



Santos operated Moomba gas processing plant, Cooper Basin

Moomba 191 and Beyond

Diana Hoff – VP Technical & Engineering

28 August 2013

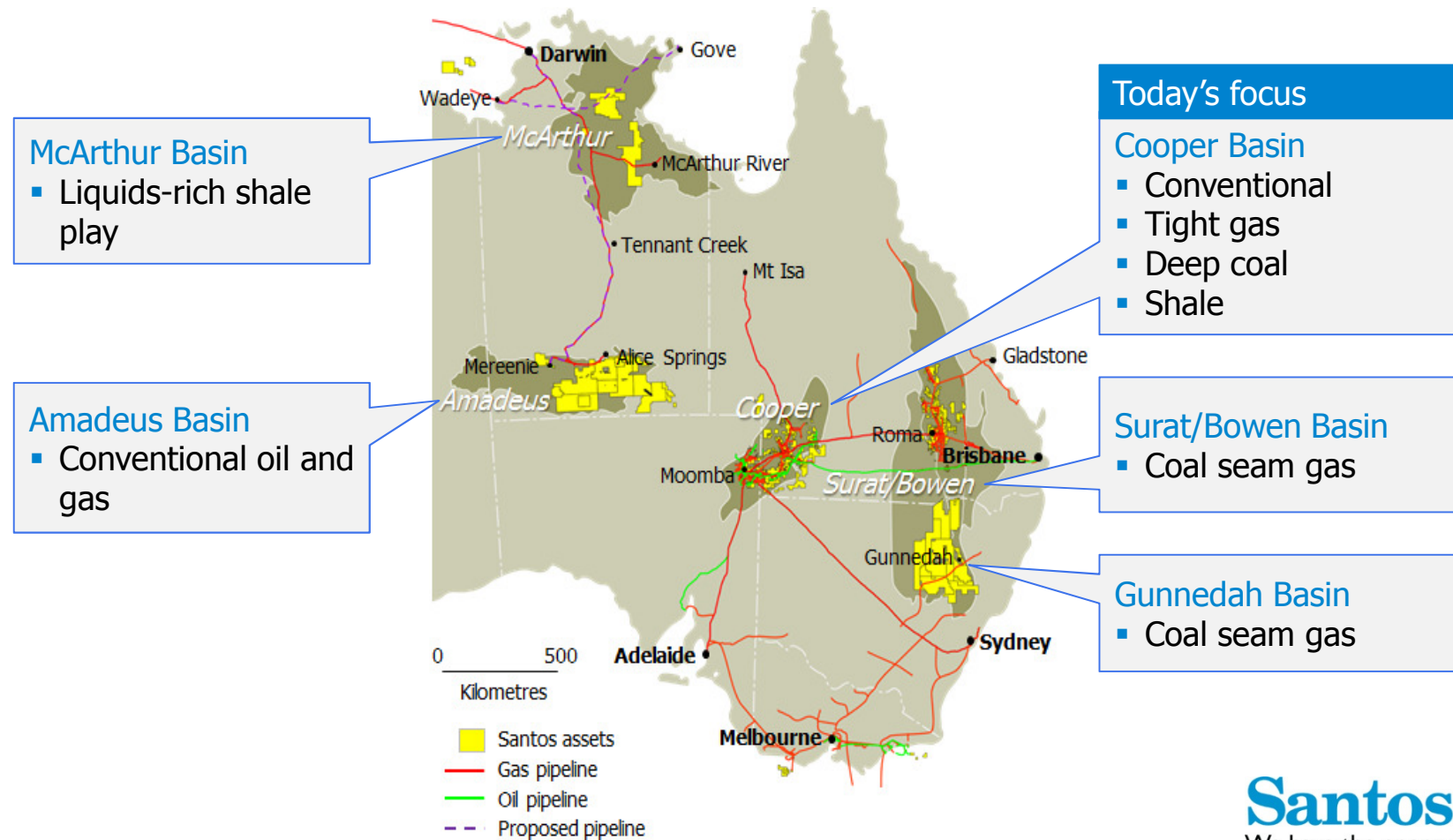


Session outline

- 1 Santos unconventional history
- 2 Operational learnings
- 3 Cooper Basin investment

