The road (downunder) to new conventional and unconventional oil and gas reserves

**CONTEXT**

**USA annual production in the “Lower 48” now exceeds consumption**

M K Hubbert (1956)
1290 x 10^{12} scf gas ultimate production curve

Australia leads the world in the use of CSG as feedstock for LNG – with exports tied to Brent $/barrel

**Barry Goldstein**
Executive Director
Department of State Development
South Australian State Government
$/barrel for Brent Crude

$160  Venezuela balances budget
$130  Iran balances budget
$115  Breakeven for highest cost USA shale oil
$114  Iraq balances budget
$110  Russia balances budget
$100  Supports new Canadian oil sands
$95   Average crude price to boost airline profits by $15bln
$90   Saudi Arabia balances budget
$80   High cost deepwater offsh. Angola, Brazil, Norway and UK
$60   Median break-even for USA shale oil (assoc’d gas ~free)
$50   Kuwait balances budget
$40   Break-even for lowest price USA shale oil

Guide to Crude Oil Price Implications
Ed Crooks, pp 8, Financial Times 8 Nov 14

CONTEXT

US$49/B Brent Crude on 22 Jan 15
Estimated technically recoverable gas resource in ten unconventional reservoir basin-plays

Sources: EnergyQuest 2014, EIA 2013, ACOLA 2013 and DSD 2012 (1,000 PJ = 0.94 TCF)
Overview – oil and gas onshore and offshore South Australia

- 4 Cooper CO2013 blocks attracted aggregate $103 million work program bids (Senex x 2, Strike, Bridgeport)
- Western Flank oil play in the Cooper-Eromanga continues with 50+ % success in finding avg. 2.5 mm bbls oil
- Huge potential for gas in unconventional reservoirs in the Cooper Basin
- Encouraging results from Otway Basin exploration (Beach/Cooper)
- Bight Basin attracting major E&Ps – massive investment
- Frontier basins’ plays include:
  - Conventional oil and gas
  - Unconventional regional plays
Offshore Bight Basin Commonwealth Waters
$1.2 bln guaranteed 2011-16 + $1.1 bln non-guaranteed 2017-20

BP & Statoil
EPPs 37 to 40

CHEVRON
EPP44 & EPP45

SANTOS & MURPHY
EPP43

BIGHT PETROLEUM
EPP 41 and EPP 42
Vision for Nirvana: Centuries of safe, secure, competitive energy supplies that meet community expectations for net outcomes

To reach the vision

• Potential risks to social, natural and economic environments are *reduced to as low as reasonably practical* (ALARP); and meet community expectations for net outcomes **BEFORE IT IS PERSONAL** – before approval sought for land access;

• Affected people and enterprises get timely information describing risks and rewards to enable informed opinions;

• Convene *roundtables* to deliver *roadmaps* for projects to inform: the **PUBLIC, GOVERNMENTS, INVESTORS, AND REGULATORS** and in doing so – enable/attract welcomed oil and gas projects.

• South Australia’s Roadmap for Unconventional Gas (Dec. 2012)
Top priorities:

- Legal frameworks provide certainty and simultaneously meet community and investor expectations for outcomes
- Trustworthy, people implement and regulate projects
- Environmental sustainability
- Manage supply-chain risks (people and facilities)
- Bolster understanding of risks, risk management and rewards
Key Conclusions

1. Huge potential in unconventional reservoirs in the Cooper. ~$3.5 bln investment 2014-19.

2. Huge potential offshore in the Bight Basin. ~$2.3 Bln investment to 2020

3. Trustworthy regulation / regulators

4. The Roundtable for Oil & Gas Projects will continue to expedite fit-for-purpose outcomes to benefit all South Australians
On the road (downunder) to new conventional and unconventional oil and gas reserves

Barry Goldstein,
Executive Director – Energy Resources
South Australian State Government
Background Information: Australia Oil & Gas

