



Empire Energy Group Limited

Downstream MOU (NT Power and Water Corp) lifts sales options

Empire Energy Group Limited (ASX:EEG) is a junior oil and gas producer/explorer, with onshore Northern Territory (NT) and US oil/gas assets. EEG has the largest tenement position (28.9m acres) in the highly prospective Greater McArthur Basin, which includes the Beetaloo Sub-basin. The NT energy basins are fast developing as gas-liquids rich strategic bolsters for east coast Australia's future energy needs, and potential supply for Darwin's expanding LNG export terminals, amid strong policy/funding support from territory and federal governments. The company has announced on Monday that it has executed a gas sales and transportation memorandum of understanding (MOU) with the NT government-owned Power and Water Corporation, the Northern Territory's largest provider of gas, electricity networks, water and sewerage services. The MOU facilitates negotiations for potential gas sales and transportation arrangements. The transaction follows hot on the heels of the transmission MOU signed last week with ASX-listed APA Group, owner of ~\$21bn in energy assets. In our view, EEG's business case could materially progress over the next 12 months, as more recovery findings and transmission/end-user supply offtakes take shape, including with NT Power and Water Corp for its McArthur River transmission line and gas sales, as well as supporting APA Group's proposed Amadeus pipeline expansion and new Mt Isa pipeline into Australia's east coast markets, to help alleviate supply-constraint concerns.

Business model

Empire Energy Group Limited (EEG), as a junior oil and gas producer/exploration company, is focused on maturing its portfolio of onshore, long-life oil and gas fields. The company holds substantial exploration acreage (28.9mn acres) in the world-class McArthur-Beetaloo basins in the NT and is actively progressing evaluation activity to support reserve bookings and underpin early gas development and sales opportunities. Success could see first cash flow within 24-36 months (RaaS estimate), assisted by LPG liquid "credits". Look-through results from horizontal drilling in adjacent tenements will help define the development model. EEG is also benefiting from up to \$19.3mn under federal Beetaloo Strategic Basin Plan funding and \$5.37mn in R&D grants. EEG has also signed two downstream market access MOUs, the first with ASX-listed APA Group for transmission services, and the second, covering both transmission and gas sales, with NT Power and Water Corporation, cementing delivery opportunities into potentially supply-constrained markets.

NT Power and Water MOU delivers additional sales optionality

Just days after signing the transmission MOU with APA Group, EEG has secured a second downstream MOU, with the NT government's Power and Water Corporation (NTPWC). The MOU includes both gas sales and transmission arrangements, delivering its NT Beetaloo energy tenements with further market access opportunities via established pipelines. NTPWC is the NT's largest provider of gas, electricity networks, water and sewerage services, distributing power to over 244,000 people, spanning 1.3mn km2 across the NT. NTPWC also owns the 330km/16 TJ/day Daly-Waters (McArthur River) Gas Pipeline which connects into APA's 120TJ/day Amadeus line at Daly Waters, adding commercial opportunities, as part of federal and state policy efforts to develop the Beetaloo as a core long-term strategic supply hub. EEG also highlights in its 3Q21 update that extended production testing at Carpentaria-1 continues; Carpentaria-2H well drilling will begin in November, while in-fill 2D seismic acquisition starts within a week. All activity is targeting a re-evaluation of current resource estimates in 2022. Our interview with Managing Director Alex Underwood on these developments can be downloaded here Empire Energy Group RaaS Interview 1 Nov 2021.

Valuation is \$622m, equating to \$1.04/share

Our valuation range for EEG is \$400-\$738mn (\$0.67-\$1.23/share), with \$622mn or \$1.04/share as the mid-point. Further look-through results from regional works gather momentum, while EEG's next phase of drilling and seismic acquisition have potential to lift 2P+2C volumes and better define recovery economics to crystallise our asset valuation range.

Historical	earnings an	d RaaS est	imates			
Year end	Revenue (A\$m)	Gross Profit (A\$m)	NPAT reported (A\$m)	OCFPS (AUD cps)	EPS Adj (AUD cps)	Price/Book (x)
12/19a	7.8	1.7	(17.3)	0.69	(9.31)	1.6
12/20a	6.5	1.2	(7.7)	(0.61)	(2.73)	1.6
12/21e	7.5	2.8	(4.4)	(0.19)	(0.70)	1.6
12/22e	7.6	2.8	(3.7)	0.09	(0.59)	1.6
Source: Co	mpany data, R	aaS estimates	for FY21e and	FY22e		

Energy Exploration & Production

3rd November 2021



Share Performance (12 months)



