Citi Research

Equities

11 January 2013 | 26 pages

Oil & Gas Exploration & Production (GICS) | Exploration & Production (Citi)
Australia/NZ | Australia

Santos Ltd (STO.AX)

■ Company Update

Investor's focused on GLNG downside, what about upside?

- **Opportunity for STO to outperform low GLNG expectations** — Investor expectations are low for GLNG project delivery (capex and timing) and field performance (Roma), and we think STO's guidance to the market for GLNG timing and rampup is conservative. We value GLNG at A$3.52/shr from Jan-13, but we see some areas of upside risk related to reserves, rampup, and cost reductions which could add ~A$1.74/shr in aggregate to our DCF.
- **2P Reserves could still build to >9tcf in time** — We don't expect reserves growth to be announced for GLNG in Jan/Feb as the JV's focus has been on development wells. However, our geological assessment of open file well completion reports suggests substantial reserves growth is likely in time from Arcadia, Scotia and Greater Fairview with continued appraisal drilling over time. Our GLNG valuation is based on development of 7,200PJ, but we see potential for reserves to grow to >9,000PJ which would increase our GLNG DCF by A$0.86/shr or 25%.
- **Field outperformance vs plan could achieve faster LNG rampup** — Based on an understanding of STO's Roma production guidance, initial water production rates from Roma wells, and a comparison with Combabula geology, we think Roma wells are more likely to achieve peak rates of ~0.75TJ/d, above Santos conservative guidance of 0.5TJ/d. If Fairview also continues to outperform planning assumptions then the CSM fields could support a faster ramp-up of GLNG. LNG rampup by end CY16 rather than start CY19 would increase our GLNG DCF by A$0.25/shr or 7%.
- **New rig technology likely to reduce sustaining drilling capex** — STO is targeting >50% reduction in well costs with improved rig technology and drilling procedures, which would reduce sustaining capex, and it is already achieving costs of <A$2m per well. A reduction in sustaining capex from our current estimate of A$600m p.a. to A$360m p.a. would increase our GLNG DCF by A$0.53/shr or 15%.
- **Strong conviction BUY** — STO is delivering transformational LNG growth via PNG and GLNG. East Coast gas prices are rising, increasing the value of the Cooper, and exploration is paying dividends (Crown) providing future growth opportunity.

STO.AU (Y/E Dec)	2011A	2012E	2013E	2014E
Reported Profit (A$m)	753.0	646.1	472.4	504.0
Core Net Profit (A$m)	453.0	667.1	472.4	504.0
Core EPS (A¢)	50.8	69.9	48.9	51.8
Core EPS Growth (%)	13.6	37.6	-30.0	6.0
PE Ratio (x)	22.6	16.4	23.5	22.2
DPS (A¢)	30.0	30.0	30.0	30.0
Dividend Yield (%)	2.6	2.6	2.6	2.6
Franking Rate (%)	100.0	100.0	100.0	100.0
P/Operating Cashflow (x)	7.6	9.0	7.0	7.2
ROE (%)	5.5	7.2	4.9	5.1

Source: Company Reports and dataCentral, Citi Research.

Buy	1
Price (11 Jan 13)	A$11.50
Target price	A$16.03
Expected share price return	39.4%
Expected dividend yield	2.6%
Expected total return	**42.0%**
Market Cap	A$11,027M
	US$11,686M

Price Performance
(RIC: STO.AX, BB: STO AU)

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STO.AX: Fiscal year end 31-Dec — **Price:$11.50; TP:$16.03; # Shares: 959m; Market Cap: A$11027m; Recomm: Buy**

Profit & Loss (A$m)	**2010**	**2011**	**2012E**	**2013E**	**2014E**
Sales revenue	2,331	2,641	3,367	3,705	4,162
Prodn costs, royalties/excise	-588	-610	-717	-718	-784
Other	-371	-448	-684	-863	-859
EBITDAX	**1,372**	**1,583**	**1,966**	**2,124**	**2,518**
Exploration Expense	-129	-167	-131	-244	-216
Depn & Amort	-600	-641	-775	-881	-1,041
EBIT	**643**	**775**	**1,060**	**999**	**1,262**
Net interest	7	91	66	-64	-170
Earnings before tax	**650**	**866**	**1,126**	**935**	**1,091**
Tax expense	-274	-413	-459	-462	-587
Exceptional items post tax	124	300	-21	0	0
Minority interests	0	0	0	0	0
Associates	0	0	0	0	0
Reported net profit	**500**	**753**	**646**	**472**	**504**
Core NPAT	376	453	667	472	504

Half year data (A$m)	**1H11**	**2H11**	**1H12**	**2H12E**	**1H13E**
Sales revenue	1,155	1,486	1,531	1,836	1,802
EBIT	366	409	419	641	476
Core NPAT	236	217	283	384	226
Core EPS (¢)	26.8	23.7	29.7	40.2	23.5

Balance Sheet (A$m)	**2010**	**2011**	**2012E**	**2013E**	**2014E**
Cash & cash equiv.	4,319	3,332	1,729	160	102
Accounts receivables	665	1,099	1,466	1,519	1,747
Inventory	261	283	451	480	498
Net fixed & other tangibles	8,361	10,878	13,815	16,635	17,581
Goodwill & intangibles	0	0	0	0	0
Financial & other assets	163	222	211	211	211
Total assets	**13,769**	**15,814**	**17,672**	**19,006**	**20,139**
Accounts payable	760	1,005	1,206	1,283	1,330
Short-term debt	370	169	166	166	166
Long-term debt	2,787	3,092	3,865	4,865	5,665
Provisions & other liab	2,249	2,585	2,867	2,867	2,867
Total liabilities	**6,166**	**6,851**	**8,104**	**9,181**	**10,028**
Shareholders' equity	7,605	8,967	9,572	9,828	10,114
Minority interests	-2	-4	-4	-4	-4
Total equity	**7,603**	**8,963**	**9,568**	**9,824**	**10,110**
Net debt	**-1,162**	**-71**	**2,302**	**4,871**	**5,729**

Cashflow (A$m)	**2010**	**2011**	**2012E**	**2013E**	**2014E**
EBITDA	1,243	1,416	1,835	1,880	2,303
Working capital	315	-211	-334	-5	-199
Net interest paid	7	91	66	-64	-170
Tax paid	-274	-359	-459	-462	-587
Other	253	415	110	244	216
Operating cashflow	**1,544**	**1,352**	**1,218**	**1,592**	**1,562**
Capex	-1,709	-2,844	-3,371	-3,945	-2,202
Net acq/disposals	751	837	80	0	0
Other	-55	-135	-102	0	0
Investing cashflow	**-1,013**	**-2,142**	**-3,393**	**-3,945**	**-2,202**
Dividends paid	-316	-155	-184	-216	-218
Financing cashflow	**1,830**	**-90**	**645**	**784**	**582**
Net change in cash	**2,354**	**-888**	**-1,536**	**-1,569**	**-58**
Free cashflow to s/holders	**-165**	**-1,492**	**-2,153**	**-2,353**	**-640**

Per share data	**2010**	**2011**	**2012E**	**2013E**	**2014E**
Reported EPS (¢)	59.5	84.5	67.7	48.9	51.8
Core EPS (¢)	44.7	50.8	69.9	48.9	51.8
DPS (¢)	37.0	30.0	30.0	30.0	30.0
CFPS (¢)	183.7	151.7	127.7	164.9	160.7
BVPS (¢)	869.2	951.6	998.2	1017.9	1040.3
Wtd avg ord shares (m)	837	888	950	962	969
Wtd avg diluted shares (m)	840	891	954	966	972

Valuation ratios	**2010**	**2011**	**2012E**	**2013E**	**2014E**
PE (x)	25.7	22.6	16.4	23.5	22.2
EV/EBIT (x)	17.0	14.6	12.5	15.8	13.9
EV/EBITDA (x)	8.8	8.0	7.2	8.4	7.6
FCF yield (%)	-1.7	-14.6	-19.6	-21.2	-5.7
Dividend yield (%)	3.2	2.6	2.6	2.6	2.6
Payout ratio (%)	83	59	43	61	58

Production (mmboe)	**2010**	**2011**	**2012E**	**2013E**	**2014E**
Cooper	16.2	16.4	16.8	17.8	19.2
GLNG	3.7	1.5	1.8	1.8	1.8
PNG LNG	0.0	0.0	0.0	0.0	2.3
Surat/Denison ex GLNG	2.3	2.6	1.9	2.0	2.5
Amadeus	0.4	0.2	0.2	0.3	0.2
Otway	3.3	3.3	3.4	3.3	3.2
John Brookes	8.6	8.3	10.4	10.6	12.8
Jabiru/Challis	0.1	0.0	0.0	0.0	0.0
Legendre	0.2	0.0	0.0	0.0	0.0
Mutineer/Exeter	0.6	0.7	0.7	1.0	2.9
Thevenard	0.3	0.2	0.2	0.2	0.2
Barrow	0.6	0.5	0.6	0.6	0.8
Stag	1.4	1.7	1.3	1.2	0.9
Bayu-Undan	4.5	4.4	3.9	4.1	3.9
Indonesia	7.2	6.1	5.6	5.7	5.9
Reindeer	0.0	0.0	1.8	3.4	3.4
Vietnam	0.0	0.7	3.3	3.5	2.9
Kipper	0.0	0.0	0.0	0.0	0.0
Other	-	-	-	-	-
Total	50.0	47.2	52.5	55.8	63.0

Commodity&FX	**2010**	**2011**	**2012E**	**2013E**	**2014E**
Brent Oil (US$/bbl)	80.2	111.8	112.8	98.8	95.4
AUDUSD (analyst) (x)	0.92	1.03	1.04	0.97	0.95

