

Empire Energy – Sights on Early Production in the Beetaloo



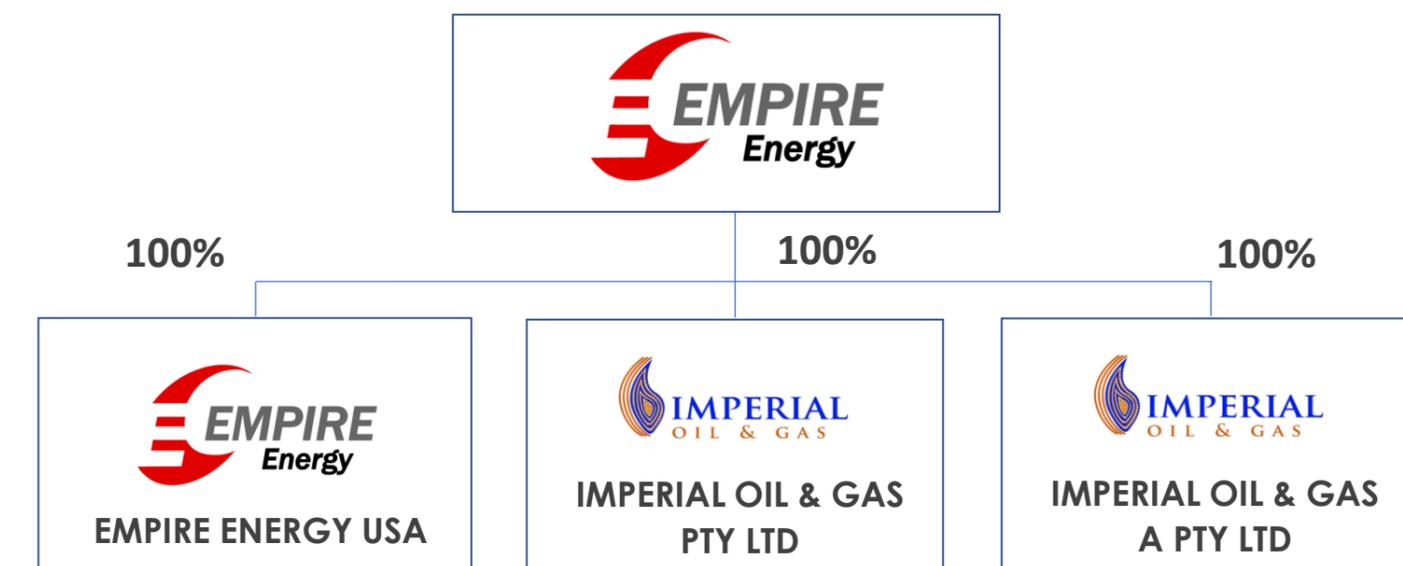
Corporate Snapshot



Capital Structure

Shares on issue ¹	613.3M
Share price	\$0.335
Market cap	\$205.5m
Net (debt ²) / cash	~\$17.5m
Enterprise value	~\$188.0m
Cash at bank³	~\$25.6m

ASX Share Price

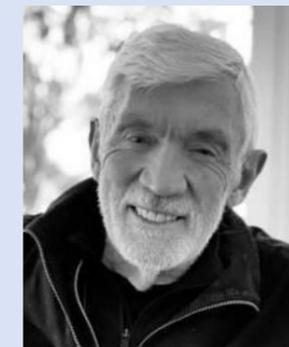


Top Shareholders

Pangaea (NT) Pty Limited ⁴	19.5%
Elphinstone Holdings Pty Limited	8.7%
Global Energy and Resources	5.3%
Energy and Minerals Group	4.3%
Macquarie Bank Limited	4.3%
Board of Directors ⁵	21.6%

1. Empire has 14.3m unlisted options on issue with an average exercise price of ~A\$0.63 per share. In addition, there are 13.2m Share Rights on issue to members of the management team and Board. Most of the Share Rights have performance hurdles tied to total shareholder return.
 2. Empire has a US\$7.5 million debt facility (drawn to US\$5.85 million) with Macquarie Bank maturing in September 2024 which is secured against the Company's USA gas production assets. Under new management, total debt has been reduced by over 80% since 2018
 3. Cash as at 31 December 2021
 4. Pangaea shares total 140m, which will be issued subject to Pangaea not holding an interest of more than 20% in Empire's ordinary shares at any point in time. Currently there are 119,894,868 issued shares held by Pangaea, with 20,105,132 being unissued
 5. Board shareholding includes Mr Paul Fudge (Pangaea) and excludes options and MD Rights

Empire's Board of Directors



Paul Espie AO

Chairman & Non-Executive Director

- Founding principal of Pacific Road Capital, a resources investing manager of private equity funds
- Former Chairman of Oxiana Ltd during the development of the Sepon copper/gold project in Laos
- Former Chairman of Cobar Mines Pty Limited after a management buyout
- Former Head of Bank of America operations in Australia, New Zealand and PNG

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

Peter Cleary

Non-Executive Director

- 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

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
- Non-Executive Director of Senex Energy

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

- 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

Pangaea Representatives

Industry leading Management



Kylie Arizabaleta

Financial Controller

- Longest serving Empire management team member
- Prior to joining the Company, Kylie worked in the Audit division of Chartered Accounting firms as a senior and lead external auditor where she gained broad experience in Audit and other Assurance Services



Ben Johnston

Vice President Business Development

- Director, Natural Resources & Energy, Commonwealth Bank of Australia
- Vice President, RBC Capital Markets energy investment banking team
- Chartered Accountant and MBA (Australian Graduate School of Management)
- Energy sector specialist across M&A, ECM and debt / project finance transactions



Sonia Harvey

VP Community and Government Relations

- Based in Darwin
- Joined Empire from the Energy Club NT where she was the founder and served as Chief Executive. In this role, she built deep relationships across Empire's stakeholder groups including with Northern Territory Government and Shadow Ministers and Department leaders, service providers and peers in our industry.
- These relationships will be invaluable to Empire as we progress through to development and seek to raise our profile in the Northern Territory.



Charles Dack

Environmental and Compliance Reporting Officer

- Environmental manager with qualifications in environmental engineering and environmental law.
- Extensive experience as the environmental regulator of the petroleum industry for the NT Government
- +6 years at the Northern Territory Government, employed as the lead Environmental Engineer for the NT Government to regulate the upstream petroleum industry.



Dr Alex Bruce

Chief Geoscientist

- PhD from the University of New South Wales (2001) in machine learning applications to geology
- 20 years experience across onshore and offshore projects from exploration to development and conventional and unconventional oil & gas
- Has held similar positions with other ASX oil & gas mid-caps including Drillsearch (acquired by Beach), AWE (now Mitsui), Roc Oil (now FOSUN) and Bridgeport Energy (part of New Hope Corporation)



Daniela Garrad

Geophysicist

- Over 35 years' experience with international and Australasian projects, including everything from basin scale regional studies, exploration and detailed field evaluation and development
- Started as a seismic interpreter with Esso Australia, and since worked in technical roles for diverse companies ranging from minnows, mid-caps to majors, most recently with Oil Search Alaska.
- Special interests and expertise in structural geology and sequence stratigraphy in both carbonate and clastic sedimentary systems.
- Holds a BSc(Hons) from The University of Newcastle and is a member of PESA, the AAPG and the EAGE

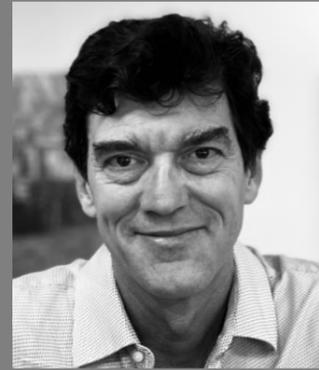


Todd Hoffman

Consultant Geoscientist

- Over 15 years experience across onshore conventional and unconventional oil and gas exploration and appraisal projects, including geoscience operations
- More than 12 years working on Proterozoic shales in the Beetaloo and McArthur Basins
- Involved in large CSG and shale discoveries in the Queensland and Northern Territory
- Previous roles with privately held Pangaea Resources

Industry leading Operating Team & Consulting Support



Dr Simon Hann

Principal Engineer

- Founding partner of inGauge and a well engineering professional with over twenty years' operational experience including conventional oil and gas, geothermal, HPHT, and coal seam gas drilling and completions.
- Fourteen years' management experience with Santos, Woodside and Shell including roles as Operations Manager, Drilling Team Leader, Drilling and Completions Manager and Production Manager;

Qualifications

- PhD Materials Science University of Queensland, 1998
- Masters of Engineering Science, Qualifier University of Queensland, 1993
- Bachelor of Engineering, Manufacturing and Materials, University of Queensland, 1992
- Shell International Exploration & Production (SIEP) Round I and Round II Well Engineering Competency Certification SIEP

Kelvin Wuttke

Principal Engineer

- Over 24 years of industry experience ranging from conventional onshore oil & gas to CSG and international offshore operations at Santos and Chevron.
- Technical expertise includes drilling & completions design, workovers, well testing, artificial lift, pipelines and surface facilities, across conventional and CSG environments.
- Experience includes managing combined drilling, completion and stimulation projects, remediation workovers, snubbing, fracture stimulation, underbalanced operations, and a wide variety of artificial lift projects.

Qualifications

- Registered Professional Engineer of Queensland, Mechanical & Petroleum
- Chartered Professional Engineer (MIE Aust CP Eng), Mechanical
- MBA, Queensland University of Technology, 2003
- Bachelor of Engineering, Mechanical, University of South Australia, 1992

Jordan Bunning

Principal Engineer

- Founding member of inGauge. Over 17 years' operational experience at Santos, Oil Search, Roc Oil and Origin in complex well execution and project management, this includes projects in conventional oil and gas, HPHT, coal seam gas and deep water bores.
- Jordan has experience in roles such as Drilling Manager, Drilling Team Leader, Senior Drilling Engineer and Drilling & Completion Engineer.
- Has been the lead in some of inGauge Energy's most successful projects including as in situ Drilling Manager for Westside Corporation, Comet Ridge and most recently Empire Energy's Northern Territory Carpentaria 1 well.

Qualifications

- Bachelor of Engineering, Petroleum Engineer (Hons), University of New South Wales, 2003

Jon Bennett

Project & Construction Manager

- Jon has 25 years operational experience, including twelve years management experience at Santos in roles such as Pre-Development Manager, Construction Manager, Civil Construction Manager and several management roles in large scale Agriculture.
- Jon is an experienced professional with a strong focus on business outcomes. Offering experience in planning, design, and construction of gathering, power, well-pad, civil and other CSG facilities. Proven strengths in business and project management and driving efficiencies through innovation and simplification over a range of industries.
- In his management roles Jon has proudly achieved and maintained industry leading EHS performance across operations.

Daniel Kalinin

Stimulation Consultant

- 28 years of international experience in Russia, Turkmenistan, Kazakhstan, Mexico, the Middle East, China, and Australia.
- 20 years Schlumberger career included starting several new locations in Russia, business development in Turkmenistan & Uzbekistan, project engineer at Karachaganak, G&G/stimulation support for an integrated well construction project in Mexico
- Unconventional experience includes shale & tight gas in Saudi Arabia, Kuwait, Bahrain, Oman, China, and various basins in Australia. He has designed the fracturing stimulation of the maiden horizontal Velkerri discovery well.
- Degrees in Geology, Economics; post-grad Integrated Reservoir Management from IFP & Imperial College; ResEng program at Tulsa University. Holds several patents and published a few SPE technical papers.



