



decisions with confidence

What will it take to make Australian LNG more competitive?

Geoff Barker, RISC Partner

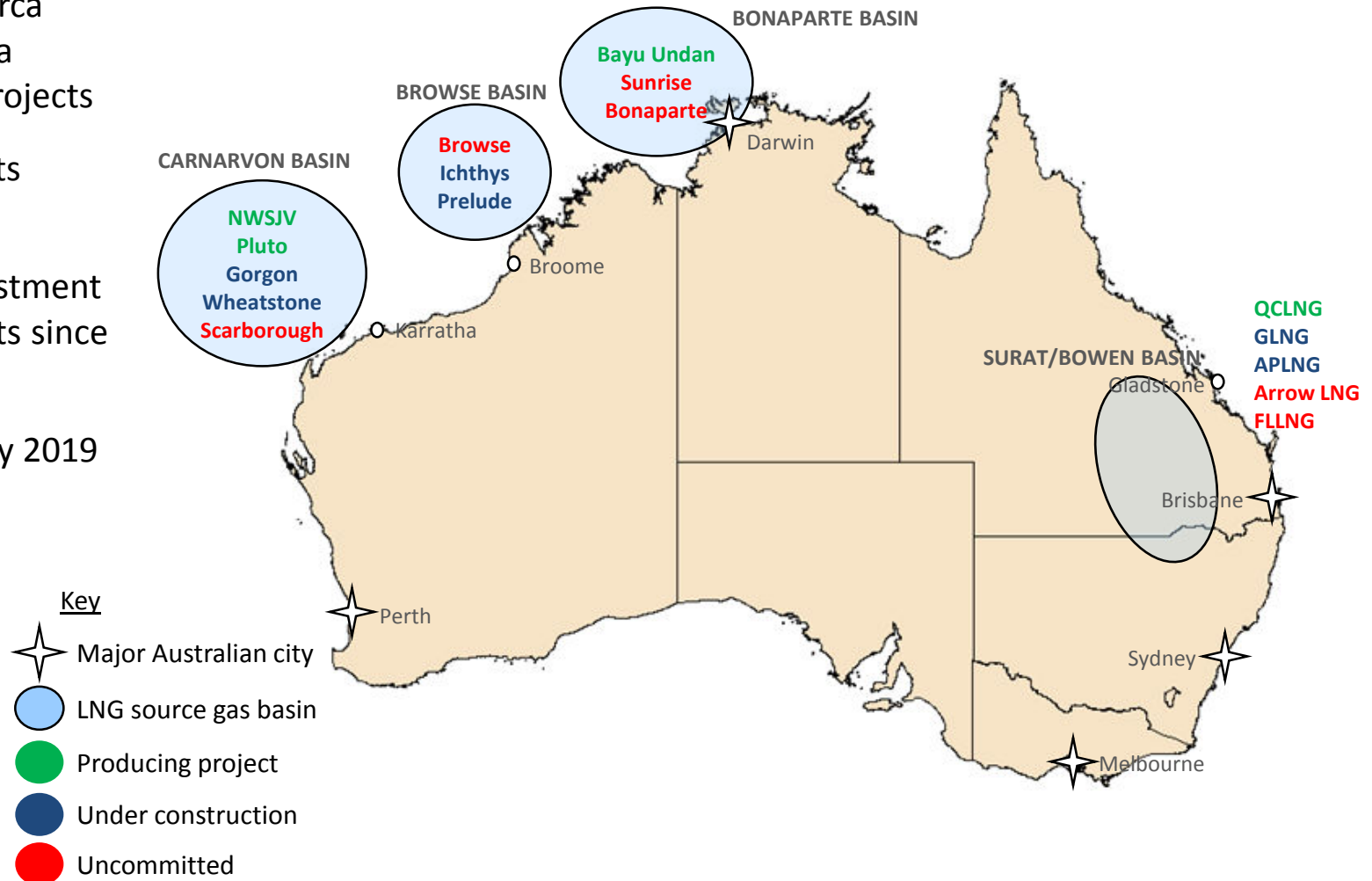


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Significance of the Australian Gas Industry

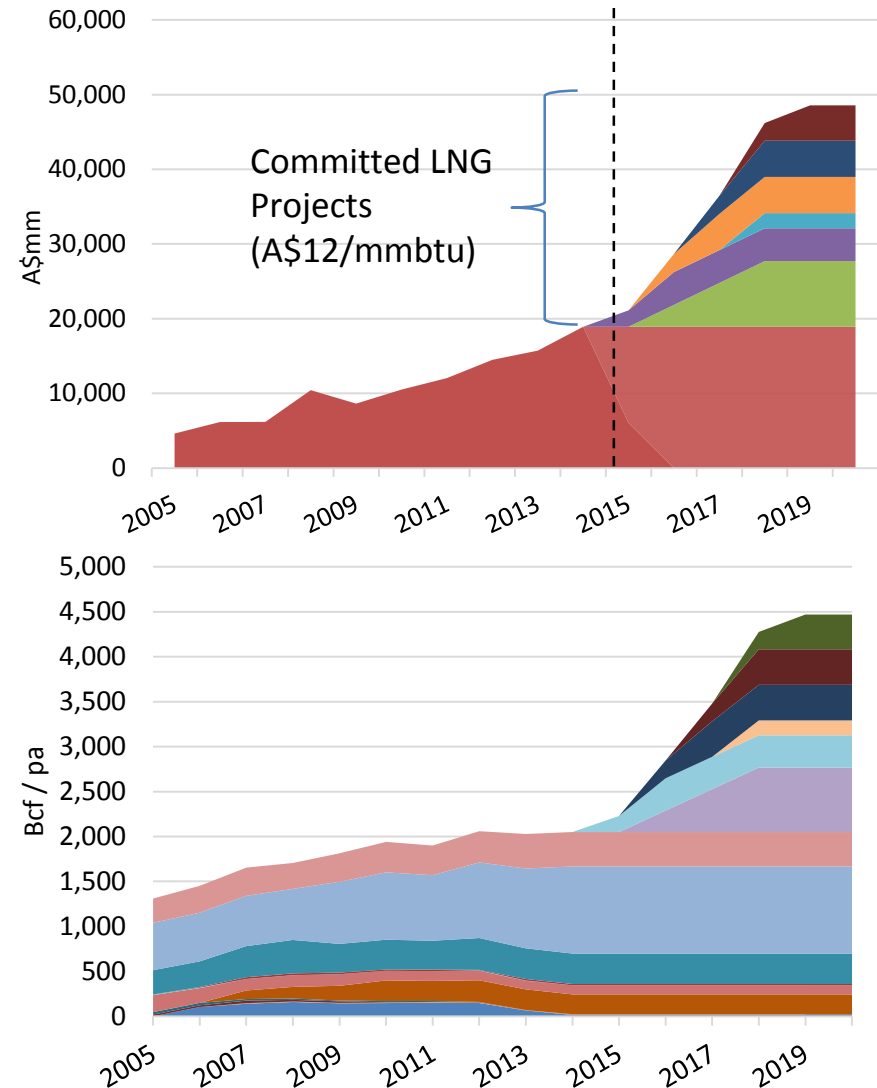
Australia's Liquefied Natural Gas Industry (LNG)