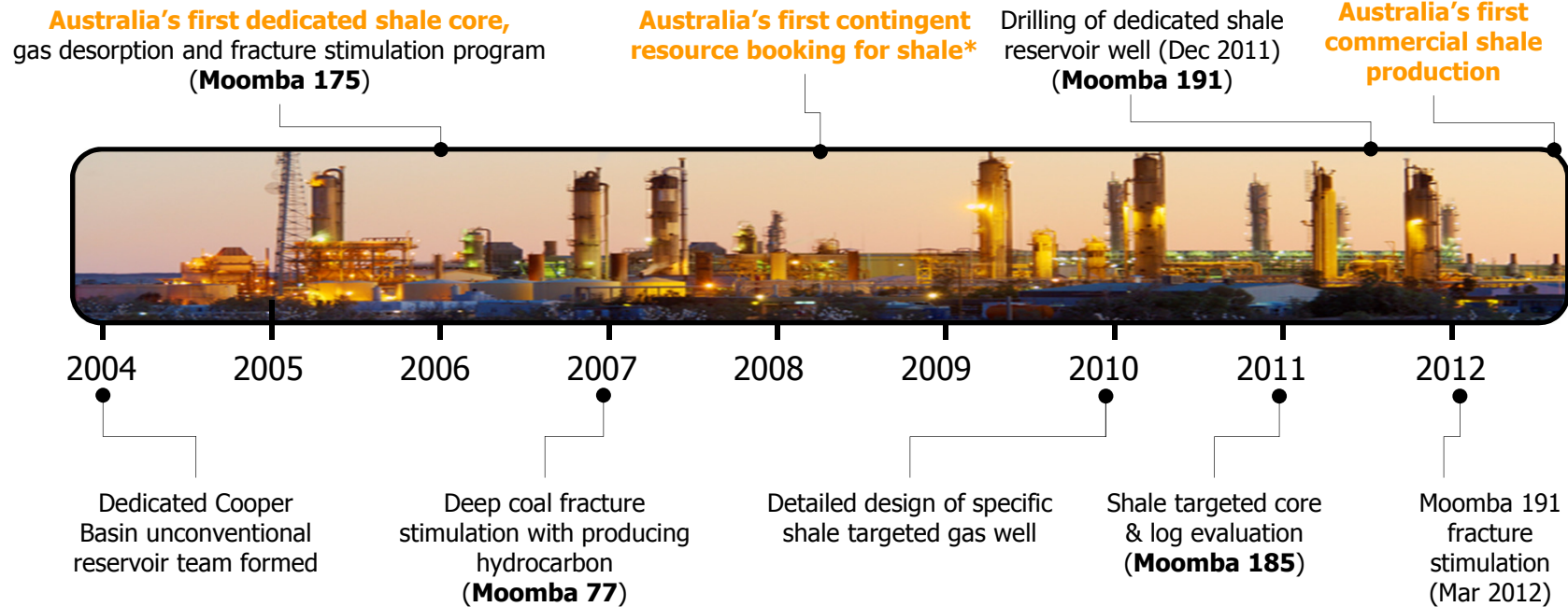
Santos unconventional footprint

Portfolio of multiple play types spread across eastern Australia



Santos in the Cooper Basin

Over 50 years of E&P experience with a pioneering unconventional resource program



Santos understands the Cooper rocks

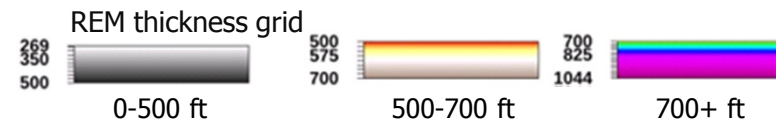
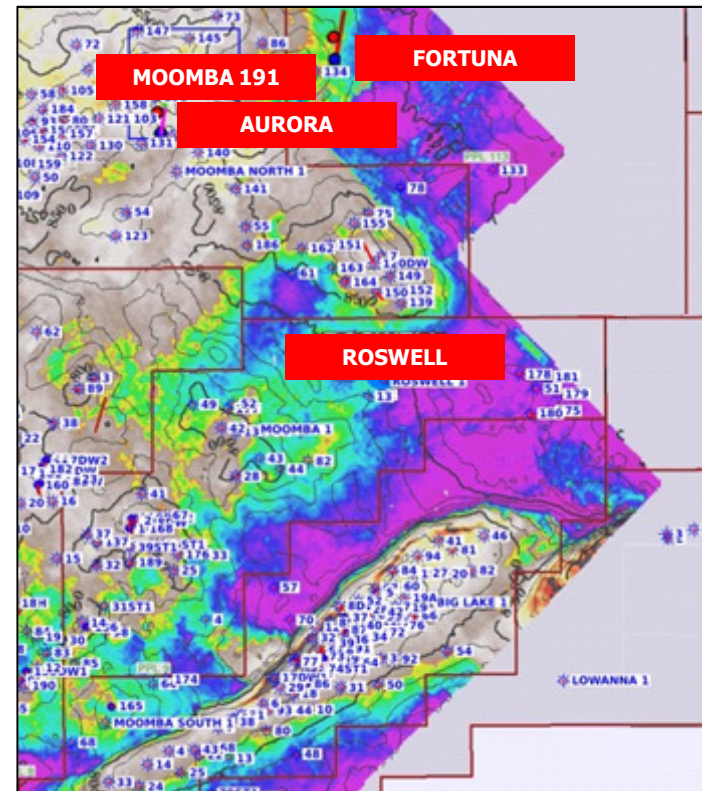
Santos has significant understanding of the Cooper Basin and Moomba REM continuity and thickness trends

