



Government of **Western Australia**
Department of **Commerce**

**Submission to the Western Australian Legislative Assembly
Parliamentary Economics and Industry Standing Committee Inquiry into
the Economic Implications of
Floating Liquefied Natural Gas Operations**

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Introduction

This submission to the Inquiry into the Economic Implications of Floating Liquefied Natural Gas Operations (FLNG) is presented to the Western Australian Legislative Assembly Parliamentary Economics and Industry Standing Committee by the Western Australian State Government Department of Commerce (“Department”).

The focus of the submission is on the following part of the declared Inquiry’s Terms of Reference:

“The Committee will identify the manner in which the use of Floating Liquefied Natural Gas Operations will impact upon the following sectors of the Western Australian economy:

- Engineering and design.
- Fabrication and manufacturing.
- Construction and ancillary services.”

The information provided and views expressed are primarily reflective of positions taken by the Industry and Innovation Division of the Department and have been developed in consultation with the Department of State Development.

Departmental Context to the Submission

The Department has primary carriage of implementing the Western Australian Government’s policy and suite of initiatives to ensure that the State’s local businesses have full, fair and reasonable opportunity to compete for major project and State Government agency contracts in an increasingly global environment.

In particular, success by local industry in supplying to major energy and mineral resource projects has traditionally been a basic determinant of the performance of the Western Australian economy.

In November 2010, in acknowledgement of a changing, more complex and increasingly competitive market, the State Government announced a review of its existing policy approach to enhancing local industry participation in major resource projects.

Following stakeholder consultations, the then Minister for Commerce (with the imprimatur of the Premier) launched the Western Australian Government Local Industry Participation Framework (“Framework”) on 1 July 2011. The Framework is based on the implementation of ten (10) key initiatives, especially:

- Undertaking strategic dialogue with project proponents in regard to changes in international business and procurement models.
- Working with project proponents to jointly identify future opportunities for local supply in resource projects.
- Establishing the relative competitiveness of local industry to service project requirements.
- Ensuring that local industry receives full, fair and reasonable opportunity to participate in project work.
- Enhancing the focus of Commonwealth Government policy in the area of local industry participation and advocating for appropriate business support programs to further this aim.

Outcomes and actions on the progress of the Department's work in this area are detailed in the bi-annual Local Content Reports that are submitted to State Parliament. These Reports provide transparency to the Executive and the community on local industry participation trends and issues.

In addition, the Department is the lead agency responsible for the provision of policy direction and oversight of the Australian Marine Complex (AMC) to achieve Government objectives.

Part of the inspiration leading to the establishment of the AMC were the findings of two reports, in the late 1980s and 1990s, delivered by the House of Representatives Standing Committee on Industry Science and Technology.

Drawing on the reports' conclusions that opportunities were being lost to develop Australia's international competitiveness, through increased local industry participation in the manufacturing of fabricated structure and engineering components to service national resource projects, the Common User Facility at the AMC was built.

The Government's vision for the AMC is "*a World-Class Centre of Excellence for manufacturing, fabrication, assembly, technology, repair and maintenance servicing activities in the marine, defence and resource industry*".

The AMC has been developed to facilitate and enhance the opportunities created by the clustering of industries and is arranged into four adjoining precincts, each with a particular service focus.

Since 2003, the AMC has created A\$1.6 billion in economic activity, 24,000 jobs and 360 projects that would not otherwise been undertaken in the State if the Government had not built the AMC.

The AMC has been unique in Western Australia by providing fit-for-purpose infrastructure to allow capability to attract oil and gas projects requiring assembly, the pre-assembly of fabricated units and repair and maintenance works.

In April 2012, the Department received funding to undertake investigations of the feasibility of the Pilbara Fabrication & Services Common Use Facility (PFSCUF).

Conceptually, the PFSCUF could provide common use infrastructure to enable local industry in the North West of the State to maximise the economic development opportunities in the region. This project, if feasible, could enable diversification of the industry base and create employment opportunities beyond the extractive resource projects currently underway. It is envisaged the PFSCUF will support a wide range of industry sectors including marine, support industries, housing, building, construction, minerals, oil and gas, defence and paramilitary.

