FLOWLINE

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TRANSFORMING OUR ***ENERGY FUTURE***

Cover image: Pluto LNG plant worker.
PHOTO COURTESY WOODSIDE.

AUSTRALIAN PETROLEUM PRODUCTION & EXPLORATION ASSOCIATION

APPEA 2013

from the chief executive

David Byers
Chief Executive

To continue growing, the Australian oil and gas industry must maintain its international competitiveness in the face of growing global competition. High local costs and emerging LNG competitors in East Africa, North America and elsewhere will make it much harder for Australian LNG to win market share and attract investment.

The industry and its suppliers must strive to meet skilled labour requirements and curtail growing costs. But governments must deliver genuine reform in five key policy areas.

1 Fiscal stability

Maximising Australia's oil and gas production requires a stable, predictable and competitive taxation regime that encourages exploration and development investments.

Yet over the past five years the industry has been confronted with several disruptive changes to both the company tax and resource taxation settings, including:

- the imposition of excise on condensate production
- limiting the application of the R&D tax arrangements
- extending the scope of the PRRT regime
- the introduction of a price on carbon
- reducing the scope of the FBT exemptions for workers.

These changes have increased the industry's taxation burden and its costs of complying with tax laws.

2 Market-based energy policy

Australia's gas industry is delivering substantial investment, jobs, and regional development benefits. But to sustain this benefit, governments must resist calls for policy interventions that impose non-commercial outcomes.

In all sectors of the economy, maintaining access to open and competitive markets is in Australia's best interest. Gas reservation policies actually impair local gas supply and affordability, rather than improve it. Laws dictating where and how gas can be sold will deter the very investment needed to develop Australia's abundant gas reserves.

LNG projects are complex, extremely costly and require a decades-long horizon. But such projects will underpin Australia's economy for decades to come. Our LNG industry is a source of comparative advantage that should be harnessed, not hindered.

The Commonwealth Government's Energy White Paper has established a solid policy framework for the sector's long-term development. It clearly articulates the crucial role of gas in delivering economic growth and energy security, both domestically and in Asian export markets. It also recognises the critical importance of market-based energy policies, rejecting domestic gas reservation policies and other industry protection measures.

3 Industry access to resources

Continued investment in oil and gas projects relies on continued access to onshore and offshore resources, and stable, predictable regulation of industry operations based on sound science and sensible risk assessment.

Yet policymaking at state and federal levels has become ad hoc and politically motivated.

In coal seam gas, the federal and NSW governments have imposed new restrictions and regulatory burdens motivated by short-term political issues rather than by science. Victoria has banned hydraulic fracturing and the federal government has placed ad hoc restrictions on some offshore seismic.

Any exclusion or restriction must be based on evidence and science. Policies that undermine development of energy projects and curtail energy production impose cost jobs, reduce economic growth and ultimately increase energy bills.

4 Reducing red tape and green tape

Australia's oil and gas industry suffers from a duplicative and inefficient regulatory system and approvals processes. Much inefficiency exists in the overlaps between federal and state government regimes. But there is also far too much duplication and inefficiency within federal departments and agencies.

Overlapping, excessive and inconsistent requirements in Australia's environmental regulatory framework contains increase project costs and cause unnecessary delays. Several major reports have identified this problem.

Reducing red and green tape and streamlining the duplicative and overlapping regulatory processes would make Australia more competitive without impairing environmental outcomes.

5 Labour market reform

Developing the skilled workforce and the local industry supply capability needed to build and operate the oil and gas projects now under construction is a major challenge. Policies must encourage:

- greater flexibility and more productive employer-employee relationships
- continued access to overseas labour markets for shortages of skilled workers (including through 457 visas)
- greater mobility of workers to regional areas where demand is greatest (including FIFO arrangements)
- investment in training.

Reform or decline

The oil and gas industry is truly global and competes for a limited pool of international investment capital. Funding lost from the domestic oil and gas industry will not be spent in other parts of the Australian economy—it will be redirected overseas.

Fiscal stability needed for investment

Noel Mulen

Australia needs a stable, predictable and competitive taxation regime if it is to foster the exploration and long-term investments required to maximise development of its petroleum resources.

In an era of increased competition and growing capital constraints, investors are thinking twice before committing billions of dollars to expensive, high-risk exploration programs and cutting-edge projects.

To encourage investment, Australia's tax regime must be internationally competitive and provide certainty.

Yet since 2008, the oil and gas industry has been confronted with an unsettling series of reviews and changes to the fiscal framework.

These changes have affected both the company and resource taxation systems, and have included:

- the extension of the crude oil production excise impost to cover condensate production from those not covered by the petroleum resource rent tax pre-1 July 2013
- restriction on the scope of the application of the R&D tax arrangements
- from 1 July 2013, extending the scope of the PRRT regime to cover all onshore areas and the NWS project, while retaining the pre-existing resource taxation settings
- reducing the scope of the fringe benefits tax exemptions for workers
- the introduction of a carbon charge that is not borne by international competitors
- the announced introduction of cash bidding for certain offshore exploration acreage.

These changes have increased the industry's taxation burden, as well as the cost of complying with the tax laws.

In addition, a major review of the overall taxation system was undertaken in period 2008 to 2010, with main outcome being the much-criticised, but subsequently abandoned, resource super profits tax.

During 2011 and 2012, the industry was confronted with further uncertainty when the government's Business Tax Working Group (BTWG) reviewed the company tax deduction provisions (including the treatment of capital depreciation and exploration expenditure) to fund a company tax rate cut.

The BTWG correctly identified how changing taxation systems could deter investment in high-risk and long-term projects.

Over the past five years, the industry has needed to maintain a strong focus on continuing the investment momentum required to capture both domestic and global market opportunities. With growing global competition, the uncertainty persisting around Australia's taxation settings impairs this country's chances of advancing the next generation of oil and gas projects.

Managing fiscal uncertainty is within the control of government. While governments at all levels face challenges in balancing their budgets, timely, cost-effective and efficient development of resource projects is necessary for Australia's future prosperity.

A stable taxation regime is needed if Australia is to encourage further investment in major projects.

Time for some productive thinking

Miranda Taylor

Australia has seven large LNG projects under construction. This investment of more than $200 billion will create more than 100,000 jobs over the next few years.

It will be followed by a long-term production phase that will create tens of thousands of jobs in upstream oil and gas and in support industries. In addition, more than $29 billion has already been spent with Australian-based businesses as part of the current wave of LNG investment.

But the global LNG business is becoming more competitive and Australian LNG projects' cost competivitness and labour productivity levels are a major threat to further investment.

Australia must reverse the big decline in labour productivity experienced over the last decade (now 60 per cent lower than at its peak in 2001–02, according to the Australian Bureau of Statistics).

Low rates of productivity growth in the construction sector will not improve unless flexibility, mobility and skill development are improved. High labour costs and lower labour productivity mean construction work in Australia can cost up to five times than in the US Gulf Coast. Australian construction costs per installed tonne of capacity are among the highest in the world.

Securing more investment and more jobs — and securing Australia's long-term prosperity — will require policy reform to develop a competitive, productive and skilled labour force.

Governments and industry must focus on four key areas.

1 Labour markets

The Fair Work Act must be reformed to improve productivity and competitiveness and to enable employers to grow their businesses and provide more jobs.

Reform of greenfields agreements is a key focus for the oil and gas industry. There is anecdotal evidence of costs escalating by more than 35 per cent in little more than a year at some offshore oil and gas construction projects in WA and Victoria. In 2012, the Australian Mines and Metals Association said casual daily rates of pay for offshore construction workers had risen 37 per cent since July 2009. Other key areas for reform include:

- allowing alternative and genuine non-union agreement options in order to provide greater certainty for investment in major projects
- reducing the range of matters that can be bargained over to ensure they truly pertain to the employment relationship
- removing unions' capacity to inappropriately use 'aborted strike technique'
- further enhancing the scope to agree flexibility arrangements with employees, including through individual flexibility arrangements.

2 Mobility

Labour and skills must be delivered when and where they are needed.

A recent KPMG study commissioned by APPEA and the Minerals Council of Australia shows that fly-in, fly-out (FIFO) arrangements not only supply workers where they are needed, but also help spread the benefits of the resources boom across Australia.

Governments must support long distance commuter arrangments to ensure projects proceed.

3 Skilled Migration

Oil and gas industry employers prefer to recruit and develop local Australian skills, but they also need the flexibility provided by a properly administered skilled migration scheme to address some significant skills and labour shortages.

With Australia's unemployment remaining at historically low levels, there are still significant skills and labour shortages.

Effective skilled migration schemes address two distinct needs: the highly skilled/trade-qualified and semi-skilled construction labour force required for the construction phases of resource projects; and the highly specialised engineering and project design skills needed for the unprecedented wave of new LNG projects.

4 Education, training and skills development

Australia must develop local professionals with high-level skills that can readily transfer into gas projects' operational phase and help improve our productivity and living standards.

These operational jobs are permanent and rewarding, and they give local people real opportunities to develop internationally recognised high-tech skills.

In Australia, oil and gas companies spend tens of millions of dollars each year on workforce training for trade, technical and professional occupations.

