

Annual General Meeting 2017

Managing Director's Presentation Wednesday 22 November, 2017

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# **Comet Ridge Limited**













Strategy to bring material gas volumes into the East Coast market, as quickly as possible, from low-cost onshore assets

#### Very large blocks & multi-basin East Coast presence:

- Southern Bowen (Mahalo) Queensland
  - Two Coal Seam Gas (CSG) pilot schemes with initial 2P & 3P reserves achieved - moving towards significant reserves upgrade
- Galilee Queensland
  - Significant resource base northwest of Gladstone (over 2200 PJ 3C)+ in Sandstones & CSG
- Gunnedah NSW
  - CSG Resources strategically located to meet NSW gas requirements (over 560 PJ 3C)+



## Immediate Investment Required



McKinsey & Company report estimates up to \$50 billion needs to be invested in new gas supply between now and 2030 to offset falling production from traditional reserves

Shortfalls related to pipeline Without new field development, shortfalls 700 and processing facility from 2019 to 2024 could result in constrained constraints observed from 2030 Gas Powered Generation, placing stress on the electricity market to satisfy electricity demand 600 Any estimation of shortfalls is dependent on the full quantity of forecast contingent 500 prospective resources being brought to market <u>2</u> 400 Petajoules 300 Over time, increasingly expensive and uncertain tranches of gas are required to meet demand 200 100 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 Proved and probable reserves - developed Proved and probable reserves - undeveloped Contingent resources Prospective resources - - - Domestic demand

Eastern and south-eastern Australia domestic gas production (excluding LNG), 2017-36<sup>A</sup> Figure 1

Source: AEMO, 2017 Gas Statement of Opportunities report

### Queensland is still the solution











Substantial green activism against gas despite the significant contribution gas makes to industry & the national economy

Restrictions in other states mean there will continue to be increasing pressure on Queensland to do more of the heavy lifting when it comes to supplying the east coast gas market into the future

Additional gas supply is the only effective and rational response

The Queensland gas industry in 2016 supported 60,582 jobs across the state and generated over \$12.8 billion in economic activity (ref APPEA 2017)



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# **Comet Ridge – Supply Solutions**



# Comet Ridge assets can form part of the supply solution for eastern gas market

#### Near term - Mahalo:

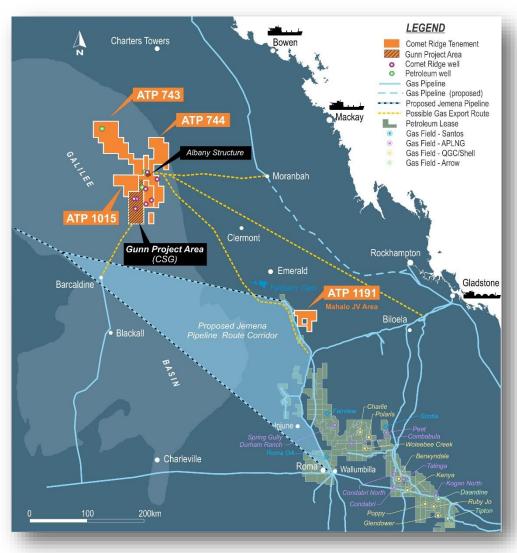
- Current field programme completed intention to substantially increase 2P & 3P reserves
- Develop asset with JV partners (Santos 30% & APLNG 30%)

#### Medium term – Galilee:

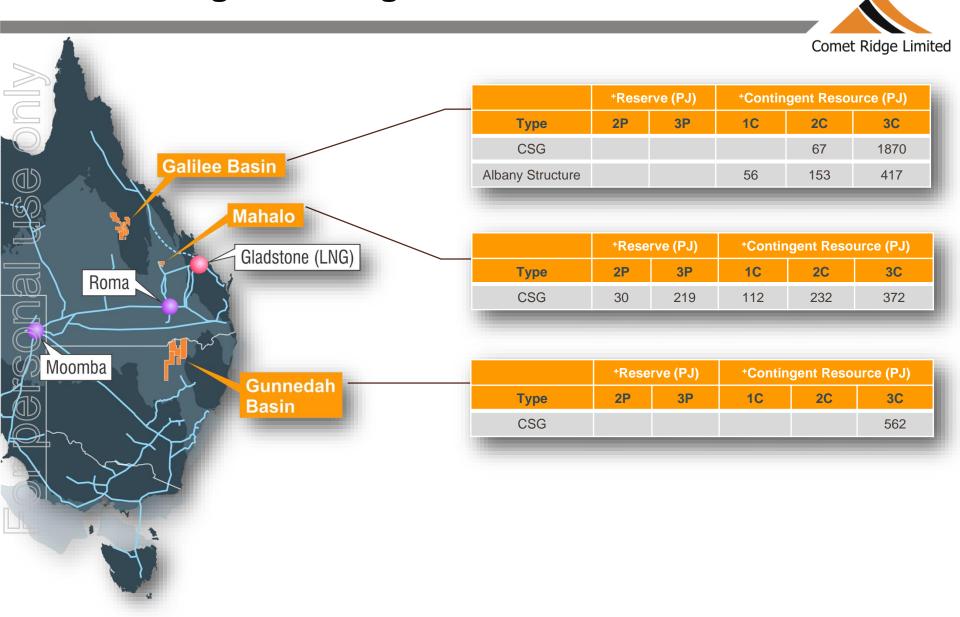
- Substantial resources 2,200 PJ 3C+ across coals & sandstones
- Substantial scale 9,700 km<sup>2</sup>
- 100% equity position allowing farm-down options – farm-in agreement recently executed