NETHERLAND, SEWELL & ASSOCIATES, INC.

WORLDWIDE PETROLEUM CONSULTANTS

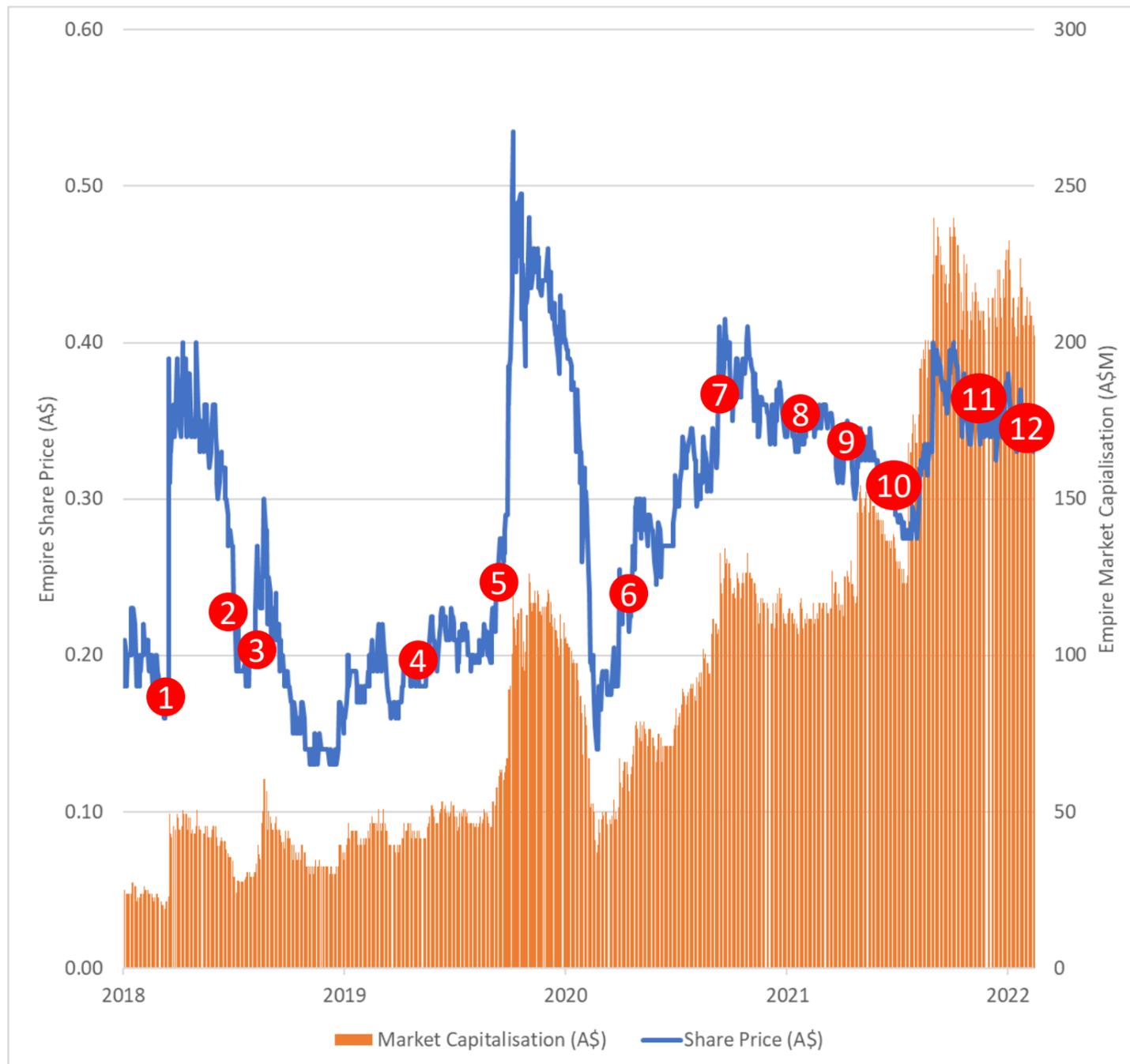


W.D. Von Gonten & Co. Petroleum Engineering

Empire Under New Management



Share Price Performance

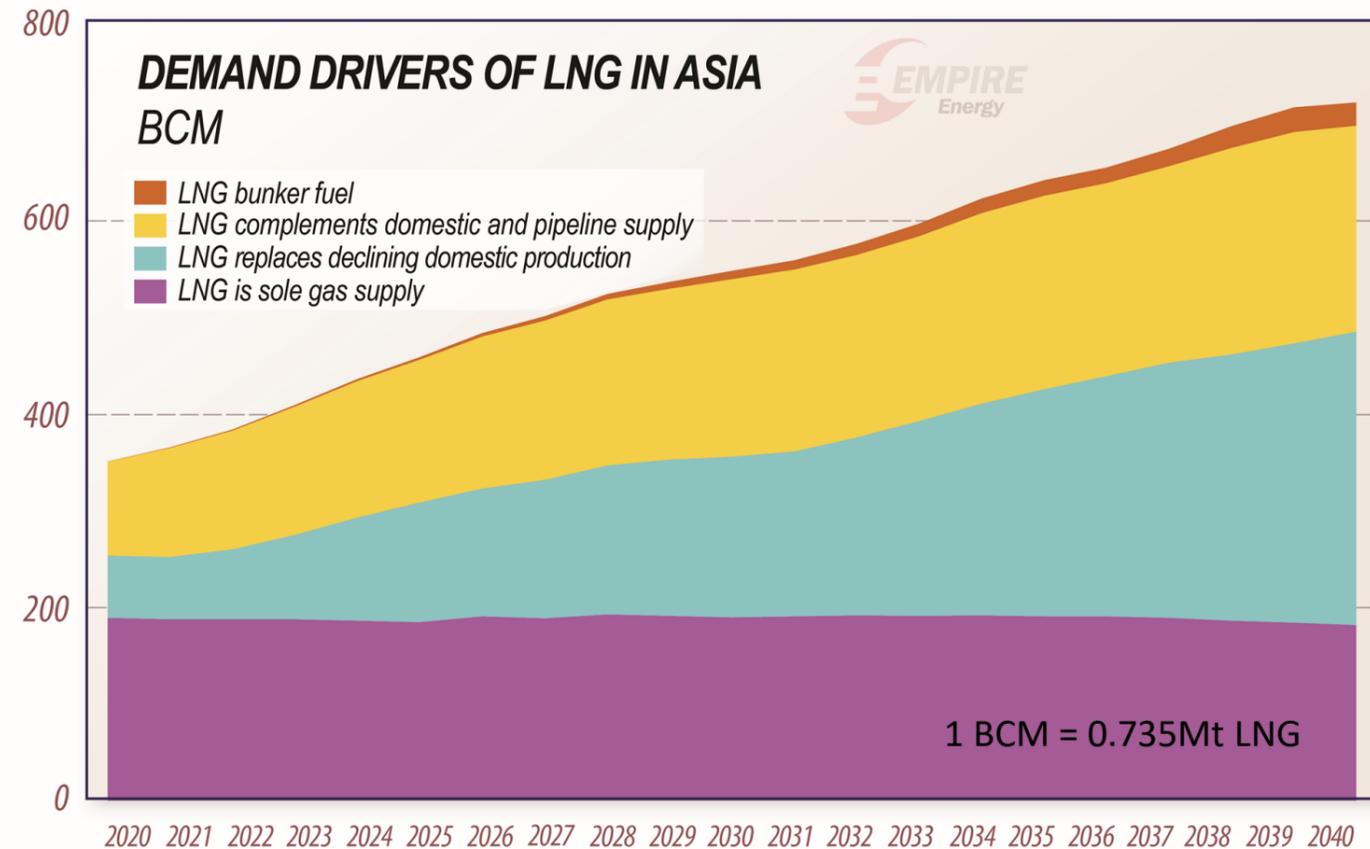
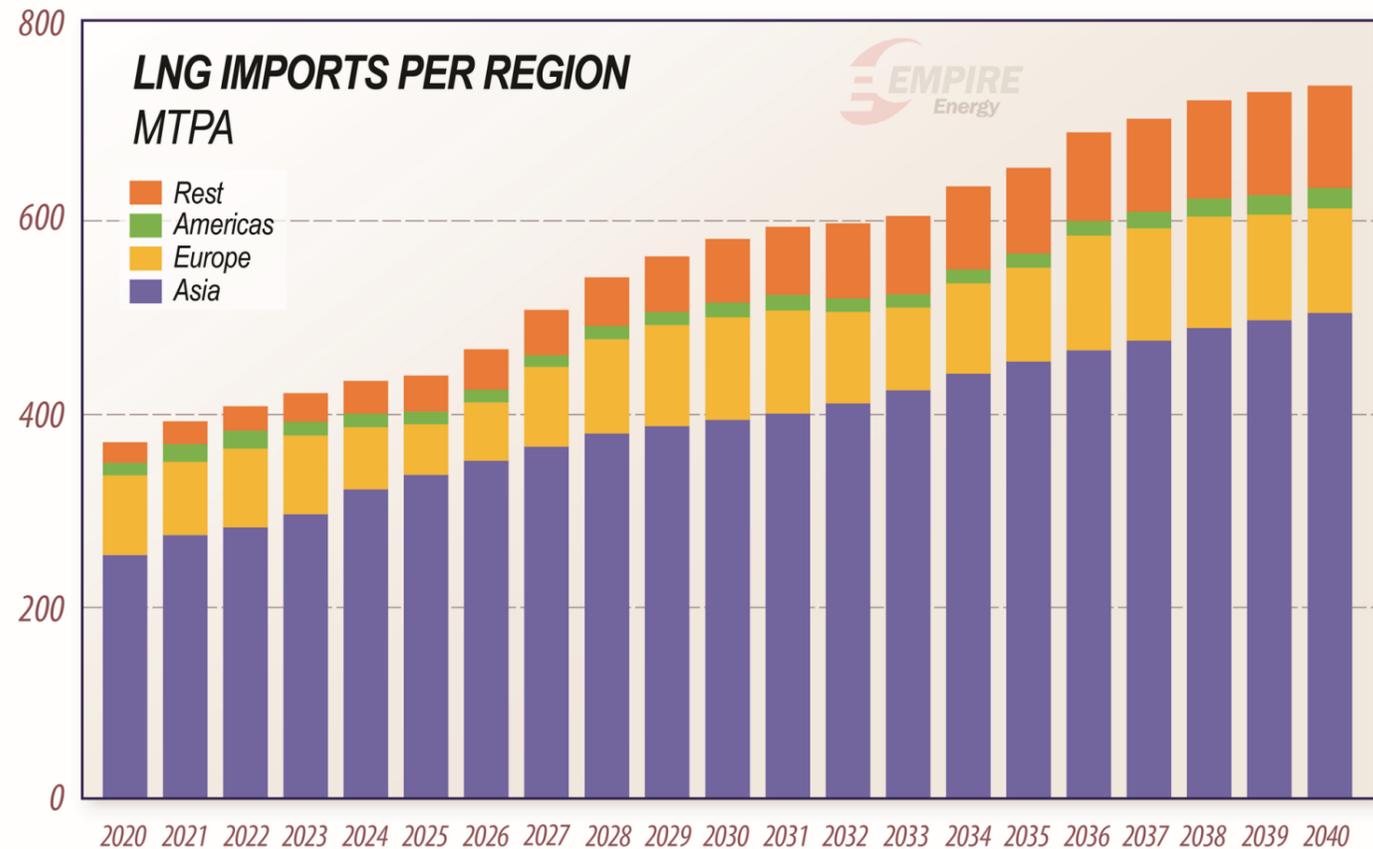