Sophisticated graduate programs provide opportunities for many geoscience, engineering and business school graduates.

Individual oil and gas operators conduct trainee and apprenticeship programs. In partnership with governments, they have invested heavily in specialist training facilities and programs.

The industry also has strategies to train, upskill and provide work experience and jobs to people living near projects, as well as to mature-aged workers and under-represented groups such as women and Aboriginal people.

To help industry underpin national prosperity, government should promote training reform that is enterprise-focused, demand-driven, technology-based and flexible. Workplace learning programs should be integrated into the education and training systems and strong links developed with industry

A productive approach

The next generation of Australian oil and gas investments depends heavily on productivity enhancements. This will require significant labour market, productivity and training reforms.

The task is substantial, but the rewards will be enormous.

Protectionism compromises prosperity

Damian Dwyer

In all sectors of the economy—not just oil and gas—maintaining access to open and competitive markets is in Australia's best interest.

Australia's gas industry is delivering substantial, economy-wide benefits in terms of investment, jobs, and regional development. But for this benefit to be sustained, governments must resist calls for policy interventions that force non-commercial outcomes.

Domestic gas reservation may sound a plausible argument to many—but it is a dangerous, shortsighted and self-interested one.

Reservations backfire overseas

A recent report concludes that gas reservation policies actually impair local gas supply and affordability, rather than improve it.

The independent analysis debunks myths perpetuated by gas reservation enthusiasts, by demonstrating that Australia is on the right path in its support of market-based energy policy and that the consequences of reservation policy are both negative and profound.

Produced by EnergyQuest for APPEA, *Domestic Gas Market Interventions: International Experience* reviews gas market policies throughout North America (the US, Canada and Mexico), Europe (Netherlands, Norway and the UK) and 14 non-OECD countries (Russia, China, India, Algeria, Egypt, Oman, Qatar, UAE, Indonesia, Malaysia, Thailand, Argentina, Brazil and Peru). These countries produced 74 per cent of global gas supply in 2011.

Gas reservation policies actually impair local gas supply and affordability

The report finds:

- In the US and Canada, wholesale gas prices are set by the market without government intervention and that the combination of a competitive market and favourable geology has created some of the world's lowest gas prices.
- In the Netherlands, Norway and the UK, wholesale gas prices are set by the market and these countries' liberalised energy markets place downward pressure on gas prices.
- Many of the non-OECD countries have policies aimed at controlling gas prices. But the impact of these has been to artificially stimulate demand and restrict supply, leading to gas shortages, imports from other countries at high prices, and upward pressure on domestic gas prices. These policies are often associated with government ownership or control of downstream industries.

The report clearly indicates that laws dictating where and how gas can be sold would deter the very investment needed to develop Australia's abundant gas reserves.

Good policy rejects reservation

To their credit, this is being increasingly recognised by Australian governments. The Northern Territory recently joined Queensland and New South Wales in explicitly ruling out a domestic gas reservation policy. The Australian Government and the federal coalition have also found arguments for domestic gas reservation unconvincing.

The 2012 Energy White Paper has established a solid policy framework to guide the sector's longterm development.

The White Paper clearly articulates the important role that Australian natural gas will play in delivering economic growth and energy security. It also recognises the critical importance of market-based energy policies and sends an important signal to investors in its rejection of domestic gas reservation policies and other such industry protection measures.

Less regulation, more exploration

Calls for government intervention in the gas market are also premised on a misunderstanding that developing gas resources is a relatively easy task.

Liquefied natural gas projects — which will underpin the Australian economy for decades to come — are complex, extremely costly and require a decades-long horizon. And we do not have this arena to ourselves — the LNG market is a globally competitive field and not one in which we can participate at our convenience.

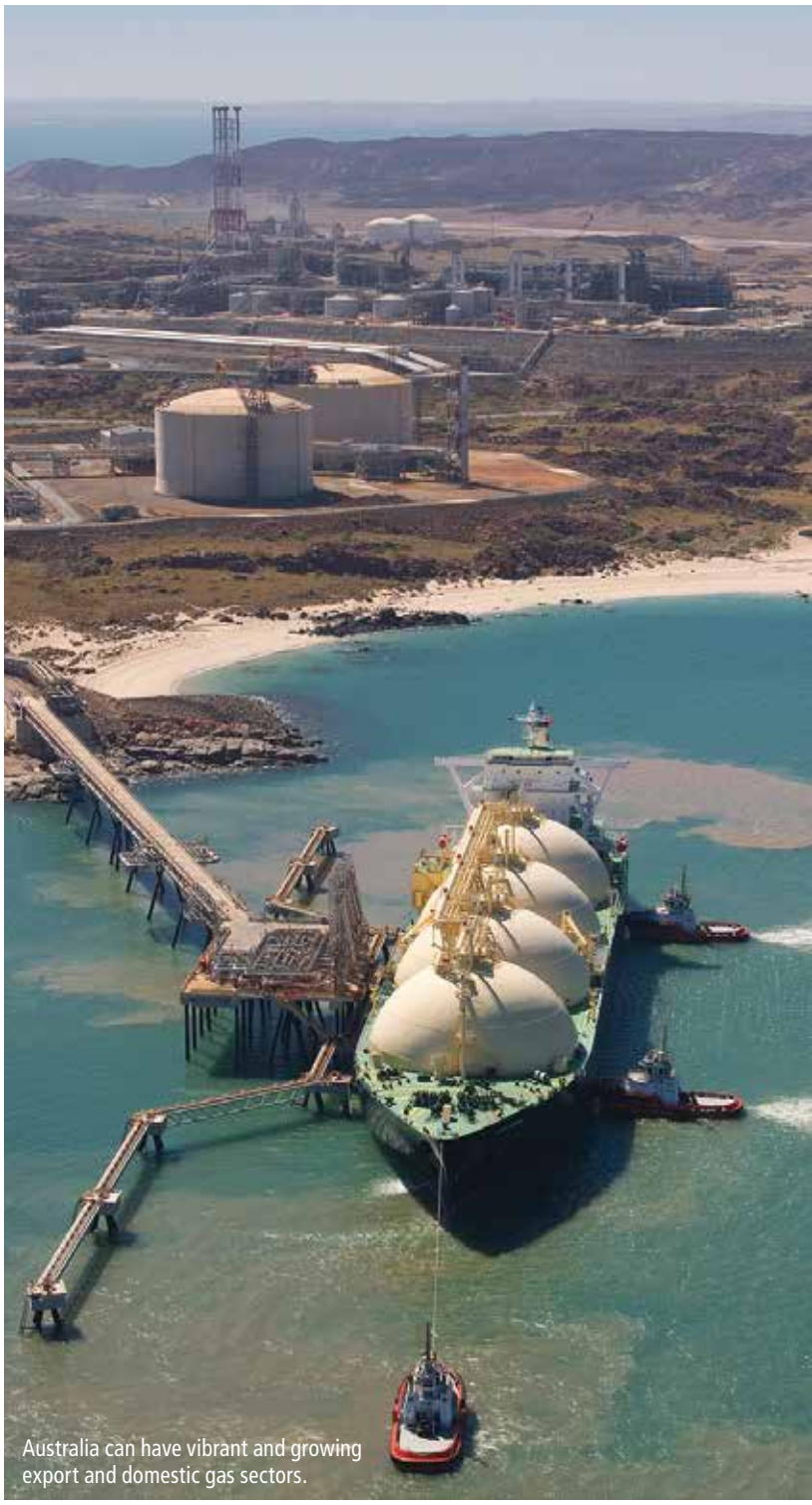
Australia's LNG industry is a source of comparative advantage that should be harnessed, not hindered. Just as Australia's long-term national interest is served by maintaining access to open and competitive markets for coal, wheat, and iron ore, the same is true for gas.

Rising exploration and development costs are driving up the cost of developing gas projects. This is in turn pushing up gas prices.

The best policy response to rising prices lies in cutting development costs and bringing more gas to market. This entails reducing the green and red tape currently constraining new projects and removing regulatory and planning barriers to the safe and responsible development of resources for domestic and export use. Trying to address high gas prices by intervening through a reservation policy will only be counterproductive.

The best way to create downward pressure on gas prices is more gas, not more regulation. Australia needs to get on with the job of developing its gas resources in order to meet the growing demand of both domestic and export buyers.

Australia must get on with developing its gas resources in order to meet growing domestic and export demand.



Australia can have vibrant and growing export and domestic gas sectors.

Shale gale could be a blast of fresh air for Australia

Stedman Ellis

Australia's growing population and carbon-constrained economy is driving demand for energy that is reliable, flexible, abundant and clean. Gas is the only fuel that meets all of these criteria.

Previously untapped sources of onshore shale and tight natural gas reserves in Western Australia, South Australia and the Northern Territory could have enormous potential.

The US Energy Information Administration (US EIA) estimates that 'technically recoverable' shale gas resources in Australia are 396 trillion cubic feet (tcf). One tcf is roughly equivalent to Australia's annual domestic gas usage.