NPV Valuation	**unriske**	**risk**	**risked**
US$85/bbl and US$/A$0.85, 9.5% WACC	**A$/shr**	**factor**	**A$/shr**
Base business	5.54	100%	5.54
Kipper	0.46	100%	0.46
PNG LNG	5.24	100%	5.24
GLNG Train 1&2, 30% interest	3.52	100%	3.52
PNG LNG Train 3	1.13	40%	0.45
BLNG	0.73	40%	0.29
GLNG T3 (3.9mtpa)	1.25	0%	0.00
Zola discovery (2tcf gross)	0.22	50%	0.11
Crown LNG (4tcf)	**1.69**	**25%**	**0.42**
Total	**18.08**		**16.02**

For further data queries on Citi's full coverage universe please contact Citi Research Data Services at CitiRsch.DataServices.Global@citi.com

Powered by: dataCentral

Figure 1. Detailed P&L, DCF valuation, and production outlook for Santos

Santos Limited: detailed P&L, inclusive of growth projects (unrisked)

(A$m)	CY09A	CY10A	CY11A	CY12E	CY13E	CY14E	CY15E	CY16E	CY17E	CY18E
Sales revenue	2,181	2,228	2,530	3,287	3,625	4,078	5,262	5,946	6,379	6,963
Other revenue	78	103	111	80	80	83	77	78	78	79
Total revenue	**2,259**	**2,331**	**2,641**	**3,367**	**3,705**	**4,162**	**5,339**	**6,024**	**6,457**	**7,042**
Production costs	(536)	(537)	(556)	(649)	(650)	(709)	(804)	(850)	(820)	(849)
Third party gas purchases	(117)	(162)	(229)	(471)	(573)	(589)	(757)	(904)	(932)	(956)
Pipeline tariffs	(91)	(95)	(109)	(105)	(115)	(128)	(171)	(177)	(183)	(190)
Royalties & excise	(61)	(51)	(54)	(68)	(69)	(76)	(94)	(120)	(146)	(161)
Movt in stock	(10)	(22)	22	31	-	20	-	-	-	5
SG&A operating expense	(87)	(92)	(125)	(115)	(122)	(103)	(105)	(108)	(110)	(113)
Other	(3)	-	-	(24)	(53)	(60)	(64)	(71)	(72)	(79)
EBITDAX	**1,354**	**1,372**	**1,590**	**1,966**	**2,124**	**2,518**	**3,343**	**3,794**	**4,193**	**4,699**
Exploration expense	(202)	(129)	(167)	(131)	(244)	(216)	(216)	(113)	(113)	(113)
EBITDA	1,152	1,243	1,416	1,835	1,880	2,303	3,128	3,681	4,080	4,586
D&A	(619)	(600)	(641)	(775)	(881)	(1,041)	(1,232)	(1,388)	(1,289)	(1,395)
EBIT	533	643	775	1,060	999	1,262	1,896	2,293	2,791	3,191
Net Interest Expense	(13)	7	91	66	(64)	(170)	(419)	(535)	(494)	(435)
EBT	520	650	866	1,126	935	1,091	1,476	1,759	2,297	2,757
Corporate Tax	(185)	(223)	(322)	(373)	(326)	(371)	(493)	(571)	(744)	(890)
PRRT post tax	(78)	(51)	(91)	(86)	(136)	(217)	(239)	(211)	(196)	(227)
Significant items (after tax)	177	124	300	(21)	-	-	-	-	-	-
Reported NPAT	**434**	**500**	**753**	**646**	**472**	**504**	**745**	**977**	**1,357**	**1,640**
Core NPAT	**257**	**376**	**453**	**667**	**472**	**504**	**745**	**977**	**1,357**	**1,640**
EPS core (Acps)	31.6	44.7	50.8	69.9	48.9	51.9	76.1	99.5	138.2	167.0
DPS (Acps)	42	37	30	30	30	30	38	50	69	83

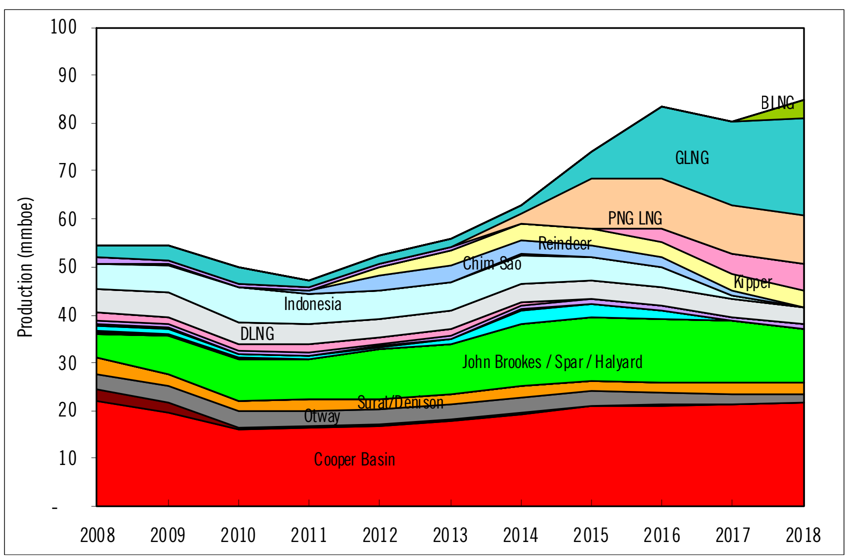
Commodity Prices	CY09A	CY10A	CY11A	CY12E	CY13E	CY14E	CY15E	CY16E	CY17E	CY18E
Brent Oil (US$/bbl)	62.1	80.2	111.8	112.8	98.8	95.4	97.8	94.7	97.1	99.5
Aust dollar (US$)	0.792	0.920	1.033	1.036	0.965	0.950	0.940	0.928	0.850	0.850

Key investment ratios	CY09A	CY10A	CY11A	CY12E	CY13E	CY14E	CY15E	CY16E	CY17E	CY18E
PE normalised (x)	36.6	25.8	22.7	16.5	23.6	22.3	15.2	11.6	8.4	6.9
EV/EBITDAX (x)	9.9	9.7	8.4	6.8	6.3	5.3	4.0	3.5	3.2	2.8
Dividend yield (%)	3.6%	3.2%	2.6%	2.6%	2.6%	2.6%	3.3%	4.3%	6.0%	7.2%
ROIC (%)	7%	8%	8%	5%	3%	3%	4%	6%	8%	10%
Gearing (ND/(ND+E), %)	-6.5%	-18.0%	-0.8%	19.4%	33.1%	36.2%	36.7%	33.5%	29.9%	24.2%

DCF at 9.5%, US$85/bbl & 0.85US$/A$

	A$m	A$/shr
Eastern Australia base	4,016	4.19
WA & NT base	3,032	3.16
Asia Pacific base	229	0.24
Growth projects		
Reindeer	688	0.72
Kipper	438	0.46
Chim Sao	411	0.43
PNG LNG	5,022	5.24
PNG LNG T3 risked @40%	434	0.45
GLNG 7.8mtpa risked @100%	3,373	3.52
GLNG T3 risked @0%	-	-
Zola	107	0.11
Tariffs/tolls	(308)	(0.32)
Corp & Unallocated	(1,173)	(1.22)
Exploration	685	0.71
BLNG milestone pmt, risked	21	0.02
BLNG risked @40%	279	0.29
Crown LNG risked @20%	404	0.42
Net Debt	(2,291)	(2.39)
Risked DCF	**15,366**	**16.03**

Chart: Production outlook



Source: Company reports and Citi Research

Investor's focused on GLNG downside, what about upside?

STO has been trading at the largest discount to DCF in our large cap E&P stock coverage for the last 12-18 months. Despite a prevailing ETR of >40%, the market remains unwilling to attribute what we deem as fair value for STO's growth assets, largely given uncertainties for GLNG. Although GLNG only accounts for only ~22% of our A$16.03/shr Target Price, it commands the vast majority of investor's focus.

At STO's 1H12 result, STO provided greater clarity on GLNG. It is now clear that the US$2.5bn of accelerated upstream capex is required to fill the 2 GLNG trains, and the plan at FID was to buy most of the gas required for T2 on market. The fact that the original US$16bn FID budget did not develop sufficient gas to supply the 2-Train project was disappointing news versus investor's prior expectation. Management had not articulated this at FID, and STO's credibility has taken a hit as a result. Investors are now viewing the GLNG project with scepticism in our view.

Despite STO's efforts to better explain the GLNG project status and outlook, many investors still fear the worst for project delivery (capex and timing) and field performance (Roma), given the uncertainty and the unproven nature of large scale CSM to LNG.

We think Santos' guidance to the market for GLNG is relatively conservative, and we see the possibility for out-performance vs market expectations (which are set very low) through execution. Specific opportunities to outperform include:

1. **Potential Resource upside long term**: We don't expect significant reserves growth to be announced for 2012 as the focus has been on development wells. Longer term, we see substantial reserves growth likely from Arcadia and Greater Fairview following further appraisal. Using geological data available from the Qld Government Department of Natural Resources and Mines, we estimate an ultimate recoverable gas resource of >9,000PJ from GLNG, consistent with NSAIs prior EUR estimate of 9,481PJ in late 2010. Our current GLNG valuation is based on the JV commercializing only 7200PJ of equity CSM gas. Assuming ~9500PJ of equity CSM would increase our GLNG DCF by A$0.86/shr or 25%.

2. **Potential for better well performance vs plan**: Based on actual performance from Fairview wells, and our detailed review of Roma geology in this note, we expect well peak production rates from Fairview and Roma will outperform STO's conservative planning assumptions. This may allow a faster ramp up of GLNG Trains to be realised. Assuming LNG trains have ramped up by end CY16 rather than by 2019 could increase our GLNG DCF by A$0.25/shr or 7%.

3. **Potential for lower sustaining capex**: We understand STO is targeting >50% reduction in well costs with improved rig technology and drilling procedures, which would reduce sustaining capex. Assuming well costs can be reduced by 50% from CY16 onwards (A$360m pa) could increase our GLNG DCF by A$0.53/shr or 15%.

