

Date: 12 October 2017

Recommendation: BUY  
 Price Target: \$0.38

## Company Information

Code	TEG.ASX
Last Price	A\$0.19
Shares on Issue	189.5m
Market Capitalisation	\$36m
Daily Volume	1.11m

## Financial Summary

	FY13a	FY14e	FY15e	FY16e
Revenue (\$m)	16.8	20.7	22.1	37.7
Operating Costs(\$m)	(12.7)	(10.7)	(14.7)	(25.2)
EBITDA (\$m)	0.2	7.6	4.8	9.8
D&A (\$m)	(2.0)	0.0	(1.1)	(1.1)
EBIT (\$m)	(1.7)	7.6	4.8	8.6
Net Interest (\$m)	(0.2)	0.0	(1.4)	(1.1)
Profit Before Tax (\$m)	(3.5)	7.6	4.8	7.3
Income Tax (\$m)	(1.1)	(2.3)	(1.4)	(2.2)
Underlying NPAT (\$m)	(4.6)	5.3	3.4	5.1
Non-recurrent (\$m)	0.0	0.0	0.0	0.0
Reported NPAT (\$m)	(4.6)	5.3	3.4	5.1
EPS Reported (¢)	(0.03)	0.03	0.02	0.03
EPS growth (%)	n/a	n/a	-36%	50%
DPS (¢)	0.0	0.0	0.0	1.0
Cash (\$m)	2.2	4.1	8.4	12.5
Net debt (\$m)	(2.2)	(4.1)	(6.7)	(12.5)
Net debt / equity (%)	270%	-91%	-85%	-97%
Interest Cover (x)	(11.2)	0.0	3.5	8.0
ROE (%)	na	118%	43%	39%
ROA (%)	na	14%	7%	8%
NTA per share (¢)	(0.01)	0.02	0.04	0.07
PE (x)	na	7.2	11.2	7.5
EV/EBITDA (x)	na	4.5	7.0	3.9

## Share Price Performance



Source: CIQ

## Analyst Details

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## Triangle Energy (Global) Limited “Now we are here in Xanadu”

Triangle Energy (Global) Limited (TEG) is a WA based E&P company that is the majority owner and operator of the Cliff Head Oil Field and the Arrowsmith plant, a 30% partner in the newly discovered Xanadu oil field and the largest shareholder of State Gas (ASX:GAS) in Queensland.

## Summary Key Points

**TEG is the majority owner and operator of the Cliff Head and Arrowsmith Processing Plant:** TEG is the 78.75% majority owner and operator of the Cliff Head oil field and nearby Arrowsmith processing plant. The field is currently producing ~1,200 bbls/day or ~440,000 bbls per year.

**TEG is working on a program to upgrade resources and to reduce costs in the Cliff Head Field:** TEG has identified several opportunities to reduce field Opex and potentially add more barrels of oil to its resources through an EOR program and infield drilling. This program includes the optimisation of producing wells, recompletions and workovers and following up on several in field and near field drilling targets.

**TEG is a 30% shareholder in the newly discovered Xanadu oil field:** The Xanadu-1 well confirmed the presence of a 4.6m oil column at the top of the Irwin Coal Measures and high-quality oil was recovered to surface. It is expected that the JV will now embark on a seismic program and drill an up-dip sidetrack well as it believes the well has intersected the accumulation at the lower part of the structure due to sparse seismic coverage. Now that a trap seal has been confirmed it is almost certain that there is more movable oil up-dip of the part of the reservoir that was intersected by the Xanadu-1 well.

**TEG is a major shareholder of State Gas (ASX:GAS) in Queensland which gives TEG exposure to the East Coast Gas Thematic:** TEG own 47.8m shares which are worth \$16.7m at \$0.35 (11 October 2017). GAS's key asset is Reids Dome (PL231) which is a conventional gas accumulation in the Bowen Basin in Queensland. This gives TEG exposure to the East coast gas thematic and high gas prices.

## Recommendation and Valuation

We initiate on TEG with a **BUY** recommendation and a **\$0.38** price target. We have valued TEG on a sum of the parts basis by developing a comprehensive DCF analysis for each of its operational assets. It is important to note that at the time of publication the current TEG share price is 30% below our most conservative view of the business. In our opinion, this provides a high margin of safety for investors as our conservative view assumes no further appraisal, exploration or optimisation success from programs that are currently well advanced.

