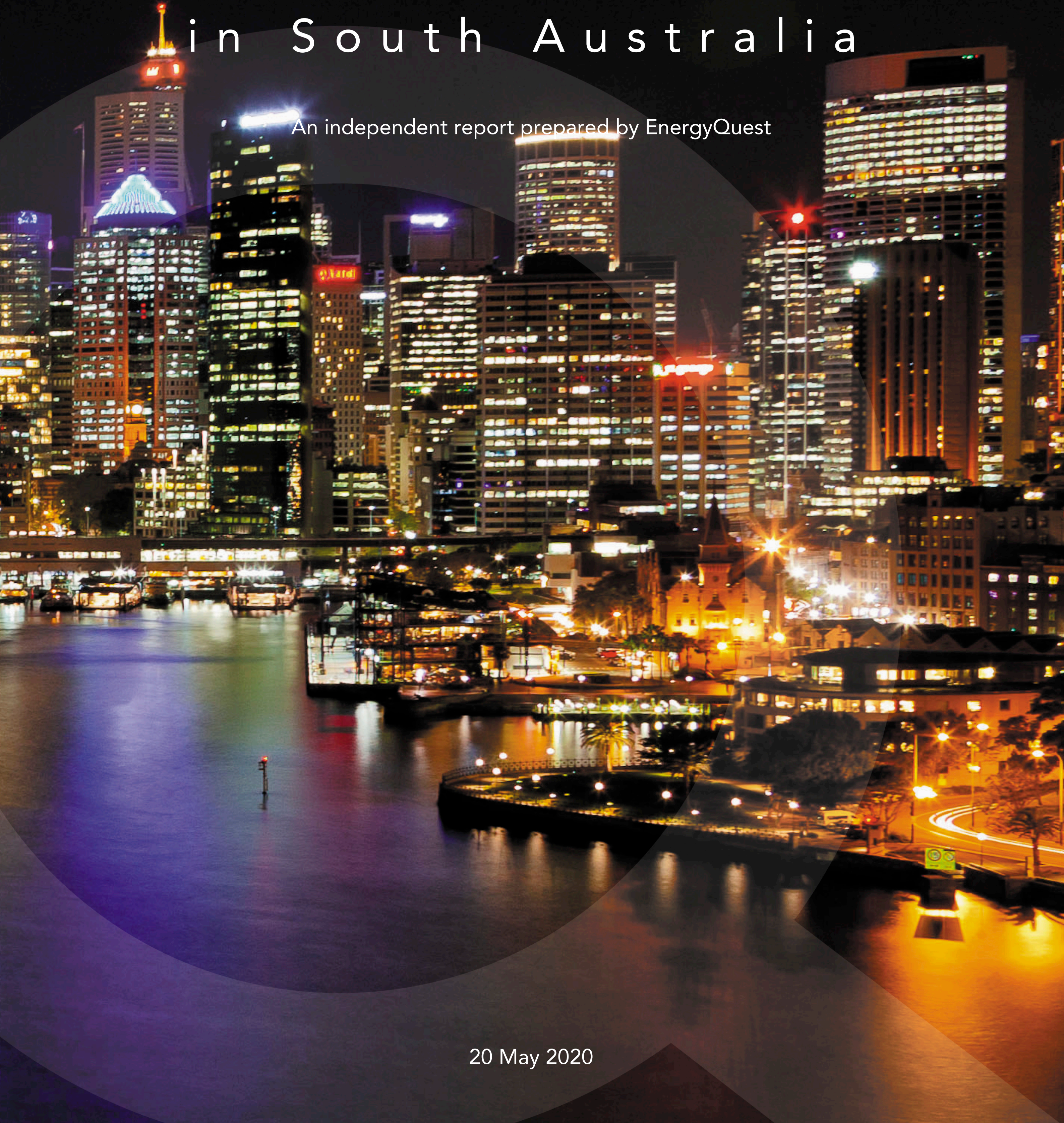
ENERGYQUEST

- Summary -
Future gas prices in South Australia



An independent report prepared by EnergyQuest

20 May 2020

Key points

The world, and the east coast gas industry, are facing extreme events - the black swan event of COVID-19, oversupply of oil in a world with at least short term falling demand, global warming and decarbonisation policies, and for the east coast of Australia, an imminent short fall of gas supply against demand.

It is impossible to predict with certainty where this will end, and yet those in the east coast gas industry must make rational business decisions based on the best available information at the time.

Demand:

The supply/demand balance is based on EnergyQuest's view of domestic demand.

- The three Queensland LNG projects accounted for 1,340 PJ or 69% of east coast demand in 2019.
- The LNG projects have long term LNG sales contracts linked to international oil prices.
- The domestic market was approximately 615 PJ or 31% of total demand for 2019.
- Industrial demand outlook is flat with a high risk of demand destruction with sustained high gas prices.
- Against expectations, gas-fired power generation (GPG) gained a little market share and volume in 2019 compared to 2018, but is expected to lose volume as renewable projects continue to gain share.
- The Residential and Commercial outlook is flat with population based growth offset by more efficient appliances and movement to electric alternatives.
- COVID-19 is expected to decrease demand or at least certainty for the next year or two.