- Current production installed capacity circa 30 million tonnes pa (Mtpa) from four projects
- A further six projects under construction
- US\$220 billion investment in eight new projects since 2007
- Forecast 85 Mtpa by 2019



Australian Gas Market Value

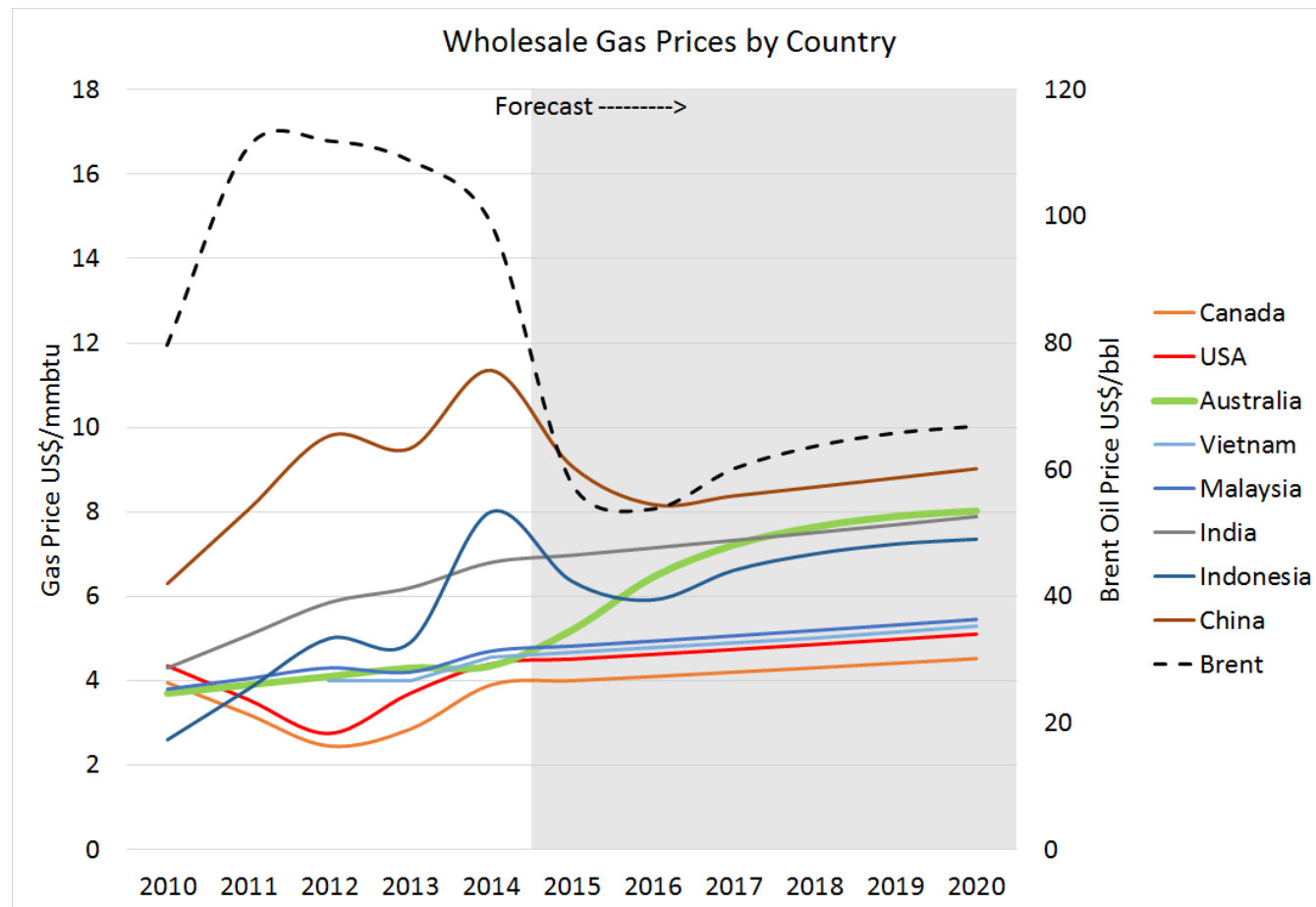
- 2014 revenue A\$ 18.9 billion, over 60% from LNG
- Gas production will more than double by 2019
- Committed LNG projects will bring total exports to 85 Mtpa
- Australia will be largest LNG exporter in the world
- LNG pricing from Australia is oil-linked, as is some domestic gas pricing
- Gross Revenue will increase to approximately A\$50b pa (assuming US\$70/bbl)
- LNG will be the second highest value Australian export commodity behind iron ore



Source: ABS, RISC analysis

Industry Competitiveness

- LNG pricing in the region traditionally oil-linked
- Australian domestic gas is predominantly sold on a contract basis
 - Trend towards oil price linking for this also
- Significant decline seen in US\$ term prices
 - Oil price moving from \$100/bbl in 2014 to sub \$60/bbl in 2015
- Australian domestic gas pricing is competitive with the regions
- Regional gas prices significantly higher than US Henry Hub and Canadian markets
- This creates a threat to Australian LNG markets