Key Events

1. Northern Territory fracking moratorium lifted
2. Recapitalisation of Empire completed. Debt reduced from US\$38 million to US\$26.5 million
3. Alex Underwood appointed Managing Director
4. Sale of Kansas oil assets to Mai Oil for US\$19.1 million in cash. Debt reduced to US\$7.5 million
5. Acquisition of 2D seismic in EP187
6. Empire's books NSAI certified 2U Prospective Resource of ~13.5 TCF for the NT
7. Carpentaria-1 vertical well in EP187 intersects liquids rich Velkerri shale gas
8. Empire's books NSAI maiden certified 2C Contingent Resource of 41 BCF
9. Acquisition of Pangaea Resources increasing NSAI 2C and 2U to 187 BCFe and ~41 TCFe, respectively
10. Strong flow rates reported at Carpentaria-1
11. Carpentaria-2H successfully drilled, cased and suspended
12. EP187 NSAI certified 2C and 2U increased to 396 BCF and 4.3 TCF, respectively



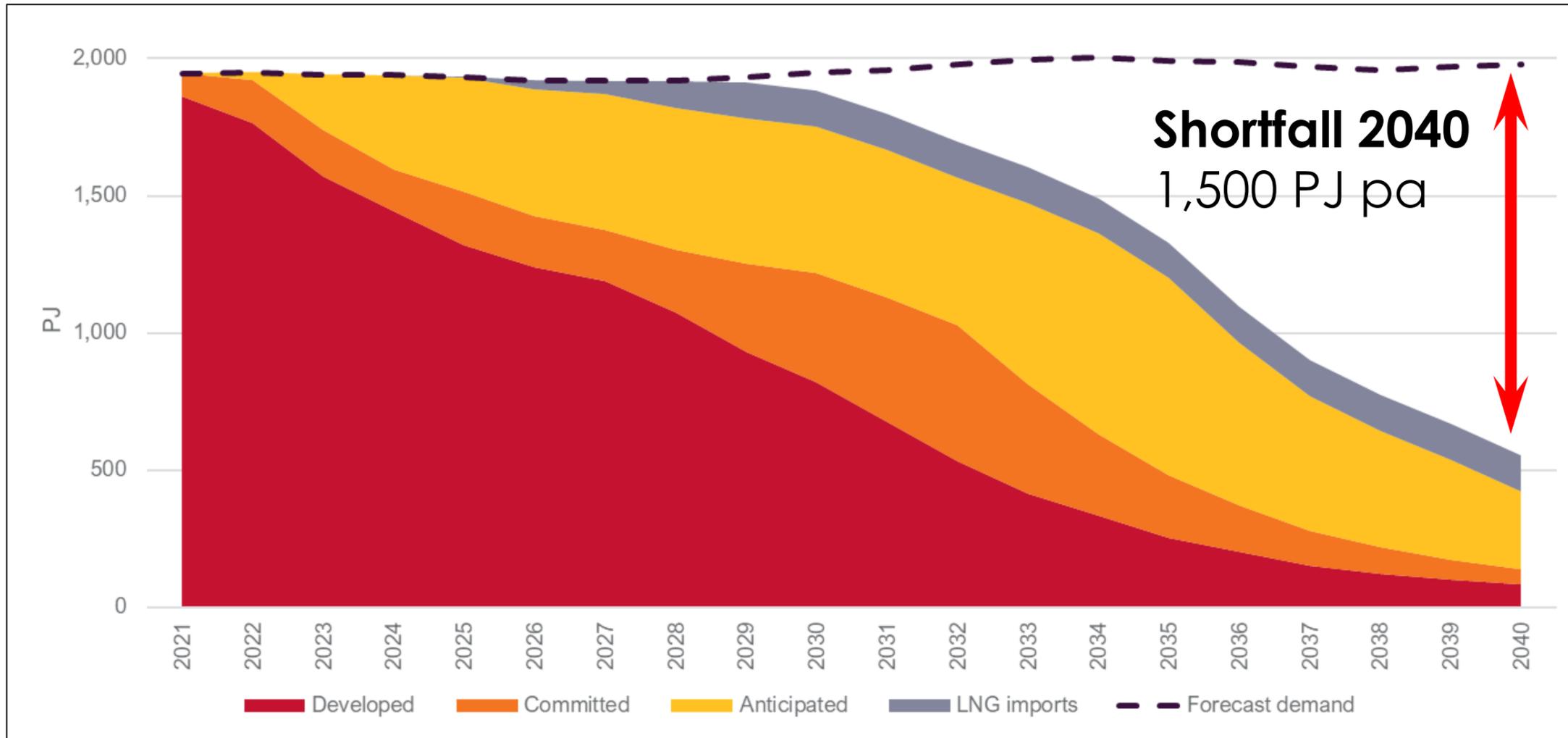
Gas running strong - Asian LNG demand increasing dramatically



Graphs extracted from: Global LNG Outlook – Shell LNG Outlook 2022

- Shell estimates global LNG demand will reach **700 million tonnes by 2040 (2021: 380mt)**, as demand for natural gas continues to grow strongly in Asia and gains further traction in powering hard-to-electrify sectors, tackling air quality concerns and meeting emissions targets
- Wael Sawan, Integrated Gas, Renewables and Energy Solutions at Shell said:
“As countries develop lower-carbon energy systems and pursue net-zero emissions goals, focusing on cleaner forms of gas and decarbonisation measures will help LNG to remain a reliable and flexible energy source for decades to come.”

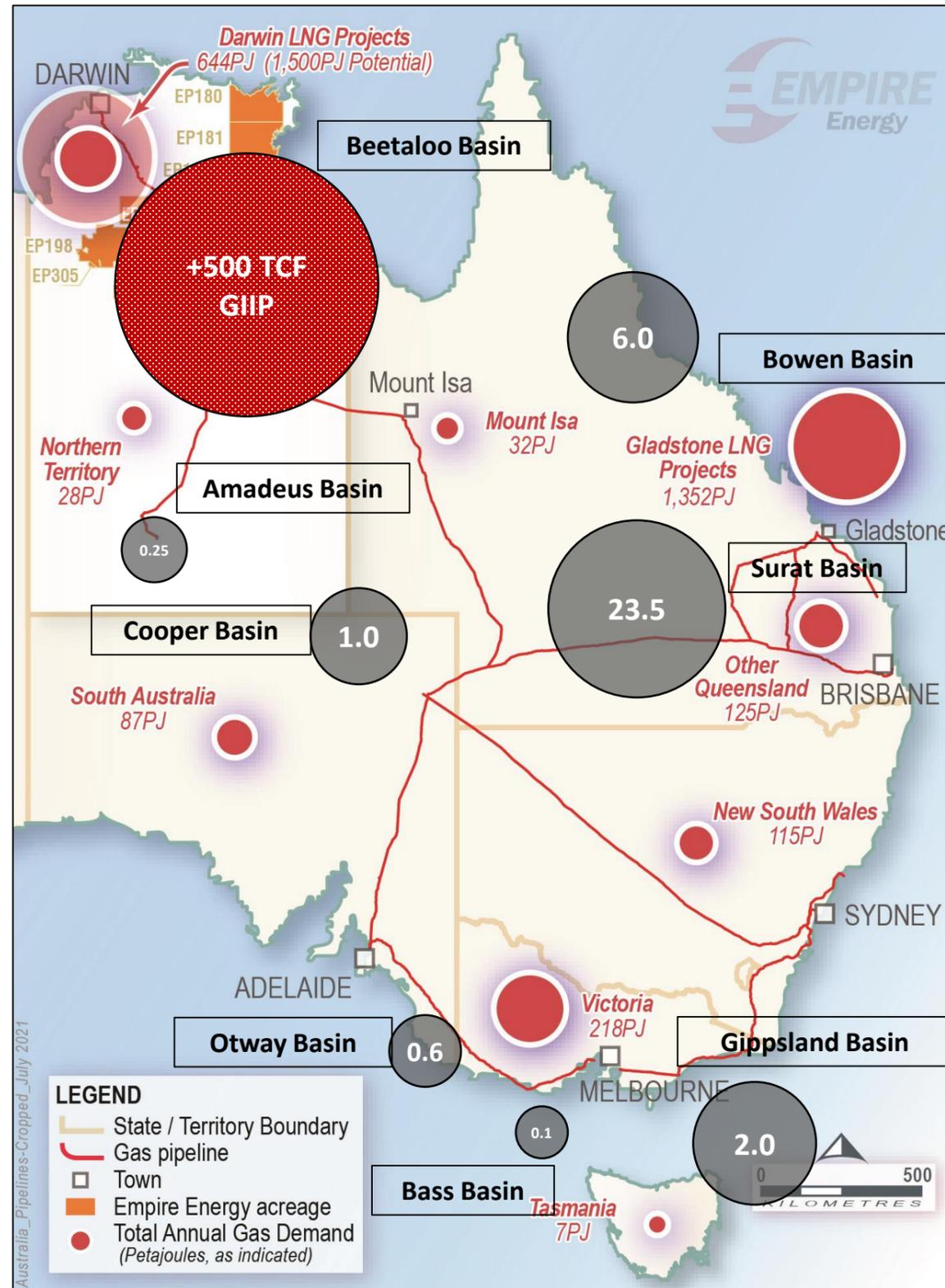
Australia's looming gas shortage – Beetaloo poised to fill the gap



- The Beetaloo Sub-basin is well positioned to meet this challenge with the scale of resource and existing infrastructure
- Empire's Beetaloo gas has notably low CO₂ (0.5% to 1%) and high calorific content
- Australian Federal Government demonstrating strong support through its Beetaloo Strategic Basin Plan committing \$220 million (including \$50 million to incentivise drilling by Beetaloo operators)

Australian Energy Market Operator 2021, *Gas Statement of Opportunities*

The Beetaloo is Australia's largest Undeveloped Gas Resource



- Total potential prospective resources in the Velkerri B shale unit 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%)
- Andrew Liveris, former Chairman of Dow Chemicals described the Beetaloo as “the **third-largest shale gas** deposit on the planet”*
- The Australian Federal Government, 14 January 2021: “The Beetaloo Sub-basin has the potential to rival the world’s biggest and best gas resources... **The \$224 million Beetaloo Strategic Basin Plan** sets out bold, innovative and cooperative actions. These actions will help us seize the opportunities presented by the natural resources in the Beetaloo.”

