# **Liquefied Natural Gas Limited**



COMPANY UPDATE 24 JULY 2013



#### **Corporate Overview**



ASX Code	LNG.AU
Shares on Issue	267 million
Share Price (23/7/13)	\$0.21
Market Capitalisation	\$56 million
Cash (23/7/13)	\$2.6 million
	Directors 7.9%
	HQC (CNPC Technology & EPC arm) 19.9%
Key Shareholders	Copulos Group 9.9%
	Dart Energy Ltd 5%
	Top 5 42.7%
	Richard Beresford (Chairman)
Board & Management	Maurice Brand (Managing Director)
	Wang Xinge (Executive Director)
	Leeanne Bond (Non-executive Director)
	Zhang Gaowu (Non-executive Director)
	Paul Bridgwood (Executive Director & CTO)
	Norman Marshall (Executive Director & CFO)

# **Corporate Strategy**



- Develop and implement mid scale LNG projects in the global market using own OSMR® liquefaction technology and marketing of OSMR® to third party LNG projects.
- Develop two LNG Export Projects: 100% owned by LNGL
  - Magnolia LNG (Louisiana, United States) : Under development
  - Fisherman's Landing LNG (Gladstone, Australia): On hold pending gas supply
- Market the OSMR® LNG liquefaction Process: 100% owned by LNGL
  - ~ 50% Lower capital cost
  - ~30% Improved energy efficiency
  - ~ 25% Shorter development and construction schedule
  - ~ 30% Lower carbon emissions
  - Patent applications for OSMR® and Boil-off gas handling already granted in many jurisdictions

#### Magnolia LNG Project Layout





Final Layout Pending Approvals

**Magnolia LNG** 

### **Magnolia LNG Site Description**



- The 108 acre site is PLC Tract 475 Industrial Canal off the Calcasieu Shipping Channel and opposite existing Trunkline LNG Import Terminal.
  - The site is accessible by road/waterway.
  - Major fabrication facilities nearby.
- ▶ The Project site is well positioned to provide access for the loading of LNG onto:
  - LNG Ships for export, which have access to deep water via the main channel and industrial canal.
  - LNG Barges for marine distribution to mini-LNG refuelling stations.
  - LNG Trucks for potential road distribution to LNG refuelling stations within Louisiana and other surrounding US states.
- Legally binding Option to Lease secured. Term of lease up to 70 years.
- The site is located within 3 miles of three major underutilized pipelines.
- Under-utilized Kinder Morgan Louisiana Gas Pipeline located on site.
- No environmental, community, construction or operational issues known.

#### **Gas Supply and Shale Gas Production**

- Shale gas gas trapped within shale formations. INTEK Report for US Energy Information Administration identified several shale gas plays ~ 750 trillion cubic feet (tcf). Estimate yearly production of 25 tcf in 2020
- MLNG requires 0.1 tcf/year for each 2 mtpa LNG train or 2 tcf over 20 years



Source: Energy Information Administration based on data from various published studies. Updated: May 9, 2011

# Magnolia LNG

# Major Gas Corridors will supply Magnolia LNG

- > 11 major transportation gas "corridors" (illustrated below) mitigates infrastructure risks.
- Government and Industry installed capacity for the quantities of LNG that were expected to be imported into the US Gulf region.
- Kinder Morgan Louisiana Gas Pipeline located on the Magnolia LNG site.
  - Egen Interstate Pipelines
  - Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division, GasTran Gas Transportation Information System.

The EIA has determined that the informational map displays here do not raise security concerns, based on the application of the Federal Geographic Data Committee's *Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns*.



Magnolia LNG

# **Permits and Approvals: Defined Process**



#### Five main Federal agencies that regulate LNG Projects in the USA :

- 1. US Dept of Energy (DOE) authorization received for up to 4 mtpa to Free Trade Agreement (FTA) countries for 25 years
- 2. Federal Energy Regulatory Commission (FERC) pre-filing granted in March 2013
  - Authorization from FERC for the construction and operation of the facility, and includes a comprehensive analysis of the environmental, operational and safety implications of the Project
  - Air Quality Permit, issued by the Louisiana Department of Environmental Quality, as detailed under the Clean Air Act
- 3. US Dept of Transportation (DOT) in progress
- 4. US Coast Guard (USCG) in progress
  - Permit from US Army Corps of Engineers for discharge of dredged and fill material, under the Clean Water Act
- 5. Maritime Administration (MARAD) of DOT in progress
  - Certification of compliance with the water quality standards (Clean Water Act)
  - A Coastal Use Permit issued by the Louisiana Department of Natural Resources

## Modular LNG Plant : 2mtpa LNG train

 Based on detailed FEED completed for Gladstone LNG Project enabled fast-track to FERC pre-filing.