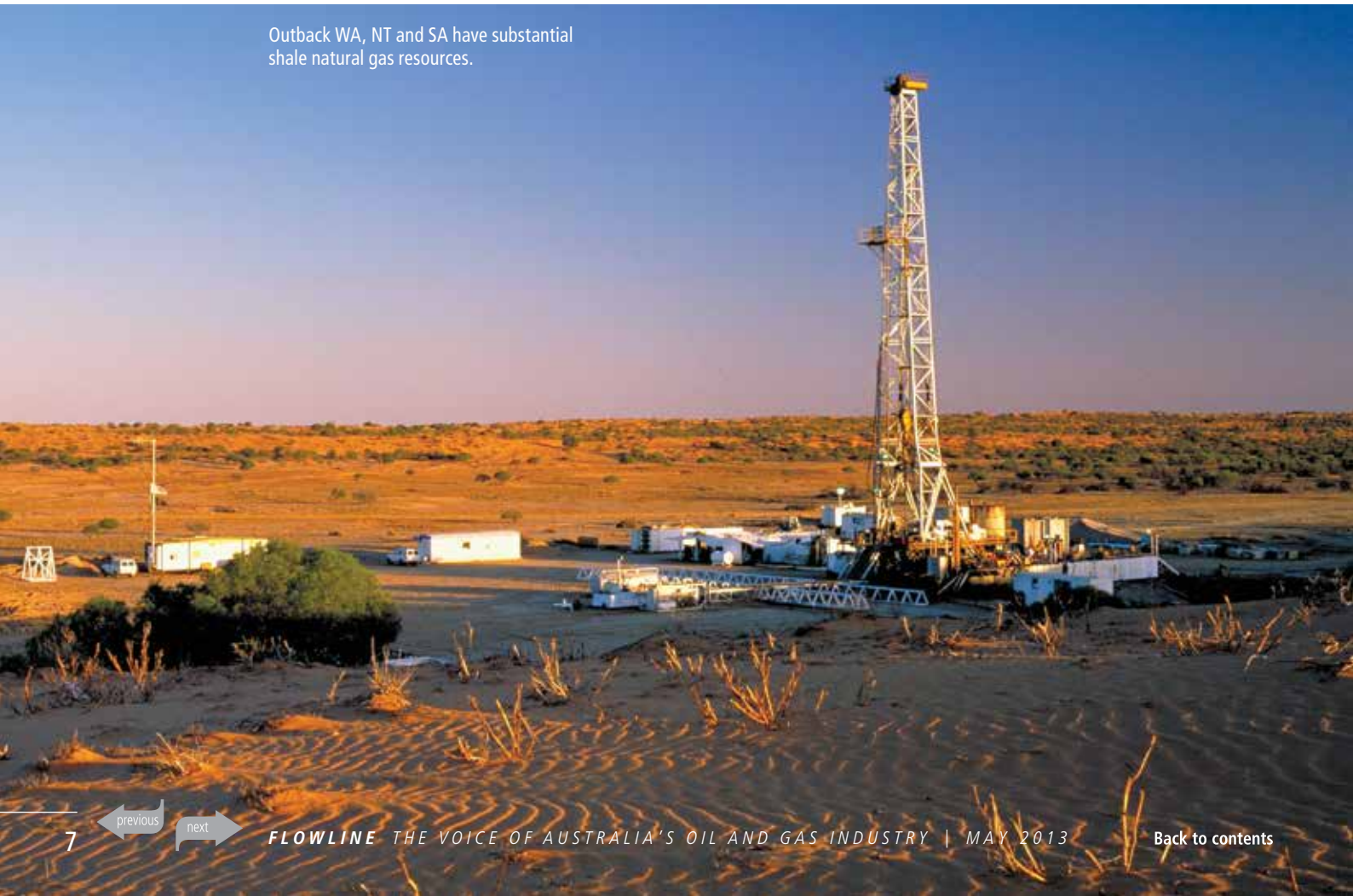
Western Australia alone was estimated to be holding the fifth largest reserves of shale gas in the world—about twice the amount of gas held in WA's offshore conventional fields.

In the US, technological advances have led to a boom in shale gas production that has delivered both economic and environmental benefits.

Strong natural gas production has created 33,300 direct jobs over the last three years. The indirect job creation from industry growth has tripled this figure to almost 100,000, reinvigorating many regional towns.

America's switch from coal to natural gas for electricity generation and industry has also driven a substantial fall in greenhouse gas emissions because gas emits only half as much carbon dioxide as coal.

Energy-related emissions of CO_2 in the US have fallen 12 per cent between 2007 and 2012 and are at their lowest level since 1994, according to a recent estimate by the US EIA.



Outback WA, NT and SA have substantial shale natural gas resources.

Commercial shale gas projects will require long lead times and long-term investments.

But significant obstacles must be overcome if Australia is to achieve similar benefits from shale gas.

Commercial shale gas projects will require long lead times and long-term investments. They must also gain the trust and confidence of landholders and local communities in areas targeted for exploration — not easy in the face of well organised and funded campaigns against shale gas extraction.

Far-fetched fiction

Shale gas — like other sources of natural gas — is a positive step towards a cleaner energy future but some in the environmental movement fear it will halt the momentum of investment in renewables. Others have focused on potential environmental impacts of the extraction process.

Unfortunately, some of the campaigns being waged against onshore natural gas development are more science fiction than science fact.

The Australian onshore gas industry has a long history — more than 50 years of safe and sustainable operations. In addition, more than two million oil and gas wells around the world have used hydraulic fracturing.

As with natural gas production from any type of reservoir the key to safe and environmentally sound exploration and production — including the use of techniques such as fraccing — is a good cement job.

APPEA is seeking to take a lead role in promoting a more rational, objective and fact based discussion of the environmental concerns and potential benefits that can lead to economically, ethically and environmentally sound outcomes.

In WA, APPEA has worked with member companies both on a code of practice and to facilitate public meetings, presentations and partnerships. It has joined with CSIRO and the Department for Mines and Petroleum to deliver community workshops, offering direct dialogue with industry, government and scientific experts. It is working with WA Farmers and the Pastoralists and Graziers Association to address specific concerns.

A similar effort is being developed in conjunction with member companies operating in the Northern Territory where shale gas represents an exciting opportunity for economic development that could create jobs in regions, improve regional infrastructure and services, and deliver royalties to the government.

Roadmap sets the right direction

Government also has a key role to play.

It must demonstrate a capable and efficient regulatory regime that both reflects leading practice and takes into account community concerns and consultation.

South Australia's Roadmap for Unconventional Gas Projects is a good example of this sort of approach.

The Roadmap's 125 recommendations cover the full life-cycle of shale and tight gas projects — from exploration to production, as well as related supply chains and infrastructure.

Once implemented, the Roadmap will establish a framework for:

- safe, secure and competitively priced gas supplies for domestic and international markets
- royalties from the sale of petroleum
- employment from environmentally sustainable exploration, development, production, processing and transport of competitive gas supplies
- growth opportunities for upstream petroleum companies operating in South Australia.

The Cooper Basin in the state's north-east has an estimated 85tcf of natural shale gas and has had encouraging results from its test wells.

As a well-established sandstone gas province, the Cooper has the infrastructure needed to support shale gas development. It seems to be the Australian basin most likely to generate significant shale gas production in the next few years.

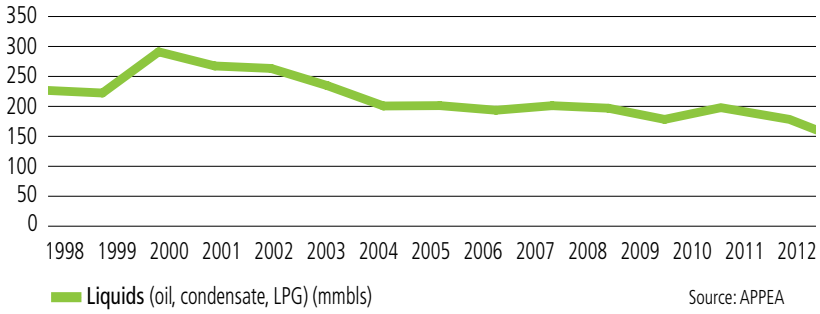
If WA, South Australia and the NT can maintain their positive regulatory approach there is no reason why natural shale gas cannot play a leading role in Australia's economic future.

Oil and gas production

Petroleum (oil and natural gas) accounts for 64 per cent of primary energy consumed in Australia.

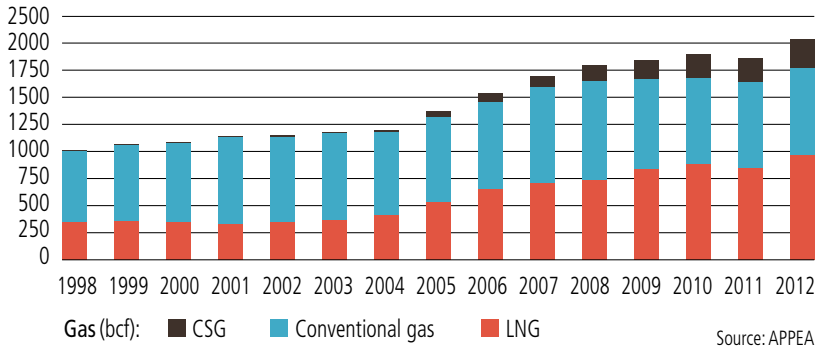
AUSTRALIAN CRUDE OIL, CONDENSATE AND LPG PRODUCTION

Australia's production of oil, condensate and liquid petroleum gas (LPG) has steadily declined since 2000.