#### Longer term – Gunnedah:

- Assets cover 17,000 km<sup>2</sup> & are located north of Santos' Narrabri development
- Longer term hold-then-follow strategy



### **Comet Ridge - Strategic East Coast Gas Portfolio**



### **Comet Ridge – 2017 Highlights**



### **Key Objectives – Complete Mahalo appraisal and progress Galilee**

Date	Description	Status
Mar 17	Executed agency agreement for Comet Ridge to manage JV subsurface work	$\checkmark$
Apr 17	Mahalo Block Work Programme and Budget approved by Santos and APLNG	$\checkmark$
Jun 17	Completed a \$5.3 million Placement	<b>√</b>
Aug 17	Mira 3, 4 & 5 successfully under-reamed	$\checkmark$
Sep 17	Humboldt South 1 corehole drilled – good results	$\checkmark$
Nov 17	Mira 6 Horizontal well – drilled 920 metres in coal	$\checkmark$
Nov 17	Executed Farm-in agreement for Vintage to farm into Galilee permits	✓
Nov 17	Completed a \$10 million Placement and launched SPP	✓
	Mahalo Block reserves upgrade expected as gas rates increase at Mira	In progress

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# Mira 3, 4 & 5 Under-Reaming





Well production enhancement process

Coal (fractures plugged by fines) is removed from around wellbore

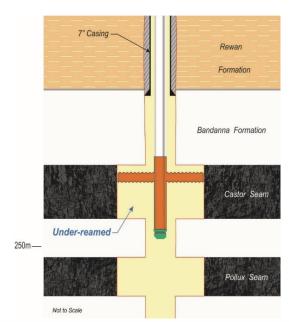
Provides easier pathway for gas and water to flow to well

Then production tubing and downhole pump run back into the well and returned to production

Pressure build up surveys indicate excellent results from under-reaming (refer table below)

Vertical Well	Skin value before	Skin value after
Mira 3	74	2.5
Mira 4	56	7.7
Mira 5	41	3.0

Wells on line since late August – Mira Pilot delivering steadily increasing gas rate





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### **Humboldt South 1 core hole**





Drilled early September



Total depth of 326 metres

8.4 metres of net coal intersected through main coal intervals (consistent with thickness at Mira wells to the west)

Coal recovered from the well had gas bubbling from the core with laboratory analysis showing gas content on trend with other Mira wells

Flow tests indicated permeability across the main target reservoir seam and across two shallower seams



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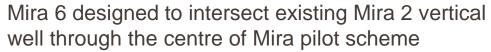
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### Mira 6 Horizontal Well





Well drilled early November

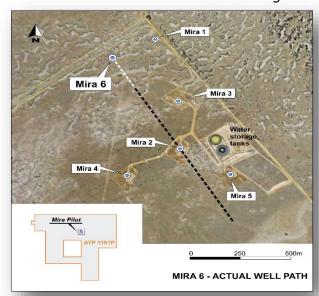


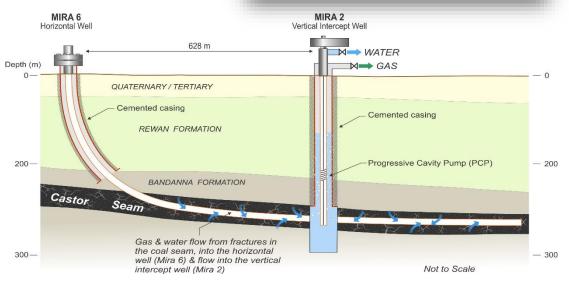
Total length of horizontal well 1,283 metres (coal depth of about 250 metres)



- Accelerate water and gas production from the Mira field; and
- Help determine optimal production well design for development

