



Eastern Australia Business Unit

Cooper Basin Unconventional Gas Opportunities & Commercialisation

November 2012



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This presentation contains forward looking statements that are subject to risk factors associated with the oil and gas industry. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a range of variables which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, geotechnical factors, drilling and production results, gas commercialisation, development progress, operating results, engineering estimates, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial markets conditions in various countries, approvals and cost estimates.

All references to dollars, cents or \$ in this document are to Australian currency, unless otherwise stated.

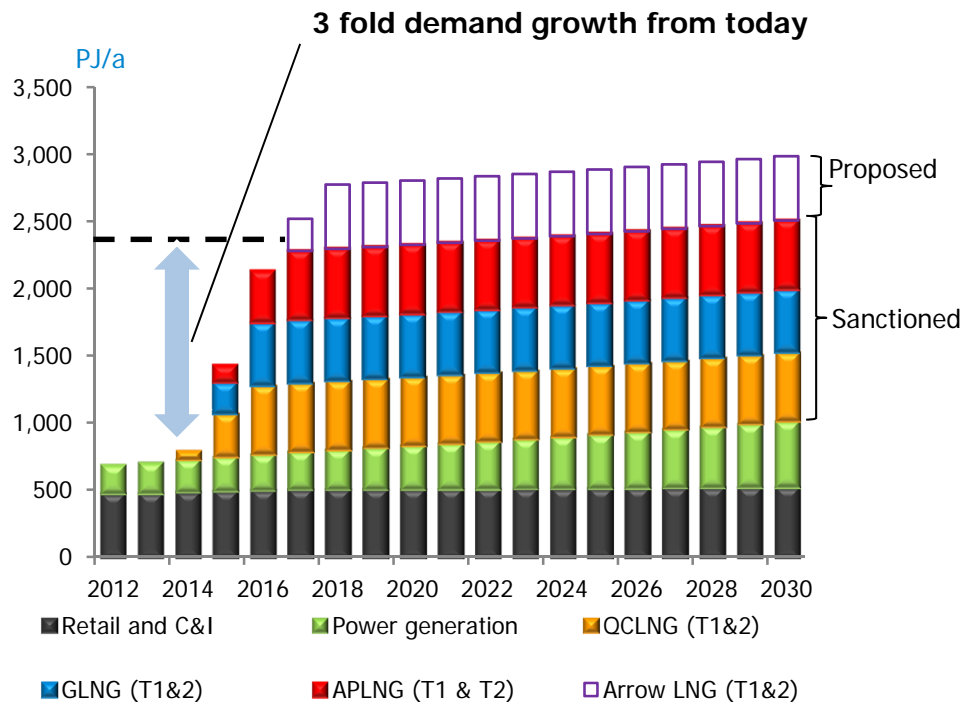
Agenda

1. The East Coast gas market
2. Application of US shale gas learnings to the Cooper Basin
3. Santos' technical and commercial advantages
4. The plan to commercialise Cooper Basin unconventional gas

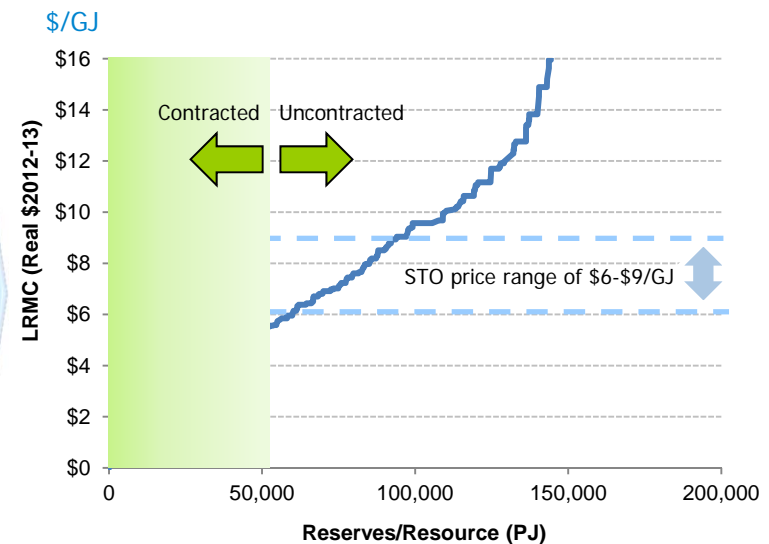
Unprecedented growth in Eastern Australia gas market

Demand growth from LNG and power generation is increasing gas prices...

Eastern Australia gas demand



Eastern Australia gas supply costs (ex-field)¹



¹ Source: Fuel cost projections, natural gas and coal outlooks for AEMO modelling (December 2011)

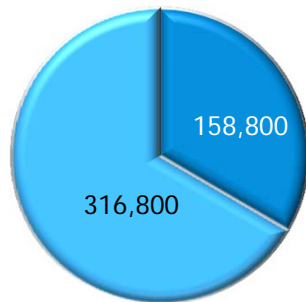
...unlocking the next wave of natural gas development

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We have the energy.

Australian gas reserves and resources

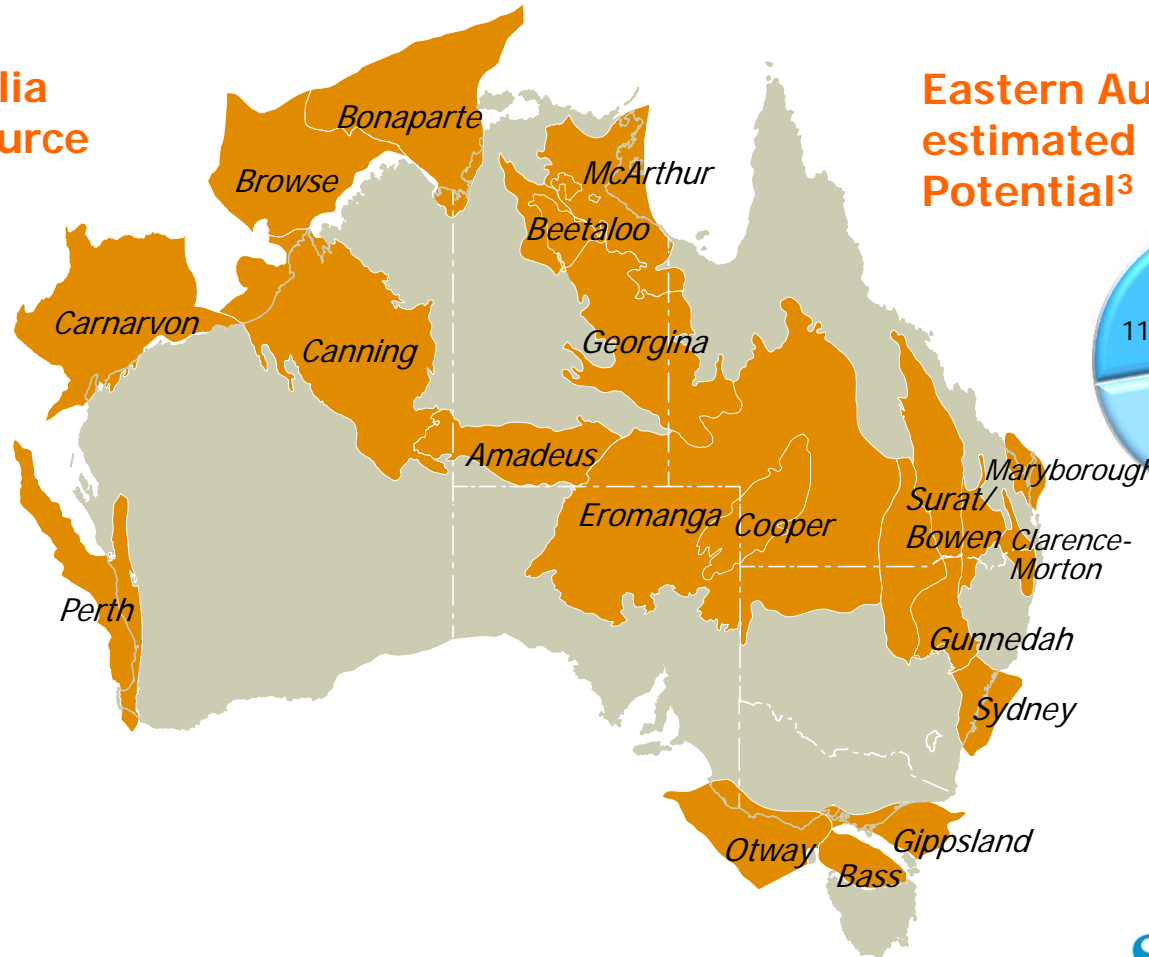
Eastern Australia has a significant resource base with geographic and geological diversity