Source: 2P data sourced from ACCC's Gas inquiry January 2021 interim report (published February 2021)

*The Australian newspaper- 23 May 2019

Government supporting the Beetaloo

NT Government supports the development of the onshore gas industry

- The Final Report of the **Territory Economic Reconstruction Commission** highlighted the critical role of gas

Australian Government has launched the Beetaloo Strategic Basin Plan

- Beetaloo Cooperative Drilling Program has committed \$50m in grant funding to accelerate drilling activities in the Beetaloo to the end of 2022. Capped at \$7.5m per well for up to 3 wells per applicant to meet 25% of eligible expenditure.
- **Empire has executed grant agreements with the Australian Government for up to \$19.4 million for three horizontal appraisal wells**
- The Australian Government has committed \$174m to upgrade roads throughout the Beetaloo

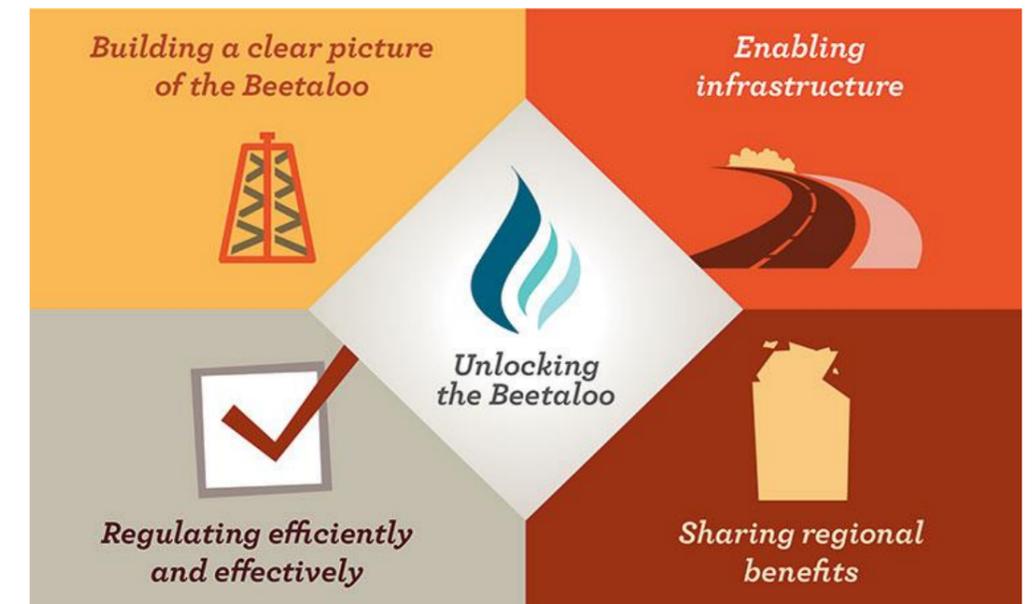
National Gas Infrastructure Plan (NGIP)

- The NGIP supports a strategic approach to gas infrastructure investment over the next 20 years and aims to guide industry to priority areas that need to be addressed to avoid a supply shortfall. **The NGIP also aims to unlock “critical basins” such as the Beetaloo Sub-basin before 2030**

Northern Australia Infrastructure Facility (NAIF)

- NAIF is a development financier with a lending facility (increased from \$5 billion to \$7 billion) provided by the Australian Government. NAIF’s purpose is to accelerate infrastructure development across northern Australia. Energy / gas is a key focus sector

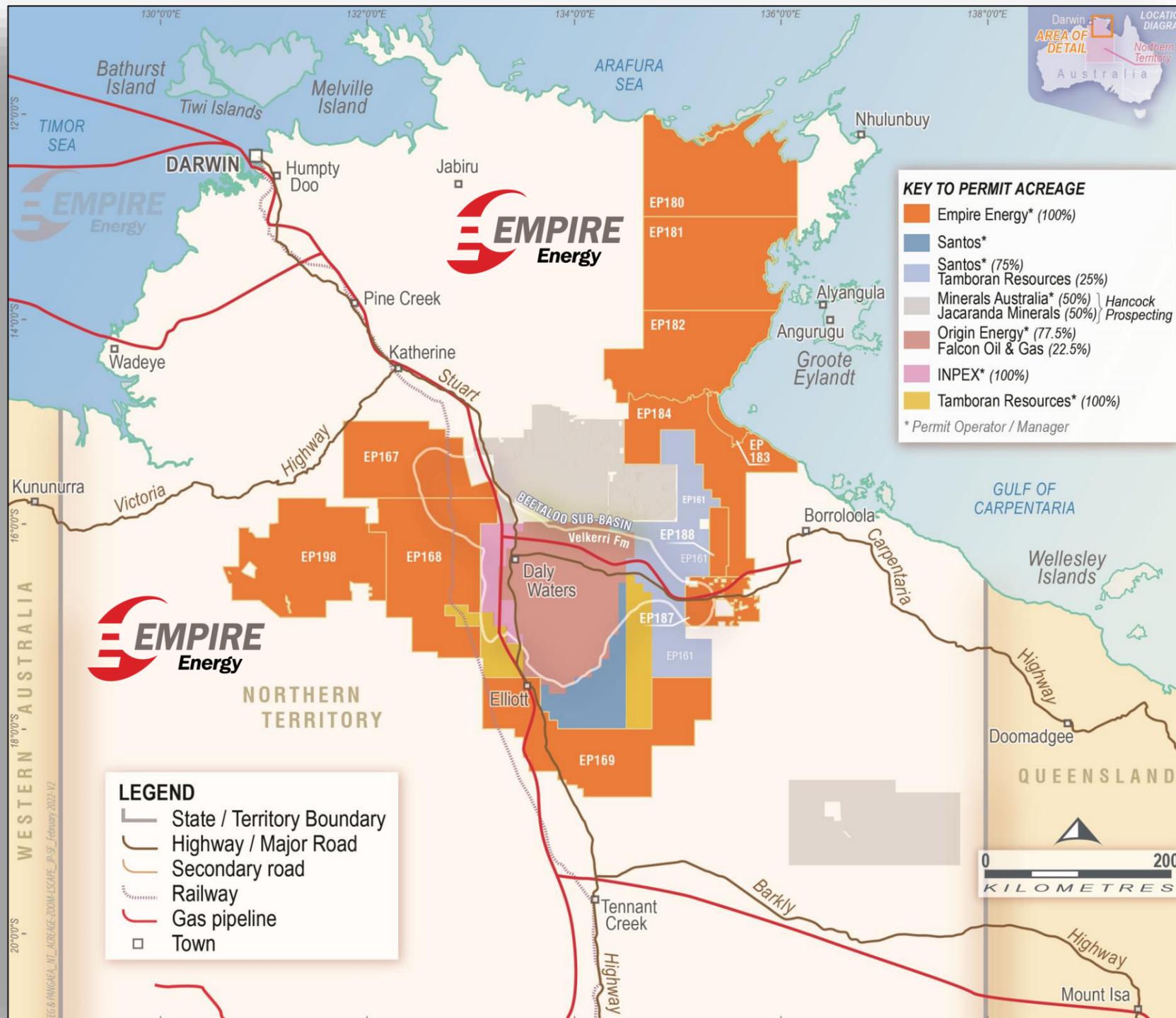
Strong Federal and NT bipartisan support for development of the Beetaloo



This graphic by the Australian Government illustrates its approach to unlocking the Beetaloo



Empire's 28.9 million acre footprint



- Pangaea and EMG invested ~\$110 million in exploration and appraisal between 2012 and 2015
- Empire acquired for \$57 million
- Stuart Highway, Darwin to Adelaide rail corridor and the Amadeus Gas Pipeline (connecting to the East via the Northern Gas Pipeline)

Prospective Resources (2U)

Gas	43 TCF
Liquids	797 MMBBLs

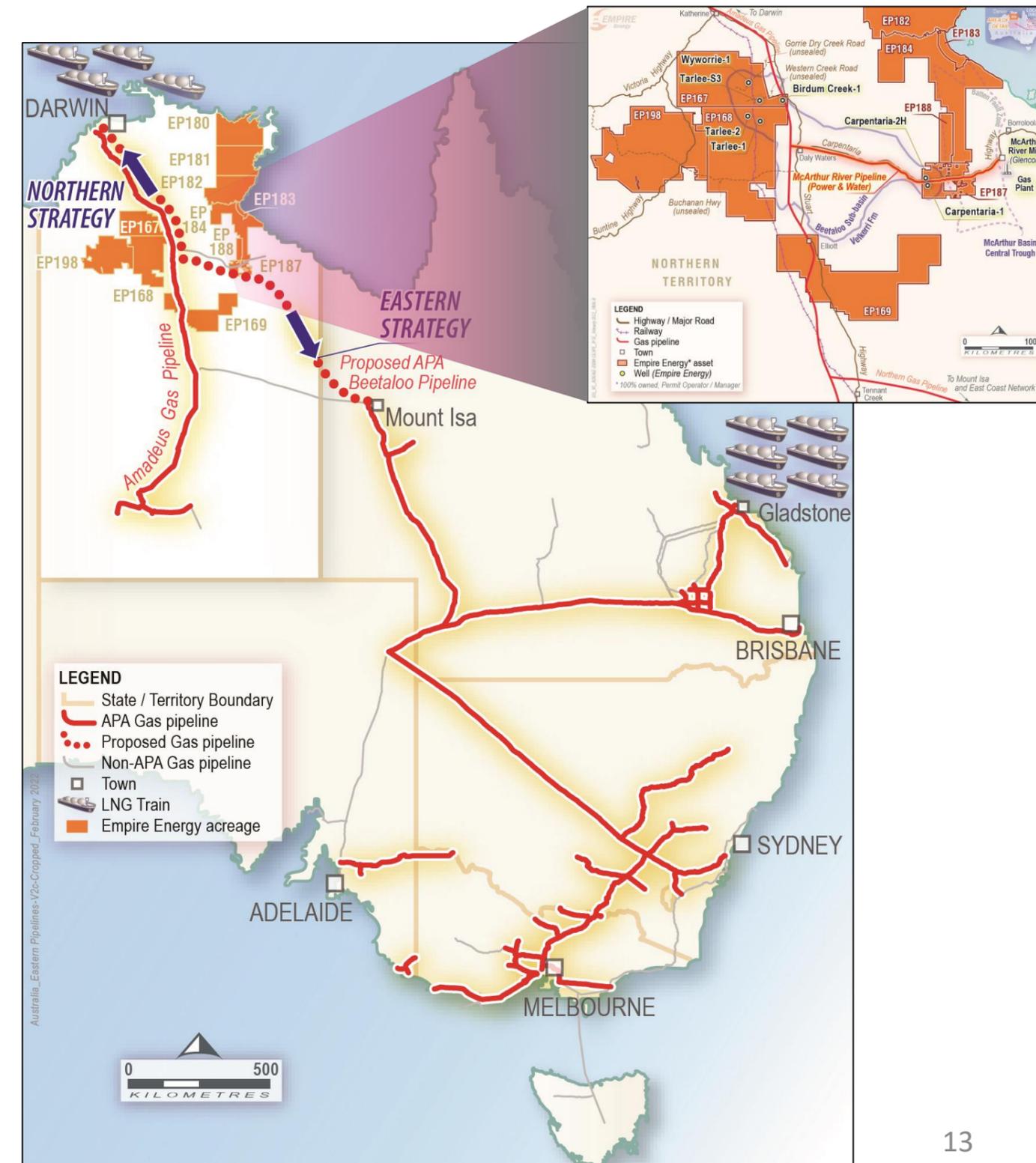
Contingent Resources (2C)

