



**Santos**

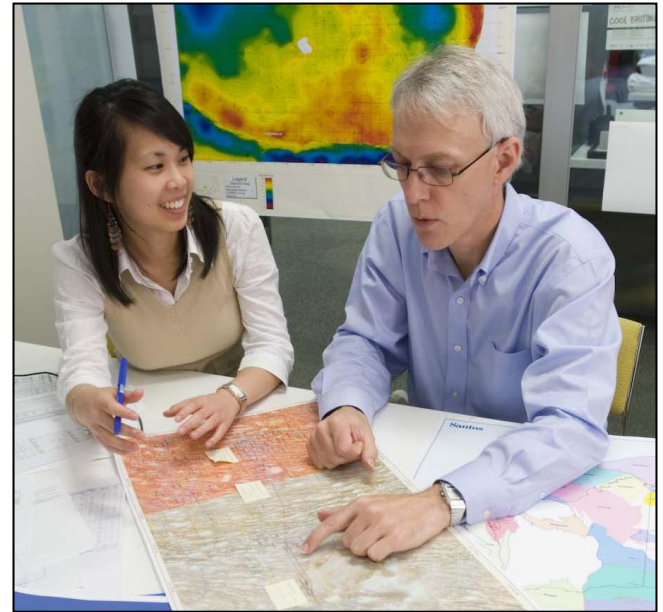
# Exploration in the Upper Hunter

Sam Crafter, NSW Manager  
Community and Government Relations

Tuesday, November 29, 2011

# Who is Santos?

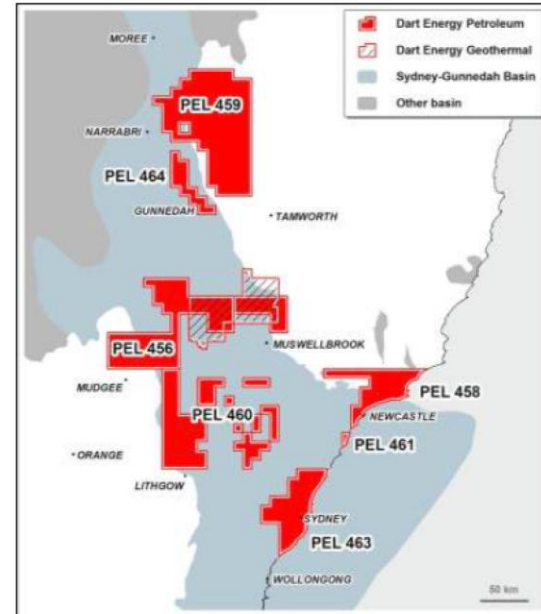
- Is an **Australian company**, based in Adelaide.
- Has been operating since **1954**.
- Is **Australia's largest producer of natural gas** for the Australian domestic market.
- Operates in all Australian states and the Northern Territory.
- **Employs 2,400** in Australia and Asia.
- Has market capitalisation of \$13billion, making it one of Australia's **top 30** companies.



# Who is Dart?

## Who is Dart Energy?

- **Dart Energy** is an Australian S&P/ASX 200 listed company focused on the development of coal bed methane in Australia, Indonesia, China, India, Vietnam, UK and Europe.
- **Experienced leadership** team who actively wish to engage and consult with the community to explain what we are doing but also to listen to what the residents have to say.
- **Dart Energy** is committed to being open and transparent about our activities and plans and is fully committed to sustainable development.
- **125 total professional staff** of which 12 in Australia.
- **7 Petroleum Exploration Licences (PELs)** in NSW.



Dart Energy exploration licenses in NSW.