Western Australia estimated Resource Potential^{1,2}

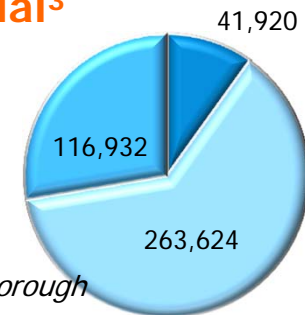


■ Conventional
■ Unconventional

475,600 PJ



Eastern Australia estimated Resource Potential³



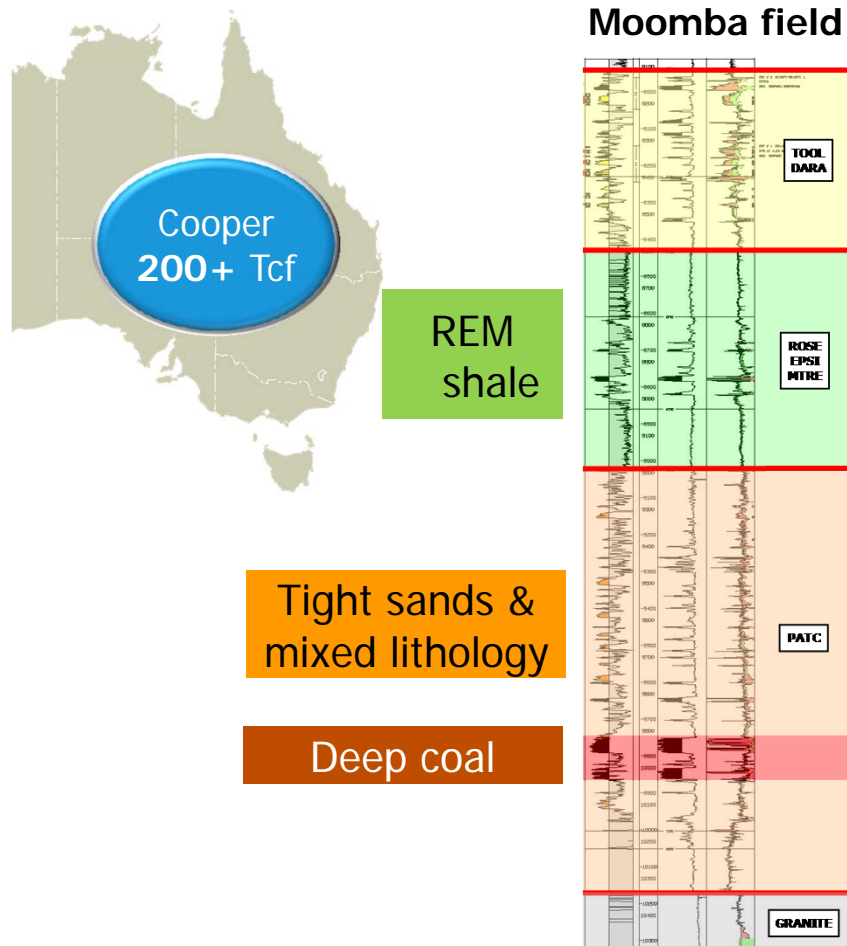
■ Conventional
■ CSG
■ Unconventional

422,476 PJ

1 Source: BREE 2012 Gas Resource Assessment, 2012
2 Source: EIA World Shale Gas Resources, 2011
3 Source: AEMO 2012 GSOO

The Cooper Basin provides the most prospective unconventional reservoir opportunity in Australia

The Cooper Basin is a world scale unconventional resource



Net Santos Cooper Basin Unconventional Prospective Resources¹

	Low	Mid	High
Recoverable Raw Gas	Tcf		
Total	15	50	125

Notes

1. Evaluated by DeGolyer and MacNaughton, 2008

Net Santos Cooper Basin Contingent Unconventional Resources¹

	1C	2C	3C
Recoverable Gas	PJ		
Total	1,156	2,345	4,561

Notes

1. Verified by DeGolyer and MacNaughton, as at 2011

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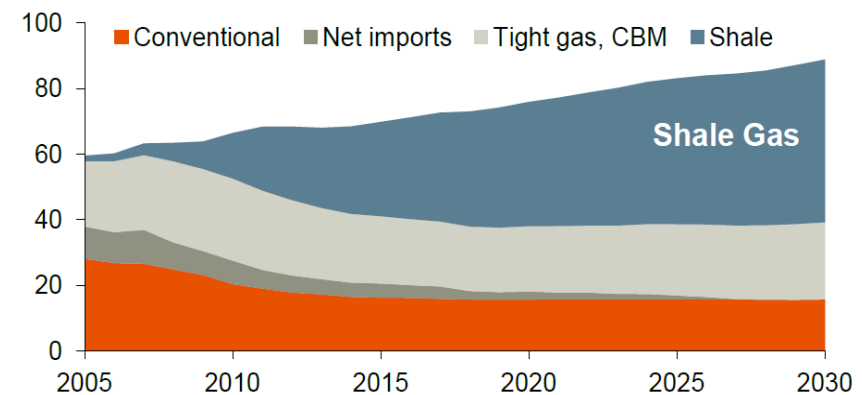
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North America's Shale gas revolution

