Australia LNG – Will the Growth in LNG Production be Maintained?

DAVID LEDESMA considers Australia's upcoming LNG potential

Background

Australia is fortunate to be endowed with considerable natural resources, not only for energy products, but also coal, metal ore minerals and precious stones. With 133 tcf gas reserves it is a major gas resource owner, the largest in Asia and ninth largest in the world. Australia, however, is a large country and its gas reserves tend to be located in remote locations and this, together with the small population of the country and its modest annual gas consumption (in 2011 26 bcma compared to 105 bcma in Japan and 80 bcma in the United Kingdom) means that, in order to commercialise its gas, capital-intensive LNG export schemes have had to be developed. Australian companies, supported by the Australian government, have been following this strategy since the successful start-up of the North West Shelf project in 1989, but only since 2010 has the industry seen a serious increase in the growth of LNG export projects sanctioned. In 2011 Australia exported 26 bcma LNG, through two LNG projects (the same amount of gas as it consumed domestically). LNG exports in 2011 were valued by the Bureau of Resources and Energy Economics at A$11 bn, approximately 6 percent of Australia's energy and resources export earnings.

It is the planned future growth of Australia's LNG exports that will change the face of LNG globally with the country expected to overtake Qatar as the largest supplier of LNG before 2020. In addition, the country is the first to spearhead LNG production from coal bed methane (also known as coal seam gas), which can be produced in commercial quantities when the coal is de-pressurised and de-watered through drilling and the application of suitable well technology. This is a development that was not thought feasible ten years ago. Developers expected the location of the coal seam gas LNG plants on the East Coast – nearer to the main population centres and with an onshore gas supply – to lead to lower cost LNG export plants when compared to those located on the more remote, and environmentally sensitive, north-west of the country which are based on offshore gas reserves. The extent to which the East Coast LNG projects will be cheaper than the conventional gas projects of the northwest is still to be proven. This rapid growth of LNG export investment is causing substantial challenges to project developers as projects compete for resources, human and financial.

This article will examine the LNG projects that are under development and look forward to see how the Australian LNG sector can expand further in the future. It will also discuss Australia's competitiveness for future LNG supplies in the next decade.

Australian LNG Projects

Operational and Under-Construction

There are currently three LNG plants operational in Australia; the North West Shelf (16.3 mt), Bayu Undan Darwin (3.2 mt) and Pluto (4.8 mt). The Pluto project is the most recent to start operation in May 2012, eighteen months late and with serious cost overruns. In 2006 the project was planned to cost US$8 bn but by the time the project was operational, project costs were reported to have increased to US$14 bn. That said, once the project started it increased its production level to near nameplate capacity in less than a month.

There are currently seven projects under construction with a total capacity of 61.3 mt, of which three are located on the East Coast of Australia near the town of Gladstone and which will use onshore coal seam gas as feedstock to the plant. The other four are located in the north-west of the country and will use offshore conventional gas. Table 1 shows the capacity of the projects currently in operation and details of those under construction.

