



**Santos**  
We have the energy.

# Narrabri Gas Project

Our plans to develop natural gas for New South Wales

December 2013

# About Santos

Australian energy company established in 1954

- Employs 3,000 workers and over 4,000 contractors
- **One of Australia's largest domestic natural gas producers**
- Supplying natural gas to NSW since 1976
- Extracting coal seam gas for 20 years
- Acquired Narrabri operations in November 2011
- Currently employs 200 workers locally including employees and contractors



# A balanced energy solution

## Supplying natural gas to New South Wales



- Clean and reliable energy
- Households, industry and power generation
- Up to half of NSW gas demand
- Pipeline south from Narrabri linking into existing pipeline to Sydney

## Delivering energy safely and with minimal impact



- 20 years experience safely extracting CSG
- Operations in Pilliga in areas designated for natural gas development
- Environmental studies establishing baselines on water, ecology, emissions

## Benefiting regional communities



- Economic growth through direct and indirect employment
- Value-based landholder compensation
- Royalties to the State
- Regional Community Benefit Fund

# Current activity

## Building foundation for future work

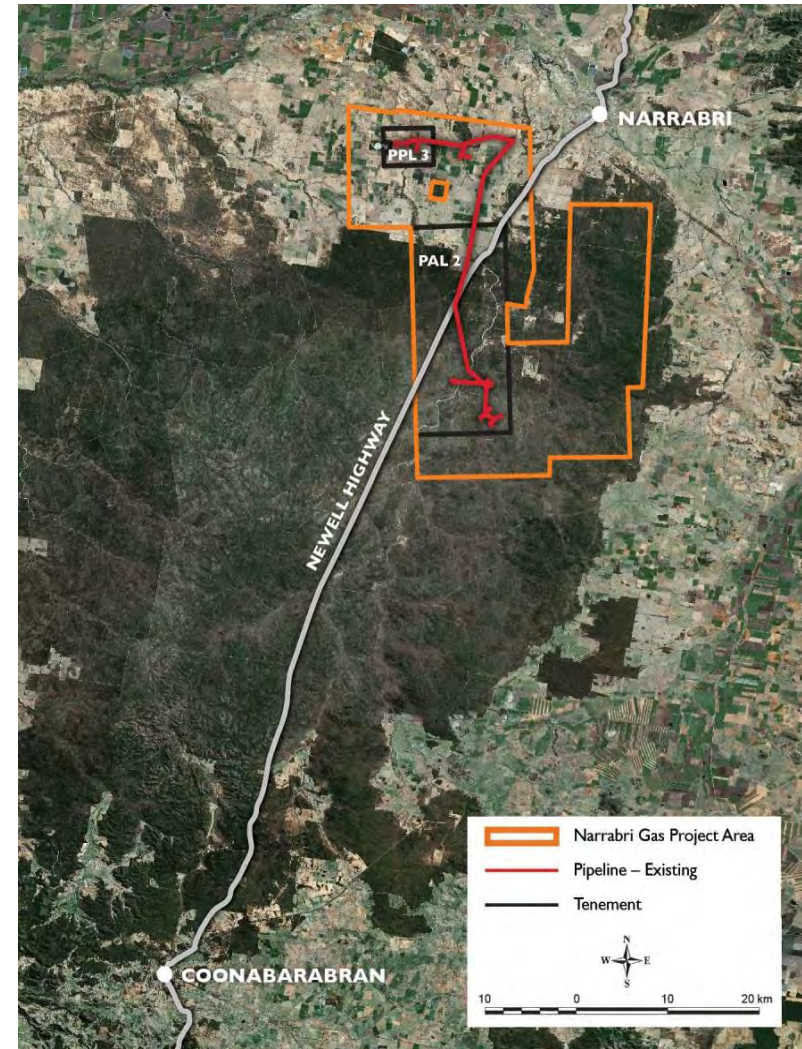
- Exploration and Appraisal
  - 15 pilot wells and one core hole
  - NSW Government assessment
  - Commonwealth EPBC review complete
- Baseline data gathering and monitoring
  - Water monitoring bores
  - Water portal
  - Air testing
  - Ecological studies
- Water management facility
- Community engagement



# Narrabri Gas Project

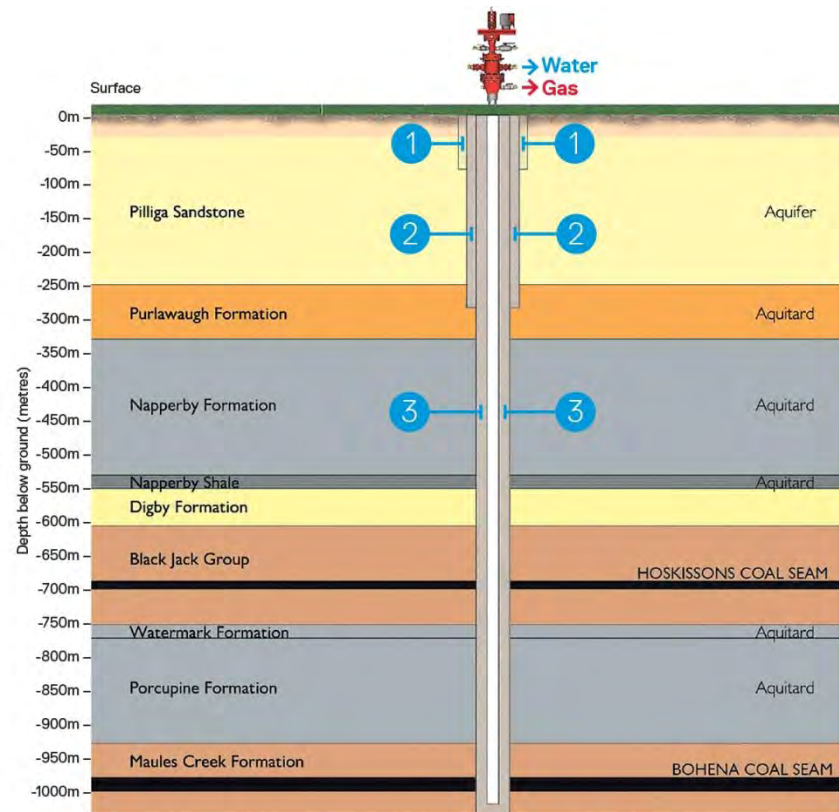
Could **supply half of NSW's natural gas**