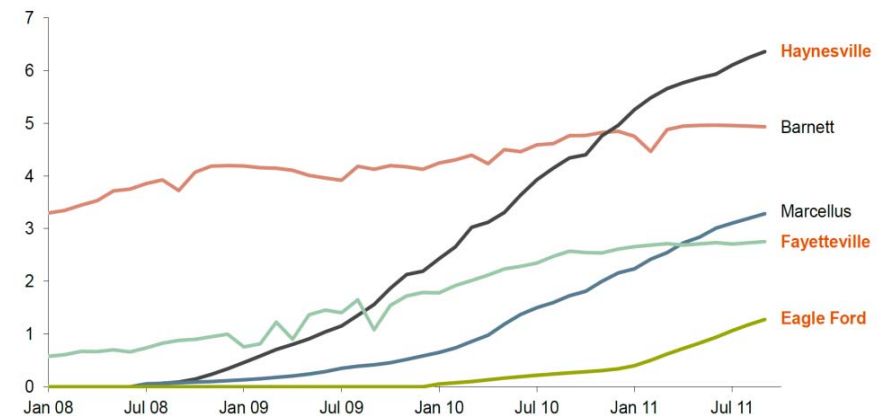
- US has led world wide shale gas production
- Growth in US supply has fundamentally altered US gas industry dynamics
- Shale gas production now accounts for over 30%⁽¹⁾ of total gas production in the US

The US Shale gas transformation driven by technology & accelerated learning

US natural gas supply (Bcfd)



Production (Bcfd)



Source:

1. AEO 2012

2. Illustrations from BHP Billiton Petroleum Investor Briefing, 14 November 2011

Technology and innovation has driven the phenomenal growth of gas in the U.S.

Geological Modelling

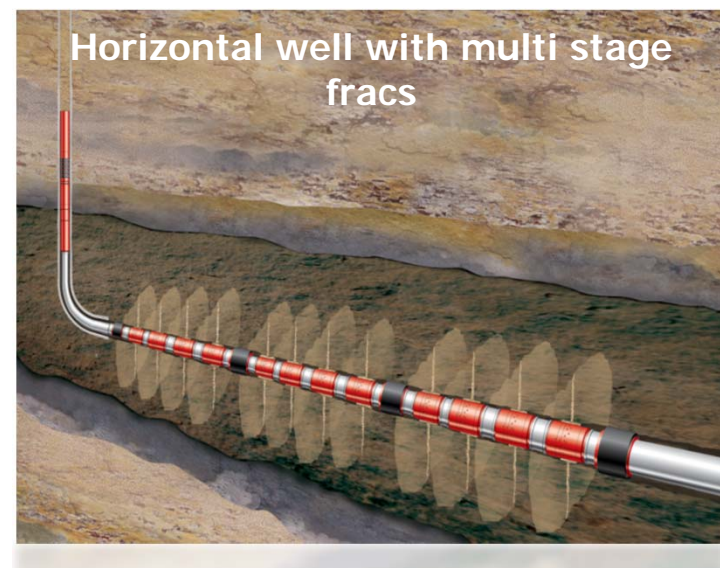
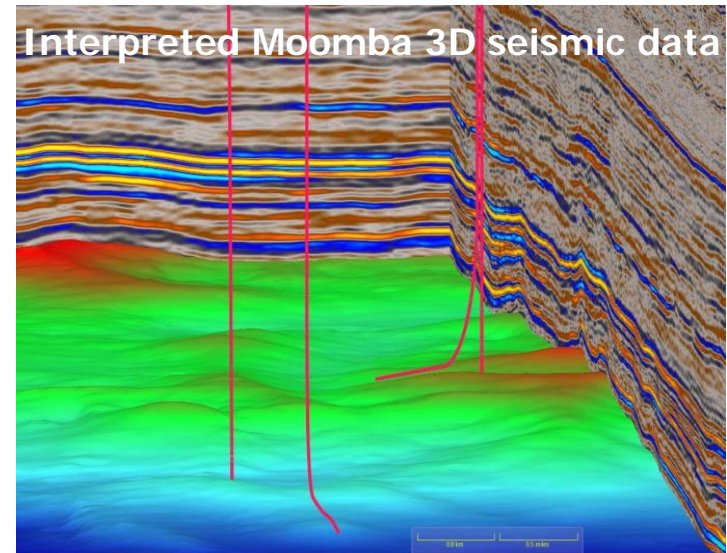
- Integration of 3D seismic, geo-mechanical and mineralogy data to create reservoir earth models
- **To determine gas volume, stress regimes, brittleness, recovery factors and plan well trajectories**

Drilling techniques

- Horizontal wells, lateral length & orientation
- Multi well pads and SIMOPS
- **To reduce well costs through design, repeatability and scale**

Multi stage fracture stimulation

- Fluid type & rate
- Proppant volumes and concentration
- Frac diagnostics
- **To maximise stimulated rock volume and UR per well**

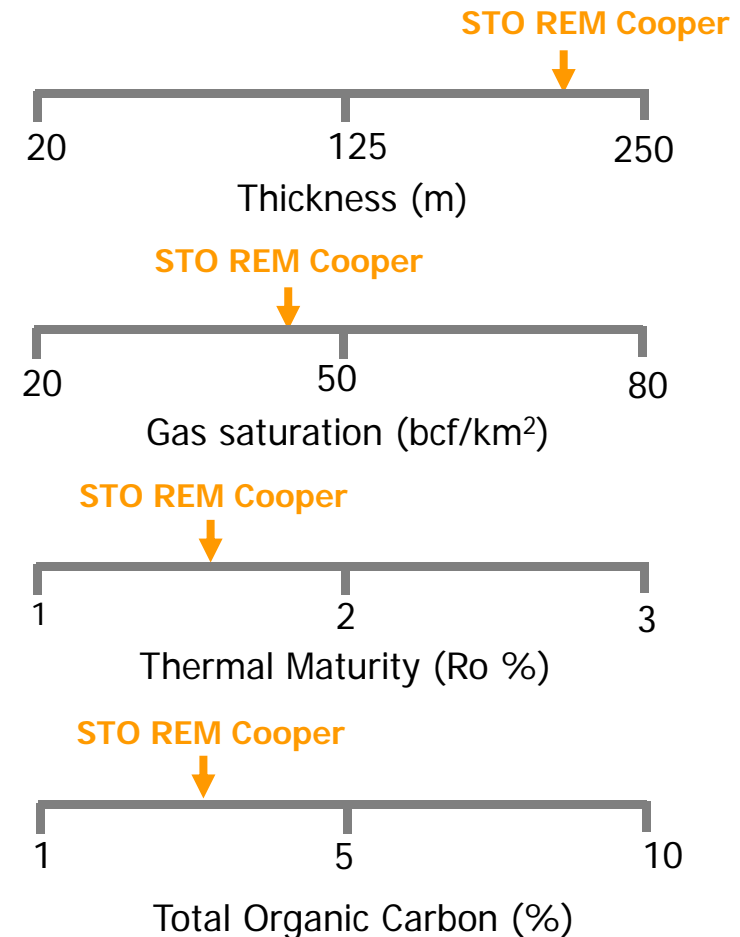


Knowing your shale characteristics

There are common factors to the most successful shale gas plays...