4. **Potential for faster rampup from 3rd party gas**: In the case where well performance does not exceed planning assumptions, there is scope for the JV to buy more 3rd party gas to achieve a faster rampup. If the JV were to buy gas on market at A$8.50/GJ to fill capacity of the LNG trains during ramp-up, it could increase our GLNG DCF by A$0.20/shr or ~6%.

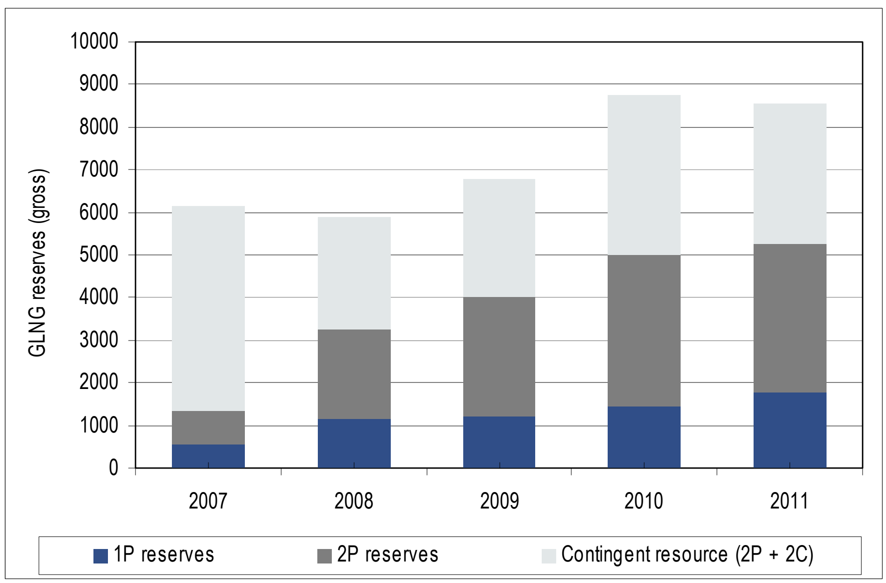
In aggregate, the combination of points 1, 2, and 3 above could add A$1.74/shr to our GLNG DCF. We expect STO will need to demonstrate the upside discussed above before the stock rerates, and much of this will be long dated. However, our research suggests there is good reason to consider these upside scenarios.

A closer look at the GLNG CSM resources

From Dec-09 to Dec-11, the GLNG JV's net 2P reserves have grown from 4003PJ to 5268PJ. While this >30% growth in reserves is positive, at FID in Jan-11 Santos was forecasting a GLNG net reserves position of >6000PJ by the end of CY11 with an NSAI estimate ultimate EUR of 9848PJ. This large miss in reserves build has led some to speculate that the ultimate gas resource recovered would be much lower than the NSAI estimate, and given drilling at the time was focused around Roma it was thought that the Roma resource had disappointed vs prior expectations.

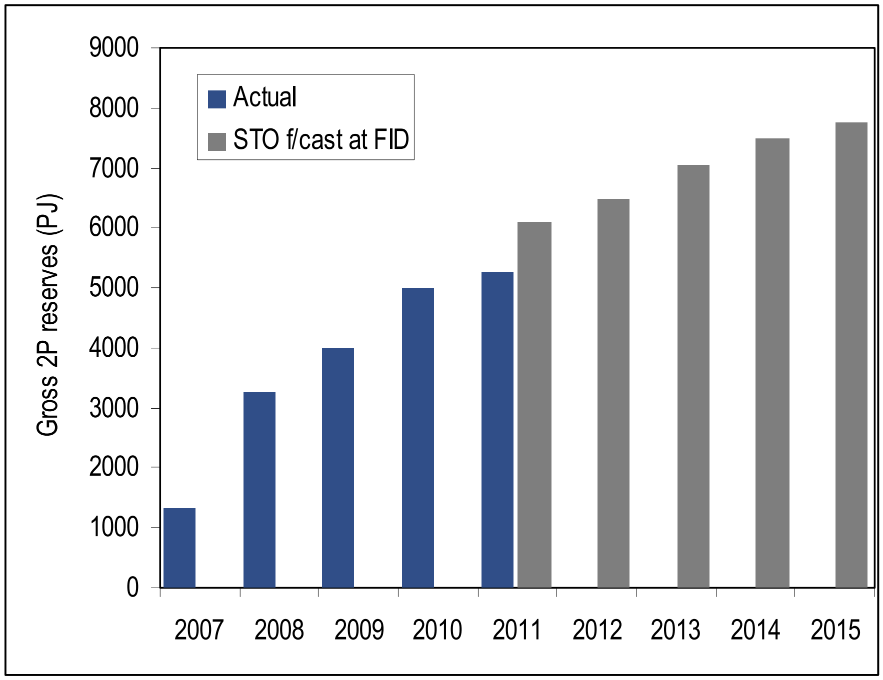
We think that the slower than expected reserves build is more because the JV has not performed as much appraisal drilling in areas like Arcadia as was expected at FID. The unusually high rainfall in the 2010/11 and 2011/12 wet seasons has put development drilling behind the original schedule (which we discuss in detail later in this note), and so the JV has been prioritizing development drilling with a focus of deliverability rather than appraisal drilling for reserves growth.

Figure 2. GLNG reserves and resource position (gross)



Source: Citi Research

Figure 3. GLNG reserves at end CY11 short compared to STO's projections at FID

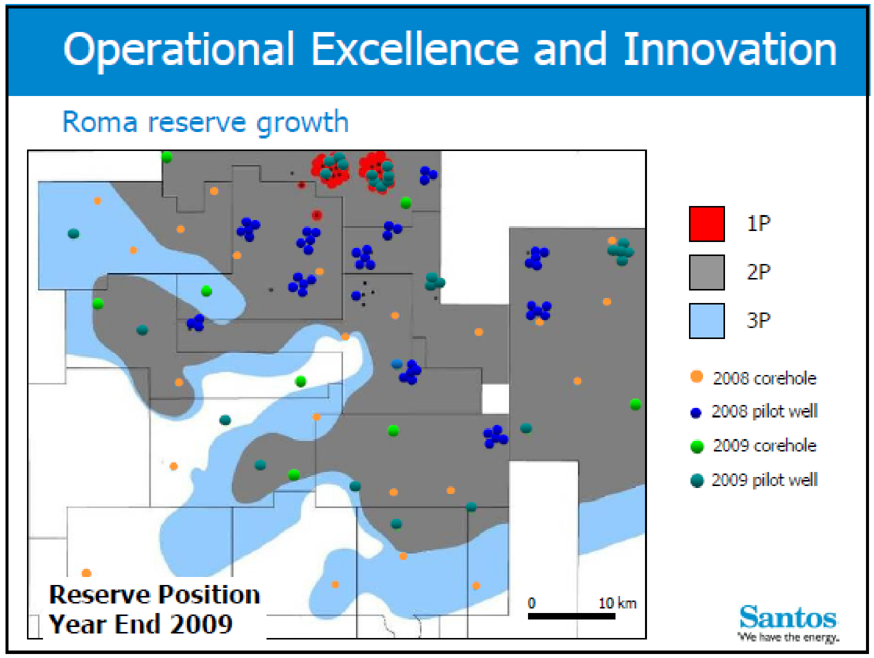


Source: Company reports, Citi Research

From reserves data provided by the Qld Government Department of Natural resources and Mines, we understand that the GLNG JV's net Roma 2P reserves have grown from ~2180PJ at Dec-09 to ~2420PJ at Dec-11.

Why has reserves growth slowed for Roma? In Dec 2009 Santos presented a slide showing Roma reserves coverage, as shown below in Figure 4. This map showed that by the end of CY09 the North-East half of Roma acreage was already covered by 2P reserves. We understand that the quality of the coals (thickness, gas content) deteriorates towards the South-West, and hence by the end CY09 we think that the majority of attractive acreage at Roma would have already been covered by 2P reserves.