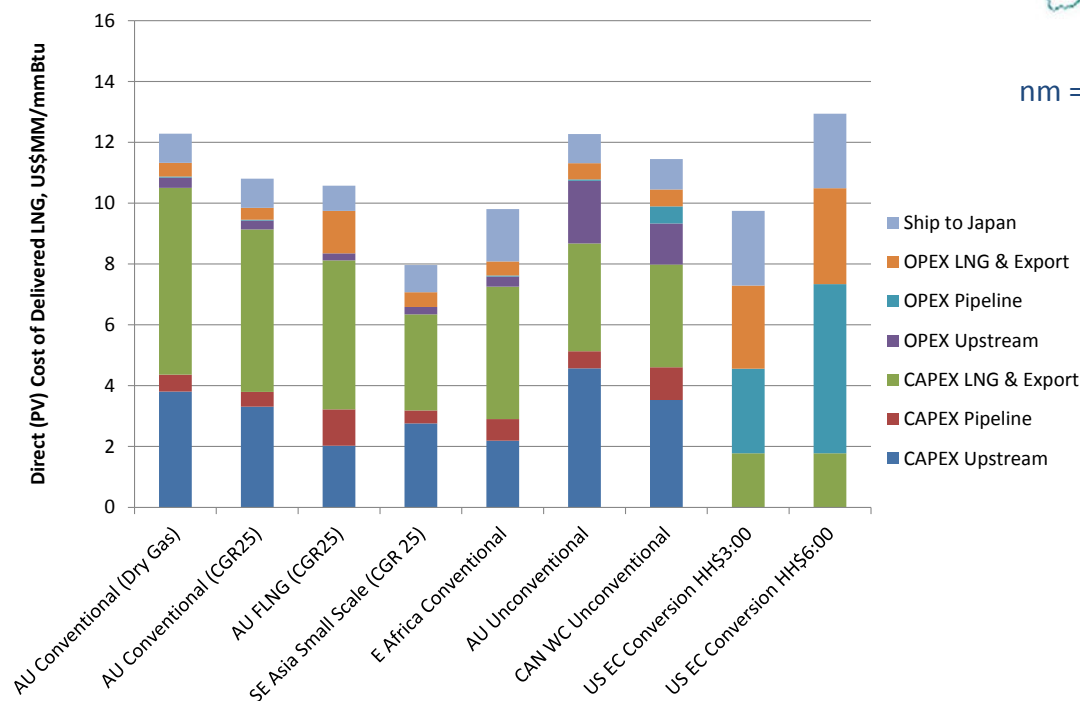
MMBTU = million British thermal units

1 MMBTU is approximately 1,000 standard cubic feet (28.3 sm³)

Source: IGU, RISC analysis

Australian LNG Competitive Advantage (1)

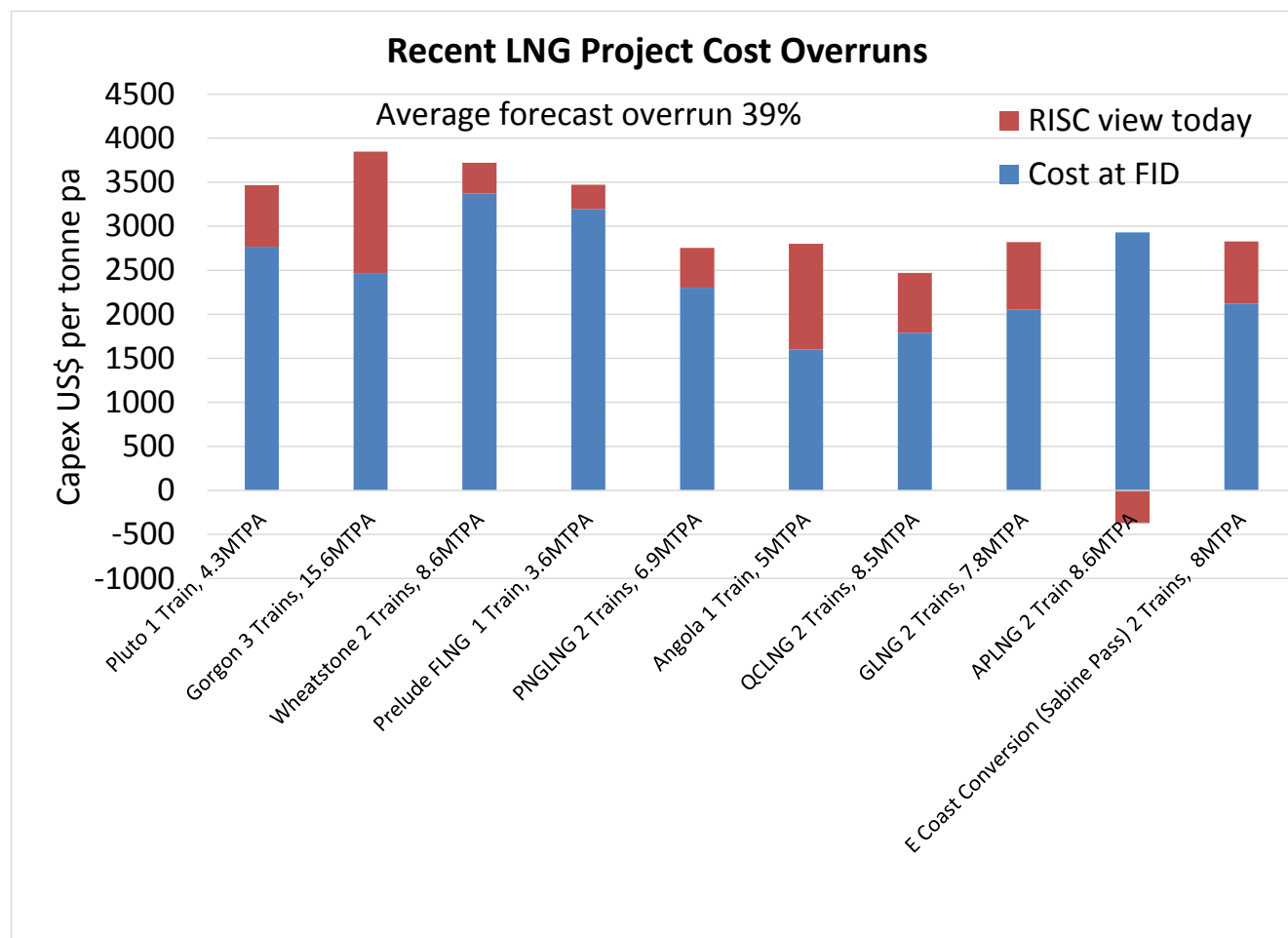
- Australian LNG has to compete internationally
- Although it has an advantage in being closer to markets and hence shipping costs are lower, the costs of development can be higher
- US gas delivered to Asia has an advantage when Henry Hub prices are low



Australian LNG Competitive Advantage (2)