- Thickness, lateral extent, gas saturation and porosity determine the resource size
- Thermal maturity determines whether the shale is in the 'gas window'
- Mineralogy & shale brittleness impact ability to drill and frac formations
- Formation frac gradient impacts stimulation cost

...understanding these will help unlock the enormous resource potential



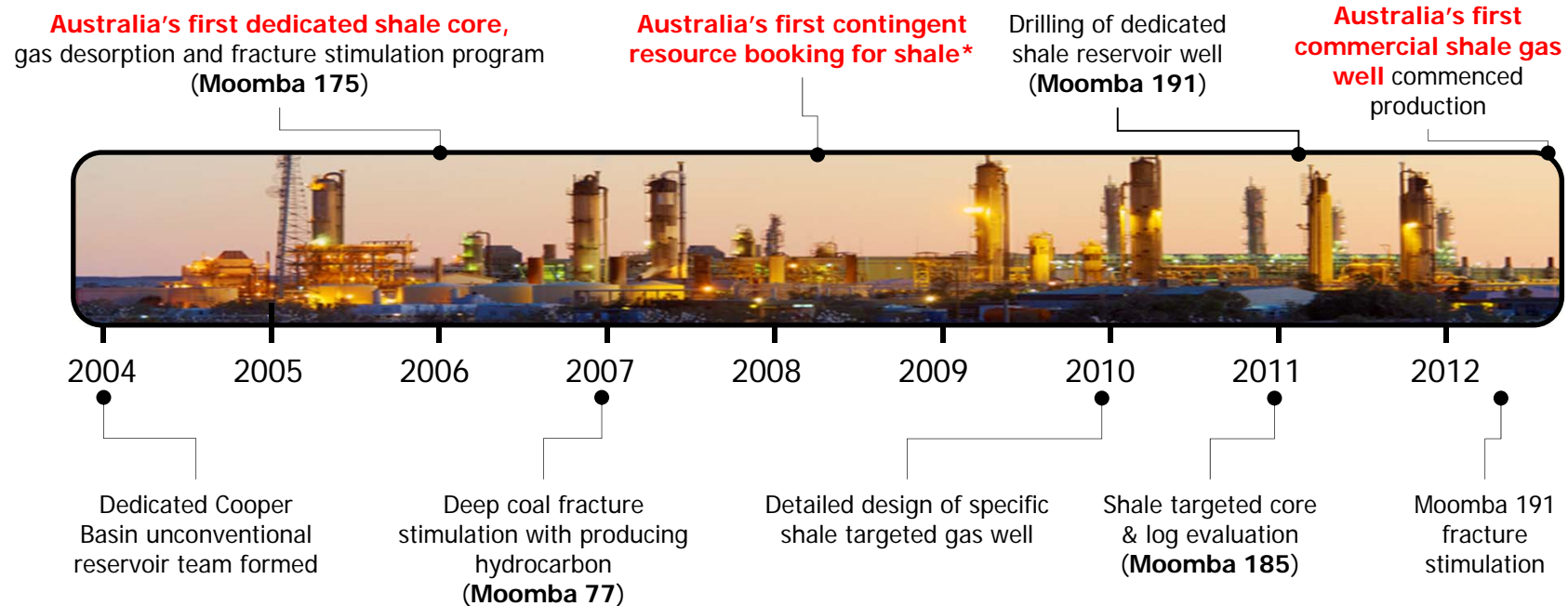
Parameter range of successful US shale plays

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Extensive knowledge & expertise of Cooper Basin unconventional reservoirs

Santos has 50+ years of E&P experience in the Cooper Basin and...



...has been actively progressing an unconventional reservoirs program for the last decade, with a growing list of Australia's first shale achievements

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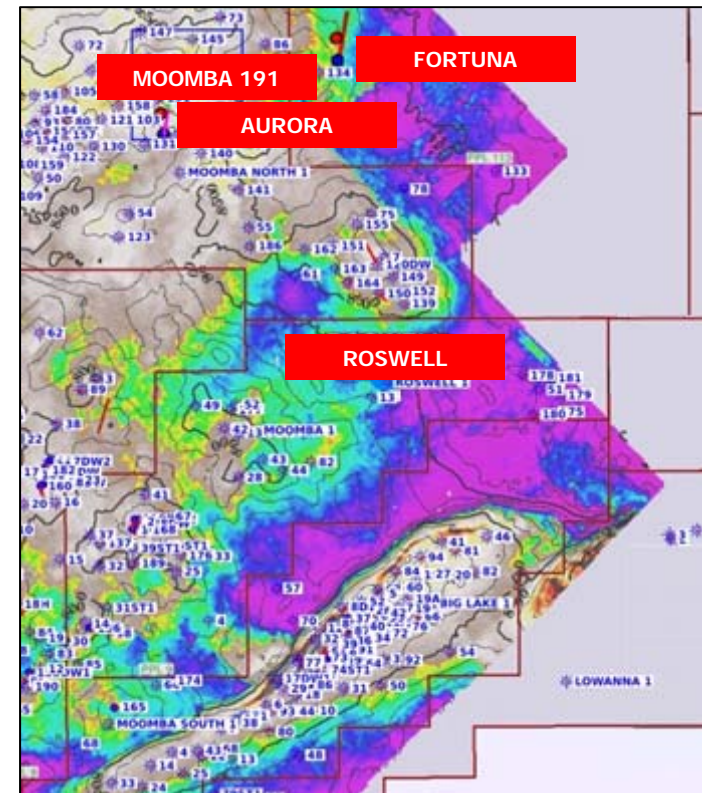
Santos understands the rocks

Santos has significant understanding of Moomba REM continuity and thickness trends...

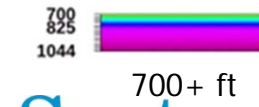
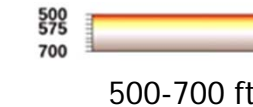
- Extensive subsurface data set from 50+ years of operation
- Over 940km² of 3D seismic coverage
- 106 wells drilled through the REM (289 in total)
- >4,000 feet of core acquired
- >300 fracs
- Diagnostic fracture data used to develop field wide understanding of frac gradients, geo-mechanical properties, and over pressure