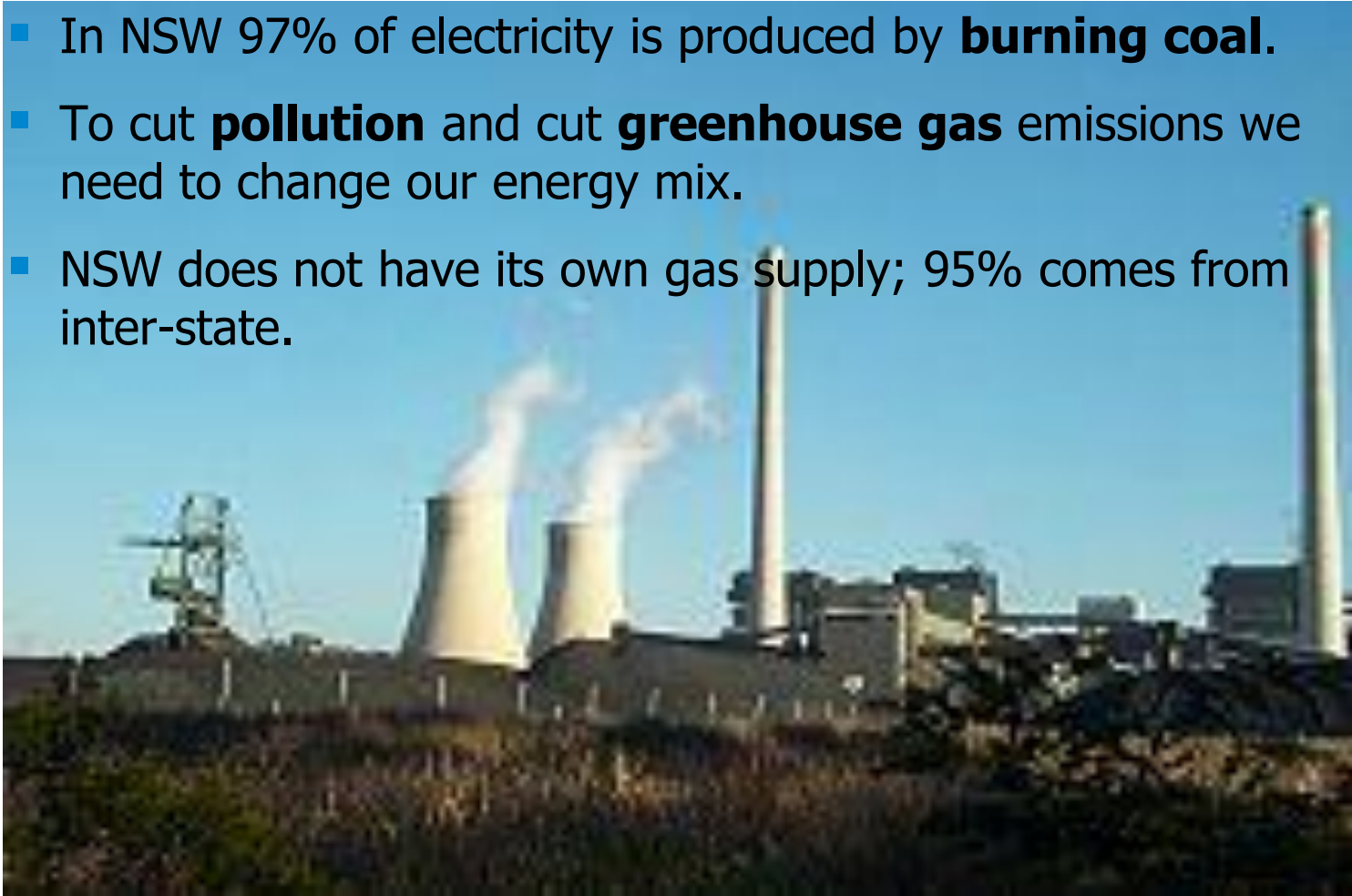
# What is coal seam gas?

- Natural gas is defined as primarily **methane**, typically 80% or more.
- Natural gas is classified as **conventional** or **unconventional**.
- Conventional natural gas is from underground **reservoirs**, typically sandstone.
- Unconventional natural gas is contained **within the source rock**.
- **Coal** is a source rock for natural gas.
- Coal contains **water and gas** particles.
- The coal is **not mined**, the water and gas from within the coal is **extracted** and the coal structure remains in place.



