

# Cooper and GLNG Investor Visit

20 - 23 April 2015

Moomba gas processing plant, GLNG Fairview Hub 4, GLNG LNG tanks

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## Disclaimer and important notice

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All references to dollars, cents or \$ in this document are to Australian currency, unless otherwise stated. All references to project completion percentages are on a value of work done basis, unless otherwise stated.

EBITDAX (earnings before interest, tax, depreciation, depletion, exploration, evaluation and impairment), EBIT (earnings before interest and tax) and underlying profit are non-IFRS measures that are presented to provide an understanding of the performance of Santos' operations. Underlying profit excludes the impacts of asset acquisitions, disposals and impairments, as well as items that are subject to significant variability from one period to the next, including the effects of fair value adjustments and fluctuations in exchange rates. The non-IFRS financial information is unaudited however the numbers have been extracted from the audited financial statements.

This presentation refers to estimates of petroleum reserves and contingent resources contained in Santos' Annual Reserves Statement released to the ASX on 20 February 2015 (Annual Reserves Statement). Santos confirms that it is not aware of any new information or data that materially affects the information included in the Annual Reserves Statement and that all the material assumptions and technical parameters underpinning the estimates in the Annual Reserves Statement continue to apply and have not materially changed.

The 2P reserve and 2C contingent resource estimates on slides 18 and 21 are based on, and fairly represent, information and supporting documentation prepared by, or under the supervision of, Marie-louise Lees, Anthony Western and Wade Bard who are full time employees of Santos Limited and members of the Society of Petroleum Engineers.

The estimates of petroleum reserves and contingent resources contained in this presentation are as at 31 December 2014. Santos prepares its petroleum reserves and contingent resources estimates in accordance with the Petroleum Resources Management System (PRMS) sponsored by the Society of Petroleum Engineers (SPE). Unless otherwise stated, all references to petroleum reserves and contingent resources quantities in this presentation are Santos' net share. Reference points for Santos' petroleum reserves and contingent resources and production are defined points within Santos' operations where normal exploration and production business ceases, and quantities of produced product are measured under defined conditions prior to custody transfer. Fuel, flare and vent consumed to the reference points are excluded. Petroleum reserves and contingent resources are aggregated by arithmetic summation by category and as a result, proved reserves may be a very conservative estimate due to the portfolio effects of arithmetic summation. Petroleum reserves and contingent resources are typically prepared by deterministic methods with support from probabilistic methods. Petroleum reserves replacement ratio is the ratio of the change in petroleum reserves (excluding production) divided by production. Conversion factors: 1PJ of sales gas and ethane equals 171,937 boe; 1 tonne of LPG equals 8.458 boe; 1 barrel of condensate equals 0.935 boe; 1 barrel of crude oil equals 1 boe.

# Santos' Eastern Australia Operations

Leveraging the past to create value for the future

James Baulderstone  
Vice President Eastern Australia

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Moomba processing plant, Cooper Basin



## East Australia value remains strong



## Value creation through integrated portfolio of resources and infrastructure

- › Gas capacity, production and resource position on track to meet commitments
- › Significant cost savings in response to fall in oil price
- › Gas demand continues to drive Cooper's long term potential
- › Santos has a unique integrated value proposition
- › Strong record of growing expected recovery with large future potential
- › Reserve build and production dictated by forward capex
- › Cooper infill reserve conversions - positives and negatives
- › Encouraging results across all 3 play types
- › Cooper Deep Coal looks highly prospective

## Safety performance

## Strong emphasis on Process Safety and Work Health Safety

### > Process Safety

- Proactive safety critical maintenance embedded
- Plant and Pipeline Integrity Programs (8,000km pipe network)

### > Contractor Management

- Robust systems and processes to drive contractor performance
- Driving improved safety culture and safety leadership

### > Personnel Safety

- Cooper Basin 4 months LTI free
- Driving behaviour including in-vehicle monitoring
- Working in the heat
- Drilling safety focus on dropped objects, automated equipment, well control and competency and leadership



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## Cooper Basin

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## Key themes continue to drive forward outlook

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Moomba Plant, Cooper Basin

- › Sustainability of East Coast business in challenging market conditions
- › Transformational increase in natural gas demand
- › Infrastructure positions business to deliver long term value

## Cooper Gas Performance

## Improved key metrics

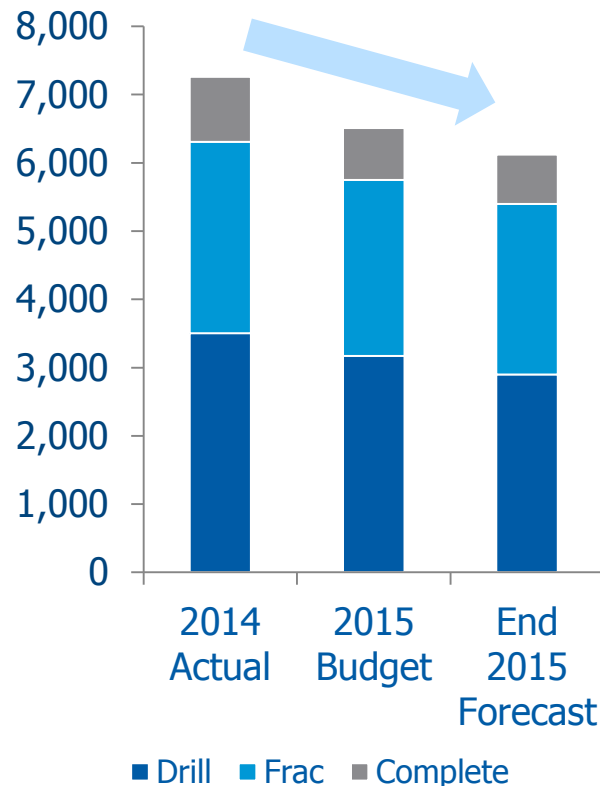
<b>Gas well head capacity</b>	<ul style="list-style-type: none"><li>▪ <b>Increased well head capacity by 15% YE 2012 to YE 2014</b> <i>(from 393 to 453 mmscf/d)</i></li></ul>		<b>15%</b>	
<b>Q-Q production</b>	<ul style="list-style-type: none"><li>▪ <b>Grown Q1 to Q1 gas production for the last two years</b> <i>(from Q113 13.7 PJ, Q114 14.4 PJ, Q115 14.8 PJ)</i></li></ul>		<b>8%</b>	
<b>Reserves and resources</b>	<ul style="list-style-type: none"><li>▪ <b>Cooper expected recovery increased by 17% since 2007</b> <i>(36% when contingent conventional resource bookings included)</i></li></ul>		<b>17%</b>	
<b>EBITDAX margin</b>	<ul style="list-style-type: none"><li>▪ <b>Strong EBITDAX margin of greater than 55% for past three years</b></li></ul>		<b>&gt;55%</b>	
<b>Cost Control</b>	<ul style="list-style-type: none"><li>▪ <b>16% reduction in forecasted year end well costs versus 2014</b></li></ul>		<b>16%</b>	

## Cooper meeting the cost challenge

Reducing costs - critical response to challenging market conditions

### Decreasing well costs<sup>1</sup>

AUD '000



<sup>1</sup> Well costs for a standard single vertical well with 5 fracture stages

### Cost savings delivered across all areas...

- ↓ 25% reduction in overall 2015 Cooper Basin capital spend vs 2014
- ↓ Work program reductions and efficiency initiatives resulted in 20% workforce reduction
- ↓ 35% reduction in Moomba accommodation levels since December 2014 (1250 to <800)
- ↓ 16% reduction in forecasted year end well costs versus 2014
- ↓ 25% reduction in drilling rig day rates
- ↓ 20-40% reduction in well evaluation costs
- ↓ \$450k/well savings on frac and completions

**...continuing to drive lower**



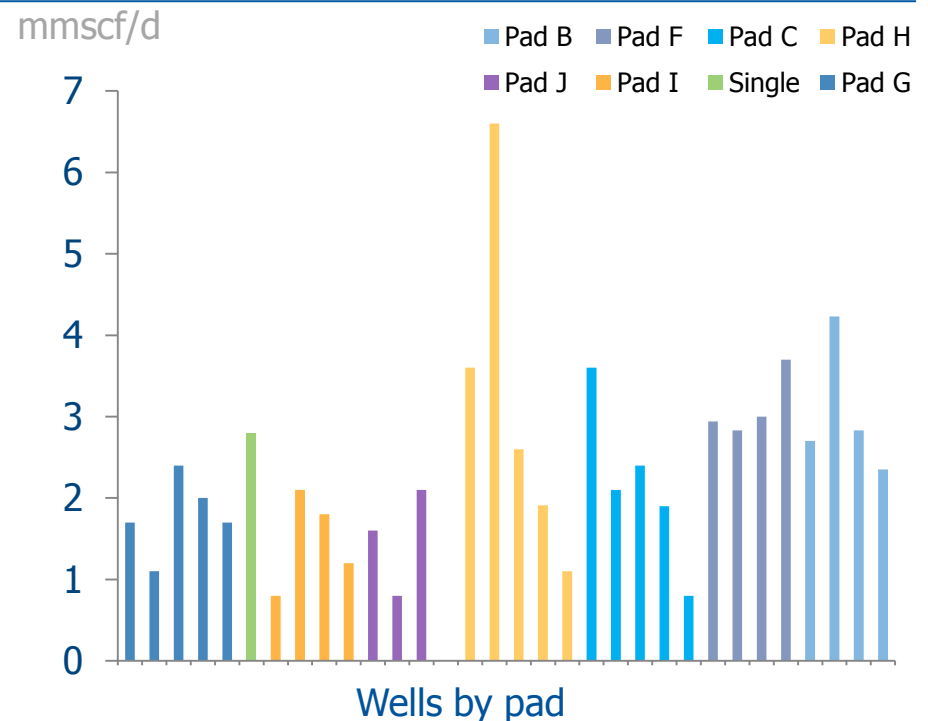
### Excellent execution efficiencies and solid reservoir performance

- › 2H 2014: 32 wells drilled, 24 wells fractured (203 stages), 23 wells brought online, monthly performance above or tracking forecast
- › 1Q 2015: 2 pads exceeded expectations, further 2 pads on track to deliver AFE expectations

#### Big Lake Overview

Wells drilled	32
Capital	\$270-275 million
2P developed	100 bcf
Capacity add	~76 mmscf/d
Development cost	~\$4 GJ

### Big Lake Infill Programme: Well Head first 30 day average rates



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## Strategy and market opportunity

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Converting strategic potential into value

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**Proudly powering Australian business**

Santos and its joint venture partner Origin are proud to have extended our gas supply to Genos, an Australian advanced manufacturer of plastics.

The extended contract enables Genos to maintain and expand its operations at Botany Bay in Sydney, securing over 300 jobs at the plant plus thousands of others at NSW businesses that rely on Genos products. It's just one way Santos is powering Australian business.

L-R: Genos Chief Executive Officer, Jonathan Clancy, Genos Operations Technician, Daniel Stojanovic, Santos VP Eastern Australia, James Bartholomew.

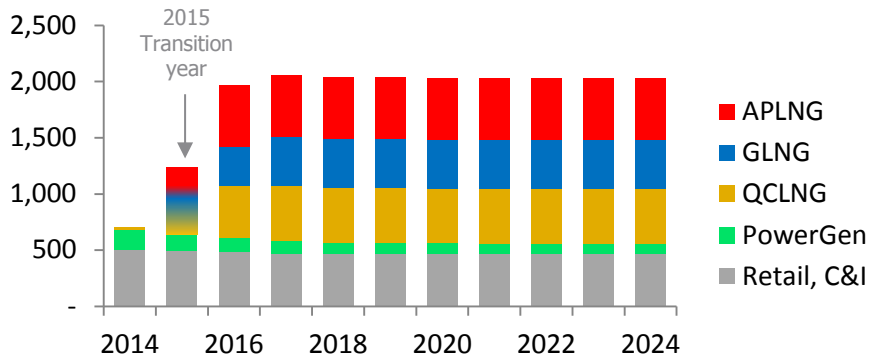
**Santos**  
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## Eastern Australia gas market portfolio

Positioned to capitalise on the changing market dynamics with Cooper playing a central role

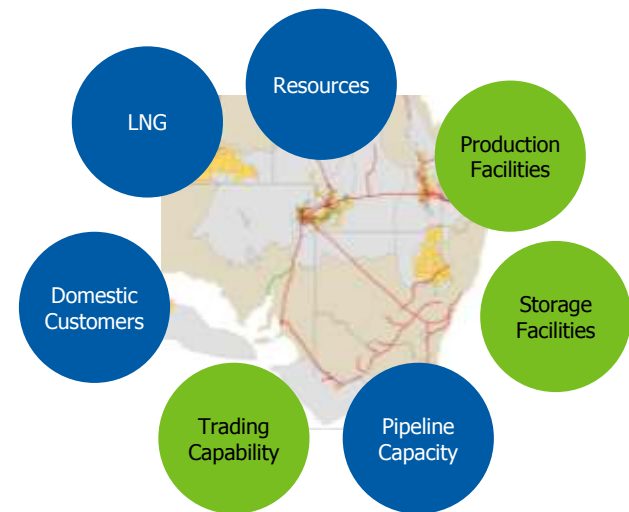
### Changing market dynamics

#### Tripling of Eastern Australia Gas Demand (PJ)



- Gas prices likely to remain robust at >A\$8/GJ
- Transformation of gas market re-rates Santos' portfolio:
  - New sources of gas required pre-2020 to meet demand
  - Uncontracted gas reserves more valuable (Cooper, Kipper)
  - Opportunity to unlock Cooper Basin large undeveloped gas resources
  - Evaluation of new supply, Narrabri Gas Project, offshore Vic supply (Sole, VIC/P44)

