

# IMPERIAL OIL & GAS (100% SUBSIDIARY)

**PESA DEAL DAY PRESENTATION** 

MCARTHUR BASIN AND BEETALOO SUB-BASIN SHALE ASSET

### HIGHLIGHTS



- Fracking Moratorium has been lifted by Northern Territory Government
- Government decision paves the way for resumption of industry exploration activities
- NT Government and most Traditional Owners supportive of renewed activity
- Ongoing discussions with potential new joint venture partners
- ✓ Significant gas resource potential to help solve East Coast gas crisis & LNG plant shortage
- Opportunity to develop NT downstream industries following resource definition
- Potential to demerge and undertake an IPO of Imperial Oil & Gas

### **CORPORATE SNAPSHOT**





(1) Prospective Resource P(50) - unrisked, is the estimated quantities of petroleum that may potentially be recovered by the application of future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

(2) Market Cap as at Wednesday 9<sup>th</sup> May 2018

### CHARACTERISTICS OF THE MCARTHUR BASIN THE MCARTHUR BASIN CENTRAL TROUGH ("MBCT")

- MBCT is one of the few global petroliferous basins to have retained its integrity since its formation 1.6b years ago
- Critical characteristics of the MBCT can be seen in analogue US basins, identifying the MBCT as highly prospective for hydrocarbon development
- Thickness of the Australian shales relative to the US plays may result in significantly greater resource potential per acre (km<sup>2</sup>) in the MBCT
- Multilayered, undisturbed shale formations
- Impervious shale protective barriers in the MBCT have successfully sealed in the hydrocarbons ensuring little migration (or loss of hydrocarbons) and isolated the aquifers
- The unique hydrogeology of the MBCT compared to other basins in the Northern Territory
- ✓ Market access for commercialisation

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## THE MCARTHUR BASIN - OPERATIONS



- McArthur Basin, Northern Territory a major focus area for new exploration by Imperial, Origin, Santos, Hancock et al
- ~\$800m committed investment since 2014
- Lifting of the moratorium allows for resumption of exploration and development expenditure
- ✓ >60 shale wells drilled, most with oil and gas shows
- ✓ >240 Tcf of recoverable shale gas estimated across basin (Deloitte 2015)
- ✓ Potential to replicate US shale boom
- Darwin LNG Project (Conoco Phillips / Santos) requires additional gas supply
- ✓ Darwin LNG plants have options for additional LNG trains
- Northern Gas Pipeline ("NGP") being constructed by Jemena to connect NT shale to East Coast gas market which is critically undersupplied.
- Jemena has publicly stated it will invest \$4bn to increase the capacity of the NGP to transport NT onshore unconventional gas
- New Queensland LNG plants producing below capacity and looking for additional gas supplies



# IMPERIAL'S MCARTHUR BASIN PROJECT



#### MORATORIUM LIFTED

- NT Government has lifted the fracking moratorium
- NT Government to implement the 135 recommendations of Fracking Inquiry
- ✓ This paves the way for Imperial to commence exploration of its acreage
- Imperial believes that a majority of its prospective acreage will be able available for exploration

#### IMPERIAL CONTINUES DISCUSSIONS WITH POTENTIAL PARTNERS

- ✓ In 2014 one of the world's most experienced shale groups identified the McArthur Basin as an exciting opportunities for potential shale oil and gas development
- ✓ In 2015 Imperial entered into a Farmout Agreement with American Energy Partners, LP ("AEP")
- ✓ AEP was founded and led by Aubrey McClendon, the co-founder of Chesapeake Energy
- ✓ On a results driven basis, AEP committed up to US\$560m (US\$60m in the 1st 3 yrs)
- ✓ Due to the passing of the Founder of AEP, the Farmout agreement was terminated in 2017
- ✓ Discussions with potential new partners are ongoing
- Exploration activities since AEP deal have increased understanding of the Beetaloo Basin, so a better farm out deal is likely to be achievable