# Why do we need coal seam gas?

- In NSW 97% of electricity is produced by **burning coal**.
- To cut **pollution** and cut **greenhouse gas** emissions we need to change our energy mix.
- NSW does not have its own gas supply; 95% comes from inter-state.



*Bayswater Power Station, Hunter Valley, New South Wales.*

# NSW reliant on coal and

- Natural gas is **clean burning**.
- Produces less than **half the greenhouse** emissions of burning coal.
- NSW only produces 5% of the gas it needs.
- The gas is from **Camden**, operated by AGL, is the *only* producing coal seam natural gas field in NSW.
- It has been supplying the Sydney market for a **decade**.

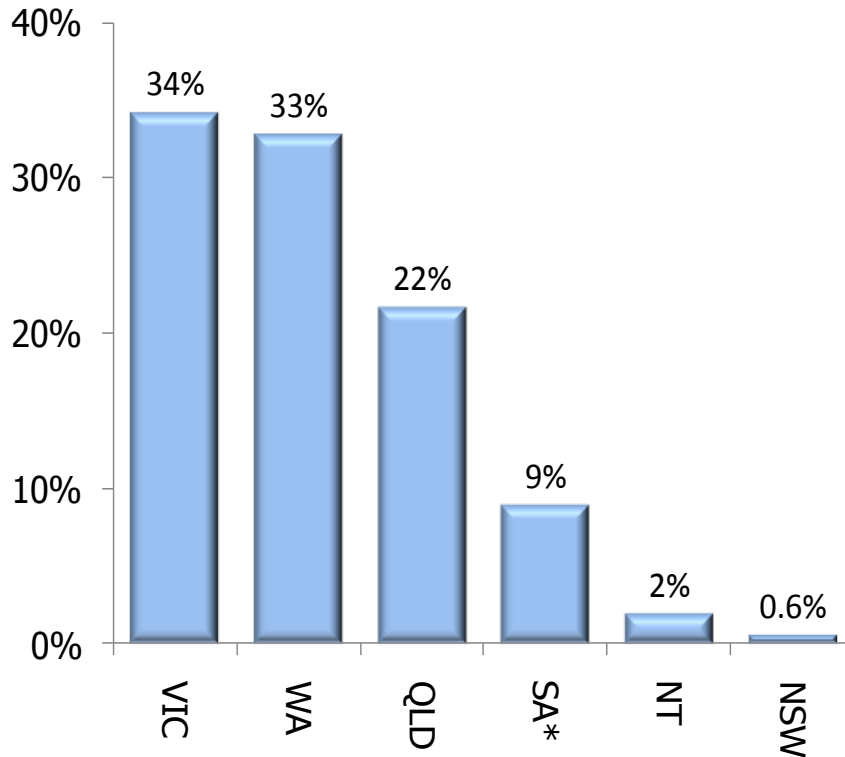


*Gas production plant, Camden, New South Wales.*

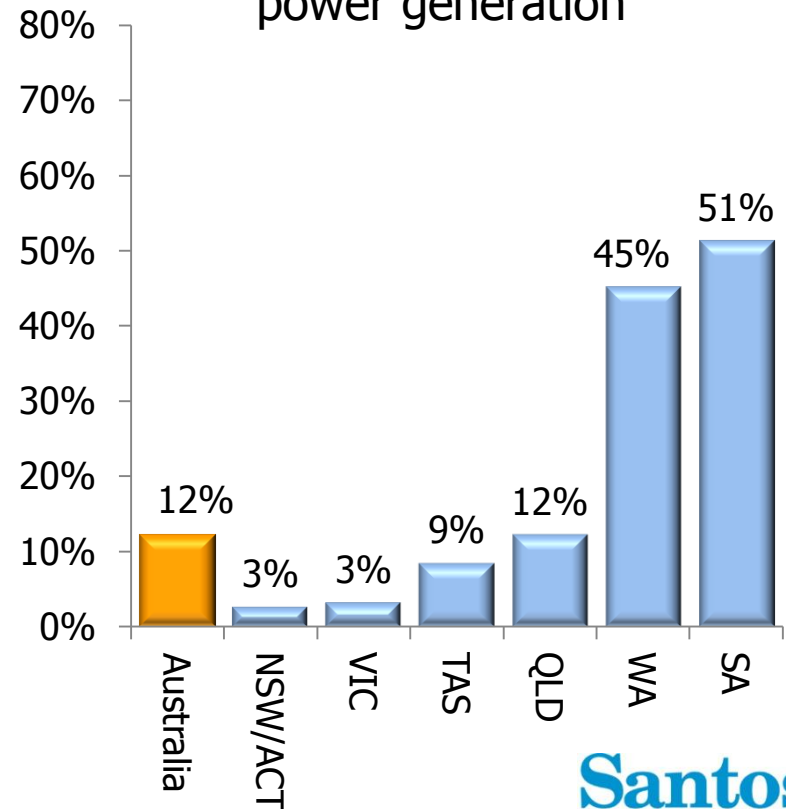
# Australian gas production

NSW is only the Australian mainland state without any significant local production of natural gas

### Natural gas production



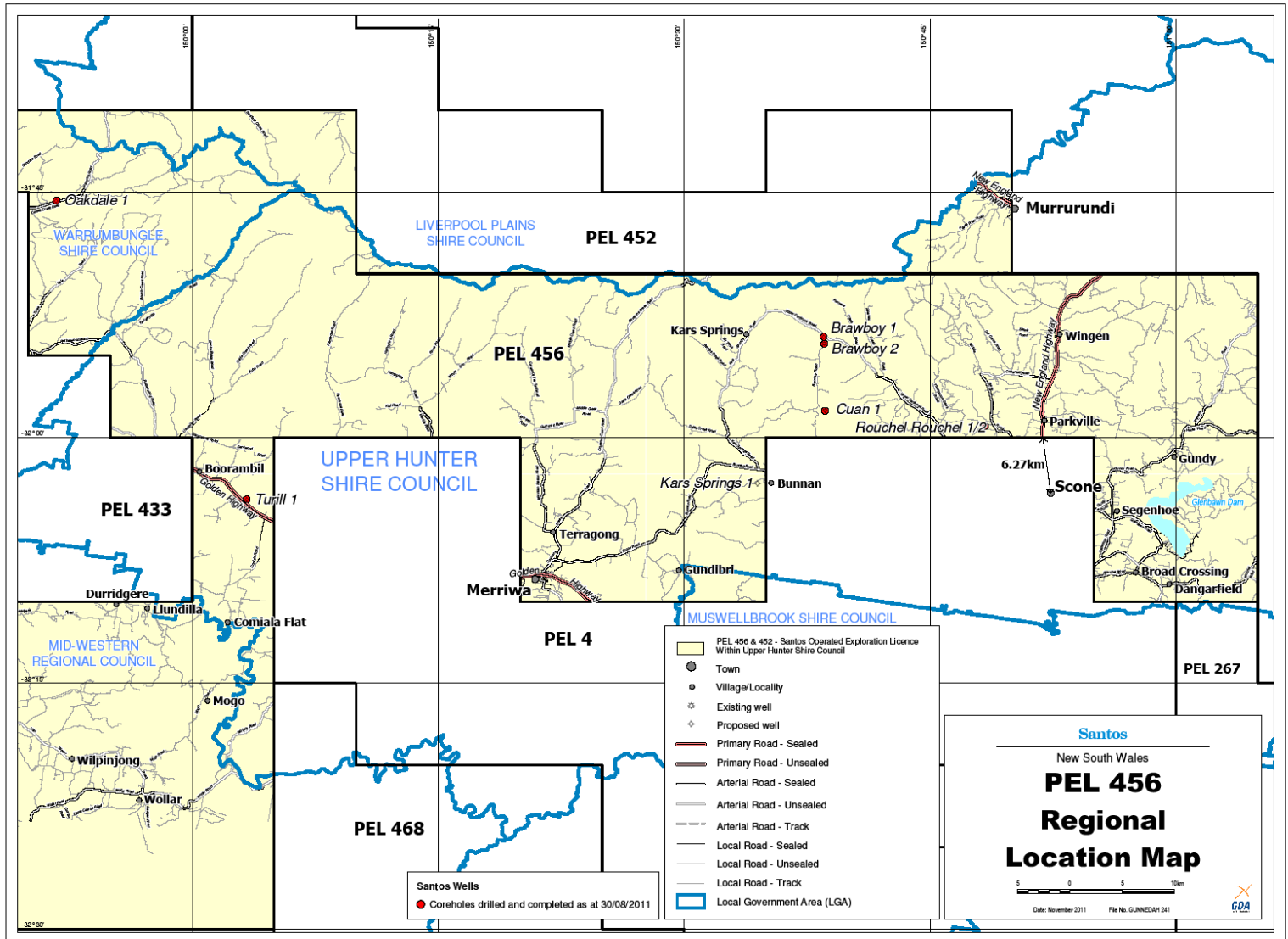
### Gas utilisation as a percentage of power generation



