
<td>10.0</td>
<td>18.0</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>5.0</td>
<td>7.5</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>5.0</td>
<td>7.5</td>
<td>12.5</td>
<td></td>
</tr>
</tbody>
</table>

Source: ABARE
LNG – capacity expansion plans

Projected demand vs. Existing capacity

Source: ABARE
LNG – market dynamics

Trends in industry:

• Fierce producer competition is lowering prices and margins
• Cost base of liquefaction is reducing
• LNG moving to “commodity status” in global market
• New LNG markets slow to materialise
• US emerging as a market
• Around 2010, expect another Australian producer of LNG other than NWS
• Australia will need to compete for exploration dollars
• Domestic gas market is immature but developing
• Australia positioned to supply growing LNG market