...provides confidence in resource assessment, well and fracture design

Moomba REM Thickness



REM thickness grid

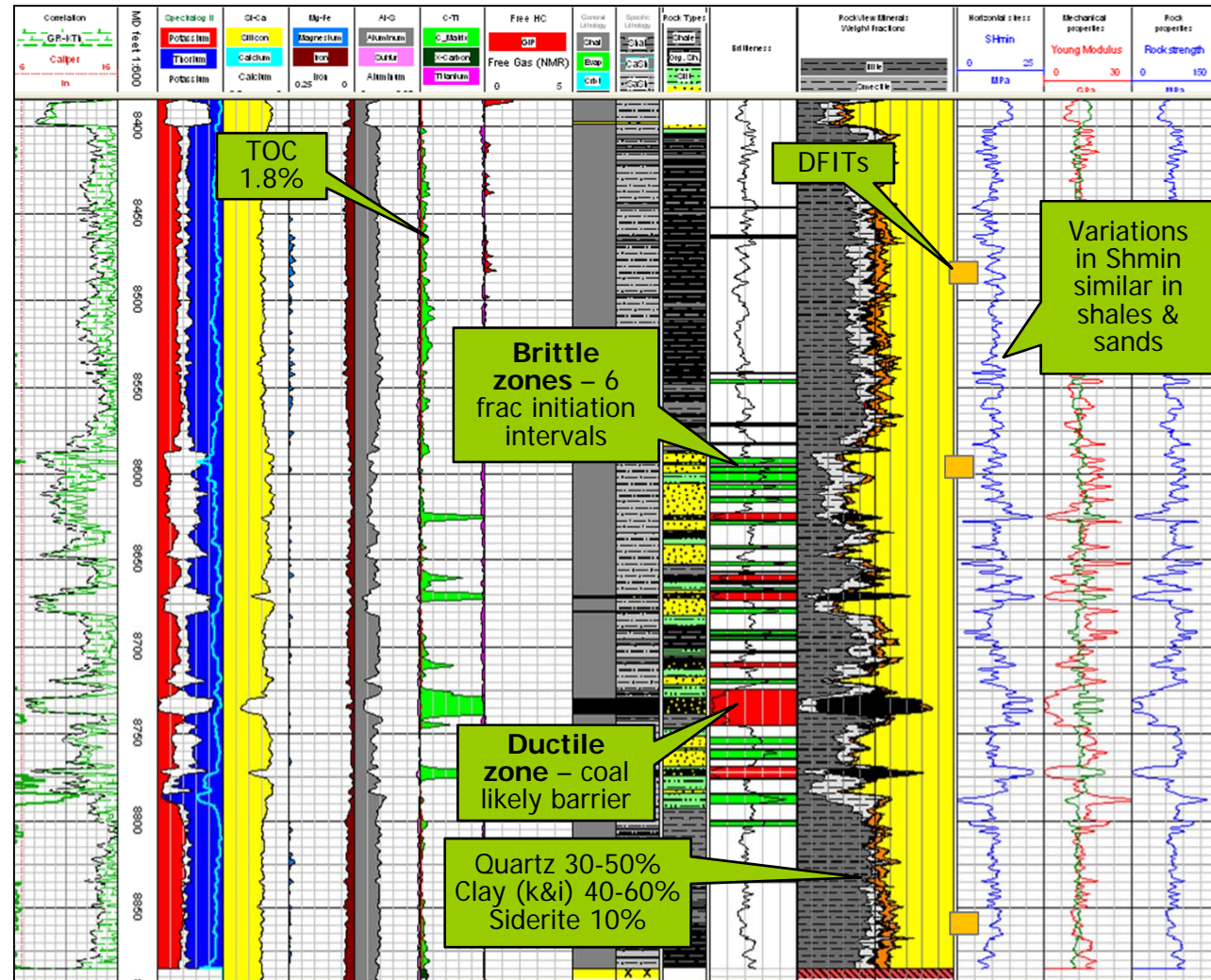


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Deep understanding leads to optimised drilling and completion strategies

Moomba 185 shale specific logs demonstrate that...

- Mineralogy and stress variation is consistent through the REM
- Brittleness & frac gradient indicates fracability
- Total organic content, porosity and moderate over pressure support an average gas content of 80 scf/ton

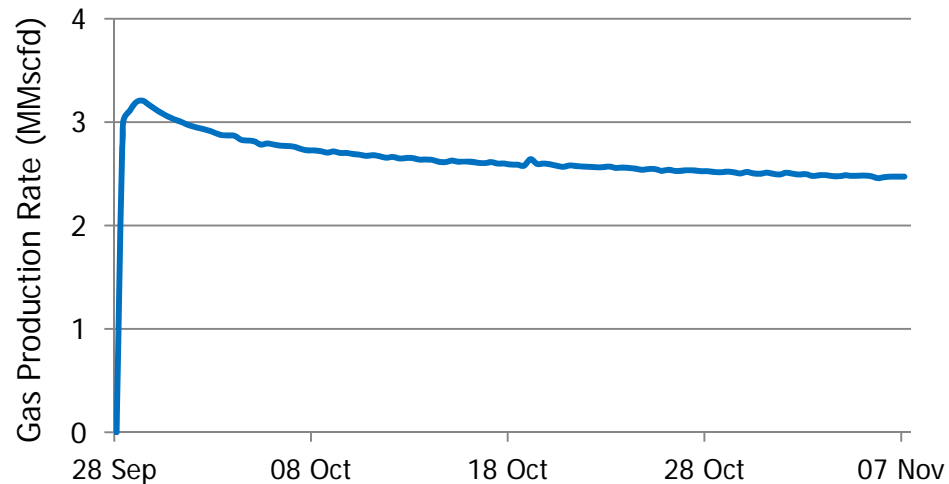


Australia's first shale gas reserve booking

Moomba 191 is an extraordinary result

- Dedicated shale well commissioned on 28 September 2012
- Initial flow rate >3 mmscf/d
- First month average flow rate of 2.7 mmscf/d
- Gas composition is consistent with that produced in the Moomba Big Lake area

Moomba 191: Production History



Santos EUR Estimates YE 12

Gross Bcf	1P	2P	3P
Accessed OGIP	2	4	9
Ultimate Recovery	1.5	3	7

Moomba 191 Gas Flare



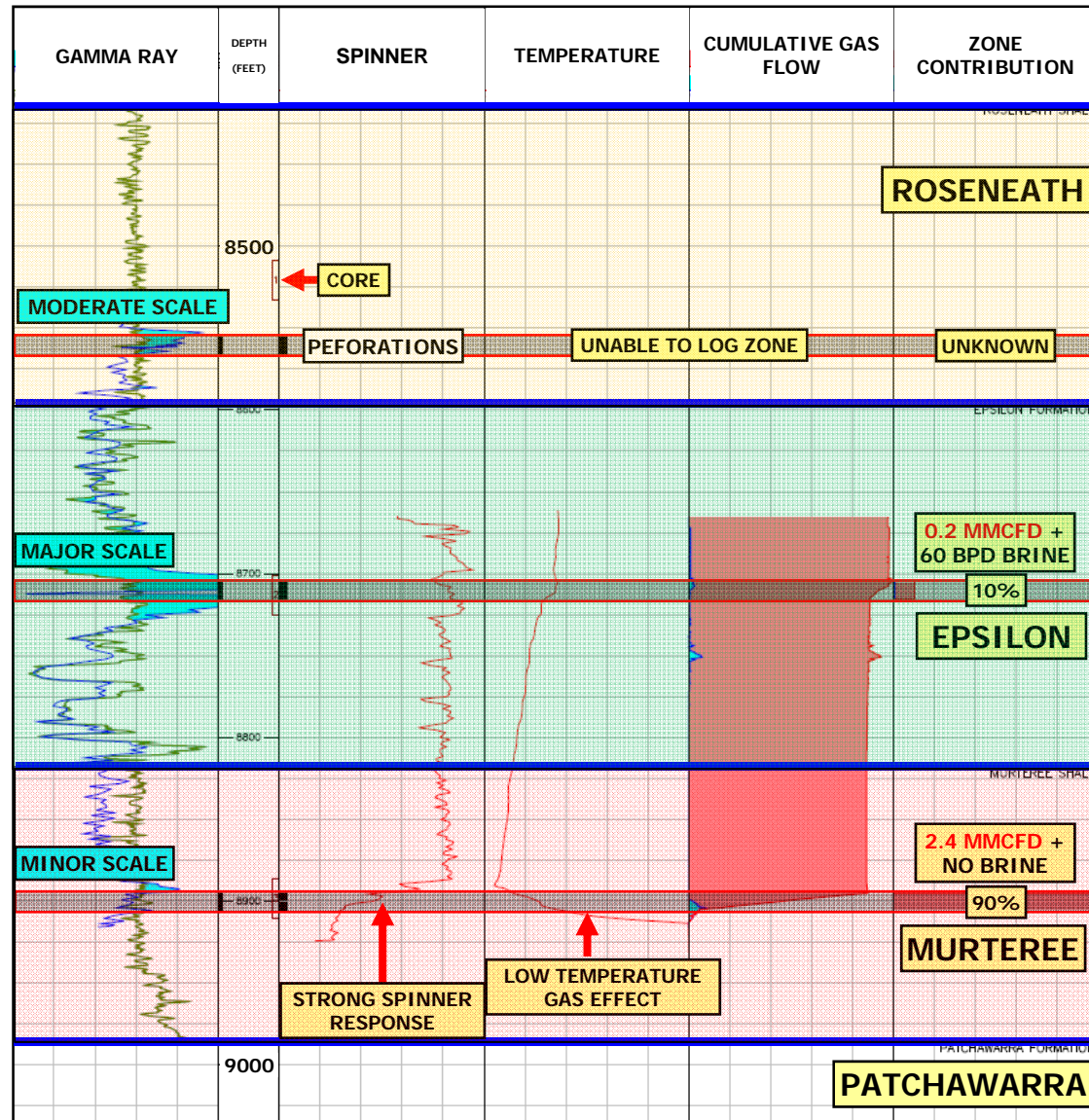
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Moomba 191: Production logging result