- Australian has a reputation as a high cost country for oil and gas projects
- RISC's analysis shows that globally, large oil and gas projects have a history of poor project management
- Hence the perception of Australia as a high cost destination is only partially true
 - e.g. 20% rise in Australian labour costs results in 5% project cost increase
- There are also underlying strategic decisions have a much more material impact

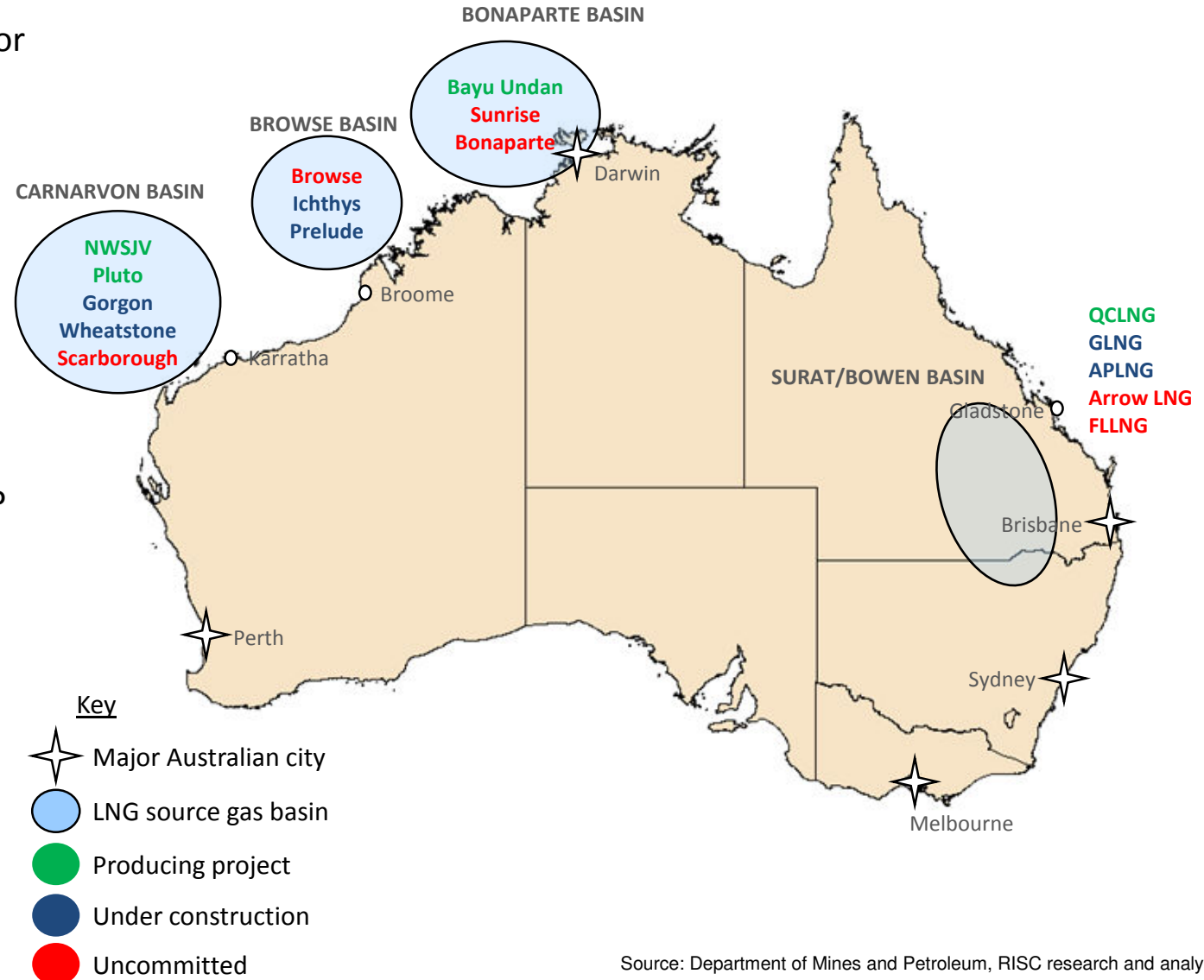


Source: RISC analysis

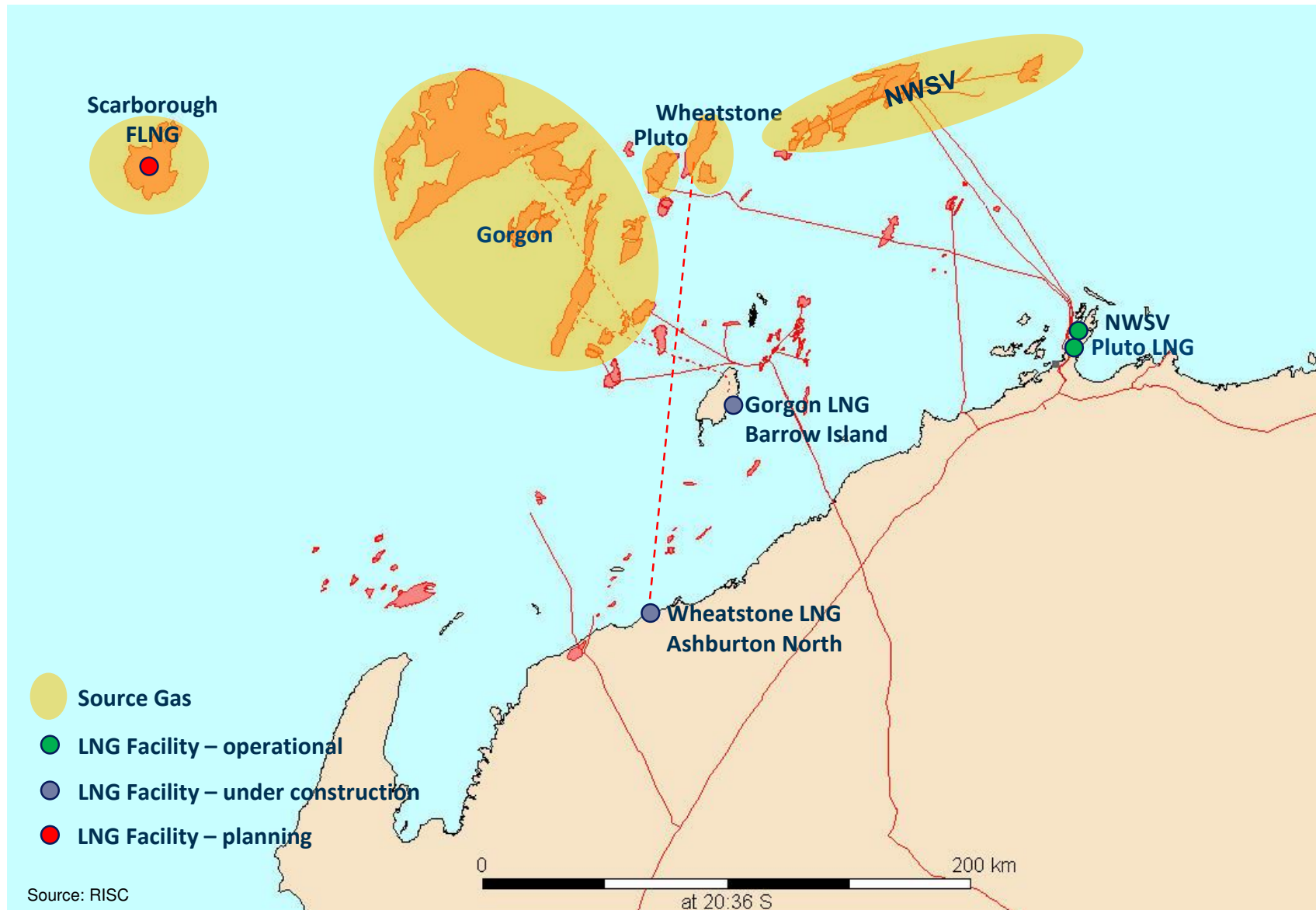
Strategic decisions and their impact

Strategic Decision # 1: proliferation vs cooperation

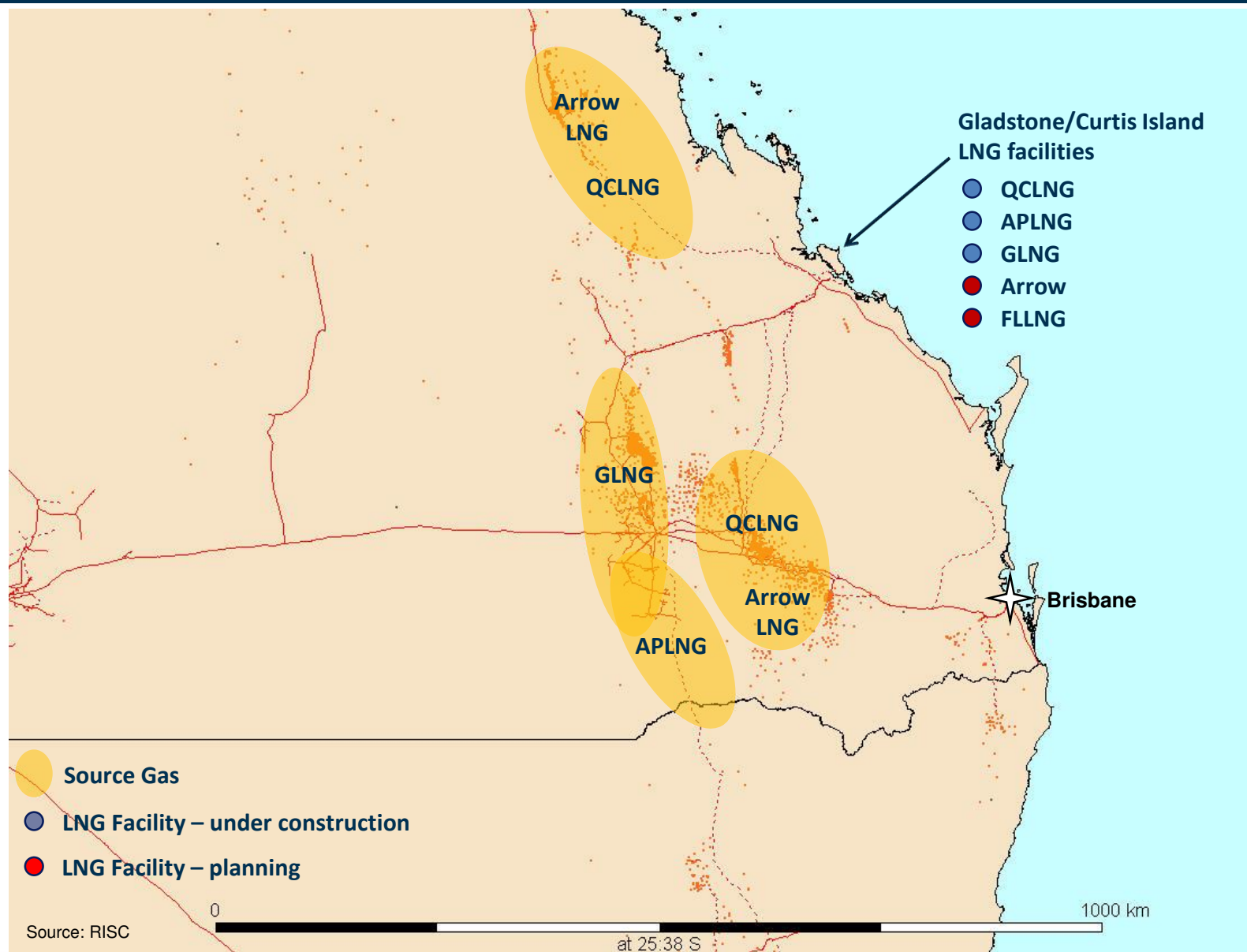
- 10 projects in operation or under construction
- All with separate, stand alone LNG production infrastructure
- Capital cost US\$220b + since 2007
- Why?
- What is the cost/benefit?