Objectives of proposed PFSCUF include:

- Regional economic development and industry diversification.
- Strengthen and diversify the State's regional economic base.
- Attract industries and employment beyond the resource sector.
- Capitalise on projects in North West.
- Community benefits from local participation flow-through.
- Increased employment opportunities leading to more families settling in the region, supporting the Pilbara Cities initiative.
- Relieve pressure on the State's road infrastructure.

Funding for the feasibility studies has been provided through the Western Australian Government's Royalties for Regions program, administered by the Department of Regional Development (DRD).

The Department is coordinating four (4) feasibility studies. The studies have been commissioned and will be used in the Business Case to be submitted to the Government approvals process in late 2013.

Historical Context to the Submission

The Framework was introduced in a context of the erosion of high levels of natural protection enjoyed by local suppliers to the State's resource sector. Significantly higher levels of overseas competition can be attributed to a combination of factors including:

- Increasing use of modular construction technology to produce major capital equipment, generally supplied from overseas.
- Competition from overseas, especially South East and North East Asian manufacturers (China, Japan, Korea, Thailand and Vietnam).
- Design, procurement and contract management moving and consolidating offshore (to the global engineering and design hubs in Reading (UK); Yokohama (Japan); Houston (USA) and Singapore).
- Emergence of specialist Engineering, Procurement and Construction (EPC) and Engineering Procurement and Construction Management (EPCM) companies undertaking out-sourced service provision for project proponents. This business model has led to the rising use of global supply chains and international marketing arrangements.
- Closer links between project equity and sourcing.
- Advances in transport and communication technologies providing greater access to Western Australia from overseas.

- A strong Australian dollar.

These changes have particularly adversely affected the local steel fabrication and engineering and design industries.

The largest impact has been experienced in reduced supply opportunities to off-shore oil and gas projects. The substitution of large modules for “stick build” is an example of a cost effective technological breakthrough which carries negative implications for local industry, especially in the construction phase.

Contemporary Context

Since the Framework was launched, the Department estimates that A\$54 billion of publicly announced, locally awarded, resource contracts have been won by Western Australian based suppliers. It is further estimated that this translates to more than 136,000 jobs for the State. However, it has been recognised by both industry and government that global business trends have and will strongly continue to influence the future of Western Australian fabrication and manufacturing and engineering and design activities.

The degree to which local industry is able to adjust will be critical as the transformation in the market environment, referred to above, continues.

The Department considers that there is an increasing disparity between global trends in construction and production methodology and local benefits. What is occurring is a weakening in the traditional synergy between what is commercially optimal for the project and the maximum benefit for the Western Australian economy.

With financial support from the Department and, in some instances, the Commonwealth Government there have been several independent reviews of prospects for the local steel fabrication and engineering and design industries intended to clarify the future outlook. These were:

- “Enhancing Opportunities for Small to Medium Enterprises in Major Resource Projects in Western Australia” – Prepared for the Technology and Industry Advisory Council by AECOM Australia Pty Ltd – February 2013.
- “Australian Industry Participation in Modular Based Construction in the Resources Sector” – Prepared for the Department of Industry, Innovation, Science, Research and Tertiary Education and the Department of Commerce by Dr Martin West, Curtin University – December 2012.
- “Improving participation and competitiveness in WA infrastructure and resources projects” - With funding secured through the Department of Commerce, the Australian Steel Institute commissioned an initiative looking into the potential to optimise local supply chain efficiencies and ultimately to improve the prospects of the steel fabrication industry to supply major resource projects in the State – Prepared by Dr Martin West, Curtin University and Deloitte Private – October 2012.
- “Local engineering issues and policy” – Prepared for the Department of Commerce by the Association of Professional Engineers, Scientists and Managers Association and Engineers Australia - October 2012.

