



Empire Energy Group Ltd

Next stop – resources upgrades

Empire Energy Group Limited (ASX:EEG) is an oil and gas producer/developer, with onshore Northern Territory (NT) and US oil/gas production assets. EEG has the largest tenement position in the highly prospective Greater McArthur Basin, which includes the Beetaloo Sub-basin. The NT energy basins are fast developing as strategic high-calorific gas bolsters for east coast Australia's future domestic requirements, growing Gladstone LNG ullage and potential supply for Darwin's expanding LNG export terminals, amid funding support from Territory and Federal governments. Empire Energy represents a pure, independent, and highly leveraged exposure to the transformational potential of the NT basins. Incremental operational data continues to support the commercial case, with the company firmly on the pathway and timeline to early commercialisation. Revised resource certification is under way with results likely to hand by end-May, to underpin FEED planning and the approvals process. EEG is sitting on an extensive and pervasive gas resource and we expect the share price discount to materially unwind as the development model firms. With more clarity across the Federal Government's gas policy, the company is well positioned to deliver a final investment decision (FID) and first gas over the next 18 months to two years, on an early-stage gas project.

Business model

Empire Energy Group Limited (EEG), is an oil and gas development and production company, focused on maturing its portfolio of onshore, long-life oil and gas opportunities. The key asset is the substantial tenement holdings across the world-class McArthur-Beetaloo basins in the NT where testing and evaluation data underpins the potential for material increases in gas resource bookings supporting an early gas development option. In practical terms, we suggest the company can be considered to be in a pre-development phase. Success from this point should see EEG on an accelerated path to first gas. EEG holds a current cash balance of ~\$20.7mn with \$15mn in undrawn debt and \$2.1mn remaining in Beetaloo Drilling Program grants.

Testing results and price exemptions build the economic case

Additional testing data from Carpentaria-2H records IP60-90-100 averages of 2.38/2.4/2.35mmcfd respectively and given the still-to-be-optimised development well design, continues to underpin the required threshold flow rate for commerciality (on normalisation). Independent analyses suggest EURs of 6.2Bcf (~7PJ @ P_{50}) to 8.1Bcf (~9PJ @ P_{10}) for a well with a 3,000m lateral and 60 frack stages. FEED studies and environmental applications are under way for next-phase work. A resources certification study is under way with results due by end-May and a significant upgrade to booked resources likely. We note the release of the Gas Code of Conduct and gas price cap exemption for small, domestic suppliers – market pricing can deliver material project upside.

The valuation shows the size of the success case

Whilst valuing pre-development phase assets is a subjective exercise, data to hand builds confidence in the economic and commercial with more re-rating events to come – more testing data, upgraded resource estimates and sales contracts with a project sanction by end-2023. We adjust our base-case (mid-point) valuation to \$613mn (\$0.79/share) on a weaker commodity price outlook, with an upside case to \$0.99/share. Against a reference share price of \$0.18/share, this suggests the market is risk weighting the EP 187 (Carpentaria option) at around 23% of our ascribed value. The success case at Carpentaria is rapidly building and could deliver valuation upside well in excess of our base case...such is the nature and attraction of gas plays in the proof-of-concept phase.

Energy

4 May 2023



Share Performance (12 months)



Upside Case

- Success cases at currently evaluating Carpentaria (-2H, -3H and -4V) wells delivering above-expectation testing data
- Delivery of initial 'P' certification to underpin commercial development case
- Securing a binding off-take agreement and/or a farm-in partner to offset market perceptions of future equity dilution

Downside Case

- Frack performance of C-3H in particular falls below expectations
- Continuing Federal Government development and approval hurdles slowing progress to first gas
- Continuing financing reliance through equity issues on weaker field data resulting in excessive share dilution

Board of Directors

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Paul Espie AO	Chair
Dr John Warburton	Non-Executive Director
Peter Cleary	Non-Executive Director
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More Clarity On Gas Policy

The Federal Government has released its draft gas industry Code of Conduct which ostensibly clears the way forward for smaller gas operators, although we remain somewhat cautious given the 'devil is always in the detail' with respect to what the terms and conditions translate to in practice.

Industry body APPEA has released preliminary observations regarding the proposed mandatory code of conduct suggesting that whilst the 'Code' recognises the "...critical need for investment in new gas supply to avoid future shortfalls in the east coast domestic market and to put downward pressure on gas prices", the process and practice of the operating regulations remains somewhat "uncertain" (at least in my interpretation of its commentary).