### Santos' integrated value proposition



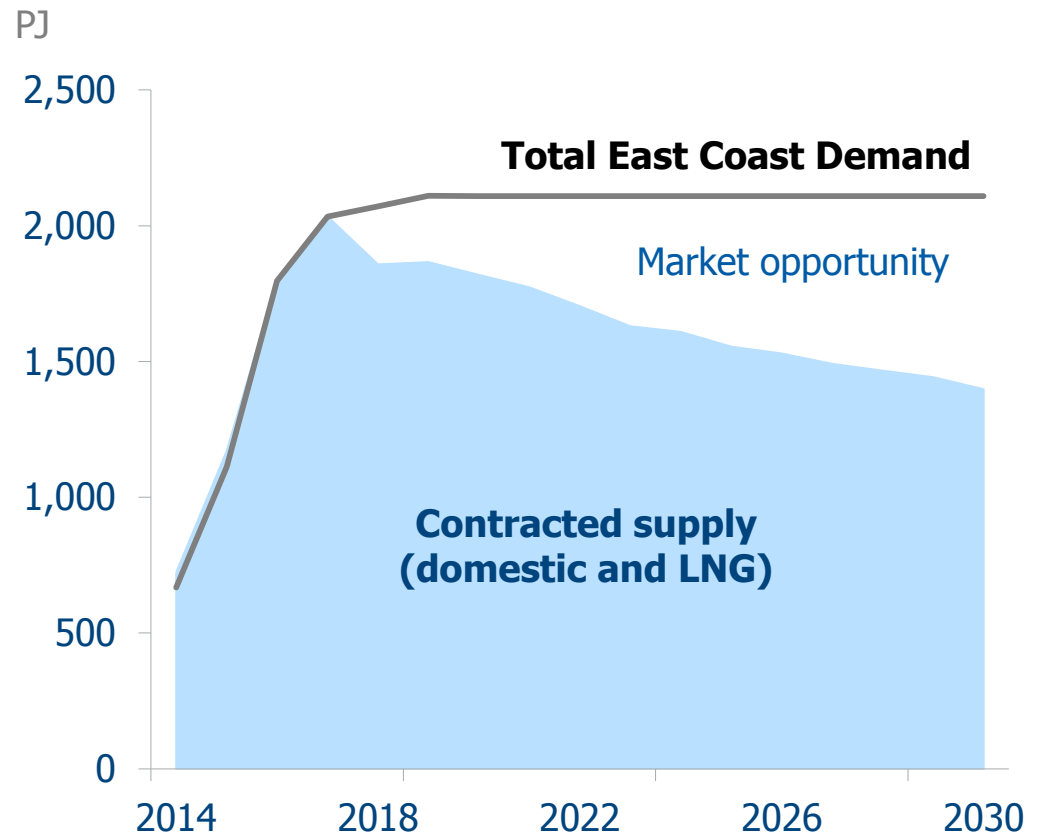
- Scale of demand presents opportunities for Cooper asset
- Moomba is open for business, 3<sup>rd</sup> Party processing
- Increasing ability to trade and transport gas
- Gas storage in Cooper (70 PJ existing plus greenfield opportunities)

## Market opportunity

Significant opportunity to supply uncontracted demand

- › Current contracted supply is insufficient to meet forecast demand
- › Uncontracted and new supply projects will be needed to meet growing demand
- › Santos is ideally placed to take advantage of this opportunity:
  - Existing and new supply projects
  - Integrated infrastructure position
  - Processing third party volumes
  - Supply portfolio

### Eastern Australia contracted supply and demand



SOURCE: CORE ENERGY GROUP 2014, EASTERN AUSTRALIA GAS OUTLOOK 2035

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## Leverage our strategic infrastructure footprint

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## Linking resources and market through our unique infrastructure positions

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### Process

- › Moomba is “open for business”
- › Increases throughput: increased revenue and reduced unit costs
- › Third party oil business well established processing ~20,000 bopd



### Aggregate / Arbitrage

- › Aggregate third party raw and sales gas at Moomba
- › Manage supply volatility through gas storage and supply portfolio
- › Realise arbitrage value to strong Queensland markets



### Store

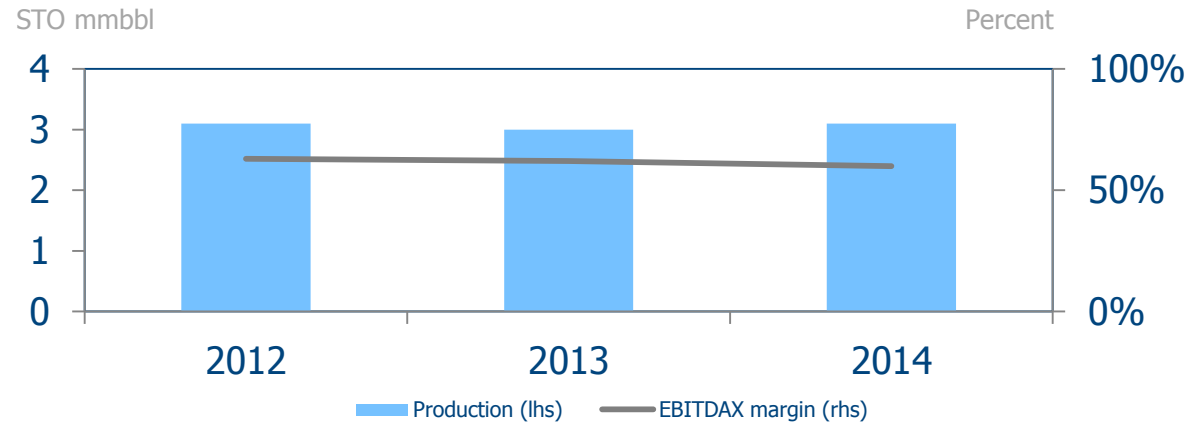
- › Optimise Cooper Basin storage (brownfield, greenfield):
  - 70 PJ existing capacity at Moomba/LDB and Ballera/Chookoo
  - Multiple greenfield sites scoped
- › Seasonal buy-sell arbitrage
- › Third party storage services

## Cooper Oil

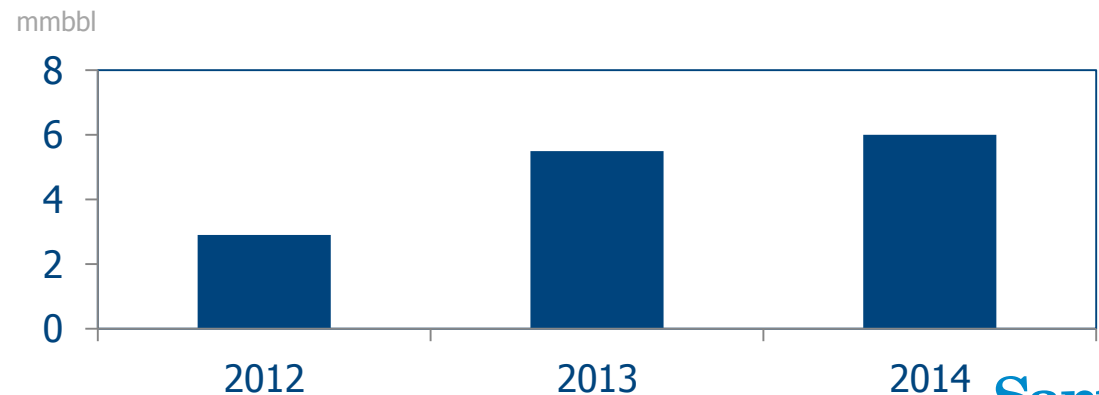
- › Cooper oil production has remained strong ~3 million bbl per year
  - › Robust 5 year rolling average 2P RRR of 67% in a mature basin
  - › Scale-able business, 2015 scaled down – ready for higher oil prices
- 
- › Cooper has an established third party<sup>1</sup> oil business
  - › Third party sales have typically achieved a >10% gross margin
  - › Increased throughput drives revenue and reduces unit costs for Santos' base business

Strong production combined with well established and growing third party revenue stream

### Cooper oil production and EBITDAX margin



### Third party oil volumes<sup>1</sup>



<sup>1</sup> Third party is defined as a JV with no parties the same as the SACB JV

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## Cooper Gas

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Balancing resource conversion, delivering contracted volumes and future growth potential

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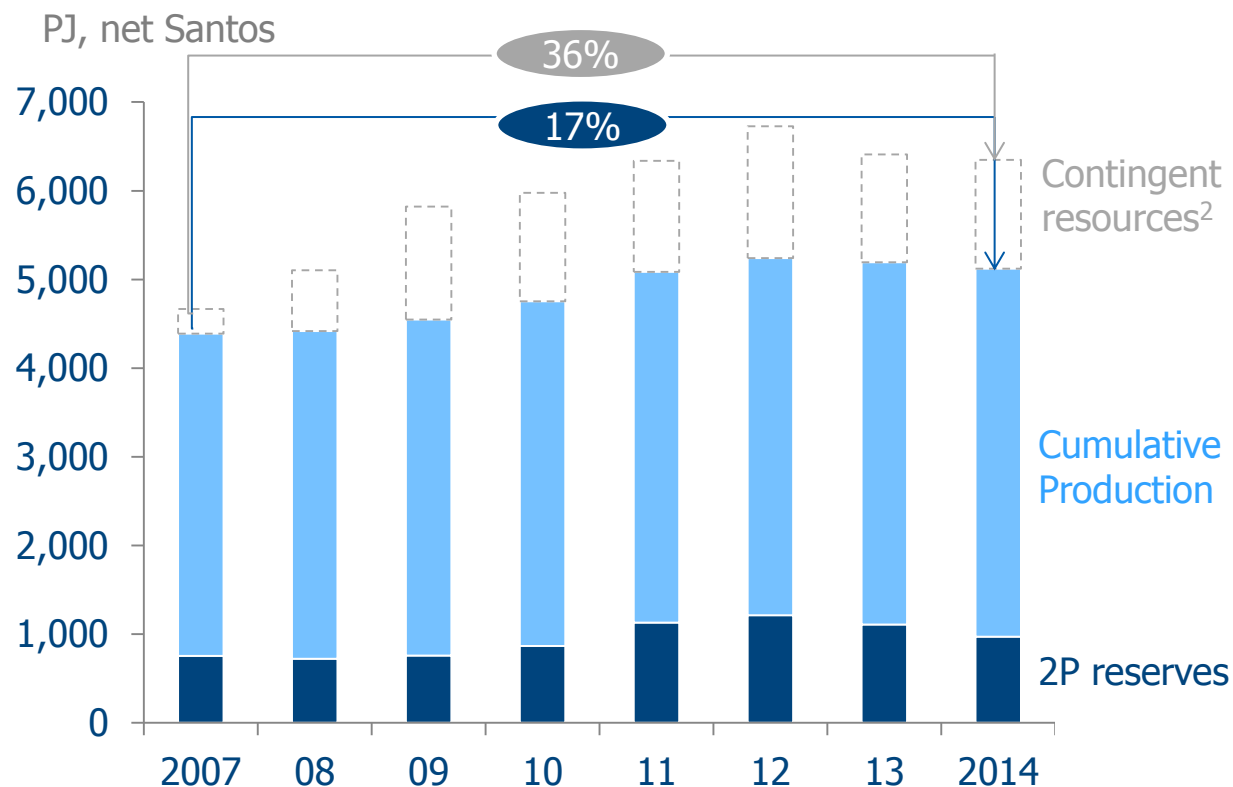
Big Lake, Cooper Basin

## Cooper Basin gas reserves and resources

- › Increased expected recovery by 17% in a mature basin
- › Conventional 2C bookings also strong demonstrating positive long term trend
- › Constrained exploration and appraisal drilling resulted in slowing of conversion
- › YE14 2P reserves ~15 years of production

Expected recovery increased by 17% since 2007

### Santos estimated expected recovery<sup>1</sup>, year end 2007–14



<sup>1</sup> Estimated expected recovery is equal to cumulative production plus remaining 2P reserves

<sup>2</sup> 2C resources (excludes unconventional contingent resources)