# MCARTHUR BASIN – TARGETED SHALES



### TARGET REGIONS

- Total 33,867 km<sup>2</sup> (8.4mm acres) of identified shale for Prospective Resource calculations
- ✓ Current Prospective Resource P50 ~13.0 Tcfe (13,000Pj)
   WORK PROGRAM BEETALOO SUB BASIN
- ✓ Velkerri Prospective Resource P50 >1.3 Tcfe (>1,300 Pj)
- ✓ Kyalla/Velkerri (EP187) development program 2018/19
  - 126 km 2D seismic ~A\$1mm
  - 3 to 4 stratigraphic wells to 2,600m ~A\$10mm
  - ~300,000 acres with targeted shale formations:
    - Kyalla
    - Middle Velkerri (A, B, C shales)
    - Barney Creek
  - Work Program Target commercialization 2019/20
- Basin technical news flow:
  - Santos drilling directly adjacent to Imperial in 2019
  - Origin drilling 5 production wells 2019 +A\$100mm
  - Hancock Prospecting allocated A\$100mm to 2019





# **BARNEY CREEK SHALE (AND EQUIVALENTS)**

NT-C



**X-Section location map** 

Ε



NT-D

EMP

NT-E

energy

# BEETALOO SUB-BASIN – IMPERIAL INITIAL TARGET

IMPERIAL PROSPECTIVE RESOURCE P(50) (VELKERRI B) = >1.2TCF + 174MMBO OR >1.3TCFE

- ✓ Imperial ~2,543km<sup>2</sup> (630,000 acres) in eastern Beetaloo sub-basin
- Amungee NW-1H TD 2,500m considered Beetaloo sub-basin DISCOVERY WELL:
  - Velkerri A, B, C shales ~560m thick
  - Net pay >100m
  - Av TOC 3% to 4%
  - Velkerri B shale fracked
  - ~1mmcf/d for 61 days
  - ~95% methane
  - 2C contingent resource 6.6Tcf (gross)
  - Area 1,968 km<sup>2</sup>
  - Recovery Factor 16%
- ✓ Shallower Kyalla liquids potential



Final Average Depth to Basement from Gravity (from: Ailleres, Armit and Betts, 2014) With location of historic seismic lines (blue), Santos seismic lines (black- not yet open-file), and drillholes.

Compiled: Rod Dawney, AUSMEC Geoscience, 21 May 2015

Gravity data is indicative of the Velkerri Formation

Expected volume per typical 10,000 ft Hz– Velkerri producing >10.0 Bcf/well (volumetric resource by AEP)

# **VELKERRI SHALE - MARCELLUS EQUIVALENT**

A MAJOR UNCONVENTIONAL OPPORTUNITY WITH THE VELKERRI/KYALLA SHALES, WITH ORIGINAL GAS IN PLACE EQUIVALENT TO THREE STACKED MARCELLUS SHALE PLAYS



Clear USA shale analog of Marcellus shale identified for the Velkerri shale

## MCARTHUR BASIN GEOLOGY



#### What The Rocks Show

 Analysis of McArthur Basin rocks reveals two distinct shale clastics with clearly identified US analogs



### Why The Rocks Matter?

✓ 30 day initial production rates of the top 12 Utica wells vs the top 12 Marcellus wells, Appalachia, US



Source: AEP

Table complied by Activity Editor, Hart Energy Data Source: IHS Inc.

Similarities between Imperial's McArthur Basin shale tenements and the major USA Marcellus and Utica shale basins indicate potential to generate substantial oil and gas production

### **IMPERIAL RESOURCE ESTIMATE**



#### Independently certified estimated Prospective Resource

Formation	Permits	Geological factor discount	Area M acres	Units	P90	P50	PV10
Barney Creek Formation	EP 184, EPA180, 181, 182, 183, 188	50-90%	3,559	Bcf	3,304	8,699	20,172
		50-90%		MMBO	66	174	403
Velkerri Formation	EP184, 187, EPA 188	50%	315	Bcf	383	1,192	3,086
		50%		MMBO	8	24	62
Wollogorang Formation	EP 184, 187, EPA 188	90%	1,384	Bcf	524	1,185	2,371
		90%		ммво	10	24	47
Total				MMBOe	851	2,238	5,183

Notes:

Conversion Factor: 5.485 Mcf : 1 Bbl

Northern Territory Resources by: Muir & Associates P/L and Fluid Energy Consultants

Prospective Resource - unrisked, is the estimated quantities of petroleum that may potentially be recovered by the application of future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

