



AUSTRALIAN LNG: STILL COMPETING

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DECISIONS WITH CONFIDENCE

Australia's LNG sector booms amid concerns

Too many projects chasing too few suppliers and contractors point to delays and cost over-runs for all, but an early admission of defeat and the drawing of a firm line could set Woodside back on the right track with its Pluto project.

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The Sydney Morning Herald

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\$100b LNG projects imperiled by African gas rush

August 31, 2012

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An Industry Insider's Low Down on the Next Bakken Stock To Pop

The discovery along Africa's east coast of the world's biggest gas finds in a decade threatens to undo investment plans on the other side of the Indian Ocean.

Royal Dutch Shell, BG Group of the UK and France's Total may scale back projects to build liquefied natural gas export plants in Australia and switch to Tanzania and Mozambique, where the new prospects lie and will cost about half as much, according to Jefferies International.

The LNG boom in Australia, where \$180 billion of planned investment was set to make gas the country's fastest-growing export over the next five years, risks losing strength as labor and material shortages force up building costs. As energy companies consider the next \$100 billion of projects, a switch to East Africa would hold back Australia's market share in China and India, where energy consumption is forecast to rise more than 60 percent by 2030.

Cost blowouts and skills shortage threaten gas projects

MATT CHAMBERS The Australian January 29, 2011 12:00AM

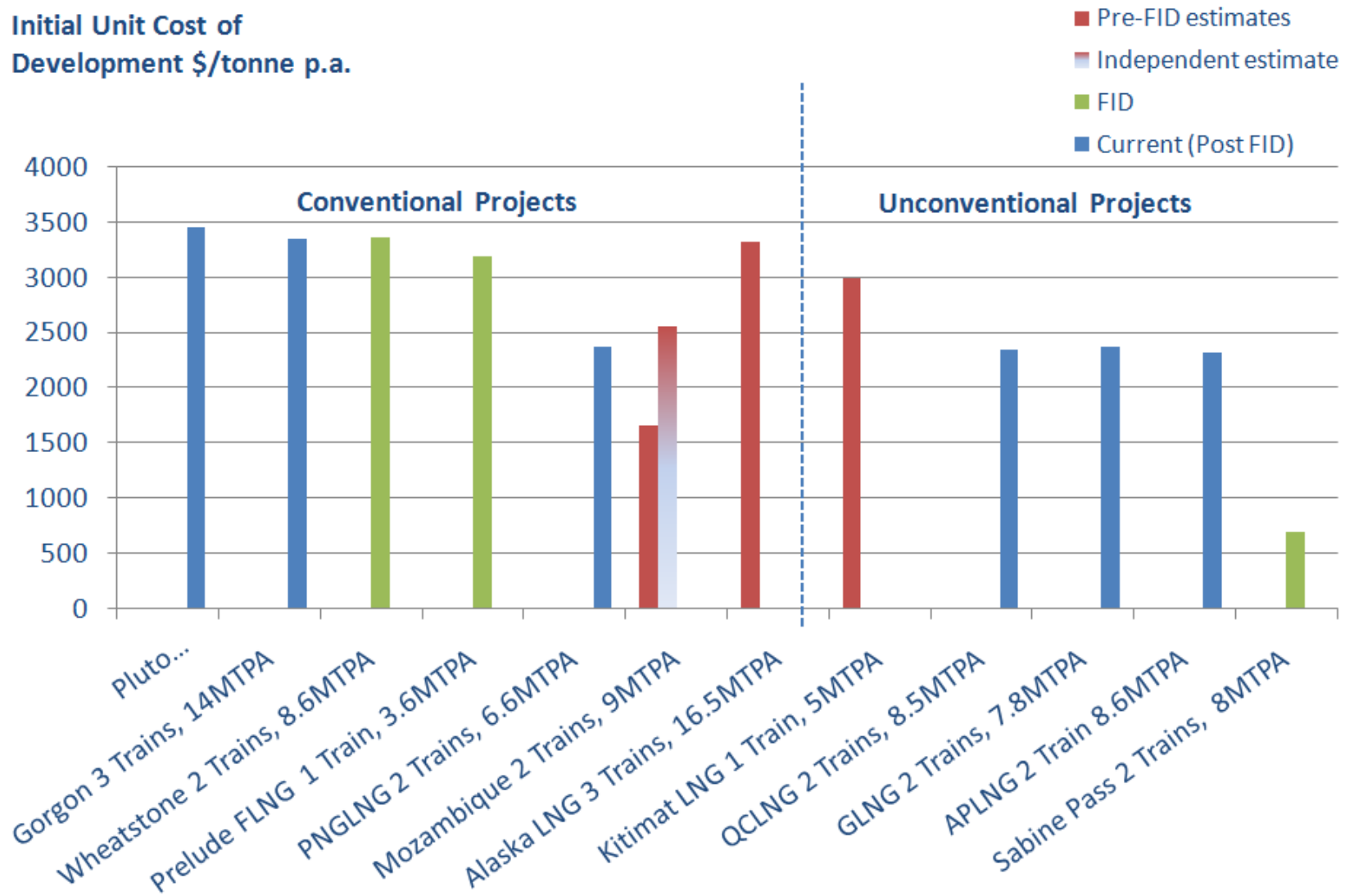


Liquefied natural gas plant Source: The Australian

THE national skilled worker shortage and costly delays mean some planned liquefied natural gas projects -- including Origin Energy's \$35 billion Australia-Pacific LNG project -- could be abandoned because they will miss lucrative supply contracts, possibly costing billions of dollars in lost exports.

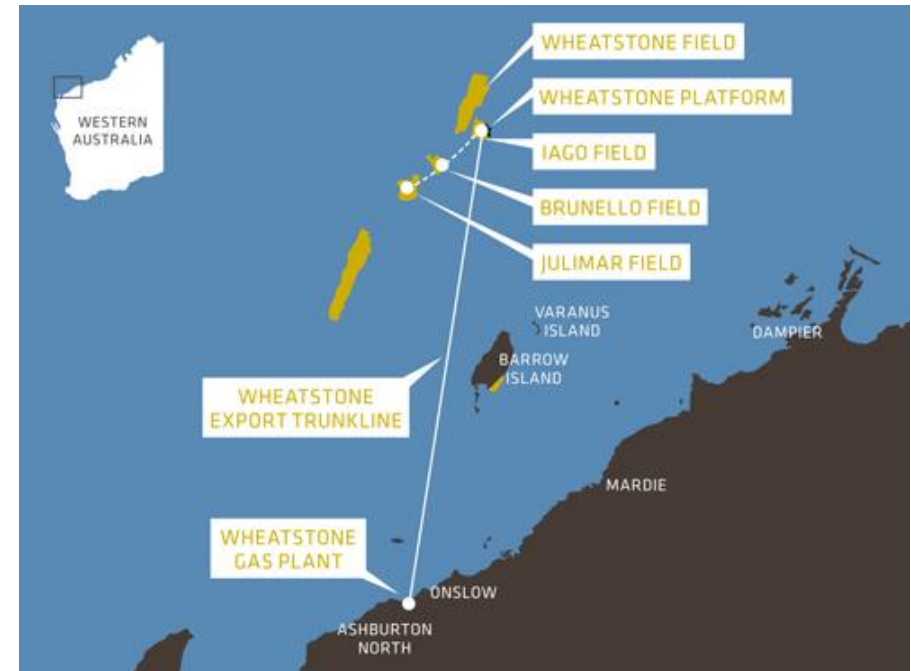
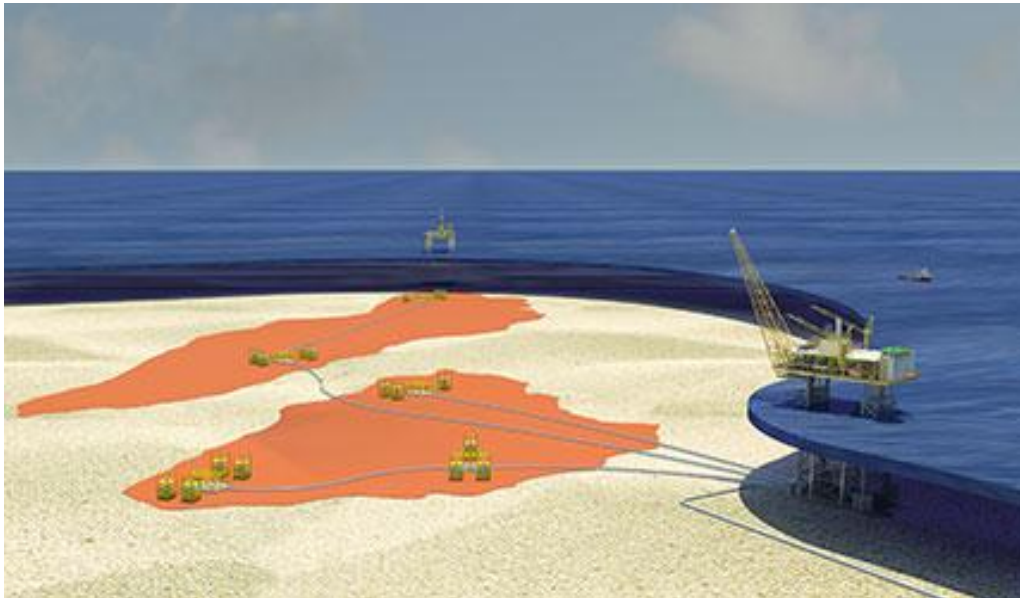
CAPEX COSTS – IS AUSTRALIA THAT EXPENSIVE?