Comet Ridge just completed Mahalo Block
2017 field work programme under budget
notwithstanding wet weather





# Mahalo likely to be at low end of cost curve



XIUO ƏSN	Shallow	Mahalo Pilot only 225 metres to coal Lower drilling and completion costs
	Permeable	Mahalo 7 flowed 1.2 mcfd gas per metre of coal intersected along horizontal well
		Higher flowrates / less wells
	Low water rates	Mahalo 7 peaked at only 30 bwpd so exceptionally low water-gas ratio
PUOSJ <del>P</del> d		Lower water handling capex and opex / less workovers
	Gas Quality	No expensive CO <sub>2</sub> or H <sub>2</sub> S removal to get to sales gas spec
		Use basic carbon steel in wells, flowlines and plant
	Close to	14 km - nearest pipeline connection
	infrastructure	60 km - Mira Pilot to Jemena pipeline
		63 km - Mira Pilot to GLNG pipeline

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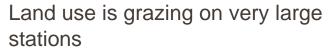
### **Galilee Basin – Significant Scale**





Basin covers a large part of central western Queensland (~250,000km²)





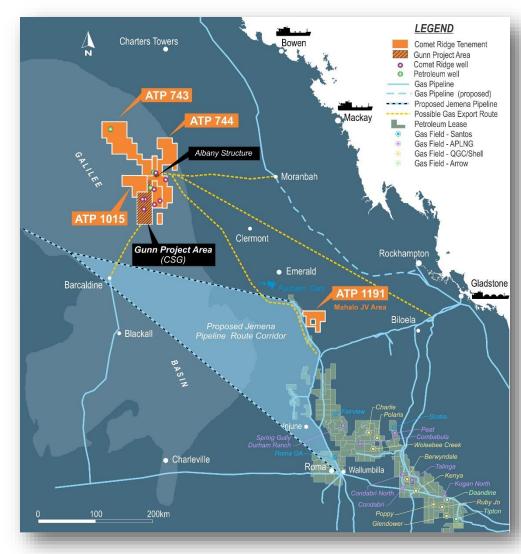
Historic oil exploration (1964 & 1995) includes gas flows from Sandstones at 2800 metres

Comet has a dual sandstone and CSG opportunity

Significant 3C resources certified in CSG (1,870PJ) and sandstone (417PJ)

Planned Galilee coal mine just to the east

Jemena recently announced plans to fast track extension of Northern Gas Pipeline from Mt Isa to Roma

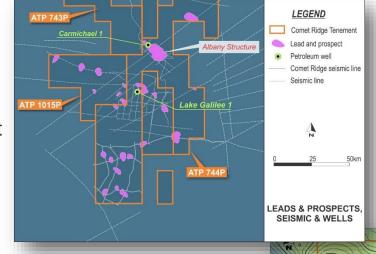


### Sandstone Farm-out to Vintage Energy



# \$8.5 million farm-out programme for Vintage to earn 30% interest in Sandstone reservoir ('Deeps'). Comet Ridge retains 100% of CSG potential

- Vintage Energy to farm-in to Sandstone reservoir sequence of Comet Ridge's ATP743, 744 and 1015 (Galilee Permits)
- Vintage team previously had significant onshore Australian oil and gas experience and success
- Two-stage farm-in to earn up to 30% interest in the Deeps by Vintage committing to spend \$8.5m as part of an up to \$15m work programme
- 1st Stage drilling and testing of a new well Albany 1, near to Carmichael 1 (flowed gas in 1995)
- Farm-in agreement is subject to Vintage funding, JOA and Co-operation Agreement
- Refer detailed ASX announcement 1 Nov



personal

#### Galilee Basin - CSG



# Gunn Project area and ATP 1015 area (COI 100%) coals contain recoverable gas over an estimated 1,865 km<sup>2</sup>

6 individual coal seams

Depth to coal 700 - 1,000m

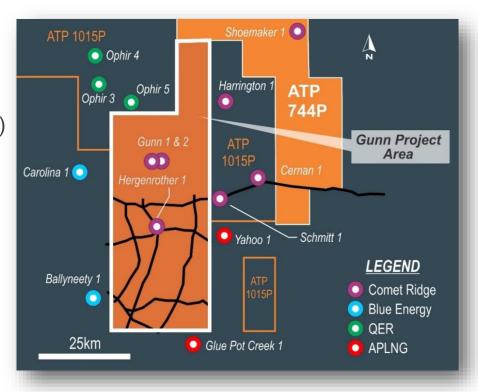
>16m net coal deposited over large area

Average gas content 4.3 m<sup>3</sup>/t (high 7.3 m<sup>3</sup>/t)