As we read it, the Code basically indicated there will be "...<u>automatic exemptions from price controls for small, domestic-only producers"</u> but "...meaningful supply investments will require <u>further conditional exemptions</u>".

With the \$12/gj price cap for new gas contracts extended through to mid-2025, the exemption to price controls is welcome news for EEG (and others) and we understand the 'meaningful supply' condition to be relatively generous (up to 100PJ pa), such that as it relates to EEG's growth strategy would not impact its exemption status in any way.

We remain somewhat at odds with the need for approvals to be at the <u>joint discretion</u> of the Climate Change and Energy Minister and Resources Minister, which we suggest could lead to perhaps unnecessary delays particularly in areas that may be across the mandates of both departments.

Exemptions (as granted) may only be in effect for one year, opening the possibility that some projects "...may need to reapply many times over the course of project operations, with no guarantee that the basis for an exemption today will be sufficient for an exemption in the future". APPEA also indicated that "...[c]onditional exemptions may also be varied or revoked at any time".

We suggest that rolling exemptions are likely to be an extreme case and that exemptions are more probably to apply over an investment period, whether that is field life or contract life as the nominal term. However, more clarity over these procedures would be welcome prior to submissions.

We also query whether the exemptions are going to be company or project/JV specific, apply to the individual project or in aggregate, and how any equity sell-down is treated, particularly if it's to a party (large-cap company) that may be in other projects, not qualified for exemptions.

As pointed out by APPEA "...[I]ong-term capital investments for new gas supply cannot be made on the basis of one year of certainty" and whilst these T&Cs may of necessity be couched in oblique/opaque terminology to cover potential loopholes, the "discretionary" nature of the process is probably the key area of concern.

A piece of good news for the industry per se, is that the draft Code won't be imposing a 'cost-plus' model and binding arbitration. In effect, the reasonable-pricing provisions of the Code can be considered as 'off the table'.

As commented though, "...the revised approach [may continue to represent] significant complexity and Ministerial discretion to the operation of the gas market".

APPEA conclude by commenting that "...further clarity and refinement will be needed across a number of areas to ensure the domestic gas market is able to function effectively".

As a reminder, we highlight to previous commentary related to changes to the Safeguard Mechanism legislation as noted in our 3-Apr update note:

- Beetaloo projects particularly singled out requiring net zero Scope 1 emissions from day one; and
- All new gas developments supplying into LNG projects (not new LNG projects) need to be net zero from day one as per international best practice as a standard.



The implications that follow suggest the approvals process could be longer and potentially more complicated, particularly if under the legislation the requisite federal minister becomes directly involved.

Capex and opex will rise on offsets and mitigation processes. Nominally, these costs could be small and offset by rising gas prices.

However, we suggest these imposts could be a material issue only for <u>high CO_2 projects</u> noting **that EEG is** reporting CO_2 contents of <1% for its resources, <u>compared to the deeper parts of the Beetaloo with tag levels of 3-4%.</u>

We suggest the economic impost to EEG will be small and at the margin.

The requirement for net zero reservoir CO_2 is considered international best practice <u>only for fields that supply LNG</u>. Fields developed for domestic supply will not necessarily have the same international best-practice requirement as we understand the intention.

No Material Change To NAV – Ranging \$501mn-\$764mn

We adjust our value range for EEG at the margin after updating for revised commodity price assumptions and net cash balance for the new quarter. Our value now ranges between \$0.65-0.99/share with a mid-point (base case) of \$0.79/share, noting the closing share price of \$0.18/share (3-May) represents a 73% discount to the low end of the NAV range and in isolation can be considered a risk weighting of ~63% to our mid-point assigned value of the 2C resources.

We would highlight that this discount is not unusual compared to the unit values the market is applying to the sector.

However, <u>additional flow data and updated reserves declarations due before mid-year should close the</u> <u>'value gap'</u> and underpin a resource rating as commercial outcomes become more tangibly demonstrable.