Carnarvon Basin LNG



Surat/Bowen Basin CSG-LNG



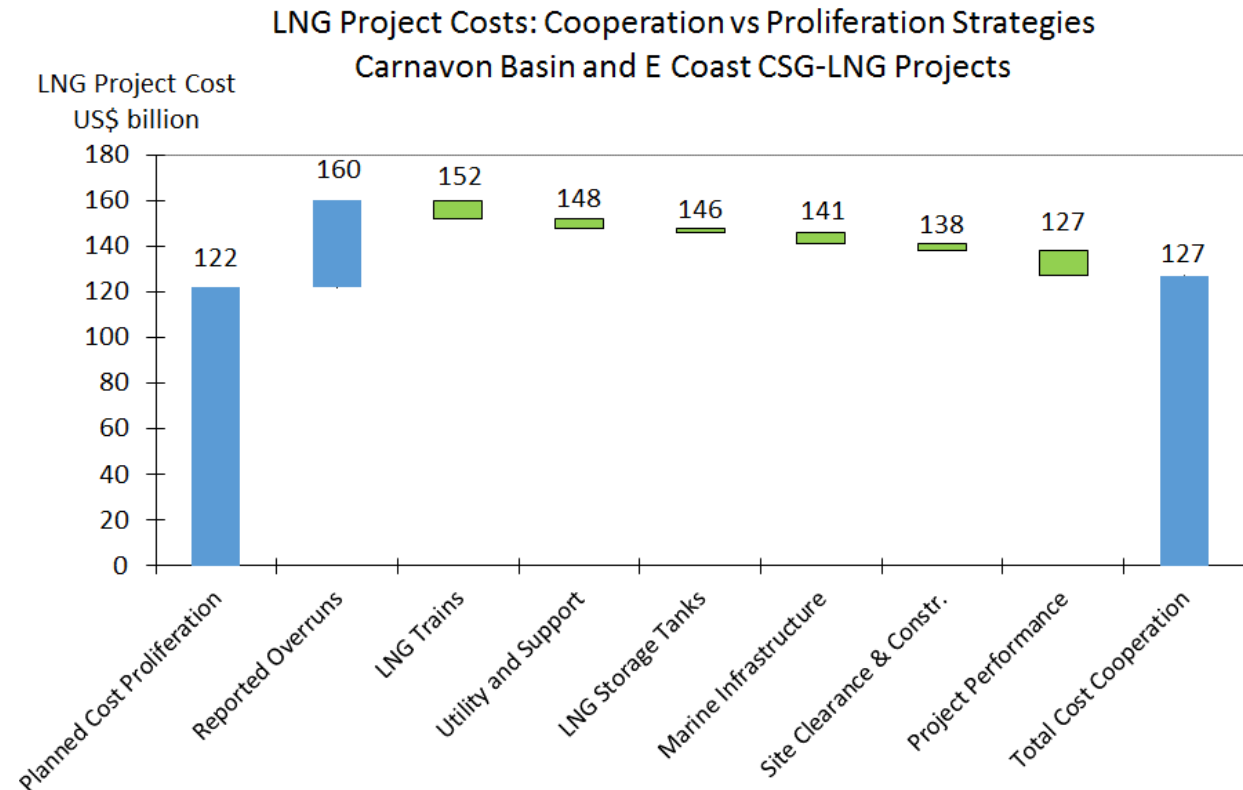
Current and proposed CSG-LNG facilities at Gladstone



Strategic Decision # 1: proliferation vs cooperation



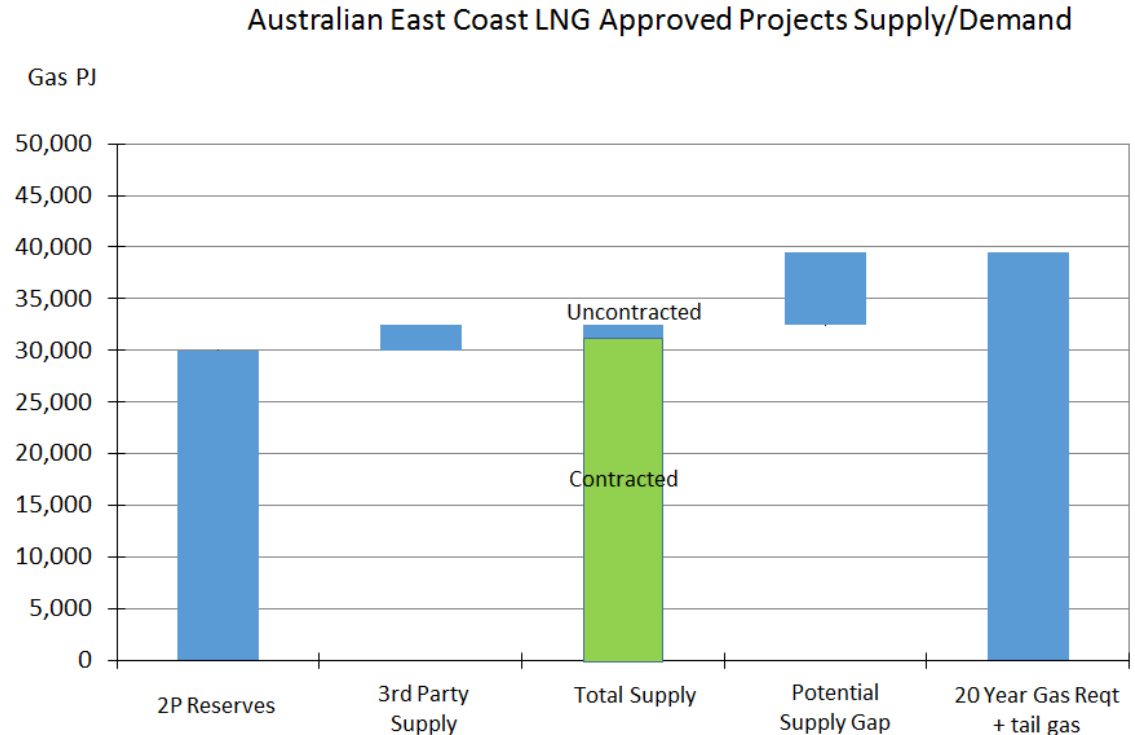
- What if 2nd wave projects in Carnarvon Basin and Gladstone used common LNG facilities?
- RISC estimates total capital costs of US\$160 billion in these two areas using proliferation strategy
- Estimate potential savings of over US\$33 billion if cooperation strategy pursued
- Excludes any potential synergies in field development, upstream infrastructure and operations



Source: Company websites and RISC analysis

Strategic impact # 2

- On a 2P reserve basis, in aggregate CSG-LNG projects have sufficient resources to meet contracted demand
- However, RISC view is that the projects are overcapitalised and that shortfalls in capacity may materialise in the medium term
- In aggregate, the projects will require additional resources of 7000 PJ to secure 20 years supply plus tail gas
- Additional resources could come from 3rd party gas resources and/or reserves growth, however these are not assured