Good to excellent permeability within target coals

#### **Gunn-2 Production Test**

- Perforated single 4m coal interval
- Seam isolated above and below by impermeable mudstone
- Established connectivity to coals
- Evaluated methods of formation water treatment
- Demonstrated long term production solution



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## **Comet Ridge – Summary**



Mahalo Pilot













#### **Mahalo**

- ✓ Production enhancement at Mira 3, 4 & 5
- ✓ Humboldt South 1 corehole
- Mira 6 Horizontal well
- Major reserves upgrade approaching

#### **Galilee**

- ✓ Well planning for Albany 1 finalised
- ✓ Various pipeline options under consideration
- Funding of first sandstone well via Vintage farm-in
- Local market developing just east

#### Gunnedah

Long-term follower strategy to Narrabri development





## **ASX Listing Rule 5 Disclosure**



#### Competent Person Statement and ASX Listing Rules Chapter 5 - Reporting on Oil and Gas Activities

The Contingent Resource for the Albany Structure ATP 744 are taken from an independent report by Dr Bruce McConachie of SRK Consulting (Australasia) Pty Ltd, an independent petroleum reserve and resource evaluation company. The Contingent Resources information has been issued with the prior written consent of Dr McConachie in the form and context in which they appear in this Annual Reserves Statement for 2016. His qualifications and experience meet the requirements to act as a qualified petroleum reserves and resource evaluator as defined under the ASX Listing Rule 5.42 to report petroleum reserves in accordance with the Society of Petroleum Engineers ("SPE") 2007 Petroleum Resource Management System ("PRMS") Guidelines as well as the 2011 Guidelines for Application.

The estimate of Reserves and Contingent Resources for the Mahalo Project as part of ATP 1191P provided in this presentation, is based on, and fairly represents, information and supporting documentation determined by Mr Timothy L. Hower of MHA Petroleum Consultants LLC Inc in accordance with Petroleum Resource Management System guidelines. Mr Hower is a full-time employee of MHA, and is a qualified person as defined under the ASX Listing Rule 5.42. Mr Hower is a Licensed Professional Engineer in the States of Colorado and Wyoming as well as being a member of The Society of Petroleum Engineers. Mr Hower has consented to the publication of the Reserve and Contingent Resource estimates for Mahalo in the form and context in which they appear in this presentation.

The reserve and contingent gas resource estimates for ATP 1191P provided in this presentation were originally released to the Market in the Company's announcement of 28 August 2014 and subsequently updated in an announcement date 2 December 2015, and were estimated using the deterministic method with the estimate of contingent resources for ATP 337P not having been adjusted for commercial risk.

The contingent resource estimates for ATP 744P provided in this presentation are based on and fairly represent, information and supporting documentation determined by Mr John Hattner of Netherland, Sewell and Associates Inc, Dallas, Texas, USA, in accordance with Petroleum Resource Management System guidelines. Mr Hattner is a full-time employee of NSAI, and is considered to a qualified person as defined under the ASX Listing Rule 5.42 and has given his consent to the use of the resource figures in the form and context in which they appear in this presentation.

The contingent gas resource estimates for ATP 744P provided in this statement were originally released to the Market in the Company's announcement of 25 November 2010, and were estimated using the deterministic method with the estimate of contingent resources for ATP 744P not having been adjusted for commercial risk.

COI confirms that it is not aware of any new information or data that materially affects the information included in any of the announcements relating to either AYP 1191P or ATP 744P referred to above and that all of the material assumptions and technical parameters underpinning the estimates in the announcements continue to apply and have not materially changed.

The contingent resource estimates for PEL 6, PEL 427 and PEL 428 referred to in this presentation were determined by Mr Timothy L. Hower of MHA Petroleum Consultants LLC in accordance with Petroleum Resource Management System guidelines. Mr Hower is a full-time employee of MHA, and is a qualified person as defined under the ASX Listing Rule 5.42. Mr Hower consented to the publication of the resource figures which appeared in the announcement of 7 March 2011 made by Eastern Star Gas Limited (ASX:ESG) and any reference and reliance on the resource figures for PEL 6, PEL 427 & PEL 428 in this presentation is only a restatement of the information contained in the ESG announcement.

The contingent resource estimates for PEL 6, PEL 427 and PEL 428 were estimated using the deterministic method with the estimate of contingent resources for PEL 6, PEL 427 and PEL 428 not having been adjusted for commercial risk.

COI confirms that it is not aware of any new information or data that materially affects the information included in the ESG announcement of 7 March 2011 and that all of the material assumptions and technical parameters underpinning the estimates in the announcements continue to apply and have not materially changed.

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