- 50+ years of operational subsurface data
- >4,000 feet of core
- >300 fracs

Moomba REM

- > 940km² (363 sq mi) of 3D seismic coverage
- 106 wells drilled through the REM

Moomba REM thickness



* REM – Roseneath, Epsilon and Muturee shales zones

Moomba 191 success

Australia's first commercial shale production commenced 28 September 2012

- Initial flow rate
3 mmscf/d
- Current flow rate
2 mmscf/d
- Location close to existing pipeline and infrastructure allowed quick tie-in
 - 8km (5mi) to Moomba Plant
 - 350m (1150ft) to tie-in



Leveraging existing infrastructure

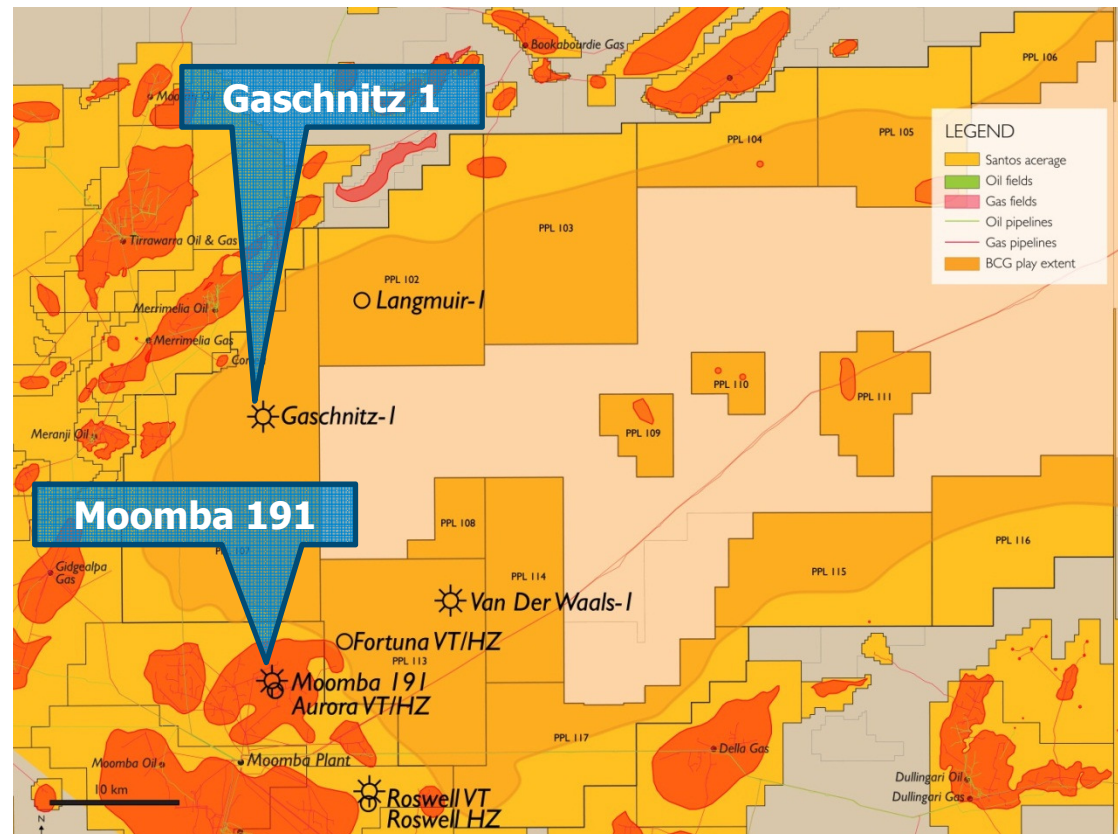
Santos operates and jointly owns all major infrastructure and processing facilities in the Cooper Basin