Gas	554 BCF
Liquids	3.5 MMBBLs

MOUs Executed With APA Group and Power and Water



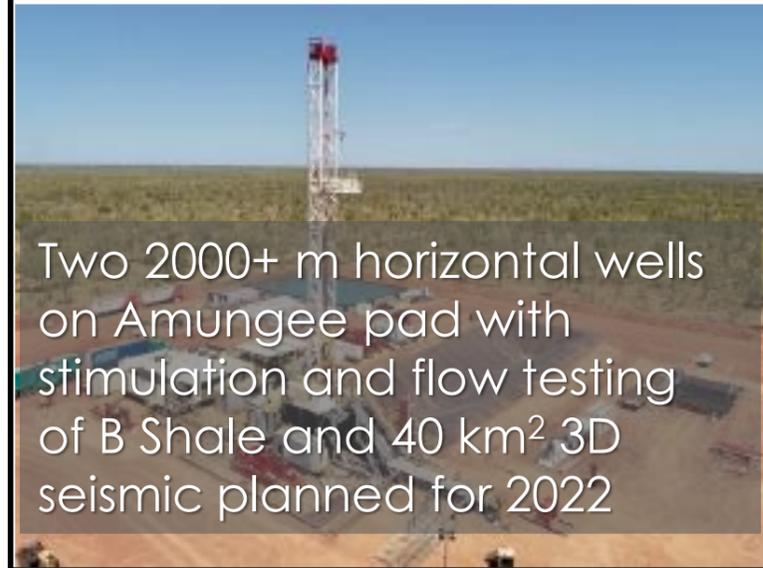
- APA Group (ASX: APA) and Empire have executed an MOU to explore opportunities for the development of Beetaloo mid-stream infrastructure including gas and liquids gathering, processing and pipelines
- APA will support Empire to get production to market, promptly, leveraging its existing network of gas transmission infrastructure
- APA and Empire are supportive of a common infrastructure approach amongst Beetaloo upstream producers to deliver lower per unit costs
- 'Northern Strategy' will support the development of a gas-fed manufacturing industry and LNG export expansion at Darwin
- 'Eastern Strategy' including a new Beetaloo Pipeline to Mount Isa will allow Beetaloo gas to be transported to all Australian east coast domestic markets (Wallumbilla, Brisbane, Sydney and Melbourne) and LNG export through Gladstone
- Empire has also executed an MOU with NT Government owned utility Power and Water Corporation to facilitate negotiations for potential gas sales and transportation arrangements utilising the McArthur River Pipeline



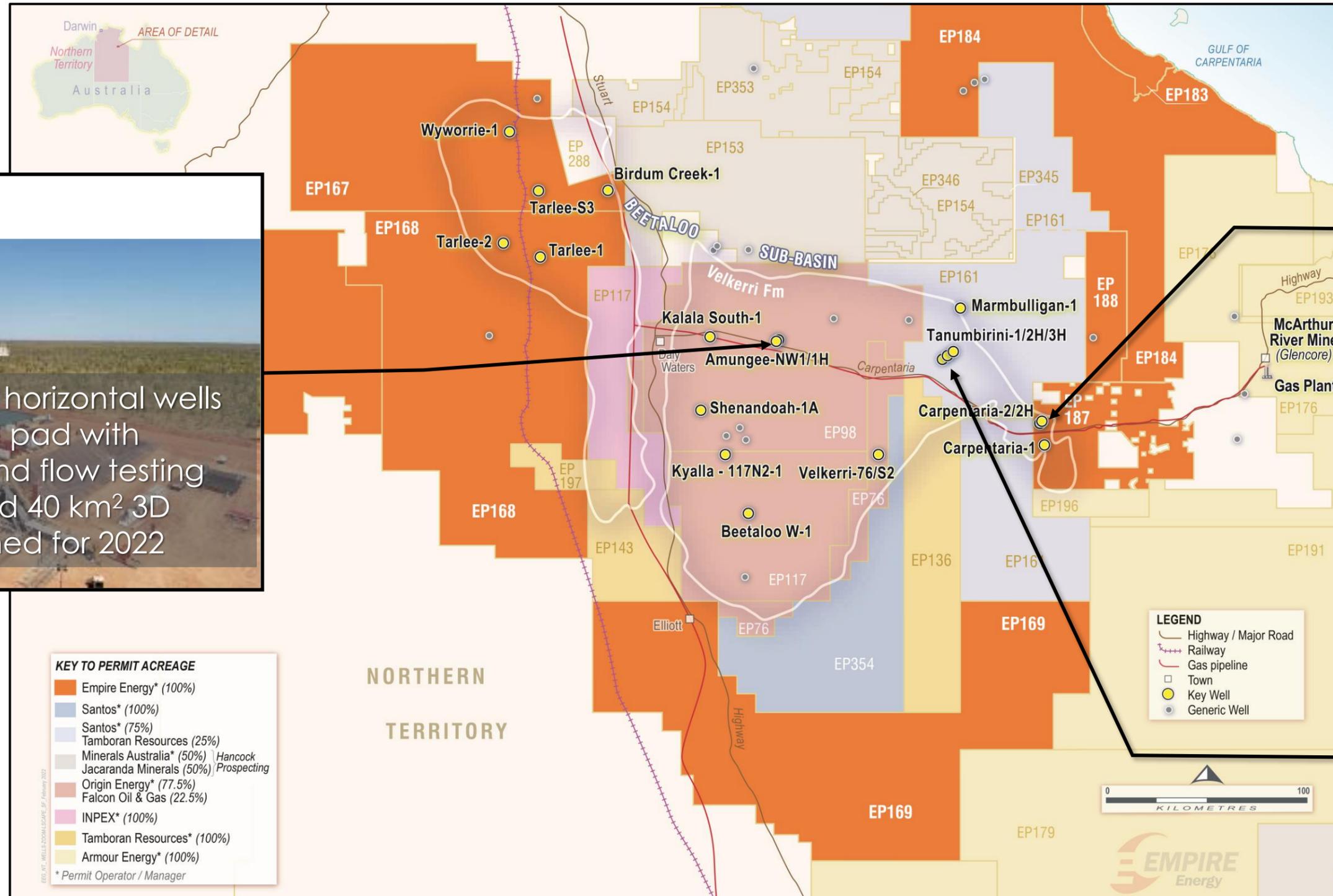


Appraisal work accelerating across the Basin

Origin
energy



Two 2000+ m horizontal wells on Amungee pad with stimulation and flow testing of B Shale and 40 km² 3D seismic planned for 2022



KEY TO PERMIT ACREAGE

Orange	Empire Energy* (100%)
Light Blue	Santos* (100%)
Medium Blue	Santos* (75%)
Light Purple	Tamboran Resources (25%)
Light Green	Minerals Australia* (50%) Hancock
Light Yellow	Jacaranda Minerals (50%) Prospecting
Light Orange	Origin Energy* (77.5%)
Light Red	Falcon Oil & Gas (22.5%)
Pink	INPEX* (100%)
Yellow	Tamboran Resources* (100%)
Light Green	Armour Energy* (100%)

* Permit Operator / Manager



Carpentaria-2H Velkerri B Shale stimulating and flow testing planned for Q2 2022

Santos



Tanumbirini-2H and 3H Velkerri B Shale wells continuing 300 day extended production testing in 2022

