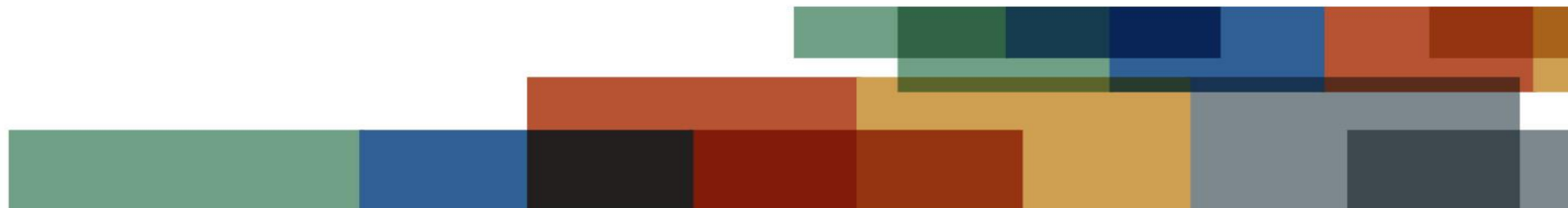




decisions with confidence

Australian LNG – Cost myths and truths



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Headlines indicating the high cost of Australian LNG



smh.com.au
The Sydney Morning Herald

BusinessDay

News Markets Quotes Portfolio Money

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\$100b L. rush

August 31, 2012

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High-cost Australia may miss \$180 bln LNG expansion

Chevron finds huge cost blowout for Gorgon: report

Published 3:56 AM, 14 Nov 2012 Last update 3:56 AM, 14 Nov 2012

other parts of the world could deliver LNG projects 20 to 30 per cent cheaper than Australia.

Australia's LNG projects chasing 'all, but an edge' in the right

Triple whammy sparks \$5bn blowout for BG's Gladstone project

MATT CHAMBERS AND BARRY FITZGERALD The Australian May 04, 2012 12:00AM

Liquefied natural gas plant Source: The Australian

THE national...
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Australian LNG Projects are in Serious Trouble

The discovery also...
undo investment...
Royal Dutch Shell...
liquefied natural...
the new prospe...

Australasia LNG / LPG News

Santos Reports \$2.5B Increase in GLNG Price Tag

by Quintella Koh Rigzone Staff
June 28, 2012

PRINT EMAIL FAV SHARE

The LNG boom in Australia, where...
country's fastest-growing export over the next five y...
material shortages force up building costs. As energy, companies consider...
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...
threaten gas projects...

Engineering News

Australian LNG Threatened by High Costs

MELBOURNE
Friday May 6, 2015

mid concerns

delays and cost...
could set



... miss lucrative supply contracts, ... most exports.

Is it true, and what are the contributing factors?



A number of factors have been highlighted as contributing to the high cost of Australian LNG projects, including:

- Foreign exchange rates
- Australian labour costs
- Project delays and productivity

RISC has analysed these factors, and also looked at 2 others

- The impact of decisions and assumptions made early in the project
- Collaboration

Foreign Exchange Rates



- Projects generally assumed a weaker AUD than was experienced
- Revised budgets in 2012 indicated FOREX as a major factor
- Estimated overall impact ~10%
- A bigger impact for East Coast projects than for West Coast
 - Onshore vs. Offshore