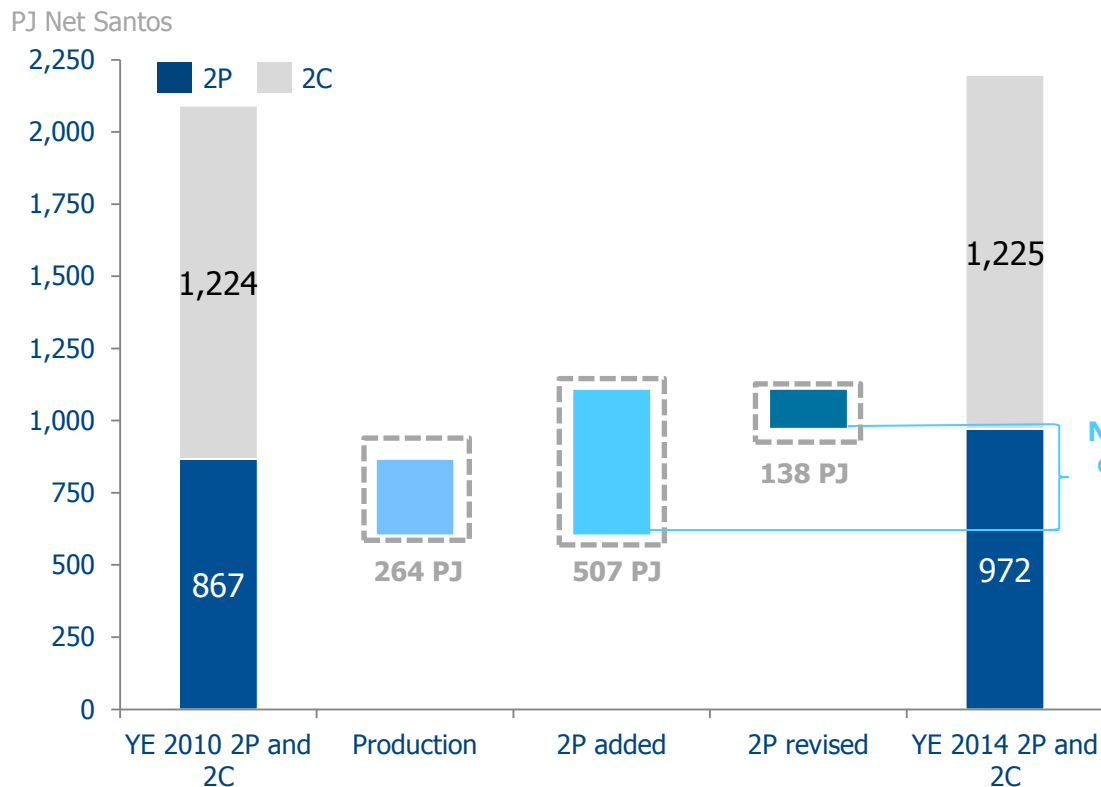


## Cooper Basin reserves and resources

Strong growth in conventional 2P since 2010

Greater Tindilpie downside result and Horizon "gross up" impacting reserve build

### Comparing year end 2P reserves and 2C resources, 2010-2014, by area



2C resource excludes unconventional contingent resource

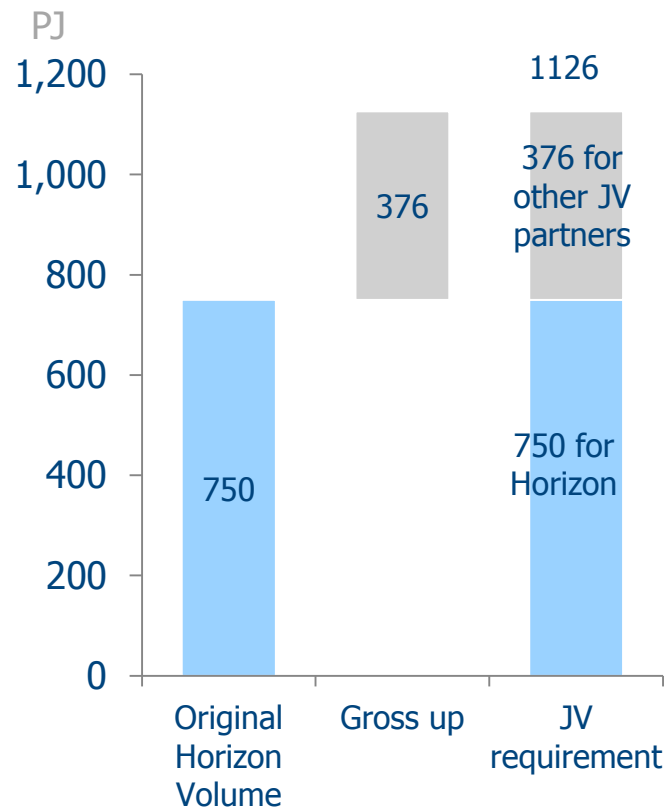
### 2011 2P Reserves Target

- > 1,000 PJ target predicated on:
  - Early infill pilot results
  - US analogues
  - Ongoing appraisal program
- > 2P reserve additions slowed due to Greater Tindilpie outcome and requirement to "gross up" Horizon contract
- > Unconventional 2C at 1,721 PJ excluded from the analysis

## Delivering Horizon

Grossing up of Horizon has necessitated a focus on deliverability

### “Gross up” of Horizon



- › Origin and Beach elected not to supply equity volumes into the Horizon contract
- › Required a ~50% increase in developed 2P to meet the contractual commitment (750 to 1126 PJ)
- › Necessitated capital to be prioritised on development over reserve build in implementation period
- › Well capacity build on track to meet Horizon contract

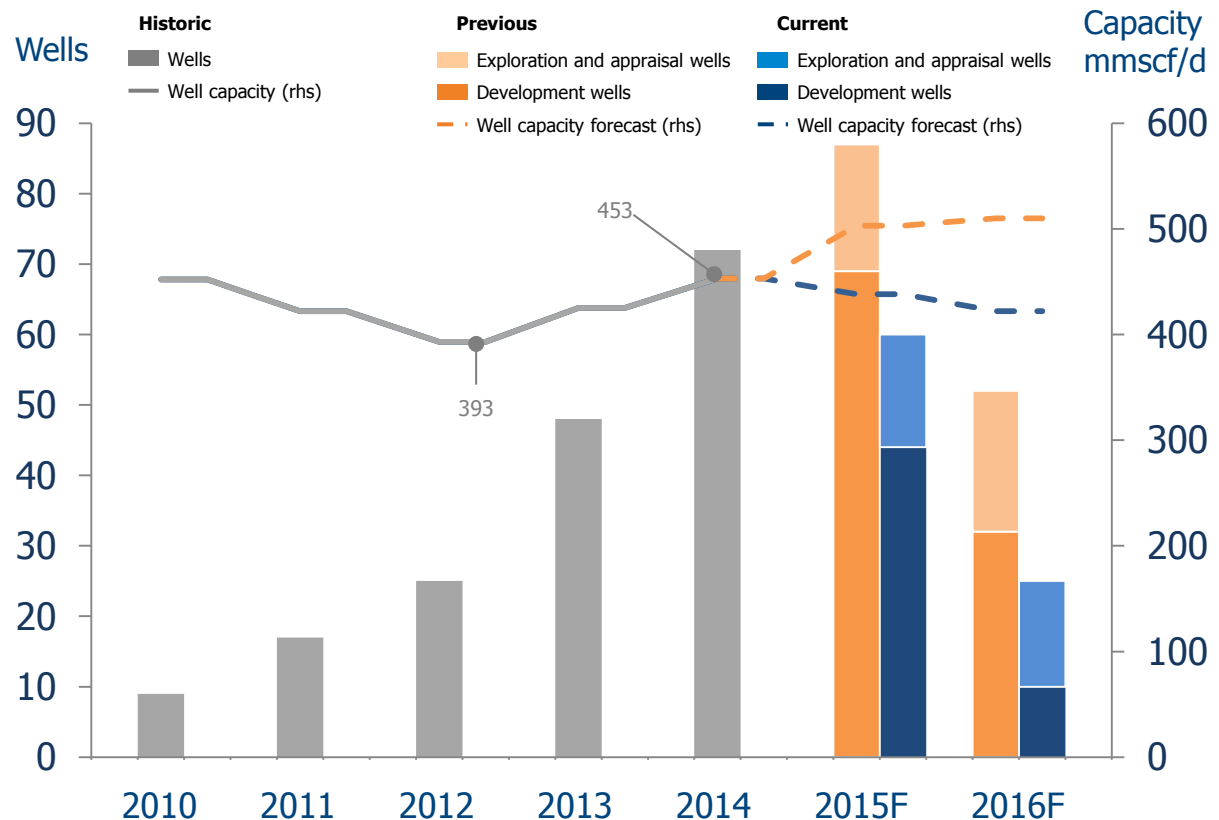
## Building well capacity

- › Capacity increased by ~15% 2012-14
- › Recent capex reductions will result in deferred drilling and lower capacity (rigs from 7 to 3)
- › Train 8 capex deferral maintains 2015 Moomba sales capacity at ~375 TJ/d – retain ability to quickly expand processing to 420 TJ/d
- › Appraisal drilling continues to rebuild future well inventory

Focused effort to increase well capacity from 2012

Recent cuts to forward capex will reduce capacity in the short term

### Cooper gas drilling & well capacity<sup>1</sup> build



<sup>1</sup> Well capacity is gross raw gas capacity including CO<sub>2</sub>, fuel, flare & vent and in gross terms.

## Cooper infill program

Greater Tindilpie disappointed whilst Big Lake delivered on expectation



Drilling at Big Lake

### Greater Tindilpie (GT) Development Drilling

- GT prioritised as considered **most suitable for large pad drilling** to achieve US-like cost savings
- Cowralli 16 well pad drilled in 2013; **delivered on time and under budget** however downside result on expected production and 2P developed reserves
- Initial production rates <50% AFE at 16 mmscf/d
- **Results confirmed GIIP** but more challenging to extract

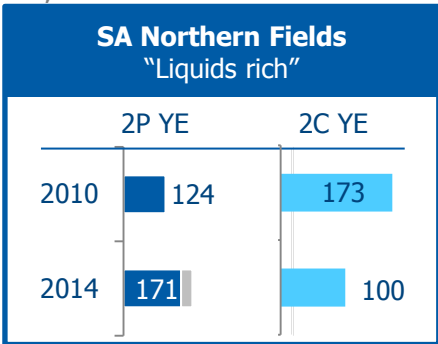
### Big Lake Infill Drilling

- Large scale development program yielded a **more efficient field development versus historical practice**
- 32 wells drilled, capacity add of 76 mmscf/d, 100 bcf 2P reserve developed at a development cost of ~\$4GJ
- Development concept of 4-6 well pads with targeted frac placement
- **Execution efficiencies quantum step change for Cooper Basin:**
  - Achieving up to **4 stages per day** (up from 2 per day on a standalone vertical)
  - **20% lower well costs**, comparing a 2010 vs 2015 drill of normalised scoped well, driven by pad efficiencies

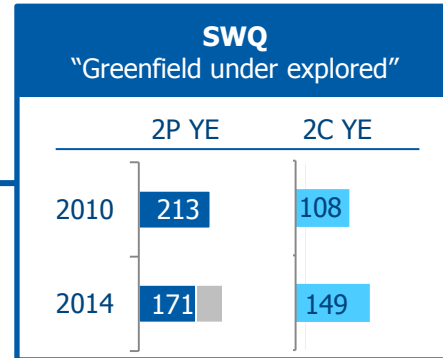
# Future of the Cooper Basin

Existing resources are only part of the future – independent experts highlight multi-tcf conventional upside potential<sup>1</sup>

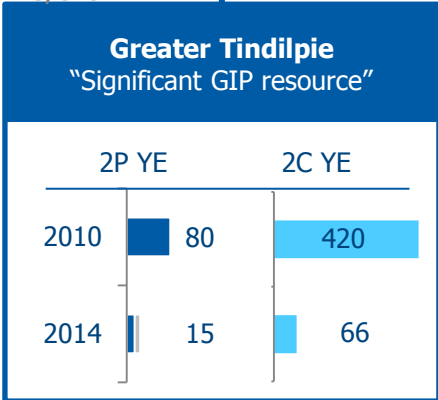
PJ, STO



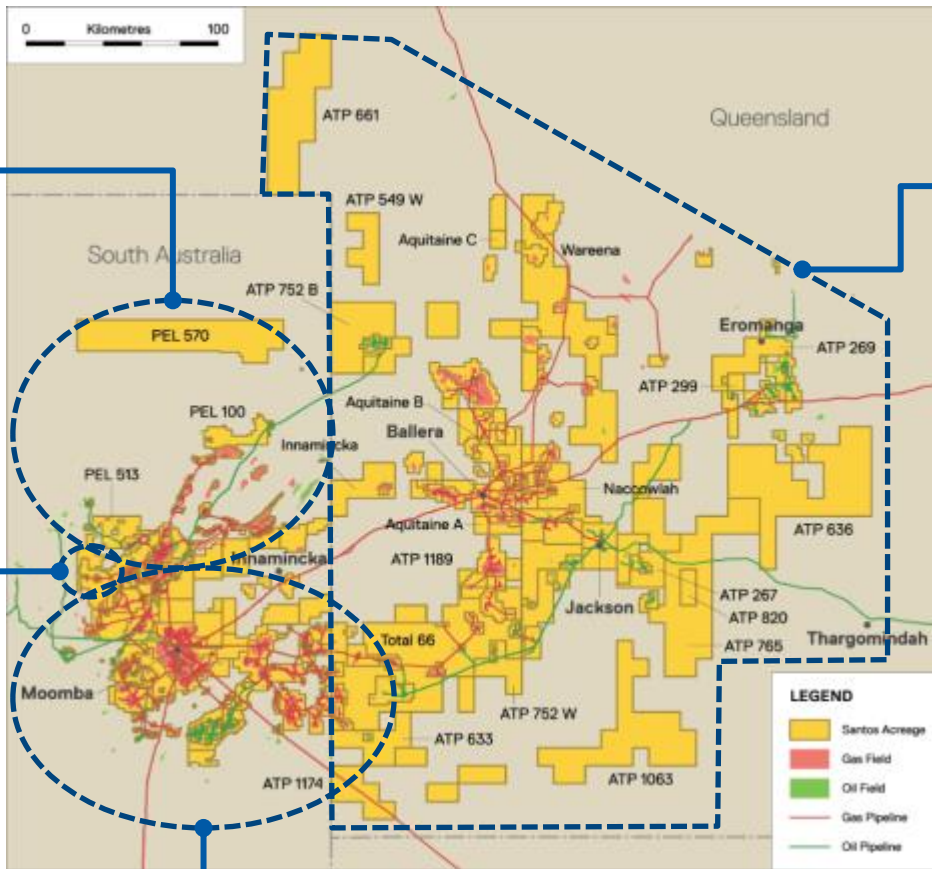
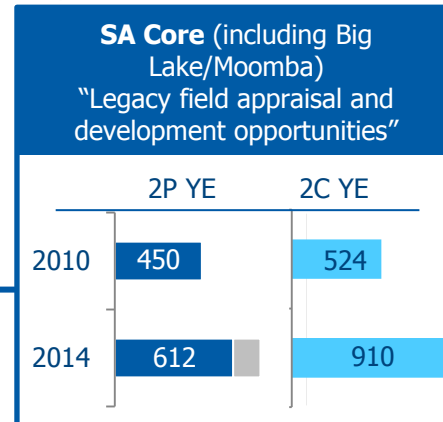
PJ, STO