Upside Case

- EP187 programmes accelerate and underpin a substantial Beetaloo business case
- Look-through success provides independent validation of the commercial model
- EEG drilling success generates high-value LT strategic partnership(s) and funding options

Downside Case

- Gas rates are sub-commercial, negatively impacting regional permit values
- Additional equity financing becomes highly dilutive to per-share growth opportunities
- Gas success in NT/Qld pushes downward pressure on domestic gas prices, raising the commercialisation threshold

Board of Directors

Alex Underwood	Managing Director/CEO
Paul Espie AO	Non-Executive Chairman
Dr John Warburton	Non-Executive Director
Peter Cleary	Non-Executive Director
Louis Rozman	Non-Executive Director
Paul Fudge	Non-Executive Director

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*The analyst holds shares



To Market, To Market

EEG has inked two market access MOUs over the past week for its Beetaloo tenements, delivering significant downstream and market comfort to investors, as the company continues to expand its upstream onshore shale energy investments in the Northern Territory's Beetaloo Sub-basin. These investments are helping support federal and state government policy efforts to develop a gas-based manufacturing hub in Darwin; deliver greater energy security to Australia's increasingly-constrained east coast energy markets; and expand LNG export supply opportunities to feed growing Asian fuel requirements.

EEG's first MOU is with ASX-listed ~\$21bn energy infrastructure asset group, APA Group, covering transmission avenues into local, cross-border and export markets. The second MOU is with the NT government's Power and Water Corporation, covering both transmission and local NT sales options for EEG's Eastern and Western Beetaloo properties.

NTPWC is the NT's largest provider of gas, electricity networks, water and sewerage services, distributing electricity to over 244,000 people, spanning 1.3m km2 across the state. The company reported revenues of over \$800mn and EBITDA of over \$220mn to 30 June 2021.

APA operates the readily-expandable 1,658km 120TJ/day Amadeus Gas Pipeline (AGP), from the Amadeus Basin near Alice Springs, north to Darwin, primarily feeding local electricity generation. APA is separately investigating building fresh "common-user" transmission lines to service east coast markets from the NT to Mt Isa, while enlarging the AGP to support new Beetaloo flows. The AGP already connects with Jemena's 622km 106TJ/day Northern Gas Pipeline (NGP) at Tennant Creek into Mt Isa, which in turn connects into APA's extensive east coast transmission grid. The APA MOU deal terms do not preclude EEG from seeking pipeline user agreements with the 330km/16 TJ/day Daly-Waters (McArthur River) Gas Pipeline, owned by Power & Water Corporation, which connects into APA's Amadeus line at Daly Waters.

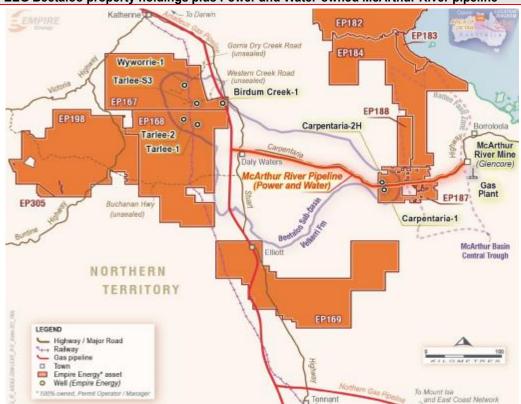


Exhibit 1: EEG Beetaloo property holdings plus Power and Water-owned McArthur River pipeline

Source: Company data







Exhibit 3: EEG's total Contingent and Prospective Resources in the Northern Territory