## Key Catalysts

**Cliff Head Cost Savings:** TEG is working to lower the Opex costs of the Cliff Head field thereby improving margins. Good progress has already been made and we can expect further progress on this front.

**Increased production from the Cliff Head field:** TEG has a field optimisation program underway that has the potential to achieve greater production and a longer field life. Positive results will improve the resource base and production profile.

**Near field exploration upside:** TEG is looking to drill the Mentelle prospect, which if successful, could add substantial additional reserves and production to the Cliff Head field.

**The drilling of a side track well at the Xanadu field:** The JV is planning seismic survey and the drilling of a side track well. Results from this program will be critical in determining the commercial potential of the Xanadu field.

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## Valuation and Recommendation

### Recommendation

We initiate on TEG with a **BUY** recommendation with a **\$0.38** price target.

We believe TEG is undervalued relative to its current asset base and future potential. In our view TEG offers a diverse exposure to different parts of the Oil and Gas project cycle as well as favourable macro tailwinds:

- Cliff Head provides exposure to current production and a potential for production uplift and reserves addition due to a field optimisation work program that is currently underway. TEG own and operate its key infrastructure which puts in a favourable position to capitalise on new developments in the area.
- The investment in GAS offers exposure to the macro thematic of gas shortages on the East Coast of Australia which has already resulted in an increase in gas prices. GAS's assets are also situated close to infrastructure which allows for rapid access to east coast markets.
- TEG has a 30% share of the newly discovered Xanadu oil field which is close to its Arrowsmith plant. While Xanadu is in the early stages of appraisal it has the potential to be a significant oil field considering the size of the structure. Rapid commercialisation of the field is a reality as it will be possible to process the oil at the nearby Arrowsmith plant thereby saving the JV hundreds of millions of dollars in capex.

### Valuation

We have valued TEG on a sum of the parts basis as the firm consists of three separate entities. We have developed multiple valuation scenarios to quantify the value of TEG's operational assets as they have the potential to grow significantly in value. TEG has two major initiatives to extract value from the Cliff Head field; a review of the cost base as well as the realisation of unexploited resource opportunities in the field. The JV owners of the Xanadu field are also embarking on an appraisal program to quantify the potential of the field. We have developed comprehensive DCF full field models to value each scenario and asset separately.

#### ***Low Case Valuation Scenario***

We assume no further resource optimisation takes place at Cliff Head and TEG runs the field to the end of its life and that ultimately Xanadu is a 7 mmbbls field.

#### ***Base Case Valuation***

TEG is targeting upgrading Cliff Head's resources by 7 mmbbls which we have assumed for our base case valuation scenario results in a 3 mmbbls upgrade to recoverable oil. In our view, the previous owners of the field did not take full advantage of the optimisation opportunities at Cliff Head and we believe with Tamarind's help, TEG will be able to extract more value from the field. Due to the early stage of the Xanadu appraisal program, we have used the same Xanadu low case scenario as the low case valuation.

#### ***High Case Valuation***

In this valuation scenario, we have assumed a high degree of success in the Cliff Head optimisation program and assumed an additional 6 mmbbls are added the field resources. We have also assumed that Xanadu is a 50 mmbbls field which is still below redrill estimates of 160 mmbbls of recoverable oil.

The State Gas valuation is based on the current market value of TEG's 47.8m shares.

We have valued TEG on our Base Case valuation scenario at **\$71.3m** or **\$0.38** a share using an 8% discount rate. It is important to note that at the time of publication the current TEG share price is 30% below our most conservative view of the business. In our opinion, this provides a high margin of safety for investors as the conservative view, assumes no further appraisal, exploration or optimisation success from programs that are currently well advanced.