# **Gunvor - Tolling Term Sheet Signed**



- Parties to the Term Sheet: Magnolia LNG, LLC (MLNG) and Brightshore Overseas Ltd (Brightshore), an affiliate of Gunvor Group.
  - MLNG shall reserve, for Brightshore, firm LNG production capacity of 1.7 million tonnes per annum (mtpa), plus 0.3 mtpa of interruptible capacity, in total being equivalent to one LNG train.
  - Brightshore shall be responsible to deliver gas, including gas usage for the LNG plant, at its own expense, to MLNG's LNG Project for liquefaction, storage, and delivery onto LNG ships arranged by Brightshore.
- The Parties agree to work together with the intention to agree a legally binding Tolling Agreement. MLNG is required to submit the first draft of the Proposed Tolling Agreement by the 30 September 2013, based on the following key terms:
  - 20 year term, plus a five year extension option at Brightshore's election
  - Brightshore will pay MLNG approximately US\$3.7 billion in Fixed Monthly Capacity payments over the 20 year term
  - Brightshore will also pay MLNG Fixed and Variable Monthly Operating and Maintenance payments, with both increasing annually in line with US inflation
  - Brightshore will also pay MLNG a Fixed Monthly Bonus Capacity Fee in the event that MLNG obtains authorisation from the DOE for the export of LNG to countries that do not have a Free Trade Agreement with the USA
  - MLNG to provide certain preferential rights to Brightshore, as a foundation customer of the Magnolia LNG Project

Magnolia LNG

### **Gunvor – LNG supply to Panama**

- The Energy link
- Panama is a US Free Trade Agreement (FTA) Country with a LNG receiving terminal scheduled for start up in 2017.
- Gunvor has signed a HoA with LNG Group Panama as the aggregator and supplier of LNG.



Magnolia LNG

# **Gunvor – Global Energy Player**

- The Gunvor Group, one of the world's largest independent commodities trading houses by turnover.
- Principal commodities traded by Gunvor continue to be refined petroleum products (fuel oil, gasoil, gasoline, naphtha, and LPG), crude oil, coal, natural gas, LNG, biofuels, carbon emissions and grains.
- Strategic investments in energy infrastructure—refineries, pipelines, storage, terminals and coal mining.
- Key Financials (2012)
  - EBITDA: USD 575 million
  - Earnings: USD 433 million
  - Volume: 130 million tons
  - Turnover: USD 93 billion

- Key Metrics
  - Sources crude oil from 35 countries
  - > 1,600 employees worldwide
  - > 60 global banking partners
  - ~2.5 million barrels traded per day

- **Relevance to Panama...a FTA country:** 
  - Gunvor has signed a Heads of Agreement with LNG Group Panama as the aggregator and supplier of LNG to the first land based LNG terminal to be constructed in Panama, scheduled for start-up in 2017.
  - Gunvor owns about 17 percent of Petroterminal de Panama oil pipeline, which has a throughput capacity of 600,000 barrels per day, linking the Pacific and Atlantic coasts of Panama, with storage locations on both sides.;



#### Magnolia LNG – Robust Financial Returns

• Key financial model assumptions for Phase 1:

2 x 2.0 mtpa LNG Trains

4.0 mtpa nameplate LNG production capacity

3.4 mtpa guaranteed LNG sales volumes

**Development Costs of US\$30 million to Final Investment Decision** 

Capital Cost of US\$2.20 billion

EBITDA: US\$ 380 million per annum for 20 years



Magnolia LNG





**Equity Funding Plan** 

Additional Tolling Agreement for up to 2 mtpa

Submit application for US Export to non-FTA countries

**Execute definitive project equity agreements** 

Advise Tolling Agreements for additional capacity

**Select preferred EPC Contractor** 

**Execute legally binding definitive Tolling Agreements** 

Complete Approvals and Permit pre-filing with Federal Energy Regulatory Commission (FERC) Magnolia LNG

# Fisherman's Landing LNG Project (Australia)





#### **Gladstone LNG Project Site**





#### **Project Status**



- Project suspended in March 2010 when Shell/Petro China make take-over offer for Arrow Energy Ltd. Take-over completed in July 2010
- In July 2011, CNPC subsidiary, HQC invested \$20.2 million at \$0.378 cents/share into LNG Limited to take a 19.9% shareholding
- In January 2012, LNG Limited appointed HQC to update EPC FEED based on module design for a 1.5 mtpa (guaranteed) LNG train
- In August 2012, HQC's sister company, PetroChina executed a Tolling Agreement Letter of Intent, with LNG Limited, for gas supply to the Fisherman's Landing LNG Project
- In November 2012, PetroChina purchased Molopo Energy gas assets for \$42 million to supply to the Fisherman's Landing LNG Project
- LNG Limited, in its own right, is continuing to directly pursue other potential gas supply sources