Successful stimulation...

- Majority of gas flow across the Murteree shale
- Minor gas flow contribution from the Epsilon
- Roseneath contribution unable to be measured
- Continued production expected to result in greater contribution from Epsilon and Roseneath resulting in higher gas recovery

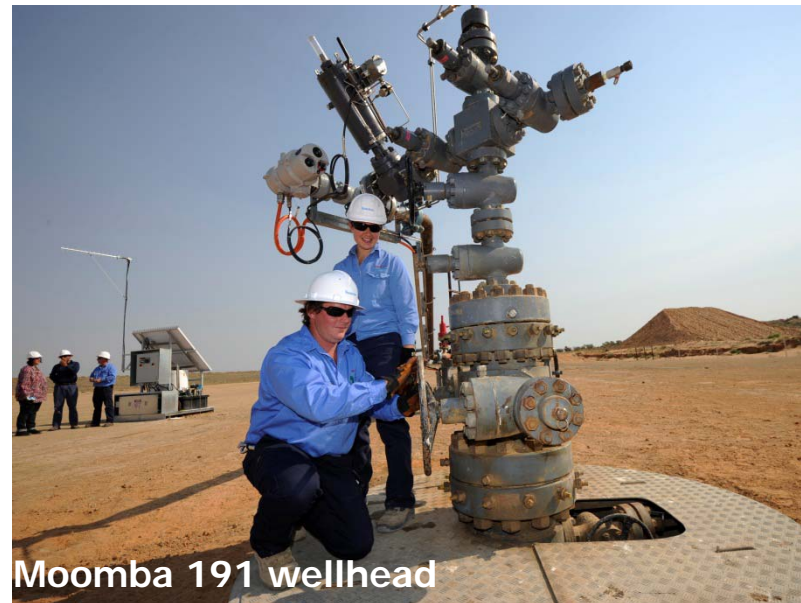
...demonstrates ability to unlock resource potential



Achieving a commercial reserve in the REM shale

The results from Moomba 191 indicate that Cooper Basin shale can be commercially produced

- Estimated well and connection costs of \$10 million for vertical wells optimised for production
- Estimated recovery per well of 3-6 Bcf



At circa \$6GJ vertical shale wells are economic based upon Moomba 191 characteristics. Horizontal wells provide opportunity for significant additional value enhancement.

Santos' strong infrastructure position is a clear commercial advantage

Santos owns and operates all major existing infrastructure and processing facilities in the Cooper Basin

- Processing capacity 550 TJ/day (Moomba & Ballera) with plans to expand
- 70 PJ gas storage
- 6,000 km flowlines and 100,000 horsepower satellite compression
- Access to East Coast gas market
- Firm pipeline capacity to transport gas from Moomba to Wallumbilla gas hub