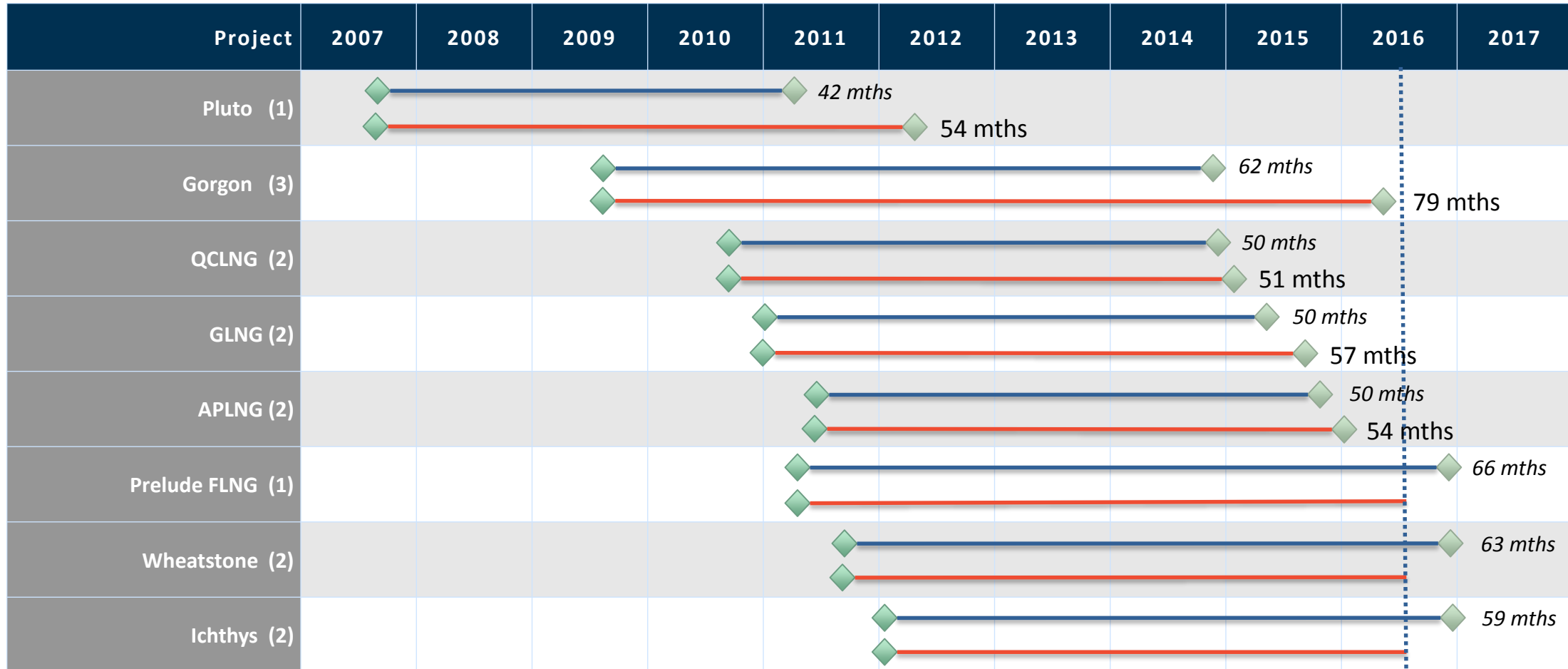
- For ~50% Local Content
If we assume ~50% of LC is labour

20% increase in Australian labour costs =
5% increase in total costs
- East coast projects higher local content than
West Coast projects



Source: Bechtel, Bechtel Copyright

Project Delays and Productivity



Australian East Coast Projects

- Greenfield location
 - Small Jetty into sheltered water
 - Island location (Sheltered Channel)
 - Near industrial area (but no road access)
 - 2 Trains
 - 2 Storage Tanks
 - Lean gas - no liquids
-
- ~US\$20 bln Total
 - ~US\$10-12 bln Downstream (in a period ~parity)
 - ~54 months from sanction to first LNG
 - Most significant delays pre-sanction

Corpus Christi

- Greenfield location
 - Small Jetty into sheltered water
 - River location
 - Industrial area with good road access
 - 2 Trains
 - 2 Storage Tanks
 - Lean gas - no liquids
 - No upstream content
-
- US\$11.5 bln
 - Planned 42 months execution
 - Significant approval delays pre-sanction

- Pluto invested in infrastructure for 2 trains, but has not expanded beyond 1 train