Asset Valuation	Ownership %	Low Case		Base Case		High Case	
		AUD\$m	A\$/ps	AUD\$m	A\$/ps	AUD\$m	A\$/ps
Cliff Head	78%	26.9	0.14	49.7	0.26	73.8	0.39
Xanadu	30%	7.9	0.04	7.9	0.04	84.1	0.44
<b>Total Operations NPV</b>		<b>34.7</b>	<b>0.18</b>	<b>57.6</b>	<b>0.30</b>	<b>157.9</b>	<b>0.83</b>
State Gas (ASX:GAS)	47.8m shares	-	-	-	-	-	-
Cash		3.0	0.02	3.0	0.02	3.0	0.02
Corp		-6.0	-0.03	-6.0	-0.03	-6.0	-0.03
<b>Total NPV</b>		<b>48.5</b>	<b>0.26</b>	<b>71.3</b>	<b>0.38</b>	<b>171.6</b>	<b>0.91</b>

Figure 1: TEG Valuation Scenarios

Source: DJC

### Oil Price and FX Assumptions

For all of the valuation scenarios, we have used a flat Brent oil price of US\$50 and an exchange rate 0.78 AUD to the USD. Brent has been trading between US\$40 and US\$60 for over 14 months and thanks to ongoing production cuts from OPEC and the running down of global crude stocks, the price has shown resilience and at the time of publication of this note was trading at US\$55 a barrel. The consensus forecast from a selection of global investment banks is that Brent is going to trend upwards next year from US\$57 (CY2018) to US\$70 a barrel by CY2026. We therefore, believe there is upside to our valuation based on the expectations for future oil prices. We have calculated a sensitivity analysis on our different valuation scenarios and have observed that a modest increase in oil prices has a large effect on TEG's NPV.

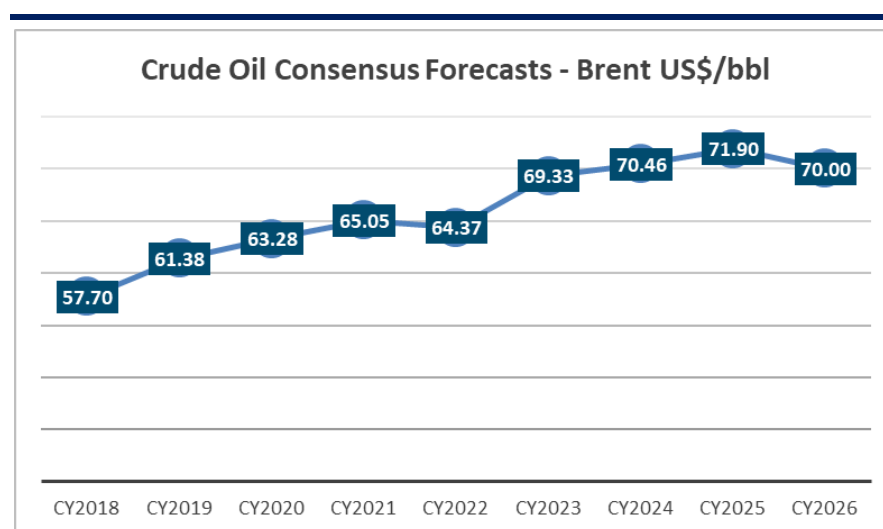


Figure 2: Brent Consensus Forecasts

Source: CIQ

Sensitivity to oil price \$/share	Brent Oil Price (US\$/bbl)				
Scenario	45	50	55	60	65
<b>Low Case</b>					
Cliff Head	0.10	0.14	0.18	0.22	0.25
Xanadu	0.01	0.04	0.07	0.10	0.13
<b>Total Operations NPV</b>	<b>0.11</b>	<b>0.18</b>	<b>0.25</b>	<b>0.32</b>	<b>0.39</b>
<b>Base Case</b>					
Cliff Head	0.19	0.26	0.34	0.41	0.49
Xanadu	0.01	0.04	0.07	0.10	0.13
<b>Total Operations NPV</b>	<b>0.20</b>	<b>0.30</b>	<b>0.41</b>	<b>0.51</b>	<b>0.62</b>
<b>High Case</b>					
Cliff Head	0.29	0.39	0.49	0.60	0.70
Xanadu	0.24	0.44	0.65	0.85	1.05
<b>Total Operations NPV</b>	<b>0.53</b>	<b>0.83</b>	<b>1.14</b>	<b>1.44</b>	<b>1.75</b>

Figure 3: TEG operations NPV valuation sensitivity to oil price Source: DJC

The impact of a US\$1 change in the Brent oil price on the NPV/share is presented in Table 4. It is clear that the TEG business is positively geared to an upwards change in the oil price but because it is aggressively reducing its opex, TEG is likely to be profitable in a declining oil price environment. Oil prices would have to fall to close to US\$35 a barrel before profitability is compromised but considering we are expecting an improvement in opex the breakeven oil price is likely to be even lower. The oil price briefly retreated to these level in early 2016 but quickly rebounded up ~US\$51 by the end of the year.