Continuously productive shales, with encouraging flow rates

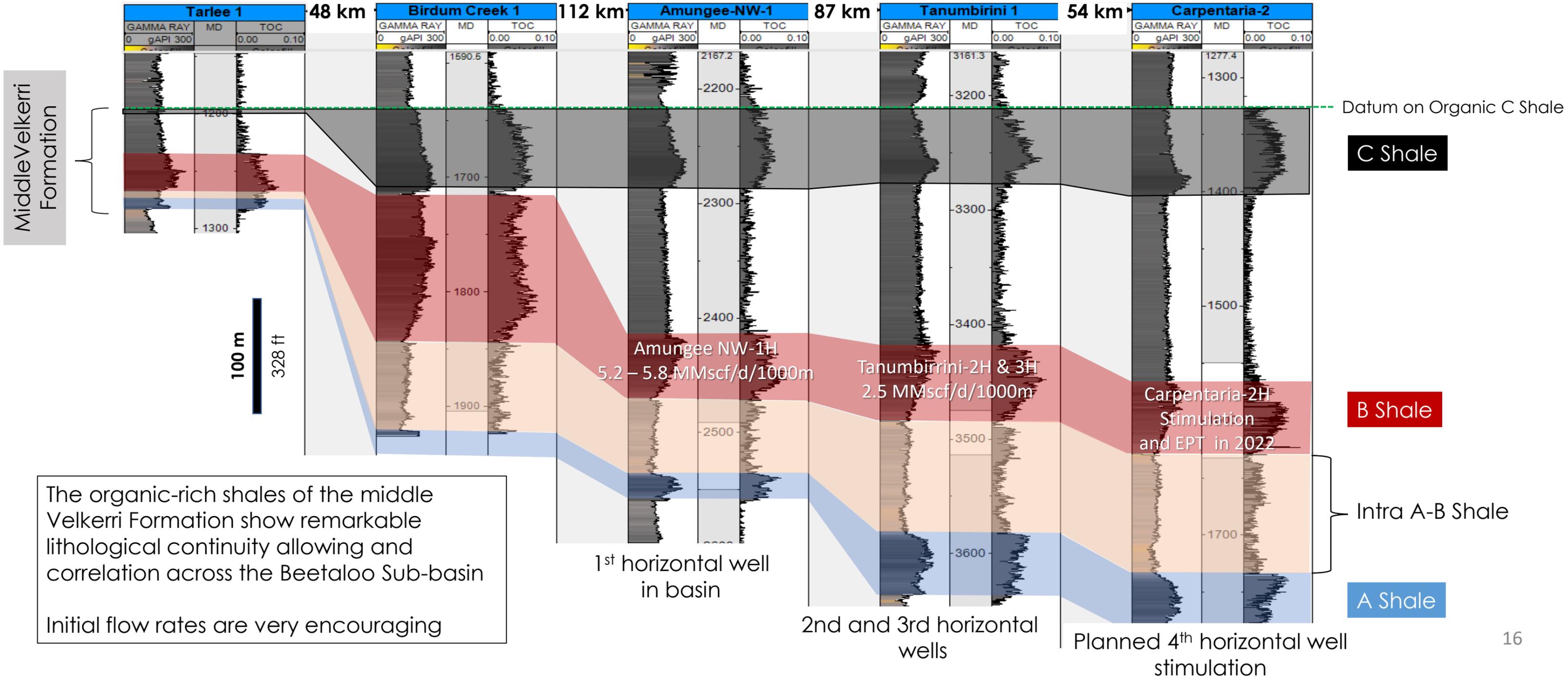


West

East



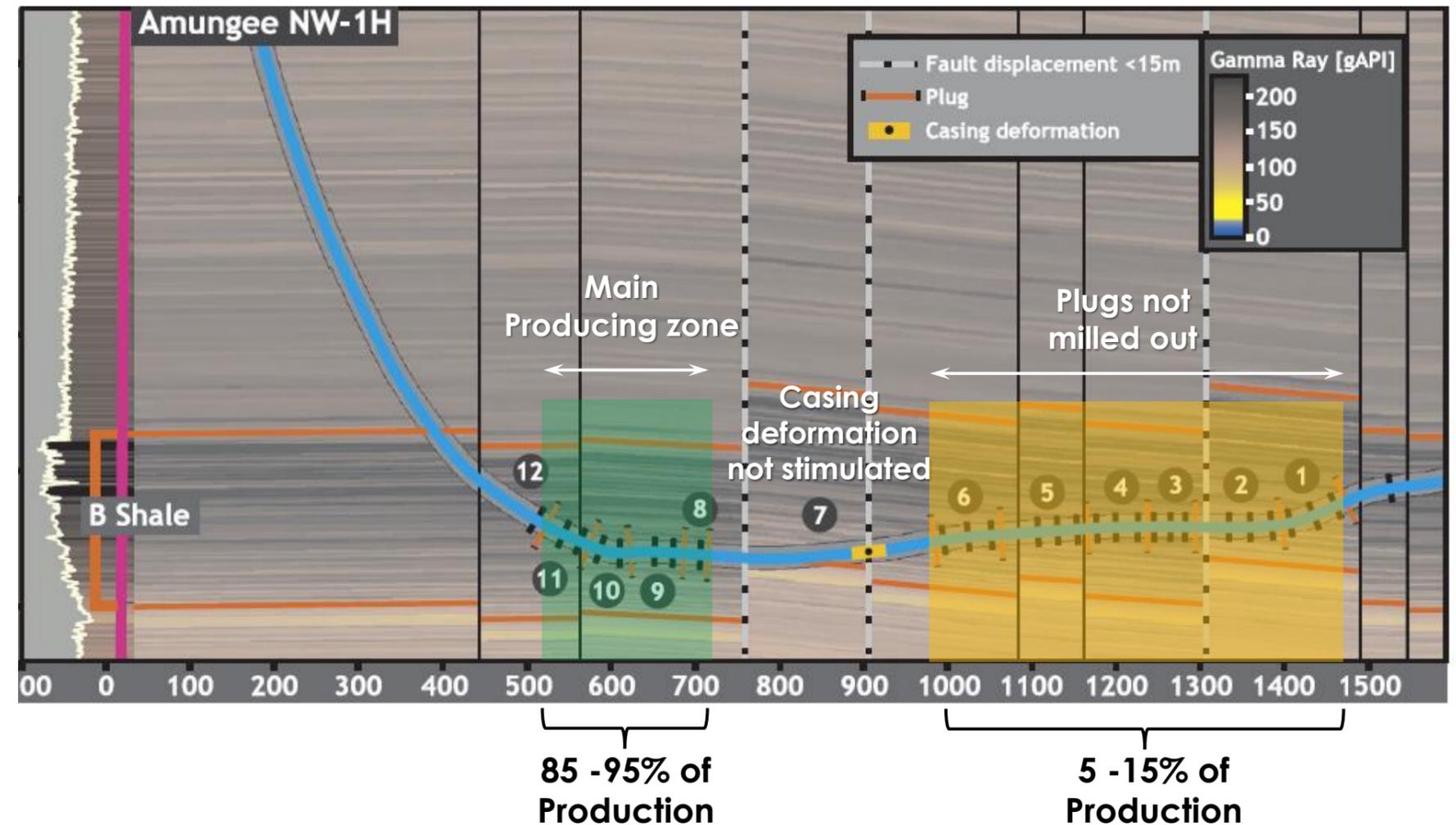
Santos



First Horizontal Well in Beetaloo Achieves US Scale Flow Rate

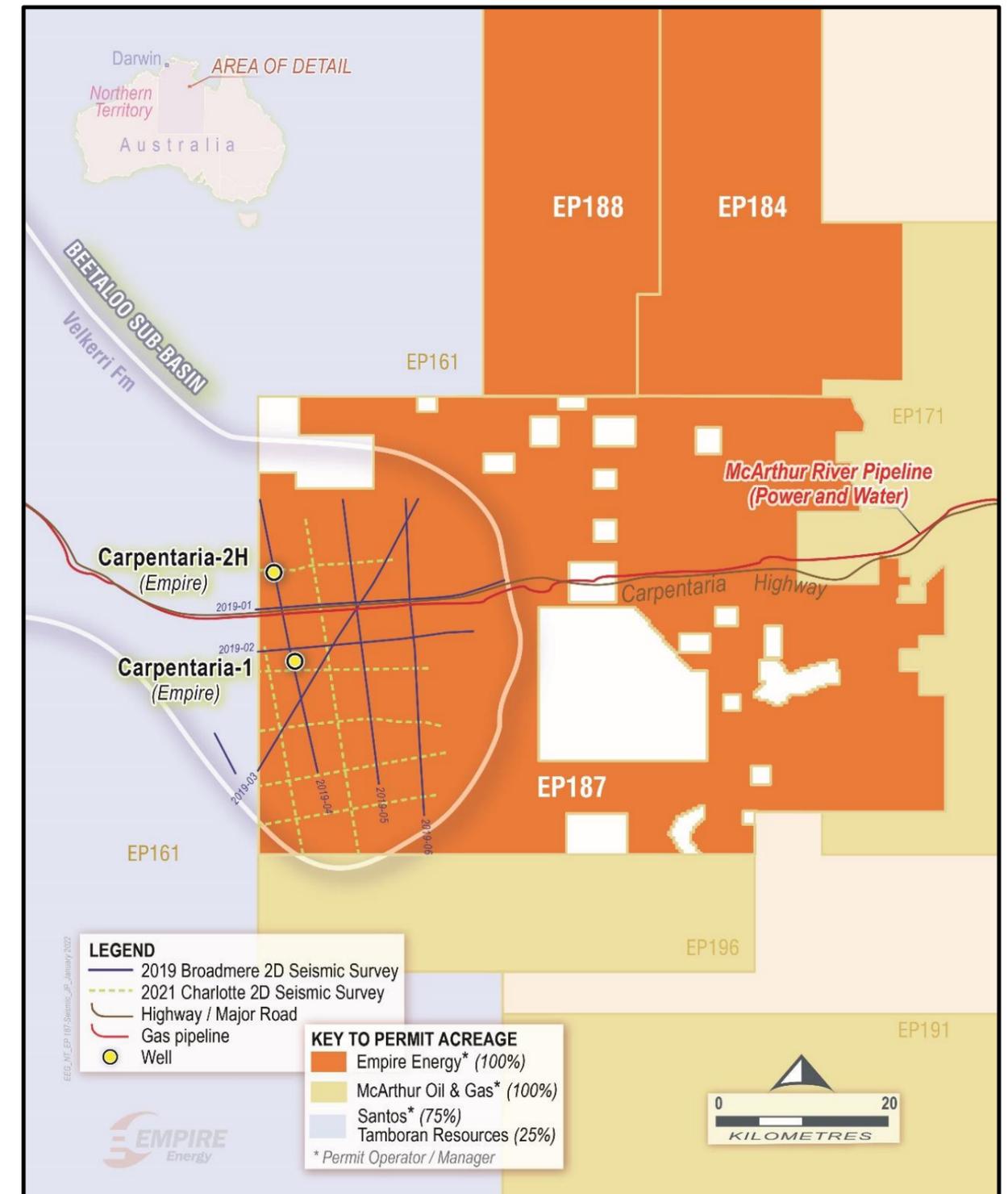
Amungee NW-1H achieved a normalised gas flow rate of between 5.2 – 5.8 mmscf/d/1000 m (1.6 – 1.8 mmscf/d/1000 ft) from the Middle Velkerri B Shale

- **Two Extended Production Tests conducted over a combined 80+ days**
 - First (2016) - average production rate of 1.1 mmscf/d over 57 days
 - Second (2021) – average production rate of **1.2 mmscf/d for first 23 days**
- **Limited decline on EPTs**
- Production logged to confirm producing zones
 - **85 – 95% of production is coming from 200 m (~650 ft) zone**
 - 5 – 15% of production from stages beyond casing deformation and unmilled plugs



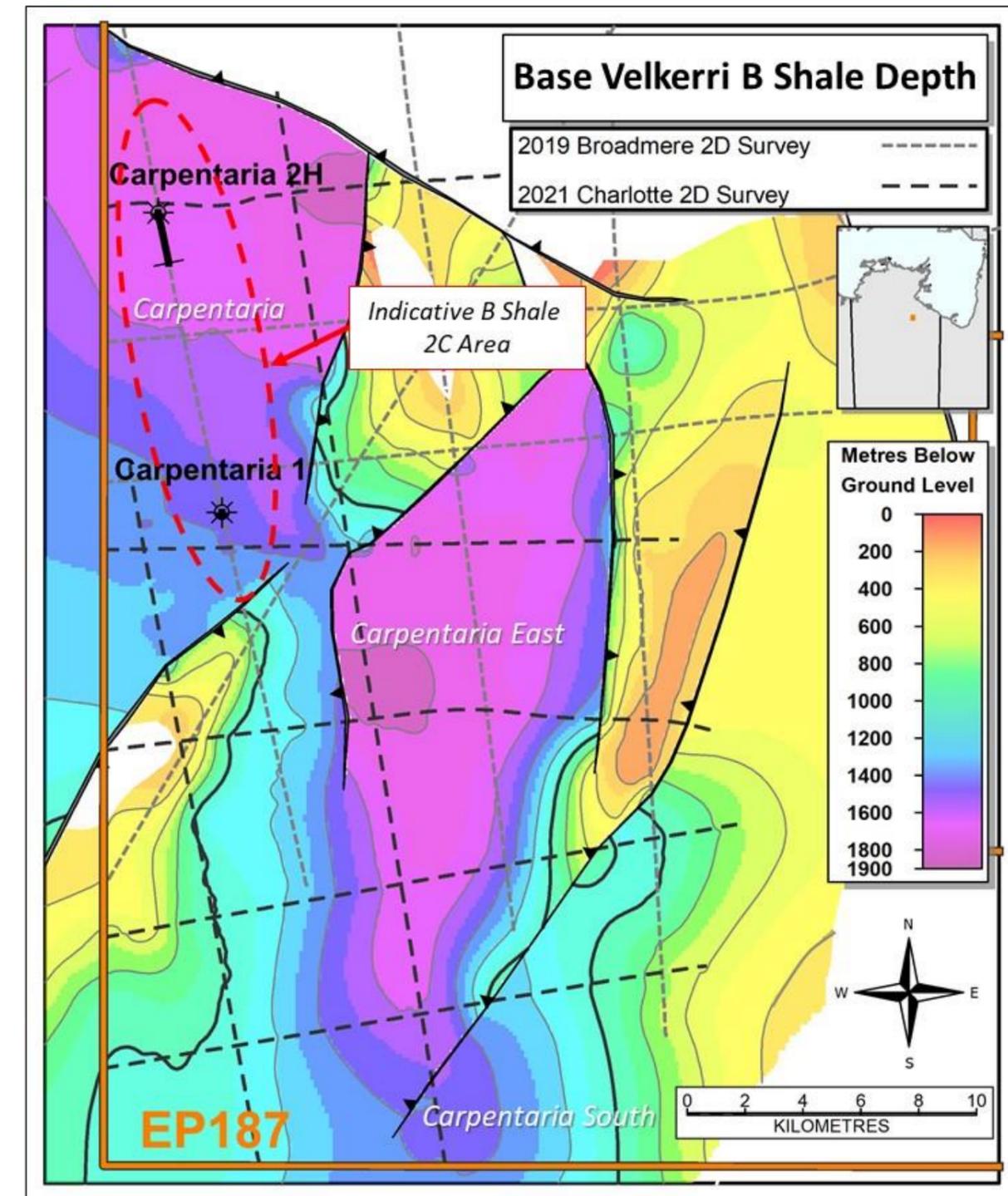
Exploration & Appraisal Campaign Successes