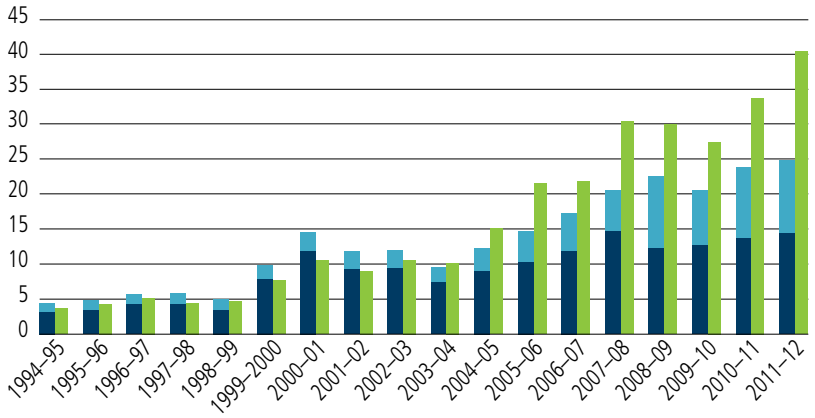
AUSTRALIAN GAS PRODUCTION

Australia's gas production is growing steadily, responding to increasing domestic and Asian demand.



AUSTRALIAN TRADE IN PETROLEUM

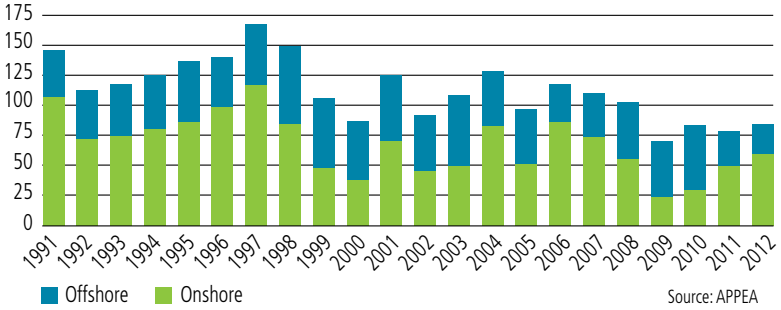
Australia's growing gas production is not enough to offset the imbalance between the country's growing demand for oil and its declining oil production. More imports will be needed to meet expected demand growth.



Oil and gas exploration

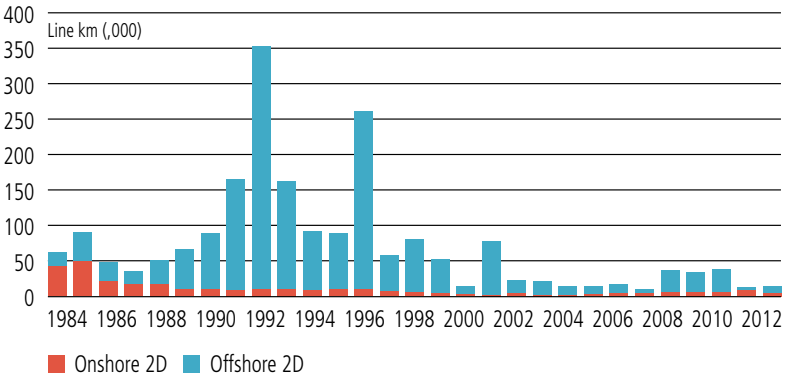
Offshore exploration expenditure peaked in 2009 and has trended downward in the two years following. Onshore exploration expenditure continues to trend upwards, but this increase is largely a result of the growth in exploration costs rather than an increase in activity.

AUSTRALIAN EXPLORATION WELLS SPUDDED 1991–2012

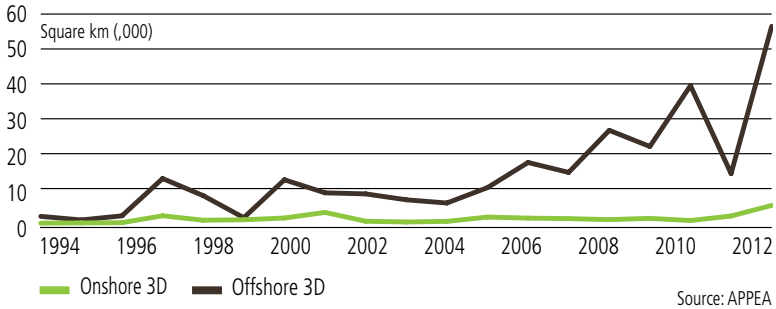


Source: APPEA

AUSTRALIAN 2D SEISMIC SURVEYS 1984–2012



AUSTRALIAN 3D SEISMIC SURVEYS 1994–2012



Source: APPEA

Queensland's onshore gas sector has already created more than 27,000 jobs and is still growing. But the NSW industry is languishing.

Erratic regulation undermining energy security

Rick Wilkinson

Increasingly in Australia we are seeing policies emerge that undermine the development of energy projects and energy production.

Apart from leaving multi-billion dollar projects with a distinct disadvantage in an increasingly competitive international marketplace, these policies impose real costs on the Australian community in the form of lost jobs, forgone economic growth and higher energy bills.

When the NSW Government released its long-awaited land use plan last year its press release proclaimed 'greater certainty for landholders and the resources industry'.

The plan, they said, had been subject to extensive community and stakeholder engagement — 2000 submissions and 1100 attendees at public forums and information sessions.

The plan, they said, places the strictest controls in Australia on the natural coal seam gas industry.

The plan, they said, identifies and protects more than two million hectares of strategic agricultural land.

It introduces 27 measures designed to provide greater protections for farmers to balance competing land uses.

It creates a position for a new Land and Water Commissioner to restore community confidence in the processes of government and exploration activities.

At its core lies a gateway process for proposed projects that must be adhered to, allowing for scrutiny through independent, scientific and upfront assessment.

In all, there were some difficult hurdles for the natural gas industry to overcome from a new policy that made it one of the most heavily regulated in Australia. But at last, it could get on with its work of exploring and producing natural gas while creating jobs, breathing new life into regional communities and meeting the growing energy needs of households and businesses across the state.

But in February all that changed when blanket no-go zones were applied to an industry that has been producing natural gas safely in Australia for decades. At the time that *Flowline* went to print the NSW Government was no closer to finalising a land use policy to provide certainty to all stakeholders.

The process to do so has now entered its third year.

If that wasn't enough, the Federal Government's foray into the regulation of onshore natural gas has added more problems.

The plan to introduce an industry-specific trigger in its environmental regulation delivers no environmental benefit yet increases costs for industry. It exemplifies what is wrong with the duplicative and inefficient management of this critical energy source.

Despite the fact the coal seam gas industry provides a third of Eastern Australia's natural gas, it is one of the most heavily regulated industries in the world under existing state government laws.

As an industry we must and should continue to support stable, predictable, robust regulation of our activities based on sound scientific principles and assessment.

Yet political expediency comes with dire consequences.

Development of gas resources, particularly in NSW, is critical. The failure to develop those supplies will drive up the cost of gas, the price of energy and the costs of living and of doing business in NSW.

We need to have a much more mature discussion about natural gas, how important energy is to our businesses and community, and where our future supply is coming from.

The farewell function at APPEA 2012

The APPEA 2012 exhibition

APPEA events in 2013

APPEA has built a strong reputation for delivering focused events by the industry, for the industry. The 2013 program is no different, combining the successful formats of previous years with new topics and emerging challenges facing the industry.

2013 APPEA HSR FORUM

5 AUGUST PERTH, WESTERN AUSTRALIA

The HSR Forum takes place in Perth, the day before the APPEA National Oil and Gas Safety Conference.

It is Australia's only workforce safety forum for oil and gas health and safety representatives. This year's theme is *Protecting your team: Who are you responsible for?* This event allows delegates to share workplace experiences, issues and solutions, to develop skills and to network with colleagues. The forum gives HSRs knowledge and tools to perform their roles more effectively and help improve health and safety performance.

Employer support for the forum is fundamental to its success. Managers can make it easier for their HSRs and safety workforce to attend by coordinating rosters and schedules well in advance of the event.

www.appeasafetyconference.com.au

2013 APPEA NATIONAL OIL AND GAS SAFETY CONFERENCE

6–7 AUGUST PERTH, WESTERN AUSTRALIA

Safety from the Frontline to the Boardroom is the theme of APPEA's 2013 National Oil and Gas Safety Conference.

Recent efforts to directly engage industry leaders and CEOs in health and safety strategies have led to vastly improved safety outcomes. Underscoring the importance of the issue, Australian CEOs will gather to discuss the oil and gas industry's safety leadership and culture.

Keynote speakers will discuss the importance of leadership in driving process safety, and the need to understand the human factors in safety models and solutions.