GPinfo Petroleum Permits of Australasia 2014

Government of South Australia
Department of State Development

10
Natural gas and oil in unconventional rock-reservoirs

**CONTEXT**

**Technically Recoverable Shale Resource Estimates**

<table>
<thead>
<tr>
<th></th>
<th>Gas (TCF)</th>
<th>Oil (Billion Bbls)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USA 1,161</td>
<td>Russia 75</td>
</tr>
<tr>
<td></td>
<td>China 1,115</td>
<td>USA 48</td>
</tr>
<tr>
<td></td>
<td>Argentina 802</td>
<td>China 32</td>
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<td>Algeria 707</td>
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<td>Australia 437</td>
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<td>South Africa 390</td>
<td>Mexico 13</td>
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<td></td>
<td>Russia 285</td>
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</tr>
<tr>
<td></td>
<td>Brazil 245</td>
<td>Canada 9</td>
</tr>
<tr>
<td></td>
<td>Others 1,535</td>
<td>Others 65</td>
</tr>
<tr>
<td></td>
<td>Total 7,795</td>
<td>Total 335</td>
</tr>
</tbody>
</table>

Fast follower criteria outside North America:

- The right rocks (liquids rich better)
- Markets
- Trusted regulatory frameworks
- Pre-existing infrastructure
- Supportive investment frameworks
- Two ends against the middle – descend cost & ascend productivity curves
USA “Lower 48”

- 2.9 million wells
- 250,000 wells drilled since 2003
- 30k – 35k wells/yr. now (80% horizontal)
- 20k – 30k wells pa to 2020
- Onshore: 1,400 rigs operating (63 onsh Oz)
- Texas:/Oklahoma: 700-900 rigs
- Permian Basin: 500-600 rigs (15 in Cooper)
- 2008-13 Horizontal & Stimulated Wells
  - Lateral length incr’d 40% (lease limited)
  - # stages incr’d 100% but shorter intervals

North America

- ~Nil LNG pa exports (0.9 TCF pa ex-Oz in ‘13)
- 3 LNG projects with Final Investment Decision
- Expect 5-7 plants with FID by 2017
- 5-6 yrs. to commission greenfield projects

World and Market Share

- Capacity w’wide at YE’13: 11 TCF LNG pa
- W’wide drawing board (FEED+): 7 TCF LNG pa
- North America in next 10 years: 4+ TCF LNG pa
- USA produced 4 TCF gas more than it consumed in ‘13
- Australia expects 3+ TCF LNG pa capacity by 2020
Australia:

Shale gas - technically recoverable potential:
- 437 tcf in 6 basins (avg 21% RF), EIA 2013
- > 1000 tcf in all prospective basins, Cook, 2013

Shallow CSG, Queensland & New South Wales
- 235 TCF est. tech. recov. resource (Santos ‘13)
- 42.8 tcf 2P reserves, YE ’12 (Core Energy, 2013)

Shale oil plays
- 17.5 BBO in 6 basins (avg 4% RF), EIA 2013
- In South Australia - prospects targeted in the onshore Otway and Arckaringa basins

Tight gas - technically recoverable potential:
- Still to be assessed nationally. Estimated 300+ tcf gas-in-place resource target in just PEL 218, South Australian Cooper Basin (Beach Energy)

Deep coals - technically recoverable potential:
- Still to be assessed nationally. Considerable gas resource targets. 9+ tcf targeted in just PEL 96, South Australian Cooper Basin (Strike Energy)
A Natural Gas Revolution is Underway

Vision:

- Secure and competitive gas;
- Improved balance of trade;
- Australia’s supplants imports with gas-based transport fuel;
- $ Billions in ESD projects;
- Thousands of jobs;
- Royalties/tax for public good;
- Risks to natural, social & economic environments reduced to ALARP & operations meet community expectations for net outcomes.

2014 Context:
Eastern Australia 2P Gas Reserves

13% conventional

Total = 52,522 PJ

87% Unconventional (Coal Seam Gas)

Australia’s Petroleum Pipeline Network

Core Energy Group June 2013 statistics
DEEP GAS IN THE COOPER BASIN

**EIA (2013):** 93 TCF sales gas in Cooper shales

**Beach Energy: PEL 218:** Potential 300 TCF gas in place in just PEL 218 (Nappamerri Trough, SA) ~100 TCF in shales and >200 TCF in sands. Chevron now PEL 218 partner

**Santos:** High-side 200+ TCF recoverable raw gas. Moomba 191 (vertical well): 2.6 MMscf/d from unconventional reservoirs at line pressure flowing to market. Santos – Beach – Origin JV have domestic and export markets.

