Update on the Leigh Creek In-Situ Gasification (ISG) Project

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This presentation may also contain non-IFRS measures that are unaudited, but are derived from & reconciled to the audited accounts. All references to dollars, cents or $ in this presentation are to Australian currency, unless otherwise stated.

Mineral Resource Compliance Statement

Estimates of Mineral Resources reported in this announcement were initially reported & released to the ASX on 8 Dec 2015. We are not aware of any new information or data that materially affects the information included in the 8 Dec 2015 announcement & all the material assumptions & technical parameters underpinning the estimates in that announcement continue to apply & have not materially changed.

Gas Resources Compliance Statement

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Presentation Outline

- Overview
- Technology/Site
- Project Status
- Urea/Ammonia Case
- Commercial Pathway
- Summary
Overview

- Leigh Creek Energy Project (LCEP) – 550kms north of Adelaide
  - LCK 100% owner and operator
  - 50+ year project
  - Nationally significant resource
  - Ideal location – infrastructure in place, geology
  - Approval process and regulatory framework is clear
  - Strong relationships with Regulators

- Milestones
  - April 2018 – environmental approval received
  - October 2018 – LCEP operations - “First Gas”
  - Anticipated upgrade to 2P Reserve – Q1 2019

- Commercial Pathway
  - LCK syngas to produce Fertiliser
  - Sovereign risk in power and gas markets
  - Renewables, Regulation, Price control

“the Leigh Creek site represents one of the strongest opportunities for low risk commercial UCG anywhere in the world”
Dr Gary Love
Technology

- The LCEP utilises In-Situ Gasification ("ISG") process on the Leigh Creek Coalfield to develop the deep coal resources that are unable to be accessed through open-pit mining.
- The ISG process converts solid-state underground coal to Syngas, which contains hydrogen, methane, and carbon monoxide.
- Standard oilfield equipment is used.
- Syngas can be processed for conversion into:
  - Natural Gas
  - Petrochemical products
  - Agricultural products

![Syngas Production Diagram]

1t LC Coal  →  15 GJ Syngas

- 12 GJ synthetic natural gas
- 590 liters of ammonia
- 490 liters of methanol
- 260 liters of liquid fuels
- 2 MWh electrical
Leigh Creek Coalfield “Best site in the world … ”

1. Remote location; heavily impacted by previous mining operations
2. Leigh Creek coal ideal for ISG
3. Open-cut coal mine supplied Port Augusta power station (250km away) for 60 years until 2016
4. Established accommodation and town services in Leigh Creek and Copley
5. Infrastructure already in place:
   - Power
   - Road and Rail
   - Airport

✓ Minimal and manageable land use conflict
✓ Manageable groundwater resources
✓ Minimal environmental receptors and impact
✓ Suitable geology creates low-risk of:
   - Subsidence
   - Fugitive gas
   - Groundwater contamination - no useful water resource or aquifer in vicinity of operations

April 19 - Environmental Approval

• “the Leigh Creek site represents one of the strongest opportunities for low risk commercial UCG anywhere in the world”

• Key Findings
  1. Geology
  2. Underground water
  3. Regulatory oversight
  4. Operating principles

• South Australian legislation specifically contemplates and outlines approval pathway for ISG projects (S 35, Petroleum and Geothermal Energy Act, 2000)

SA (LCK) and Qld (CNX+LNC) comparison
“material differences related to site suitability, operational practices and … regulatory oversight”
PCD is Operational!
PCD Status

- LCK initiated the gasifier on 10 October 2018
- PCD operating for c. 40 days
- Each coal seam in the world is unique and shows different behaviours during development of the gasifier
- Company can confirm that:
  1. Gasifier is developing
  2. Operation is comfortably within the bounds of the regulatory approval process set out in the EIR
  3. Plant and equipment operating as designed
- To accelerate the development of the gasifier, an approved fuel source will be injected into the gasifier
- LCK is on track to upgrade a portion of the resource to 2P status.

ABB Gas Analyser and GC
Ammonia and Urea – high demand products

- Value added products with diverse range of downstream products
- **Ammonia** (NH₃) – Primarily used in chemical/industrial, minerals processing, explosives, etc
  - Emerging Hydrogen economy
- **Urea** (NH₃ + CO₂) – Primarily used for fertiliser (primary production)

Source: ThyssenKrupp Website
Urea market commentary

- Urea is an energy product
- Price (history and forecasts) closely correlated to energy prices
- Global production capacity 222Mt, increasing by 5% pa to 2025 (mainly in India)
- Australian Urea demand
  - Stable at 2.5Mt/a (>90% imported)
- World demand (currently at approximately 175mta) is projected to increase until 2020, and 2016/17 was a cyclical low in terms of pricing
  - Population growth is expected to continue to increase
  - China - population growth in the short term and decreasing capacity/production due to environmental controls
  - India - population growth and increased standard of living expectations
  - North America - reducing imports (over long term)
  - Emerging economies and increase in their living standards
  - Urbanisation of rural areas
    - Reduction in arable land → higher yields
    - GDP growth → higher value products
Ammonia and Urea market in Australia

- Australia is an importer of fertiliser products, especially Urea
  - Only domestic production is IPL Gibson Island
- Sea freight to Australia is a significant cost
  - Urea shipped from the Arabian Gulf spends an average 24 days on water
- Australian dollar currency fluctuations impact the profits of importers
- Main countries of origin for Urea imported in Australia:
  - Middle East
  - China
  - Bangladesh
  - Malaysia
  - Russia

Source: Fertilizer Australia & Department of Agriculture and Water Resources

Source: Australian Bureau of Statistics

This graph shows average fertilizer sales in Australia for 2012-2017
Note: Domestic Single Super is manufactured from phosphate rock that is imported
LCK will use Syngas to make Fertiliser products

1. Scoping Studies nearing completion - highest economic value
2. Cost efficiency through vertical integration
3. LCK gas production costs and volume stable vs market volatility and increasing
4. Geographic advantage
   • Close to large demand centres
5. High value products
   • E.g. Urea price at cyclical lows – long term price stability, forecast to improve
6. Pre-existing critical infrastructure on site – rail, road, brownfield
7. Social License - Fossil fuel to energy vs. Feed the World, supports farmers
1. Capacity constraints
2. Economic feasibility
3. CAPEX and OPEX commentary
4. Sensitivity Analysis
5. Concept Study Analysis
Pathway to Commercial — 2 year approvals and funding + 2 year construction

- **Q4 2018**: PCD Syngas Production
- **Q1 2019**: 2C Resource Upgraded to 2P Reserve
- **2019**: PFS, geotechnical investigation, determine corporate strategy for production facility (may include offtake negotiation/agreements)
- **2020**: Feasibility Study
- **2021 +**: FEED, FID, fabrication of commercial facility modules
- **2022-23**: DED, Construction of commercial plant
- **2023 +**: Commissioning, production, full operations

PCD Operations

Fertiliser Production and Distribution
Right Market, Right Time, Right Place, Right Product

1. Near term de-risking events
   - Environmental Approval
   - PCD operations
   - PRMS upgrade to reserve

2. Strong Fertiliser business case

3. Flexibility of end products

4. Good market dynamics and strong macro trends

5. Large resource – 2,964PJ 2C 50+ years

6. World class site, existing infrastructure, suitable geology

7. Resource characteristics ideal for ISG

Resource + Approval + Execution = Results