Figure 4. Roma reserves coverage as of end CY09



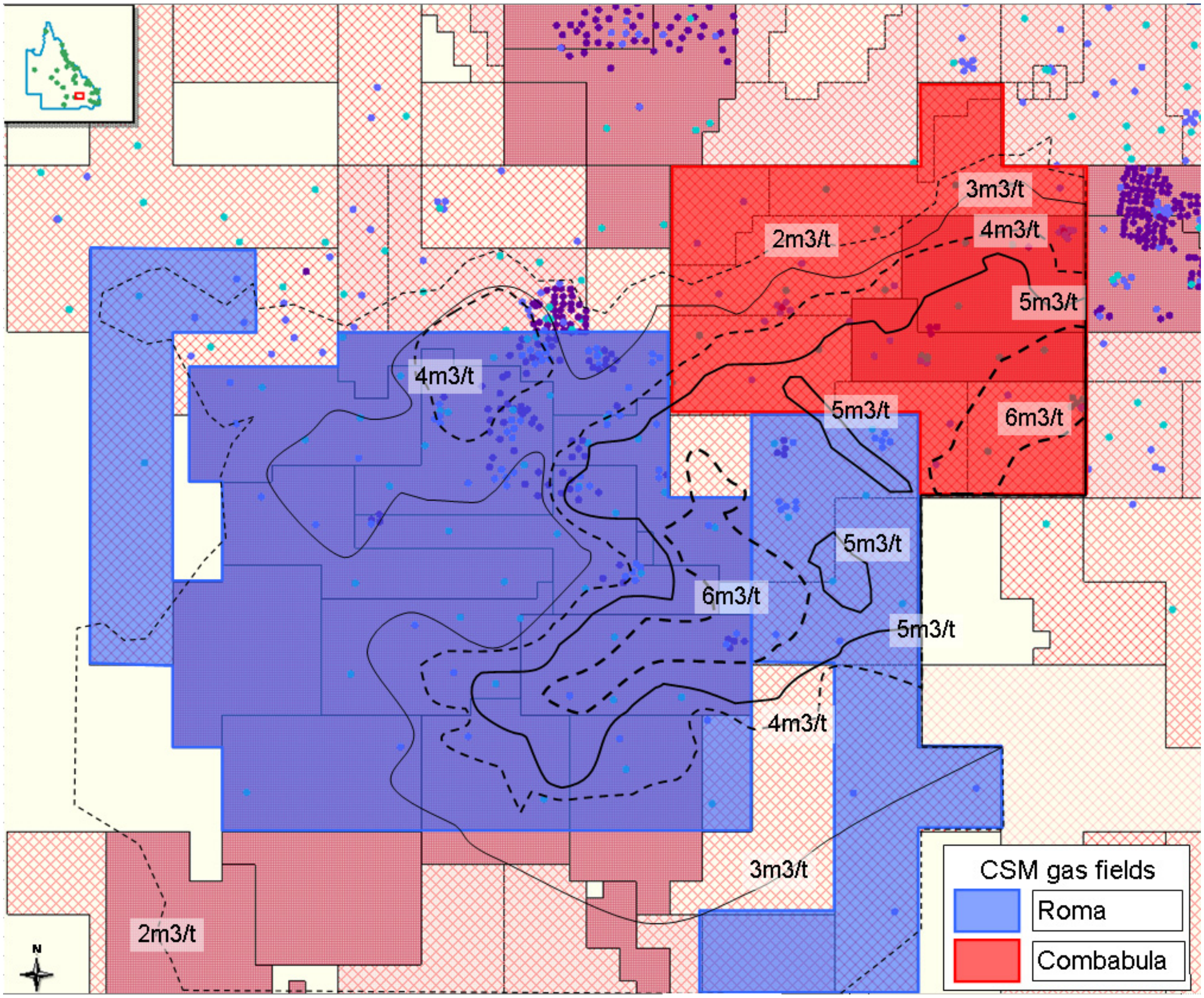
Source: Company Reports
NOTE: Roma 2P reserves have only increased by 9% from end-CY09 to end-CY11

Could the gas recovered from Roma disappoint vs current reserves? We have undertaken a comprehensive review of over 200 CSM open file well completion reports across Roma (and Origin's adjacent Combabula field), as well as published maps/data from the various operators, to better understand how the CSM geology changes geographically (from east to west).

This exercise has enabled us to better assess the likely well performance from Roma prior to the GLNG JV having production history across the field. This process we have undertaken is a standard process for CSM operators, and we think the insight gained from the geology is one of the reasons why STO is confident in ultimate well performance from Roma.

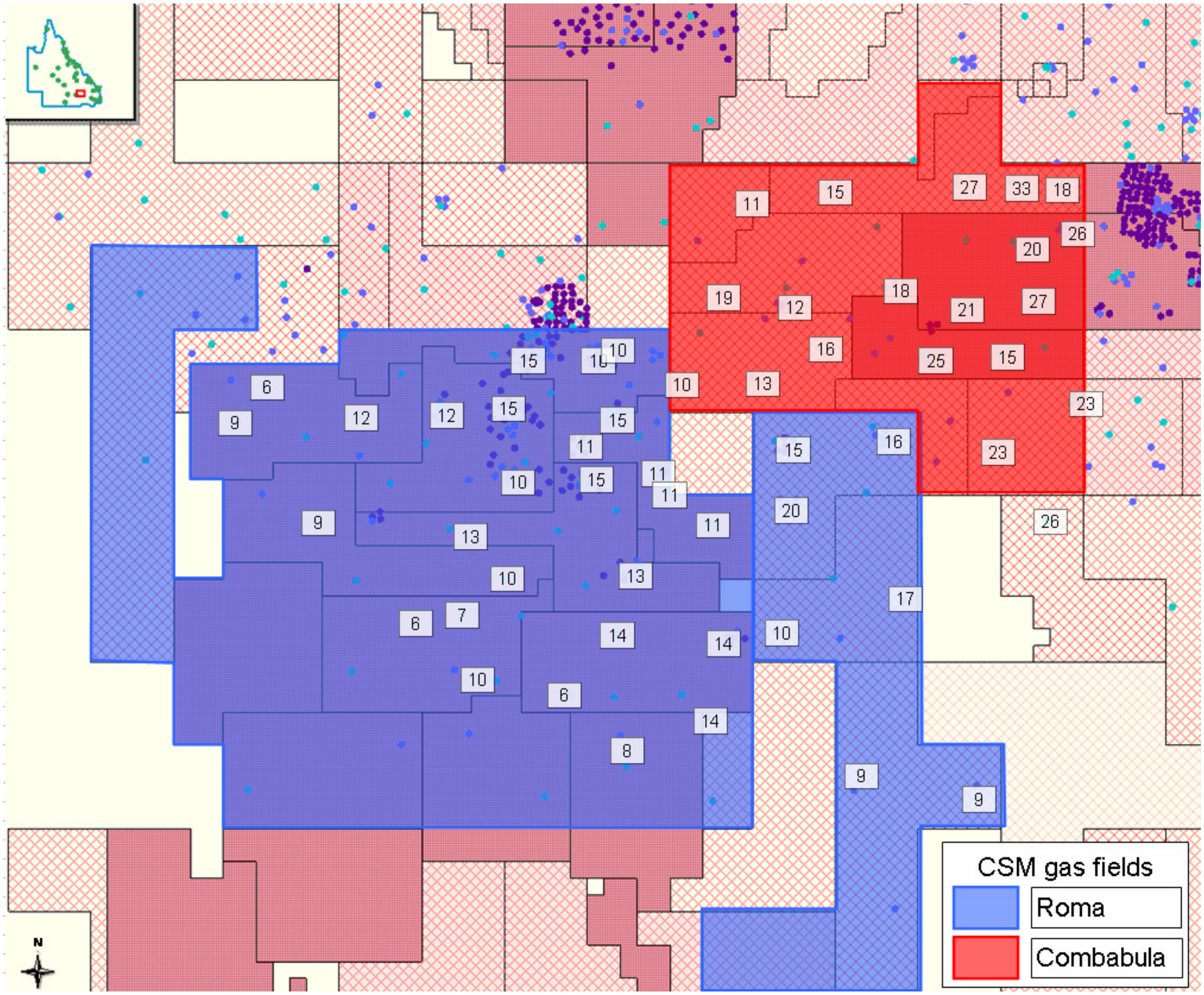
Using the well completion report data, we have mapped net coal thickness and gas content to form a view on the quality of Roma acreage, as shown below in Figure 5 and Figure 6. We acknowledge that our estimates for a specific location are unlikely to be exactly correct, however we expect the small errors should be averaged out by the large number of CSM wells being drilled.

Figure 5. Estimated average coal gas content across Roma and Combabula CSM fields



Source: Citi Research, Company Reports, Qld Government Department of Natural resources and Mines

Figure 6. Estimated average coal thickness across Roma and Combabula CSM fields, thickness in metres



Source: Citi Research, Company Reports, Qld Government Department of Natural resources and Mines

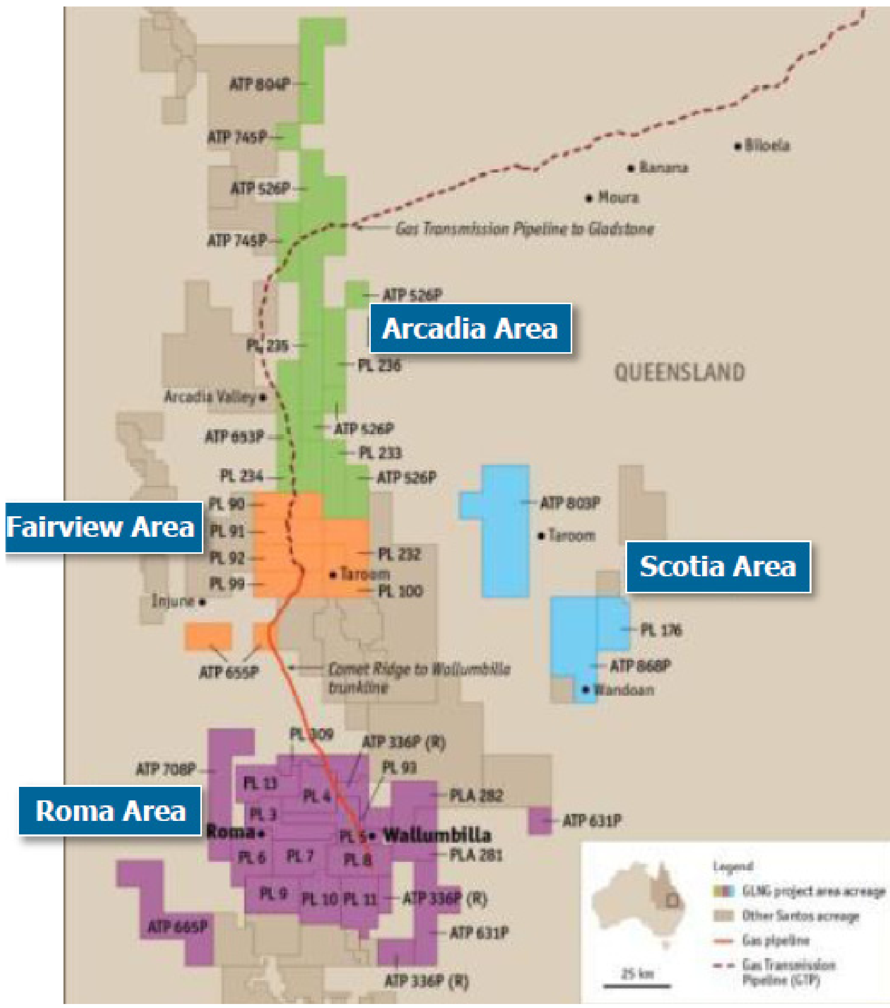
The maps above demonstrate that the quality of Roma acreage deteriorates towards the South West as net coal thickness drops below <10m and gas content drops to below 3m3/t. However we think it is equally as important to realize that the coal in the North-East of the Roma acreage is of a higher quality, with gas content similar to Combabula and net coal thickness only slightly less than Combabula.