Exhibit 1: The risked NAV range continues to mark a material premium to the market price

		Risk	ed range (A	\$m)	
		Low	Mid	High	
Northern Territory					
Contingent Resources			2C volumes certified to 554Bcf of which 396Bcf (~70%) are attributed to EP 187 and 295Bcf to the mid-Velkerri B zone.		
Prospective Resources		\$144	\$197	\$236	2U volumes are largely associated with ex-EP 187 and ex-Pangaea tenements and represent longer-dated gas potential. The geological confidence level is relatively high on the look-through, but realisation will require extensive drilling campaigns.
US Onshore		\$36	\$44	\$61	Benefitting from higher US gas pricesthese assets are self-funding.
		\$499	\$610	\$762	
Net cash/(debt)			\$7		
Corporate			(\$5)		
TOTAL		\$501	\$613	\$64	
Shares issued (mn)	773	\$0.65	\$0.79	\$0.99	

Source: RaaS analysis; Risked ranges based on discretionary RaaS risk adjustments



Marching On Through The March Quarter...Data Remains In The Zone

We refer to our note of 3-Apr ("Gas bells are ringing") on the progress of testing from the Carpentaria gas play, which we highlighted was delivering results supporting the commercial case for a Beetaloo gas project, in our view. Whilst the quarterly only provided incremental additional operational data, we note the progress of the company through the approvals process for next-phase works and the continuing strength of the financial position.

Exhibit 2: Ticking over to NSAI results

Carpentaria-2H (C-2H)

The well was drilled between Jun-Jul 2022 with a completed (stimulate) hz section of 927m in the Velkerri B Shale

After initial testing the over 51 days, the well was shut-in for 'soaking' over the next five months and reopened for further testing on 24-Feb.

EEG has reported an IP30 rate of 2.81mmcfd and on an extrapolated basis (per 1,000m) the test rate normalises to 3.0mmcfd which is considered to be 'the' nominal benchmark advocated for the deeper, more central parts of the basin.

This gas rate, from a shallower, lower pressure, lower capital cost part of the basin means, in simple terms, comparatively more to EEG and we suggest comfortably makes the economic threshold. We also reiterate previous commentary that the subsequent testing phase **demonstrated a lower rate of natural decline**.

The hz section of the well was completed with 21 frack stages trialling four different styles and results need to be considered in that context – **the frack methodolgy is still to be optimised** and would likely deliver stronger results than those reported.

C-2H has clearly demonstrated the commercial potential of the play at this location and in comparative terms against the initial phase of testing, the well is running 34% more productively at a nominal decline rate of 14% versus 18% over the IP30 periods.

The company has also reported the following 'type curve' outcomes:

- IP60 gas rate averaging 2.38mmcfd:
- IP90 gas rate averaging 2.40mmcfd; and
- IP100 gas rate averaging 2.35mmcfd

IP90 and IP100 rates are aggregate/extrapolated estimates, which broadly fit the current type curve model.

Carpentaria-3H (C-3H)

The well was drilled between Oct-Nov 2022 with a completed (stimulated) hz section of 1,989m in the Velkerri B Shale

The hz section of the well was completed with 40 frack stages trialling three different styles - optimisation of methods remains a work in progress.

The well still shut-in after 27 days for soaking after initially being flowed for 27 days and recording an average flow rate of 2.6mmcfd (2.3mmcfd at shut-in). A more relevent calibration of C-2H and -3H results will be availabe after C-3H is reopened and further tested.

We assume re-testing will occur after a similar period of soaking (five months) which implies around mid-July.

The C-3H well is approximately 150m deeper than in the -2H.

Carpentaria-4V (C-4V)

The C-4V well was drilled across Dec-2022-Jan-2023 in a separate but adjoing fault block to the other Carpentaria wells and has established "...the continuity of the shale play into the adjoining Carpentaria East (area)" where the "...thickness of the shale sequence has proven to be consistent throughout the EP-187 area".

Update resources certification is on the way...

...incorporating the data from the C-2H, -3H and -4V wells, a revised certification is under way undertaken by Netherland Sewell and Associates.

We expect results to be available by the AGM scheduled for 30-May...with a material upgrade in the offing.

Corporate

FEED studies and approval applications are well under way

Ongoing FEED studies to tie down planning, design and costs; and securing bankable gas sales agreement heading to a first-mover project anticipated to be sanctioned (FID) by end-2023.

...EUR modelling is strongly supportive

As previously reported, analyses completed by Subsurface Dynamics Inc. on the flow data indicates EURs (gas recovery per well) of between 6.2Bcf (~7PJ) on a P_{50} case up to 8.1Bcf (~9PJ) on a P_{10} case for a well with a 3,000m lateral and 60 frack stages (every 50m).

Bearing in mind that <u>frack optimisation is still a work in progress</u>, we suggest this data may represent the lower end of a base-case range.

Well capex is crystallising

The working model estimates capex in the order of ~\$20mn for a 3,000m hz and 60 frack stage well, in a pilot case potentially reducing to ~\$15mn in a development case which translates to <u>unit drilling and</u> completion costs of ~\$2-3/gj on a project basis.