- Gorgon
 - Remote Island
 - Class A Nature Reserve
 - CO₂ injection

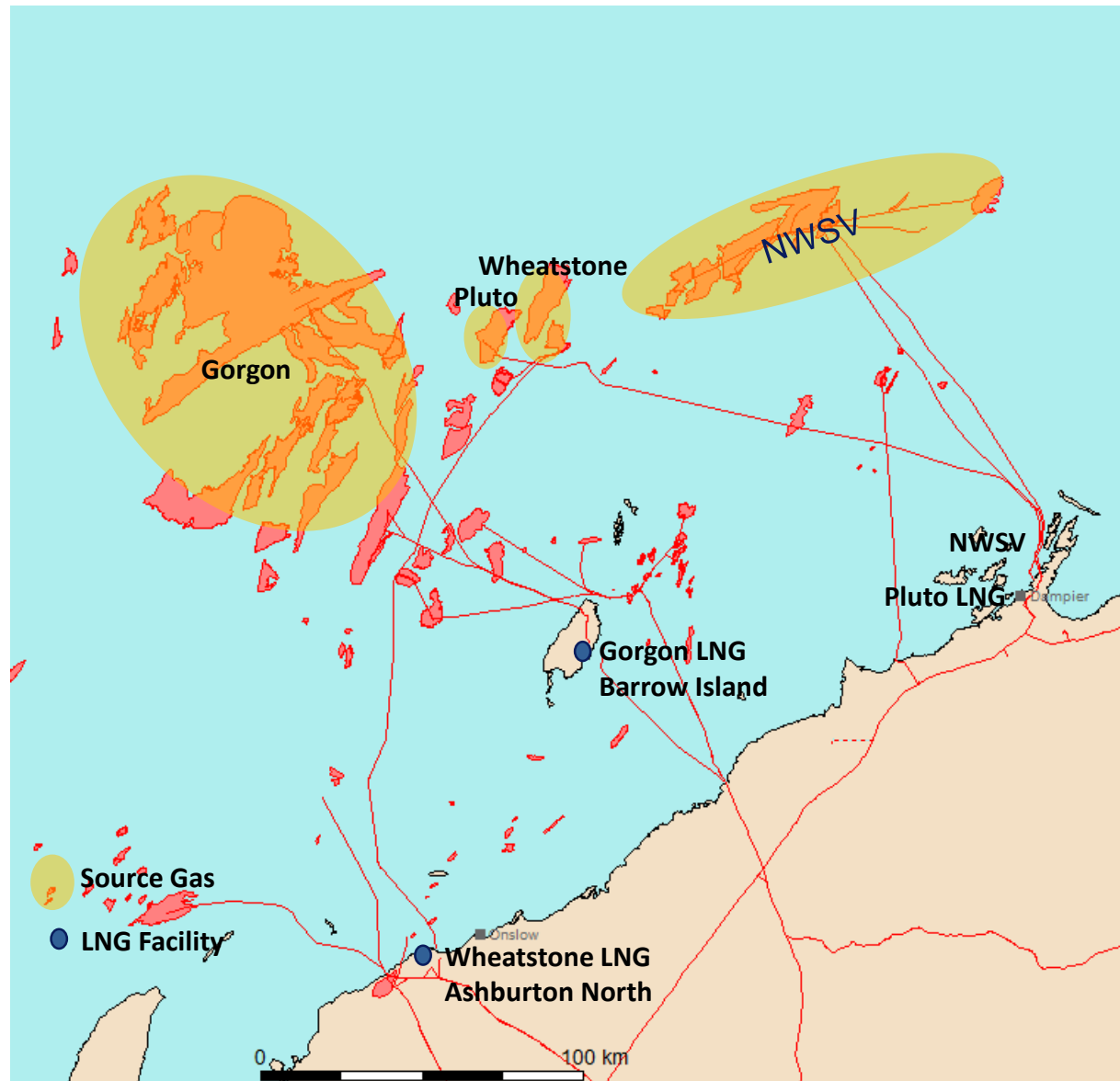
- CSG-LNG projects assumed lower number of wells than now planned