We have estimated Well Estimated Ultimate Recoveries (EURs) across Roma using the coal thickness and gas content data collected, plus typical Surat Basin ash/moisture content, well spacings and recovery factors. Then based on these EURs we estimate a recoverable gas resource net to GLNG JV from an area similar to the delineated "2P reserves" area in Figure 4 above, where net coal thickness is >10m and gas content is >3m3/t. Our estimated recoverable gas resource of ~2600PJ is ~7% higher than the reserves position at the end CY11, and it excludes a further >800PJ of gas recoverable from acreage we see as marginal (well EURs <0.8PJ/well). Hence we see little risk to current Roma reserves, however we also

think that there is probably only small amount of upside remaining in Roma 2P reserves near term.

With little upside to Roma, where will remaining resource upside come from? At its Strategy day in Nov-12 Santos stated that it had placed a higher priority on production drilling in CY12, rather than drilling to increase reserves. While Fairview and Roma reserves build are both reasonably well advanced, Arcadia/Scotia and the broader Fairview flanks are yet to have the same level of drilling (coreholes and production pilots) required to certify 2P reserves. As such we expect to see continued reserves build from these areas over time with continued drilling and appraisal works.

Figure 7. GLNG acreage, colour coded by project area



Source: Company Reports

We have undertaken an analysis of possible EURs for Fairview/Scotia/ Arcadia, similar to the analysis previously undertaken on Roma, but based on a much smaller data set of open file well completion reports. Below in Figure 8 we have shown reserves net to the GLNG JV for each field to Dec-11, compared to our estimated EURs for each region.

Figure 8. GLNG reserves at 31st Dec-11 by field compared to our estimated EUR

	Gross 2P reserves, PJ (QLD Dept)	GLNG JV interest	GLNG net 2P reserves (QLD Dept)	GLNG net 2P reserves (STO)	Estimate net EUR, PJ (Citi est.)
Fairview	2914	76%	2215		3200
Roma	2588	mostly 100%, 82% in ATP631	2421		2600
Arcadia	812	76%	617		3200
Scotia	186	100%	186		900
TOTAL	**6500**		**5348**	**5268**	**9900**

Source: Qld Government Department of Natural resources and Mines, Santos, Citi Research.

We think this analysis confirms the opportunity for substantial reserves build from Arcadia, and to a lesser extent Scotia and Greater Fairview. We think there is still potential for the GLNG JV to ultimately produce the NSAI recoverable resource estimate of 9481PJ which was published back in late 2010. It is important to realize that we have only included top tier acreage in this analysis, ie. areas where well EURs are anticipated to be greater than 1PJ/well. If the GLNG JV is able to reduce well costs longer term, or use in place infrastructure to produce more marginal acreage, then we would see the potential for further upside to these numbers.

What could this mean for our valuation? Our current GLNG valuation is based on the development of only ~7200PJ of equity CSM gas. Assuming in fact that the JV ultimately develops ~9500PJ of equity CSM gas would increase our GLNG DCF by A$0.86/shr or 25%.

Roma flowrates conservative, potential to outperform

The GLNG JV has assumed average peak flow rates of 1.1TJ/d from Fairview and 0.5TJ/d from Roma for the purpose of internal production forecasts / planning. Santos has stated that these flowrates are likely conservative, and we agree based on the analysis we've outlined in this note.

At the Investor Day in Nov-12 STO stated that Fairview was currently averaging 1.44TJ/d per well from 159 production wells, but there was potential for upside to this number given this average included some wells which were yet to be fully dewatered. This achieved rate from Fairview is already ~30% higher than that used for planning.

While there is very little production data available from Roma, we think the data/insights we have suggest that Roma should outperform STO's conservative guidance based on three points:

1. **Current assumption based on observed flowrates from wells yet to be dewatered**: Santos has said that 0.5TJ/d production guidance for Roma was based on the achieved average flow rate from 33 pilot wells which had not completed dewatering, hence there should be upside to this number and we expect STO's guidance is conservative.

2. **Relationship between water flowrates and peak gas rates**: STO has observed a relationship between initial water rates and peak gas rates at Fairview (1Kbwpd results in peak gas rate of 1TJ/d). This observation was also made historically by QGC for its Surat Basin acreage, and we expect it will hold at Roma. STO presented three water production charts for wells at Roma at its strategy day in Nov-12 which showed initial water rates of 0.6-1.2Kbwpd,

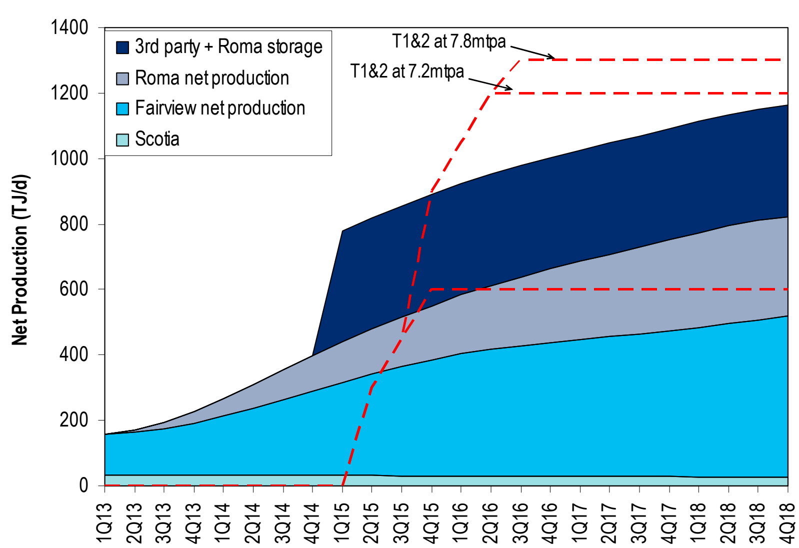
suggesting peak gas rates will also range from 0.6-1.2TJ/d, again above production guidance.

3. **ORG's expectations for Combabula which has similar geology to Roma**: On the recent APLNG site tour ORG guided to average peak rates of 1TJ/d for its Combabula acreage which is adjacent to the Roma acreage (North East of Roma). Based on our review of Roma/Combabula geology, we estimate that Roma well EURs will be ~25% lower than Combabula EURs given some deterioration of coal quality towards Roma. We would expect a similar relationship between EURs and peak-rates for Roma and Combabula which have similar geology. As such we expect Roma peak rates to average ~25% less than Combabula wells, or 0.75TJ/d.

We think that the above analysis suggests Roma wells are more likely to achieve peak rates of ~0.75TJ/d on average, higher than STO's conservative guidance of 0.5TJ/d. If the Roma wells do actually average 0.75TJ/d, and Fairview wells continue to outperform relative to STO's planning assumption, we think that the CSM fields could support a faster ramp-up of GLNG than STO's guidance of a ~3yr ramp-up from 2015.

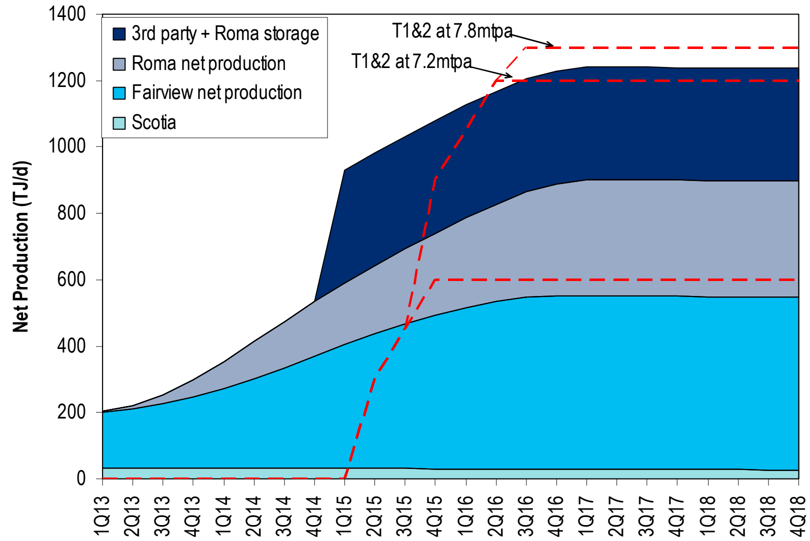
We have built a well by well model to better understand how higher well peak rates increase the ramp-up of gas supply from the upstream project. We have looked at two scenarios, 1) a "Design case scenario" which uses conservative well peak rate assumptions (Roma peak 0.5TJ/d, Fairview 1.1TJ/d, Fairview flank 0.75TJ/d) , and 2) our expectation for actual well performance (Roma peak 0.75TJ/d, Fairview 1.5TJ/d, Fairview flank 1.0TJ/d). We have used our expectation for drilling timing and well type curves in each scenario. The two ramp-up profiles are shown below in Figure 9 and Figure 10.

Figure 9. CSM supply ramp-up using conservative well peak rates



Source: Citi Research

Figure 10. CSM supply ramp-up using our expected well peak rates



Source: Citi Research

This analysis shows that if the wells outperform relative to STO's conservative planning assumptions then the LNG Trains could be ramped up to design capacity by end-CY16, ie LNG ramp-up profile becomes largely a function of the LNG construction/commissioning and not of gas supply from the field.

We currently model a conservative ramp up of LNG production from June-15 until end CY18. If we were to adopt the profile shown in Figure 10 above it would increase our GLNG DCF by A$0.25/shr or 7%. We think this outperformance from the field would also improve market sentiment towards the project.