PJ, STO



PJ, STO



■ Production

<sup>1</sup> Assessments of overall Cooper Basin conventional prospective resources conducted independently by Core Energy and USGS  
 ▪ Core Energy: Eastern Australia Gas Outlook – 2035, November 2014  
 ▪ USGS: World Conventional Gas Resources

## Queensland Cooper gas

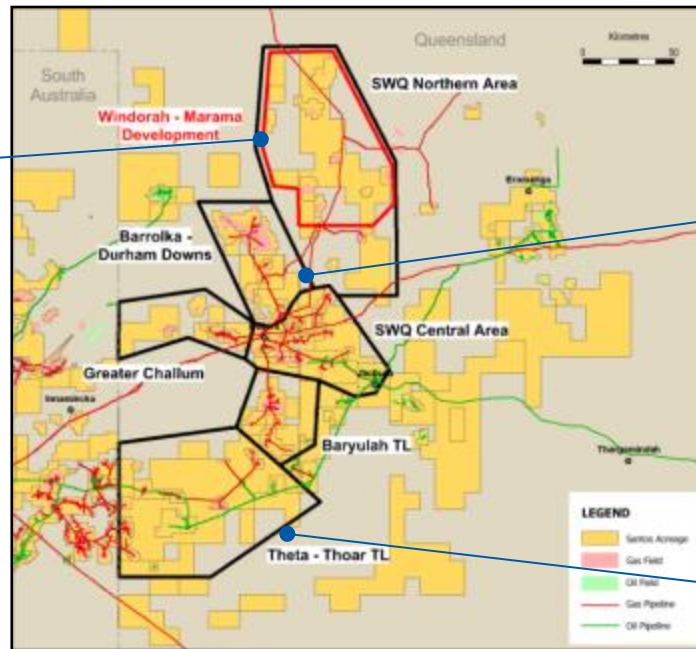
Highly under-explored area with green and brownfield growth opportunities

Opportunity to explore, appraise and commercialise conventional resources

### Attractive brownfield opportunities for current ~176 bcf 2C STO plus Material prospective resources

#### 1 Windorah-Marama

- Greenfield project
- Initial phase sanctioned December 2014
- Expect to produce 15 bcf 2P STO and commercialise 26 bcf 2C STO
- Significant prospective resources



#### 2 Barrolka-Durham Downs

- Brownfield project
- 3D seismic acquired over Coolah, currently processing
- Appraisal and development drilling in progress

#### 3 Future potential

- Exploration drilling in ATP1189P
- Exploration and appraisal drilling in the Southern area (Theta Thoar)

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## Cooper unconventional exploration

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Moving from testing to enhancing flow rates

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Roswell-2 horizontal well

# World scale Cooper unconventional resource potential

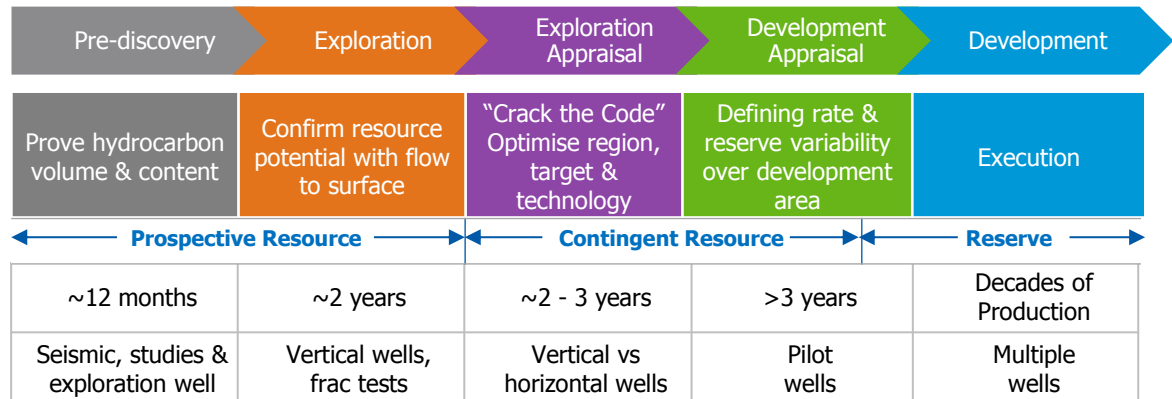
Work program: understanding geology, targeting sweet spots, testing well designs to lower costs and increase flow rate

**McArthur Basin**  
Thick stacked marine shale with rich liquids potential



**Amadeus Basin (Mereenie)**  
Tight gas & hybrid shale play with existing infrastructure

**Cooper Basin**  
Large GIP with 3 Plays,, Deep Coal with liquids potential; Tight Gas & Shale



**Cooper Liquids-rich Deep Coal**  
Progressing via SACBJV add-on coal frac program and world-class R&D activities

## Cooper (3 Plays – Tight Gas, Deep Coal, Shale)

- ✓ Proven gas accumulation, over 3,000 ft of continuous gas column
- ✓ Four proven unconventional targets with demonstrated gas flows from all zones
- ✓ Large resource potential with booked contingent resources
- ✓ Unconventional targets are thick, over-pressured, extensive and fraccable

**Future work program**

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We have the energy.



## Unconventional resources

Three plays successfully tested with program moving to target sweet spots

### Patchawarra Trough

Condensate Rich Deep Coal

- > 10 deep coal 'add-on' frac stages now flow tested across Cooper Basin; **averaging 0.3 mmscf/d** with up to 1 mmscf/d achieved. **Condensate** observed **at 10-70 bbl/mmscf** from Patchawarra Trough coals
- > **PEL 570 liquids-rich Deep Coal Play**; drilling the first dedicated deep coal well with ~5 stages planned; and 3D-seismic
- > Tirrawarra South-1 flowed 0.3 mmscf/d from Deep Coal with condensate at **~40bbbls/mmscf; to be connected as first dedicated deep coal producer in the basin**

### Nappamerri Trough

Multiple Targets

- > Langmuir-1 flowed at **peak rate of 1.5 mmscf/d**
- > Moomba-194 five stage frac achieved **peak rate of 3.5 mmscf/d**
- > 3D seismic acquired in Gaschnitz area for sweet spot identification
- > Further 3 wells drilled in Gaschnitz area accessing stacked BCG tight sands, shales and deep coal

### Moomba Big Lake

Shale & Deep Dry Gas Coal

- > Moomba-191 flowed at commercial rates **>3.0 mmscf/d**
- > Roswell-2H, 5 frac, 1500ft horizontal, flowed stable rate of **0.8 mmscf/d**
- > Moomba-193H, 10 frac, 3000ft horizontal; first horizontal shale producer connected in the basin; currently flowing at **1.1 mmscf/d**
- > Roswell-1: Deep dry gas coal frac test: single stage flowed **~0.4mmscf/d**







- ✓ Vast opportunity across 3 unconventional plays
- ✓ Systematically identifying sweet spots & testing well designs
- ✓ Results encouraging
- ✓ 3 unconventional wells on production (M-191, 193H, 194)

## Unconventional appraisal

Unique RQ / CQ characteristics requires innovative and iterative learning to unlock the resource potential

The economic success of unconventional resource plays depends upon the interplay between:

- › Reservoir Quality (RQ)      “how good is the rock?”
- › Completions Quality (CQ)      “what can we do to the rock to make it flow?”

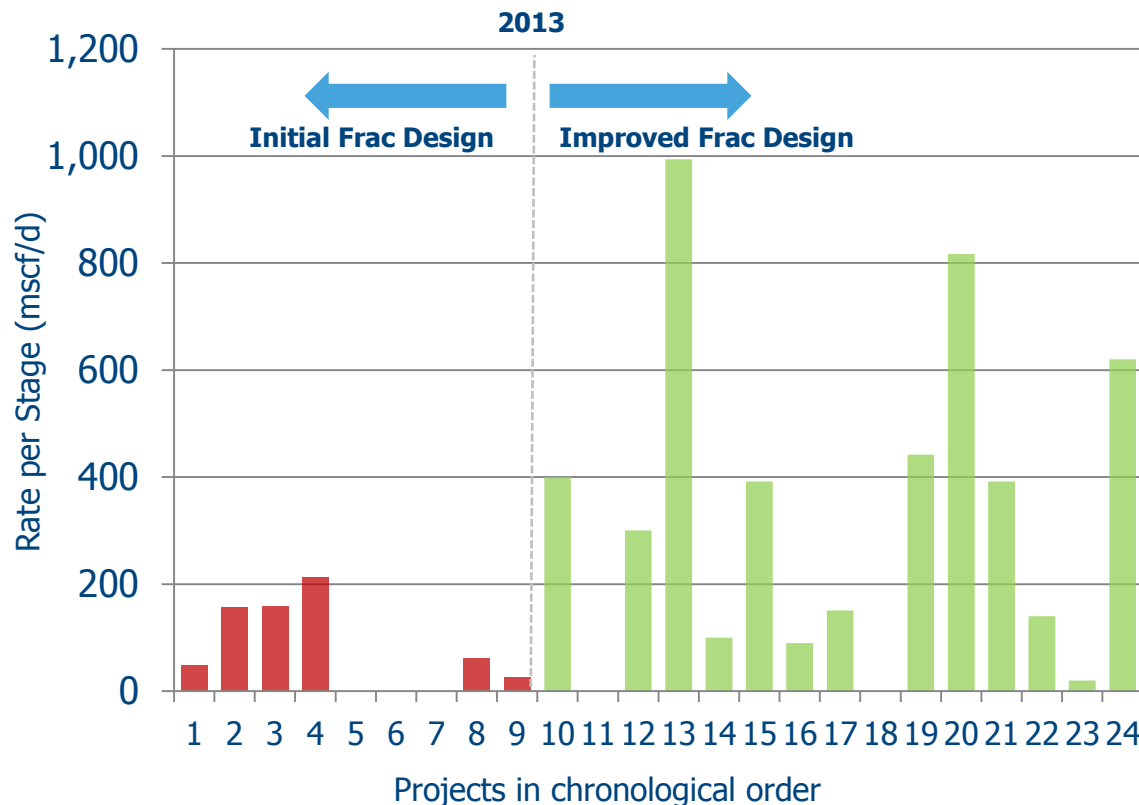
Rank	Region	Targets	Reservoir Quality	Completion Quality	Comments
1	Patchawarra Trough	Deep Coal			<ul style="list-style-type: none"> <li>› High RQ, “the source-rock” with high gas content and liquids in some areas</li> <li>› Add-on coal frac program in SACBJV development wells is de-risking CQ</li> <li>› Rates per frac stage encouraging</li> </ul>
2	Nappamerri Trough	Tight Sand, Shale, Hybrid Shale, Deep Coal			<ul style="list-style-type: none"> <li>› Multi-lithologies within large gas column provides multiple opportunities</li> <li>› Strong overpressure – positive for drive and volumes</li> <li>› Requires effective fracturing in high stress environment</li> </ul>
3	Moomba Big Lake	Shale, Hybrid Shale			<ul style="list-style-type: none"> <li>› Shale has low RQ (storage) &amp; minor over-pressure</li> <li>› Requires higher frac effectiveness (CQ) to compensate</li> </ul>

## Cooper Basin's unconventional resources

- › Encouraging flow results with high liquids content (10-100 bbl/mmscf)
- › Step change in flow performance: 0.4 mmscf/d and increasing flow rates over time
- › Potential to add-fracs to future conventional wells enhancing base business economics
- › Highly material prospective resource

## Patchawarra Trough Deep Coal showing encouraging results

### Increasing flow rates from effective fracture stimulation



## East Australia value remains strong



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# GLNG

Trevor Brown, Vice President Queensland

Rod Duke, Vice President Downstream GLNG

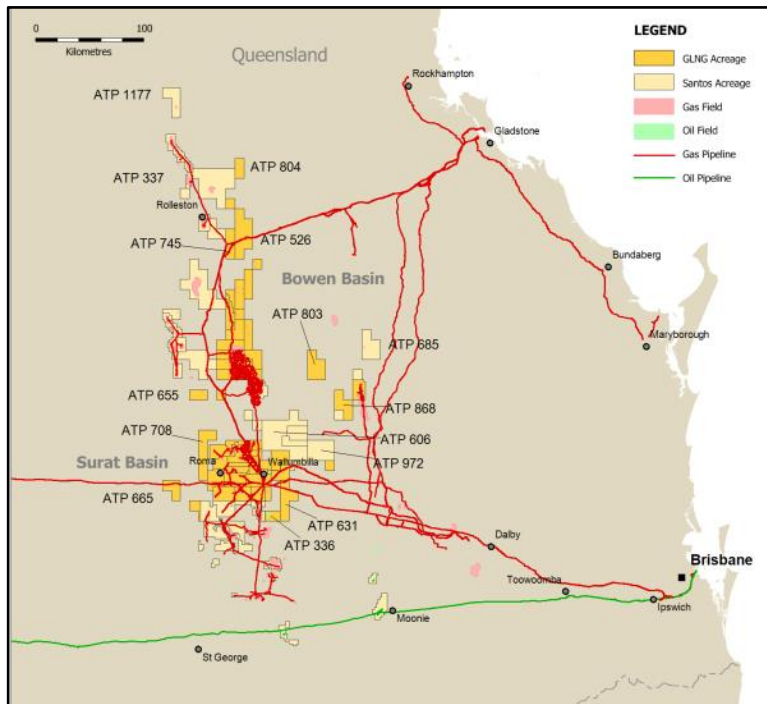
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GLNG Plant, Curtis Island



## Project overview

Integrated LNG project on track for first LNG around the end of the third quarter of 2015, within US\$18.5 billion budget



<sup>1</sup> Based on foreign exchange rates which are consistent with the assumptions used at FID (A\$/US\$ 0.87 average over 2011-15).