- 550 TJ/d sales gas capacity (519 mmcf/d) (Moomba & Ballera with plans to expand)
- 70 PJ gas storage (66 bcf)
- 6,000 km flow lines (3,728 miles)
- 100,000 horsepower satellite compression
- Access to East Coast gas market
- Firm pipeline capacity from Moomba to Wallumbilla gas hub



Beyond Moomba 191

- 85 Tcf of gross technically recoverable unconventional gas
- 9 well, \$200m gross program over 2yrs
- Two play focus:
 - Basin Centred Gas (Gaschnitz 1)
 - REM shale (Moomba 191)



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CSG drilling cost reductions

Significant time and cost efficiencies are continuing to be achieved as a result of:

- Reduction in number of well designs
- Focussed regional campaigns has led to a factory drilling approach, lowering costs

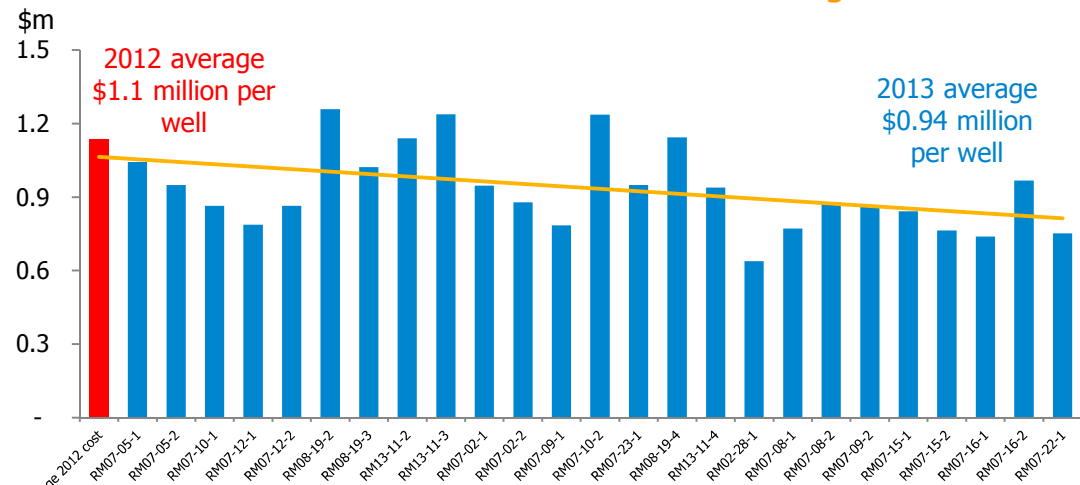
Roma

- 14% reduction in drilling costs for Roma deviated wells in Q1 2013
- >40% reduction since FID

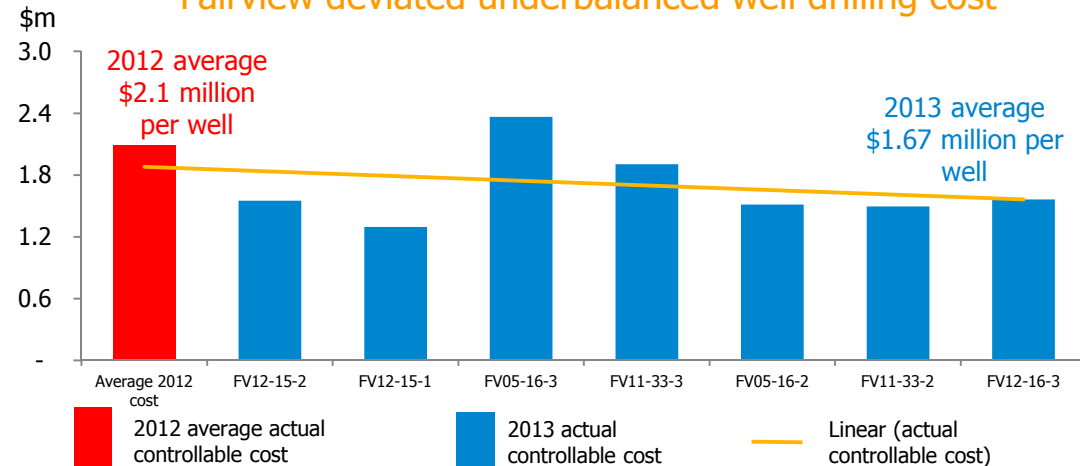
Fairview

- 19% reduction in drilling costs for Fairview deviated wells in Q1 2013
- >30% reduction since FID