As per all assumptions to date we believe EUR and capex could be considered as perhaps the higher end of a base-case range given the design is still to be finalised.

Financing position remains comfortable

EEG holds a cash balance of ~A\$20.7mn (as at date) with \$15mn in undrawn debt and \$2.1mn remaining against the Beetaloo Cooperative Drilling Program grants.

Source: Company data; RaaS commentary



As previously noted and worth reiterating:

... $\underline{\text{C-2H}}$ data is ticking boxes and there aren't many more to tick from an operational (field) perspective. The company enterprise value(~\$118mn) at the reference share price reflects a discount of ~69% to our ascribed value of the mid-point 2C gas volumes only.

The discount to the resource value likely reflects a bearish market sentiment to gas policy uncertainty, residual concerns on the economic case and perhaps anticipation of an equity raise...or just the small company discount in a market currently in a risk-off investing phase.

...this discount is not unusual compared to the unit values the market is applying to the sector. However, <u>derisking the type curves</u>, material upgrades to gas resources and definitive progress through FEED to FID should close the 'value gap'.

The value proposition lies in being able to unlock gas opportunity.

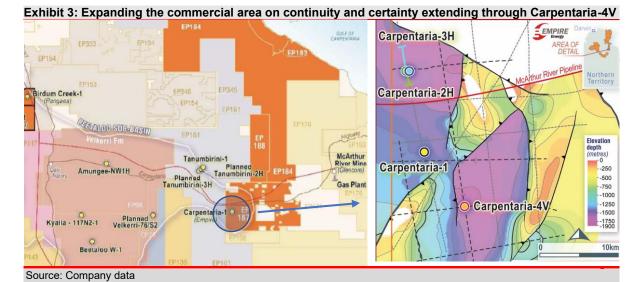




Exhibit 4: Financial Summary

EMPIRE ENERGY O	ROUP LTD	EEG				nm = not meaningful						
YEAR END		Dec				na = not applicable						
NAV	A\$mn	\$0.65										
SHARE PRICE	A\$cps		priced as of c	lose trading	3-May							
MARKET CAP	A\$mn	139										
ORDINARY SHARES	M	773										
OPTIONS	M	10										
COMMODITY ASSUM	PTIONS	2020	2021	2022E	2023E	NET PRODUCTION			2020	2021	2022E	2023
Realised oil price	US\$/b	39.48	67.98	94.25	79.69	Crude Oil	k	b	2	2	2	
Realised gas price	US\$/mcf	1.96	3.72	6.42	2.69	Nat Gas		nmcf	1,630	1,676	1,727	1,72
Exchange Rate	AS:US\$	0.6989	0.7514	0.6946	0.6757	TOTAL		boe	273	282	290	29
	100000000000000000000000000000000000000			1011111		1			10.000			
						Product Revenue	A	\$mn	6.5	8.5	12.7	7.
RATIO ANALYSIS		2020	2021	2022E	2023E	Cash Costs		Śmn	(5.3)	(5.0)	(8.1)	(5.
Shares Outstanding	M	324	612	773	773	Ave Price Realised		\$/boe	23.64	30.17	43,66	26.4
EPS (pre sig items)	UScps		(2.41)	(0.54)	(0.64)	Cash Costs		\$/boe	(19.26)	(17.76)	(28.05)	(19.2)
EPS	Acps	(2.73)	(2.41)	(0.54)	(0.64)	Cash Margin			4.38	12.41	15.61	7.1
PER	×		na	na	na							
OCFPS	Acps	(0.61)	(5.35)	37.40	2.60	RESOURCES and RESER	VES					
CFR	X	10.02)	na	na	na			gent Resou	rces	Prospe	ective Resou	rces
DPS	Acps						1C	2C	3C	10	2U	3U
Dividend Yield	96					Northern Territory			-		1,000	-
BVPS	Acps	13.4	23.8	23.7	24.4	Gas (Bcf)	138.8	553.5	1,707.8	12,561	42,928	139,488
Price/Book	X		20.0	0.8x	0.7x	Liquids (Mb)	0.9	5.0	14.1	170	797	3,633
ROE	96			na	na		7.00		2777			-
ROA	%			na	na							100 11 1
(Trailing) Debt/Cash	×			112	1.0	TOTAL (Mboe)	24.0	97.2	298.8	2,264	7,952	26,881
Interest Cover	×					. Sinc (moor)	2-710	2716	2,50,0	2,204	1,500	10,001