### Project partners

Santos (30% and operator), PETRONAS, Total and KOGAS

### Project scope

Existing and sanctioned gross upstream compression capacity 725 TJ/day, additional capacity to be sanctioned  
 Incremental gas supply and infrastructure projects  
 420 kilometre gas transmission pipeline  
 2 train LNG plant and associated infrastructure

### LNG plant capacity

7.8 mtpa of LNG; 7.2 mtpa has been sold to PETRONAS and KOGAS

### Gross capital cost estimate

US\$18.5 billion<sup>1</sup> from FID to the end of 2015 when the second train is expected to be ready for start-up

### Gross sustaining capex

~A\$900 million average per annum over 2016-20  
 ~A\$500 million average per annum post 2020

### LNG train ramp-up

Train 1 first LNG expected around end 3Q 2015; LNG production expected to ramp-up over 3-6 months  
 Train 2 expected to be ready for start-up by the end of 2015; LNG production expected to ramp-up over 2-3 years

## Project progress

On track for first LNG around the end of the third quarter of 2015  
GLNG provides positive free cash flow at US\$40/bbl oil

### Gas supply



- › Over 9,000 PJ of dedicated reserves and resources
- › Fairview wells performing strongly, expected field capacity ~600 TJ/d by end 2015
- › Roma wells online and dewatering in line with expectations
- › Santos portfolio & third party gas provides 410-570 TJ/day in 2016
- › Underground storage delivery rate >100 TJ/day

### Surface facilities & pipelines



- › Fairview Hubs 4 and 5 operational and produced at above nameplate capacity
- › Commissioning well progressed at Roma Hub 2, incremental 140 TJ/d compression capacity expected to be sanctioned mid-2015
- › 420 km gas transmission pipeline complete and delivering gas to LNG plant
- › 120 km Comet Ridge to Wallumbilla pipeline loop complete and commissioned

### LNG plant and port



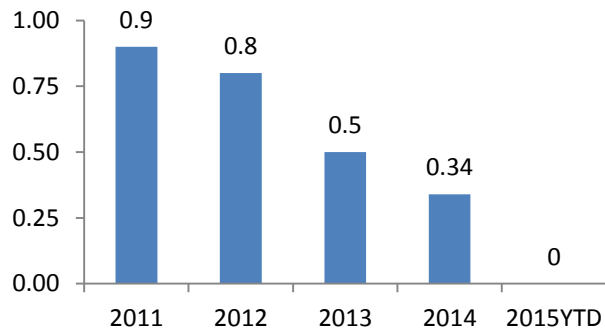
- › Gas introduced into the LNG plant and first two gas turbine generators fired
- › Train 1 piping and cabling nearing completion
- › First LNG tank dried and purged
- › Loading jetty complete
- › Plant commissioning on track
- › First LNG around the end 3Q 2015

## Safety performance

Over 80 million hours worked since FID, including 4 million hours worked in 2015 to date

- Continuous improvement in lost time injury frequency rate (LTIFR) since FID
  - 2014 LTIFR of 0.34 per million hours worked
  - 2015 YTD<sup>1</sup> has LTIFR at 0
  - 4.1 million hours worked<sup>1</sup> in 2015
- 100% safety critical maintenance achieved in 2014 upstream operations

Annual LTIFR since FID



<sup>1</sup> As at 10 April 2015





## GLNG expenditure guidance

US\$18.5 billion<sup>1</sup> capex from FID to the end of 2015

2016-20 average capex estimate A\$900 million average per annum

GLNG provides positive free cash flow at US\$40/bbl oil

### Capital expenditure estimate

FID to end of 2015	US\$18.5 billion <sup>1</sup>
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2016-2020	~A\$900 million average per annum
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Post 2020	~A\$500 million average per annum
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### Opex average cost estimate

Upstream field <small>(excludes electricity and carbon)</small>	~A\$1.25/GJ
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Downstream <small>(pipeline, plant and port)</small>	~A\$150 million per annum
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#### > Vast majority of 2016-20 expenditure is the upstream, and includes:

- Drilling and completion of new wells (~200 per annum)
- Connections of new wells, including wellpads, gas gathering lines, water pipelines, and power/communications infrastructure
- Additional compression, water treatment facilities and ponds, trunklines, transmission lines and roads
- Capitalised cost of staff working on upstream capex projects and wages associated with engineering, procurement and construction of upstream capex projects
- Exploration and appraisal
- Domestic gas stay-in-business capex

#### > Includes maintenance capex for the LNG plant and gas transmission pipeline

<sup>1</sup> Based on foreign exchange rates which are consistent with the assumptions used at FID (A\$/US\$ 0.87 average over 2011-15).

# Upstream

**Santos**  
We have the energy.

Hub 4, Fairview



## GLNG upstream delivery

Upstream is supplying gas to the LNG plant

- › Performance of Fairview wells continues to exceed expectations
  - Well capacity expected to be ~600 TJ/day by the end of 2015
- › Roma well capacity growing in line with expectations
- › Fairview Hubs 4 and 5 operational and produced above nameplate capacity
- › Construction complete at Roma Hub 2, with commissioning well advanced, incremental 140 TJ/d compression capacity expected to be sanctioned mid-2015
- › Pipeline compressor station complete
- › 120 km Comet Ridge to Wallumbilla pipeline loop complete and commissioned

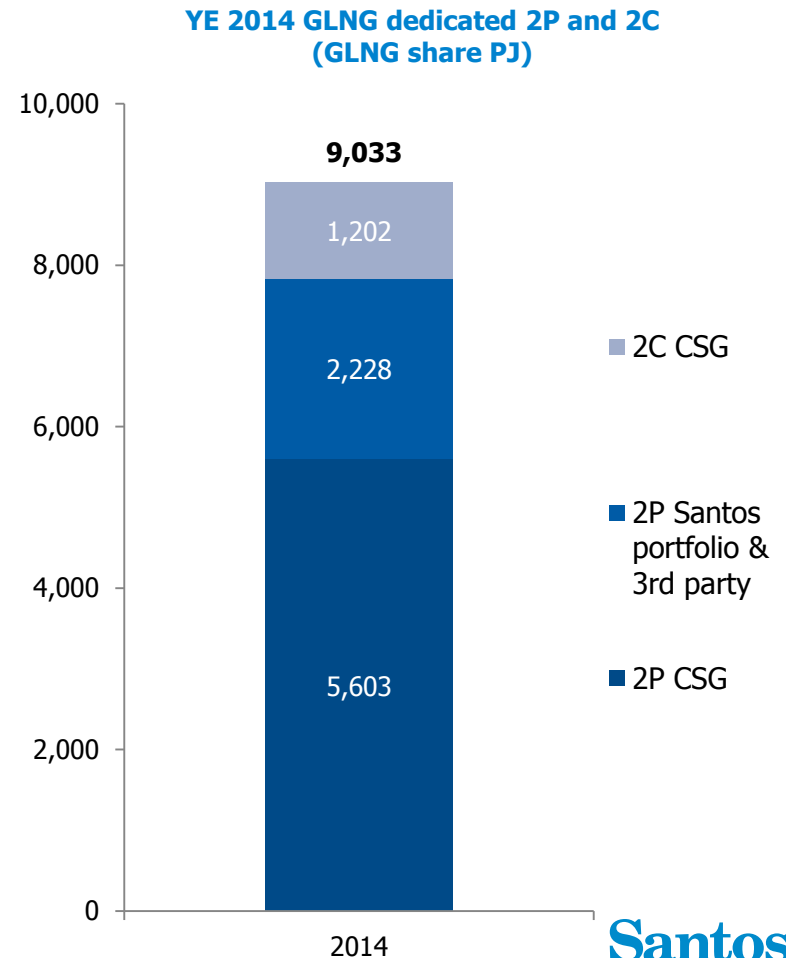


Fairview Hub 5

## Gas supply

Over 9,000 PJ of dedicated 2P reserves and 2C resources at the end of 2014

- › GLNG has an integrated gas supply portfolio of indigenous gas, Santos portfolio gas, third party supply and gas storage
- › GLNG proved reserves grew by 22% and proved and probable reserves by 4% in 2014, primarily due to positive re-assessments in the Fairview, Roma and Scotia fields
- › GLNG has secured up to 2,228 PJ of Santos portfolio and third party gas supply agreements
- › GLNG also has 1,202 PJ of 2C resources



## Third party gas supply

- › Secured up to 2,228 PJ Santos portfolio and third party supply
- › Attractive oil-linked gross margins
- › Provides operational flexibility in LNG train ramp-up and operation

## Third party gas generates significant value for the project

Supplier	Quantity	TJ/day	Starts	Term	Delivery point	Price basis
Santos portfolio 'Horizon'	750 PJ	140	2015	15 years	Wallumbilla	Oil-linked
Origin	365 PJ	100	2015	10 years	Wallumbilla	Oil-linked
Origin	194 PJ <sup>1</sup>	50-100 <sup>1</sup>	2016	5 years	Wallumbilla	Oil-linked
Other suppliers	85 PJ	10-15 60-100	2015 2016	7 years 21 months	Wallumbilla	Oil-linked
Meridian JV	445 PJ <sup>2</sup>	20-65	2015	20 years	GLNG GTP	Oil-linked <sup>3</sup>
Combabula/ Spring Gully	389 PJ <sup>4</sup>	30	2015	20 years	Fairview	Oil-linked

<sup>1</sup> 100 PJ firm volume over 5 years. Origin has the option to supply additional volumes of up to 94 PJ during the same period.

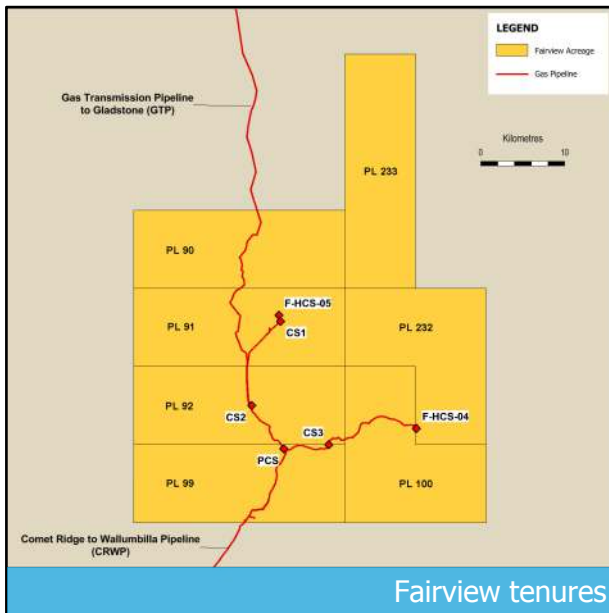
<sup>2</sup> Source: WestSide Corporation Target Statement of 16 May 2014. Excludes additional gas production by the Meridian Joint Venture beyond 65 TJ/day. Volumes subject to Meridian field production performance and implementation of expansion plans.

<sup>3</sup> Oil-linked from 2016.

<sup>4</sup> Santos share 2P reserves in the APLNG-operated Combabula, Spring Gully and Ramyard fields at the end of 2014.