Estimated replacement cost of \$10+ Billion

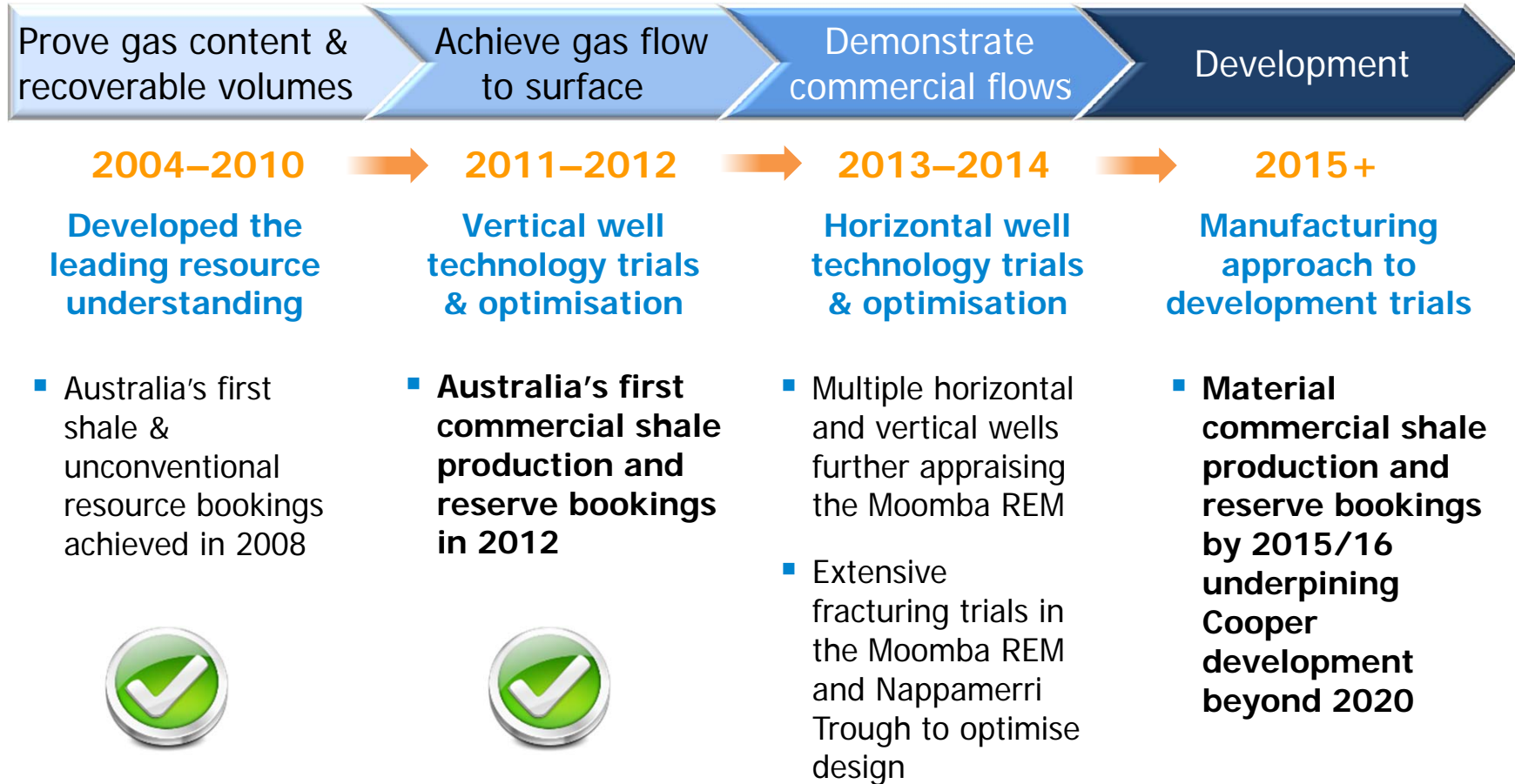
Enabling early commercial success

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Our objective is to deliver material commercial production by 2015/16



Leveraging our expertise and infrastructure

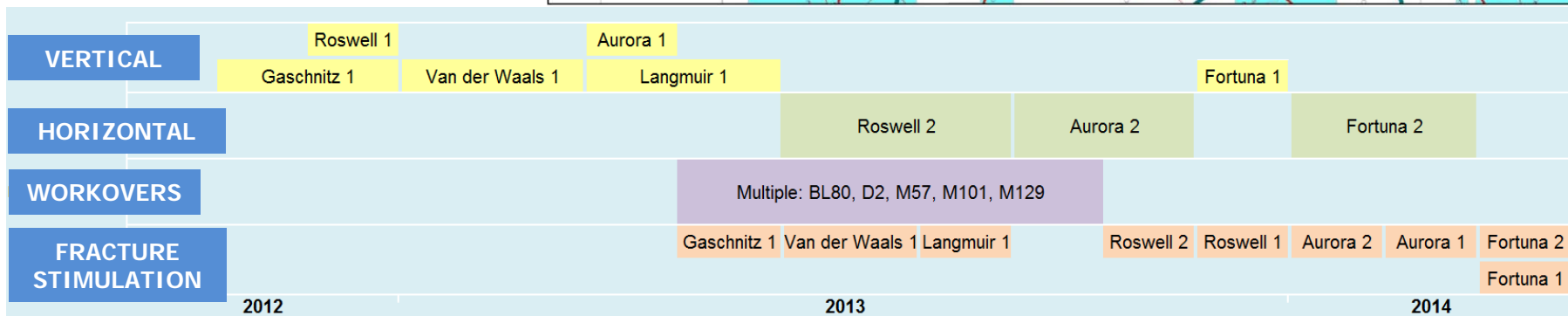
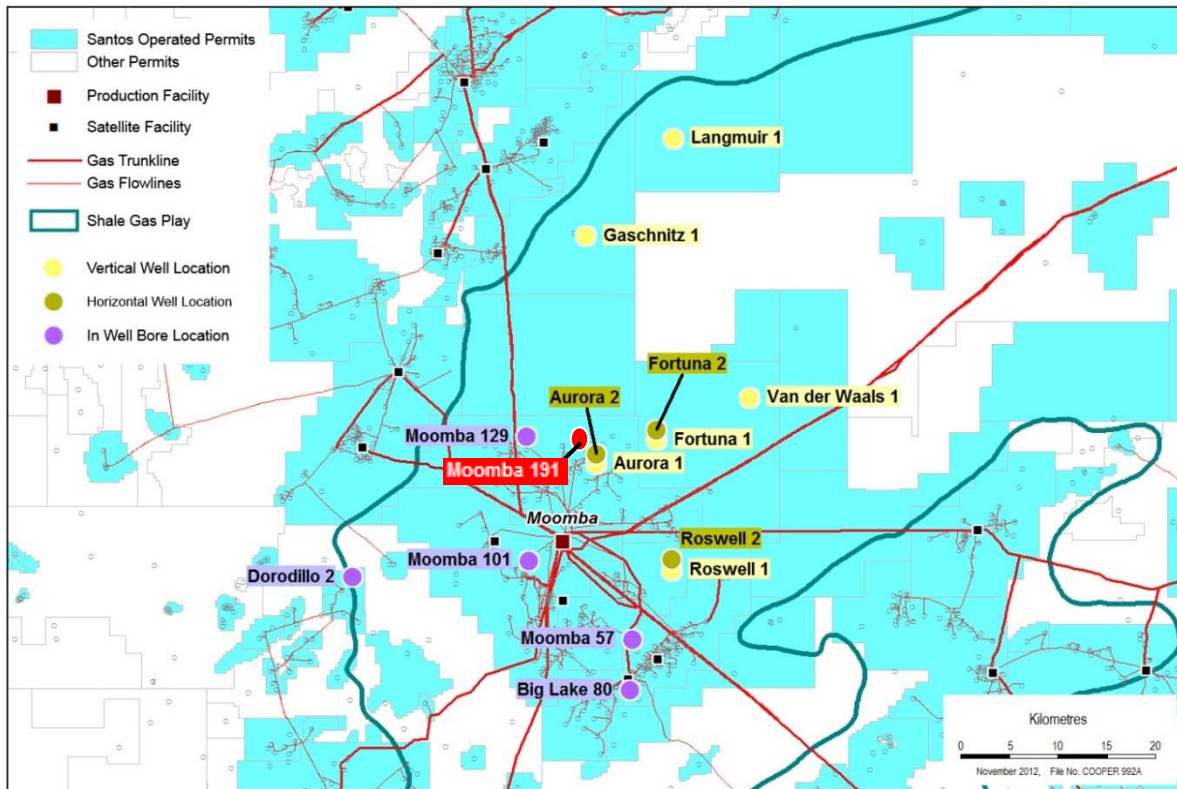
Comprehensive program targeting our most prospective play types