Scenario	Change in NPV/Share for a USD\$1 change in
<b>Low Case</b>	
Cliff Head	0.01
Xanadu	0.01
<b>Total Operations NPV</b>	<b>0.02</b>
<b>Base Case</b>	
Cliff Head	0.01
Xanadu	0.01
<b>Total Operations NPV</b>	<b>0.02</b>
<b>High Case</b>	
Cliff Head	0.02
Xanadu	0.04
<b>Total Operations NPV</b>	<b>0.06</b>

Figure 4: Effect of a US\$1 change in the Brent oil price the NPV/share Source: DJC

The USDAUD has traded up since May 2017 and reached a high of AU\$0.81 in September. Since then the exchange rate has trended down to AU\$0.78. According to the forward curve, the exchange rate is expected to drop to AU\$0.75 by 2023.

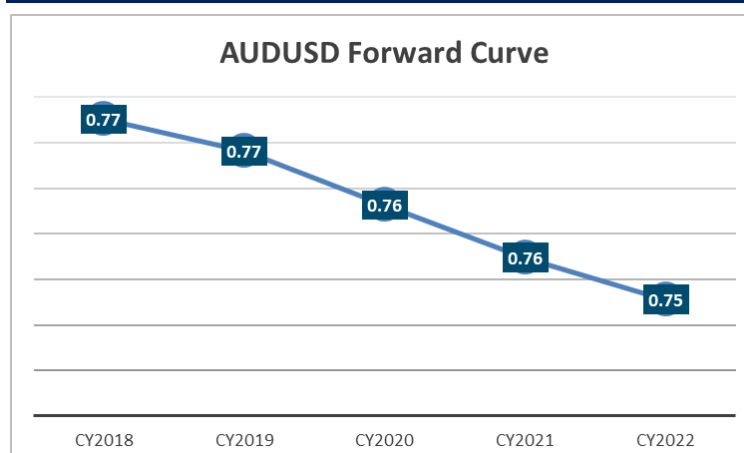


Figure 5: AUDUSD forward curve

Source: CIQ

TEG receives payment for oil based on the USD but pays its costs in AUD. Therefore, a fall in the exchange rate is favourable for TEG as a lower AUDUSD exchange rate increases realised price it receives thereby increasing margins. We have used a flat exchange rate of AUD\$0.78 for our analysis even though the exchange rate is likely to fall over the next several years.

### Cliff Head Oil Field

#### Cliff Head oil field and the Arrowsmith plant valuation assumptions and results

The Cliff Head oil field is currently operational and is producing crude oil daily.

#### Low Case Valuation – NPV \$26m - \$0.14/share (net to TEG)

We have valued the Cliff Head plant for our low case valuation analysis by assuming there will be no upside to current resources from the ongoing work program to grow the field's reserves. This assumes TEG would simply run the field to the end of its working life without addressing the current cost structure or optimising the field to access further oil production potential.

There is also an abandonment liability on the field and TEG carries a \$25.5m provision on its balance sheet to account for it. In our opinion, the nearby recent Xanadu discovery and the field extension activities make it unlikely that TEG will be decommissioning any part of the operation for the foreseeable future. However, we have included a \$5m decommissioning charge in our Cliff Head base case valuation to account for the abandonment of producing wells once the field is exhausted.

Assumption	Value
Field Life	8 years
Estimated Ultimate Recovery (EUR)	2.8 MMbbl
Decline Curve	~7% per year
LOF Oil Price	US\$50
Opex	US\$30
Field Capex	0

NPV (Net to TEG)	\$26.9m/\$0.14/share
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Figure 6: Cliff Head Low Case Valuation Assumptions

Source: DJC

**Base Case Valuation – NPV \$49.7m - \$0.26 p/share (net to TEG)**

TEG has stated that it believes there are 7.8 mmbbls of mean prospective resources within the Cliff Head field that can be added to the current estimated 3 mmbbls of proven reserves on the back of a 5-step work program. This involves the drilling of 2 wells, an EOR program and the recompletion of existing production wells. Even if only 50% of this upside is ultimately realised, Cliff Heads production profile could double and even triple adding substantially to revenue and profitability as well as extending the life of the field considerably. In our base case valuation, we have attributed a 3 mmbbls upgrade to resources. We have also assumed that the addition of these barrels to TEG inventory will cost \$20m in capex. These additional barrels add \$23.7m/\$0.12 p/share of NPV to the value of the Cliff Head operation as well as extending the field life by 4 years.