Gross Profit/share	Acps	3.7	5.7	5.9	2.7	US Onshore						
EBITDAX	ASM	2.9	3.0	6.7	3.0	UJ Chancre	1P	2P	3P			
EBITDAX Ratio	%	412.	3.0	9.7	2.0	Gas (Bcf)	28	38	42			
EARNINGS	A\$000s	2020	2021	2022E	2023E	000 (001)	20	30				
Revenue	rocca	6,464	8,502	12,662	7,652	EQUITY VALUATION	p;	sked Range		Low	Mid	High
Cost of sales		(5,266)	(5,005)	(8,135)	(5,585)	A\$mn	Low	Mid	High	LUW	A\$/share	riigii
Gross Profit		1,198	3,497	4,527	2,068	Northern Territory	LUW	MIG	riigii		Agystiate	
Other revenue		1,130	3,437	14,327	2,000	Contingent Resources	320	369	464	\$0.41	\$0.48	\$0.60
Other income		1,039	1,606	1,927	296	Scenario Weighting	3%	2%	1%	30,41	30.40	\$0.00
Exploration written off		1,000	1,000	4,247	250	Prospective Resources	144	197	236	\$0.19	\$0.26	\$0.31
Finance costs		(755)	(568)	(677)	(669)	US Onshore	244	437	230	30.23	30.20	30.31
Impairment		(733)	(300)	(2,705)	(003)	Appalachian	36	44	61	\$0.05	\$0.06	\$0.08
Other expenses		(8,682)	(14,332)	(8,511)	(6,817)	грранастиан	499	610	762	\$0.65	\$0.79	\$0.99
EBIT		(7,013)	(11,305)	(1,851)	(3,707)		433	010	702	30.03	30.75	\$0.55
Profit before tax		(7,485)	(10,835)	(3,983)	(4,749)	Net cash/(debt)		7				
Taxes		(200)	(213)	(213)	(200)	Corporate costs		(5.0)				
NPAT Reported		(7,684)	(11,048)	(4,196)	(4,949)			(0.0)				
Underlying Adjustment	L	(7,004)	0	(4,130)	(4,545)	TOTAL	501	613	764	\$0.65	\$0.79	\$0.99
NPAT Underlying		(7,684)	(11,048)	(4,196)	(4,949)	TOTAL	501	013	704	50.00	90.73	90.33
CASHFLOW	A\$000s	2020	2021	2022E	2023E	Shares on issue (mn)	773 mi	n				
Operational Cash Flo		(1,970)	(7,044)	13,796	1,701	anales on issue (min)	772 MI					
Net Interest		(755)	(568)	(677)	(452)	-						
Taxes Paid		(200)	(213)	(187)	(120)	-						
Other		(200)	(213)	(10/)	(120)	-						
Net Operating Cashi	low	(2,924)	(2,460)	20,082	1,356							
Exploration		(856)	(2,460)	20,082	(4,181)							
PP&E		(12)	0	(133)	(4,181)	1						
Petroleum Assets		(12,841)	(12,965)	(54)	(5)	-						
Net Asset Sales/other		(12,841)										
			(24 442)	(50.410)	(12 000)	-						
Net Investing Cashfl	OW	(12,841)	(24,443)	(50,419)	(12,000)							
Dividends Paid		(2.045)	(0.57)	(70.01	(PAN)							
Net Debt Drawdown		(1,845)	(817)	(793)	(500)	33						
Equity Issues/(Buyback)		17,640	39,359	28,928	. 0							
Other	la	27 200	20.5.5	20.000	Spinot.	-						
Net Financing Cashf	ow	15,795	38,542	28,550	(500)							
Net Change in Cash	ACCOC	29	11,639	(1,786)	(11,144)	-						
BALANCE SHEET	A\$000s	2020	2,021	2022E	2023E	-						
Cash & Equivalents		14,146	25,650	24,092	12,948							
O&G Properties		45,442	34,900	85,635	97,931							
PPE + ROU Assets		1,716	1,306	1,328	860							
Total Assets		66,563	158,823	207,710	207,480							
Debt		7,824	8,027	8,127	7,311	<u></u>						
Total Liabilities		36,327	49,502	80,240	80,067							
Total Net Assets/Equ	iity	30,236	109,320	127,470	127,413							
Net Cash/(Debt)		6,322	17,622	15,965	5,636							
Gearing dn/(dn+e)												

Source: RaaS Advisory, company data



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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