## Fairview

The initial GLNG upstream development is focussed on the mature Fairview field



- The Fairview field is located in south-central Queensland, about 100 km north of Roma
- Fairview is a mature field, with over 20 years of production history
- GLNG ownership 76.07% (ATP 526P); 100% (ATP 655P)
- Land tenure is a mixture of Santos-owned property, privately-owned property, leasehold and state-owned property
- The area is sparsely populated: the nearest town, Injune — about 25 km to Fairview's south-west — has a population of around 400
- Historically, wells produced to the three Fairview hub compression stations F-CS-01, F-CS-02 and F-CS-03. Two additional compression stations (F-HCS-04 and F-HCS-05) are now operational in the north and south-eastern part of the field
- Initial development targeted the north and south-eastern part of the field, with an infill drilling program and the Eastern Flank development sanctioned post FID

## Fairview well performance

Performance continues to exceed expectations – gross field well capacity expected to be ~600 TJ/day by the end of 2015

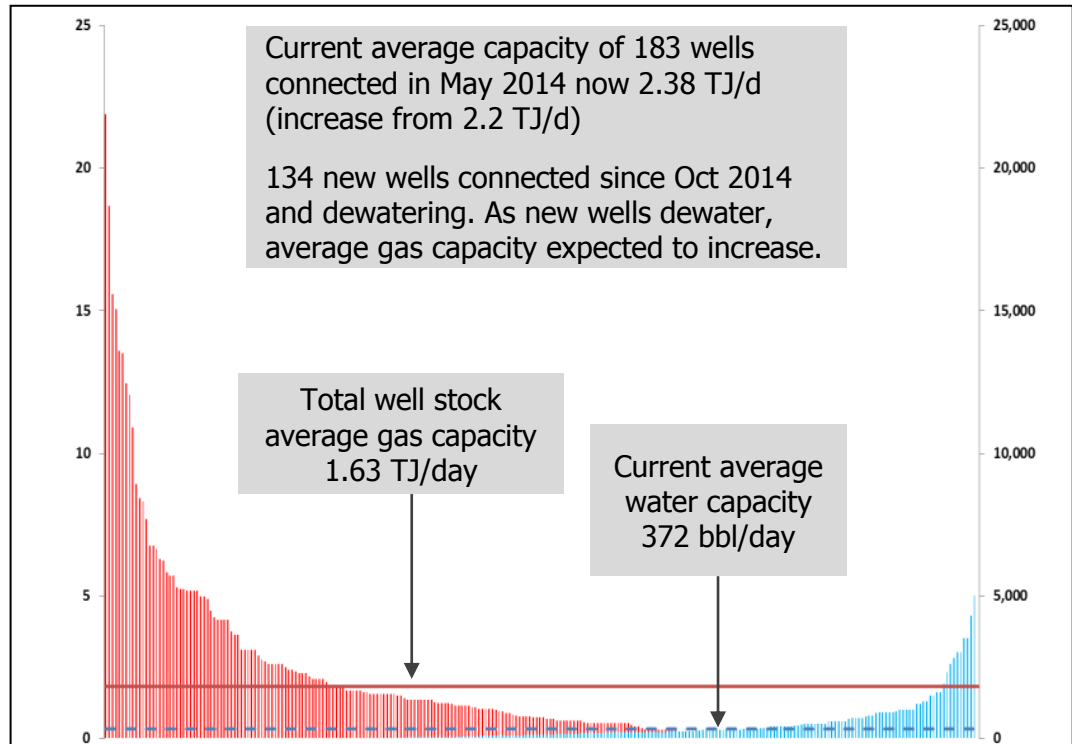
- › Performance of Fairview wells continues to exceed expectations
- › Well capacity expected to be ~600 TJ/day by the end of 2015
- › Excellent gas rates up to 22 TJ/day, with 9 wells with optimum capacities >10 TJ/day
- › Current average capacity of 183 wells connected in May 2014 now 2.38 TJ/d (increase from 2.2 TJ/d)
- › High turn-down capacity
- › 134 new wells connected since Oct 2014 and dewatering
- › Average gas capacity of total connected well stock 1.63 TJ/d including new wells in dewatering phase
- › As new wells dewater, average gas capacity expected to increase

### Fairview well performance as at March 2015

347 wells connected

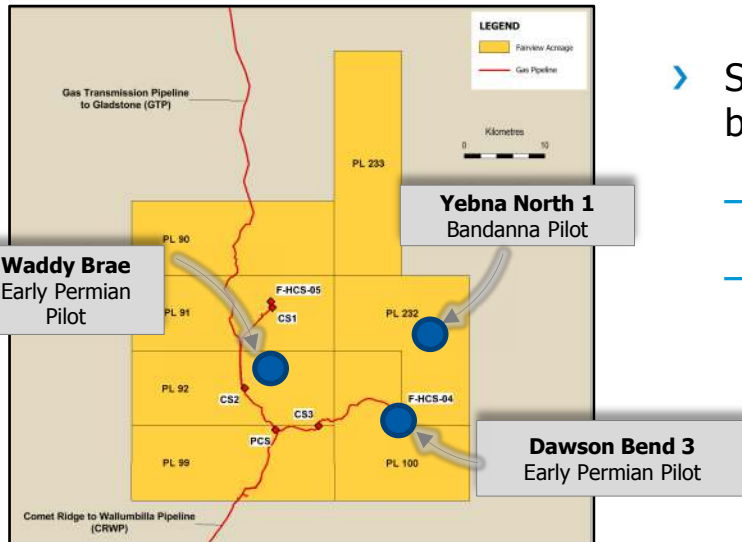
Optimum gas capacity (TJ/day)

Optimum water capacity (bbl/day)



## Fairview upside potential

Significant upside potential exists in the Early Permian coals and on the flanks of Fairview



➤ Significant gas in place confirmed in Early Permian coals directly beneath Fairview Field and close to existing infrastructure

- Net coal up to 50 metres thick in Waddy Brae area
- Encouraging performance from Early Permian East pilots – Waddy Brae and Dawson Bend-3 with gas rates >700 mscf/d achieved

➤ Appraisal of Bandanna coals on flanks of Fairview field progressing with solid results:

- Yebna North area on the far Eastern Flank production rates higher than expected for depth
- Yebna North-1 test rate 388 mscf/d from coal at 1,180 metres

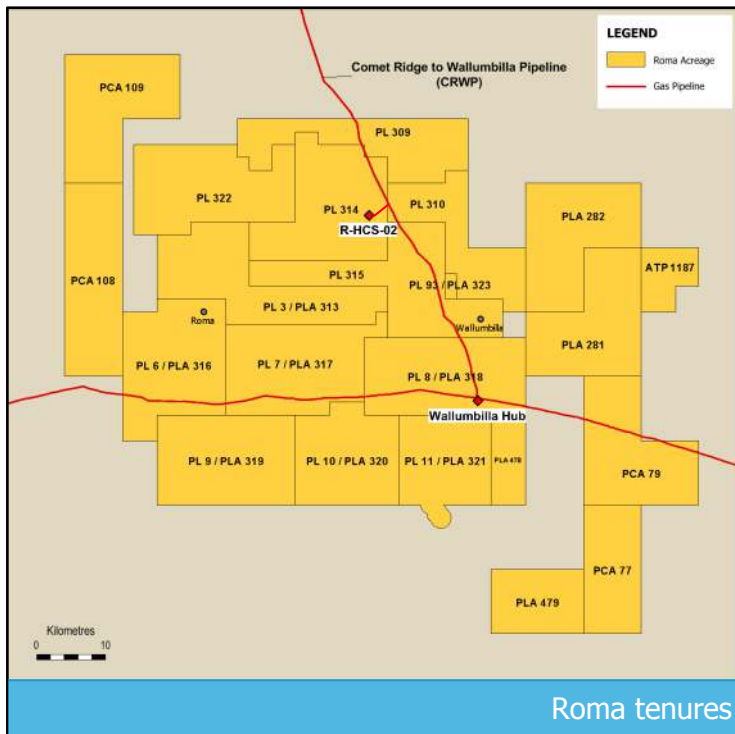


Yebna North 1, production testing



## Roma

Santos has a long history operating in the Roma area



- › The Roma field is situated in south-central Queensland, some 300 km north-west of Brisbane
- › On trend with APLNG and QCLNG key field development areas
- › Covering approximately 3,000 km<sup>2</sup>, the development area consists of four ATPs (ATP 336 and ATP 631, 708 and 665), 11 PLs and 2 PLAs
- › GLNG ownership: 100%, except ATP 631P (81.9%)
- › Drilling has initially been focussed in the western acreage
- › All produced gas will be exported from the hub compressors at Roma Hub 2 (R-HCS-02) via a 3 km, 20" line connected to a tie-in point to the CRWP pipeline

## Roma well performance

Online and dewatering, supporting average well capacity of 0.5 TJ/day

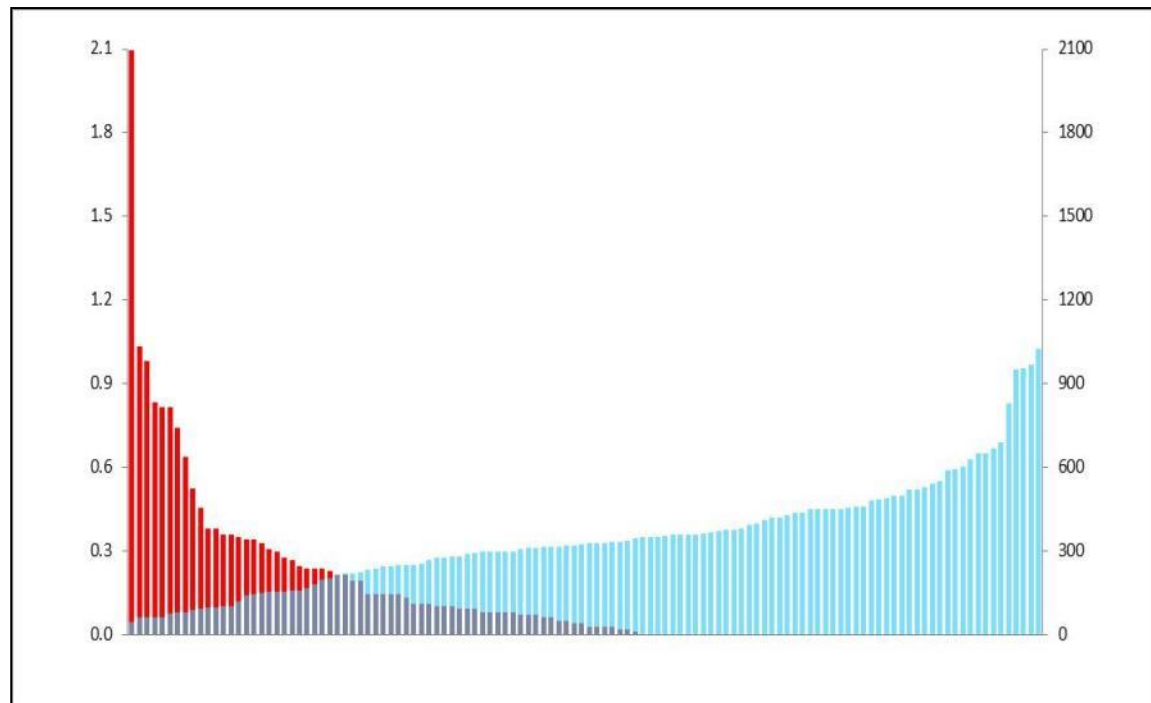
- › 271 development wells drilled
- › 120 wells online and dewatering in line with expectations
- › Average gas capacity growing month-on-month as wells progressively connected and dewatered
- › 8 wells are flowing >0.5 TJ/d, highest of these 2.1 TJ/d
- › Strong gas rates from early producers
- › Strong water rates from recent connections

### Roma well performance as at April 2015

120 wells connected

Optimum gas capacity (TJ/day)

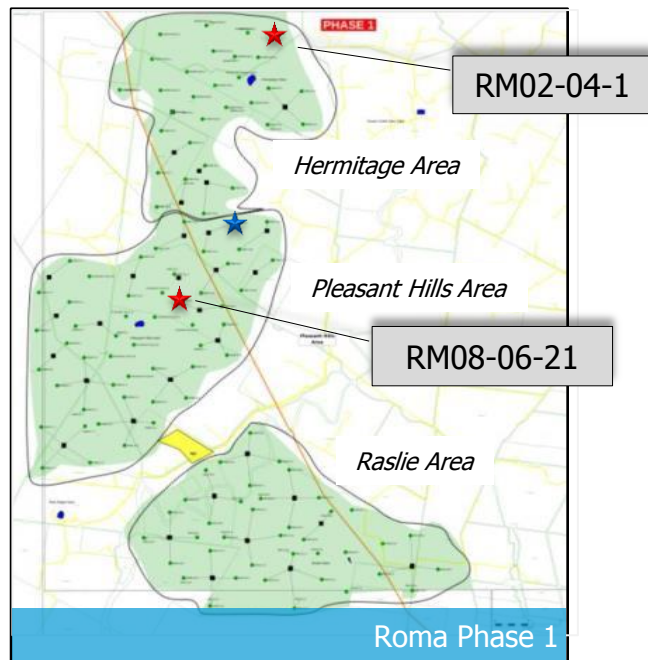
Optimum water capacity (bbl/day)