**Senex Energy:** Est. 75-110 TCF gas in place in tight sandstone, shales & coals. Origin now partner in 3 PEL

**Strike Energy:** Est. 9 TCF gas resource in deep coal in PEL 96 and has attracted a major gas customer (Orica) to back its appraisal program versus terms for project capital and a sales agreement for 237 bcf over 20 years

**Drillsearch Energy and BG** in Qld deep gas play:
Cooper Basin Composite and Deep Coal Plays

Nappamerri Group
Regional Seal
Roseneath Shale
Regional Seal
Murteree Shale
Regional Seal
Patchawarra Formation
PRIMARY SOURCE INTERVAL

Gas saturated composite play
Patchawarra Formation overpressure data derived from DSTs and other data sources. Water pressure gradient is 0.43 psi/ft. Gradients exceeding ~0.45 psi/ft are indicative of overpressured gas. Overpressured gas in the Patchawarra Formation occurs at depths exceeding ~9500’ (~2900m).
Deep Cooper Basin (Gidgealpa Coals): Enormous Generation Capacity

Senex’s Paning 2 (May 2013):
Single 63,000 pound proppant fracture stim. in Toolachee coal (~2900m). Up to 90,000 scf/d, over 4 days.
Progress on recommendations #31 & #52
Updated CO\textsubscript{2} and Gas Wetness Maps, South Australian Cooper Basin
(Epsilon, Patchawarra, Tirrawarra, and Merrimelia Formations)

% CO\textsubscript{2}
Barrels of Propane + Butane (LPG) per MMcf Gas
Barrels of Condensate per MMcf Gas

Patchawarra Absent
Patchawarra Absent
Patchawarra Absent
**Indicative Rig Schedule for 6,000 PJ over 15 years:**
2,800 wells @ 3Pj / well to book 8,422 Pj (to sell =>6,000 Pj) (~10% of 93 TCF EIA estimate for gas from shales only)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019-2030 (12 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drilling rigs</strong></td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td><strong>Type of wells</strong></td>
<td>Vertical</td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Horizontal</td>
</tr>
<tr>
<td><strong>Rig Years @ 50% vertical vs horizontal</strong></td>
<td>1.5</td>
<td>1.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Wells/yr/rig</strong></td>
<td>17.5</td>
<td>11</td>
<td>17.5</td>
<td>11</td>
</tr>
<tr>
<td><strong>Wells Tally</strong></td>
<td>26.25</td>
<td>16.5</td>
<td>43.75</td>
<td>27.5</td>
</tr>
</tbody>
</table>

**Work for government-industry:**

- Discover local competence possibly without capacity to supply rigs, pipe, roads, rail, materials, services, people, etc, etc.
- Foster pre-qualification for tenders; and
- Enable clusters and IPOs for budding multi-nationals
Field Size Distribution – Proven Productive Oil Play in the Cooper-Eromanga Basins

Swanson’s Mean = 2.53 million barrels per new field discovery

Proven + Probable (2P) Million Barrels
Western Flank oil exploration Cooper – Eromanga (2000-14):

- 52% wells located with 3D were discoveries (avg 2.5 mmbo)
- 28% located with 2D were discoveries
Case Study – Petroleum Retention Leases for Oil

Winner’s Curse?

Know your market!

Average for High Bids:
$4,435 per sq km per year

$4,500 / km² pa

$16,000
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0

$ per sq km per year

Square Km Area of PEL

$10,000
$8,000
$6,000
$4,000
$2,000
$0

$16,000
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0

y = 16418e⁻¹⁶.⁰₃x
R² = 0.6809

Government of South Australia
Department of State Development

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Top (#1) **Roadmap recommendation** - Provide fit-for-purpose licences

- **Giant gas** ('00s of TCF) resource potential in unconventional reservoirs
- 52% post-3D success rate 2002-14 for oil exploration in western flank of Cooper – Eromanga (avg. 2.5 mmbo find size)
- South Australia Western Flank Oil: 9 operators for 25 companies
- South Australia Cooper Gas: 9 operators for 28 companies

**Operators**
- Australian Gasfields
- Beach Energy
- Blue Energy
- Bridgeport Energy
- Circumpacific Energy
- Discovery Energy
- Drillsearch Energy
- Outback Energy Hunter
- Rawson Resources
- SAPEX
- Santos
- Senex Energy
- Strike Energy
- Terra Nova Energy