Unrisked Net Contingent Resources Liquids (MMBBL)			Unrisked Net Contingent Resources Sales Gas (BCF)				Resources	,	Unrisked Net Prospective Resources Gas (BCF)			
Estimate			Estimate			Estimate			Estimate			
Low (1C)	Best (2C)	High (3C)	Low (1C)	Best (2C)	High (3C)	Low (1U)	Best (2U)	High (3U)	Low (1U)	Best (2U)	High (3U)	
0.8	3.0	11.1	0.8	4.5	27.7	88	378	1,571	184	857	4,891	
0.1	0.5	3.0	57.2	194.0	474.1	80	413	2,037	10,163	30,214	87,735	
-	1	-	,	-	-	-	-	-	1,633	11,053	45,380	
0.9	3.5	14.1	58.0	198.5	501.8	168	791	3,608	11,980	42,124	138,006	
	Low (1C) 0.8 0.1	Resource Liquids (MME Estimate Low (1C) Best (2C) 0.8 3.0 0.1 0.5 - -	Resources Liquids (MMBBL)	Resources Liquids (MMBBL) Sal	Resources Resources Sales Gas (B	Resources Sales Gas (BCF)	Resources Liquids (MMBBL) Sales Gas (BCF) Liquids (MMBBL) Sales Gas (BCF) Liquids (MMBBL) Estimate Estimate	Resources Sales Gas (BCF) Resources Liquids (MMBBL) Resources Sales Gas (BCF) Resources Liquids (MMBBL) Estimate Estimate Estimate Low (1C) Best (2C) High (3C) Low (1C) Best (2C) High (3C) Low (1U) Best (2U) 0.8 3.0 11.1 0.8 4.5 27.7 88 378 0.1 0.5 3.0 57.2 194.0 474.1 80 413 - - - - - - - -	Resources Sales Gas (BCF) Resources Liquids (MMBBL) Estimate Estimate Low (1C) Best (2C) High (3C) Low (1C) Best (2C) High (3C) Low (1U) Best (2U) High (3U) 0.8 3.0 11.1 0.8 4.5 27.7 88 378 1,571 0.1 0.5 3.0 57.2 194.0 474.1 80 413 2,037 - - - - - - - - -	Resources Liquids (MMBBL) Resources Sales Gas (BCF) Resources Liquids (MMBBL) Estimate Estimate Estimate Low (1C) Best (2C) High (3C) Low (1U) Best (2U) High (3U) Low (1U) 0.8 3.0 11.1 0.8 4.5 27.7 88 378 1,571 184 0.1 0.5 3.0 57.2 194.0 474.1 80 413 2,037 10,163 - - - - - - - - 1,633	Resources Sales Gas (BCF) Resources Liquids (MMBBL) Resources Gas (BCF) Estimate Estimate Estimate Estimate Estimate Low (1C) Best (2C) High (3C) Low (1U) Best (2U) High (3U) Low (1U) Best (2U)<	

Source: Company disclosures and regulatory filings

Event Drivers - Looking Ahead

With approval for up to seven horizontal wells on the EP187 tenement granted in mid-October by the NT government and supported by traditional owners, we expect EEG to make strong appraisal progress over the next 6-12 months on a number of investment fronts, as the company focuses on commercialising its expanding Beetaloo's Middle Velkerri shale reservoirs. In our view, these "in-the-ground" investments are likely to lead to the upgrade of EEG's 2C volumes, shown in Exhibit 4 above, while the recently signed downstream MOU's provide a line-of-sight to potential cashflow generation opportunities. We also expect further positive appraisal news from the drill programmes under way by other regional operators assisting wider basin geological and operating understandings.

- 1) EEG's EP187 Carpentaria-1 vertical well is undergoing an extended production test (EPT), with gas production running at 0.364 mmscf/day. EEG had lodged a Gas Discovery Notice with the NT government in June following strong hydrocarbon flows to surface (0.37 mmscf/day over 72hrs), with CO2 levels below 1%. Gas and flowback fluid sampling is also taking place to help determine which of the four shale targets will be the first lateral focus for EEG's Carpentaria 2H well next year. Based on data collected thus far, this is likely to be the Velkerri B-Shale.
- 2) EEG's EP187 Carpentaria-2H well site preparations began in October. The pad is located ~11km north of Carpentaria-1. A vertical pilot hole is to be drilled through the Velkerri Formation shales (A, B, Intra A/B and C), followed by a horizontal section of at least 1,000m, ideally before the wet season commences. A hydraulic fraction stimulation and EPT is planned for post-wet season, likely to commence early 2Q 2022. Results collected from the pre-Christmas vertical pilot hole will also assist to inform an updated independent 2C resource assessment slated for 1Q 2022.
- 3) The infill Charlotte 2D Seismic Survey data acquisition phase on EP187's western flank is expected to commence this week, employing local NT businesses and crew for line preparation. This seismic programme has been designed to further delineate the Velkerri Formation across EP187. The results will feed into future drill location selection on the tenement.
- 4) During 1Q 2022, EEG intends to commission an independent resource report to evaluate updating its Prospective and Contingent Resource base within EP187, which will incorporate all the fresh data accumulated from the Carp-1 verticals, the 4Q 2022 seismic data and any Carp-2H drill results.
- 5) With the 100% acquisition of the Pangaea and EMG Beetaloo tenement holdings [EP167; 168; 169; 198; and 305], completed on 16 August, EEG's technical team has begun an engagement programme with local landholders, including traditional owners and pastoralists, ahead of seeking EMP approvals for on-ground activities in 2022. These are likely to be centred around the EP167 and EP168 permits targeting Velkerri Formation shales, which are underpinning the largest percentage of the current resource estimates. We note that \$110mn of exploration capex was invested across 2013-2016, prior to the NT's moratorium.