When are we likely to gain clarity on Roma production performance? The water treatment infrastructure is planned to be in place by end CY13, after which the Roma wells will commence the dewatering process which can take ~12-18 months for Surat Basin wells. We are therefore unlikely to have clear visibility on Roma production performance until late CY14.

Drilling rates back on schedule and likely to improve

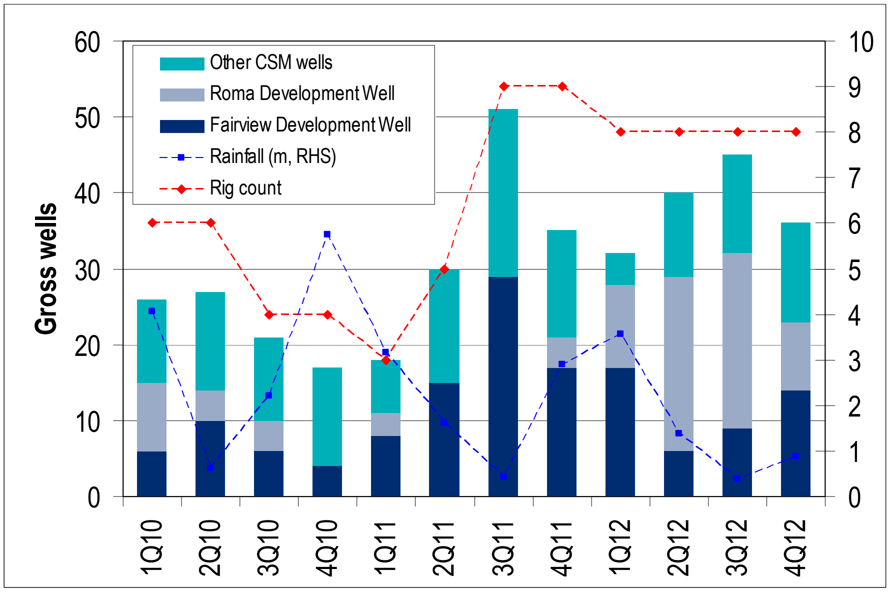
Beyond well performance, the other area influencing field deliverability is the well drilling rates, and some investors have expressed a concern that a slower than anticipated drilling rate could result in a lack of gas production.

Drilling rates have been hampered for GLNG and the industry since FID by unusually wet weather, particularly in the 2010/11 wet season, and to a lesser extent in the 2011/12 wet season. Figure 9 shows the wells drilled for GLNG per quarter compared to quarterly rainfall and the GLNG rig count, showing the drop in activity during these wet seasons.

The unusually wet weather placed GLNG behind schedule early in the project. STO's original target was to drill 150+ wells in CY11 before the rain/floods, but it lost ~2 months to weather in 1Q11, drilling only 18 wells that quarter. The JV contracted extra rigs to catch up, and ended up drilling 134 wells by end CY11– the JV did not plan to catch up in year one but over a few years.

Santos was targeting to complete 150 CSM wells in CY12, and based on the current well data available on its website we count 153 CSM wells completed in CY12 which is a positive. We note that we expect total CSM wells drilled in 4Q12 (we expect ~36 wells) to be down on 3Q12 due to time lost over Christmas (see Figure 11).

Figure 11. GLNG CSM drilling rates compared to rig count and rain fall



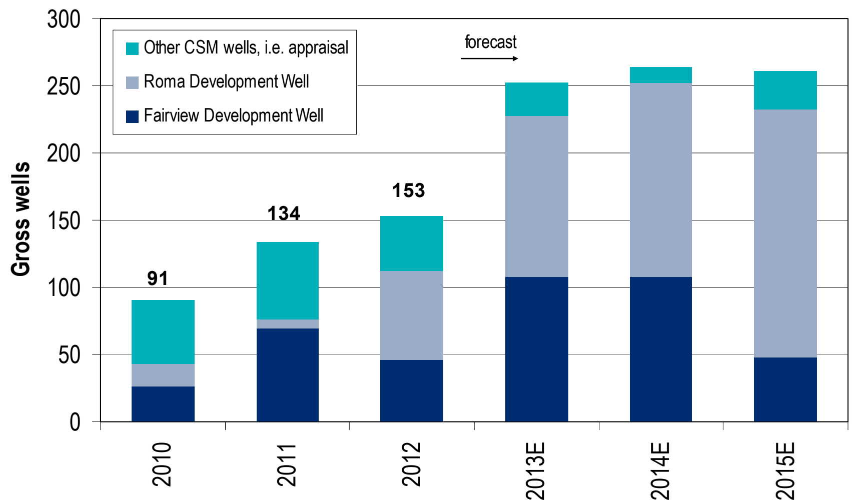
Source: Citi Research

Santos has learnt from the last 2 wet weather seasons where its drilling has been interrupted by rain and slippery roads. Santos is ensuring it "black-tops" more of its roads ahead of the wet season in 1Q13. If it was to experience the same wet weather as the last two seasons, then it would slow down Santos' drilling rate, although not as much as it has for the last 2 seasons. Also, Santos' schedule does allow for a slowdown in drilling in the wet season, just not to the degree that was experienced in the last two seasons.

While meeting targeted drilling rates in CY12 is positive, CY13 will prove to be a bigger test with STO targeting to average 250-300 wells pa from CY13-15 to lift the total well stock to 1300 wells by end CY15. The expected step up in activity is shown in Figure 10 below. We think STO will need to consistently meet ~60 wells per quarter before investors will gain confidence in targeted drilling rates.

In the 4Q12, three new Saxon rigs (Saxon 185, Saxon 186, Saxon 187) commenced drilling operations, and we believe a fourth will be delivered shortly. The Saxon rigs have the advantage of being fully automated, purpose-built CSM rigs that can benefit from the advantages of pad-drilling, and should help increase the number of wells drilled per quarter. We see the opportunity for the Saxon rigs to increase drilling rates from early 2013, and help alleviate market concern over drilling rates.

Figure 12. Actual and forecast wells drilled for GLNG project



Source: Company data, Citi Research

Potential for new rig technology to bring down well costs

A key advantage for the new Saxon rigs, discussed briefly by Santos at the Strategy day, is that if faster spud to spud times can be achieved as anticipated, then it should drive down average CSM well costs. At its strategy day Santos stated that it had already reduced the drilling costs for its deviated Roma wells by 40% or >A$0.5m per well during 2012, and that its Roma wells are already costing less than the A$2m per well.

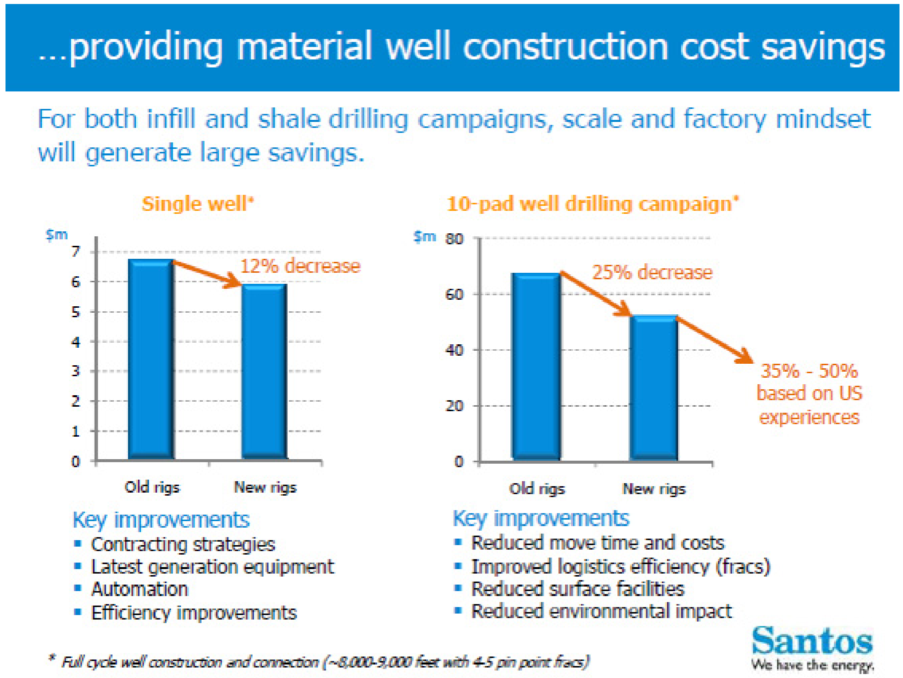
The concept of using smart rigs and a manufacturing like approach to well drilling/completions to drive down costs is not new. Operators in the US have been fine-tuning shale gas well drilling for several years in an attempt to drive down costs and improve economics, however rig technology in Australia is years behind the US.

Santos recently brought 3 purpose-built Saxon rigs into the Cooper Basin for its gas infill drilling program, which are designed specifically for drilling pad (fully automated, skidable, directionally drillable). STO has already proven a reduction in spud to spud times of drilling, and is targeting cost reductions in the Cooper Basin, as outlined in the chart below (Figure 11) were presented at its Sep-11 Cooper site tour.

While the cost reductions achieved by operators in the US has been very impressive, the techniques which are commonplace in the US are still very new here in Australia. In the Cooper Basin Santos is still taking baby steps with its new Saxon rigs, having only just drilled a 6 well pad. Santos wants to prove the cost reductions from its 16 well pad in the Cooper Basin which is to be drilled in early 2013. This will be the first test of whether STO can actually perform true simultaneous operations (drilling a new well while fraccing an adjacent well on the same pad).

Just like operations in the Cooper Basin, we see the opportunity for the GLNG JV to significantly reduce average CSM well costs. From our discussions with Santos we understand it thinks a ~50% saving in average CSM well costs could ultimately prove to be conservative, and we see the opportunity for STO to discuss in more detail in CY13 when it is starting to achieve these cost savings.