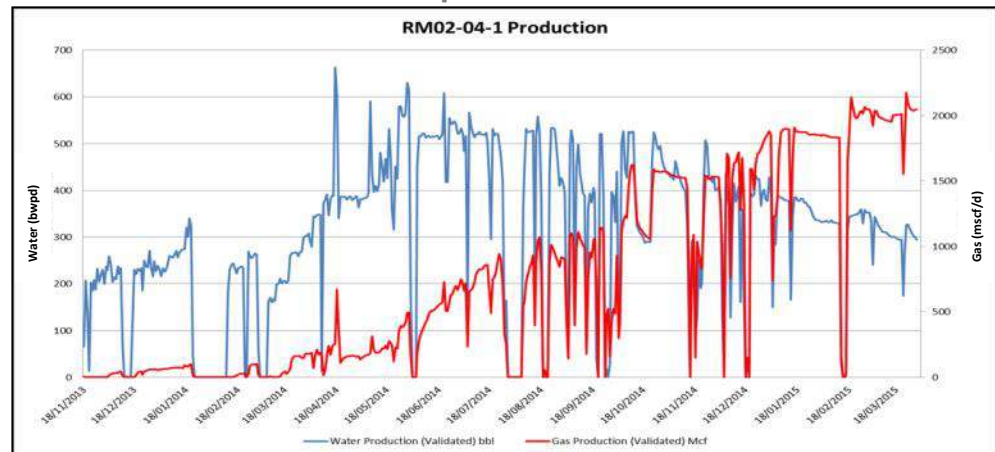
## Roma field performance

Strong gas and water production performance from the Hermitage and Pleasant Hills area

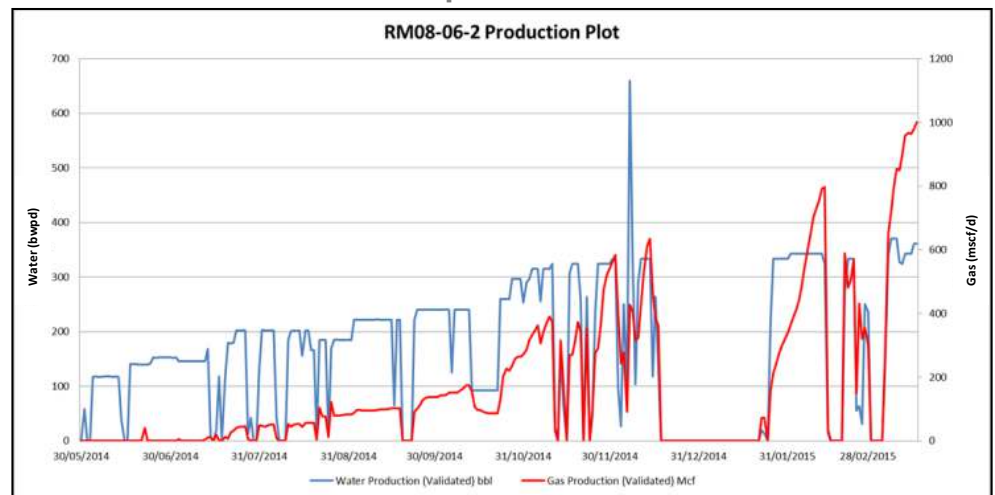
- Best results observed in areas already dewatered by pilot production
- Results provide confidence in ongoing gas build
- Roma RM02-04-01 (Hermitage area) now over 2 mmscf/d and RM08-06-02 (Pleasant Hills) >1 mmscf/d



Roma RM02-04-1 well - actual production



Roma RM08-06-2 well - actual production

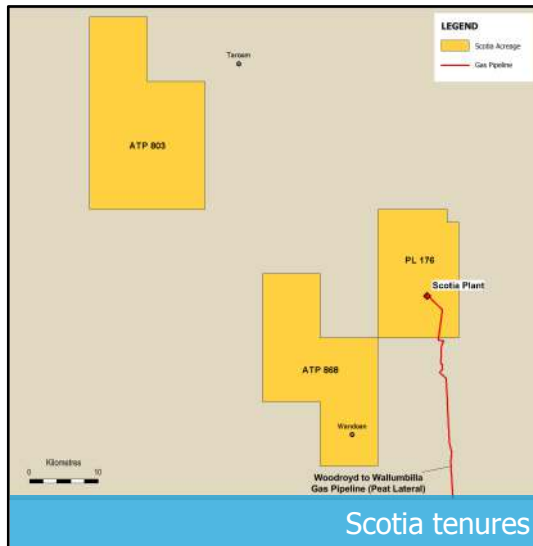


## Scotia and Arcadia

A phased future development strategy is being pursued in Scotia and Arcadia

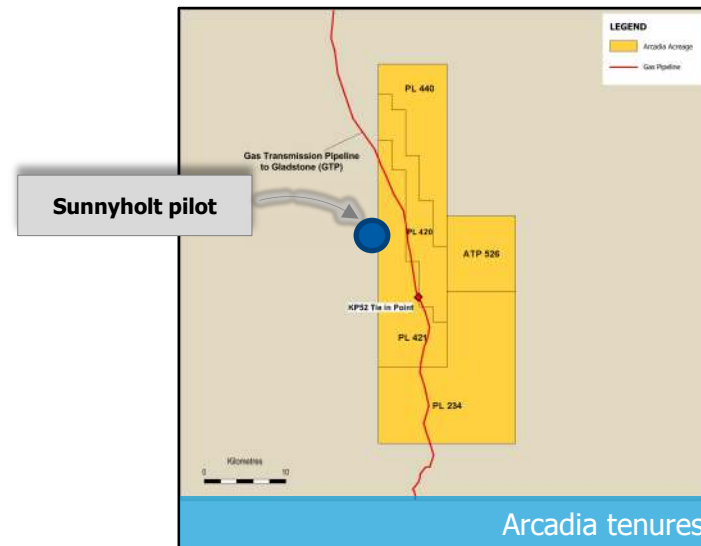
### Scotia Area

- The Scotia area is located about 100 km west of the Fairview assets. The three Scotia licence areas include PL 176, ATP 868P and ATP 803P.
- PL 176 planned as the first phase. Gas production can be delivered via the executed APLNG Swap agreement
- Additional targets both within PL 176 and in the ATPs are in the exploration and appraisal phase



### Arcadia

- The Arcadia field is situated in south-central Queensland, approximately 400 km north-west of Brisbane
- Encouraging results from Sunnyholt Pilot area with >1 mmscf/d and continuing to ramp
- The gas transmission pipeline to Gladstone runs through the Arcadia development area with bespoke tie-in point



## Resource growth opportunities

In addition to the four core GLNG areas numerous growth opportunities exist across GLNG portfolio



- Numerous Brownfield opportunities, encouraging pilot results close to existing infrastructure
- Greenfield opportunities are benefitting from knowledge of reservoir behaviour and technology applications in core areas
- Several different plays with large GIIP have been identified across the GLNG portfolio, although significant subsurface uncertainty remains

### Appraisal Phase (Greenfield)

- 1 Arcadia - flanks & extended Reach drilling
- 2 Clematis Creek area
- 3 ATP 803 and ATP 868
- 4 Northern Comet Ridge close to KP 128 Tie-In

### Appraisal Phase (Brownfield)

- 1 Fairview - Early Permian (east)
- 2 Fairview Flanks - Bandanna
- 3 Scotia - Western Flank
- 4 Scotia - Mid-Baralaba coals
- 5 Roma - Western flank
- 6 Fairview - Early Permian (west)

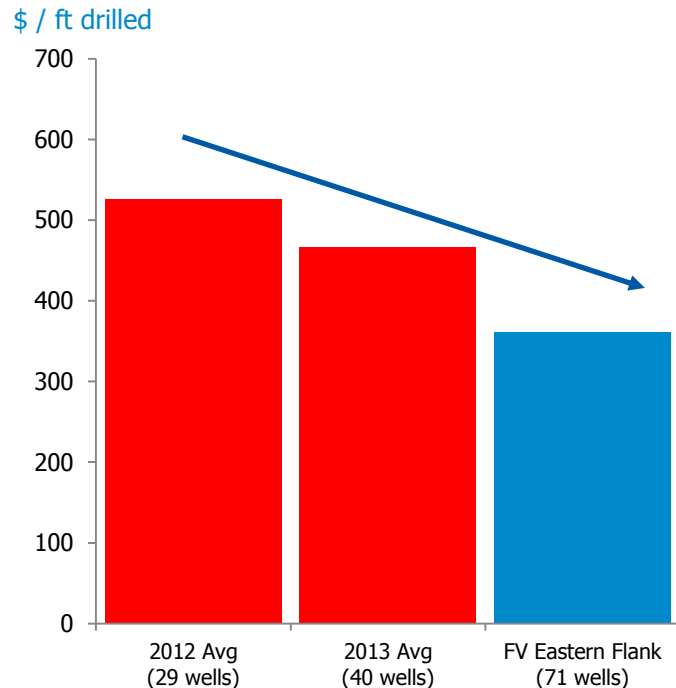
### Exploration Phase

- 1 Scotia - Deep sands and basement volcanics
- 2 Arcadia - Early Permian - thick coals up to 75 m intersected
- 3 Roma - Permian CSG & Conventional Plays

## Drilling and completions

Multi-well pads continue to drive greater efficiency, lower costs and a smaller environmental footprint

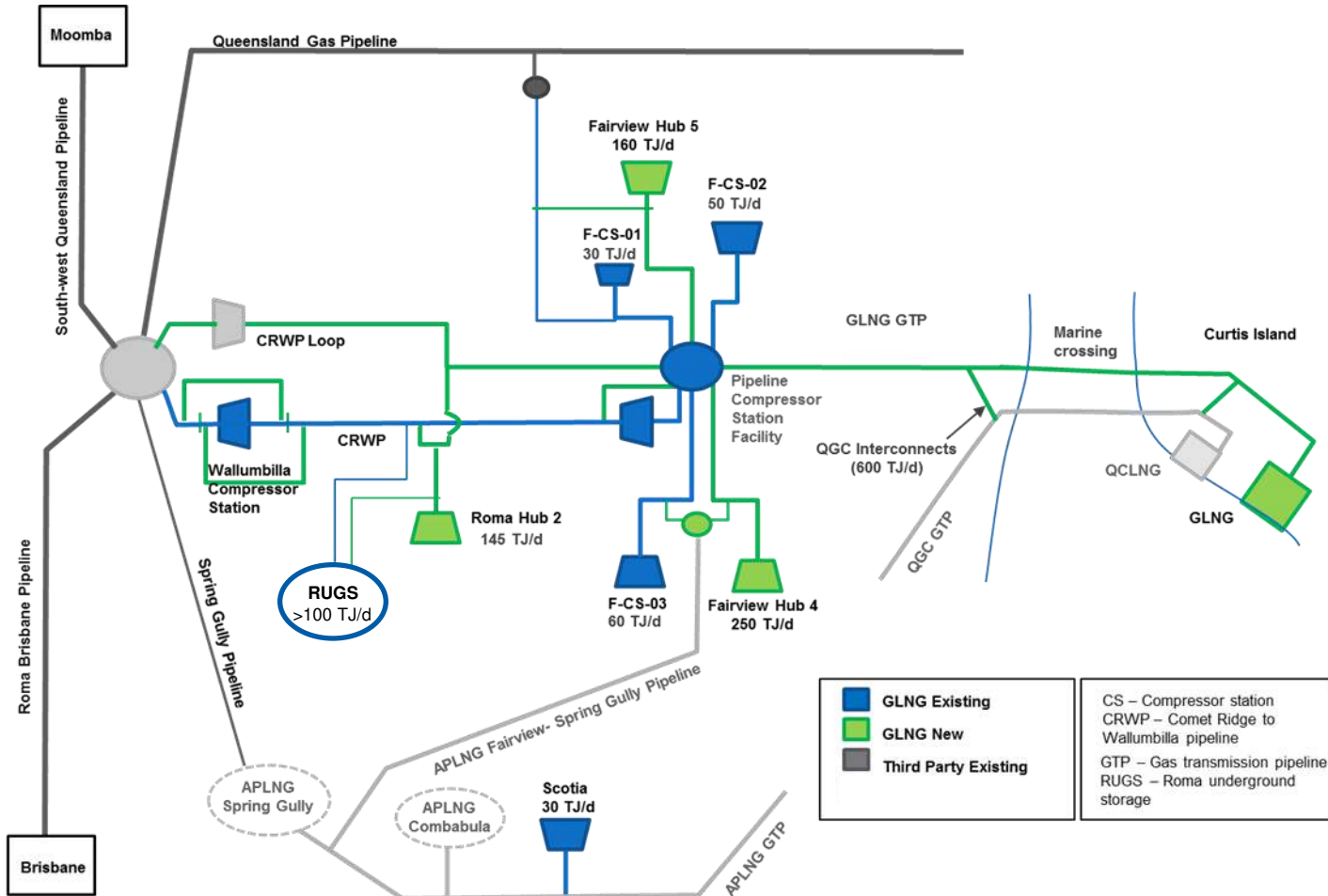
### Fairview deviated well drilling cost performance



- › Over 600 wells drilled since FID
- › At peak drilling, ten drilling rig and five completion rigs were operational in GLNG assets
- › Current rig fleet of 1 drilling rig and 2 completion rigs across GLNG fields
- › Significant reduction in drilling and completion costs per well since FID
  - Custom designed drilling rigs and factory drilling approach continues to drive lower well costs
  - Roma drill costs dropped from \$427/ft to \$233/ft by 2014
  - Fairview drill costs have dropped from \$532/ft to \$388/ft
- › Expect to drill ~200 wells average per annum post-2015