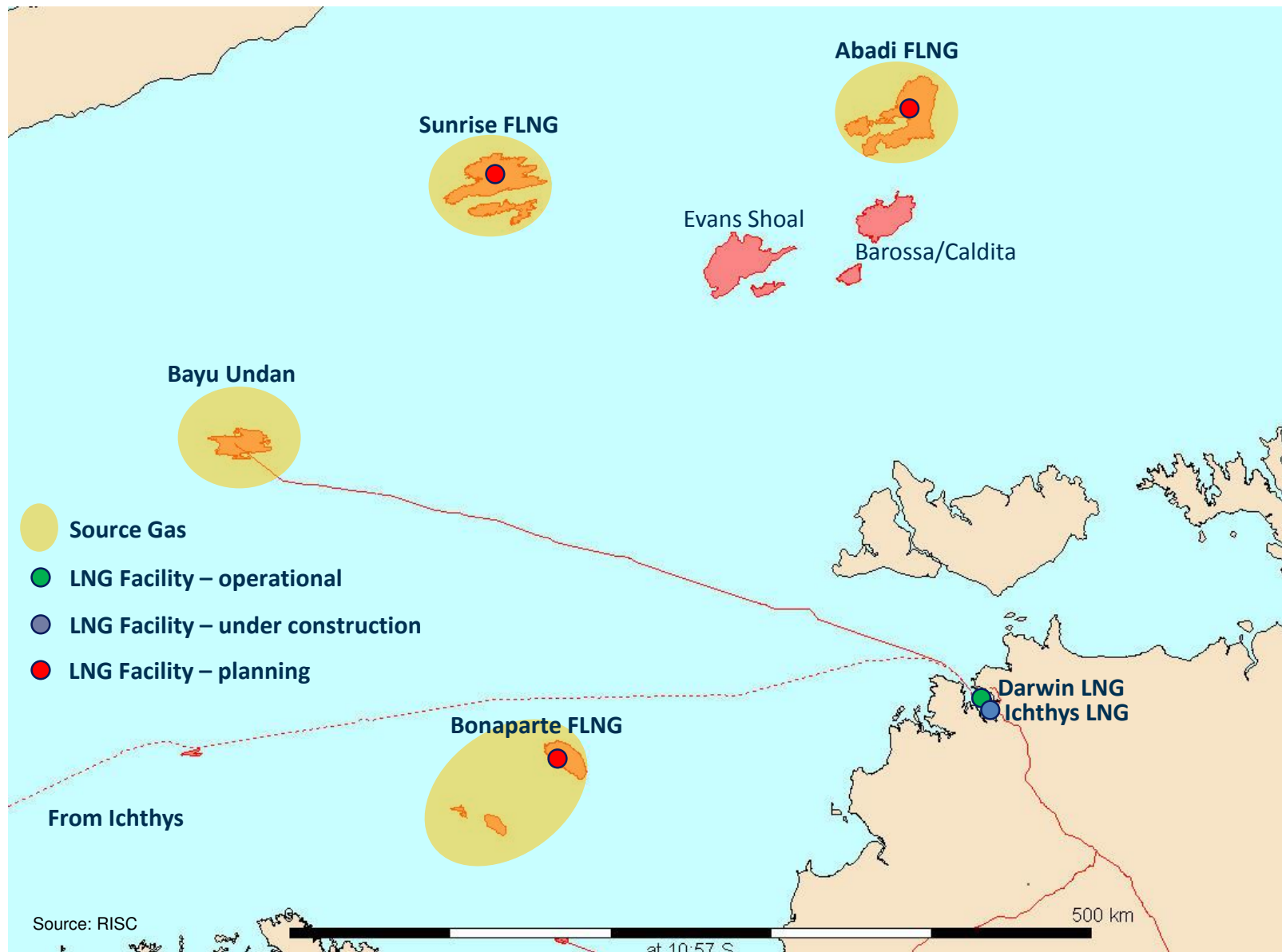


1 PJ = 1 Petajoule = approx. 1 Bcf

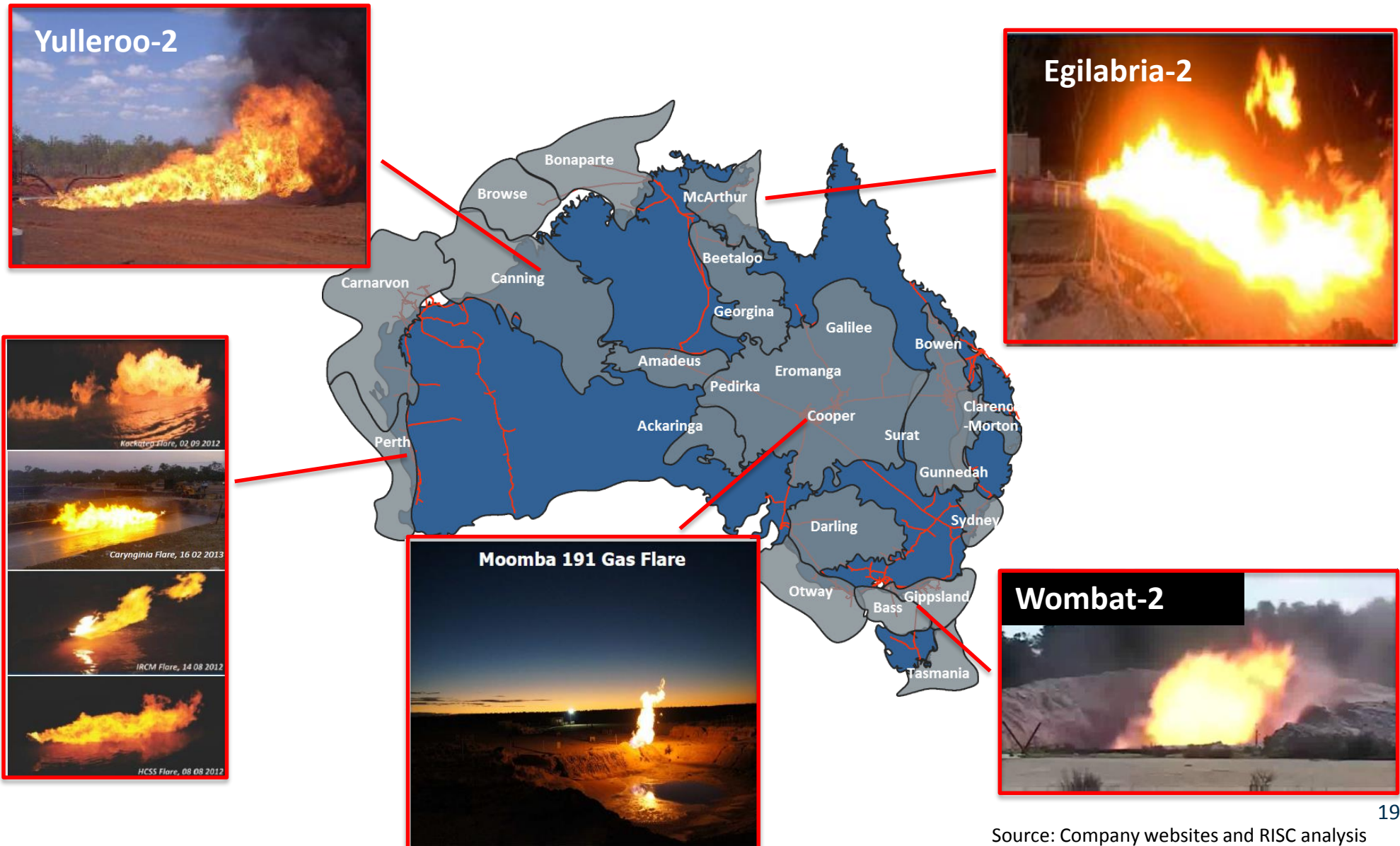
Source: Company websites and RISC analysis