- “Australian Participation in Large Resource and Infrastructure Projects” – Prepared for the Commonwealth Government by Mr Dennis H O’Neill, Commonwealth Government appointed Steel Supplier Advocate – December 2011.
- “Modular Fabrication in the Resources Sector in Western Australia: Current Practices and Strategies for Improvement” – Prepared for the Department of Commerce and the Industry Capability Network Western Australia by Dr Martin West, Curtin University – November 2011.

A hard copy of the above documents can be provided to the Committee, on request.

A primary factor in falling levels of local supply for steel fabricators was confirmed to be a combination of Asian industrialisation and the increasing use of large modules for off-shore projects. Because a significant number of Asian fabrication yards are geared up to produce modules of increasing size and complexity, and enjoy the ability to offer a price based on marginal cost, local steel fabricators were confirmed as facing serious competitive disadvantages in terms of price, physical capacity and perceived capability. Indeed, the December 2012 report, endorsed by the Western Australian Branch of the Australian Steel Institute (ASI), recommended that fabricators switch emphasis from construction to operational needs and concentrate on niche, time sensitive items.

In terms of the engineering and design industry, the October 2012 report prepared under the auspices of the Association of Professional Engineers, Scientists and Managers, Australia (APESMA), concluded that Western Australia suffers from a number of significant disadvantages. In particular, cost factors and the existence of established centres of excellence were seen as major handicaps to increased levels of industry participation in offshore developments.

Further, APESMA now acknowledges that it is the operational phase of projects that offer the greatest opportunities for its members.

However, the future of both the steel fabrication and engineering and design industries has often been linked to the concept of Perth/Western Australia as a Centre for oil and gas excellence.

In this context, the Department is engaging closely with major project proponents including Woodside Petroleum which is leading a consortium of major explorers and producers (including Shell, Chevron and General Electric); and suppliers, from large contractors and service providers (including Matrix, Apache, Clough, Worley Parsons and Thiess), small to medium enterprises to researchers and educators in a submission for an Oil and Gas Industry Innovation Precinct under the Commonwealth Government’s Industry Innovation Precinct Program. A substantial part of the proposed Oil and Gas Precinct’s funding (to be matched by industry partners) will be invested in establishing and fostering collaboration between industry and the research sector in Australia to improve productivity, create new growth models and exploit economic opportunities emerging from growing international demand, especially Asia; targeting innovation in on-shore and off-shore technologies for construction, exploration, operations and sustainable business practice.

On 16 August 2013, the Commonwealth Government announced plans to invest in two new projects to boost research and innovation in the State’s oil and gas industry, if re-elected.

The first of those plans was the Oil and Gas Industry Innovation Precinct.

The Industry Innovation Precinct has the potential to make important contributions to achieving consensus between proponents, government and suppliers as to the direction for the relationship between off-shore developments and the State's economy.

The second of the plans was that the Commonwealth Government would invest A\$30 million in a new National Floating Systems Research Centre in Perth to catch the industry trend towards floating gas production facilities.

The Centre will be led by the CSIRO and Australian Institute of Marine Science, in partnership with industry.

Additionally, at a State level there is an ability to extend the Floating Dock at the AMC and incorporate Stage 2 which comprises an additional 16,000 tonne lift to ensure unique capability of fit-for-purpose infrastructure is maintained in new markets.

Manifestations of Market Changes in the Energy Sector

After evaluating the suitability of performing gas liquefaction on a floating vessel near the point of extraction, the world's first FLNG project, Shell's estimated A\$12 billion Prelude project (some 250 kilometres off the Western Australian coast in the Timor Sea) was announced in 2011. This was followed by the negative Final Investment Decision by Woodside Petroleum of the proposed on-shore Browse LNG Development near James Price Point, subsequently leading to a 2 September 2013 announcement by Woodside Petroleum that the Browse Joint Venture participants have selected the use of FLNG technology as the development concept to commercialise the three Browse gas fields.