Figure 13. Santos targeted well cost savings from pad-drilling in Cooper Basin



Source: Company Reports

Sustaining capex uncertain, but risk to the downside

One of the remaining concerns from the market is in understanding the magnitude of sustaining drilling capex post first LNG. While Santos is yet to provide explicit guidance on longer-term sustaining capex for the project, it has stated the JV would need to drill ~300 wells per year to sustain production rates. STO has also stated that current drill and complete costs are ~A$2m per well, which indicates ongoing drill and complete costs of A$600m per year.

What about gathering costs? We think that gathering costs to tie the wells into the infrastructure would add ~A$120m per year (or ~A$300K/well), lifting sustaining capex to A$720m per year.

What about infrastructure costs? The US$18.5bn budget includes all required field infrastructure (pipelines, compression, water treatment, roads, camps etc) to produce from the Fairview and Roma fields at 890TJ/d. In addition, the GLNG JV has secured 265TJ/d of gas supply from third parties, and some feedstock will come from storage also. STO therefore does not anticipate additional capex on field infrastructure until it ties in the Arcadia and Scotia fields later in the project life. We estimate that the infrastructure will cost ~A$1.5bn gross for the tie-in of Arcadia in CY19-CY20 (real terms), and a smaller scale ~A$1bn (gross, real) in CY24-CY25 for the Scotia infrastructure.

We currently model sustaining capex of A$600m per year, plus the two large infrastructure projects to tie in Arcadia and Scotia. Our rationale for A$600m per year is that we think there will be some cost savings for drilling and completion which will lower the capex from our current estimated A$720m requirement based on prevailing costs.

However, we see a strong possibility for sustaining capex to be below A$600m pa with the benefit of new rig technology. Assuming well costs can be reduced from current cost levels by 50% from CY16 onwards to A$360m per year would increase our GLNG DCF by A$0.53/shr or 15%.

We think it is peculiar that the market appears willing to assume the introduction of new drilling technology in the Cooper Basin will drive down well costs and support longer term commerciality for shale gas (for stocks like BPT and SXY, for example), but it appears unwilling to accept the notion of cost reductions for CSM drilling. We view shale gas as being commercially unproven currently and our analysis suggest Cooper shale gas is likely to have a higher cost of supply vs CSM.

Opportunity to buy/swap gas on market

While Santos has guided to a conservative ~3yr ramp-up of its Gladstone LNG facility due to a ramp-up of its CSM fields, we think that there will be an opportunity for it to buy 3rd party gas volumes to fill under-utilised capacity of its LNG Trains. We think this is likely in the scenario that well performance does not outperform STO's planning assumptions. Uncontracted gas volumes we are aware of include:

- Non-GLNG gas volumes from Fairview. The GLNG JV has a ~79% interest in Fairview, which is increasing production capacity to 660TJ/d. This means that there is ~140TJ/d of potential 3rd party supply from Fairview. Of this 140TJ/d of potential 3rd party supply, 25TJ/d has already been spoken for by the Fairview/Combabula swap, and there is further potential for swaps to occur for the remaining 115TJ/d which we discuss below.

- STO minority interests in other CSM fields. Santos currently holds a minority interests in both Spring Gully (~2.4%) and Combabula (5.91%), CSM fields which APLNG is planning to use to supply gas to its LNG project in Gladstone. We understand APLNG is building ~600TJ/d of production capacity at Combabula and ~200TJ/d at Spring Gully. Based on STO's equity interests in these fields we estimate ~40TJ/d of STO's equity share of production from these two fields. Santos has already swapped ~25TJ/d of Combabula/Fairview gas, but we see the potential for a further ~15TJ/d of supply to be swapped.

- Non-GLNG gas volumes from East Roma. While the GLNG JV has 100% interest in the majority of Roma licenses, it only has a ~85% working interest in ATP631P, with the remaining interest held by APLNG (15%). We see scope for either a swap to occur which would provide the GLNG JV with access to this gas using STO's Spring Gully gas if that was available, or other Santos portfolio gas. Otherwise, a 3rd party supply agreement could be reached for this gas. We estimate the volume would be in the order of 10-15TJ/d.

- BPT's share of Horizon contract: Santos has signed an agreement with the GLNG JV in 2010 to supply 140TJ/d of gas supply from the Cooper Basin, with the other Cooper JV partners having the option to participate or not. While ORG has stated it will not participate BPT has not confirmed if it will participate in the supply to GLNG. We think for planning purposes STO will need to assume it is supplying 100% of these volumes from the Cooper. For STO to supply 140TJ/d of equity gas from the Cooper, the Cooper JV will need to produce an additional ~215TJ/d gross, of which BPT's equity share would be ~45TJ/d.

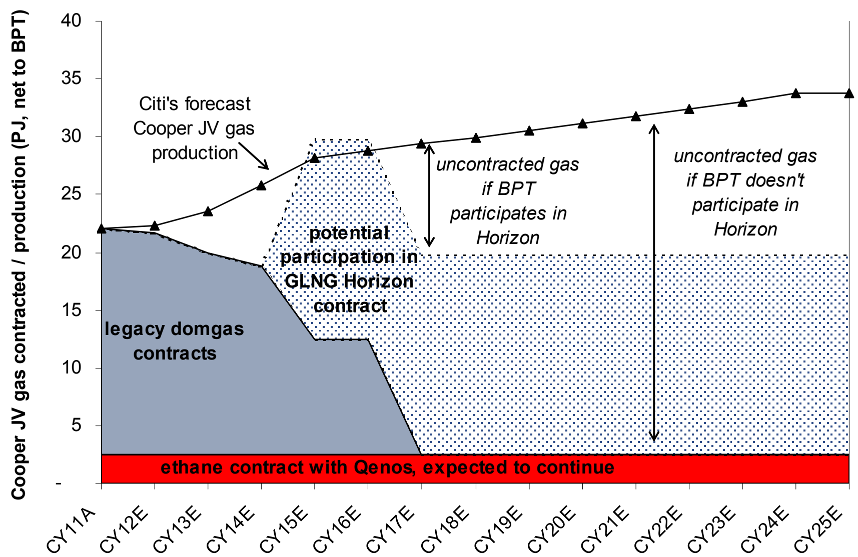
  It has been over 2 years since Santos signed the GLNG Horizon contract. BPT has added to shareholder value by not signing up with GLNG initially, in our view, as we believe gas prices have increased by more than A$1/GJ in that time. However, we think time is closing in for BPT and it should sign a contract soon.

We would expect BPT will likely sign a contract in the coming months, for two reasons:

1. The longer time goes on, the more the CSG-LNG players firm up gas supplies for their 2-train projects. Over the last 12 months, Santos has accelerated its infill drilling plans and increased its gas production targets for the Cooper Basin, and so it could potentially supply all of the 140TJ/d using its 65% share.

2. BPT has uncontracted gas at the Cooper Basin from May-13 which is when the 36TJ/d (gross) Xstrata contract expires, and its uncontracted gas position increases significantly in the coming years as production increases and other contracts expire, as shown below in Figure 12.

Figure 14. BPT's uncontracted gas position starts to increase in CY13



Source: Citi Research

We currently model a conservative ramp up of LNG production from June-15 until end CY18. If we were to assume the GLNG JV was able to instead buy gas on market at a price of A$8.50/GJ to fill LNG capacity it would increase our GLNG DCF by A$0.20/shr or ~6%.

Realistically when are we likely to see these contracts signed if at all? We think that the APLNG JV is unlikely to sell its share of Fairview gas to others until just before start-up of its own project so that it does not leave itself short of gas. BPT on the other hand is facing a closing marketing window for its share of Horizon contract volumes, and given it will need to soon commit to the capex program to deliver the gas, we think it will likely look to contract these volumes in 1H CY13.

Valuation Scenarios

Figure 15. DCF Valuation Scenarios for Australian E&P Sector, with Long-Term Forecasts of US$85/bbl Brent and 0.85US$/A$

Company	Scenario	Share price A$/shr	DCF A$/shr	DCF prem/(disc) to price	Price target A$/shr	PT prem/(disc) to price
Woodside	Base business incl. Pluto-1	34.73	32.65	-6%	41.13	18%
9.2% disc. rate	Base business, Pluto-1, +Pluto-2 assuming WPL contribute 25% of 8tcf for T2		34.37	-1%		
Buy	Base business, Pluto-1, Pluto-2, Browse FLNG		38.83	12%		
	Base business, Pluto-1, Pluto-2, Browse FLNG + Sunrise		41.62	20%		
	Base business, Pluto-1, Pluto-2, Browse, Sunrise + Laverda oil		42.76	23%		
Santos	Base Business	11.48	5.54	-52%	16.03	40%
9.5% disc. rate	Base + Kipper		5.99	-48%		
Buy	Base, Kipper, PNG LNG		11.23	-2%		
	Base, Kipper, PNG, GLNG		14.75	28%		
	Base, Kipper, PNG, GLNG, PNG T3		15.88	38%		
	Base, Kipper, PNG, GLNG, PNG T3, BLNG		16.61	45%		
	Base, Kipper, PNG, GLNG, PNG T3, BLNG, GLNG T3		17.86	56%		
	Base, Kipper, PNG, GLNG, PNG T3, BLNG, GLNG T3, Zola		18.08	58%		
	Base, Kipper, PNG, GLNG, PNG T3, BLNG, GLNG T3, Zola, Crown (4tcf brownfield LNG)		19.77	72%		
Oil Search	Net Debt	6.96	-1.77	-125%	8.46	22%
10% disc. rate	Base business ex LNG		-1.16	-117%		
Neutral	Base Case: Including PNG LNG		6.48	-7%		
	Base Case: Including PNG LNG , 5tcf Train 3 project (29% OSH share)		8.82	27%		
	Base Case: Including PNG LNG , 5tcf Train 3 project, Kurdistan oil		10.10	45%		
KAR	Base Business (Corporate costs and cash)	5.26	0.49	-91%	10.17	93%
11% disc. rate	Base + 7tcf FLNG Poseidon development (inc funding dilution)		4.39	-17%		
Buy/High Risk	Base, Poseidon FLNG + 325mmbbls development in Brazil (inc funding dilution)		10.80	105%		
	Base, Poseidon FLNG, Brazil + 140mmbbls dev in Peru (inc funding dilution)		12.98	147%		
AWE	Base business inc plus late life Trefoil tie-in to BassGas	1.20	1.04	-14%	2.14	78%
11% disc. rate	Base, plus Sugarloaf		2.00	67%		
Buy/High Risk	Base, Sugarloaf, plus AAL Indonesia Oil development post farm-down		2.43	102%		
	Base, Sugarloaf, Indonesia Oil, Perth Basin Shale (valued at A$150/acre multiple)		2.60	117%		
BPT	Producing assets inc North Shadwan and Bakken Oil Shale	1.45	0.72	-51%	1.22	-16%
11% disc. rate	Producing assets + net cash		0.87	-40%		
Sell/High Risk	Base Business + Cooper Shale based on $600/acre		1.17	-19%		
	Base, Cooper shale, + undeveloped gas resources (BMG gas, Pandora, Burnside)		1.33	-8%		
	Base, Cooper Shale, undeveloped gas resources + 50mmbbls Tanzania discovery		1.47	1%		
AUT	Base business valuation (based on 60acre spacing)	3.69	2.57	-30%	3.29	-11%
11% disc. rate	20% increase in capital efficiency		2.87	-22%		
Sell/High Risk	Down spacing wells to 40acres		3.41	-8%		
	Lower declines / higher EURs		4.24	15%		
	Aggressive drilling, NGL stripping, and combined effects		4.42	20%		
SXY	Base oil business	0.77	0.24	-93%	0.63	-19%
11% disc. rate	Base+ Western Flank oil exploration		0.32	-91%		
Sell/High Risk	Base, oil exploration+ BG operated CSM assets and Don Juan CSM assets		0.36	-90%		
	Base+ oil exploration+ BG operated CSM assets+ Don Juan CSM assets+ Shale business multiple		0.63	-83%		