In addition, concurrent sessions will address emerging industry-specific issues and a half-day workshop on human factors in incident investigation will be held.

www.appeasafetyconference.com.au

2013 APPEA ONSHORE GAS CONFERENCE

1–2 OCTOBER ADELAIDE, SOUTH AUSTRALIA

Building on the success of last year's APPEA CSG Conference, a dedicated Onshore Gas Conference and Exhibition will be held in Adelaide this October.

The conference responds to the growing demand for natural gas, and Australia's emerging role in producing gas for domestic and export markets.

The conference will cover all aspects of onshore natural gas operations, including:

- the challenges of coal seam, shale and sandstone reservoirs
- the hurdles posed by red and green tape
- job creation and recruitment
- the importance of community engagement
- benefits for rural and regional communities.

Over two full days, keynote speakers and concurrent sessions will explore and analyse the challenges and opportunities facing Australia's onshore gas industry.

www.appeaonshoregasconference.com.au

2013 APPEA TAXATION AND COMMERCIAL CONFERENCE

21–22 NOVEMBER SANCTUARY COVE, QUEENSLAND

APPEA's biennial Taxation and Commercial Conference event brings together taxation, legal, accounting and commercial professionals from within the oil and gas industry to discuss issues that affect the financial performance of companies in the sector.

The two-day event features keynote addresses, concurrent sessions on specific issues, and ample networking opportunities.

Speakers and delegates include industry experts, representatives from advisory and legal firms, and government officials.

As delegate numbers are capped, participation is limited to APPEA members and invited representatives. Secure a place by registering your interest ahead of time.

www.appeataxconference.com.au

A panel discussion at the 2012 APPEA CSG Conference.

Dates for your diary

2013	EVENT
26–29 May	**2013 APPEA Conference & Exhibition** Brisbane www.appeaconference.com.au
5–7 Aug	**APPEA National Oil & Gas Safety Conference & HSR Forum** Perth www.appeasafetyconference.com.au
1–2 Oct	**APPEA Onshore Gas Conference** Adelaide www.appeaonshoregasconference.com.au
21–22 Nov	**2013 APPEA Taxation & Commercial Conference** Sanctuary Cove, Qld www.appeataxconference.com.au
28 Nov	**APPEA Annual General Meeting**
2014	
6–9 April	**2014 APPEA Conference and Exhibition** Perth

A panel discussion at APPEA 2012.

APPEA 2013

A meeting of minds

The annual APPEA Conference and Exhibition facilitates the exchange of ideas and information in a fast-moving industry and conveys news about company projects and APPEA's industry advocacy messages to policymakers and media.

A press conference at APPEA 2012

Australia is rapidly expanding its gas production, but is also facing serious challenges and potential pitfalls in areas such as industry regulation, access to resources, tax and fiscal frameworks, and workforce development and productivity. These hurdles threaten to undermine further growth of the industry and compromise its contribution to future prosperity.

Industry, policymakers and the media must meet and exchange information and ideas to improve their understanding of these issues. APPEA 2013 is an ideal forum for this.

Leading politicians—including Federal Resources and Energy Minister Gary Gray, Federal Energy and Resources Shadow Minister Ian Macfarlane, and Queensland Deputy Premier Jeff Seeney—will address APPEA 2013.

Politicians, their staff and senior bureaucrats will also be listening to Conference presentations, meeting with APPEA staff and industry executives, and attending social functions where they can speak with industry executives and professionals, as well as analysts and other experts, in an informal setting.

In addition, about 50 journalists will cover this event, spreading industry news and views to opinion-makers and the wider public.

The exchange of ideas—both within industry and between industry and policymakers—is important in developing the industry's policy positions.

The conference also spreads knowledge and ideas at a technical and operational level. APPEA 2013 will include about 100 presentations and addresses in its plenary and concurrent sessions.

FIFO spreads the benefits of the resources sector.

FIFO building richer regions

A new study debunks some of the myths about the use of fly-in, fly-out (FIFO) workers in the resources industry.

The KPMG study, commissioned by APPEA and the Minerals Council of Australia, shows FIFO is critical for spreading the benefits of the resources boom across Australia.

The study also revealed that regional communities reap numerous benefits from resource projects, including higher levels of income and education, and lower unemployment.

The study is the first of its kind and fills large gaps in data on Australia's long-distance commuter (LDC) workforce. It draws on recent census data and a survey of non-resident accommodation across nine resources regions, including the Surat Basin, the focal point of Queensland's gas industry, according to KPMG Demographics Associate Director Liesl Verwoert. "The study measures for the first time the size and distribution of the LDC workforce over time, by industry and by region," Ms Verwoert said.

"The data provides a baseline to understanding where LDC workers live and work and how these commuter flows differ by industry, region and over time. It will assist APPEA, its members and a variety of government and industry bodies in workforce planning."

The study found that the resources sector had driven a three-fold increase in high-income earners in these regions. And, contrary to popular opinion, these regions also had more families and working aged people than other parts of regional Australia.

In 2011, there were just over 210,000 LDC workers in Australia undertaking commutes of more than 100 km. These FIFO and DIDO (drive-in, drive-out) workers represent less than 2.1 per cent of Australia's workforce.

The resources industry accounts for just one in five of Australia's LDC workers. More LDC workers commute to capital cities than regions.

Resources, including oil and gas, accounts for 21 per cent of all LDC workers. However, oil and gas has a lower percentage of LDC workers than the mining industry.

Ms Verwoert said the oil and gas LDC workforce had increased by 92 per cent between 2006 and 2011.

"However, the rate of growth experienced by the oil and gas LDC workforce was below that of the total oil and as workforce which recorded a growth rate of 105 per cent over the same period," she said.

The study also showed that the belief that LDC is a recent trend is unfounded. "At a national level there has been little change in the propensity of resources workers to undertake LDC work practices," Ms Verwoert said.

"Growth in LDC work practices in resources has been underpinned by the fact that this was the fastest growing industry of employment over the five years to 2011 [65 per cent growth compared to an economy-wide average of 10 per cent], rather than a substantial increase in the propensity for resources industry workers to undertake LDC."

The study also found that for every one LDC mining or petroleum worker there is roughly one LDC worker in an allied industry. Taking this figure into account, KPMG estimates there are around 100,000 LCD workers in the wider resources industry.

FIFO vital for many projects

If planned projects go ahead, LDC worker numbers are set to increase rapidly. Indeed, many projects can only proceed if FIFO and DIDO practices are enabled.

To ensure that major projects go ahead and more workers from across Australia can share in the benefits of the resources sector, LDC practices should be welcomed. The construction phase of a project's lifecycle is when the demand for labour is at its highest and when FIFO is more likely to be used.

With construction projects in regional and remote locations often struggling to find labour and skills, LDC must be acknowledged as more than a short-term trend. It must be included in discussions on how to make Australia's growing resources regions more sustainable.

KPMG Associate Director Leisl Verwoert will discuss the LDC report in Concurrent Session 20 (Workforce Strategies), which starts at 3.45pm on Tuesday 28 May.

Australia needs LNG productivity boost

Last month's decision to defer the $45 billion Browse LNG project underlines the need to tackle rising costs in Australia's LNG industry.

Oil and gas project management is becoming increasingly difficulty according to McKinsey Australia Managing Partner, Michael Rennie, a speaker at APPEA 2013's plenary session on Project Delivery.

Mr Rennie is leading the McKinsey Global Institute's groundbreaking Pathways to LNG Productivity project.

Pathways to LNG Productivity takes a well-timed, independent and balanced look at the challenges facing the LNG industry.

Successfully addressing these issues could have a huge impact on Australia's economic—and budgetary—performance, according to Mr Rennie.

"Ensuring the next wave of LNG investments through fixing productivity would bring 1.5 to 2 per cent of additional GDP growth, about 150,000 additional jobs, and a substantial increase in government revenues," he says. "To put this into context, the tax haul from these possible additional LNG projects between 2015 and 2035 would equal about 1.1 times the federal debt, about one year of income tax returns, or more than three times the federal health budget."

Mr Rennie says Australia's falling LNG competitiveness has fallen both in absolute terms and relative to its main competitors.

This is partly because of reservoir characteristics—new fields are further from the coast and in deeper water, or are in coal seam gas fields that require many small wells. This makes them more challenging to develop than the earlier LNG projects.

But there are also other factors and these can be addressed by government.

- Australia's tax and regulatory regimes differ from those in other countries, and this has implications for competitiveness.
- Labour cost rises are not being matched by an equal improvement in productivity, making Australia a more expensive place to complete a piece of work.

Hop to it: Australian governments and industry must cooperate to boost competitiveness in LNG.

Productivity improvements vital

Mr Rennie says the biggest drivers of productivity in LNG are the outputs from labour employed and capital invested.

"Labour costs account for slightly less than half of all costs of conventional LNG costs, where the costs of equipment and materials is about a third," he said.

"The biggest drivers to improve productivity are to reduce the time needed to build a new LNG plant, and to reduce the costs of doing so.

"These, in turn, are driven by the efficiency of the supply chain, the tax and regulatory regime, and the cost and productivity of labour in Australia."

Mr Rennie says the scale of the productivity changes needed, and the benefits that would flow to the entire community as result, are so significant that the problem cannot be solved by one party alone.