There are also other global FLNG projects going forward. These include:

- ExxonMobil and BHP Billiton's plans to start construction of a \$10 billion-plus floating LNG platform off Western Australia to process gas from their Scarborough gas field.
- PETRONAS' first floating LNG facility will be among the world's leading FLNG vessels, scheduled for deployment in 2015. With a 1.2 million tonnes per annum capacity, it is expected to operate at the Kanowit gas field, 180km offshore from Bintulu, Malaysia.
- China national Offshore Oil Corporation's gas and power division gained development approval in mid-August 2013 for the country's first FLNG terminal in the northern port city of Tianjin.

FLNG Construction Phase

In assessing local content prospects in FLNG, the Department considers utilisation of this form of extraction and processing will effectively eliminate local industry participation in the construction phase, given that the vessels will be built, fitted-out and commissioned overseas, floated down to the gas fields off the coast of the State and anchored in place. Local steel fabrication and engineering and design companies will not benefit, to any real degree, from this methodology.

The Committee is aware that engineering and design for the Prelude project has been undertaken by Technip in France and Japan and it is the Department's surmise that the Shell Prelude prototype vessel will minimalise the opportunity for any re-engineering and design work for future vessels.

The only identified exception to this may be some local engineering and fabrication associated with drilling, installation, calibration and manufacture of the anchors/piles. Therefore, the net amount of locally contracted construction work should be considered to be minimal.

Consequently, in terms of the key focus area of the Inquiry, the Department's consolidated view is that there will be in the construction phase:

- Very little local engineering and design.
- Little fabrication and manufacturing.
- No construction.
- Only minor exceptions to the above.

This is in contrast to the traditional model for LNG projects which make a significant contribution to the local and national economies during the construction phase.

One indicative comparison of this contrast is to consider the scope of work carried out or intended to be carried out during the construction phases of the Gorgon and Wheatstone LNG projects.

Based on information sourced from reports provided under the Barrow Island Act 2003 (incorporating the Gorgon Gas Processing and Infrastructure) to the Gorgon Local Content Steering Committee, aggregated committed Western Australian expenditure for the period 1 January 2007 to 31 March 2013 was A\$18.93 billion of the total A\$34.86 billion. This equates to approximately 54 per cent Western Australian content during the construction phase.

To date, the Gorgon project has generated more than 10,000 jobs in Australia, including 6,000 currently working on or around Barrow Island.

Based on information sourced from reports provided under the Ashburton North State Development Agreement to the Wheatstone Local Content Steering Committee, aggregated committed Western Australian expenditure for the period January 2012 to March 2013 was A\$3.35 billion of the total A\$7.06 billion. This equates to approximately 48 per cent Western Australian content during the construction phase.

The Wheatstone project is expected to create around 6,500 direct and indirect jobs in Australia during peak construction.

If, as the Department surmises, the construction component of the Prelude project will only produce State economic input in the order of approximately five per cent, it will equate to local expenditure of approximately A\$658 million.

Accepting the divergent scenarios above, the Prelude project as a harbinger of FLNG clearly offers substantially less attractive economic outcomes for the State in this phase.

A further area of potential loss is in terms of the contribution to social infrastructure that major on-shore LNG projects provide.

In the case of the Gorgon project, the Gorgon Joint Venture is committing approximately A\$190 million in environmental offsets and Net Conservation Benefits that includes A\$62.5 million to establish the North West Shelf Flatback Sea Turtle Conservation Program. Further, the Gorgon Joint Venture is investing around A\$2 billion in the design and construction of the CO2 project.

In terms of social investment, The Gorgon Social Impact Management Plan (SIMP) provides a framework to enhance the social and economic impacts associated with the Project.

It focuses on:

- Regional economic development.
- Education, training and employment.
- Aboriginal-specific employment, training and education.