Funding and Q3CY21 Highlights

EEG held \$31.8mn in gross cash at the end of September 2021, with net cash of ~\$23mn, after deducting US business loans of ~\$8.8mn with Macquarie Bank (5-yr secured loan, US libor+650bps) and PNC Bank (a Covid-19 Paycheck Protection Programme note due Feb 2026, 1% fixed annual).

Grant agreements totalling \$19.3mn have also been executed with the Australian federal government, which can be applied to offset 25% of the seismic acquisition and drilling, stimulation and flow test costs of up to 3 H-appraisal wells on EEG's EP187 tenement.

EEG has also received a \$5.37mn tax offset refund under the federal government's Research and Development Tax Inventive Scheme to cover new drilling techniques.

EEG's onshore Appalachian conventional energy assets achieved a positive EBITDA of US\$217k during Q3CY21, up from US\$16k last quarter, benefiting from rising Henry Hub prices, which have more than doubled over the past year to ~US\$5.40/mmBtu.

Notably, EEG's cash flow from operating activities increased from a loss of \$1.9mn in H1CY21, to a gain of \$4.75mn at the end of Q3CY21. As a result, YTD operating cashflows achieved lifted to \$2.4mn. Weighted average realised sales prices (post-hedging) reached US\$3.51/Mcfe during the third quarter, up from US\$1.94/Mcfe year-on-year for its US Appalachian business. This compared with lifting costs averaging ~US\$1.25/Mcfe.

EEG produced 567 barrels of oil and 418.4k Mcf of natural gas during Q3CY21 from its onshore US assets, with YTD reaching 1,829 barrels of oil and 1.23m Mcf of gas.

ECNT Proceedings

Activist group, Environment Centre NT Inc (ECNT), launched legal proceedings in the Federal Court on July 29 against the Federal Minister for Resources and Water and the Commonwealth, and has subsequently co-joined EEG as a party to proceedings. ECNT is seeking judicial review of the federal Beetaloo Cooperative Drilling Program, including the decision to grant \$19.3mn in funding to EEG. If upheld, the relief sought by ECNT would include a declaration that the grant contracts with EEG are void. Hearings will begin on 2 and 3 November, 2021.

We note that the federal government has no jurisdiction over Beetaloo Sub-basin regulations. The NT has sole province over the Beetaloo, with bi-partisan support for the NT's energy development strategy provided by both Labor and Liberal representatives locally.