He says government must act, but industry can also make important changes, including:

- improving the productivity of the people employed (for example, by improving the time at work and training supervisors to use available time more effectively)
- collaborating, as the industry is doing in the North Sea (joint vendor qualification, standard contracts and liabilities)
- further improving design and project management.

These are large challenges, but it is important that they are addressed. Committed LNG projects account for more than $200 billion in investment. This is about a third of all private investment in Australia and about two-thirds of current resources (mining and energy) investment.

In addition, events in the US are proving that the most effective way to reduce emissions is by switching from gas to coal. Gas-fired power is much more reliable and cost-effective than renewables and is much cleaner than coal, both in terms of greenhouse gas emissions and in terms of sulphur, particulates and other emissions that affect urban air quality. Australian LNG can deliver huge environmental benefits for Asian export markets while also helping to underpin economic growth in the region.

Mr Rennie remains positive about the future of Australia's LNG industry. "I think we have no choice but to be optimistic and work constructively for all the parties to find a way to overcome some of the obstacles."

Liquid assets

APPEA 2013 will come to a close with updates on four major LNG projects — Gorgon, Ichthys, Gladstone LNG and Australia Pacific LNG.

The Project Updates session will deliver the latest information on approvals, construction and production, followed by a panel discussion with journalist and broadcaster Ali Moore.

More than $200 billion has been committed to developing seven new Australian LNG projects — these four, plus Wheatstone, Prelude and Queensland Curtis LNG.

Several other projects are on the drawing board but as yet uncommitted. The success of the developments being discussed in this year's Project Updates will have a strong bearing on whether final investment decisions are made on further LNG projects.

Gorgon

The unprecedented scale of the $52 billion Gorgon project – a 'modern day Snowy Hydro Electric Scheme' — makes it Australia's largest-ever resource project.

The Gorgon and Jansz-Io gas fields, 130km north-west Western Australia, hold about 25 per cent of Australia's known gas reserves.

The Gorgon processing plant on Barrow Island includes a three-train LNG facility, a domestic gas plant, and innovative carbon dioxide injection and storage technology. Domestic gas will be piped to the mainland, while a dedicated LNG loading jetty is expected to supply three ships a week.

The plant will produce 15 million tonnes of LNG a year for export markets. Its domestic gas plant will produce about 300 terajoules of gas a day, increasing Western Australia's gas supply by one-third. First shipments are expected in 2015.

Gorgon is operated by Chevron in a joint venture with ExxonMobil and Shell. Foundation customers Osaka Gas, Tokyo Gas and Chubu Electric Power have also taken equity positions in the project.

Ichthys

Supplies from the INPEX-operated Ichthys gas and condensate project have all been forward-sold, more than three years ahead of the first LNG cargo, which is scheduled for 2016.

At $34 billion, the project represents the largest Japanese investment in Australia and will be one of the largest gas processing projects in the world.

The Ichthys fields, 220km off the north coast of WA, hold about 12 trillion cubic feet of gas and 500 million barrels of condensate. Preliminary processing will take place offshore before the gas is transferred along an 889km subsea pipeline to an onshore processing plant near Darwin.

Construction began after a final investment decision early last year and is being managed by JKC Australia LNG. The project will produce 8.4 million tonnes of LNG and 1.6 million tonnes of LPG a year, and up to 36 million barrels of condensate a year.

Ichthys is providing around 5000 jobs during construction, with 4000 in Darwin and 1000 offshore. Once operational, the project will provide 740 jobs.

INPEX's joint venture partners are Total, Tokyo Gas, Osaka Gas, Chubu Electric and Toho Gas.

Construction at Gorgon LNG.
Inset: An APLNG reverse-osmosis water treatment plant.

Gladstone LNG

The $18.5 billion Santos-led GLNG project in Queensland is now more than 50 per cent complete. First shipments of LNG from this pioneering CSG-LNG development are scheduled for 2015.

GLNG pipes gas from the Bowen and Surat Basins to Curtis Island near Gladstone. Set to produce 7.8 million tonnes of gas a year, the GLNG Project will supply export markets. It is a joint venture between Santos, PETRONAS, Total and KOGAS.

This project is providing 5000 jobs during construction and 1000 for ongoing operations.

GLNG's online water portal provides up-to-date results of the project's extensive surface and groundwater monitoring programs. It includes detailed results from over more than water monitoring locations. The portal won an APPEA Environment Award at last year's APPEA Conference.

Australia Pacific LNG

Australia's largest CSG project, APLNG, will supply domestic and overseas markets. The $24.7 billion development pipes gas from fields in the Surat and Bowen basins to a plant on Curtis Island off Gladstone.

APLNG is a joint venture between Origin Energy, ConocoPhillips and Sinopec. First production is due in 2015.

Origin is developing the gas fields and 520km pipeline, while ConocoPhillips is building and operating the two-plant LNG facility. Sinopec became the project's first customer and an equity partner.

The project will produce 9 million tonnes of LNG a year. Six thousand jobs are being created during construction, while operations will deliver 1000 jobs when production starts.

The Project Updates plenary session will be held at 2.30pm on Wednesday 29 May.

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Accenture provides services across the entire energy value chain. The Accenture energy industry group serves oil and gas organisations, including IOCs, NOCs, independents and oilfield services. Accenture collaborates with clients at the heart of their operations to help them meet competitive challenges and achieve high performance. Extensive research, tools, methods and deep industry expertise, enables Accenture to develop business strategies, reduce time to first gas, optimise operations and provide back-office functional services across supply chain, information technology transformation and enterprise resource planning.

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. We provide a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural and social environments. More information on AECOM and our services can be found at www.aecom.com. Follow AECOM on Twitter @AECOM.

Aspen Medical is an Australian-owned global healthcare solutions provider. It is the global leader in expeditionary healthcare services and delivers full spectrum healthcare tailored to discerning clients with needs in any setting, especially those in remote, challenging and under-resourced locations. Aspen offers a unique combination of flexible teams of health practitioners and has the capabilities and experience to deliver healthcare solutions in complex environments throughout the Pacific, South East Asia, the Americas, the Middle East and the United Kingdom.

Australian Government: The Department of Resources, Energy and Tourism, and Geoscience Australia have prepared a comprehensive information package to underpin the 2013 Offshore Petroleum Exploration Acreage Release. Geoscience Australia is Australia's preeminent geological research organisation, which provides pre-competitive geological and geophysical datasets and analysis on acreage release areas. Australian Resources and Energy Minister, the Hon Gary Gray MP will launch the acreage release at APPEA 2013.

Baker Hughes Incorporated creates value from oil and gas reservoirs with high-performance drilling, evaluation, completions and production technology and services, pressure pumping, integrated operations and reservoir consulting. Baker Hughes' solutions are designed to lower costs, reduce risk or improve productivity for the global oil and gas industry. With more than 50,000 employees in more than 90 countries, its local geomarket teams work alongside with customers to engineer reliable, application-specific products and services in every market segment.

Barker Wentworth is a South Australian-owned and operated advisory and project delivery firm providing services to leading Australian and international businesses at operational, senior executive and board level. It offers extensive operational and executive experience with each consultant having at least 25 years insight and track records to draw upon. Barker Wentworth is passionate about the future of Australian energy and resources and can assist with a range of challenges faced by the industry today.

Beach Energy Limited is one of Australia's top 10 largest ASX listed oil and gas exploration and production companies. Beach's proved and probable reserves are forecast to grow to about 100MMboe as at June 2013 and annual production is forecast to increase to around 9MMboe for 2012–13. Beach is at the forefront of Australian unconventional gas development and has a global portfolio of strategically located and prospective exploration and production tenements.

BHP Billiton is a leading global resources company. Its purpose is to create long-term shareholder value through the discovery, acquisition, development and marketing of natural resources. The company's people are the foundation of its business and the key ingredient for its sustained success. The future is BHP Billiton. The future is yours…

BOC is a member of The Linde Group, a leading global gases and engineering company that serves customers in more than 50 countries. The company develops safe, sustainable and innovative solutions for customers in many specialty sectors, heavy industry and medical environments. Throughout Australia, New Zealand and the South Pacific, BOC supplies safety products, industrial equipment and trade tools, and specialty compressed and bulk gases and gas-related equipment.

BP Developments Australia is the Australian upstream petroleum arm of BP, a global energy company that provides its customers with fuel for transportation, energy for heat and light, petrochemicals products, and retail services. In Australia, BP is exploring for oil and gas in the Great Australian Bight; is a foundation participant in the North West Shelf Venture; is developing resources in the Browse and Greater Gorgon areas; and is a leading refiner and marketer of fuels and lubricants.

Brisbane Marketing promotes Brisbane nationally and internationally. Its Investment Attraction division is the city's inward investment agency. With an international reputation for success, it works with a diverse group of clients across the energy and resources sector to attract new business to Brisbane. By connecting leaders of the sector and providing critical information and introductions, the Investment Attraction division strategically shapes the future of Brisbane's business environment and helps deliver long-term economic growth for the city. Meet them at the Invest Brisbane Café today or visit investbrisbane.com.au.

