



ASX:EEG

Empire Energy – Beetaloo Basin – On the Path to Pilot Production and Beyond



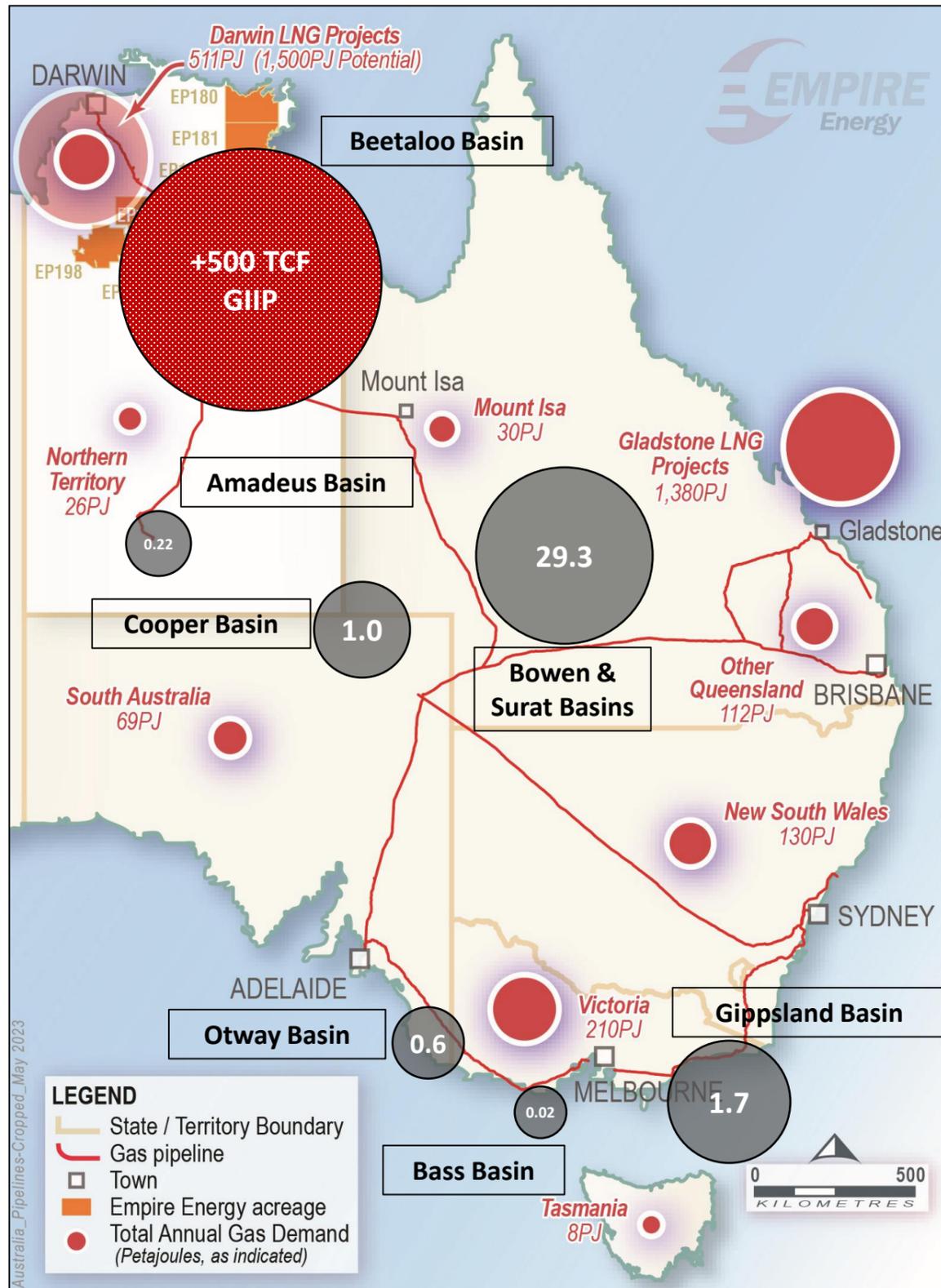
RIU Good Oil Conference – 6 September 2023

Why Empire?



1. Empire's existing 2C Contingent Resource is 1,906 PJ (1.625 TCF), an LNG scale resource located in the Beetaloo Sub-basin
2. Empire's activities are supported by the Australian and NT Governments
3. Empire's four wells have delineated a large discovered gas resource including two horizontal wells, fracture stimulated, and flow tested have demonstrated production deliverability
4. Empire is moving into pilot production (up to 25TJ/d)
 - Midstream gas infrastructure development supported by APA
 - FID targeted later in 2023
5. **Empire is targeting to scale up production to ~200TJ/d to supply Australian east coast markets and thereafter to LNG scale production to support LNG export through Darwin and Gladstone**

Empire has a Commanding Position in the Beetaloo



- Total potential Prospective Resources in the Velkerri B shale of between **50 TCF and 100 TCF** (one of five productive shale units) based on Government estimates of **500 TCF** gas-in-place (assuming recovery factors of between 10% and 20%)
- **Large enough to supply both LNG and east coast markets**
- **Empire (100%) NT 2C Contingent Resource of 1,906 PJ (1.63 TCF) gas and 3.5 MMBBLs liquids¹**
- **Empire (100%) EP187 2C Contingent Resource of 1,739 PJ (1.5 TCF) at an average EUR per well location of 7.9 PJ**
- **Empire (100%) P(50) Prospective Resource of 44,541 PJ (41.67 TCF) gas and 764 MMBBLs liquids^{1,2}**

Source: Netherland, Sewell & Associates Inc

1. Western Beetaloo 1.06 PJ per BCF applied

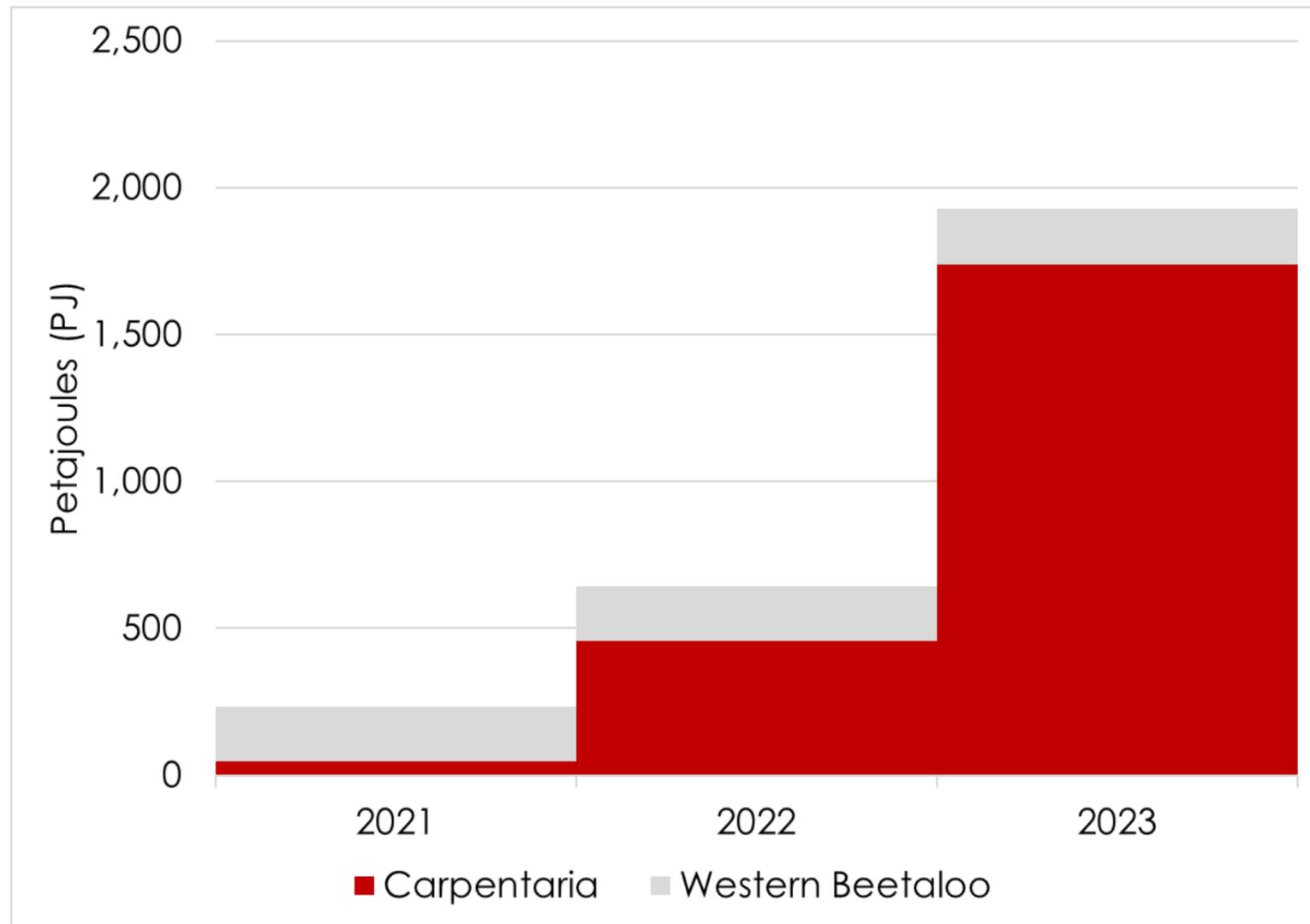
2. Barney Creek – McArthur Basin targets, 1.06 PJ per BCF applied



Empire has Grown its Certified 2C Contingent Resources



Empire's on ground activities have grown discovered resources to an LNG Scale



	EP187 Contingent Resources (100%) as at May 2023 Net Sales Gas (PJ)		
	Low Estimate (1C)	Best Estimate (2C)	High Estimate (3C)
Total	304	1,739	3,507
Average EUR Per Development Well	6.2	7.9	9.3
Indicative Pilot Development Well Cost (\$20m per well)	\$3.23 / GJ	\$2.53 / GJ	\$2.15 / GJ
Indicative Full Field Development Well Cost (\$15m per well)	\$2.42 / GJ	\$1.90 / GJ	\$1.61 / GJ

Key Drivers of 2C Uplift	2021	2022	2023
	<ul style="list-style-type: none"> Carpentaria-1 drill Pangaea acquisition 	<ul style="list-style-type: none"> Carpentaria-1 EPT Carpentaria-2H drill Charlotte 2D seismic survey 	<ul style="list-style-type: none"> Carpentaria-2H EPT Carpentaria-3H drill and EPT Carpentaria-4V drill

Note: Refer to EEG announcement dated 29 May 2023 for Netherland, Sewell & Associates, Inc. Contingent and Prospective Resources

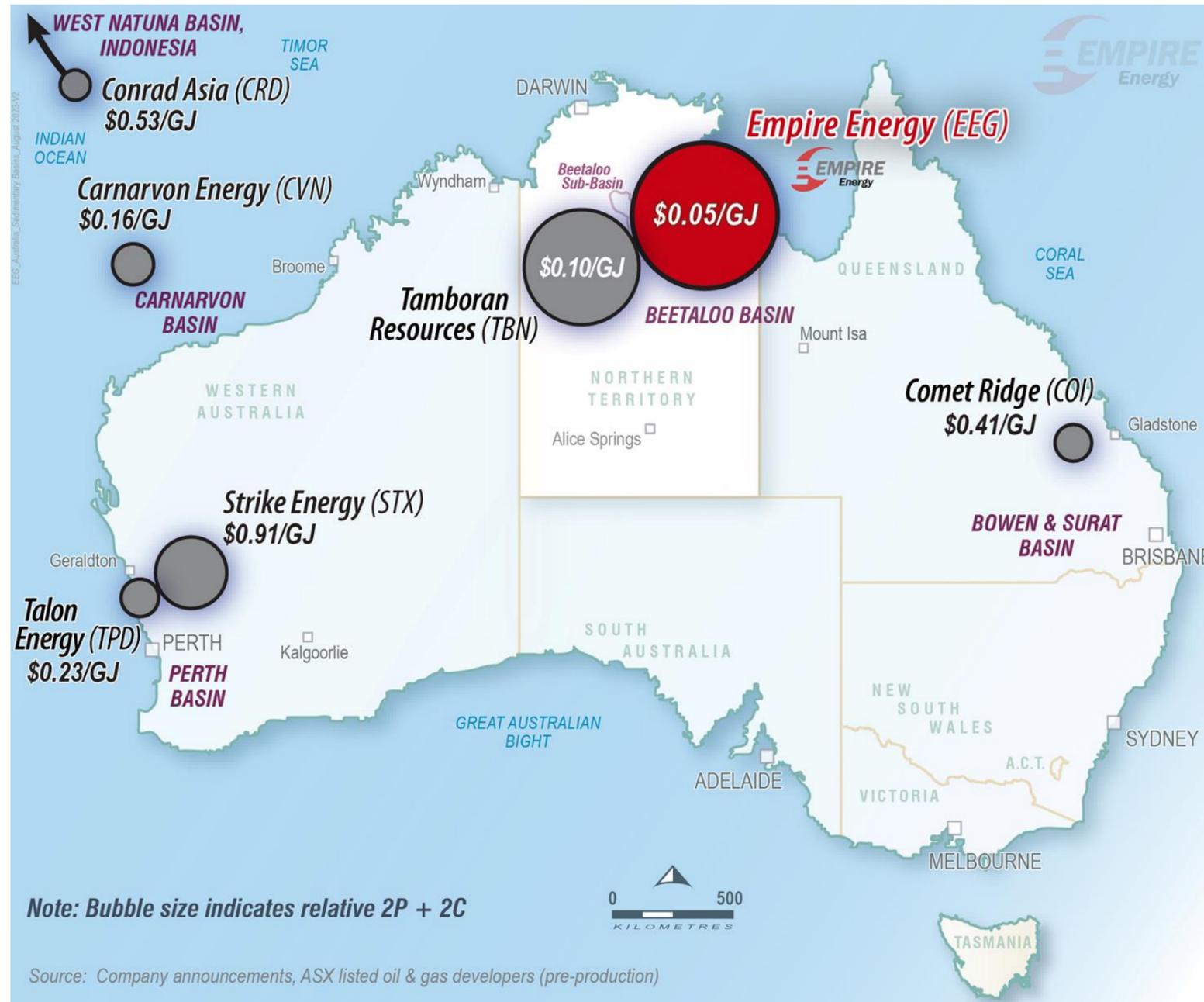
Empire Owns an LNG Scale Discovered Resource



Material discount to market peers versus Reserves & Resources

EV / GJ 2P RESERVES & 2C CONTINGENT RESOURCES

Empire Energy Group Limited and Selected ASX Listed Oil & Gas Developers



Scale

- Empire has the largest 2C Contingent Resources position for ASX listed energy companies in the Beetaloo
- NSAI certified Estimated Ultimate Recovery of ~8 PJ per well for 2C Contingent Resources

Growth

- >200 identified development well locations at Carpentaria Project (Velkerri B and C shales only)
- Conversion of 2C Contingent Resources to 2P Reserves with pilot project

Opportunity

- Grow market capitalisation through pilot project delivery
- Attract a JV partner to deliver LNG-scale volumes
- **Empire has a 2P plus 2C position approximately 2x Strike Energy with 1/9 of the market capitalisation**

Sources:

1. Share prices as at 29 August 2023
2. Net debt / (cash) as at 30 June 2023 Quarterly Statements
3. 2P reserves and 2C contingent resources per relevant company ASX releases
4. BCF to PJ conversion of 1.06

Governments are supporting Empire in the Beetaloo

NT Government has given industry a green light to move into production

Federal Government has exempted smaller companies from gas market intervention

NT Government supports the development of the onshore gas industry

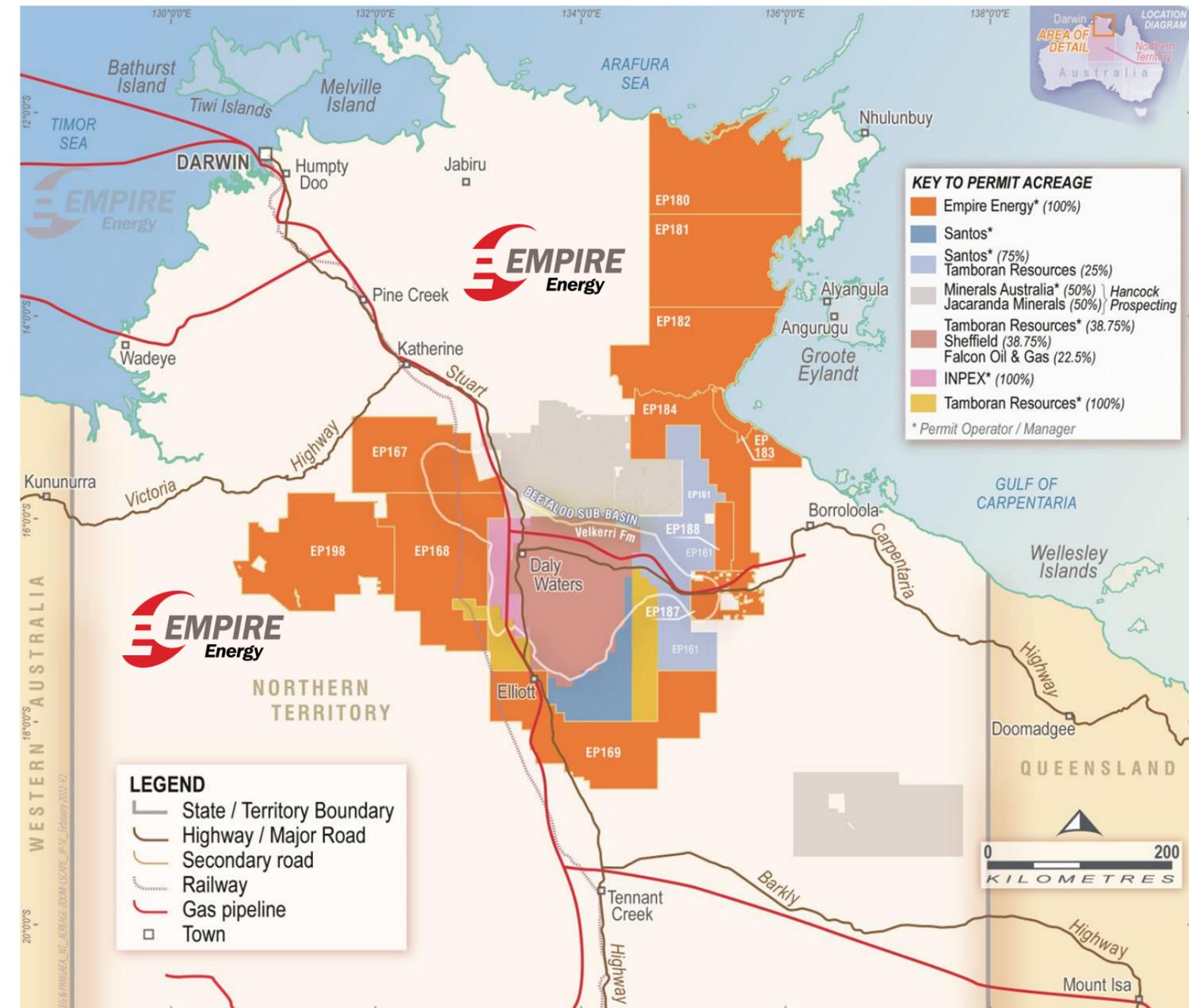
- NT Government has completed the Pepper Inquiry regulatory implementation process, **finalising the regulatory settings to allow the commencement of commercial production in the Beetaloo**

Australian Government Mandatory Code of Conduct

- Small producers (less than 100 PJ p.a. or equivalent to \$1.2bn in revenue at \$12/GJ) are **exempted from the gas price cap and reasonable pricing provision** provided they supply the domestic market

Darwin Middle Arm Sustainable Development Precinct (supported by Beetaloo gas)

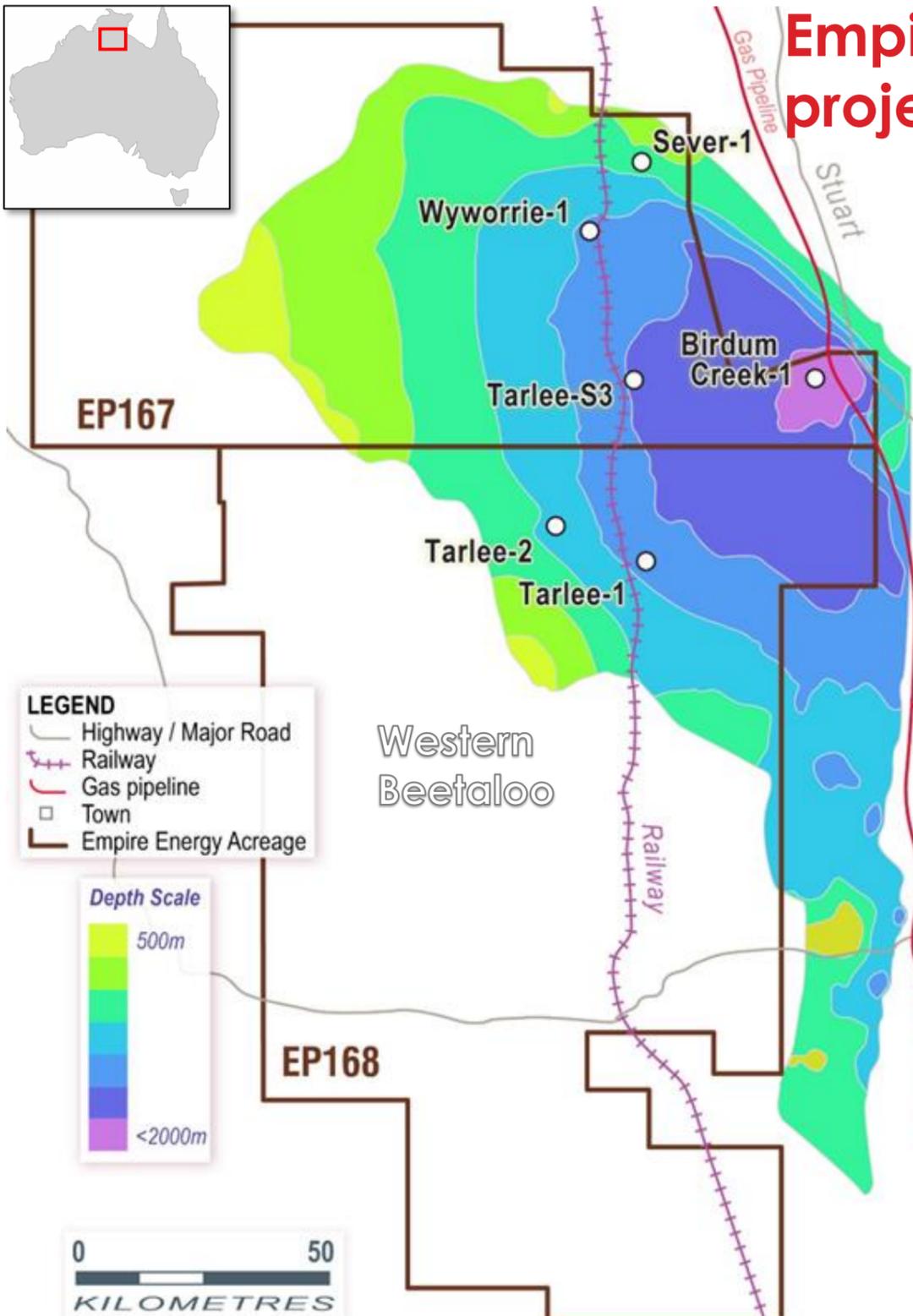
- A\$1.5 billion commitment made by both major parties to support expanded port infrastructure at Darwin. **Includes A\$300 million for production of clean LNG and hydrogen; and A\$550 million for renewable energy supply, CCUS and other technologies**
- On 17 May 2023, NT Government announced shared carbon capture utilisation and storage commitment for Middle Arm



Large Pilot Development and Appraisal Position (100% EEG)



Empire has two large scale appraisal and pilot development projects across the Beetaloo Sub-basin connected to infrastructure

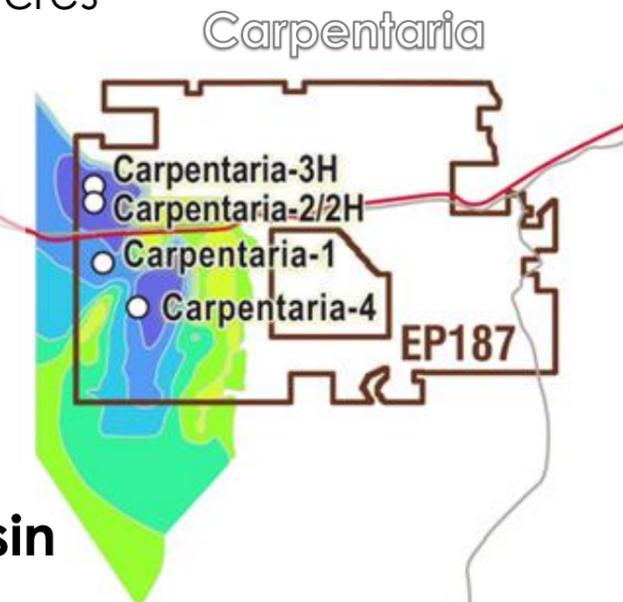


• Carpentaria – Pilot Development

- Covers 110,000 acres
- Fully delineated with 2D seismic, two horizontal stimulated wells, one vertical multistage simulated well, one step-out vertical well and three Extended Production Tests
- Focused on FID for pilot project in 2023 and construction in 2024
- 2C Contingent Resource 1,739 PJ (~1.5 TCF)
- 2U Prospective Resource 3,542 PJ (~3.0 TCF)

• Western Beetaloo – Appraisal

- Large, extensive play covering ~1m acres
- Delineated by five spatially drilled wells, ~1,800 metres of core and >1,000 km 2D seismic acquired
- Further de-risked by activity in Carpentaria (same rock)
- 2U Prospective Resource ~28 TCF



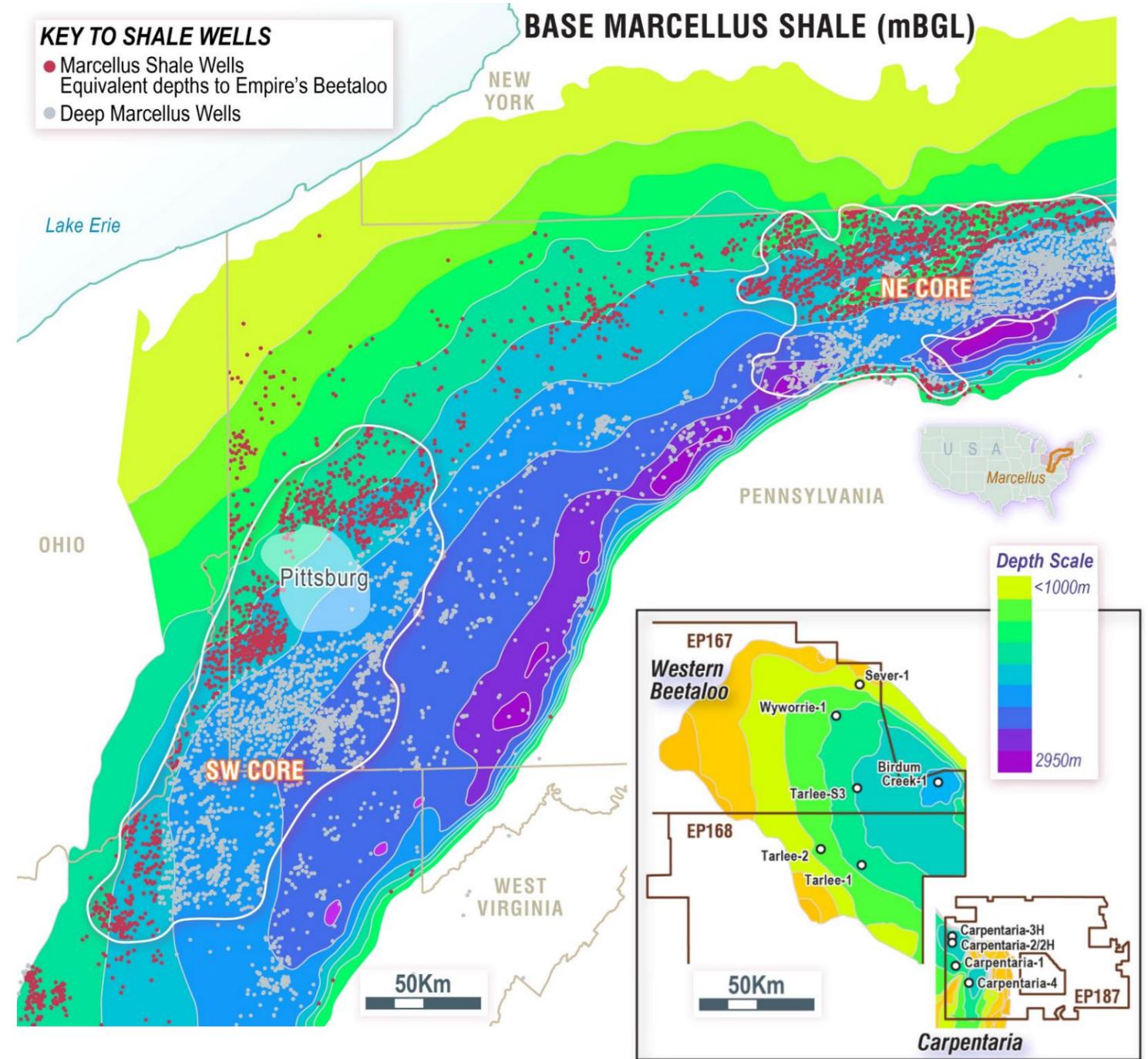
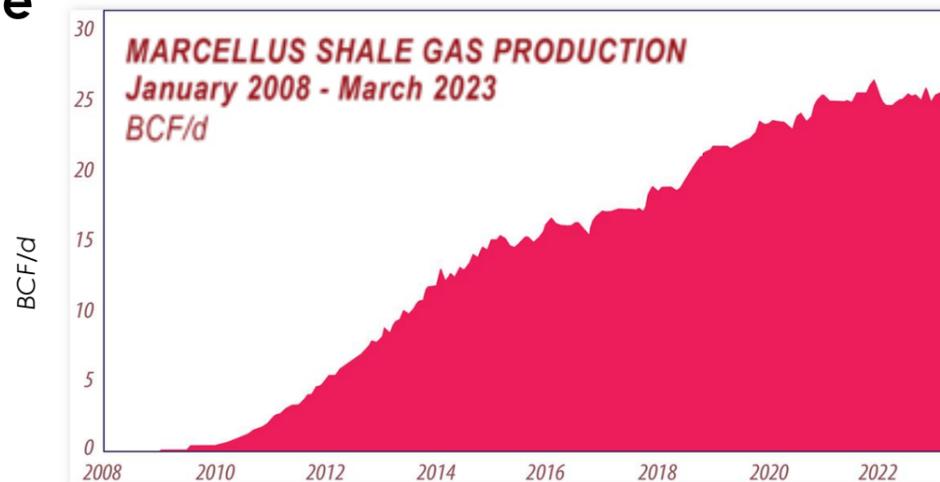
One of only three operators in the Basin

Empire's Beetaloo Footprint Comparable to Marcellus



- Empire's Beetaloo footprint is comparable in size to significant portions of the core areas of the Marcellus Shale play in the Appalachian Basin
- More than 9,000 wells are producing from similar depths to Empire Beetaloo play (~34 percent of all Marcellus wells)¹ across both core areas
- The majority of the more than 27,000 producing Marcellus Shale wells are less than 2,250 metres below ground level
- **Marcellus shale producing acreage has typically transacted at US\$5,000 to US\$25,000 per acre². Empire is valued at ~US\$70 per acre based on the Carpentaria Project and Western Beetaloo Project alone**

“Marcellus shale gas production has grown by 25 BCF/d over ten years”



Insert map: Empire's base Velkerri B Shale at same scale as base Marcellus Shale map

Source: U.S. Energy Information Administration - EIA - Independent Statistics and Analysis

1. EIA and relevant State databases

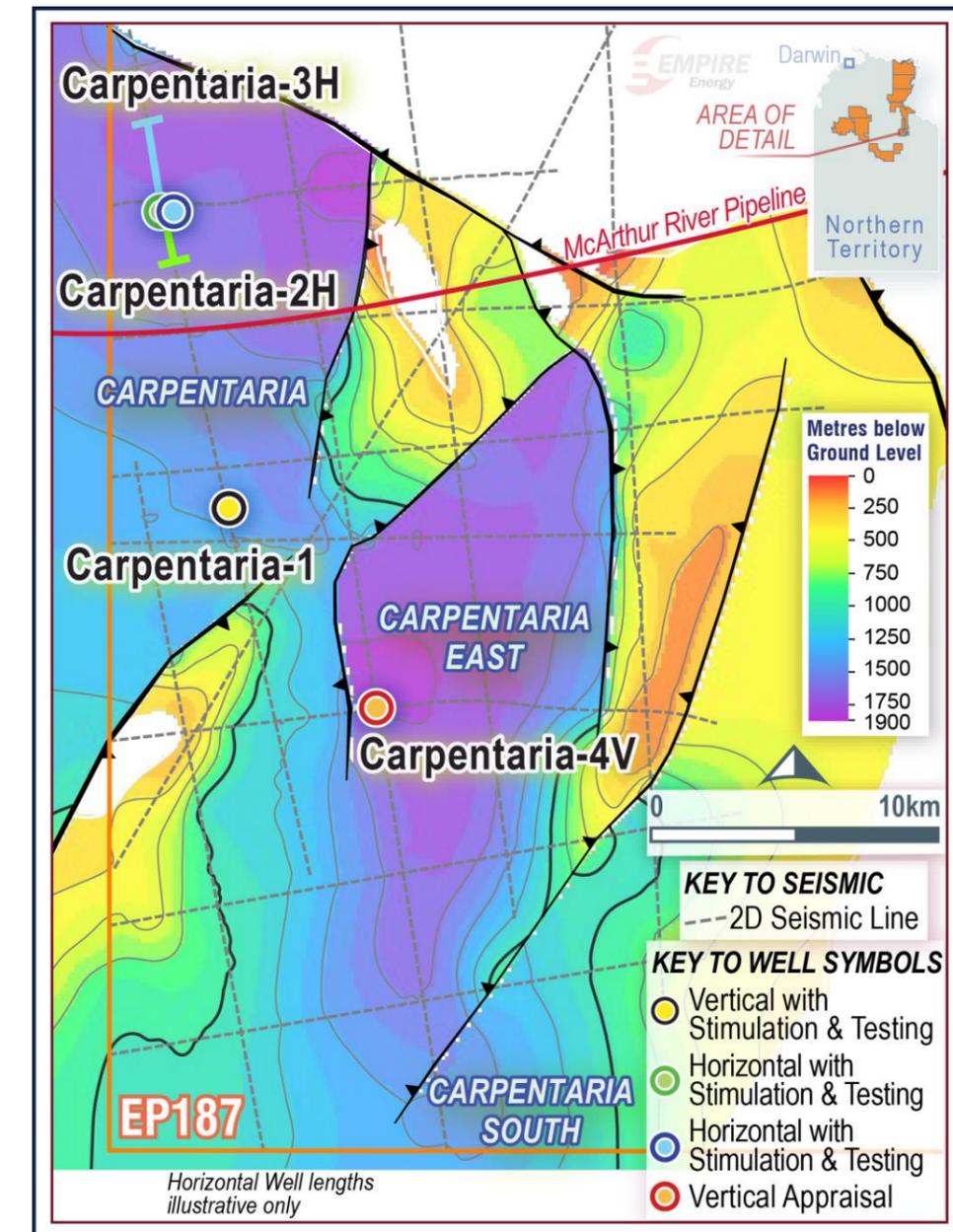
2. <https://mercercapital.com/energyvaluationinsights/ma-in-marcellus-utica-basins-2>

Exploration & Appraisal has Delivered Carpentaria Pilot Ready



Empire's focused, systematic and scientific approach to evaluating and de-risking the Velkerri Shale play in EP187 has proved a large resource in a cost-effective manner

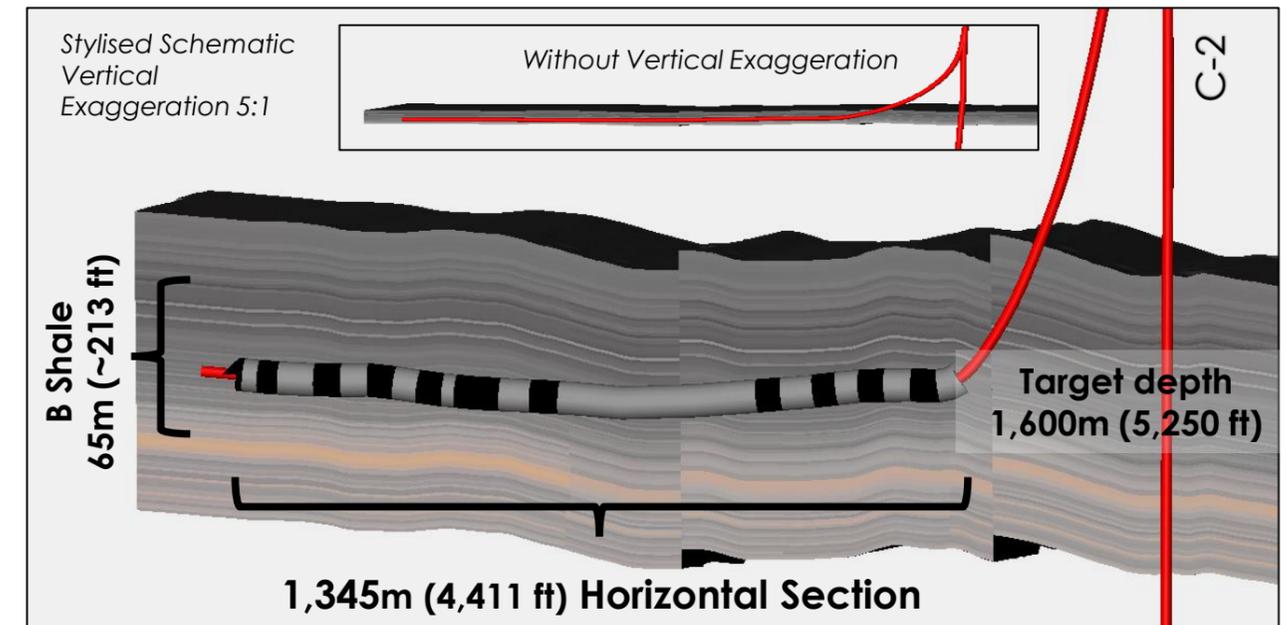
- 4 wells drilled have delineated a very large, discovered resource
 - \$100m invested has delivered >1,739 PJ (~1.5 TCF) discovered resource
- 2 fracked horizontal sections drilled, and flow tested with excellent results
 - Vertical Carpentaria-1 and Carpentaria-4V **confirmed stacked play**
- All drilling programs executed for ~50% of the cost of Beetaloo peers
 - Corporate overhead well below most comparable ASX peer
- **Gas resource scale and productivity now established to move into pilot production**
- 2D seismic coverage has mapped Velkerri shale at favourable depths across 110,000 acres
- **There are hundreds of drilling locations across Carpentaria and Carpentaria East fault blocks with multiple wells from each pad to minimise surface disturbance**



Empire's First Horizontal Well Flow Test A Success

Carpentaria-2H is the fourth horizontal well in the basin, was drilled 100% within zone, and successfully flowed gas to surface from all 21 frac stages

- **Carpentaria-2H ("C-2H") produced a total of 323 TJ (281 mmscf) over 127 days**
 - This equates to a **normalised rate of 8.25 TJ (7.2 mmscf) per day for an equivalent 3,000m horizontal development well** for the entire test period
- Gas composition remained consistent with high calorific value and **extremely low CO₂ (less than 1%)**
- C-2H was brought back online after an initial 51 days of testing to test the benefit of soaking with excellent results
 - **The post-soak 2023 IP30 is confirmed at 10.5 TJ (9.2 mmscf) per day for an equivalent 3,000 metre horizontal development well**
- Completed without the need for production tubing, well free-flowed through 4 ½" casing. Empire is likely to move to 5 ½" in future scenarios
- **These rates exceed the benchmark other Beetaloo players have put forth as commercial, at a capital cost of ~half of Empire's peers**



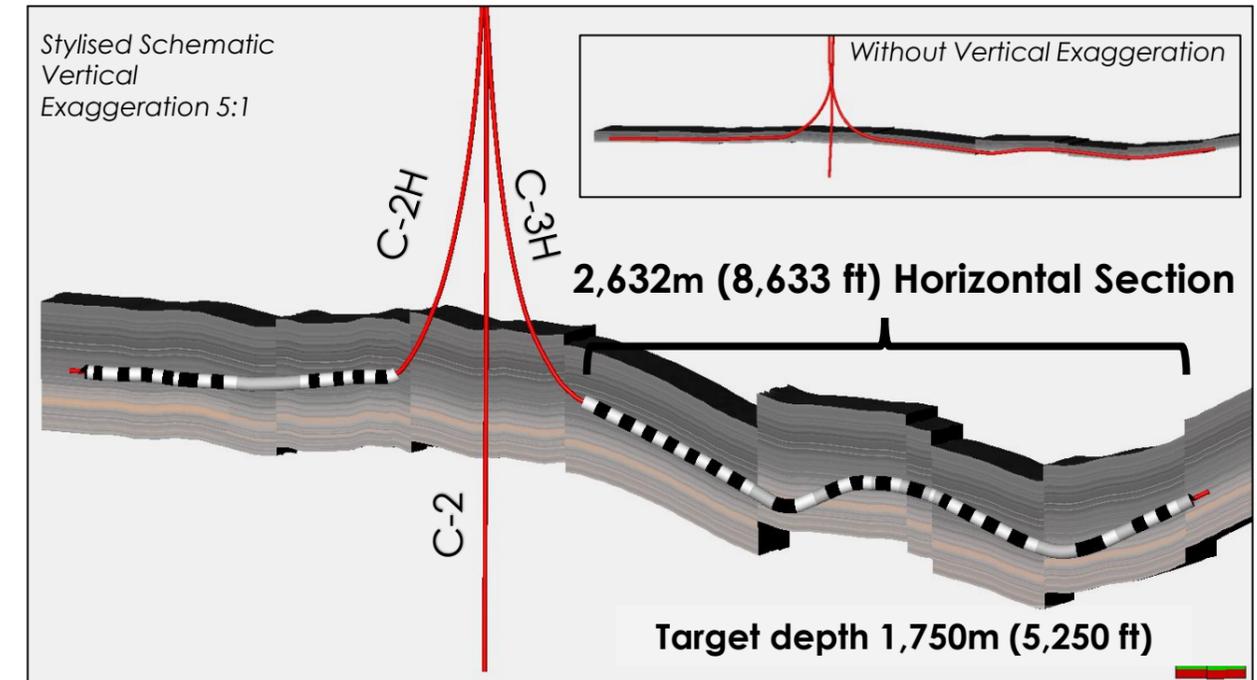
Carpentaria-2H flare

Empire's Record Breaking Carpentaria-3H Horizontal Well



Carpentaria-3H is the longest horizontal shale well, and the largest frac job ever executed in Australia, on time and ~\$6m under budget

- **Total horizontal lateral length of 2,632m (8,633 ft)**, with 2,374 m (7,786 ft) successfully placed within the target Velkerri B shale (**90% in zone**), with strong gas shows throughout the target zone
 - **Confirming long horizontals can be drilled in the Beetaloo**
- Carpentaria-3H successfully stimulated, significantly below budget, executing all planned 40 stages across 1,989m (6,526 ft)
- A total of 12.8 million lbs of proppant placed, averaged 319,000 lbs per stage (~2,000 lbs/ft). Comparable to US Shale frac intensity
- Carpentaria-3H was brought back online on 3 August 2023 and has demonstrated the material benefits to productivity of soaking, through significantly increased gas flow rates
- **Following reopening, Carpentaria-3H flowed gas at an average rate of 3.3 mmscf / day (3.8 TJ / day) over the first 30 days ("IP30")**
- **The Carpentaria-3H "post-soak" average daily production rates have increased 30% over the IP27 "pre-soak" test conducted in Q1 2023**



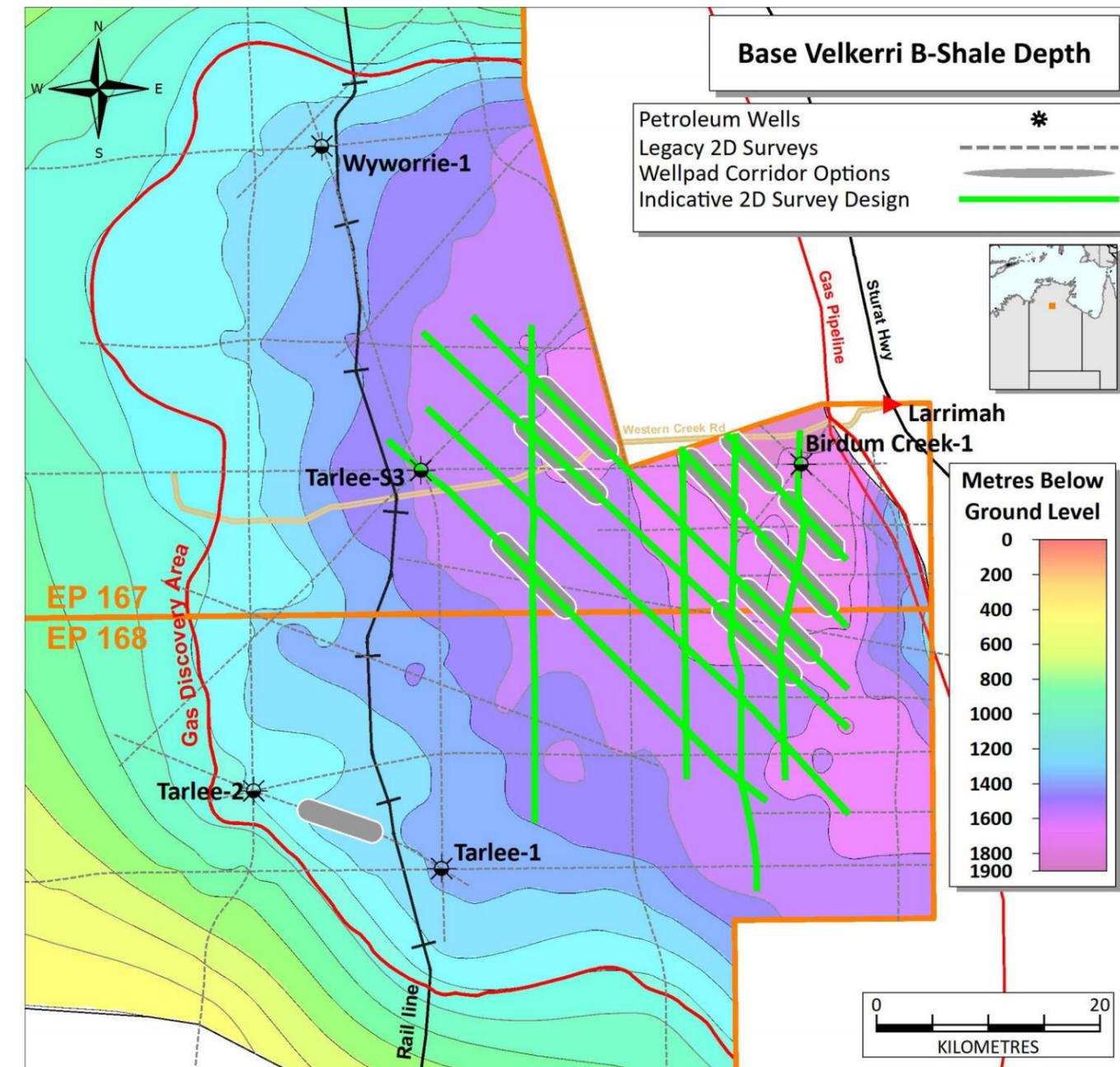
SLB 185 Rig drilling Carpentaria-3H in EP187

Western Beetaloo Work Program

Clearances are underway for a multi-year seismic, drilling and stimulation program across the >1 million acre Velkerri Shale play in Western Beetaloo

- **Planned appraisal activities are focused within the Gas Discovery Area where \$110 million spent by previous operator** (acquired by Empire for \$57 million primarily in equity during 2021)
- Same rocks as Carpentaria
- **Strategically located near gas pipeline, highway and rail line**
- **Environmental approvals submitted** to the Regulator for:
 - The acquisition of up to **~380 km in-fill 2D seismic** orientated for future horizontal wells
 - Clearance for **drilling, stimulation and flow testing of up to six horizontal wells** on six well pad locations
- **Land access agreements executed with pastoralists**
- The approvals have the potential to accommodate numerous production wells in a future commercial development scenario
- Current **2C** Contingent Resource of **167 PJ¹ (157.5 BCF)** (+3.5 MMBBLS)
- Current **3C** Contingent Resource of **441 PJ¹ (415.8 BCF)** (+14.1 MMBBLS)
- Current P(50) Prospective Resource of **~28 TCF and 764 MMBBLS**

1. 1.06 PJ per BCF applied by Empire



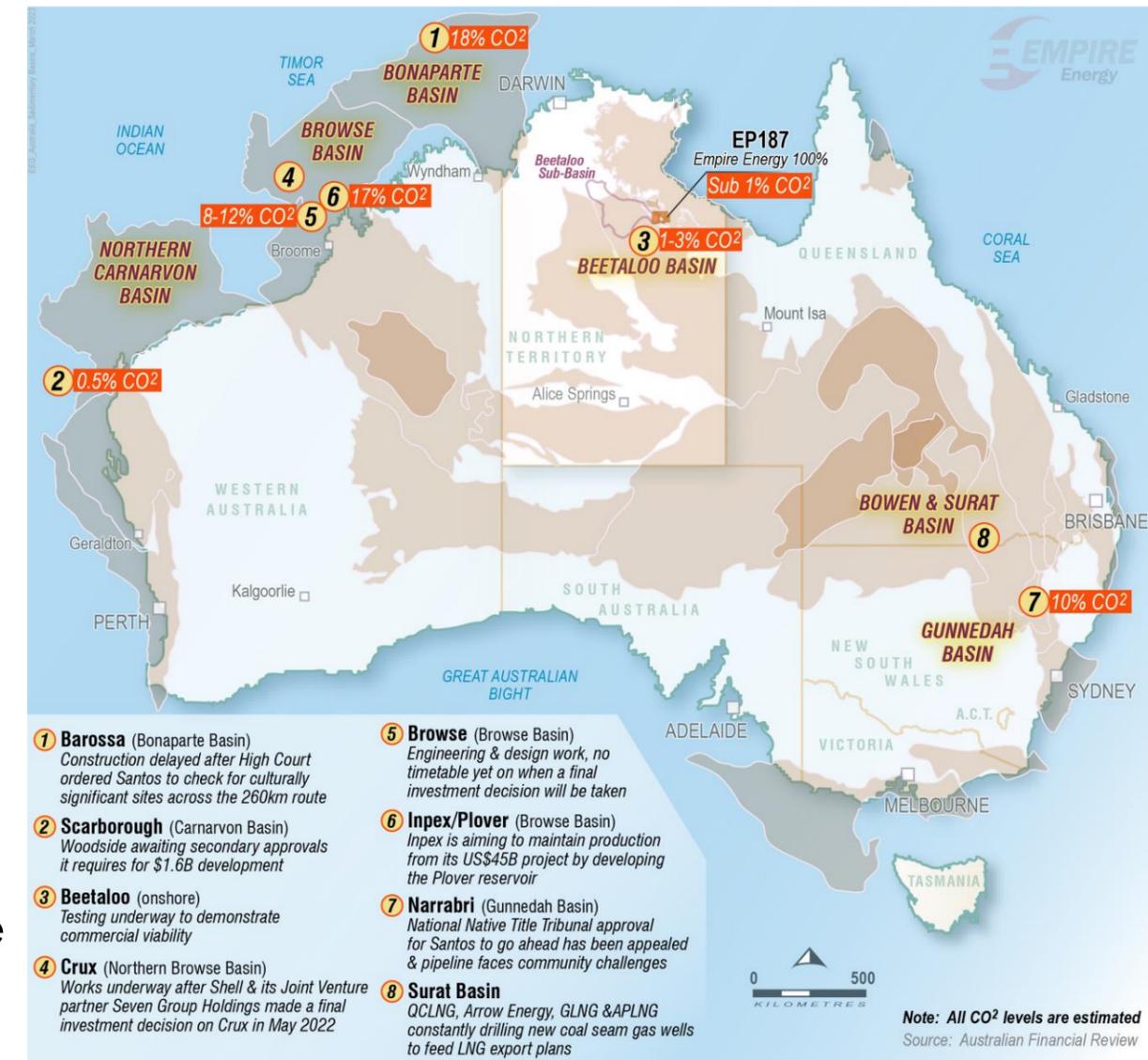
EP 167 and EP 168 100% EEG

Empire is Working Sustainably to Develop the Beetaloo



Empire is responsibly developing its Beetaloo gas resources

- Empire's forecast Greenhouse Gas ("GHG") emissions have been independently reviewed based on recent appraisal results, planned field development assumptions and the **National Greenhouse and Energy Reporting** framework¹
- Empire's Scope 1 emissions based on this analysis will include:
 - Fuel combustion e.g. gas for power, diesel use
 - Fugitive emissions associated with operations (aim to minimise)
- Empire estimates its **Scope 1 offsetting obligation is less than 5% of gross revenue** (at \$10/GJ gas price) for Carpentaria's full field economic life at the Australian Government's carbon price cap (\$75 per tonne indexed at 2% p.a. plus CPI). This obligation is **~2% of gross revenue at the current Australian Carbon Credit Unit ("ACCU") price**¹
 - Empire has commenced engagement with ACCU supply counterparties
- **Carpentaria CO₂ reservoir levels are extremely low (less than 1%)**
- Empire maintains strong relationships with Traditional Owners ("TO") on whose land it operates with their full, informed and prior consent
 - ~30 on-county meetings held with TOs to date. NLC exploration payments paid for the benefit of TOs and thousands of hours of employment for TOs to date



1. Estimates have been independently reviewed by HRL Technology Group Pty Limited (<https://www.hrlt.com.au>)

Empire is Connected to Market for Large Gas Volumes

- **APA Group (ASX: APA)** and Empire have executed an agreement for the establishment of exclusive midstream gas infrastructure furthering the memorandum of understanding as announced by Empire on 27 October 2021
- **APA will spend up to \$5 million** under a proposed early works agreement on Engineering and Design Concepts for midstream gas facilities associated with Empire's Carpentaria Pilot Project, which would materially reduce the capital requirements for Empire to commence commercial production
- APA and Empire are also working on concepts to transport **large volumes of gas from the Beetaloo to Australian east coast markets (in excess of 500 TJ/d)**. The leading concept considers the potential construction of a new pipeline connecting the Beetaloo to APA's existing Carpentaria Gas Pipeline between Mount Isa and Ballera (Queensland)
- Negotiations with NT Government owned utility **Power and Water Corporation** under the existing MOU are advancing to facilitate access to the McArthur River Pipeline
- **Empire is currently in active gas sales negotiations with multiple parties for supply of gas in both the pilot phase and full development phase**



Pathway to Carpentaria Pilot Project Production and Revenue



EXPLORATION & APPRAISAL

2021

✓ 2C Contingent Resource: 575 BCFe

✓ 2U Prospective Resources: ~48 TCFe

2022

✓ Gas Sales & Transportation: APA Group and Power and Water Corporation MoUs Executed

✓ Established \$15 million credit facility with Macquarie Bank to move to project financing

KEY ACTIVITIES TO CARPENTARIA PILOT PROJECT FID

2023

✓ Major Contingent Resource upgrade announced for EP187

✓ Carpentaria-2H flow rates: normalised IP30 of 10.5 TJ (9.2 mmscf) per day for an equivalent 3,000m horizontal development well

✓ Carpentaria-4V: intersected the same stacked Velkerri Formation shales as the Carpentaria Project wells thereby opening the Carpentaria East Area

1. Front End Engineering & Design ("FEED"): including engineering, economic modelling etc

• **Pilot development (up to 25 TJ/d) – over \$90m revenue per annum @ \$10/GJ**

2. Subsurface design planning

3. Execute gas sales and transportation agreements – discussions ongoing with multiple parties

4. Arrange financing for pilot (Macquarie Bank credit facility already in place)

5. Obtain government approvals: NT Petroleum Production Licence over Carpentaria

6. Negotiate Northern Land Council ("NLC") Production Agreement with Traditional Owners

POST FID

2024

1. Pilot project construction

2025

1. First gas sales

2. Planning to move to full development (200 TJ/d+ to East Coast then >1 PJ / day LNG export via Darwin)

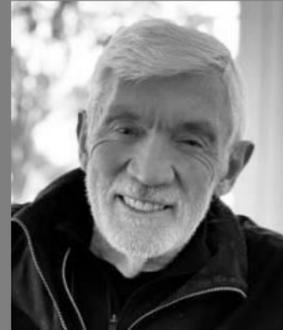


<https://empireenergygroup.net/>

ASX:EEG

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Appendix 1: Empire's Board of Directors



Peter Cleary

Chairman

- Distinguished 29-year career representing Santos, the North West Shelf Venturers and BP in Asia. His executive career was in LNG, pipeline gas and chemicals operations
- Member of the Executive Committee of the Australia Japan Business Co-operation Committee and the Australia Korea Business Council

Alex Underwood

Managing Director

- Associate Director Energy Markets Division of Macquarie Bank Limited (Sydney and Singapore)
- Director Natural Resources Division of Commonwealth Bank of Australia (Singapore)
- Financial Analyst BHP Billiton Petroleum (Perth)
- Experience investing debt and equity in the upstream oil and gas sector and identification of value creation opportunities for upstream oil and gas development / production assets

Paul Fudge

Non-Executive Director

- Controlling shareholder of Pangaea
- Significant investment experience in onshore Australian oil & gas, including being an early mover in the Queensland Coal Seam Gas industry and in the Beetaloo Sub-Basin
- Paul brings significant business and investment experience to the Board of Empire

Jacqui Clarke

Alternate Director to Paul Fudge

- 30 years professional services experience, with over 15 years as a Partner at Deloitte.
- Jacqui is a Chartered Accountant and Fellow of the Institute of Chartered Accountants, Graduate of AICD (Australian Institute of Company Directors), Chartered Tax Advisor and Justice of the Peace

Louis Rozman

Non-Executive Director

- Former Managing Director of CH4 Gas which merged with Arrow Energy and later acquired by PetroChina and Shell
- Founding principal of Pacific Road Capital, a resources investing manager of private equity funds
- Former Chief Operating Officer of AurionGold Limited
- Chairman of the VALMIN Code Committee for the AusIMM and Australian Institute of Geoscientists

Prof. John Warburton

Non-Executive Director

- Highly regarded petroleum geoscientist experienced in big fields
- 30 years technical & leadership experience in leading E&P companies including BP, LASMO-Eni and Oil Search
- Previously Chief of Geoscience & Exploration Excellence for Oil Search

Appendix 2: A Globally Significant Resource Position



Shale Unit	Contingent Resources (Liquids)			Contingent Resources (Gas)			Prospective Resources (Liquids)			Prospective Resources (Gas)		
	Low Estimate (1C)	Best Estimate (2C)	High Estimate (3C)	Low Estimate (1C)	Best Estimate (2C)	High Estimate (3C)	Low Estimate (1U)	Best Estimate (2U)	High Estimate (3U)	Low Estimate (1U)	Best Estimate (2U)	High Estimate (3U)
	<i>mmbbls</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>PJ</i>	<i>PJ</i>	<i>PJ</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>PJ</i>	<i>PJ</i>	<i>PJ</i>
Kyalla	0.8	3.0	11.1	0.8	4.8	29.4	88	378	1,571	195	908	5,184
Mid Velkerri	0.1	0.5	3.0	364.3	1,901.4	3,916.8	76	386	1,938	10,454	31,916	92,236
Barney Creek	-	-	-	-	-	-	-	-	-	1,731	11,716	48,103
Total	0.9	3.5	14.1	365.2	1,906.1	3,946.1	164	764	3,509	12,380	44,540	145,523

Empire 2C Contingent Resource of **1,906 PJ (1,625 BCF gas)** and **3.5 MMBBLs liquids**

Empire P(50) Prospective Resource of **44,541 PJ (42 TCF gas)** and **764 MMBBLs liquids**

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