Source: Energy Quest, ESAA.

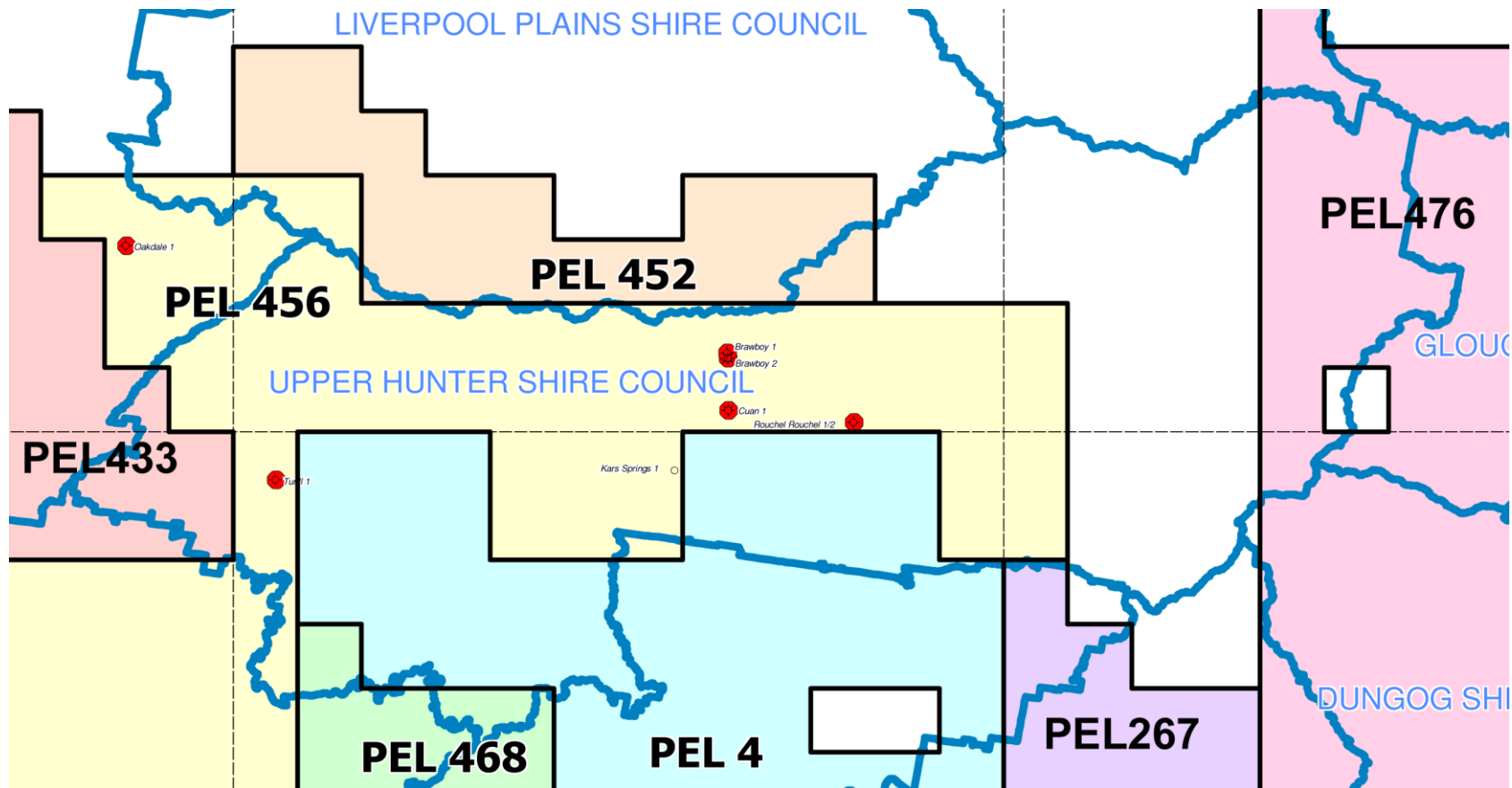
\* SA\* comprises Cooper Basin production in SA and SWQ