Supply/Demand Balance:

- **Balanced Supply/Demand Phase:** There is sufficient gas supply from proven and probable (2P) reserves and selected contingent resources (2C), to meet demand until 2025, when the first of the LNG import projects are required. Already Queensland gas is a net exporter of gas to the southern states to meet their demand.
- **Transition Phase:** During the transition period from 2025, LNG imports are required and at least one LNG train is mothballed. Even with two LNG import terminals operating and the diversion of up to two-thirds of another LNG train to the domestic market, a supply shortfall emerges by 2029.
- **Shortfall Phase:** After 2029, the are no known 2P gas reserves or likely contingent resources which can meet demand. There will be demand destruction (including potentially more LNG train shutdowns and Industrial curtailment) and/or new gas supplies not identified, or LNG imports take a rapidly increasing share of supply. During this period, the CSG fields are expected to lose over 100 PJ pa in deliverability - the equivalent of an LNG import terminal every year. Eventually the LNG contracts come to an end around 2036, and this allows the remaining LNG gas to be sent to the domestic market.

- **Post-LNG Phase:** From 2036, The closure of the LNG trains at the end of their contracts means that northern supply will exceed demand and enable more gas to be supplied to the southern market.
- The situation has not improved over the last two years as produced reserves of 3,853 PJ were not replaced, and another 3,439 PJ of 2P reserves were written down or rebooked into contingent resources.

Gas Price Outlook:

- While at face value there are large quantities of low cost reserves, much of this is already committed to LNG or long term domestic contracts. Removing these committed reserves, increases gas costs delivered to Adelaide by around $2/GJ.
- During the Balanced Supply/Demand Phase to 2025, gas prices will rise to LNG net back level. This will be above $11/GJ in Adelaide.
- In the Shortfall Phase from 2030, LNG importing sets the domestic gas price. At full value this is around $11.75/GJ in Adelaide - unloaded and regasified in Victoria, and piped to Adelaide.

Risks and Game Changers:

There is a high degree of uncertainty in the east coast gas industry, including supply uncertainty, demand reaction to prices and risk, mismatched supply/demand balances, infrastructure constraints, regulatory risk and wavering public support for the industry.

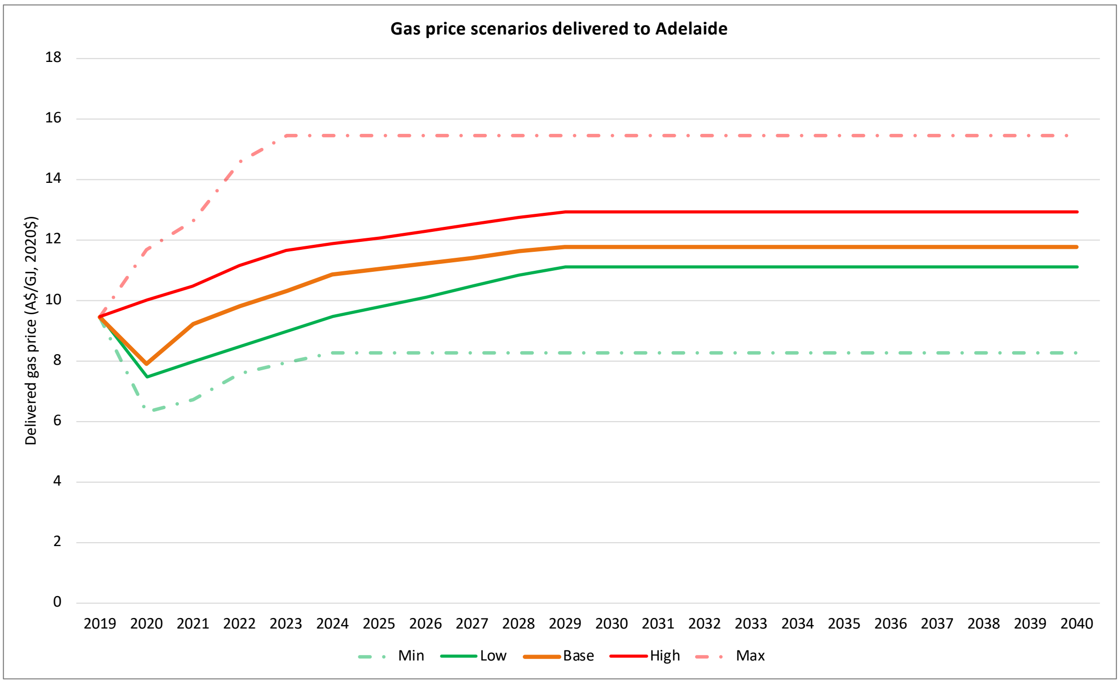
Some notable risks include:

- COVID-19 uncertainty
- collapsed oil prices
- lack of new domestic gas plays to develop
- CSG production uncertainty, and moving from the ‘sweet spots’
- demand response to above $10/GJ gas prices
- regulatory intervention to divert LNG feedstock gas to the domestic market
- the linking of international pricing to the domestic market via LNG options
- high gas prices causing industrial demand destruction, with an increased requirement for active gas supply portfolio management.

Scenario assumptions for Adelaide delivered gas price scenarios.

Case	Assumptions
Min.	Oil prices fall, with LNG net back pricing from Queensland LNG projects.
Low	Competition between Gippsland Basin Joint Venture and Arrow Energy (Queensland Surat CSG), and smaller volumes from the Otway and Cooper Basins, set pricing until east coast/NT supply cannot meet demand, then LNG net back sets price at lower oil prices.
Base	Arrow Energy gas sets price until east coast /NT supply cannot meet demand, then LNG import prices at mid-range oil prices.
High	Market prices up to the LNG alternatives, and oil prices trend to higher range.
Max.	Market prices up to the LNG alternatives, and oil prices return to historical highs.

Scenarios for delivered gas prices to Adelaide



Source: EnergyQuest analysis

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