Initial Unit Cost of Development \$/tonne p.a.



CONVENTIONAL LNG PROJECT UPSTREAM SCOPE

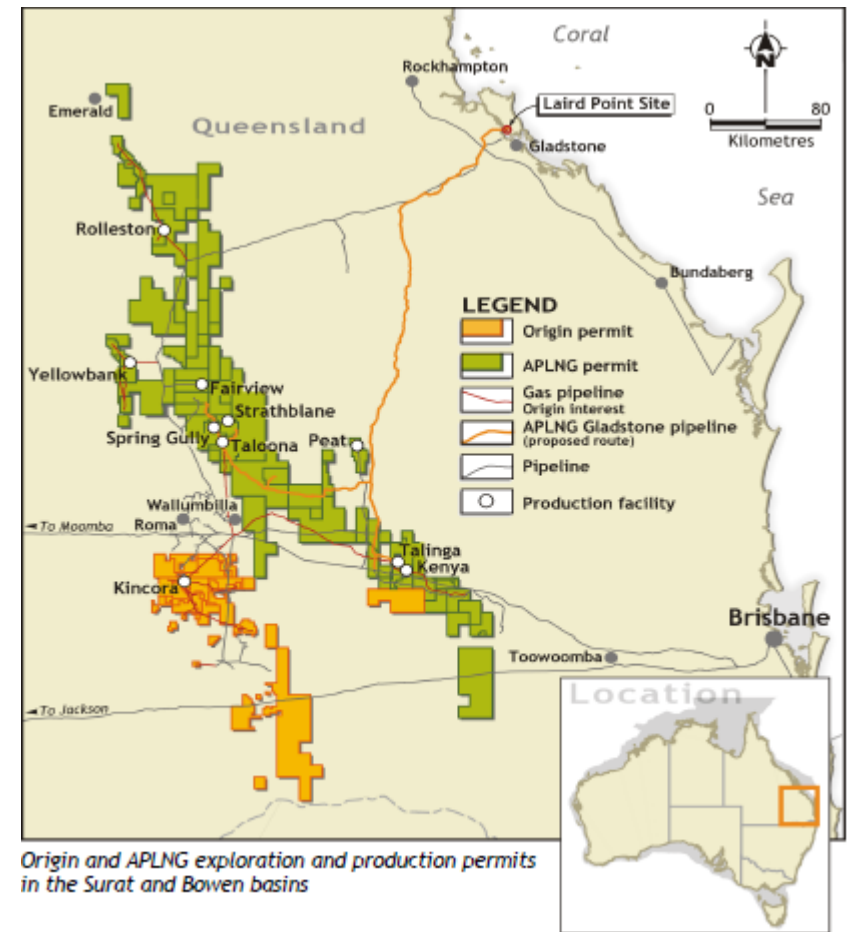
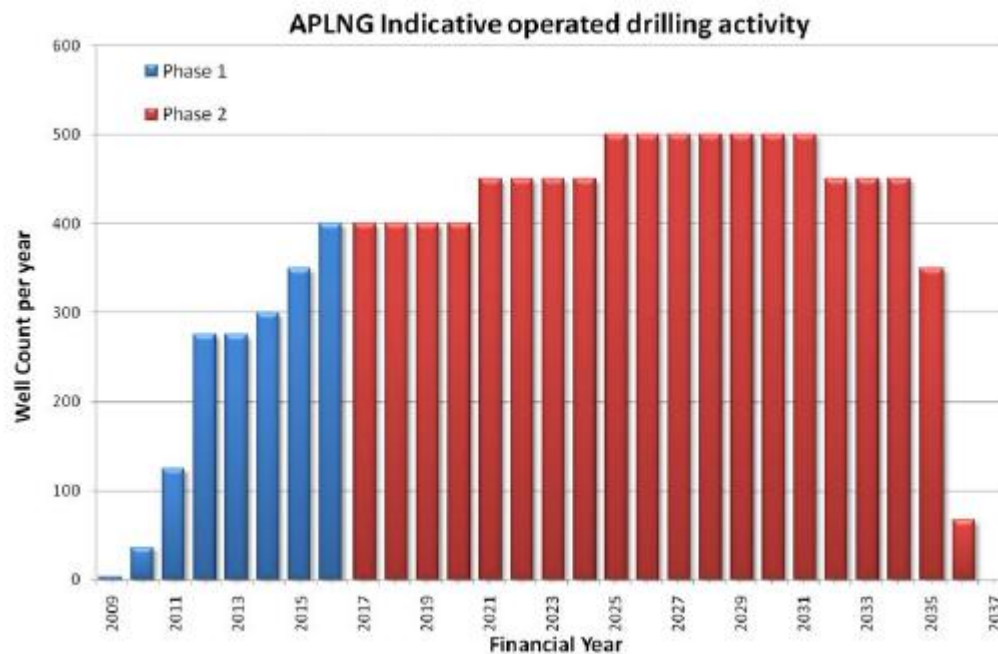
- Wheatstone example
- Offshore manned processing platform 2 bscf/d processing capacity, 35,000 tonne topsides
- Approx 30 subsea wells + pipelines
- 225km x 40" OD subsea trunkline