# Exploration to date – PEL 456





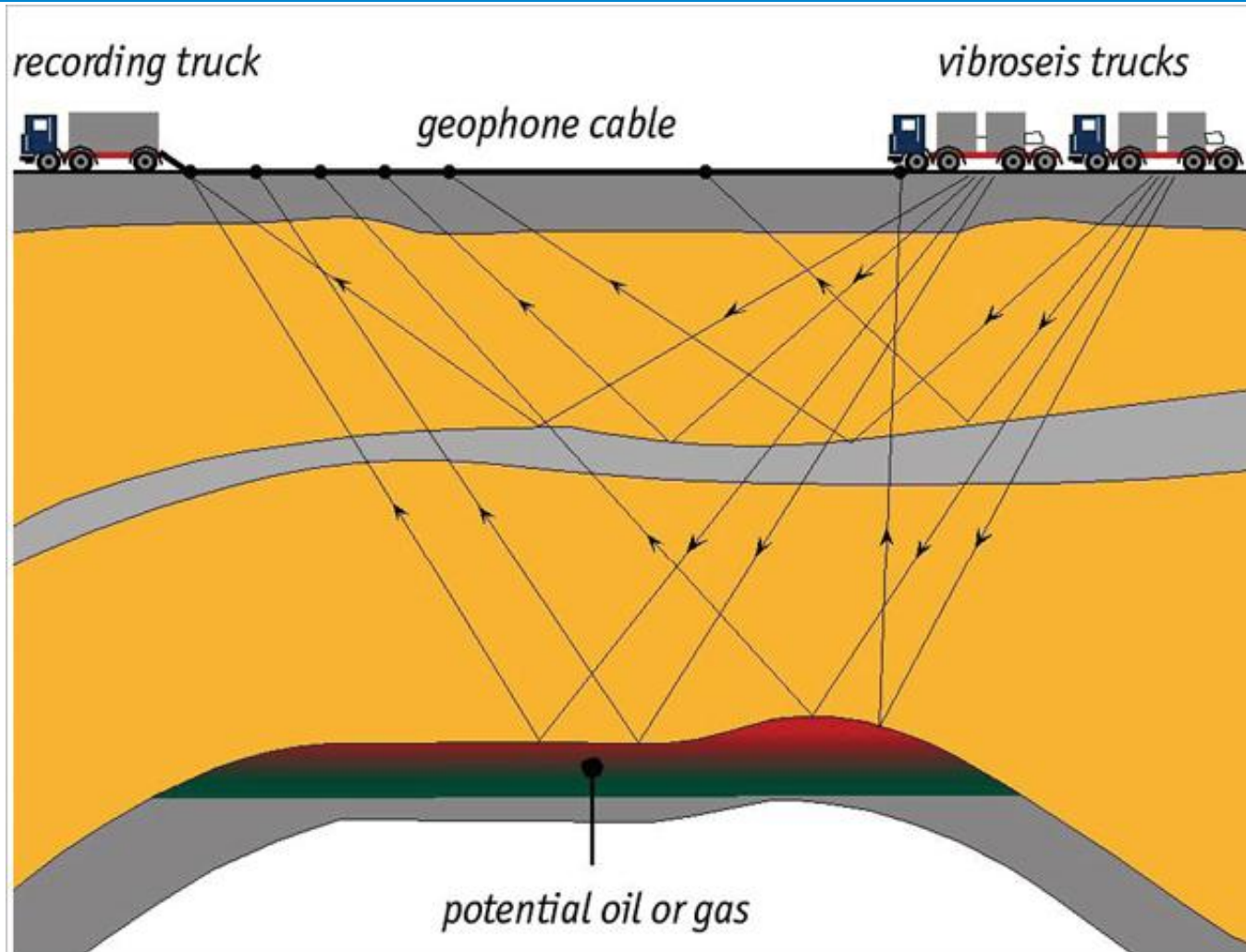
# PEL's within the UHSC



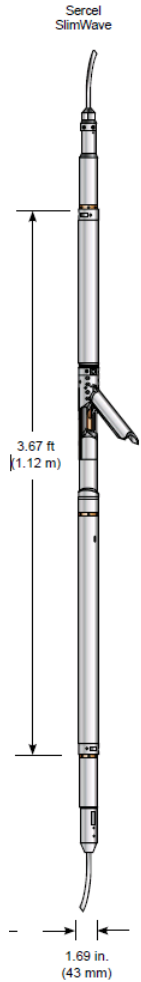
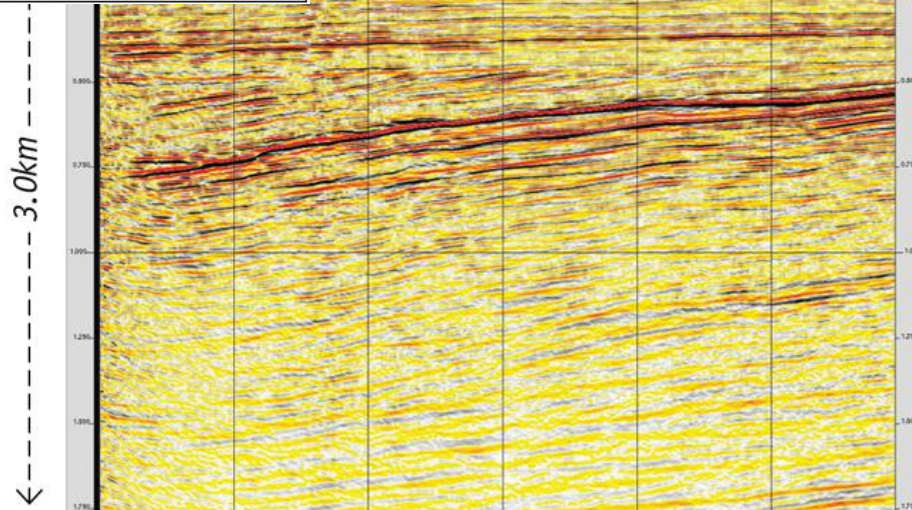
# Santos - The next 12 months

- Seismic surveys -1.5km from the Brawboy 2 core hole
- A core hole – at Bunnan
- 2 pilot wells – Begin planning locations in Q1, 2012.

# Seismic surveys



# Seismic surveys



**Santos**  
We have the energy.

# Core holes - drilling



# Core holes – core samples



# Core holes – during



# Core holes - after





# Pilot wells



# Coal seam water use



# Water testing – local water bores

- We begin water testing before drilling
- NO water is produced during a corehole
- Establishing baseline data
- This monitoring identifies existing groundwater users
- 2 km radius, prior to the core hole being drilled
- Measures: water level, water quality, absence / presence of coal seam natural gas
- Follow up monitoring
- Testing is NOT a regulatory requirement
- Council invited to observe monitoring
- [www.santos.com/gunnedah](http://www.santos.com/gunnedah)



■ **Questions?**