Work on this program is ongoing and we believe that it is likely that TEG for a relatively modest capital outlay, be able to add barrels to the field. As already discussed thanks to the Xanadu discovery there is every chance that there is oil trapped up-dip from where the Mentelle-1 well intercepted a residual oil column. An up-dip drilling location has been identified and TEG is in the process of planning to drill it.

Assumption	Value
Field Life	14 years
Estimated Ultimate Recovery (EUR)	6.3 MMbbl
Decline Curve	~10% per year
Oil Price	US\$50
Opex	US\$30
Field Capex	\$20m
NPV (Net to TEG)	\$49.7m/\$0.26/share

Figure 7: Cliff Head Base Case Valuation Assumptions

Source: DJC

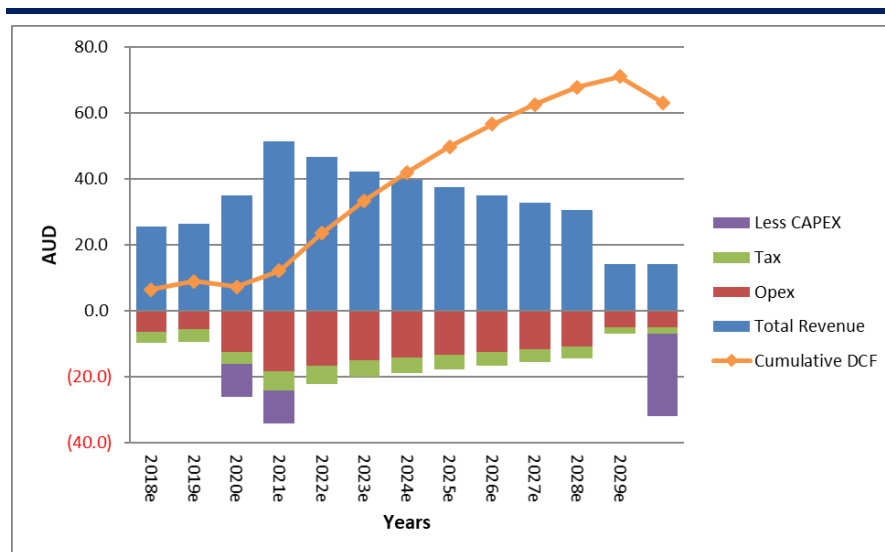


Figure 8: Cliff Head Base Case cashflow profile

Source: DJC

### High Case Valuation – NPV \$73.8m - \$0.39 p/share (net to TEG)

In our high case valuation, we assume a greater level of success to the Cliff Head optimisation program and therefore we have attributed a 6 mmbbls upgrade to resources. We have also assumed that the addition of these barrels to TEG's inventory will cost \$50m in capex.

Assumption	Value
Field Life	14 years
Estimated Ultimate Recovery (EUR)	8.59 MMbbl
Decline Curve	~15% per year
Oil Price	US\$50
Opex	US\$30
Field Capex	\$50m
NPV (Net to TEG)	\$73m/\$0.39/share

Figure 9: Cliff Head Base Case Valuation Assumptions

Source: DJC

## Xanadu Oil Field

### Xanadu Oil field development assumptions and results

The Xanadu oil discovery is still in early days of appraisal. Due to the relatively sparse seismic over the prospect it has been difficult for the JV to determine the size of the discovery. A 4m net oil column was intercepted which is encouraging but the real value lies in determining what lies up-dip of this area.



To value the field, we have developed 3 full development field scenarios based on recoverable oil. We have assumed a type curve that is based on the Cliff Head production profile. For each development, we have assumed a combination of horizontal production wells and vertical injection wells similar to the Cliff Head development. We have also assumed all oil will be processed at the Arrowsmith plant and exported via Geraldton which is only 60km away. Opex costs are assumed to be the same as the current operational Cliff Head field. Importantly, we have not assumed any toll income for processing the oil to TEG but have charged the JV full Opex costs. This toll income will accrue to TEG further improving the value of the TEG business. We have however not accounted for this income stream in our valuation at this point in time. The inclusion of this value will provide a further opportunity to upgrade our valuation.