Exhibit 4: Financial Summary

EMPIRE ENERGY C	DOLID LTD	FFC										
EMPIRE ENERGY G	KOUP LTD	EEG				nm = not meaningful						
YEAR END		Dec				na = not applicable						
NAV	A\$mn	622										
SHARE PRICE	A\$cps	'	riced as of cl	ose trading	2-Nov							
MARKET CAP	A\$mn	240										
ORDINARY SHARES	M	600										
OPTIONS	M	57										
PROFIT & LOSS	A\$000s	2019	2020	2021E	2022E	COMMODITY ASSUM	/PTIONS		2019	2020	2021E	2022
Revenue		7,763	6,464	7,460	7,637	Realised oil price	U	S\$/b	59.76	39.48	67.00	66.3
Cost of sales		(6,026)	(5,266)	(4,684)	(4,831)	Realised gas price	U	S\$/mcf	2.44	1.96	3.26	3.1
Gross Profit		1,737	1,198	2,776	2,806	Exchange Rate	А	\$:US\$	0.6958	0.6989	0.7603	0.750
Other revenue						RESOURCES and RES	SERVES					
Other income		224	1,039	263	267	Conting	ent Resou	rces	Prospe	ctive Resou	rces	
Exploration written off							1C	2C	3C	1 U	2U	3U
Finance costs		(916)	(755)	(808)	(790)	Northern Territory						
Impairment		(1,677)	0	0	(2,505)	Gas (Bcf)	58.0	198.5	501.8	11,980	42,124	138,006
Other expenses		(18,806)	(8,682)	(7,133)	(6,502)	Liquids (Mb)	0.9	3.5	14.1	168	791	3,608
EBIT		(13,783)	(7,013)	(3,004)	122							
Profit before tax		(17,069)	(7,485)	(4,357)	(3,696)							
Taxes		(194)	(200)	0	0	TOTAL (Mboe)	10.6	36.6	97.8	2,165	7,813	26,609
NPAT Reported		(17,263)	(7,684)	(4,357)	(3,696)							
Underlying Adjustments		(5,971)	0	0	0	US Onshore	1P	2P	3P			
NPAT Underlying		(23,234)	(7,684)	(4,357)	(3,696)	Gas (Bcf)	24	34	38			
CASHFLOW	A\$000s	2019	2020	2021E	2022E							
Operational Cash Flo	w	1,822	(1,970)	573	735							
Net Interest		(2,712)	(755)	(614)	(593)	PRODUCTION						
Taxes Paid		(194)	(200)	(50)	(100)	Year end Dec			2019	2020	2021E	2022E
Other						Crude oil		kboe	89	2	2	2
Net Operating Cashfl	ow	(1,084)	(2,924)	(92)	42	Natural Gas		mmcf	1778	1630	1646	1663
Exploration		0	(856)	0	0	Total		kboe	385	273	276	279
PP&E		0	(12)	0	(133)							
Petroleum Assets		(2,658)	(12,841)	0	0							
Net Asset Sales/other		27,698	0	0	0	EQUITY VALUATION						
Net Investing Cashflo	w	25,040	(12,841)	(18,390)	(10,000)		Low	Mid	High	Low	Mid	High
Dividends Paid						NT						
Net Debt Drawdown		(26,943)	(1,845)	(723)	(1,233)	Contingent	\$153	\$191	\$220	\$0.25	\$0.32	\$0.3
Equity Issues/(Buyback)		11,562	17,640	36,782	153	Prospective	\$223	\$402	\$485	\$0.37	\$0.67	\$0.8
Other						US Onshore						
Net Financing Cashflo	ow	(15,381)	15,795	35,309	(1,080)	Appalachian	\$5	\$10	\$15	\$0.01	\$0.02	\$0.0
Net Change in Cash		8,575	29	16,827	(11,038)		\$381	\$603	\$720	\$0.64	\$1.01	\$1.20
BALANCE SHEET	A\$000s	2019	2020	2021E	2022E	Net Cash (Debt)	\$23	\$23	\$23			
Cash & Equivalents		14,106	14,146	30,973	19,935	Corporate Costs	-\$5	-\$5	-\$5			
O&G Properties		37,505	46,442	125,488	135,755	TOTAL	\$400	\$622	\$738	\$0.67	\$1.04	\$1.23
PPE + ROU Assets		711	1,716	1,199	1,181	***************************************						
Total Assets		56,594	66,563	158,648	157,613	Shares on Issue	600 m	nn				
Debt		9,251	7,824	8,284	7,551							
Total Liabilities		37,089	36,327	45,537	45,857	RATIO ANALYSIS			2019	2020	2021E	2022
Total Net Assets/Equi	ty	19,505	30,236	113,112	111,757	Shares Outstanding	N		263	324	622	62
Net Cash/(Debt)		4,855	6,322	22,689	12,384	EPS (pre sig items)		Scps			(0.70)	(0.59
						EPS		cps	(9.31)	(2.73)	(0.70)	(0.59
NET PRODUCTION		2019	2020	2021E	2022E	PER	X				na	n _i
Crude Oil	kb	89	2	2	2	OCFPS		cps	0.69	(0.61)	(0.19)	0.0
Nat Gas	mmcf	1,778	1,630	1,646	1,663	CFR	X				na	n
TOTAL	kboe	385	273	276	279	BVPS		cps	7.5	13.4	18.2	18.0
						Price/Book	X		5.4x	3.0x	2.2x	2.2
	A\$mn	7.8	6.5	7.5	7.6	ROE	%				na	n
Product Revenue	A C no n	(6.0)	(5.3)	(4.7)	(4.8)	ROA	%				na	<u>n</u>
Cash Costs	A\$mn						Acps		6.6	3.7	4.5	4.
Cash Costs Ave Price Realised	A\$/boe	20.16	23.64	27.02	27.40	Gross Profit/share						
Cash Costs		20.16 (15.65) 4.51	23.64 (19.26) 4.38	27.02 (16.96) 10.05	(17.33) 10.07	EBITDAX EBITDAX Ratio		\$M	2.7	2.9 44.6%	3.7	3. ² 48.5%

Source: Company data for actuals, RaaS estimates



FINANCIAL SERVICES GUIDE

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Corporate Authorised Representative, number 1248415

of

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Effective Date: 6th May 2021



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