Programs and initiatives funded under the SIMP include:

- Karratha and Districts Chamber of Commerce and Industry Business Excellence Awards.
- Pilbara Pulse Economic Summit incorporating the Karratha Business Expo.
- Karratha Non-Government Organisation Support Service.
- Pilbara Small Business Development Series.
- Pilbara Women's Network.
- Pilbara Aboriginal Contractors' Association.
- Gorgon Entry Skills Training Program - linked with employment outcomes at the Australian Marine Complex at Henderson and is targeted towards Aboriginal people in Kwinana.
- Gorgon Trades Assistant Training Program.
- Aboriginal Quarantine Inspector Training Program.
- West Pilbara Business Support Program.

In the case of the Wheatstone project, under the State Development Agreement, Chevron has committed approximately A\$200 million to social infrastructure projects.

This includes:

- Power upgrades.
- A desalination plant.
- Waste and waste water management.
- Health services upgrade including dental clinic.
- Expansion of school and childcare facilities.
- Emergency services expansion.
- Initial works and maintenance and post construction upgrade of Onslow Road.
- Land development costs.
- Housing for government services employees.

Chevron will also contribute approximately A\$66 million to upgrade Onslow facilities including:

- A picnic and playground area at Four Mile Creek.
- An aquatic and recreational centre.
- Planning, design and construction of the Onslow Ring Road.
- Old Onslow conservation and tourism development.
- Town master plan and improvements.
- Onslow Airport.
- A community development fund including A\$5 million at Final Investment Decision then A\$1.5 million annually for the ten years after construction.

FLNG Operational Phase

In so far as the operational and maintenance phase of FLNG projects, the contrast with the traditional level of opportunities is less marked.

In relation to the Terms of Reference for the Inquiry, the Department believes that the operational phase does not represent rebuild and refurbishment opportunities for the steel fabrication industry in line with previous practices for on-shore facilities. However, the Department does consider that the outlook is more positive for elements of engineering and design with regard to project management.

What is likely to transpire is that the overall levels of local content, in this phase, may to some degree reflect levels achieved in recent LNG projects, but what will be different is the composition. As mentioned above, steel fabrication and manufacturing will be replaced in part by new and emerging business services.

In its meetings with Shell in relation to the Prelude project, the Department was advised that local content is anticipated to be around 70–75 per cent of annual expenditure.

According to Shell, it is estimated that the Prelude project will bring benefits to Australia of some A\$45 billion over the life of the project (estimated by Shell to be between 20-25 years), of which taxes would be around A\$12 billion.

As the Committee is aware, from the transcript of evidence taken on 26 June 2013 from representatives of Shell, the company is expecting that the Prelude project will produce around A\$200 million of benefit to the local community if about 70 per cent local content can be achieved during the operational phase.

This compares with an estimate that the average annual Australian contract operational expenditure from off-shore energy projects is A\$303.30 million.

The Department has also been informed by Shell that, for its Prelude project, there will be subcontracting opportunities in fields such as:

- Operations and Production (facilities management services; fuel infrastructure and product supply; operator training services; production chemicals supply and services; laboratory services and bulks, materials and services).
- Engineering and maintenance (engineering services, technical services; inspection services; fabrication and installation services; general maintenance services; specialist maintenance services and turnaround and shutdown services).
- Major equipment maintenance (rotating equipment; automation, instrumentation and electrical; maintenance, repair and operations/Prime Vendor and static equipment).
- Subsea and Wells (subsea hardware aftermarket services; underwater services; wells equipment aftermarket services and well intervention services).
- Logistics and Warehousing (aviation services; marine services; land transport services; waste management services, freight forwarding and customs services; warehouse management services and inventory management services).
- Corporate support (manpower services; health, safety, security and environmental services; specialist services; travel and accommodation services; information management/information technology; telecom services and corporate services).

As the Committee is aware, supply base and servicing activity already occur at the Australian Marine Complex at Henderson and in the North West in relation to support for off-shore activity. The difference is that FLNG entails processing off-shore and therefore requires a higher level of interchange between the vessel and on-shore facilities.

The Department has noted anecdotally that, in general terms, the already changing fabrication market, industry trends and the introduction of floating technology will mean a substantial adaptation from current business models. In particular, the heavy fabrication industry has been expressing concern regarding the lack of local opportunity in recent times, and it will be essential that these businesses look to reposition themselves in the through life support and asset management industry.