Source: Chevron, Apache and Wheatstone LNG Project

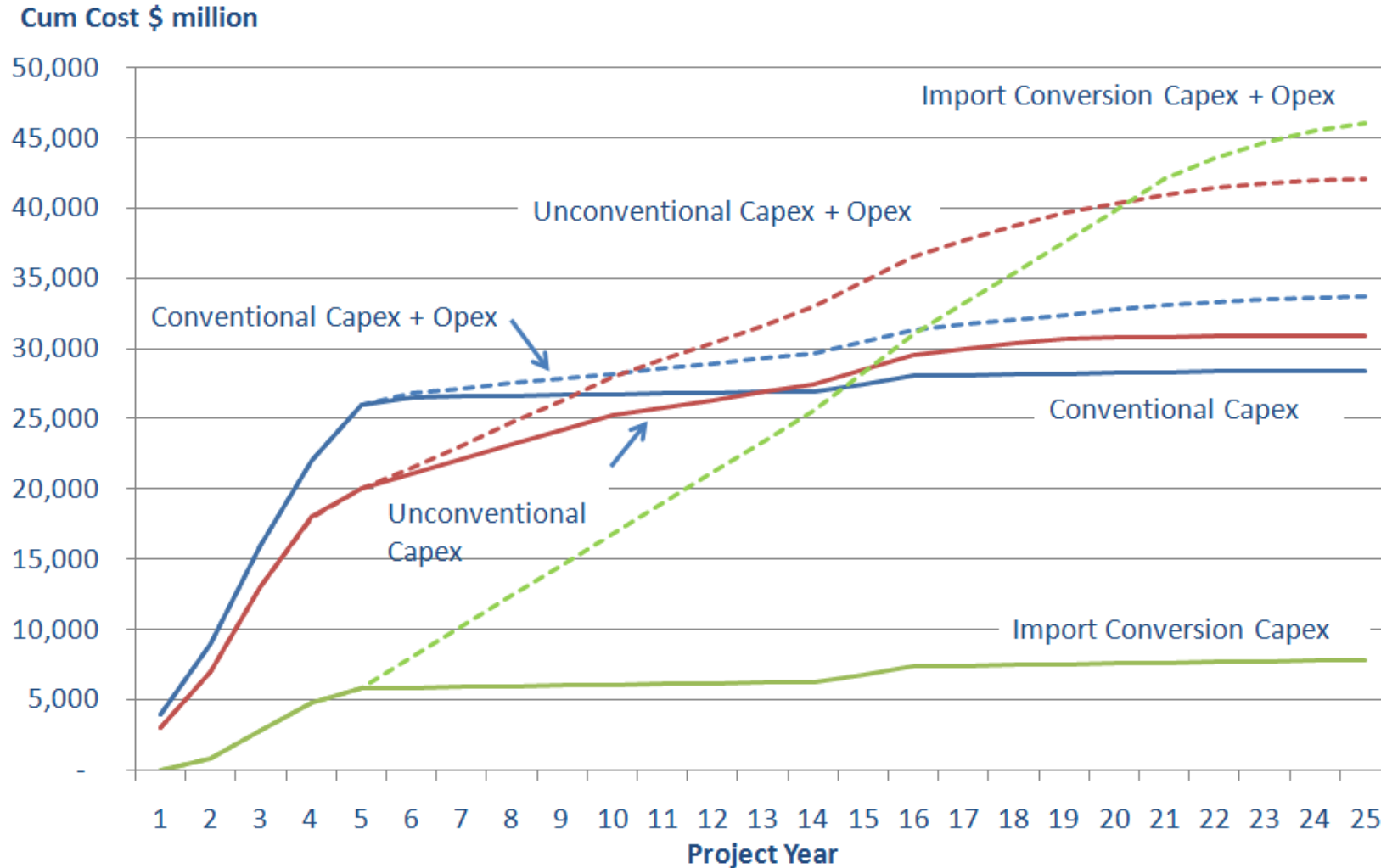
UNCONVENTIONAL LNG PROJECT UPSTREAM SCOPE

- APLNG Example
- Onshore facilities 1.8 bscf/d processing capacity
- 1,000 wells by first gas, 8-9,000 wells over 20+ years
- 100's km infield LP & HP gas and LP water pipelines
- 1 MMbbl/d peak produced water disposal
- 415 km x 36-42" OD trunkline



IT'S NOT ALL ABOUT CAPEX

Comparative LNG Project Cumulative Lifecycle Cost



OPEX profiles assume gas costs of \$5/MMBTU for import conversion LNG project. Does not include sunk costs

Comparisons based on notional 2 Train development producing 8MTPA.