- **Oil well**
- **Gas well**
- Western Flank proven oil play
- Gas pipeline
- Gas and liquids pipeline
- Liquids pipeline
- Coongie Lakes control zone – no access
Conclusions for the Cooper-Eromanga Basins

1. >50% success rate in finding average 2.5 mmbo post 3D
2. Huge shale, tight sandstone and deep coal gas plays. Four fracture stimulation service companies competing
3. Proven 1,000+ metre gas columns can be developed with a mix of (mostly) verticals and (fewer) horizontal wells
4. Initial resource estimates for the Cooper Basin are high:
   • EIA potential sales gas from shales: 93 TCF
   • Rough estimate of sales gas in Composite Play: ~ 300 TCF
5. Exploration and appraisal ramping up with several E&Ps and gas customers now funding exploration. Expect deals
6. $3.5 bln ‘spend’ in Cooper - Eromanga 5 yrs from 1/7/14
Background information: Path to Nirvana Investment Frameworks

Nirvana Outcomes

The kid is good
Vision for Nirvana: Centuries of safe, secure, competitive energy supplies that meet community expectations for net outcomes

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• **South Australia’s Roadmap (Dec. 2012)**
Roadmap for Unconventional Gas informed by the Roundtable for Oil and Gas Projects

Conclusions:
Descend cost & ascend productivity curves to survive supply-side competition

Regional sharing of costs mitigates the tyranny of distance for remote operations

Informed by a Roundtable of: industry; governments; peak bodies for protecting environments and aboriginal people; research institutions & a few individuals. Now 615 members

Now under the auspices of the Roundtable for Oil and Gas Projects with 7 working groups to inform potentially affected people and enterprises while enabling cooperation amongst competitors.

Strategic actions:
• Demonstrate where the net present value of cooperation (JVs for JVs) exceeds the value of go-it-alone planning / investment;
• Local businesses given a ‘heads-up’ to use competence to build capacity to compete (local skin in the game)
Priorities to foster sustainable, profitable projects - Feedback from Roundtable / Roadmap for Oil & Gas

Top priorities:

• Legal frameworks provide certainty and simultaneously meet community and investor expectations for outcomes
• Trustworthy, people implement and regulate projects
• Environmental sustainability
• Manage supply-chain risks (people and facilities)
• Bolster understanding of risks, risk management and rewards
To download the Roadmap for Unconventional Gas Projects in South Australia - go to:

Top (#1) Recommendation: Provide fit-for-purpose licenses

The highest priority defined in the Roadmap by its Roundtable now implemented with fit-for-purpose Petroleum Retention Licenses with minimum exploration + appraisal expenditure requirements:

- Avoids 18-24 months delay after intermittent relinquishments;
- Accelerates investment at contestable levels in ways not achieved with PELs;
- Delivers investment, jobs, production and royalties, sooner
- Industry as a whole has greater investment efficiency;
- Competitive levels of investment without ‘winner’s curse’ bidding;
- Nurtures growth of enterprises;
- Overcome a looming issue: Ever-smaller licences;
- Seeks secure investment at a time the State needs stronger investment;
- Farm-outs and sales will further accelerate investment work programs
- With regret, there little chance that all regulatory decision will please all stakeholders, always;
Recommendation #2: Manage the risk of a shortage of skills and people

Evergreen responsibility of industry and government. **Implemented in part through:**

- **industry and the State Government’s Department of State Development (DSD) under the auspices of Roundtable Working Group #1**
  - Santos, Beach Energy and Senex Energy are working with the DSD and TAFE SA to establish an Onshore Petroleum Centre of Excellence (OPCE) training facility at Tonsley, co-located with the new State Core Library (More on this later in the agenda)
  - A South Australia State chair for unconventional reservoir research has been established in at the University of Adelaide – complimented with funding for international expert lecturers, the State Chair in Petroleum Geology, funding for the CO2CRC, and funding for the State Chair in Geothermal Energy at the University of Adelaide.
  - Suppliers’ study tours of oil and gas facilities in the USA in 2014 will be leveraged-on in another tour in 2015 under the auspices of the Industry Participation Office.