- Prelude, new technology

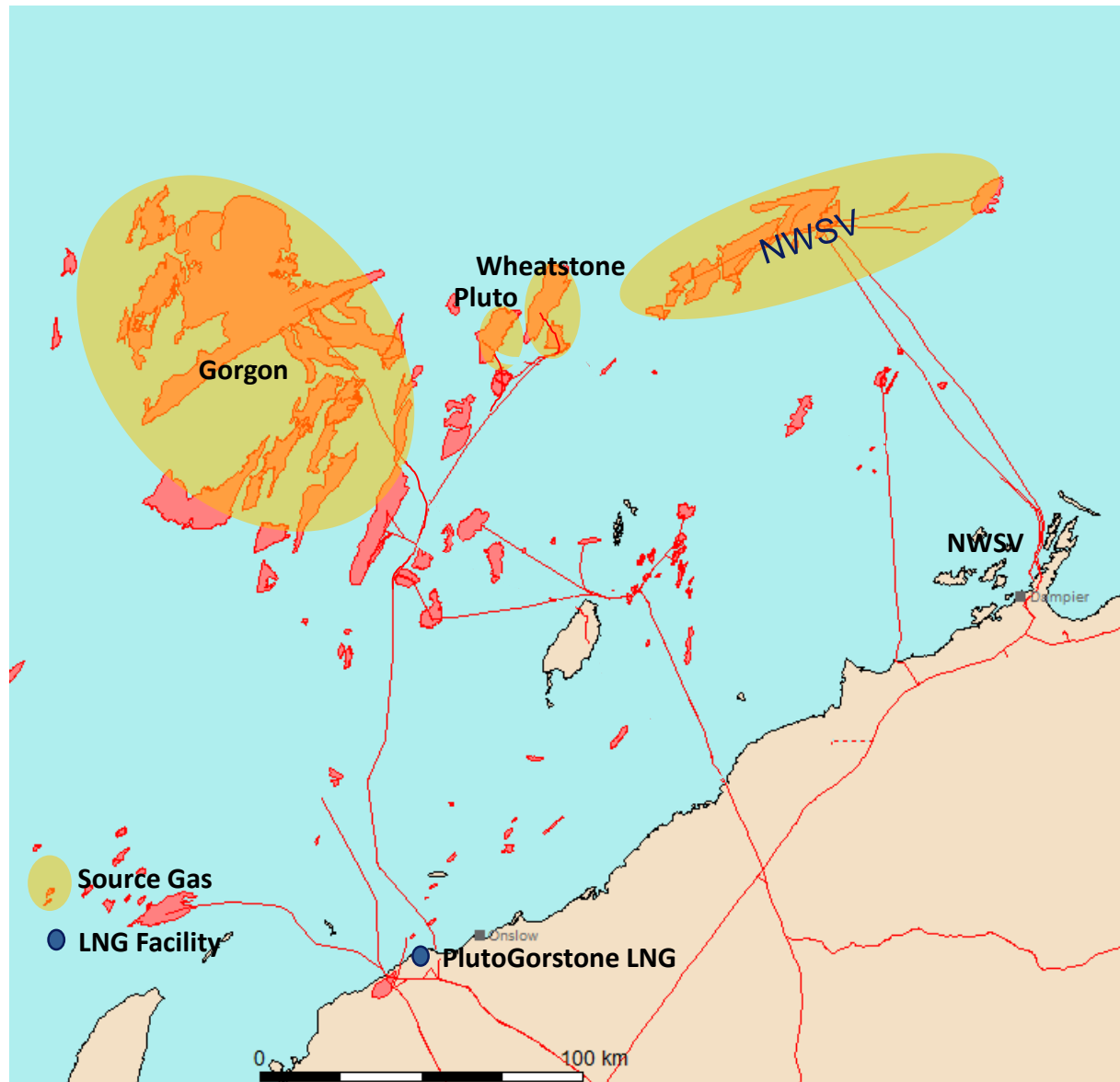
- Wheatstone on a site, previously not chosen for Pluto or Gorgon, suitable for up to 5 trains

- Ichthys LNG plant 900km away from fields
 - Longest subsea pipeline in the southern hemisphere

