Cooper Basin
South and East coast gas supply growth
Cooper Basin

Objectives

+ 20+ year Reserve/Production life
+ Production plateau/new play growth
+ Swing producer to East Coast
+ Leveraged carbon business

How?

+ Disciplined operating model
+ Leveraged data, knowledge and technology
+ Balanced capital allocation (target inventory)
+ Prudent infrastructure re-lifting

Horizonal Drilling

100 wells per year

19 mmboe

Grow annual production to 17-19mmboe by 2025

CO2 injection into depleted reservoirs

Fracture stimulation

Horizontal Drilling

~70% of drilled conventional 2C converts to 2P
A disciplined operating model

Improved efficiencies are delivering growth

Low-cost, efficient drilling enables...

- Well cost US$ million: Down 50%
  - 2015: 4.8
  - 2018: 2.4

Improved capital efficiency and more wells leading to...

- Wells drilled: Up 72%
  - 2015: 67
  - 2019: 115 (LE)

Increased production and reserves replacement.

- Reserves Replacement Ratio: Up 72%
  - 2015: -
  - 2016: 5
  - 2017: 32
  - 2018: 72
Renewed focus on appraisal and wildcat exploration

With drilling efficiencies and <US$40/BBL Upstream FCFBP realised, risk tolerance rises, programme mix is more balanced – and new reserves and resources result

- Wildcat exploration – new play maturation & running room, material resource adds
- NFE exploration – rate, liquids, quick cycle tie-back and acreage management
- Appraisal activity – unlocking reserves, project framing
- Development drilling – undeveloped to developed 2P, quick cycle tie-back

Cooper Basin Reserve / Resources
Net mmboe

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<th>Prospective*</th>
<th>2C resources</th>
<th>2P reserves</th>
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<td>41</td>
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Drilling Program Composition
2019 Estimate

- Prospective
- Undeveloped Reserve
- Contingent Resource
- Developed Resource

Deploying an increased proportion of wells utilising horizontal, frac, and UBD technologies

Reserve estimates are as at 31 December 2018

* Indicative volumes are sum of the unrisked mean
Case Studies

+ Underbalanced drilling
+ Carbon Capture and Storage
+ Appraisal – Moomba South Patchawarra
+ Exploration – Moomba new plays
  – Deep coal: Liquids-rich gas
Underbalanced drilling

Narrows key uncertainties

UBD is the only technology which has been consistently successful in developing low pressure Cooper reservoirs
Moomba South - Toolachee

\[10^s\text{ bcf}\]
Low Pressure Reservoirs

\[>100\text{ bcf}\]
Evaluation of rate while drilling

\[100s\text{ bcf}\]
Fracture Stimulation Replacement

Capex reduction and productivity uplift by effectively developing stacked, variably depleted sands, without fracture stimulation
Dullingari

* Volumes reflect “forecast” 2P conversion “from undeveloped to developed reserves using UBD development”, as well as 2P Addition
Cooper Carbon Capture and Storage (CCS) project

- 2018 CCS Concept defined
- 2019 1H Appraisal drilling complete
- 2019 Q4 CO₂ injection test
- 2020 Q1 facilities FEED entry
- 2020 H2 FID CCS project
- 2022 CO₂ injection and storage
Appraisal - Moomba South

Monetising a large contingent and prospective resource opportunity

- Contingent Patchawarra resource located beneath historical Toolache-Daralingie production
- Significant reserves and historical production in adjacent fields
- Incremental upside emerging (granite, wash)
- 2019 Q4 Phase 2 – planning 8 well pilot program
- 2020 H1 Phase 2 Execution / planning full development

8 Wells (Phase 1)

650 Bcf

2C CR evaluated

Lower ▼ CO₂

Higher ▲ liquids

up to 8.7 mmscf/d

2018 Appraisal Campaign

- Appraisal - Moomba South
- 8.7 mmscf/d
- Higher liquids
- Lower
- Higher
- 8 Wells (Phase 1)
- 650 Bcf
- 2C CR evaluated
- Lower ▼ CO₂
- Higher ▲ liquids
- 2018 Appraisal Campaign

Legend:
- Gas Wells
- Gas Production
- Water Injection
- Upper Patchawarra
- Middle Patchawarra
- Lower Patchawarra
- Coal (above mud)
- Granite Wash
- Terlingwana/Weeereeja
- Weathered granite
- Intrusive granite
- Warburton basin

Illustration not to scale, depths displaced relative to those actually recorded.
Exploration new plays - Moomba

New incremental reserves and material contingent resource adds in complex old reservoirs

+ Thick intervals of gas-saturated granite, weathered granite, alluvial fans
+ Challenging, complex reservoir
+ Proven sustained flow in multiple tests
+ 2019 Planning, reservoir characterisation, additional coring and horizontal drilling
+ 2020 Bespoke fracture stimulation designs

Moomba 72 @ 9865 ft Weathered Granite

Porosity / Permeability Network
- Matrix
- Micro-porosity / fractures
- Open fractures
- Exfoliation Joints
Cooper deep coal: Liquids-rich gas

Transformational play potential

- **30 bbl/mmscf**
  - Typical Tirrawarra coal condensate to gas ratio
- **4.7 Tcf**
  - Prospective Resource* mapped
- **0.2 mmscf/d**
  - P50 Qi per coal seam (vertical)

- Material and scalable
- Proven sustained flow in multiple tests, repeatable PLTs
- 2019 Horizontal well planning / frac design trials
- 2020 Drill horizontal → seeks to establish commercial rate thresholds and step-change EUR/well

* On a raw, gross and unrisked basis

**Qi per stage Permian Deep Coal Fracs**

Lognormal Distribution

- **0.17**
- **0.45**
- **0.05**
- **0.17**
- **0.45**

Probability

mmscf/d

P90

P50

P10

P10
60 Years
Since Innaminka-1 spud

50 Years
Since first pipeline gas

Vision
2025
Transform, Build and Grow

Summary

First gas  Port Bonython  LNG Export
Moomba Plant  Cooper Oil  Transform

Swing producer into domestic and export markets

17 -19 mmboe
Leverage technology and data
Throughout the project cycle

CCS 100 wells per year

Horizontal Drilling
Thank You / Questions?