A pipeline of resource opportunities
Petroleum and gas in Queensland
Queensland Petroleum Overview

- 10 basins in Qld with proven or strong potential for oil and gas
- Main producing basins
  - Cooper
  - Surat
  - Bowen
- Industry started in 1961 – Moonie oil field in Surat Basin
- CSG industry began in ~2002 – driven by Qld government policy to diversify fuel sources used in electricity generation, with an initial target of 13% (later 15%) of non-coal fuelled electricity
- GOC Enertrade constructed pipeline from Bowen Basin to Townsville – contributed to abandonment of PNG pipeline
Queensland Petroleum
Production and development

- Queensland produced 1160 PJ of gas in 2016
  - LNG: 970 PJ
  - Domestic: 185 PJ
  - Fuel gas: 5 PJ

- LNG projects - own gas vs 3rd party (Q4 2016 figures)
  - APLNG: 149/0 PJ
  - QCLNG: 110/0 PJ
  - GLNG: 39/41 PJ

- Queensland reserves
  - 2P: 39989 PJ
  - Inadequate to meet LNG commitments (need ~58,000PJ)

- Gas usage
  - Significant volumes go to “non-power” uses – e.g. feedstock for ammonium nitrate production (Incitec Pivot)

- Development activity
  - Senex Energy – developing “Western Surat Gas Project”
  - Arrow Energy – commenced FEED for (Surat Basin) Tipton expansion project
Queensland Petroleum
Future expansion

- A review of Qld’s 27 hydrocarbon basins was conducted in 2015
- A “Top 10” list developed in terms of scale and prospective potential
- Top 3 – Surat, Bowen and Cooper
- Remaining 7 – large scale and prospective potential
- Government geoscience programs will focus on frontier basins in northwest of state – South Nicholson, Isa & Georgina
- Qld government works will be coordinated with federal government “Exploring for the Future” program to fast-track exploration
Queensland Government working with all non-LNG producers to find ways to fast-track maturation of gas to:

- Ensure full supply volume to LNG export
- Address domestic market gas needs

Prospective 2C contingent 2P reserve production

Key issues for emerging producers/junior explorers

- Supply side
  - Access to capital
  - Infrastructure development
  - Ability to develop “critical mass” of tenure area

- Demand side
  - Consolidated market signals i.e to aggregate adequate volume to underpin project development

Emerging producers

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Pre-competitive geoscience focus areas

- Frontier basins in NW Qld
  - South Nicholson,
  - Isa Super
  - Georgina
  - **Will use “Basin play and assessment approach”**
    - Obtain seismic exploration programs to define basin structure
    - Obtain samples for assessment of reservoir characteristics and source
    - Allow establishment of baseline groundwater regimes
    - Carbon capture and storage
    - Identify and quantify prospective potential of reservoirs for carbon capture and storage
Gas and energy supply issues have high profile at state and federal level:

- Apparent 2P gas supply shortages due to under-investment in developing new supplies
- View that one CSG-LNG producer (GLNG) is taking excess volumes from domestic markets
- Approaching expiry of legacy contracts with many domestic users – with significant increase in new costs to levels closer to world parity levels

Concurrent impact of increases in electricity costs, due in part to reduction in gas volumes from local markets & transition to greater use of renewable energy generation

Some industrial manufacturers (e.g. mineral processors) are seeking government support to increase security of supply and cost stability
Queensland Petroleum State Government initiatives

- Gas Supply and Demand Action Plan
  - Response to challenges facing gas sector
  - Aims to maximise sector’s potential while balancing needs of owners, communities, and environment
  - Plan to release final plan in mid-2017

- Tenure and geoscience reporting reform
  - To bring more consistency to reporting obligations
  - To improve tenure management – e.g. to implement means to deal with “land-banking” etc

- Queensland exploration strategy
  - To bring strategic approach to planning, prioritisation and delivery of geoscience programs

- Pre-competitive geoscience programs
  - Four year program (FY17/18 – FY20/21) focussed on northwest Qld frontier basins, in collaboration with Geoscience Australia
Queensland Petroleum
Geoscience data freely available

- **Seismic Header Update Project (SHUP)**
  - An investment of $1MM to cleanse historical 2D and 3D seismic survey data state-wide
  - Completed in 2016, delivering standardised and quality-controlled SEGY data files through QDEX

- **Mines Online Maps**
  - An interactive mapping tool allowing you to view, query, analyse, extract and print spatial information

- **Queensland Digital Exploration Reports System**
  - Obtain open file industry and governmental reports with associated geological and geophysical data
  - Download the borehole database including stratigraphy, formation tests, analyses, and shows

QDEX Reports and Data
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Federal Government initiatives

- Northern Australia Infrastructure Facility $5B
- Independent report into the future security of the national electricity market ("Finkel report")
- A package of support measures being considered, e.g:
  - Similar measures to the $26M “Plan to Accelerate exploration” (PACE) program recently rolled-out in South Australia
  - Baseline environmental studies to support subsequent environmental approval processes
  - Gas market reform
Queensland Petroleum
Carbon capture and storage

- **IEA World Energy Outlook 2016**
  “The frontlines for additional emissions reductions are in the power sector, via accelerated deployment of renewables, nuclear power (where politically acceptable) and **carbon capture and storage**

- **Three part process**
  - Separate gas at a power station or other point source
  - Clean, compress and transport to a suitable geological site
  - Inject into porous rock for permanent storage

- **Trials**
  - International – 22 sites
  - Queensland - Surat Basin - CTSCo
    - Non-profit subsidiary of Glencore
    - Small trial in northern Surat Basin – near Wandoan
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Gas storage

➢ Purpose
   ➢ Natural – storage of gas in depleted geological reservoirs
   ▪ Useful to meet demand peaks

➢ Natural gas reservoirs - example
   • AGL Silver Springs – Surat Basin
   • Silver Springs produced gas from 1978 until depleted in 1999
   • From 2011, began use to store gas to support development of the QCLNG project
   • Gas reservoir ~2000m depth

➢ Management
   • Storages subject to comprehensive environmental management and monitoring conditions
THANK YOU

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