There are approximately 160 vessels operating in the North-West. The Department has been informally advised that there could be over an additional 200 vessels operating in the area by 2017.

Other possible opportunities involved with through life support of vessels, particularly for small to medium sized enterprises, could include small scale, emergency and repair fabrication; support services and asset management; mobilisation and demobilisation services; support vessel repairs, docking and maintenance services; and load out/in, assembly and material staging.

An opportunity to build relevant fit-for-purpose infrastructure to ensure business models can engage with market and support current assets, development of planned assets and assets that will come with record levels of exploration work being undertaken in the region.

The proposed PFSCUF is planning for the potential first stage to include the following infrastructure that will enable through life support, repair and maintenance:

- 500m land-backed wharves.
- 7,200 tonne shiplift for first stage (12,000 tonne for second stage).
- 30 hectares of laydown area.

To maintain contracts and competitiveness within the State, it is important that this type of infrastructure is available for capacity and capability in the North West. Currently, there is limited infrastructure in the North West that will ensure support services for through life repair and maintenance is captured in the region.

In its discussions with the Association of Professional Engineers, Scientists and Managers, Australia on operational opportunities for FLNG there has also been emphasis given for the potential for project management based on a remote and automated business approach. This would require collaboration between engineers and digital technicians and represent an emerging dimension of support to projects.

Another dimension to logistical and service support is that Western Australia, as the first location globally for FLNG, has the potential to turn this advantage into the beginnings of an international centre of excellence for such activities.

Broadly, the above information indicates the demands generated will be largely services based and the value of this could be marginally above that of a traditional project.

These types of potential opportunities arising from Prelude's operation have been the subject of informal discussions between the Department and Shell and a number of potential operational companies. This exchange is being formally established with a local content roundtable which will begin meeting in August 2013.

Some options for Government

As the Prelude project is the first of its kind, there is a degree of conjecture in terms of what the investment will deliver to local industry, essentially during its operational/maintenance phase.

As indicated above, the establishment of forecasting and reporting arrangements has commenced, where focus can be given to local content related matters for the Prelude project.

Further, the Department chairs the Browse Local Content Steering Committee which can serve as a forum for similar exchanges as that project advances.

There is an obvious desirability to establish similar arrangements between the State Government and other FLNG projects, at the earliest stage at which it is realistic to do so.

However, it is clear that FLNG offers few opportunities during the construction stage. There are, in fact, only three (3) yards in the world capable of constructing these vessels.

The normal level of local content in an off-shore development is, at minimum, 45 per cent. A very low figure is estimated for FLNG construction with consequent loss of employment and income generation for the State.

Somewhat in contrast but on a much smaller scale, as indicated above, there is a range of potential areas of supply during FLNG operations. Shell has indicated that 70-75 per cent of operating and maintenance spend could flow locally. This compares with 85 per cent for more traditional off-shore projects.

Summary

There are parallels between the advent of large construction modules and the adoption of FLNG. Both represent significant technological advance and offer attractive cost savings to project proponents.

Further, both reduce levels of local content during a project's construction phase, due to an absence of physical capacity. Finally, each serves to fundamentally alter the exchange of benefits for access which has hitherto characterised Western Australia's resource development.

The key difference between modular construction and FLNG is that the latter is entirely off-shore. The negative impact of this approach, during the construction phase, has been outlined and even during the operating and maintenance stage, the servicing demands generated will diverge from the traditional and present new or emerging requirements.

In an overall sense, the relationship between FLNG and the State's economy present unprecedented policy and industry development issues for the Government and the community. Their successful resolution will not be achieved without serious, on-going dialogue by all affected parties.

It is the Department's view that early negotiation on anticipated outcomes between the State and proponents is clearly warranted. In some cases, the State's ability to achieve alternative benefits to redress the loss of construction impacts will be limited. In these circumstances, a Commonwealth Government policy response is required.