# Fisherman's Landing LNG

#### **Fisherman's Landing: Path Forward**

#### Gas Supply

 LNG Limited's major focus remains to secure adequate gas supply for the first LNG Train either through the PetroChina Australia Letter of Intent and/or directly under Gas Sale Agreements/Tolling Agreements with third parties

#### Lease Agreement

• Secured until 30 June 2014 with Gladstone Ports Corporation

#### EPC Contract with HQC

Draft fixed price Engineering, Procurement and Construction (EPC) contract on hold pending gas supply



# Features of OSMR<sup>®</sup> LNG Technology





# **OSMR® vs Conventional LNG Plants**



	APCI – C3/MR	CoP- Cascade	OSMR
Train Size (mtpa)	4.1	3.9	1.9
Refrigeration Power •Gas Turbine (x Nos) •Steam Turbine (x Nos)	85 MW Frame 7 (x2) n/a	32 MW LM2500 (x6) n/a	32 MW LM2500 (x2) 8 MW (x2)
Plant Power Generators •Installed •Running	Gas Turbine Driven 70 MW 30 MW	Gas Turbine Driven 30 MW 25 MW	Steam Turbine Driven 8 MW 6 MW
Plant Fuel Usage (% of Feed Gas)	9-11 %	8-9 %	6%
Heat Exchanger Types •Pre-cooling (x Nos) •Main Cooling (x Nos)	C3 Tube in Kettle (x3) MR Spiral Wound (x1)	Brazed Aluminum C3 Core-in-Kettle (x2) C2, C1 Cold Box (2+2)	Brazed Aluminum NH3 Core-in-Kettle (x2) MR Cold Box (x2)
CAPEX (\$/tpa)	1000-1200	1000-1200	500-600

- LNGL's OSMR® process provides an alternative which is simple, efficient, low cost and uses proven conventional technologies
- **Smaller Train sizes allows easy modularization and economic project development**

# **OSMR®** Technology Reviews/Reports



- Independent Engineer's Technology Reviews/Reports
- > The following independent reports are included in the data room:
  - LNG Industry Article (March 2010)
  - Foster Wheeler Gladstone LNG OSMR Study Report (June 2009)
  - CHIV Evaluation of OSMR LNG Process (October 2008)
  - Arrow-WP Interim Review of Fisherman's Landing LNG Plant (December 2009)
  - Evaluation Report of LNGL's OSMR Gas Processing and Liquefaction Technology I. Aoki
  - SKEC Evaluation of the OSMR Process for Gladstone (June 2009)
  - Technical Review Group (TRG) Final Report (August 2009)

#### OSMR<sup>®</sup> Process Technology Patent Application Submitted / Granted





#### **Patents Granted**

OSMR® Process patents have been granted in Australia, China, OAPI, Eurasia, Hong Kong, New Zealand, Singapore, South Africa and Ukraine;

BOG Treatment Process patents have been granted in China, OAPI, Eurasia, Hong Kong, New Zealand, Singapore, South Africa and Ukraine.

# **Company Value Initiatives**



#### Magnolia LNG Project (United States):

- LNG Limited has laid the foundations for an 8 mtpa LNG export project in the dynamic US gas and LNG sectors
- US is set to become a dominant LNG export country due to its significant uncommitted gas resource and extensive integrated gas pipeline network
- LNG Limited has targeted to be in the top 5 LNG export projects

#### Fisherman's Landing LNG Project (Australia)

- Securing gas supply is the primary focus to unlock and deliver the project's potential value.
  - PetroChina Australia and the Company have a Tolling Agreement Letter of Intent to secure gas for the Fisherman's Landing LNG Project
  - LNG Limited is additionally pursuing gas supply for the project and is in discussion and/or negotiation with potential gas suppliers

#### **OSMR® LNG Process Technology**

Aside from utilising the low cost and highly efficient LNG process technology in its Magnolia LNG Project and Fisherman's Landing LNG Project, LNG Limited is exploring all opportunities to licence the technology (for a Licence Fee) to third party LNG projects

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#### **Our Logo:**

We chose the red ant as our logo because it is distinctive and bold and represents strength, energy, hard work and perseverance – characteristics we aim to make trademarks of our corporate culture.