- October 2020 Carpentaria-1 drilled to TD 1,915m intersected a **column of liquids rich gas in the Velkerri nearly 1 km thick** (998m)
- Substantial proportions of heavier-end, **higher-value liquid** hydrocarbons intersected - enhancing the economics of future production scenarios
- The Velkerri Shale is shallower than in analogue Beetaloo Basin wells and offers **lower drilling costs** in future wells
- Post-well analysis undertaken at W.D. Von Gonten & Co (Houston, Texas) in collaboration with Empire's technical team recorded **favourable rock properties**
- Carpentaria-1 four stage vertical fracture stimulation and flow testing produced a peak rate >1.6mmcf / day and ~0.25 mmcf / day average in EPT 1 and **~0.364mmcf / day average in EPT 2**
- October 2021: Drilling and hydraulic stimulation **of up to 7 horizontal wells across EP187 approved**
- Carpentaria-2H horizontal appraisal drilling **completed on time and budget**. Fracture stimulation and production testing to commence in Q2 2022



Activity Growing in EP187

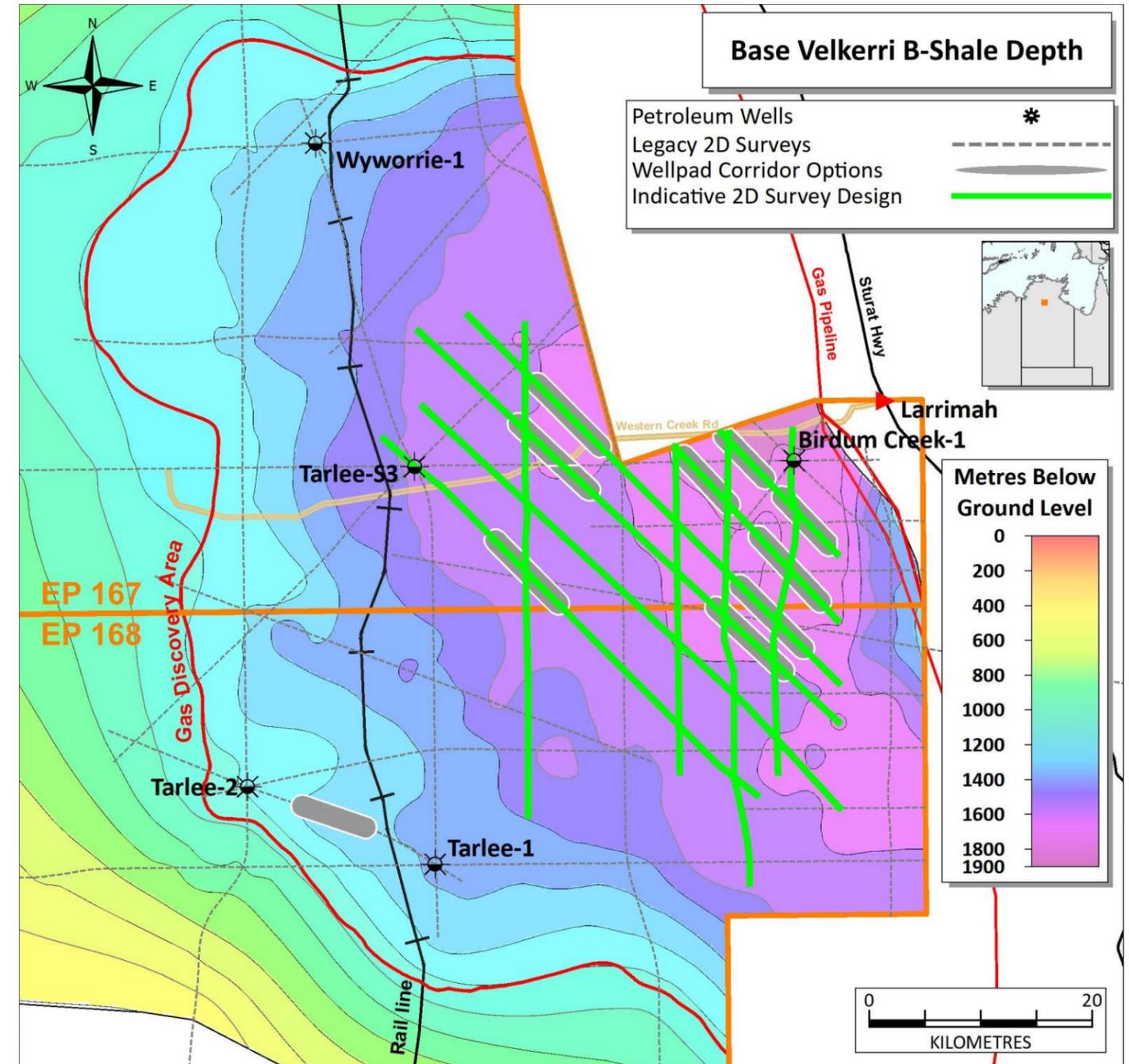
- Empire acquired the Charlotte 2D Survey during 2021 whose objective was to infill and extend existing seismic coverage
- Seismic data and drilling results have enhanced Empire's understanding of the **Carpentaria Resource Area** and refined definition of the undrilled but highly prospective **Carpentaria East and Carpentaria South Resource Areas**
- Carpentaria East and Carpentaria South have been **demonstrated to be deeper over a more extensive area** than previously mapped, thereby enhancing prospectivity and potential future productivity
- Greater acreage at ideal depths for shale gas development is likely to increase the number of well locations in a development scenario
- Favourable Velkerri shale depths cover 110,000 acres
- Five additional drilling locations have environment clearances across Carpentaria and Carpentaria East
- **866%** increase in 2C Contingent Resource from 41 BCF to **396 BCF**
- **1402%** increase in 3C Contingent Resource from 86 BCF to **1292 BCF**
- P(50) Prospective Resource of **~4.3 TCF**



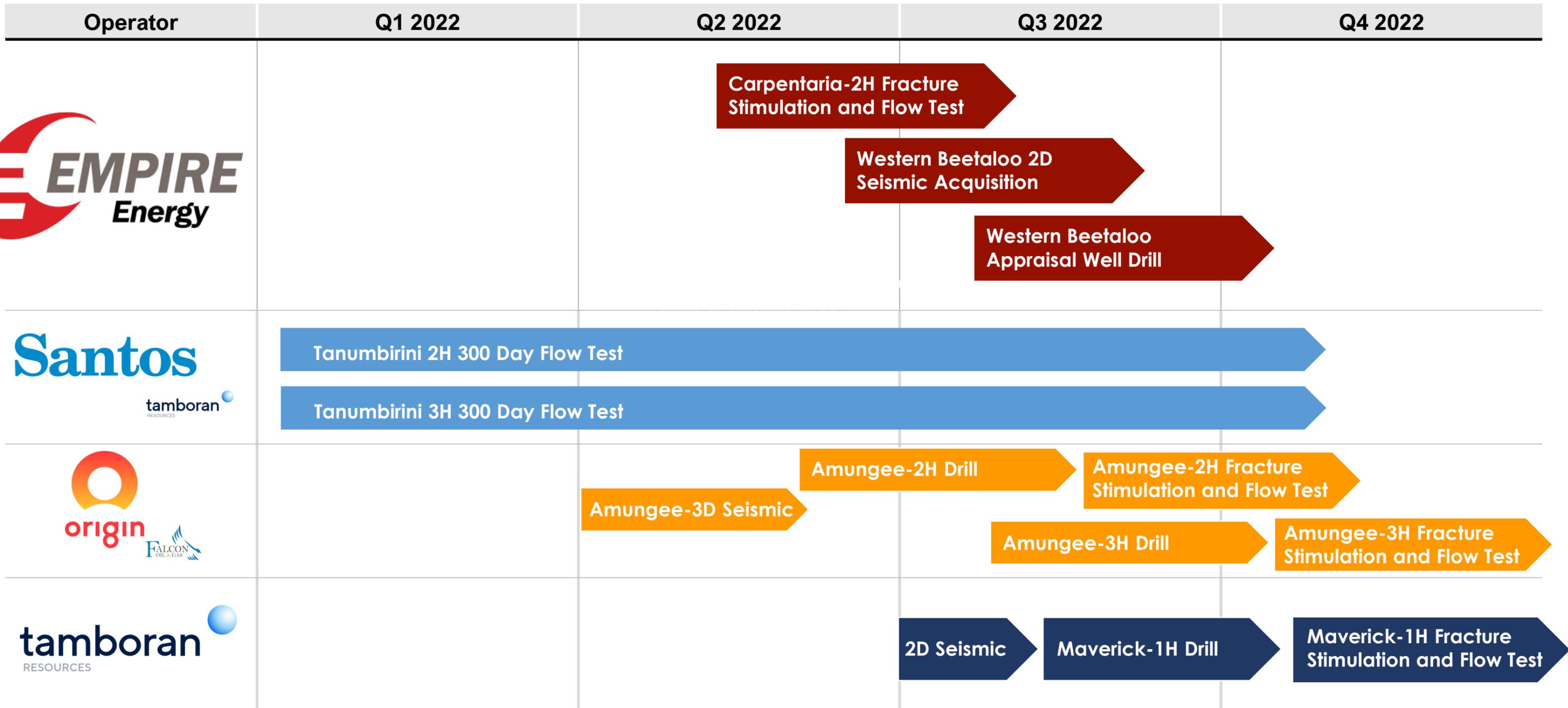
Western Beetaloo Multi-Year Work Program Clearances Underway



- Empire submitted environmental approvals to the Northern Territory Regulator in December 2021 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 within the gas discovery area
- The approvals have the potential to accommodate numerous production wells in a future commercial development scenario
- Once approved, the EMP will remain in place for five years
- Planned appraisal activities are focused within the Gas Discovery Area (\$110 million spent to date, >1m acres)
 - Strategically located near gas pipeline, highway and trainline
- **2C** Contingent Resource of **157.5 BCF** (+3.5mmbbls)
- **3C** Contingent Resource of **415.8 BCF** (+14.1mmbbls)
- P(50) Prospective Resource of **~28 TCF and 764 MMBBLs**
- Land access negotiations in progress with pastoralists