# Upstream infrastructure

Integrated upstream development with connections to APLNG and QCLNG



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## Upstream gas processing

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Hubs are supplying gas to the LNG plant and have produced above nameplate capacity

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### Existing

- › 170 TJ/day existing gross gas capacity at Fairview and Scotia
- 

### Fairview Hub 5

- › 160 TJ/day gross gas capacity
  - › 4 ML/day water handling facilities
  - › Operational
- 

### Fairview Hub 4

- › 250 TJ/day gross gas capacity
  - › 20 ML/day water handling facilities
  - › Operational
- 

### Roma Hub 2

- › 145 TJ/day gross gas capacity
  - › 10 ML/day water handling facilities
  - › Construction complete and commissioning well underway
-





Fairview Hub 5 160 TJ/day capacity - Facility operational



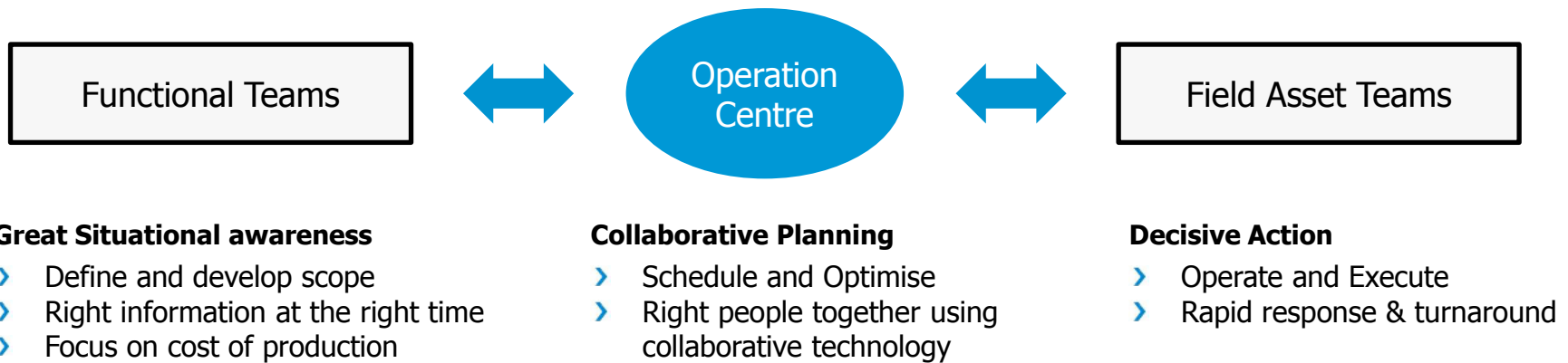
Fairview Hub 4 250 TJ/day capacity - Facility operational



Roma Hub 2 145 TJ/day capacity - Construction complete and commissioning well underway

## Upstream operations philosophy

Upstream is controlled from Brisbane operations centre utilising world class technology to drive down operating costs and maximise productivity



## Pipeline compressor station (PCS)

The pipeline compressor station is complete and operational

- › Connection point to the gas transmission pipeline to Gladstone
- › PCS is the collection point for all of GLNG's upstream gas infrastructure, including:
  - Existing hubs (CS1, CS2, CS3)
  - New hubs (FV04, FV05, RM02)
  - CRW Pipeline and Loop
- › Complete and operational

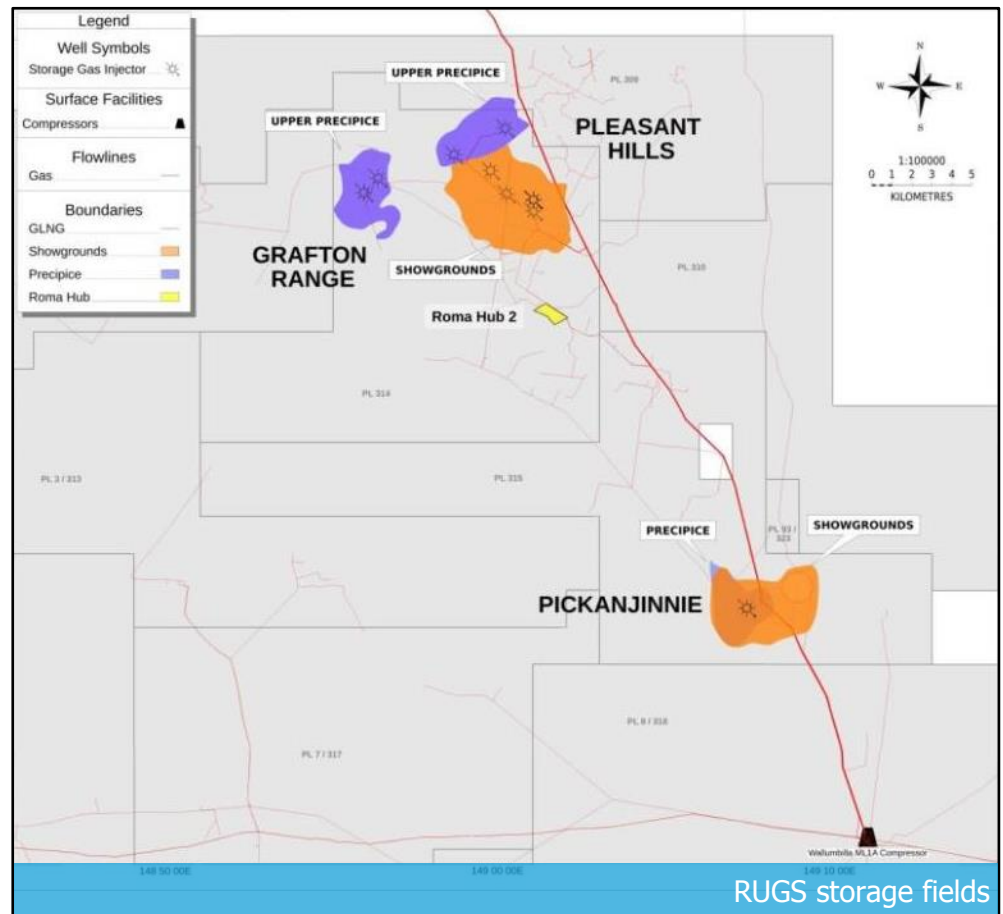


Pipeline compressor station, Fairview

## Roma underground storage (RUGS)

RUGS provides significant gas storage capacity adjacent to the Wallumbilla gas hub

- › Gas storage in three depleted conventional Roma gas fields: Pleasant Hills, Grafton Range and Pickanjinie
- › 15 injection wells on-line
- › Maximum underground storage injection and delivery rate >100 TJ/day
- › Capacity 70 PJ
- › Key infrastructure providing operational flexibility
- › Opportunity for investment in additional gas storage capacity



## Incremental gas supply and infrastructure projects

## Incremental infrastructure and field development projects delivered on or ahead of schedule and on or under budget



- › In addition to the project scope approved at FID, the following projects have been sanctioned:
  - Fairview Eastern Flank, Fairview Infill
  - Roma West Phase 2A
  - CRWP Loop
  - Upstream electrification
  - Marine crossing tunnel
  - QGC pipeline interconnects
- › Optimisation studies ongoing for investment in additional upstream development and compression capacity
  - Roma Phase 2B: additional 140 TJ/d hub compression capacity expected to be sanctioned mid-2015
  - Scotia: additional development expected to be sanctioned end-2015

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## Landholder and community engagement

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We respect and proactively engage with landholders and the local community

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GLNG has 720 agreements in place with 647 landholders

We ensure success by:

- › Upfront discussions with the landholders to understand their operations now and in the long term
- › Monitoring works to minimise disturbance during construction and working to rectify issues quickly
- › Dedicated landholder advisers based in the field from the communities they work with

We manage a pastoral/irrigation business on our key sites co-existing with CSG production:

- › 1,500 Droughtmaster breeding herd on 43,000 hectares
- › Irrigation with produced water of 1,260 hectare of Chinchilla Whitegums (1.3 million trees)
- › Forage crops of 234 hectare Laucaena and 450 hectare Buffel grass irrigated with produced water
- › Our employees understand how to work with agri-business from their own experience of co-existence





# Downstream

**Santos**  
We have the energy.

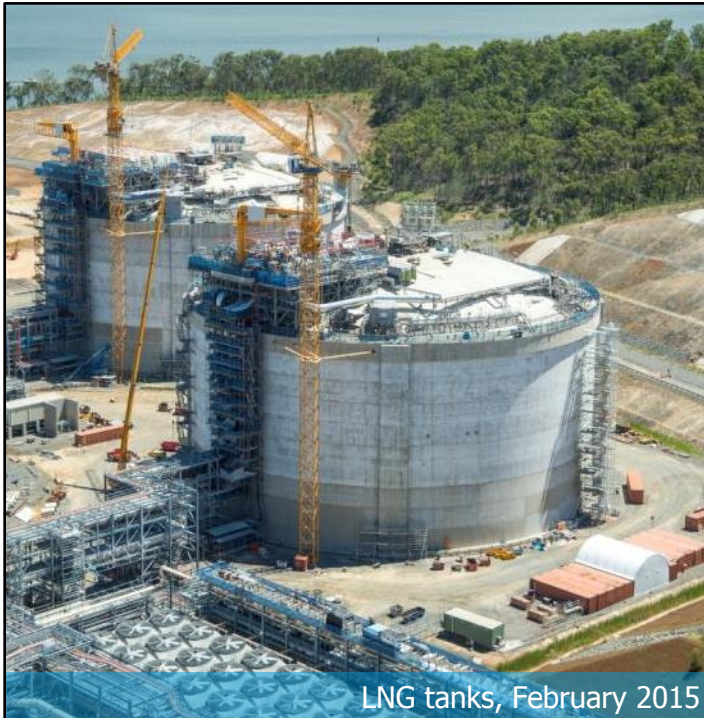
GLNG Plant, Curtis Island



## Downstream overview

Plant commissioning is well underway

First LNG expected around the end of the third quarter of 2015



Location	Curtis Island, Gladstone, Queensland
EPC contractor	Bechtel
Technology	ConocoPhillips Optimized Cascade Liquefaction technology and a modular construction scheme
LNG plant capacity	2 x 3.9mtpa trains (7.8 mtpa)
LNG contracts	7.2 mtpa has been sold to PETRONAS and KOGAS
Scope	Modular train construction: 82 modules for train 1 and 29 for train 2 (111 in total). Modules built at Batangas in the Philippines and shipped to Curtis Island for assembly 2 x 140,000 cubic metre LNG storage tanks 360 metre jetty
LNG train ramp-up	Train 1 first LNG expected around the end of the third quarter of 2015 LNG production expected to ramp-up over 3-6 months Train 2 ready for start-up expected by end-2015 LNG production expected to ramp-up over 2-3 years

## GLNG downstream



## Commissioning well underway and expect first LNG around the end of the third quarter of 2015

- › LNG Train 1 piping and cabling nearing completion with loop testing well advanced
- › LNG Train 2 piping installation and cable pulling underway
- › Gas introduced to plant in March 2015 and flare lit
- › First two Train 1 gas turbine generators running
- › Other Train 1 utilities commissioned and operating
- › Drying and purging of LNG Tank B complete and underway on Tank A, following which tanks will be ready to receive LNG
- › LNG loading jetty complete
- › 107 Santos GLNG staff embedded in integrated Bechtel/GLNG commissioning and start-up team
- › QGC interconnects complete with first gas flowed in March 2015
- › 420-kilometre gas transmission pipeline complete and supplying gas to LNG plant
- › Expect to deliver first LNG around the end of the third quarter of 2015



Utilities area  
Includes Central Control Building

Camp accommodation  
1,680 beds

Gas inlet and refrigerant storage

Train 2  
3.9 mtpa nameplate capacity

Flare  
100 metres tall

Train 1  
3.9 mtpa nameplate capacity

Two LNG tanks  
280,000m<sup>3</sup> combined capacity

LNG jetty  
360m long, 4 loading arms

February 2015



Train 1 piping and cabling nearing completion with loop testing well advanced

Train 2 piping installation and cable pulling underway

February 2015



Drying and purging of LNG Tank B complete and underway on Tank A, following which tanks will be ready to receive LNG

February 2015



LNG jetty is complete

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## Commissioning and operations

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## Integrated commissioning and operations team

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- › 107 Santos GLNG staff embedded in integrated Bechtel/GLNG commissioning and start-up team
- › Gas has been introduced to LNG plant
- › LNG plant commissioning team includes GLNG operators and maintenance staff
- › Experienced GLNG partner secondees working in key commissioning and start-up coordination roles
- › 13 commissioning cargoes sold



GLNG plant control room, Curtis Island



## GLNG

On track for first LNG around the end of the third quarter of 2015, within US\$18.5 billion budget

Milestone		Date
Marine crossing tunnelling completed	✓	February 2014
Last Train 1 module installed	✓	June 2014
First LNG tank hydrotested	✓	July 2014
Pipeline commissioning commenced	✓	August 2014
Second LNG tank hydrotested	✓	September 2014
Last Train 2 module installed	✓	November 2014
Pipeline commissioned and gassed-up to Curtis Island	✓	November 2014
First commissioning gas to LNG plant	✓	March 2015
First LNG Train 1		Around end 3Q 2015
Train 2 ready for start-up		End 2015

Curtis Island, February 2015

APLNG

QCLNG

GLNG

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