Source: Citi Research, Note: Prices are as of market close Thursday 10th January 2013

Santos Ltd

Company description

Santos Limited (STO) is an oil & gas exploration and production company, with a portfolio of largely Australian-based, mature assets. In addition, Santos is a 13.7% JV partner in the PNG LNG project. The company's main focus is on delivering the highly material Gladstone LNG project in which it is operator and 30% JV partner.

In 2011 Santos' total production was 47 million barrels of oil equivalent, split between natural gas (75%), oil and condensate (21%), liquefied natural gas and liquefied petroleum gas (4%), and as at 31 December 2011, STO had total proved and probable reserves of 1,364 million barrels of oil equivalent.

Investment strategy

We rate Santos Buy (1). We think Santos is attractively valued based on the growth from its PNG LNG and GLNG projects, plus the improved margins to be derived from higher domestic gas prices at its Cooper Basin legacy asset. We think there is potentially further valuation upside from longer-dated growth projects (Bonaparte LNG, potential Train 3 at PNG LNG, Zola, Crown, exploration success, etc), although we think it is premature to factor in too much value for these long-dated options.

Valuation

Our target price of A$16.03/shr is based on our DCF valuation, and attributes full value for non-LNG growth (Chim Sao, Kipper, Reindeer), full value for PNG LNG, two-train GLNG development, 40% risk weighting to PNG LNG T3, 40% risk weighting to BLNG, 50% risk weighting to Zola, and 25% risk weighting to Crown. Our DCF is calculated using Citi Research's commodity price outlook (long-term US$85/bbl real Brent from CY16, 0.85 US$/A$) and a discount rate of 9.5%.

Risks

A large proportion of Santos' valuation is attributed to proposed LNG growth projects, PNG LNG and GLNG, and thus subject to project risks and potential delays.

There is uncertainty about the valuation for Santos' most material LNG project, GLNG. This is driven principally by uncertainty over the later life capital cost, and also uncertainty over the ultimate reserves position. We assume 7.5tcf gross of equity gas for GLNG, but changes to this would affect our DCF valuation.

Downgrades to our long-term oil price below our assumed US$85/bbl would decrease our price target on Santos, all else being equal. If the impact on the company from any of these factors proves to be greater or less than we anticipate, the stock could outperform or underperform our price target.

Appendix A-1

Analyst Certification

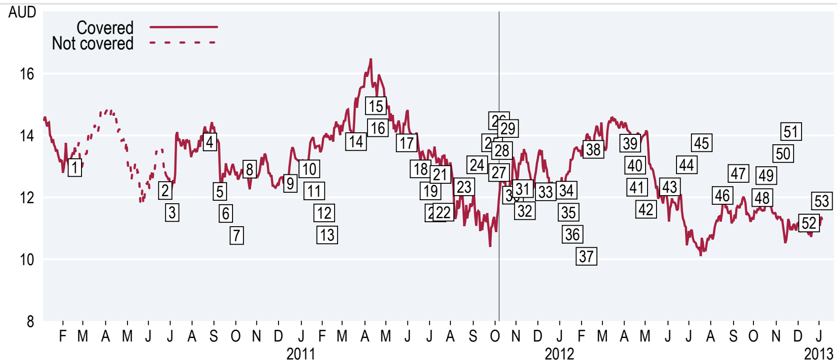
The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Santos Ltd (STO.AX)

Ratings and Target Price History
Fundamental Research

Analyst: Mark Greenwood
Covered since June 24 2010



	Date	Rating	Target Price	Closing Price
1	17-Feb-10	Coverage terminated		
2	24-Jun-10	1M	*16.15	12.81
3	4-Jul-10	1M	*16.31	12.22
4	26-Aug-10	1M	*17.57	14.07
5	9-Sep-10	1M	*17.05	12.79
6	17-Sep-10	1M	*16.80	13.10
7	4-Oct-10	1M	*16.91	12.83
8	21-Oct-10	1M	*16.56	12.26
9	17-Dec-10	1M	*15.93	12.97
10	13-Jan-11	1M	*15.85	13.45
11	20-Jan-11	1M	*15.96	13.73
12	3-Feb-11	1M	*16.16	13.98
13	8-Feb-11	1M	*16.15	13.96
14	20-Mar-11	1M	*16.47	15.05
15	18-Apr-11	*2M	16.47	15.61
16	20-Apr-11	2M	*16.35	15.63
17	31-May-11	2M	*15.83	14.76
18	19-Jun-11	*1M	15.83	13.38

	Date	Rating	Target Price	Closing Price
19	3-Jul-11	1M	*16.36	13.50
20	10-Jul-11	1M	*15.95	13.64
21	18-Jul-11	1M	*15.64	12.74
22	21-Jul-11	1M	*15.63	13.31
23	19-Aug-11	1M	*16.32	11.07
24	7-Sep-11	1M	*16.33	11.50
25	28-Sep-11	1M	*18.27	11.06
26	7-Oct-11	Stock rating system changed		
27	7-Oct-11	*1	18.27	12.02
28	12-Oct-11	1	*18.28	12.49
29	20-Oct-11	1	*18.23	12.07
30	27-Oct-11	1	*18.45	13.31
31	10-Nov-11	1	*17.84	13.18
32	13-Nov-11	1	*17.95	13.56
33	13-Dec-11	1	*18.47	13.01
34	11-Jan-12	1	*18.41	12.74
35	13-Jan-12	1	*18.42	12.85
36	19-Jan-12	1	*18.48	13.25

	Date	Rating	Target Price	Closing Price
37	8-Feb-12	1	*18.04	14.00
38	17-Feb-12	1	*18.47	13.56
39	10-Apr-12	1	*18.54	14.08
40	17-Apr-12	1	*18.34	13.90
41	19-Apr-12	1	*18.26	14.04
42	2-May-12	1	*18.32	14.16
43	5-Jun-12	1	*18.13	11.64
44	28-Jun-12	1	*16.77	10.45
45	19-Jul-12	1	*16.30	10.69
46	17-Aug-12	1	*16.56	11.78
47	10-Sep-12	1	*16.57	11.70
48	12-Oct-12	1	*16.39	11.57
49	18-Oct-12	1	*16.53	11.79
50	12-Nov-12	1	*16.44	11.02
51	22-Nov-12	1	*16.45	11.05
52	18-Dec-12	1	*16.25	10.79
53	4-Jan-13	1	*16.03	11.30

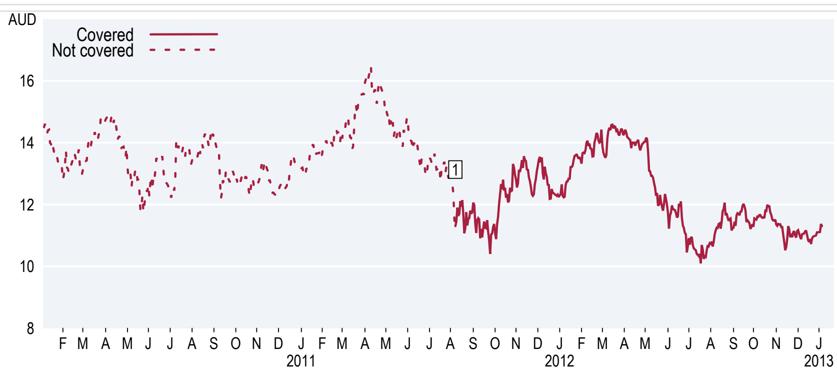
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Santos Ltd (STO.AX)

Ratings and Target Price History
Best Ideas Research
Relative Call (3 Month)

Analyst: Mark Greenwood
Covered since June 24 2010



	Date	Rating	Target Price	Closing Price
1	8-Aug-11	*ADD MP	-	11.30

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

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Data current as of 31 Dec 2012	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
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% of companies in each rating category that are investment banking clients	53%	49%	45%	60%	49%	55%

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