- **User-pays fees to sustain the competence and capacity for trustworthy regulations. Enabled by popularity of PRLs. ...After providing $s for time-writing for upstream petroleum regulation by DSD, DEWNR, EPA, SafeworkSA, and Health – still cut PRL fees by 20%**
3rd and 4th Highest Ranked Recommendations
- Use water wisely

Evergreen responsibility of industry and government. Implemented in part through:

- Industry and the State Government’s Department of State Development (DSD) under the auspices of Roundtable Working Group #3
  - Santos, Beach Energy, Senex Energy and Drillsearch have shared their historical and forecast water production and use in the SA-Qld Cooper-Eromanga basins. DSD called for tenders and provided $ support for a water balancing model. CSIRO and DEWNR providing peer review.
  - Independent expert scientific research review of international oil and gas operations impacts on water to decipher what are significant versus insignificant risks to water resources
  - Regional water studies in the Otway underway and more planned

- Demonstrate safe conduct through outcomes: No evidence or realistic expectation of fracture stimulation resulting in the contamination of fresh water supplies or damaging induced seismicity in the far northeast of South Australia where 717 deep petroleum wells and a few geothermal (hot rock) wells have been fracture stimulated through August 2014 (next slide)

- Regulation must be trustworthy to ban anything everywhere until it is clear all significant risks posed to social, natural and economic environments can be managed to meet community expectations for net outcomes
5th, 11th and 12th Highest Ranked Recommendations –
Ensure legislation, regulation, policies & programs are trustworthy, efficient and effective

Evergreen responsibility of government. Implemented through the leading practice South Australian Petroleum and Geothermal Energy Act 2000 (PGEA):

- South Australia’s PGEA defines the environment as: land, air, water, soil; plants and animals; social, cultural and heritage features; visual amenity; economic and other land uses.
- Activities cannot start without an approved SEO in place.
- SEO’s set standards for outcomes from operations
- SEOs are objective-based, transparent drivers for risk management and the protection of environments.
- ‘Owner of land’ means all people and enterprises potentially directly affected by activities, entitling them to notices of entry, the right to dispute entry (in court) and compensation.

~ 14,000 notices of entry for operations issued – without a single person or enterprise taking up their rights to take the matter to court
6th Highest Ranked Recommendation –
Bolster public understanding (with reliable information) re: hazards and risk management via FAQ on web

Informing stakeholders is an evergreen function of regulators through:

• timely stakeholder engagement jointly by DMITRE-PIRSA-DEWNR-EPA (reading off the same evidence-based pages)

• area- and activity specific SEOs (prepared by PGE Act licence holders) and the SEO approvals process to inform potentially affected people and enterprises.

• published the Roadmap for Unconventional Gas Projects in South Australia in December 2012 – and sustaining the Roundtable that informed that Roadmap – to keep the information-flow at the leading edge of evidence/objective based decision-making;

• publish accounts of the PGE Act and stay contestable;

• frequently improve the PGE Act. Discussion paper in preparation for public consultation (in 2014/15) to inform prospective amendments to the PGE Act (in 2015/16) for efficiency and effectiveness.

• routinely update answers to frequently asked questions (FAQs) for historical and potential upstream petroleum operations to inform the public. (see: http://www.petroleum.dmitre.sa.gov.au/__data/assets/pdf_file/0003/218109/FAQ__South_East_Unconventional_Gas_and_Oil.pdf)
### 7th, 8th, 9th & 10th Highest Ranked Recommendations – Improved transport, supply-chain depots, heavy vehicle road and wiring regulation

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Progress to end January 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>#7, #8 &amp; #9</td>
<td>More under Agenda Item #6. Implementation in progress through Roundtable Working Group #2.</td>
</tr>
<tr>
<td><strong>Paved, wide roads more passable year-around</strong></td>
<td></td>
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<tr>
<td></td>
<td>• Options for improving roads from ports to operations in the Cooper-Eromanga basins established in dialogs involving the State Government, key operators of petroleum licences in the Cooper-Eromanga basins.</td>
</tr>
<tr>
<td></td>
<td>• Load modelling enabled with equipment lists for wells construction for deep gas in the Cooper Basin (<a href="#">Appendix 2a and 2b of the Roadmap for Unconventional Gas</a>).</td>
</tr>
<tr>
<td>#10: Streamline heavy vehicle road and wiring regulations</td>
<td>More under Agenda Item #7. Implementation in progress through Roundtable Working Group #4</td>
</tr>
<tr>
<td></td>
<td>• Queensland and South Australia State governments cooperating to enable wharf to wellhead transport corridors without extraneous regulation. Discussions also involving the National Heavy Vehicle Regulator.</td>
</tr>
</tbody>
</table>
Many of the recommendations are for evergreen action.