CGG is a fully integrated geoscience company providing leading geological, geophysical and reservoir capabilities to a broad base of customers primarily from the global oil and gas industry. Through its three complementary business divisions of equipment, acquisition, and geology, geophysics and reservoir, CGG brings value across all aspects of natural resource exploration and exploitation. CGG employs 10,000 people around the world, all with a passion for geoscience and working together to deliver the best solutions to customers.

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Chevron Australia is the local arm of one of the world's leading integrated energy companies. Chevron has been present in Australia for more than 60 years. Chevron Australia is leading the Gorgon and Wheatstone Projects and is a foundation participant in the North West Shelf. It also produces oil on Barrow and Thevenard Islands and is a significant investor in exploration offshore northwest Australia. Chevron's Perth-based Global Technology Centre provides technology support and solutions to the company's operations in Australia and around the world.

Chiyoda is a world-leading integrated engineering company with wide-ranging services in diverse fields, such as energy, chemicals and petrochemicals, pharmaceutical, environmental technology, social infrastructure and industrial facilities. Chiyoda has successfully built many plants and executed many projects in over 40 countries around the world, with particular strengths in LNG and gas processing facilities.

Clough is an engineering and project services contractor servicing the energy and chemical and mining and mineral markets in Australia and PNG. Services range from early concept evaluation and feasibility studies through design, construction, commissioning and long term production operations support and optimisation. Clough is recognised for specialised LNG capabilities, and industry-leading safety and productivity performance. Its approach to sustainable development assures the wellbeing of its people, the environment and local communities.

Coffey International Limited is a specialist professional services consultancy with expertise in geosciences, international development, and project management. Its geosciences consultancy has specialist technical knowledge in geotechnical, environmental and mining engineering, as well as materials testing and analysis. With more than 50 years of experience, Coffey is well known in for deep technical skills and market-leading solutions to complex tasks.

ConocoPhillips is one of the world's largest independent exploration and production companies based on proved reserves and production of liquids and natural gas. Headquartered in Texas, ConocoPhillips has been in Australia since the mid 1980s and has made multi-billion dollar investments through Darwin LNG and Bayu-Undan, as well as the Australia Pacific LNG Project in Queensland. ConocoPhillips' growth portfolio includes Sunrise LNG, offshore exploration in the Browse Basin and Timor Sea, and onshore shale exploration in northwest Australia's Canning Basin.

Core Laboratories is the world's largest and most technologically advanced independent provider of reservoir fluid and petrophysical services to the oil and gas industry. It provides data and services that characterise the porous reservoir rock and its reservoir fluids—gas, oil and water. The data sets provided are used to assist with reserve calculations and maximise oil and gas recovery.

CRA Excellence Program. Using the wrong materials can be catastrophic for your project. The CRA Excellence Program is a cutting edge advisory service providing expert advice on the selection and use of corrosion-resistant alloys. Its program draws on the combined expertise of an independent panel of leading materials and corrosion specialists to guide you in selecting appropriate materials, and extends to checking that you get what was specified. Visit www.craexcellence.com for further information.

The CRA Excellence Program

Energy Apprenticeships Group is an initiative of Apprenticeships Australia. It provides professional apprentice and trainee recruitment, employment and management services to the oil and gas sector throughout Australia. EAG understands the industry's specific workforce development needs. It has helped some of the leading industry players set up their programs and is proud to have played an important role in successfully completing over 250 apprentices and trainees.

eni is a world-leading integrated energy company. Present in Australia since 2000, eni operates the Blacktip Project in the Bonaparte Basin and the Kitan Project in the JPDA. It is also a partner in Bayu-Undan and Darwin LNG. Eni also operates Block NT/P68, containing the Heron and Blackwood discoveries, and has a significant interest in Block NT/P48, which holds the Evans Shoal discovery. Eni Australia Exploration and Production has interests in areas covering about 26,000sq km.

ERGT is Australia's national oil and gas safety training specialist. It helps make people and workplaces safer by providing safety, emergency response and crisis management training in full scale, practical simulated environments. ERGT delivers more than 80 accredited programs from seven training centres in WA and Victoria, including its new $18 million Oil and Gas Safety Training Centre in Jandakot, Perth.

Ernst & Young offers a Global Oil and Gas practice consisting of a network of more than 9200 professionals with extensive oil and gas industry experience. It serves a wide range of companies—independent E&P companies, oilfield services firms, independent refiners, major integrated corporations and national oil companies. Its media channels can keep you up to date on the company's reports, surveys and more. Join up for discussions on under the group name Ernst & Young Global Oil & Gas Center and on Twitter @ EY_OilGas.

ExxonMobil Australia is this country's oldest petroleum company, operating since 1895. Its business covers a wide range of petroleum-related activities from oil and gas exploration and production to petroleum refining and supply of fuels and lubricants. ExxonMobil's primary role is to safely provide reliable and affordable supplies of energy, and the company is committed to doing so in a financially, environmentally and socially responsible manner. Learn more at www.exxonmobil.com.au.

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Flinders Group is a leading boutique professional services firm with an exceptionally strong skillset in the pre-development, tenure acquisition, land access, environmental and project approval processes for exploration and production development in Australia. The firm employs professional project managers and construction specialists in pipelines and supporting field infrastructure. Flinders has a developing focus on regional sustainability and the long-term town planning required as the industry grows into the new era of operating large gas projects.

HopgoodGanim offers commercially-focused legal advice, coupled with reliable and responsive service, to clients throughout Australia and the world. With offices in Brisbane and Perth, as well as international operations, the firm is a leading advisor to the resources and energy industry. It plays a pivotal role in supporting the long-term growth of established resources companies, SMEs and junior explorers and producers.

Fluor Corporation is one of the world's leading publicly owned engineering, procurement, construction, maintenance and project management companies. With a workforce of more than 43,000 people worldwide, in Australia Fluor provides EPCM to clients in energy, chemical, mining and metals. It also provides solutions to facility/plant owners in operations and maintenance and small capital work. An EPC Contractor of choice for greenfield and brownfield projects, Fluor provides conceptual and feasibility studies through detailed design and construction.

Horizon Resources International (HRI) is a Queensland-owned, Brisbane-based, engineering and technical consultancy in the Australian oil, gas, and mineral drilling and production industries. HRI provides rig inspections, compliance audits, training, engineering, commissioning, maintenance and environmental management. It also has project engineering teams in place on deepwater drillships and semisubmersible drilling rig construction projects in Singapore and Korea and provides engineering services throughout Europe, Asia and the US.

Fragomen is the world-leading global immigration services provider. It has 43 offices in 18 countries. In Australia, Fragomen is the largest immigration law firm focused on global mobility with significant experience in providing corporate immigration, compliance and advisory, litigation and review, employment law, consular services, private individual migration and document procurement and legalisation services to companies in the oil and gas industry.

ICN is a business network that introduces Australian and New Zealand companies to the supply chains of major projects. In essence it offers a lucrative new business source for suppliers and a sophisticated search service for project managers. ICN's role is to find the suppliers and service providers that are best equipped to meet the requirements of hundreds of projects across Australia and New Zealand.

Geoscience Australia is Australia's national geoscientific agency and is a world leader in providing first class geoscientific information and knowledge. The agency's Energy Division provides pre-competitive data and information to industry to stimulate and support petroleum exploration in Australia. The Division undertakes regional basin studies, assessments of hydrocarbon resources and provides geoscientific data in support of the annual acreage release round.

IDM Partners is a leading program and project management organisation. IDM (Infrastructure, Development and Management) specialises in delivering infrastructure projects in the energy, oil and gas, water and utilities, roads and transport, telecommunications and mining sectors. IDM focuses on delivering precise and exceptional outcomes for its clients. At present, close to $9 billion in programs are being delivered by its team of talented and committed professionals across Australia. For more information see www.idmpartners.com.au or email enquiries@idmpartners.com.au.

Hart Energy is a leading provider of news, data, analysis and events to the energy industry. Its successful DUG conferences, the world's largest unconventional resource events, attract 17,000+ industry professionals each year. This series expands in 2013 with DUG Australia, 27–29 August at the Royal International Convention Centre in Brisbane. Hart Energy editors, analysts and consultants provide actionable intelligence to investors, producers, midstream operators and refiners worldwide—visit hartenergy.com.

IHS is a global information company with world-class experts in key areas shaping today's business landscape: energy, economics, geopolitical risk, sustainability and supply chain management. Businesses and governments around the world use IHS products, services and solutions to make faster and more confident decisions. Its energy industry expertise encompasses the entire workflow continuum from exploration, development and production through distribution, power generation and consumption. IHS—advancing decisions that advance the world.

Hess is a leading independent energy company engaged in exploration and production of crude oil and natural gas. It is committed to meeting the highest standards of corporate citizenship by safeguarding the environment, making a positive impact on the communities in which it does business and protecting the health and safety of its employees. Hess is developing Western Australia's Equus LNG Project and undertaking exploration onshore in the Northern Territory and Western Australia.

INPEX CORPORATION is a worldwide oil and gas exploration and production company with more than 70 projects in 26 countries. INPEX is ranked in the top 50 global energy companies and has been part of the Australian business community since 1986. INPEX is involved in several projects offshore Western Australia and the Northern Territory. These include the very large Ichthys LNG Project, the Prelude FLNG Project, Van Gogh, Ravensworth and Kitan projects, Bayu-Undan and Darwin LNG.