Source: RISC analysis

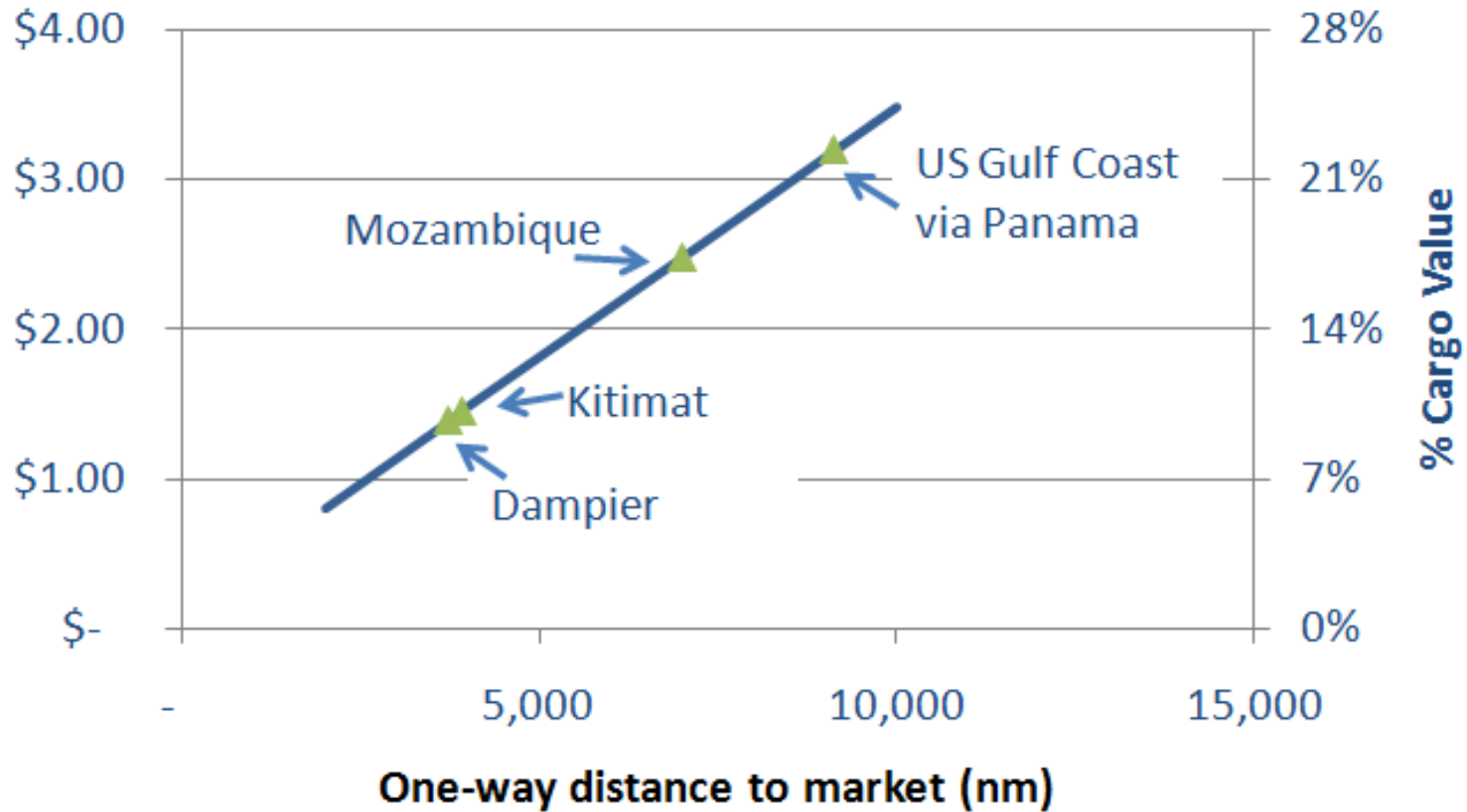
LNG TRANSPORTATION COSTS: GEOGRAPHY MATTERS



Source: RISC analysis

TRANSPORTATION COSTS TO JAPAN

Costs Shipping & Losses \$/MMBTU



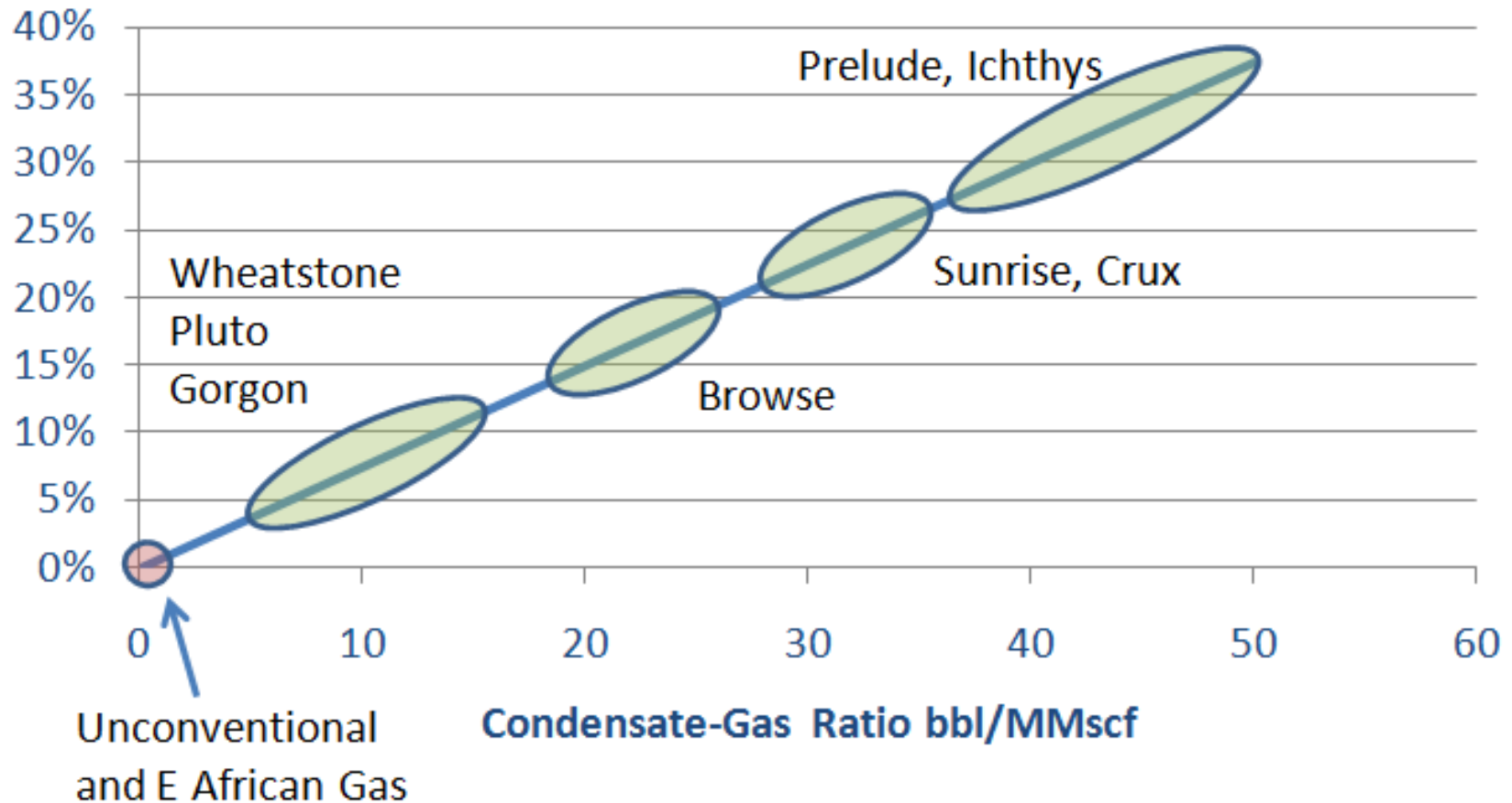
Costs include boil off losses, bunker fuel and ship charter

Assumes \$100/bbl oil price

Source: RISC Analysis

IMPACT OF LIQUIDS CONTENT ON REVENUE STREAMS

**Increase in Gross
Revenue %**



Assumes LNG sold at energy value parity to condensate
Source: RISC Analysis

CONCLUSIONS

- Don't move to Maputo just yet
- Integrated evaluation of capital, operating and transportation costs and revenue over the entire lifecycle must provide a more reliable perspective than “headline” numbers
- Australian LNG projects can be competitive to supply our regional markets, however we do have challenges
- The competition from N America and E Africa provides both threats and the impetus to do things better.
- Regulation, approvals, tax and productivity are weak points, but that is the subject for another day.





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