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Energy in action®

175 YEARS SUPPORTING THE COMMUNITY

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ASX Release

Camden Gas Project – Open Day presentation

21 May 2013

Attached is a presentation to be made today by executives of AGL's Upstream Gas division at Camden.

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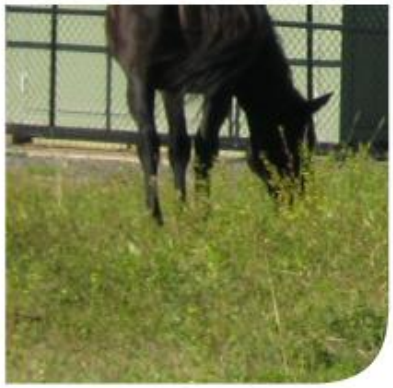
About AGL

AGL is one of Australia's leading integrated renewable energy companies and is taking action toward creating a sustainable energy future for our investors, communities and customers. Drawing on 175 years of experience, AGL operates retail and merchant energy businesses, power generation assets and an upstream gas portfolio. AGL has one of Australia's largest retail energy and dual fuel customer bases. AGL has a diverse power generation portfolio including base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources including hydro, wind, landfill gas and biomass. AGL is Australia's largest private owner and operator of renewable energy assets and is looking to further expand this position by exploring a suite of low emission and renewable energy generation development opportunities.







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Camden Open Day

Mike Roy, Head of Operations
John Ross, Hydrogeology Manager
Julie Delvecchio, Head of Community Relations

21 May 2013

Disclaimer and important information

The information in this presentation:

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Statutory Profit and Underlying Profit

Statutory Profit is prepared in accordance with the Corporations Act 2001 and the Australian Accounting Standards, which comply with the International Financial Reporting Standards.

Underlying Profit is the Statutory Profit adjusted for significant items and changes in fair value of financial instruments.

Underlying Profit has been presented with reference to the Australian Securities and Investment Commission Regulatory Guide 230 "Disclosing non-IFRS financial information" issued in December 2011. AGL's policy for reporting Underlying Profit is consistent with this guidance and the Directors have had the consistency of the application of the policy reviewed by the external auditors of AGL.

- Introductions
- Wholesale gas markets & NSW
- Overview of AGL Upstream Gas
- AGL in the Macarthur region
- What is coal seam gas?
- Camden Gas Project
- Water management
- Community relations
- Questions

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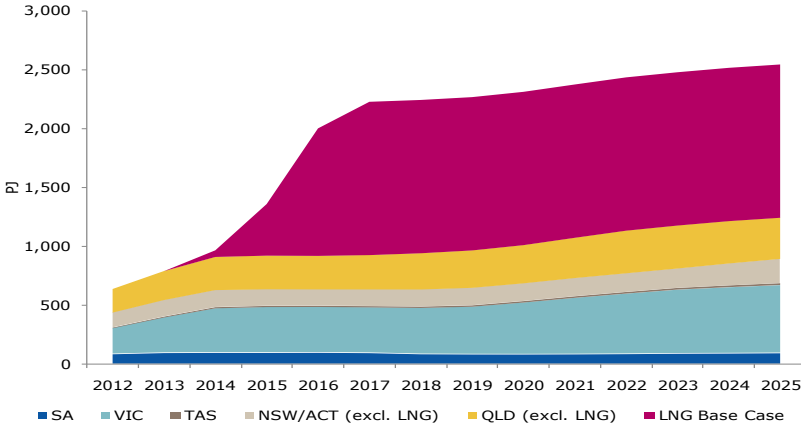
Wholesale gas markets and NSW

Wholesale gas supply

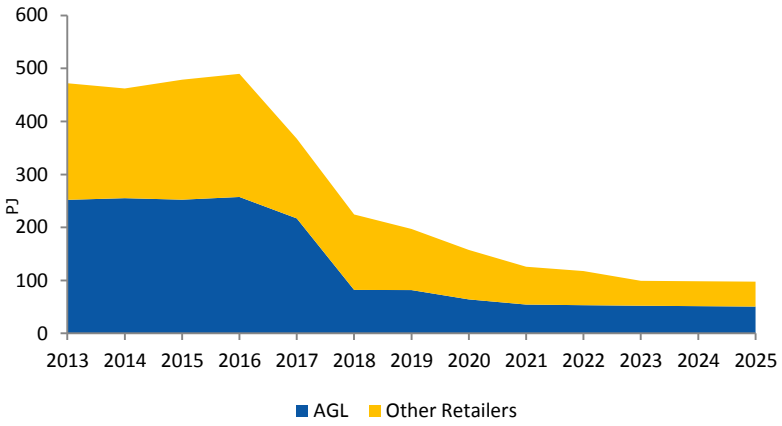
Gas retailers collectively face drop off in contracted supply.