Significant prospective resource – P50 13,000 Pj equivalent

# **APPENDICES**





### IMPERIAL MANAGEMENT TEAM



Position	Background
Bruce McLeod Executive Chairman	25 years experience in managing and financing resource and property projects in Australasia & USA. Founded Empire Energy US operations in 2006 and Imperial Oil & Gas in 2009. Non-Exec. Chairman Anson Resources Ltd.
Alex Underwood Chief Executive Officer and Director	12 years Energy Markets Division of Macquarie Bank (Sydney and Singapore) and Natural Resources Division of Commonwealth Bank of Australia (Singapore). Extensive experience investing debt & equity in the upstream oil and gas sector and the identification of value creation opportunities for upstream oil and gas development / production assets.
Prof John Warburton Director	30 years technical & leadership experience in leading E&P companies including BP, LASMO- Eni and Oil Search Limited. Previously Chief of Geoscience & Exploration Excellence for Oil Search Limited. Sits on Advisory Board of Centre for Integrated Petroleum Engineering & Geoscience, Leeds University, UK. Non-executive Director of Senex Energy Limited.
Geoff Hokin Exploration & Operations	12 years experience as a geologist in the unconventional gas and coal sectors. Works with team of field geologists, 3D mapping geologists, cultural liaison officers and traditional owners throughout the Company's Northern Territory tenements.

## MCARTHUR BASIN FARMOUT DEALS



There have been numerous farm-out transactions including those illustrated below:

Farm-in Year	Vendor	Investor	WI	State	Basin	Cash Upfront	Stage 1 Spend	Stage II Financing	Total Project Funding	Funding Period Years	Gross Acres (mm)
2011	Falcon Oil & Gas	Hess <sup>(1)(2)</sup>	62.5%	NT	Beetaloo	A\$27m	A\$135m	\$0	A\$162m	3	6.2
2013	Tamboran	Santos	75.0%	NT	Beetaloo / McArthur	N / d	N / d	N / d	N / d	N / d	6.4
2014	Falcon Oil & Gas	Origin/Sasol	70.0%	NT	Beetaloo	A\$20m	A\$165m	\$0	A\$185m	4	4.6
2015	Empire Energy <sup>(3)</sup>	AEP	80.0%	NT	Beetaloo / McArthur	A\$20m	A\$80m	A\$133m	A\$767m	3	14.5
2015	Armour Energy <sup>(3)(4)</sup>	AEP	75.0%	NT / Qld	McArthur / Nicholson	A\$31m	A\$173m	A\$133m	A\$737m	5	31.3
	Total <sup>(5)</sup>				-	A\$97m	A\$553m	A\$267m	A\$1,851m		63.0
	Average <sup>(5)</sup>					A\$24m	A\$138m	A\$67m	A\$463m		12.6

<sup>(1)</sup> Falcon drilled the Shennodah-1 well (8,500ft) and undertook 2D seismic prior to Hess farmout

<sup>(2)</sup> Due to corporate decision to exit the region, the Hess Petroleum JV was terminated in 2013 after significant amount of expenditure (>US\$50mm) undertaken

<sup>(3)</sup> Farmouts terminated after death of AEP Founder

<sup>(4)</sup> Due to takeover attempt of Armour during Farmout negotaitons, Armour undertook a US\$5mm share placement with AEP

<sup>(5)</sup> Publically available transactions only, several private transactions are excluded

\$A/\$US = .7500

The NT fracking moratorium was introduced in 2016 and lifted in April 2018 and, Empire believes that a comparable farm-out deal is achievable

Market capitalisation of Falcon Oil & Gas is ~C\$321mm



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# COMMERCIALISATION OPTIONS



### PIPELINE INFRASTRUCTURE

- Existing pipeline to Alice Springs/Darwin (EP187)
- Northern Gas Pipeline (NGP) under construction
- ✓ NGP will allow access to East Coast markets
- Gas pipeline easement Alice Springs/Darwin to Nhulunbuy

### GAS SUPPLY OPTIONS

- ✓ East Coast domestic market
- ✓ Darwin LNG plants
- ✓ Queensland LNG plants

#### VALUE ADDED POTENTIAL FOR GAS RESOURCES

- ✓ Methanol production export A,C
- Ammonia Urea production –Darwin for export, rail south to Australian markets A&B; or export only C