- Regulatory approval required by both State and Commonwealth Governments
- Project area covers 98,000 hectares
- Field operations approximately 900ha
  - Less than 1 per cent of the Project area
  - 850 production wells or 425 well sets
- Infrastructure located outside the Pilliga:
  - Gas processing facilities
  - Water management and treatment facilities
  - Brine and salt management
- Gas transmission pipeline constructed to transport natural gas to market



# Drilling with care

Local geology and Santos' high standards ensure natural gas is produced safely and groundwater is protected



- 1 Steel conductor inserted and cemented into place
- 2 Surface casing inserted and cemented into place
- 3 Production casing inserted and cemented into place

- To produce gas, water is extracted from the coal seam, reducing the pressure and allowing the gas to flow
- Pilliga sandstone contains aquifers used for agriculture and community
- Coal seams in the Project area generally between 500m – 1000m below the surface
- Impermeable rock layers form a barrier between shallow aquifers and coal seams
- Layers of steel and cement isolate the aquifers and ensure well integrity
- Well design and construction codified within the NSW Code of Practice for CSG

# Weighing up the benefits

## Substantial benefits to the local community and New South Wales

- 1,200 jobs during construction
- \$160 million Regional Community Benefit Fund
- Key source of energy for NSW
  - **Half the State's** natural gas supply
  - 1 million plus homes and businesses
  - 450 large industrial users
  - 15,000 industrial jobs dependent on reliable natural gas supply
- Cleaner energy source, lower emissions, complements renewables
- More than \$1.6 billion in royalties to fund state projects and services



# Working with landholders

We respect the custodians and owners of the land

- Work together with Forestry Corporation of NSW
- Only drill on private land with landholders consent
  - Land-value based compensation
  - Farm Management Plan
- Work towards an agreement with the native title parties
- Ensure local Aboriginal community share in social and economic benefits





# Benefiting the local community

We aim to become a valued and respected member of the local communities which host our activities

- 1,200 jobs during construction
- Local contractors used whenever possible
- Flow on benefits via supply chain revenues, local purchasing and indirect jobs
- Community Benefit Fund to support major regional projects and infrastructure
- Sponsor, support and participate in local community events and initiatives
- Local sponsorships in 2013 exceeded \$350,000



# Protecting biodiversity

We recognise the unique environment of the Pilliga

- Ongoing flora and fauna studies
- Measures used to minimise impact:
  - Avoid areas deemed significant from cultural heritage or ecological perspective
  - Use existing cleared areas and access tracks, lateral drilling and progressive site rehabilitation
  - Weed and pest animal control measures
  - Offsetting land impacted by our activities



# Establishing and monitoring baselines

- Studies to establish baseline groundwater data:
  - Groundwater modelling
  - Regional groundwater assessments
  - Regional bore inventory
- Monitoring registered water bores with agreement from landholders
- Network of shallow and deep aquifer monitoring bores established
  - Continuous remote monitoring
  - Data available to public via internet portal
- Collaboration with the University of Adelaide to collect baseline air quality data to establish background methane levels



# Beneficial water resource

We prioritise water protection, preservation and productive reuse

- Government water licences needed for all water extracted
- Water extracted is not from the Great Artesian Basin and is too deep and salty to be used by community
- Estimated 80% of water can be reused following desalination
- In Queensland, treated water irrigates forage crops and recharges local aquifers near Roma
- Options for water reuse and salt management
- Treatment facilities located outside the Pilliga



# Project timeline

Project details developed with significant community engagement

↓ Where we are now

~ 2 years ~ 2 years

20+ years



← Approximately 4 years →

- Core holes
- Seismic
- Baseline scientific data

- Appraisal pilots
- Government assessment
- Engineering and design

- Build facilities
- Gas pipeline
- Work camps

- Drilling production wells
- Natural gas production
- Ongoing field development
- Rehabilitation

Community and Stakeholder Engagement

# In summary

- Substantial economic and social benefits for community
- Supply up to half **of NSW's** natural gas needs
- Respect for custodians and land owners
- Protections for unique forest environment, farm land and water resources
- Seeking ongoing local community input and dialogue



# If you have any questions

Freecall: 1800 071 278  
Email: [energy.nsw@santos.com](mailto:energy.nsw@santos.com)  
Twitter: @SantosLtd  
Visit: [www.santos.com/nsw](http://www.santos.com/nsw)

Drop into one of our local offices:

Narrabri  
125 Maitland Street  
02 6792 9035  
Mon – Fri 9am – 5pm

Gunnedah  
206 Conadilly Street  
02 6741 5100  
Mon – Fri 9am – 5pm