Industry options for competition vs cooperation (JVs for JVs) are subject to industry positions, though government will assist.
Roundtable for O&G Working Groups

#1 Training (Tonsley CoE, Chair Unconventional reservoirs)

#2 Supply hubs, roads, rail and airstrips for the Cooper-Eromanga basins (Innamincka airport, depots, Strez. Track)

#3 Water use in the Cooper-Eromanga basins

#4 Minimize redtape for interstate 'wharf to well' corridors to/fro the Cooper-Eromanga basins (heavy vehicle, wiring)

#5 Cost-effective, trustworthy GHG detection

#6 Suppliers’ forum (make locals smart) (MIPO)

#7 Use gas for transport and heavy equipment
Leading Operators in the Cooper Basin (Santos, Beach and Senex) have agreed to contribute an aggregate of > $1million in cash and in kind to establish shared training facilities at Tonsley. Co-located with new core library

Strengthening capabilities in local Universities –
• SA Research Fellow in Unconventional Resources
• SA Chair – Petroleum Geology
• $s for Visiting Experts
• CO2CRC (cognate)
• SA Centre for Geothermal Energy Research (cognate)
Recap Working Groups #2 - Supply hubs, roads, rail and airstrips, Cooper-Eromanga basins

- Have mapped existing supply options (road, rail, air, ship);
- Used *Roadmap* details to inform probabilistic dimensions, weights and timing for transport scenarios – in turn enabling optimisation modelling for road, rail and air for minimum 6,000 pj unconventional gas ex-Cooper Basin to supply a 15 year gas contract. Also accounting for oil

- Special facility licences (SFLs) enable additional depots, airstrips and petroleum handling facilities

- DPTI has estimated requirements to seal the Strzelecki Track as part of SA’s Integrated Transport and Land Use Plan. Looking at intra-basin requirements, too

- Building economic models to elucidate public vs private benefit in context of Infrastructure Australia criteria for Federal funding.
Leading operators pooled water use and production records and forecasts for Cooper-Eromanga (SA-Qld) basin-wide modelling of water supply: demand, to deduce cost- and water-saving options. This will inevitably bolster environmental sustainability, project economics, transparency/trust, and business opportunities. Golders modelling funded by the South Australian Government. Results to be published in early 2015.

Australia’s National Centre for Groundwater Research and Training will publish in late 2015 a review of global literature to substantiate the efficacy of risk management by the oil and gas industry in protecting water resources:
Deepest water bores for human/stock/agriculture use

No evidence or realistic expectation of fracture stimulation resulting in the contamination of fresh water supplies or damaging induced seismicity in the far northeast of South Australia where 700+ deep petroleum wells and a few geothermal (hot rock) wells have been fracture stimulated.

Number of fracture stimulated stages in 717 fracture stimulated wells in the Cooper Basin to end Aug.’14
Recap Working Groups #4  SA-Qld 'wharf to well' corridors for the Cooper-Eromanga basins

South Australian State Government; Queensland State Government; and National Heavy Vehicle Regulator - Now cooperating to enable efficient and effective interstate transport and heavy equipment regulations
ARC Linkage grants worth ~A$1 million awarded for University of Adelaide research to develop more cost-effective GHG monitoring, including detection of natural seeps.

Subsequent to discussions – a sub-set of WG#5 members agreed revisit NGERS and other data develop FAQ s to better inform the public, business leaders and policy makers as to the materiality of various sources of GHG emissions. No doubt, all mitigation contributes to lowering carbon intensity. The objective of market-based GHG emissions mitigation policies are to reduce maximum GHG at the lowest costs. SA Government providing resources for this compilation and assessment.
Answers to frequently asked questions regarding oil and gas operations (including fracture stimulation) – focus on engagement in relation to oil and gas operations in the Coonawarra Wine District – Otway Basin, South Australia

Go to: