

**ASX:EEG**

## **Beetaloo Operations Update**

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Level 19, 20 Bond Street  
Sydney NSW 2000

Empire Energy Group Limited (“Empire”) is pleased to provide an update on preparation for the fracture stimulation and flow testing of its 100% owned-and-operated Carpentaria-1 vertical exploration well in EP187, located on the eastern side of the Northern Territory’s Beetaloo Sub-basin.

### **Comments from Managing Director Alex Underwood:**

2020 has been a breakout year for Empire. We drilled our first Beetaloo Basin well, Carpentaria-1, which intersected the thickest interval of Middle Velkerri Shale of any well drilled in the basin to date, with the highest liquids to gas ratio. Following this success, we are now planning for appraisal stimulation and flow testing to commence at the beginning of next year’s Dry Season.

Multiple operators across the basin have confirmed their intention to drill, fracture stimulate and flow test wells in 2021 also targeting the Velkerri Shale.

The world class potential of the Beetaloo is well recognised by Australia’s political leaders and major infrastructure developers, with billions of dollars of pipeline construction to connect the basin to the undersupplied East Coast and Darwin in advanced planning. Empire is closely involved in these infrastructure buildout discussions and has already commenced discussions with potential offtake customers. The presence of liquid hydrocarbons in our gas is attracting inquiries from major petrochemical manufacturers who are investigating the potential development of gas manufacturing operations in Darwin, consistent with the Northern Territory Gas Taskforce’s Five Point Plan to make the Territory a world class gas production, manufacturing and services hub.

Despite a challenging macro environment, 2020 has been a rewarding year for Empire, marked by substantial drilling success. We are focused on continuing to build the value of our resources over the year ahead. Thank you to our shareholders for your support.

### **Carpentaria-1 Fracture Stimulation and Flow Test Planning**

Empire has submitted an Environment Management Plan (“EMP”) for hydraulic stimulation of the vertical Carpentaria-1 well and the drilling and hydraulic stimulation of a horizontal section from the Carpentaria-1 wellbore targeting the Middle Velkerri Shale. The EMP has been accepted by the Northern Territory Department of Environment, Parks and Water Security (“DEPWS”) for final assessment with approval expected in Q1 2021. Once approved, the EMP will remain in place for five years.

The multi-stage vertical hydraulic stimulation of Carpentaria-1 will be run over the most promising liquids rich gas intervals of the Velkerri Formation. Data analysis to select these intervals is now being conducted by our technical team in readiness for commencement of field operations in Q2 2021. Empire is in active discussions with service providers to

execute the fracture stimulation and they have confirmed that the necessary equipment will be available. The fracture stimulation and flow testing will be funded from cash at bank.

### **Carpentaria-1 Core Analysis**

Analysis of the 50 sidewall cores taken from the most promising target horizons of the Velkerri Shale is underway at the W.D. von Gonten laboratories in Houston, Texas. Detailed analysis of each core will establish porosity, permeability, mineralogy, axial strengths and other properties relevant to the productivity of these shales and their likely response to hydraulic stimulation. These results will be integrated with and calibrate the downhole log data sets acquired by Schlumberger.

Information developed from these data will then enable a more refined definition of the Velkerri Shale stratigraphy and lead to optimum strategies for fracture stimulation and flow testing planned for Q2 2021. The final set of core analyses is expected in mid-January.

### **Updated Resource Assessment**

Following receipt of the final core analysis results, Empire will commission Netherland Sewell & Associates (“NSAI”) to update Empire’s Independent Prospective Resource Report. Empire expects a material change in the estimate given the presence of liquids rich gas in Carpentaria-1.



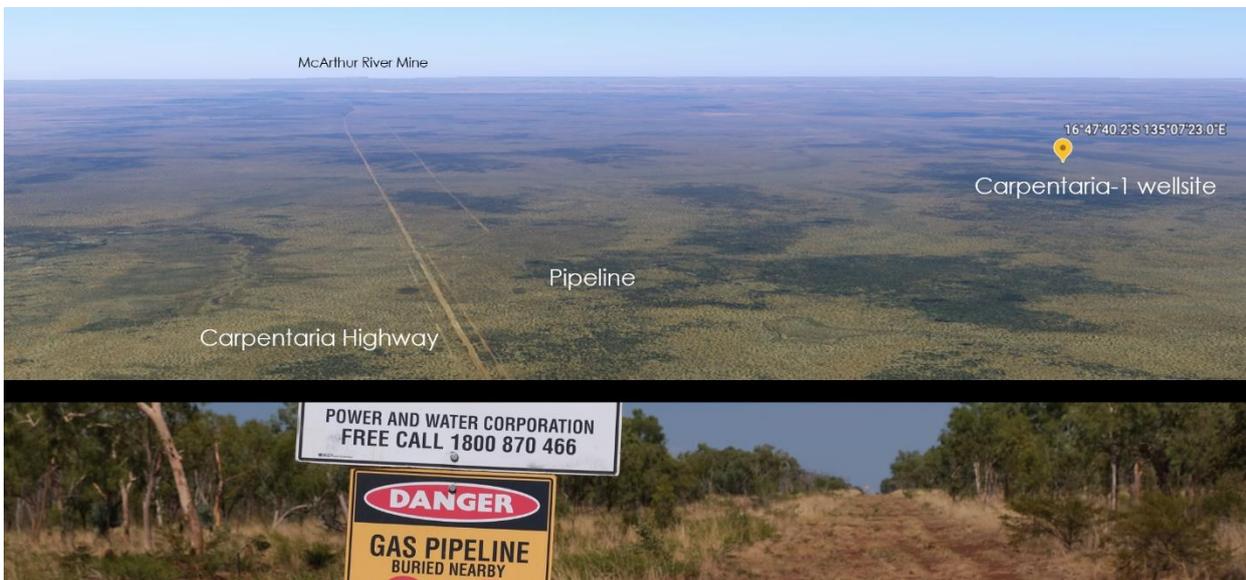
**Carpentaria-1 Velkerri Shale core samples**

### Strategies for Early Commercialisation of Empire Beetaloo Gas

Empire's management team is building strategies for the Company to be first operator to sell commercial volumes of Beetaloo Basin liquids rich gas into the Australian market.

Initial commercialisation could be via the Daly Waters to McArthur River Mine Pipeline which runs through EP187 and lies 5.7km from the Carpentaria-1 wellhead. To the east it supplies the McArthur River Mine Power Station, a 77MW gas fired power plant supporting Glencore's large scale zinc mining operation with ~9TJ/d of energy.

The pipeline has a nameplate capacity of 16TJ/d and conceptually Empire could deliver gas in both directions from a Carpentaria-1 spur line, with the 9TJ/d eastward to McArthur River Mine and 16TJ/d westward to Daly Waters and domestic markets for a total of 25TJ/d, an attractive economic proposition for maiden production.



### Daly Waters to McArthur River Mine Pipeline adjacent to Carpentaria-1

On 11 November 2020, Jemena, a leading gas pipeline and infrastructure owner and operator announced a binding Memorandum of Understanding with Tamboran Resources (25% Santos' joint venture EP161) for the construction of new pipeline infrastructure connecting the Beetaloo Basin to Australian East Coast markets and Darwin.

Empire has been speaking to major Australian pipeline infrastructure operators regarding opportunities to transport large volumes of gas from EP187 to the East Coast and Darwin. Discussions are also underway with potential domestic gas purchasers to facilitate the sale of ramp up gas. Empire has fielded inquiries from global petrochemical operators regarding offtake opportunities for liquids offtake (especially ethane, C<sup>2</sup> and propane, C<sup>3</sup>) as feedstock for newbuild plants in Darwin. Heavier ends (C<sup>4</sup> and above) could be sold into Asian spot markets through Darwin.

### Other Basin Operators

Empire has been one of the most active operators in the Beetaloo Basin in 2020, drilling one of the two wells in the basin (the other being Origin’s Kyalla-117 fracture stimulated well which was recently drilled and is currently carrying out flow testing operations).

A material ramp-up in activities is expected in 2021, with at least five wells to be drilled and flow tested including the flow testing of Carpentaria-1 which Empire drilled this year. Successful flow testing by other operators would have a material impact on the profile of the Beetaloo Basin accelerating it through the current appraisal phase.

Operator	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
	<b>Empire Q4 2020 / Q1 2021 Work Program</b> <ul style="list-style-type: none"> <li>W.D. Von Gonten Laboratories, LLC core analysis results</li> <li>New NSAI prospective resource assessment</li> <li>NT Government approvals for Carpentaria-1 vertical hydraulic stimulation, horizontal drilling and multi-stage hydraulic stimulation</li> </ul>		Carpentaria-1 Vertical Frack and Flow Test	~90 Day Production Flow Test	Target Maiden Contingent Resource
			Tanumbirini 2H – Horizontal Drill	Hydraulic Stimulation and Flow Test Tanumbirini 3H – Horizontal Drill	Hydraulic Stimulation and Flow Test
			EP136 ~550km 2D Seismic Acquisition	Velkerri - Drill	
	Kyalla 117 – Nitrogen Lift	Kyalla 117 – Flow Testing	Kyalla or Velkerri Horizontal Drill	Hydraulic Stimulation and Flow Test	

At its annual investor day on 1 December 2020, Santos confirmed it will drill two Beetaloo Basin horizontal wells with fracture stimulation and production testing in 2021. Santos also identified the low CO<sub>2</sub> content of the gas and the potential for a gas liquids window, a comment that aligns with Empire’s recent results.

On 25 November 2020, Origin Energy provided an operations update for its Kyalla-117 well which has been targeting the Kyalla Shale, a unit overlying Empire’s Velkerri Shale in the Beetaloo sequence. Origin General Manager for Beetaloo and Growth Assets, Tracey Boyes said “Our plan is to introduce nitrogen to lift the fluids in the well and lower pressures to assist with achieving a gas breakthrough, which is a common technique we carried out on the successful Amungee well in 2016.” Origin’s joint venture partner, Falcon Oil & Gas, has confirmed that nitrogen lift will commence this year. Origin also stated that it intends to drill, hydraulically stimulate and production test an additional horizontal well in the basin during 2021.

Elsewhere in the Basin, on 2 November 2020, Sweetpea Petroleum Pty Limited, the Operator of EP136, received approval for an EMP to acquire ~550 line km 2D seismic. Sweetpea was recently acquired by Santos’ joint venture partner, Tamboran Resources, which has indicated that it will drill a well on the Sweetpea properties in Q3 2021.

This ASX release has been authorised by the Managing Director.

For queries about this release, please contact:

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