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ION produces BasinSPANS TM (SPANS). These geologically-driven, basin-wide seismic data programs are acquired and imaged using the most advanced technology available. SPANS are customised to image deep within the geologic section, cover an entire petroleum province, and overlay with areas of heightened structural or stratigraphic interest. BasinSPANS data is processed by ION's GX Technology group using the most advanced geophysical techniques available. For more information email BasinSPAN@iongeo.com.

Piper Alderman is a leading legal advisor to the energy and resources sector. It advises in all areas of mining, oil, gas, utilities and resources-based law and has significant experience in projects throughout Australia and across the globe. Its national team provides services that take into account the sector's unique risks and rewards, offering advice on corporate and commercial transactions, licensing, regulatory, employment, environmental, native title and dispute resolution.

John Holland is committed to being Australia's leading engineering, contracting and services provider to the infrastructure, energy and resources and transport services sectors. Operating across Australia and in New Zealand, South East Asia and the Middle East, John Holland's business is driven by its collaborative approach to project delivery and its diversity of skills and capabilities.

PTTEP Australasia is the Australian subsidiary of PTTEP, the Thai national oil company based in Bangkok. PTTEP is one of Thailand's largest publicly listed companies with operations in 12 countries, including Canada, Mozambique, Myanmar and Australia. PTTEP Australasia is engaged in the full cycle oil and gas industry in Australia and operates 16 permits in the Timor Sea, including Montara and Cash Maple fields. PTTEP Australasia is proud to be the sponsor of the APPEA Journal for 2013.

KPMG is a leading provider of professional services to the oil and gas industry, offering an extensive array of disciplines (audit, tax and advisory) to support upstream (LNG and CSG), downstream and services organisations. KPMG's global oil and gas practice supports Australian and international organisations investing in all stages of the project lifecycle from exploration and acquisition, through to developing and operating significant projects—| all over the world.

Qube Energy has a consolidated range of experience and capabilities servicing the oil, gas and energy industry. It specialises in a fully integrated port service solution for major projects, incorporating stevedoring, logistics and transport. With offshore supply bases in Darwin, Dampier, Bunbury, Melbourne (South Wharf) and Bell Bay, Qube is ideally situated around Australia to provide comprehensive support.

Murphy Pipe and Civil is an impressive partnership that unites the multinational resources of J Murphy & Sons with the Australia-wide knowledge and experience of Pipe and Civil. The result is a company with unmatched capability that can deliver large scale pipeline and infrastructure projects for the mining, water, oil and gas industries. The company's proven capabilities include construction of large-diameter pipelines, CSG gathering systems, compressor and pumping stations, tunnels and associated works.

RISC is an independent advisory firm working in partnership with oil and gas and industry related companies, offering the highest level technical and commercial advice to clients around the world. With RISC's input, clients can make key decisions with confidence. Its clients want opinions, information and advice that consider the entire picture. RISC offers a totally independent and broad perspective on energy projects, based on years of experience and an in-depth understanding of the industry.

Origin is Australia's leading integrated energy company. Focused on gas and oil exploration and production, power generation and energy retailing, Origin services 4.3 million electricity, natural gas and LPG customer accounts and has the country's largest generation portfolio. Through Australia Pacific LNG, its incorporated joint venture with ConocoPhillips and Sinopec, Origin is developing one of Australia's largest CSG-to-LNG projects based on Australia's largest 2P CSG reserves base.

Thiess has established a strong reputation over almost 80 years for delivering high-quality, large-scale and technically-complex projects in the energy sector. Its partnerships with internationally-recognised LNG technology and specialist construction leaders give Thiess access to global sector expertise. This pairing of international specialists with Thiess' construction capability ensures certainty, quality and safety in project delivery. Tailoring solutions and innovative approaches helps deliver timely and cost effective outcomes for its clients.

Petroleum Geo-Services (PGS) is a leading, worldwide geophysical company. PGS provides an extensive range of seismic services and products for the petroleum industry, including seismic data acquisition, processing, reservoir monitoring and analysis, interpretation and electromagnetic studies. The company also has the world's most extensive 3D MultiClient data library. Headquartered in Oslo, Norway, PGS has 35 offices in 25 countries, including larger regional offices in London, Houston and Singapore. PGS is listed on the Oslo Stock Exchange.

Transfield Services has more than 24,000 people globally delivering integrated services across consulting, engineering, construction, operations, maintenance and upgrades, and strengthened through access to wholly-owned subsidiaries. This includes Easternwell, a national company offering a diverse range of leading class drilling and servicing capabilities to the energy and mineral sectors. Easternwell has a service capacity of more than 70 rigs and employees dedicated to working in remote and regional locations.

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UGL is a global leader in outsourced engineering, property services, asset management and maintenance worldwide. The company has a global presence across 52 countries and more than 55,000 employees and subcontractors. UGL plays an essential role in partnering with clients to maximise the value of their investments, wherever they are in the world.

Woodside is Australia's largest independent oil and gas company, with a proud history of safe and reliable operations spanning decades. As one of the world's leading operators of oil and gas, Woodside produces around 900,000 barrels of oil equivalent each day from a diverse portfolio of facilities which it operates on behalf of some of the world's major oil and gas companies.

Veolia Water specialises in designing, operating and managing water and wastewater infrastructure. Its understanding of the unique requirements of oil and gas operations and water challenges enables Veolia to offer innovative solutions for all types of sites fulfilling the most demanding reliability, safety and quality standards. The company's one-stop, holistic service ranges from investigation and identification of appropriate technology, through design and construction to operations, maintenance and long-term management.

Yokogawa is a leader in industrial automation within the worldwide LNG industry. More than 30 per cent of the world's liquefaction and regasification plants feature Yokogawa control systems, so the company has the knowledge and experience to ensure that the critical information in your plant is fully visible for enhanced production control and management.

WDS is a leading integrated provider of specialist engineering, drilling, construction, fabrication and maintenance related services to the cross-section of energy and mining. WDS has an extensive fleet of specialist equipment, experienced operations and maintenance personnel, project management teams and an employee base that has strong technical and industry expertise. It offers clients surety of services with a safety and quality focus, enabling on-time and on-budget project delivery.

CONTACT APPEA

Head office

Level 10
60 Marcus Clarke Street
Canberra ACT 2600

t 02 6247 0960
e appea@appea.com.au

Perth

Level 4
190 St George's Terrace
PERTH WA 6000

t 08 9426 7200
e perth@appea.com.au

Brisbane

Level 36
32 Turbot Street
BRISBANE Qld 4000

t 07 3231 0500
e brisbane@appea.com.au

Sydney

Suite 4, Level 8
3 Spring Street
SYDNEY NSW 2000

t 02 8241 1900
e sydney@appea.com.au

STAFF LISTING

David Byers	Chief Executive	
ACCESS, FISCAL & CORPORATE		
Noel Mullen	Deputy CEO – Access, Fiscal & Corporate	Canberra
Clare Valence	Policy Director – Access	Canberra
Julie Hood	Director – Events	Brisbane
Moira Lawler	Manager Events Administration	Canberra
Casey Topp	Senior Officer Administration & Events	Canberra
SAFETY, ENVIRONMENT & PRODUCTIVITY		
Miranda Taylor	Director – Safety, Environment & Productivity	Perth
Leanne Drewitt	Project Manager – Safety & Operations	Perth
Joslyn Hill	Project Administrator	Perth
Damien Hills	National Associate Director – Environment	Perth
Keld Knudsen	Associate Director – Environment	Canberra
Roma Sharp	Senior Policy Adviser – Productivity & Training	Perth
ECONOMICS		
Damian Dwyer	Director – Economics	Canberra
Larissa Wood	Economist	Canberra
Adam Welch	Senior Analyst – Economics & Operations	Perth
WESTERN REGION		
Stedman Ellis	Chief Operating Officer – Western Region	Perth
Steven Gerhardy	Associate Director – Western Region	Perth
Sandy Main	Administration & Membership Coordinator	Perth
Lucy Sutton	Senior Policy & Communications Adviser – Western Region	Perth
Andrew Taylor	Senior Policy Adviser – Western Region	Perth
EASTERN REGION		
Rick Wilkinson	Chief Operating Officer – Eastern Region	Brisbane
Laura Carlton	Administration	Brisbane
Lyall Howard	Policy Director – NSW	Sydney
Matthew Paull	Policy Director Queensland/NSW	Brisbane
Siobhan Barry	Senior Policy Adviser – NSW	Sydney
Ryan Bondar	Senior Policy Adviser – NSW	Sydney
Naaz Kerin	Senior Policy Adviser – Queensland	Brisbane
EXTERNAL AFFAIRS		
Michael Bradley	Director External Affairs	Canberra
Steve Rotherham	Senior Communications Officer	Canberra
Chris Ward	Media Manager – Eastern Region	Brisbane
SUPPORT SERVICES		
Cath Sutton	Director Support Services	Canberra
Renee Bekavac	Executive Assistant & Office Administrator	Canberra
Courtney Hughes	Office Administrator	Canberra
Anne Lowe	Finance Officer	Canberra
Tracey Pinto	Accountant – part-time	Canberra