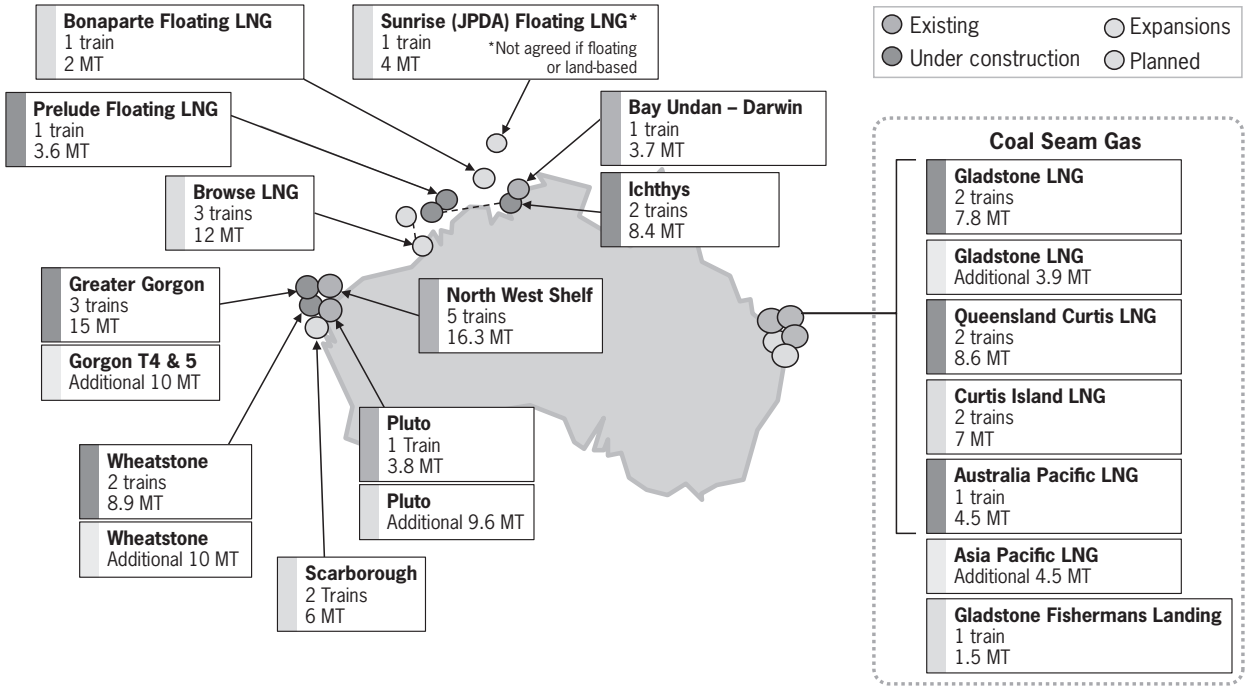
The projects that are currently under construction will face considerable challenges to deliver the LNG by the dates stated by their sponsors. In May 2012 BG announced that the cost of its Queensland Curtis LNG project had increased by 36 percent to US$20.4 bn and, in June 2012, Santos reported that the cost of its Gladstone LNG project had increased by 16 percent to $18.5 bn. The Gladstone cost overruns are also having an impact on the financial results of the sponsor companies: on the day the overruns were announced, the Santos share price fell, wiping half a billion dollars off the company's share value. Project developers say that the increase in costs is due to cost input inflation (some due to the strong Australian Dollar), landowner disputes and drilling delays.

While the liquefaction technology being used is proven and has been used in many LNG projects worldwide, gas from coal seams needs many low-flow rate gas wells to be drilled over the period of the twenty-year project life compared to the fewer high production wells from conventional gas sources. The coal-seam gas wells cost less, but it is the sheer number of wells, the logistics of drilling completion, hook-up, de-watering and the operation of these wells that is causing the developers problems. Most of the upstream gas supply cost is in the infrastructure needed to compress, gather and move the gas to the LNG plant and this requires a lot of labour, which is in short supply, particularly in specific skillsets. The project developers have tried to pass this cost risk to the contractors who are constructing the plants, with varying success, but further cost increases and delays may well be announced in the future. In July 2012, Origin Energy, a shareholder in the third Gladstone LNG project, said that there had been no significant change in the $20 billion project costs estimated for Asia Pacific LNG in 2011 when the joint venture approved the first

Table 1: Liquefaction Capacity in Operation and under Construction in Australia (mtpa)

Plants in Operation		24.3
Plants under construction		
Using conventional gas as feedstock	40.4	
Using coal seam gas as feedstock	20.9	
Total under construction		61.3
Total capacity of all plants		**85.6**

Figure 1: Australia LNG Export Projects



Source: South-Court Research

train, other than changes due to foreign exchange rates.

The local population is also complaining about the large number of wells and connecting pipelines that are being constructed or are planned to be built. In a recent report from Sanford C Bernstein & Co, it was said that companies had underestimated the number of wells needed to be drilled to support the three Gladstone projects, estimating an eventual total of 30,000 wells compared to an initial estimate of 18,000. The companies are also having problems firming up the required coal seam gas reserves, Santos has agreed to purchase gas from Origin for ten years from 2015 and this gas, together with gas from its conventional and unconventional gas reserves in the Cooper Basin, is planned to make up the potential supply shortfall for its Gladstone LNG project. BG has also secured gas for the ramp-up phase of its Queensland Curtis LNG project from Origin and ConocoPhillips.

In addition, there is a degree of company restructuring underway as project sponsors seek to manage higher costs and project delivery. BG is looking to sell 20 percent of its Australia interests and CNOOC, which has already signed a 3.6 mtpa LNG offtake agreement with Queensland Curtis LNG and has a 10 percent stake in train 1, is rumored to be a potential purchaser. The author understands that the reason for the sale is that BG wants to raise capital to support development of its planned energy projects in Brazil and East Africa. At the time of FID on the second train of Asia Pacific LNG in July 2012, Origin said that its share of the project costs would be funded by selling off a further 7.5 percent of equity in the project (in January 2012 Sinopec paid $1.1 billion to raise its stake by 10 percent from 15 percent). This means that additional equity will become available to investors from this project as well.