- Gladstone LNG exports increase to ~1,500 PJ/a
  - Coincides with roll off of east coast domestic supply contracts
- LNG projects seeking additional gas between 2014 and 2020
- LNG projects already affecting the outlook for gas prices
- Domestic supply contracts fall around 2017
- New production sources, particularly in southern markets, required to satisfy demand

Eastern Australia gas demand



Eastern Australia contracted supply

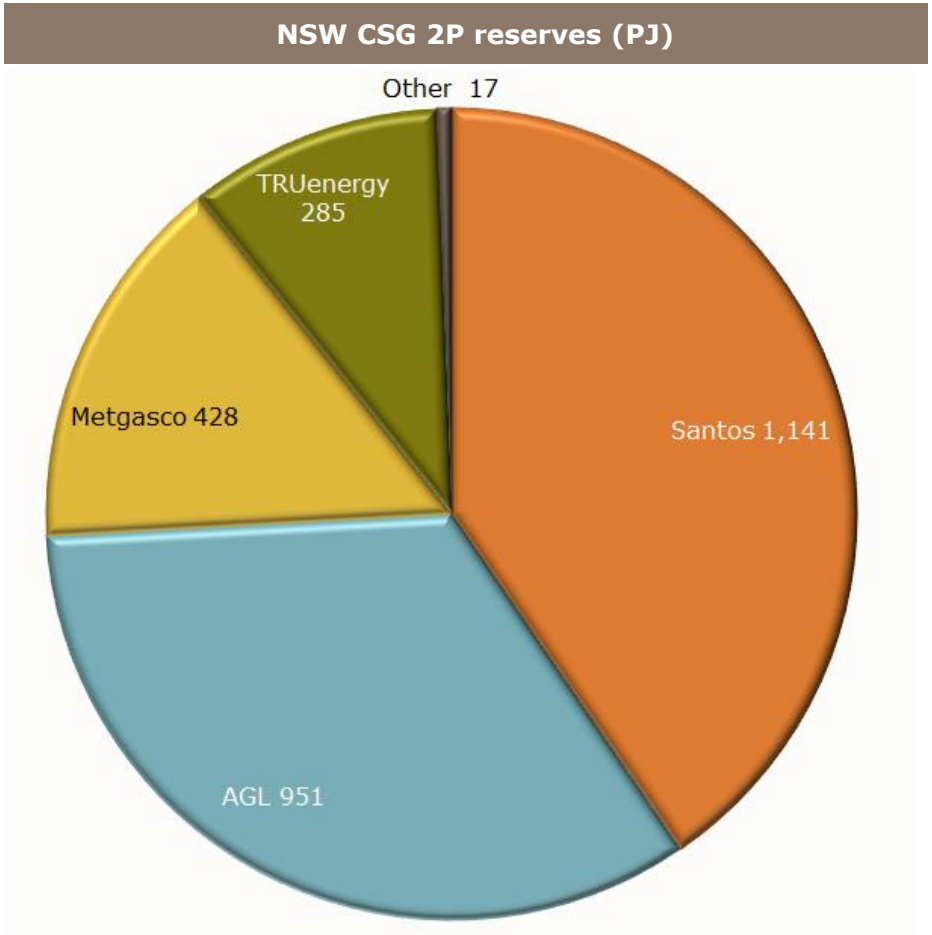


Source: AGL and ACIL Tasman

NSW gas policy reversal

Significant NSW gas reserves at risk.

- NSW imports 95% of its gas from interstate: from South Australia, Queensland and Victoria
- LNG demands now compete for continued supply from those States.
- NSW CSG has the potential to supply gas to the state for decades at the current consumption rate.
- But political and social pressure are sterilising CSG reserves
  - Metgasco, Dart and AGL have already suspended NSW projects post NSW SEPP[1] related announcements



Source: EnergyQuest February 2013

[1]State Environmental Planning Policy

NSW gas policy reversal

Likely asset impairment and future gas supply impacts.

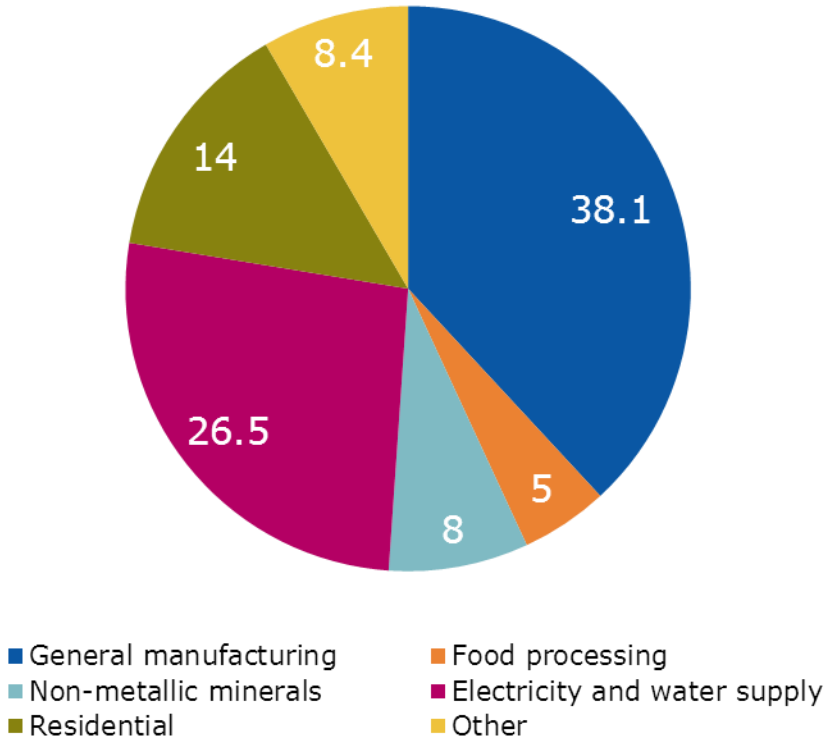
- Book value of Camden (including the northern expansion) and Hunter gas projects of $325 million may be substantially impaired once rule changes finalised
- Development of Gloucester Stage 1 not impacted by proposed policy
  - Latter stages of Gloucester may be affected
- Arbitrary exclusion zones particularly around industry clusters will sterilise substantial resources
- Proposed policy will put further upward pressure on future energy prices
- Policy expected to be finalised in the near future

NSW gas consumption

Manufacturing sector at risk of gas price surge.

- NSW businesses face potential significant increases in the cost of delivered gas
  - Assuming ability to secure gas supplies
- Industries most at risk are food processing, brick, cement, chemical and metal manufacturers
  - Potential to further exacerbate NSW subdued economic growth and threaten employment

NSW gas consumption by sector (%)



Source: BREE 2012 Australian Energy Statistics

NSW CSG is highly regulated industry

Already subject to the strictest controls in Australia.

- Operations must comply with:
  - NSW Environmental Planning and Assessment (EP&A) Act 1979
  - NSW Petroleum (Onshore) Act 1991
  - Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999
  - NSW Protection of the Environment Operations (POEO) Act 1997
  - NSW Water Management Act 2000 /Water Act 1912
- Rigid Environmental Assessment process including additional new REF requirements
- Commonwealth Independent Expert Scientific Committee - $150m for scientific studies into the CSG industry
- Strategic Regional Land Use Policy
- NSW Land & Water Commissioner

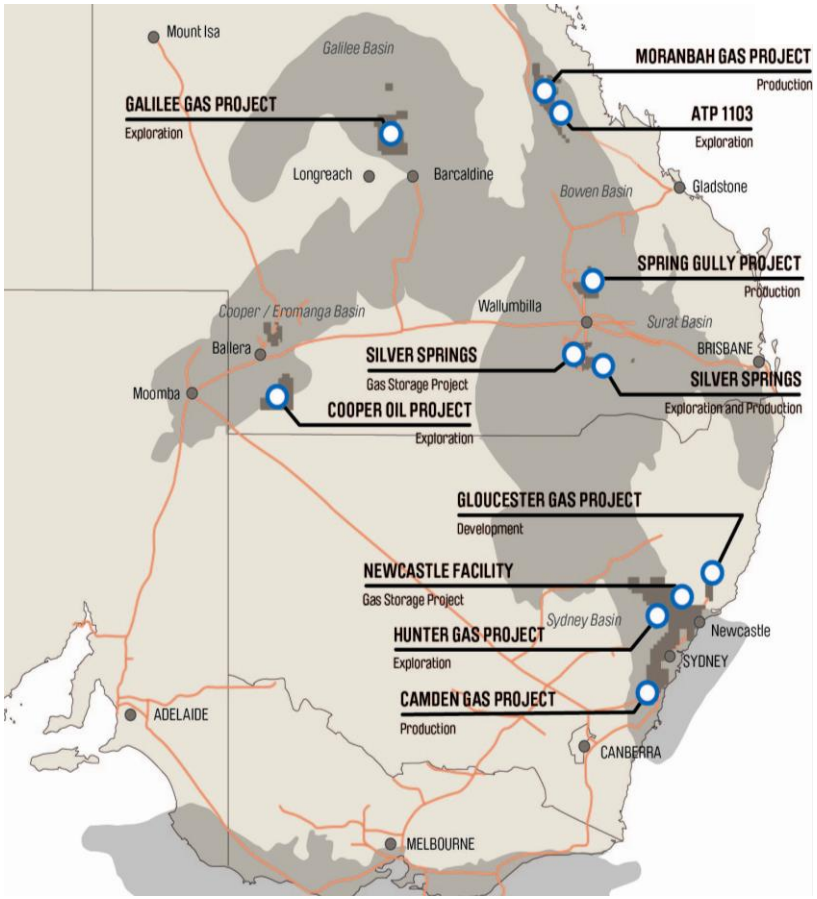
AGL Upstream Gas

AGL Upstream Gas assets

Majority of assets in exploration phase.

- Operating assets:
  - Production: Camden Gas Project, Silver Springs Production, Spring Gully Project
  - Moving to Development: Gloucester Gas Project
  - Exploration: Hunter Gas Project, Galilee Gas Project, Cooper Oil Project
  - Storage: Silver Spring Gas Project, Newcastle Gas Storage Project
- Non-operating assets (JVs):
  - Production: Moranbah Gas Project
  - Exploration: ATP 1103

AGL's Upstream Gas assets



AGL in the Macarthur region

Camden Gas Project

Safely operating for 12 years.

- Camden fields:
  - Commenced 2001
  - 60 km southwest of Sydney
  - Produces approximately 5% of NSW's gas supply (equates to 265,000 homes)
  - 100km of low pressure gas gathering lines
- Currently 144 wells:
  - 117 have been hydraulically fractured
  - 31 have been horizontally drilled
  - 95 are producing natural gas

Camden Gas Project's gas fields

Coal seam gas (CSG):

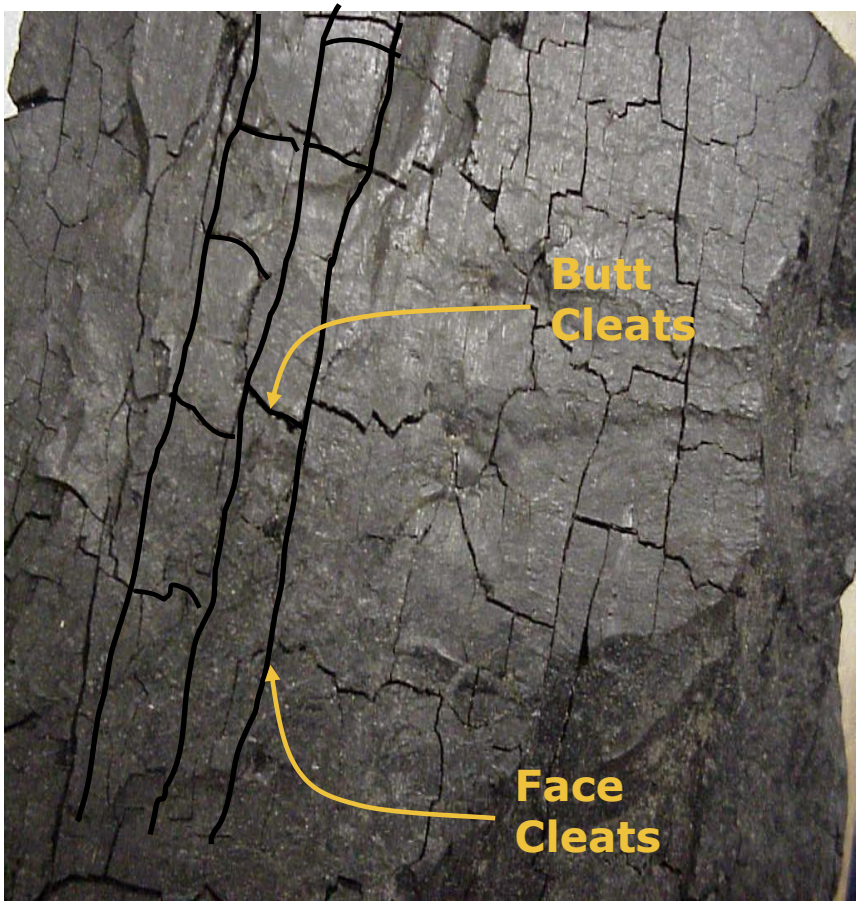
- What is it?
- How is it extracted?

What is CSG?

Naturally occurring gas trapped in coal seams.

- Mainly methane (CH4)
- Produced from ancient organic matter & trapped in coal seams
- Held in place by water that saturates coal seam
- Gas moves through coal via natural fractures
- About a third of eastern Australia's natural gas is sourced from CSG
- Extracted from coal seam by:
  - Drilling
  - Stimulating: Horizontal drilling or hydraulic fracturing
  - Pumping out the water to depressurise and allow gas flow

Typical coal cleats

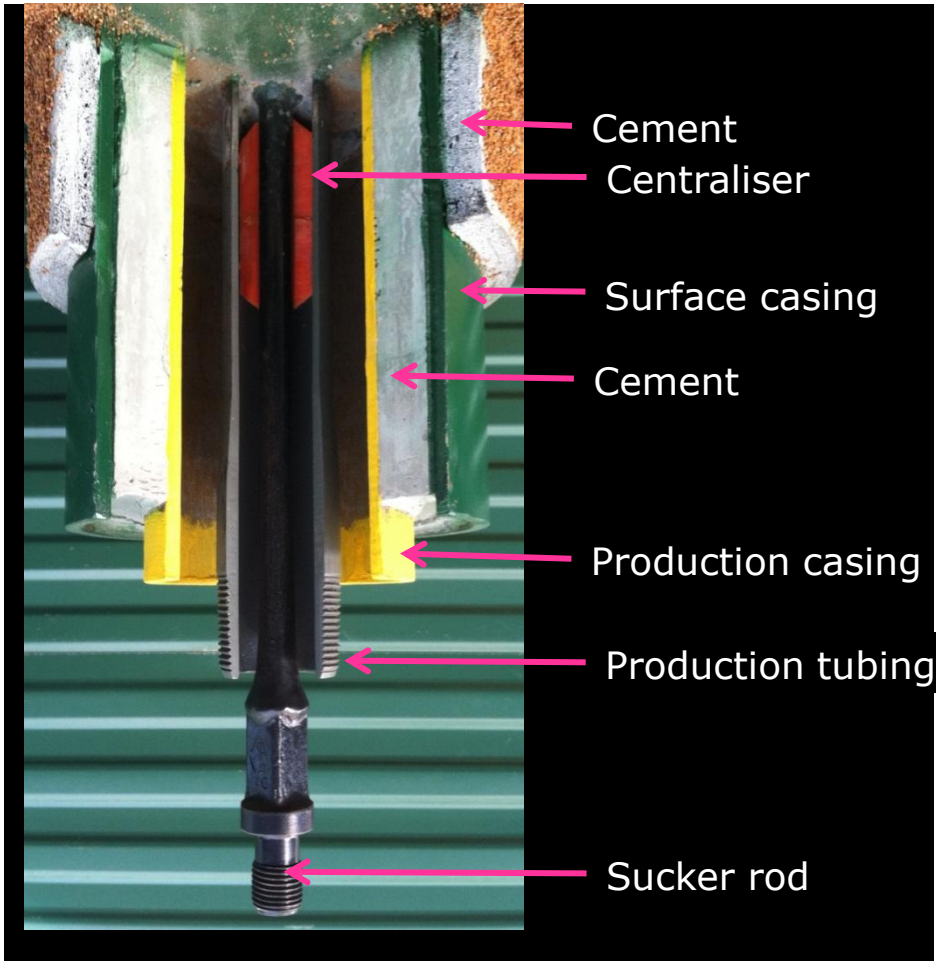


Well integrity and design

Protects groundwater.