Beetaloo Sub-basin Projected 2022 Operations



Source: company disclosures and regulatory filings
 Certain activities are subject to regulatory approval



<https://empireenergygroup.net/>

ASX:EEG

Alex Underwood
Managing Director
info@empiregp.net
+612 9251 1846

Appendix 1: A Globally Significant Resource Position

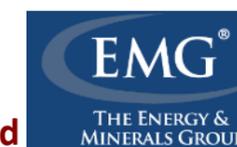


Shale Unit	Contingent Resources (Liquids)			Contingent Resources (Gas)			Prospective Resources (Liquids)			Prospective Resources (Gas)		
	Low Estimate (1C)	Best Estimate (2C)	High Estimate (3C)	Low Estimate (1C)	Best Estimate (2C)	High Estimate (3C)	Low Estimate (1U)	Best Estimate (2U)	High Estimate (3U)	Low Estimate (1U)	Best Estimate (2U)	High Estimate (3U)
	<i>mmbbls</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>bcf</i>	<i>bcf</i>	<i>bcf</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>mmbbls</i>	<i>bcf</i>	<i>bcf</i>	<i>bcf</i>
Kyalla	0.8	3.0	11.1	0.8	4.5	27.7	88	378	1,571	184	857	4,891
Mid Velkerri	0.1	0.5	3.0	138	549	1,680	82	419	2,062	10,744	31,018	89,217
Barney Creek	-	-	-	-	-	-	-	-	-	1,633	11,053	45,380
Total	0.9	3.5	14.1	138.8	553.5	1,707.7	170	797	3,633	12,561	42,928	139,488

Empire 2C Contingent Resource of **554 BCF gas** and **3.5 MMBBLs liquids**

Empire P(50) Prospective Resource of **43 TCF gas** and **797 MMBBLs liquids**

Appendix 2: Major Activity in the Beetaloo to Date



NT Fracking Moratorium (Sep 2016 – Apr 2018) NT Environmental Baseline and Regulation Update

2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Operational Highlights										
<ul style="list-style-type: none"> Pangaea NT acquires 29,000 line km full-tensor gravity gradiometry (FTG) survey 	<ul style="list-style-type: none"> Pangaea NT acquires ~1,400-line km 2D seismic survey 	<ul style="list-style-type: none"> Santos Tanumbirini-1 drilled to 3,945m TD. Play opening well, with 500m of shale logged in the Mid Velkerri section Pangaea NT drills three stratigraphic wells targeting Beetaloo and McArthur Basin shales. Tarlee-S3 discovers world class source rocks in the Velkerri Shale 	<ul style="list-style-type: none"> Pangaea NT drills 4 appraisal wells and acquires ~380-line km 2D seismic survey Pangaea NT lodges ~100 TCF Gas Discovery Notice 	<ul style="list-style-type: none"> Origin Energy announces Amungee NW-1H production test results, 66TJ produced at an average rate of 1.1mmscf/d 	<ul style="list-style-type: none"> Origin books 2C contingent resources of 6.6Tcf in the Beetaloo Basin and indicates existence of a material gas resource 	<ul style="list-style-type: none"> End of Northern Territory fracking moratorium 	<ul style="list-style-type: none"> Empire completes 231-line km 2D seismic survey in EP187 	<ul style="list-style-type: none"> Santos books maiden 2C resource Origin and Falcon Oil drill and fracture stimulate the horizontal Kyalla 117 well Santos announces initial peak gas flow rate of 10mmscf/d at Tanumbirini-1 vertical well Empire drills the Carpentaria-1 well 	<ul style="list-style-type: none"> Origin confirms liquid-rich gas discovery at Kyalla 177 with CO2 estimated at less than 1% Santos drills Tanumbirini 2H and 3H Origin drills Velkerri 76 Origin completes EPT at Amungee NW-1H flow rate 5.2 - 5.8mmscf/d / 1000m Empire drills Carpentaria-2H and acquires infill 2D seismic 	<ul style="list-style-type: none"> Tamboran announces normalised flow rates for Tanumbirini 2H and 3H of 3.0mmscf/d and 2.9mmscf/d over 1,000m lateral Origin plans to drill and frac two horizontal wells at Amungee Empire books certified 2C contingent resources of 396 BCF for Carpentaria
Corporate Highlights										
<ul style="list-style-type: none"> Santos farms into EP161 (and other tenements) with Tamboran Resources 		<ul style="list-style-type: none"> Origin Energy and Sasol farm-in to Falcon Oil & Gas' Beetaloo acreage 	<ul style="list-style-type: none"> Energy & Minerals Group farms into Pangaea Resources Beetaloo acreage INPEX awarded Beetaloo acreage 		<ul style="list-style-type: none"> Origin increases its interest in its Beetaloo JV to 70% following the acquisition of Sasol's share 			<ul style="list-style-type: none"> Origin increases its interest in its Beetaloo JV to 77.5%, valuing the project at A\$333 million (gross) Tamboran acquires Sweetpea 	<ul style="list-style-type: none"> Empire acquires Pangaea NT for cash and scrip Tamboran IPO on ASX 	

Appendix 3: How the Middle Velkerri matches the Marcellus Shale

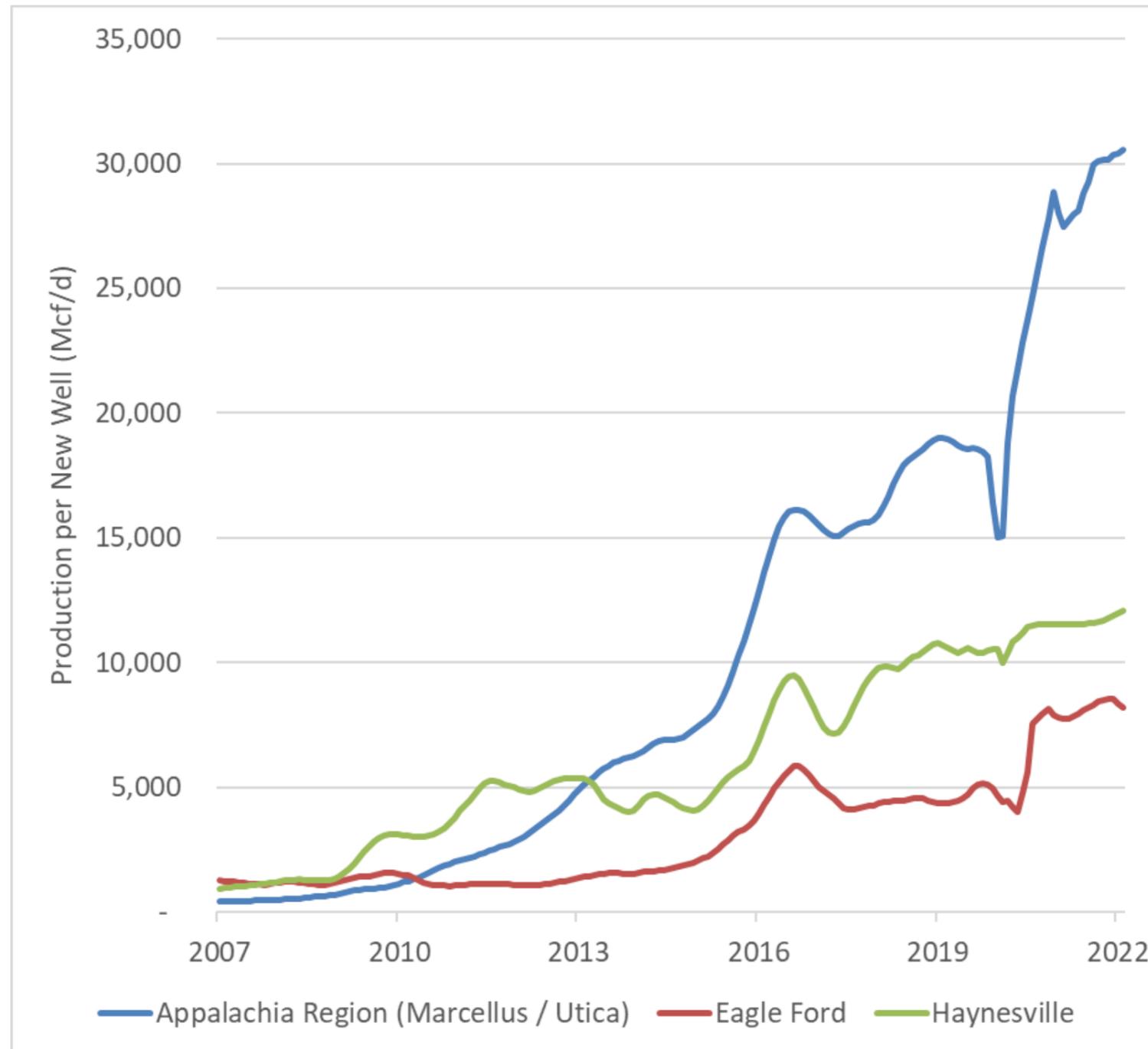


Empires regional core and log data confirms gas in-place and deliverability properties for the Middle Velkerri Shale

	Gas-In-Place	Thickness	The middle Velkerri Shales show high lithological consistency and thickness <ul style="list-style-type: none">• Thickness intervals ranges from ~40 – 100+m for the B Shale alone
		TOC & Thermal Maturity	The middle Velkerri Total Organic Carbon (TOC) content is regionally consistent <ul style="list-style-type: none">• The B Shale averages 4.0% TOC, and thermal maturity ranges from oil to dry gas
		Storage Capacity HC Saturation	Excellent storage capacity and hydrocarbon (HC) saturations indicates large gas-in-place <ul style="list-style-type: none">• Effective porosities ranging from ~4 –8% with high hydrocarbon saturations
		Resource Concentration	High gas concentration equivalent to the Marcellus Shale <ul style="list-style-type: none">• Velkerri B Shale GIP from ~40 to over 100 BCF/sq mile - stacked A, B & C Shales can exceed 160 BCF/sq mile GIP
	Deliverability	Mineralogy & Rock mechanics	Favourable mineralogy and rock mechanics for well treatments – shales are brittle and frackable <ul style="list-style-type: none">• Stimulations, core and logs confirm Velkerri shales have favourable fracture stimulation characteristics - high quartz (~60%) and low non-reactive clays (20 -35%)
		Overpressure	Shale reservoirs are consistently over-pressured to similar level as the Marcellus Shale <ul style="list-style-type: none">• DFIT's, pressurised core confirm the shales are over-pressured (0.51 – 0.59 psi/ft).
		Permeability	Good to excellent shale permeabilities <ul style="list-style-type: none">• DFITs indicates good permeability and is consistent with core data.

Carpentaria-1 vertical fracture stimulation confirms sustained flow to surface across all four zones in the middle Velkerri

Appendix 4: The US Experience – a Learning Curve



Improving shale gas well productivity reflects:

- Understanding and identification of play 'sweet spots' and landing zones
- Staying in target zones (directional drilling technology)
- Longer horizontal lengths (can now exceed 7 miles)
- Optimisation of well completion design allowing increased stimulated rock volumes
- Managed flow-back to increase Estimated Ultimate Recoveries over time

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