Roma deviated overbalanced well drilling cost

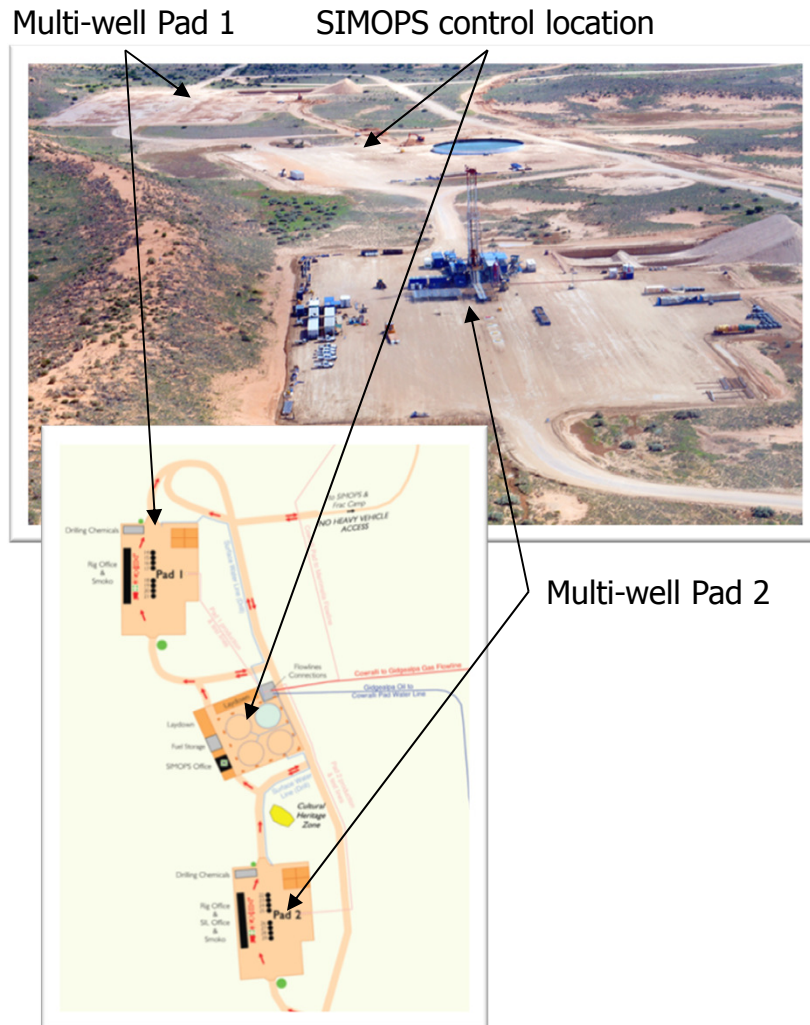


Fairview deviated underbalanced well drilling cost



Cowralli multi-well pad performance

Cowralli multi-well drilling & SIMOPS



Improving operational efficiency

Projected:

- 15-20% cheaper than a single well
- ~55% lease size reduction per well
- ~50% frac savings
- Rig moves down ~4 days to <1 day
- Average frac stages/d up ~1.5 to ~4
- Connection time down ~25%
- Well payback period reduced by ~12 months

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Cooper Basin investment

Focussing on increasing volume and reducing costs to deliver a higher margin business

1. Existing facilities reliability



Reliability

- Maintenance strategies delivering record facilities utilisation, production and cost benefits

Readiness for 2015 delivery

- Planned Cooper Basin major outages over 2013-15

2. Upstream development



Well-head production capacity

- Growing through increased drills, productivity and efficiencies

Cost reduction step-change

- Multi-well pad drilling technology
- SIMOPS approach to drilling, completions and connections

3. Cooper Infrastructure Expansion Project \$800m gross Stage 1 spend 2013-17



Stage 1 In-field

- Expansion of four key field compression stations
- Installation of new trunk pipelines between Moomba and Gidgealpa



Stage 1 Moomba Gas Plant

- Install new Moomba CO₂ train for removal of additional 1,000 ktpa
- Installation of new Moomba export compression to enable firm sales gas transport from Moomba to QLD

Australia's unconventional opportunity

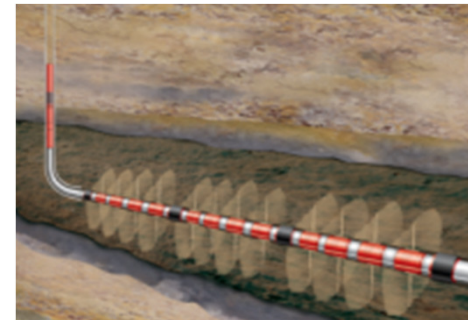
Resources

- Significant resources underpinned by unprecedented Asian demand for energy



Technology

- Australia well placed to adopt NA shale lessons with early positive results



Infrastructure

- Limited infrastructure means access to processing and marketing will be critical





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