Opportunities and challenges

Bonaparte Basin LNG



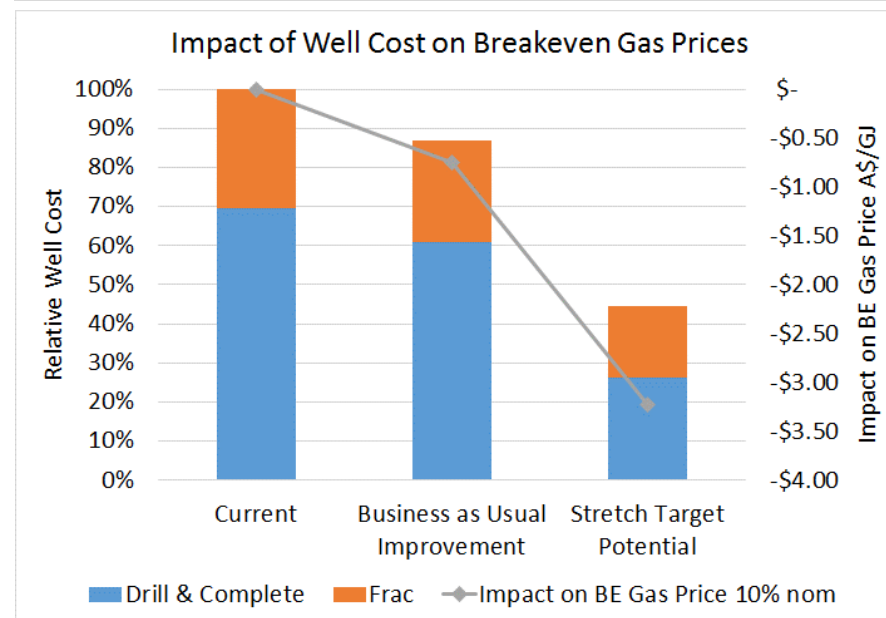
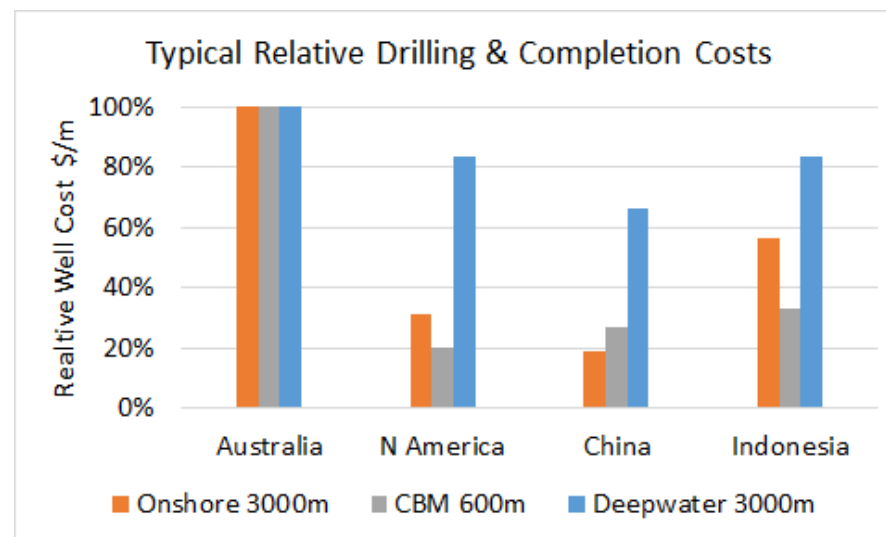
How to commercialise Australia's vast potential?



Challenge: Well Costs



- In unconventional projects, well costs may be up to 90% of total costs
- For comparable scope, Australian well costs are typically higher than in other regions. Factors which influence this are:
 - Ageing drilling rigs
 - Limited competition
 - Inefficient practices
 - Regulation
 - Lower activity levels
 - Higher labor costs
 - Remote operations
 - Lack of infrastructure
- The higher costs directly affects profitability
 - Savings of \$0.75/GJ nominal after tax assuming normal improvement expected from 15-20% reduction in a typical vertical tight gas well campaign
 - Potential to increase this saving to over \$3/GJ if a more aggressive and structured approach is taken to cost reduction
- A well cost reduction target of 50% is not only feasible but necessary to monetise the substantial potential that exists



Source: RISC analysis

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- Australia has vast natural resources
 - How can we make the Australian gas industry more competitive?
 - How can we improve cooperation amongst projects to get the best result for all?
 - Why is Australian iron ore amongst the lowest cost in the world, but our petroleum is amongst the most expensive?
 - What role should governments, management and shareholders play in these strategic issues?

- Despite rumours to the contrary, the oil and gas industry is not dead
- Great opportunities for innovative thinkers in the oil and gas industry
 - Data and knowledge management - embryonic
 - Automation – barely begun
 - Decision making – clearly remedial
 - Environment/Sustainability – it's your world

“Heavier-than-air flying machines are impossible”

Lord Kelvin, British mathematician, physicist, and president of the British Royal Society, 1895

“I think there is a world market for about five computers”

Thomas J. Watson
Chairman of IBM, 1943

“The oil and gas industry has no future”

the speaker's best friend in year 12, 1972
when discussing career options



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