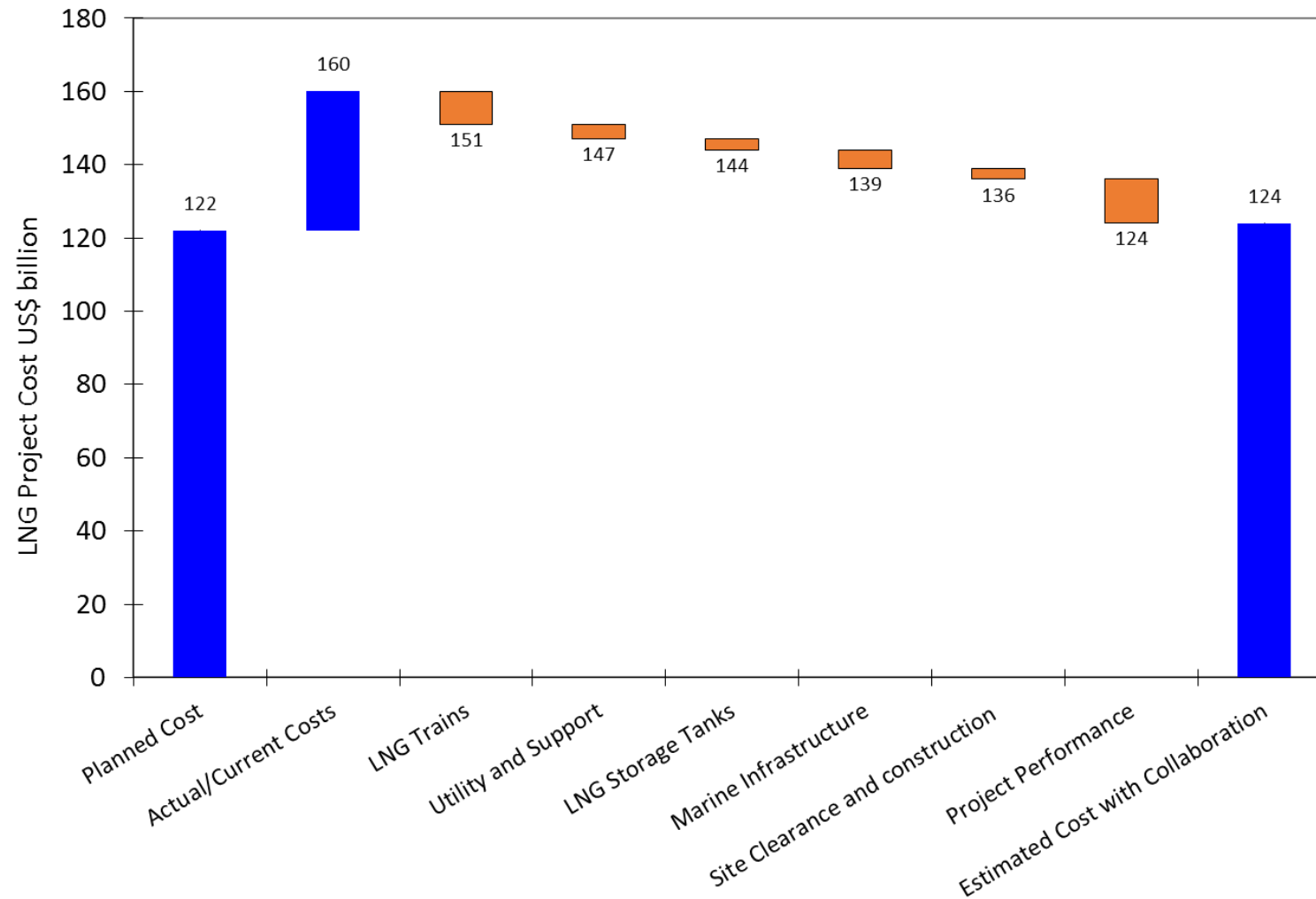
The results of lack of collaboration



Possible collaborative outcome?



Estimated cost of lack of collaboration



- It's difficult to support that FOREX and labour costs have had significant impact on project costs
- Delays clearly have impacted projects
 - But not all delays are due to lack of/low local Australian productivity
- Decisions taken early in project life cycle have had significant impact on projects
- Better collaboration would have resulted in significant capital expenditure savings across the projects
 - Australia is not unique in this aspect
- How can the industry do better?
 - How can we encourage real collaboration?



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