Prioritising 2 significant resource plays

- Moomba REM shale
- Nappamerri Trough Basin Centred Gas

Estimated capital spend of ~\$200M⁽¹⁾

1. Gross JV, subject to approval

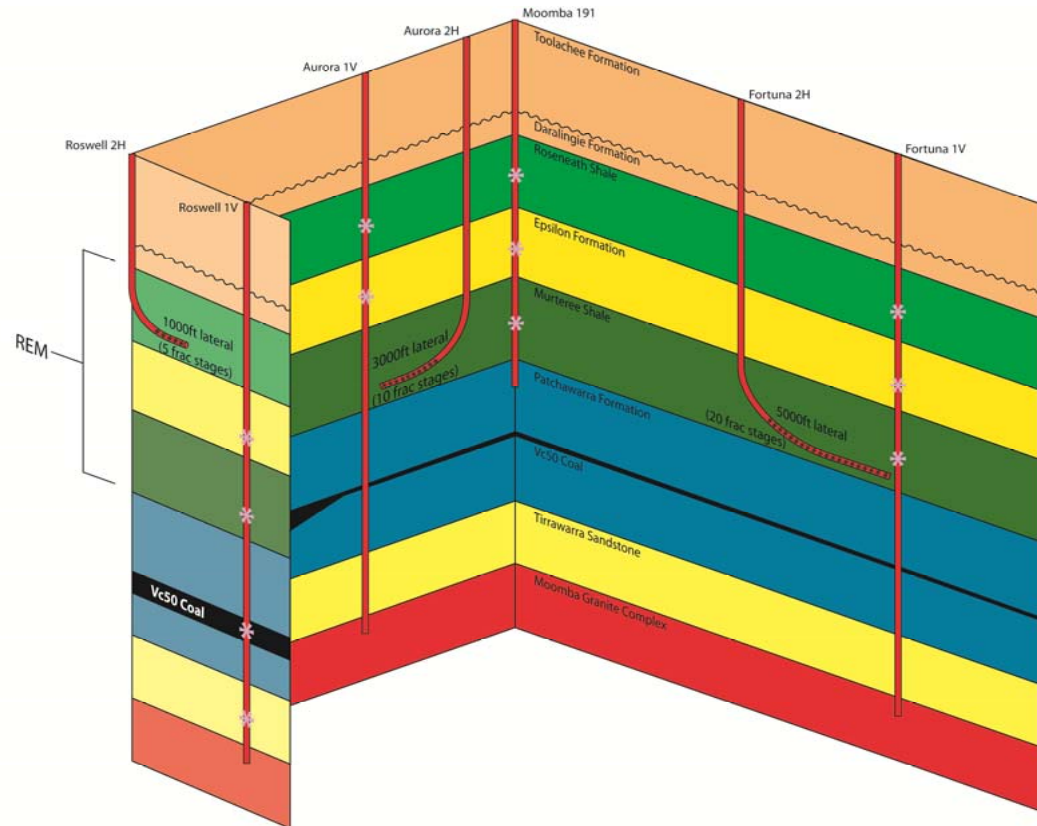


Moomba REM shale program

Defining an optimal well and fracture stimulation design...

- Drilling multiple horizontal & vertical pairs
- Systematically testing critical factors:
 - Horizontal length
 - Fracture stages
 - Fluid volumes, proppant size & concentration
- Utilising micro-seismic fracture diagnostics in vertical wells
- Campaign to further test REM potential in existing wellbores

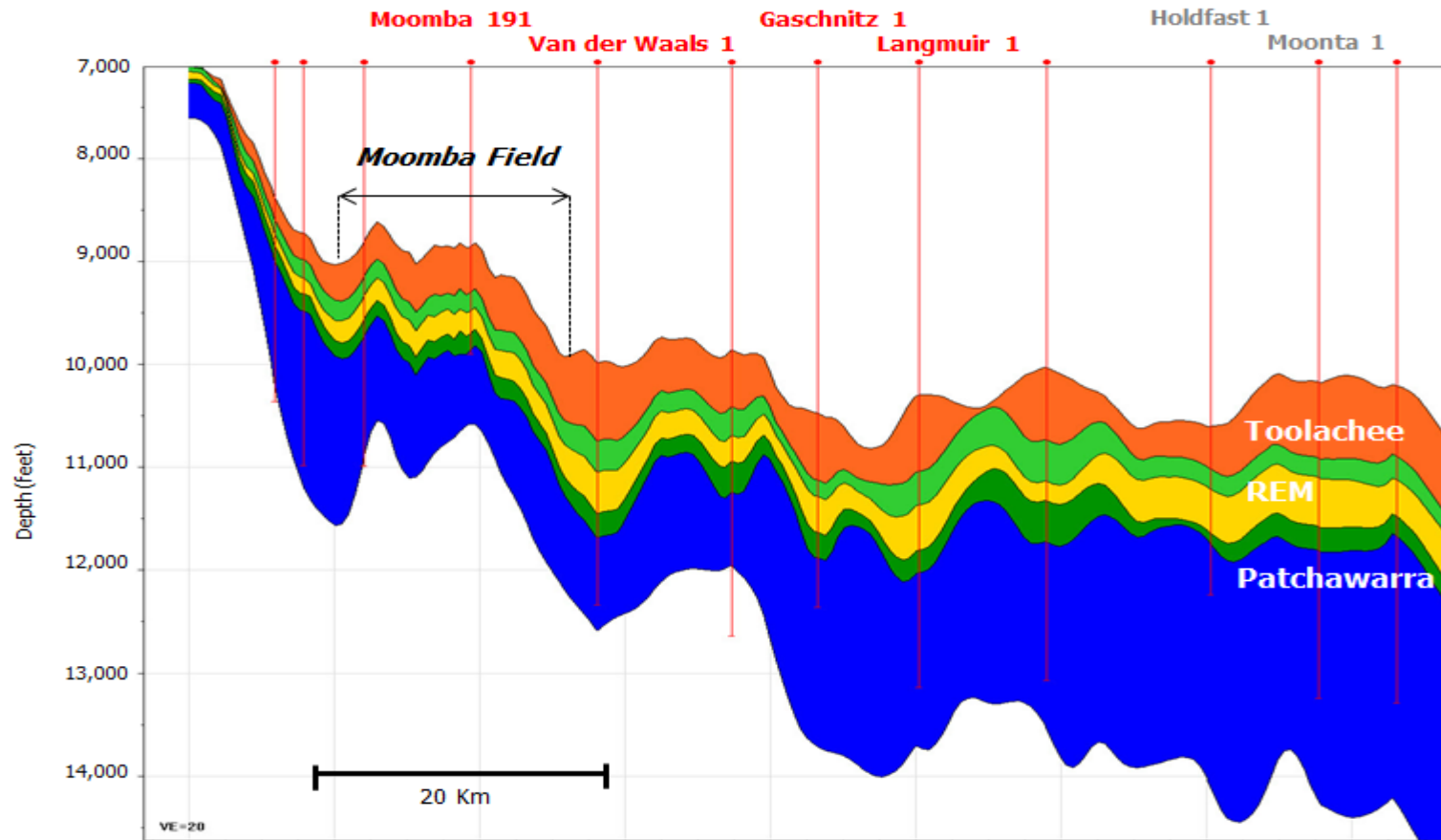
...delivering maximum rate and recovery at lowest cost



Project	Roswell	Aurora	Fortuna
REM Formation	Roseneath	Murteree	Murteree
Lateral Length	1,000 ft	3,000 ft	5,000 ft
Horizontal Fracture Stages	5	10	15-20

Nappamerri Trough program

Targeting contingent resource bookings from Basin Centred Gas



Significant continuous gas saturation over 2,400km² of operated acreage

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Key take-aways

Market demand driving supply

Unprecedented growth in EA gas demand is unlocking a world class unconventional opportunity in the Cooper Basin

U.S. shale gas learnings

U.S. technology and learnings are being applied to accelerate unlocking the Cooper's enormous potential

Santos' competitive advantages

Santos' extensive geological and stimulation knowledge, operating experience and multi billion dollar pre-existing infrastructure, provide a unique position to commercialise the resource

Focussed Commercialisation plan

2 year drilling, workover and fracture stimulation program targeting Moomba REM shale and Nappamerri Trough

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