- AGL follows Oil & Gas Standards using API[1] casing & wellheads
- 4 barriers of protection down to 120m below the surface
- Wells are pressure cemented to protect aquifers
- Cement is brought back to surface on surface & production casing
- Cement bond logs to confirm zonal isolation & cement quality
- Ensures geographical zones are isolated.

Cross section of a CSG well



[1] American Petroleum Industry

Well perforations

Establish the only connection between casing & targeted coal seam.

- Small holes precisely punched into the steel casing and concrete
- Only at coal seam depth
- Allows gas to flow back through well to the surface

Cross section of perforated concrete

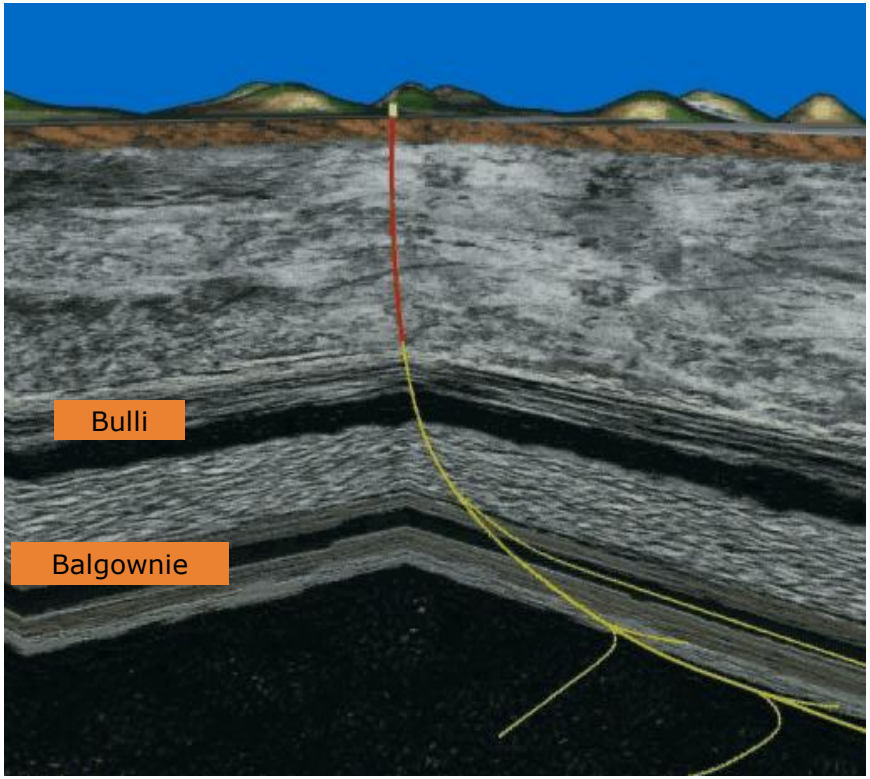
Perforated steel casing

Horizontal well design

Reduces operational footprint.

- A technique that stimulates gas flow
- Can drill in seam for up to 2,000m
- Drilling and completion takes 3-4 weeks
- 31 horizontal wells drilled in Camden to date
- Allows as many as 6 wells per pad
- Increases spacing between well pads
- AGL does not fracture horizontal wells

Horizontal well



Fracturing CSG wells stimulates flow

- Process:
  - Fluid pumped into a formation pushes open natural cleats
  - Sand is pumped in to hold the 'fracture' open
  - End result: a highly conductive path for CSG to flow into the well & to surface
  - Operation takes about 2 days
- Fracturing fluid is typically 98.5% sand & water
- No BTEX chemicals used in fracturing fluids
- Only vertical wells are fractured

CSG fracturing in Gloucester

Minimal footprint after initial drilling

CSG coexists with other land uses.

- Producing well enclosure is 6 x 6m plus access track
- Work with landowners on location of well head
- Typical well pad spacing
  - Vertical wells 600m apart
  - Horizontal wells 2km apart
- Life of well about 15 years
- Land is fully rehabilitated at end

A CSG well in the Macarthur region

Camden supplies ~5% of NSW demand

Central processing prepares gas for supply network.

- The gas plant:
  - Compresses
  - Dehydrates
  - Odorises
- Site selection minimises visual and noise impacts on local community
- Minimal flaring of gas

Rosalind Park Gas Plant

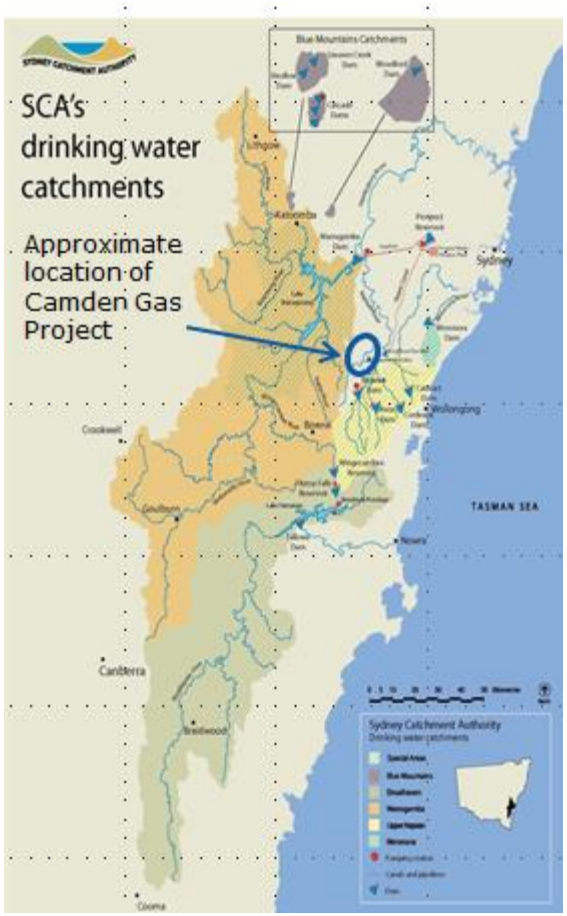
Water management

Water resources in Macarthur area

Extensive understanding protects water resources.

- Regional groundwater studies (by others) confirm the conceptual model
- Project groundwater studies
- Managing CSG produced water sustainably
- Extensive groundwater monitoring network
- Our operations don't adversely affect water resources

Sydney's water catchments



CSG water in the southern coalfield

- Different geology from QLD coal basins
  - Older and deeper (~700+ m)
  - Fewer permeable coal seams = far less water
  - Last year, 89 wells produced <4.8 ML = 1 week, 1 well in QLD
  - All water from coal seams, none from Hawkesbury Sandstone aquifer
- No beneficial aquifers below 300m
  - Water bore yields low
  - Water quality marginal to poor
  - Deteriorates to the north

Camden gas well

Hawkesbury Sandstone

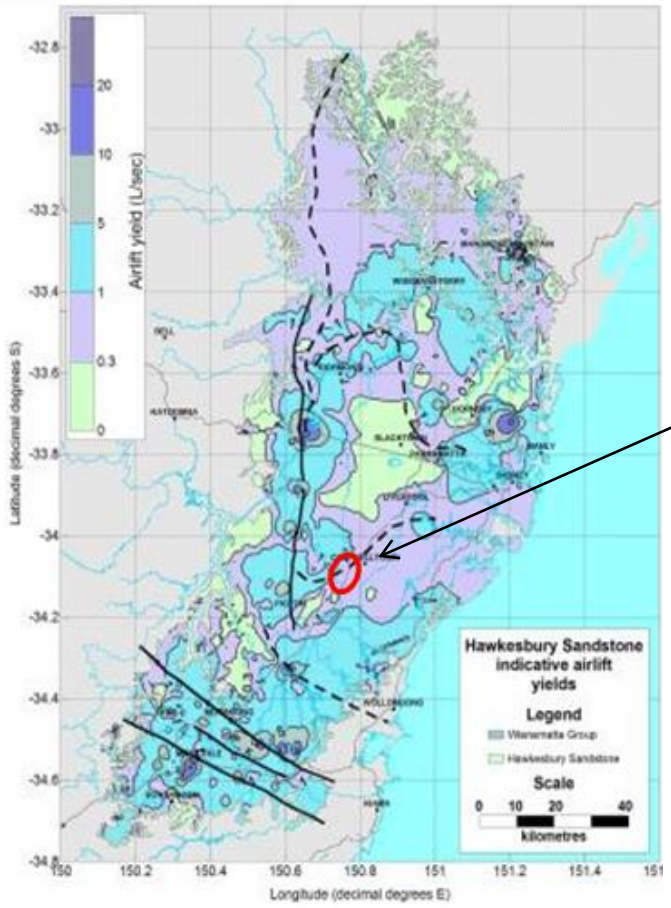
The beneficial aquifer in Camden.

Hawkesbury Sandstone off F3

Water from the Hawkesbury Sandstone aquifer

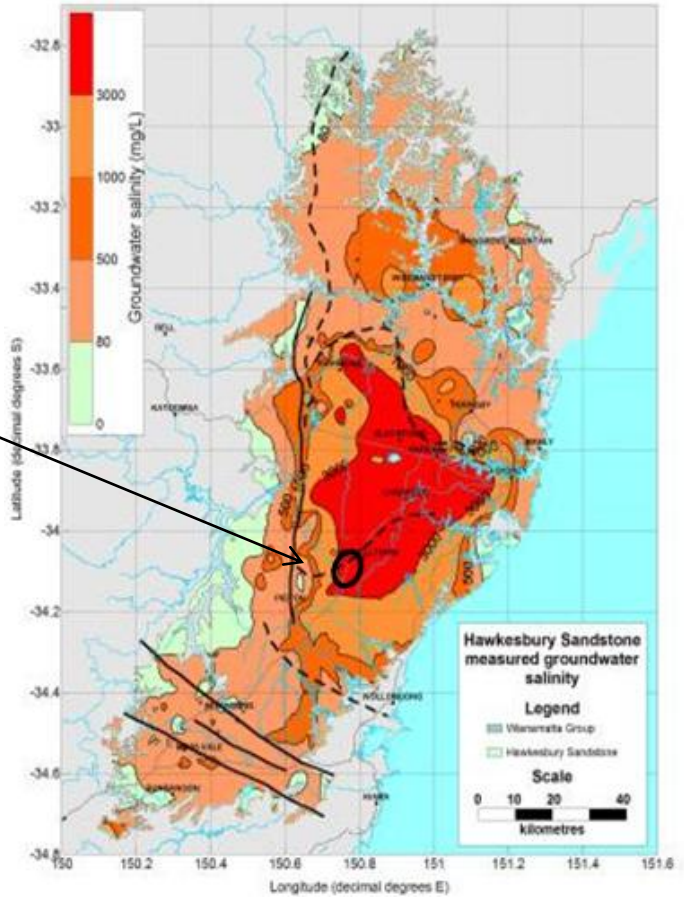
Water is of quantity and saline.

Indicative water yields



Approximate location of CGP

Groundwater salinity



Conceptual groundwater model

Impermeable rocks separate aquifers from coal.

Alluvium: Minor aquifer. Very thin <20 m thick. Good yield, good permeability, variable quality: fresh to brackish. Limited extent. *Only occurs proximate to the Nepean River*

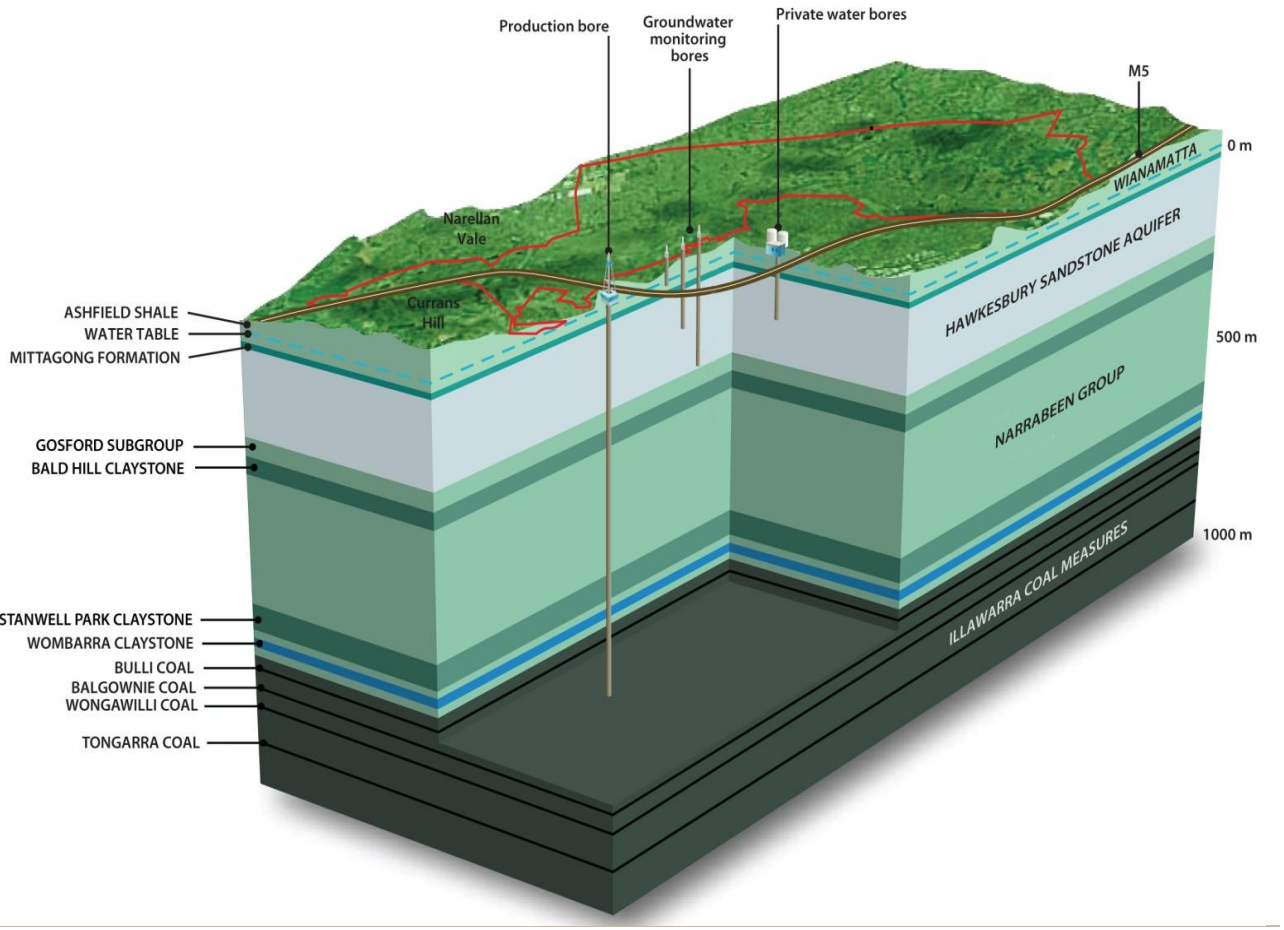
Wianamatta Shale: Shallow Aquitard/Minor aquifer. Very thin to >100 m thick. Low yield, low permeability, an aquitard rather than aquifer, typically > 4,500 µS/cm

Hawkesbury Sandstone: Beneficial Aquifer.~ 200 m thick. Typically 500 – 7,000 µS/cm, low yields.

Bulgo Sandstone (Narrabeen Group): Minor Aquifer. ~250 m thick. Low yield, typically 2500 – 7,500 µS/cm.

Illawarra Coal Measures: Water bearing zone. ~ 300 m thick. Very low yield, typically >7,000 µS/cm.

No GDEs except for potentially perched GDE (Cumberland Shale Plains/Hills Woodland)



Produced water management

Reuse solutions to promote sustainable operations.

- Water extracted from coal seams is then:
  - Temporarily stored in onsite tanks above the ground
  - Transported by truck to RPGP
  - Filtered to remove coal fines
  - Collected and taken to an EPA licensed liquid wast treatment facility
  - Mixed with other waste water and treated using special membrane filtration and microbial systems
- The final treated water has a low level of salt and can be used for industrial processes, like making bricks for building homes.

What happens to produced water?

Groundwater monitoring network

Will operate as long as the project does.

- Dedicated monitoring bores:
  - Beneficial aquifers
  - Water level and quality monitoring
- Water supply bores:
  - Water quality monitoring
- CSG wells:
  - Water quality monitoring at wells and at RPGP pond
  - Produced water volume monitoring

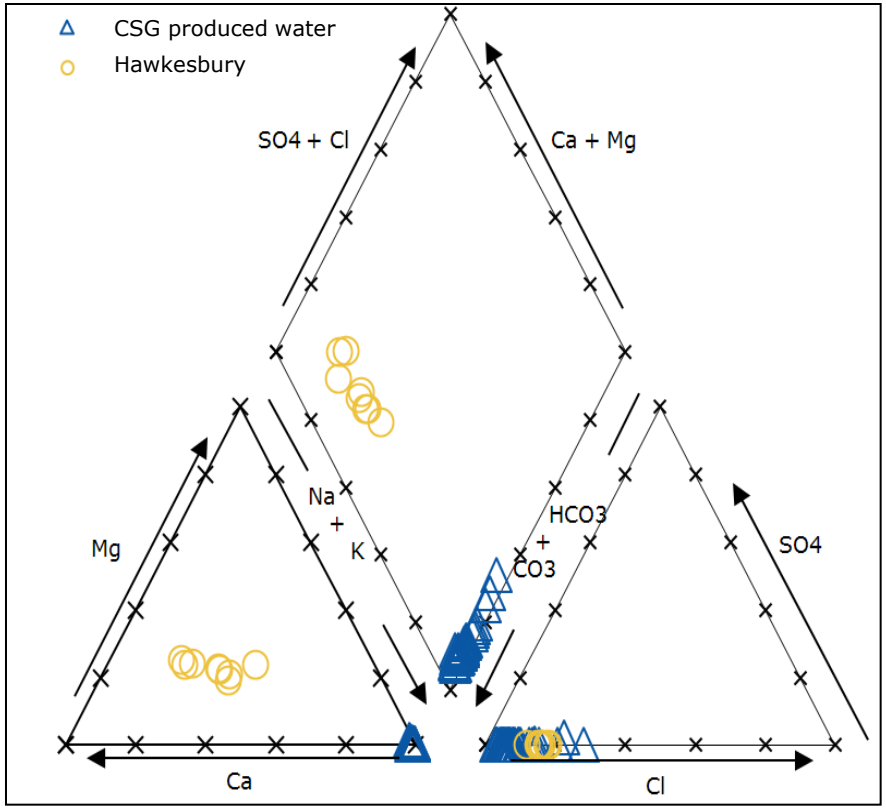
A water monitoring bore

Results of monitoring bore tests

Water quality has not changed.

- No degradation of water quality has been observed at water supply bores
- Distinct chemical signatures of Hawkesbury Sandstone Aquifer and produced water from coal seams
- Successful dewatering of many wells in CGP: >80% of wells produced no or negligible volumes of water in FY12
- Total volumes of water extracted very small - <4.8 ML in FY12

Chemical signatures of water



Community Relations

How did we get here?

Outrage has been fueled by misinformation and lack of information.

- Gaslands and other U.S.-based films have raised awareness of unconventional gas
- Media spotlight
- Groups using internet to network and rally opposition
- Industry hasn't filled the information vacuum
- Delays by the industry in scaling up engagement efforts
- Political cycle has captured CSG as a public issue

Anti-CSG protestors

Community strategy

Community acceptance critical to operational success.

- Major investment in:
  - Team
  - Research
  - Grassroots activity
- Fill information void
  - Use digital channels
  - Site tours
  - Staff in project areas available
- Leverage community input
  - Information required & its delivery
  - What needs to be improved
  - Increased air emissions & water monitoring at Camden
- Partnering with trusted organisations
  - NSW Chief Scientist & Engineer
  - CSIRO
  - EPA
  - NSW Office of Water

Hunter Project Showcase, March 2013

Outreach efforts improving

Significant increase in engagement and transparency.

- 205 engagement activities between May 2012 and May2013
  - 30 separate open days, site inspections and tours of our operations
  - Hunter showcase
    - > 330 people attended including MPs, local Government, children
    - Marquee set up alongside core drilling rig
  - Gloucester Town Hall meeting 16 May 2013
    - ~ 320 people
    - Presented alongside BGSPA[1]
- Singleton Community Info Centre (open daily)
  - Extensive displays and information
  - AGL employee onsite to answer questions
- AGL's website provides
  - Regular project updates
  - Info about CSG

Gloucester Town Hall, 16 May 2013

[1] Barrington-Gloucester-Stroud Preservation Alliance Inc

Camden Gas Project

Providing benefits to the Macarthur community.

- Approximately 60 employees & contractors:
  - 80% are from the Macarthur region
  - active volunteers in local organisations
- 40% of suppliers are local to the Macarthur region
- Spent more than $100 million since 2001
- Spent $4m locally in 2011/12
- AGL has contributed to local community organisations including:
  - Youth off the Streets
  - Macarthur Diversity Services
  - Mater Dei School
  - St Vinnies

AGL employees educating kids on energy

Thank you

Q&A

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