The four LNG projects based on conventional gas reserves may not be facing gas reserve shortages, but they could well incur severe delays and cost overruns, though, as at June 2012, none had been announced. Chevron are still planning to start train 1 of the Gorgon project by the end of 2014, but it remains a challenging and expensive project with CO_2 injection in the upstream and the plant being located in a wildlife reserve. The Shell sponsored Prelude project will be one of the world's first floating liquefaction facilities. At 488m long, 74m wide, and weighing about 600,000 mt it represents a considerable technical challenge but, with Shell as a sponsor, it is expected that the facility will be operational by 2017/18. The Wheatstone and Ichthys projects are both in different stages of construction with planned start-up in 2016 and 2017 respectively, though some commentators believe that these dates could slip. Figure 1 shows details of the LNG export projects.

Additional Projects under Development

There are also a plethora of other projects that are under consideration by project developers, many of which are expansions of projects that are currently under construction (Table 2). These projects face development challenges and may not all go ahead.

A key challenge in developing new LNG projects is cost. Over the past five years, the cost-base of LNG projects has increased, reflecting rising contractor and raw material costs. As a result, the Australian projects that are currently under construction are the most expensive LNG projects in the world. The question is – will new projects be as expensive? If they remain high cost, then other potentially lower cost projects elsewhere, such as East Africa, Russia and in the Atlantic Basin (including USA) could be developed ahead of the new Australian capacity. New CO_2 regulations in Australia may result in an increase in costs but, that said, a key factor supporting the development of new LNG capacity is that it will be, in many cases, an expansion to existing projects. Capital costs for expansion projects are normally 60–70 percent of that of new builds, as the expansion projects can take advantage of already developed infrastructure including existing site preparation, tankage, jetty and berthing facilities and utilities, even though, in some cases, additional storage and berths may be required. With the exception of the planned US Gulf LNG export projects that are being developed around existing regasification LNG import facilities, and potential de-bottlenecking of the Qatari LNG trains, most of the other new LNG projects that are planned outside Australia are greenfield and are likely to be less competitive than Australian expansion projects. Also, Australia is located close to the high value markets of Asia, which are currently willing to pay LNG prices high enough to support new LNG projects, with buyers who are willing to underpin projects with long-term take or pay LNG offtake agreements. These factors could well support the development of new Australian LNG export capacity ahead of the competition.

The availability of finance could also be a restricting factor in the development of new LNG projects. Tightness of third party project finance, due to the global financial credit squeeze and new Basel III regulations, could limit the number of new LNG projects that are developed. Developers of LNG projects are already turning to their own funds and debt

Table 2: Other potential LNG Export Projects under Consideration

Gorgon Train 4	Expansion	5.0
Gorgon Train 5	Expansion	5.0
Queensland Curtis (QCLNG) Train 3	Expansion	4.3
GLNG Train 3	Expansion	3.9
Wheatstone T3	Expansion	4.5
Wheatstone T4	Expansion	4.5
Pluto Train 3	Expansion	4.8
Pluto Train 4	Expansion	4.8
Curtis Island	Greenfield	7.0
Bonaparte	Floating	2.0
Sunrise	Floating	4.0
Scarborough	Greenfield	6.0
Gladstone Fishermans Landing	Greenfield	1.5
	Total	**57.2**

raised against company balance sheets, rather than non-recourse project finance, with only three out of the seven LNG projects under construction using third party debt financing. Lenders will seek to lend to those projects that carry the lowest risk and seek greater equity injection from shareholders and finance cover from Export Credit Agencies. Therefore, it will be easier to develop expansion LNG projects that can use income from existing production to fund part of the construction of new trains and which use proven technology and infrastructure. Projects that use new technology, such as floating LNG, may find it difficult to raise finance until the new technology has been proven. This was the case with the Shell Prelude floating LNG project which is being funded from shareholder funds with, until at least after start-up, no recourse to third party finance.

Concluding Remarks

Domestic gas demand growth will remain restrained in Australia due to the size of the country and its relatively low population. This means that, to commercialise large gas reserves, companies will have to continue to develop gas export projects, which effectively means LNG exports. New projects that are developed will primarily be expansions to existing facilities, due to the cost competitiveness of the expansion projects when compared to greenfield developments in Australia and elsewhere in the world. These projects will target the high value markets of Asia. Asian buyers will seek to negotiate lower prices as they are being offered alternative gas supplies from North America, but there is a limit to the volume of LNG that can be supplied from the USA on a US 'Henry Hub' pricing basis. Asian buyers will also not want to buy extensive LNG volumes from North America for security of supply reasons. Australian projects must endeavour to keep their costs down and, if delivery and start-up of the projects currently under construction are delayed, then this may impact on support for future project development. But even with these concerns, Australia will be the largest LNG-exporting country before 2020 and it can be expected that it will maintain this position well into the next decade, and probably beyond. ■