#### **PROJECT FINANCING**

✓ Readily available with booked natural gas reserves



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### **DEFINITIONS & RESERVES INFORMATION**

#### **Notes to Reserves**

- The scope of the Reserve Studies reviewed basic information to prepare estimates of the reserves and contingent resources.
- The quantities presented are estimated reserves and resources of oil and natural gas that geologic and engineering data demonstrate are "In-Place", and can be recovered from known
  reservoirs.
- Oil prices for Reserve calculations are based on NYMEX West Texas Intermediate (WTI) as at June 30, 2017.
- Gas prices for Reserve calculations are based on NYMEX Henry Hub (HH) as at June 30, 2017.
- Prices were adjusted for any pricing differential from field prices due to adjustments for location, quality and gravity, against the NYMEX price. This pricing differential was held constant to the economic limit of the properties.
- All costs are held constant throughout the lives of the properties.
- The probabilistic method was used to calculate P50 reserves.
- The deterministic method was used to calculate 1P, 2P & 3P reserves.
- · The reference point used for the purpose of measuring and assessing the estimated petroleum reserves is the wellhead.
- "PV0" Net revenue is calculated net of royalties, production taxes, lease operating expenses, and capital expenditures but before Federal Income Taxes.
- "PV10" is defined as the discounted Net Revenues of the company's reserves using a 10% discount factor.
- "1P Reserves" or "Proved Reserves" are defined as Reserves which have a 90% probability that the actual quantities recovered will equal or exceed the estimate.
- "Probable Reserves" are defined as Reserves that should have at least a 50% probability that the actual quantities recovered will equal or exceed the estimate.
- "Possible Reserves" are defined as Reserves that should have at least a 10% probability that the actual quantities recovered will equal or exceed the estimate.
- Prospective Resource P(50) unrisked, is the estimated quantities of petroleum that may potentially be recovered by the application of future development project(s) relate to undiscovered
  accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a
  significant quantity of potentially moveable hydrocarbons.
- Utica shale gas potential resources have only been calculated for the region where drill data is available. Very few wells have been drilled into the Utica in Western NY and NW Pennsylvania. Estimates for GIP have been made were the few existing wells have been drilled. Empire holds additional acreage outside the current potential resource region. It is expected that as with shale characteristics, the shale formations will continue within the remaining acreage. The potential GIP may increase if more data was available.
- "Bbl" is defined as a barrel of oil.
- "Boe" is defined as a barrel of oil equivalent, using the ratio of 6 Mcf of Natural Gas to 1 Bbl of Crude Oil. This is based on energy conversion and does not reflect the current economic difference between the value of 1 Mcf of Natural Gas and 1 Bbl of Crude Oil.
- "D&C" means drilled and completed and "F&D" means cost of finding and developing a project.
- "EBITDAX" means Earnings Before Interest, Tax, Depreciation/Depletion, Amortization & Exploration.
- "LOE" means lease operating expenses.
- "M" is defined as a thousand.
- "MM" is defined as a million & "MMBoe" is defined as a million barrels of oil equivalent.
- "Mcf" is defined as a thousand cubic feet of gas & "MMcf" is defined as a million cubic feet of gas.
- All volumes presented are net volumes and have had subtracted associated royalty burdens which means the Net revenue interest or "NRI"...

#### Qualified petroleum reserves and resources evaluators

The information in this report which relates to the Company's reserves is based on, and fairly represents, information and supporting documentation prepared by or under the supervision of the following qualified petroleum reserves and resources evaluators, all of whom are licensed professional petroleum engineer's, geologists or other geoscientists with over five years' experience and are qualified in accordance with the requirements of Listing Rule 5.42:

Name	Organisation	Qualifications	Professional Organisation
Mel Hainey	Graves & Co Consulting, LLC	BPE	SPE*
John P Dick	Pinnacle Energy Services, LLC	BPE	SPE*
Wal Muir	Muir and Associate P/L	BSc, MBA	PESA**

\* SPE: Society of Petroleum Engineers \*PESA: Petroleum Exploration Society of Australia

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