Our development scenarios are well below the pre-drill estimates. Once seismic and further appraisal drilling is undertaken in the field the JV will be able to determine the size of the reserves. Even though a net 4m oil column has been intersected, in no way are the pre-drill estimates off the table. The Xanadu-1 well only intercepted the edge of the accumulation and is likely that there is more oil up dip and considering the size of the overall structure the pre-drill volumetric estimates could well be realised. It must be noted that the well was drilled with sparse seismic and this needs to be filled in to better understand the field.

Assumption	Low Case	Base Case	High Case
Field Life	17 years	17 years	18 years
Estimated Ultimate Recovery (EUR)	7 MMbbl	18 MMbbl	50 MMbbl
Production Wells	2 Horizontal	4 Horizontal	11 Horizontal
Well IP	3,500 bopd	4,500 bopd	4,500 bopd
LOF Oil Price	US\$50	US\$50	US\$50
Opex	US\$30	US\$30	US\$30
Field Capex	\$38m	\$66m	\$194m
NPV (net to TEG)	\$7.9m/\$0.04/share	\$28.8m/\$0.15/share	\$84m/\$0.44/share

Figure 10: Xanadu Development Scenarios

Source: DJC

**Xanadu Low Case Valuation – 7mmmbbls of reserve and \$38m (11.4m net) capex – NPV \$7.9m/\$0.04/share net to TEG**

The low case assumes 7 mmbbls of recoverable oil and \$38m in capex to develop the field. By our calculations, a 2.5 mmbbls development and \$24m of capex for 1 vertical and 1 horizontal well will be the minimum NPV positive development returning \$2.4m of value to the JV. Such a small development, however is unlikely to receive FID from the JV as it the capex requirement far outstrips the NPV that will be delivered all things remaining equal. We also believe that the Xanadu-1 well has not intersected the ideal part of the reservoir and the laws of physics tells it is likely that substantial amount of oil is likely trapped up-dip.

We believe the minimum development that would receive FID is circa 7 mmbbls as it provides an overall NPV of \$26m and an IRR of 25%. All our calculations are post-tax.

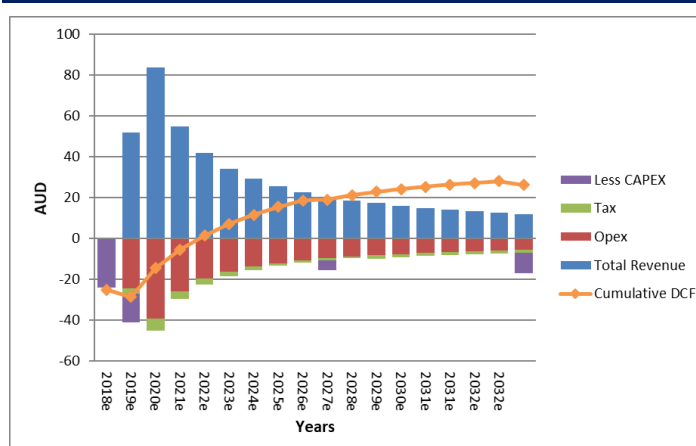


Figure 11: Xanadu base case revenue profile

Source: DJC

### Xanadu Mid Case Valuation – 18 mmbbls of reserve and \$66m (19.8m net) capex – NPV \$28.8m/\$0.15/share net to TEG

The mid-case assumes that Xanadu is an exact analog to nearby Cliff Head and ultimately delivers 18 mmbbls of oil for a \$66m development cost. The capex spend is for production wells, injection wells and gathering infrastructure. The production from an 18 mmbbls development is well within the current Arrowsmith capacity of 15,000 bopd of production.

### Xanadu High Case Valuation – 50 mmbbls of reserve and \$194m (\$58.8m net) capex – NPV \$84m/\$0.44/share net to TEG

The high case assumes that there are 50 mmbbls of recoverable oil in place. The development cost for this development is \$194m of which \$58.8 is net to TEG. We have assumed 11 horizontal production wells with a well IP of 4,500 bopd on a Cliff Head style decline curve.

Even at 50 mmbbls our estimate is well below the mid predrill estimate of 160 mmbbls and just above the low estimate of 45 mmbbls. We still believe the 50% recovery applied to oil in place was on the high side but do believe that the redrill estimates are achievable based on the size of the Xanadu structure.

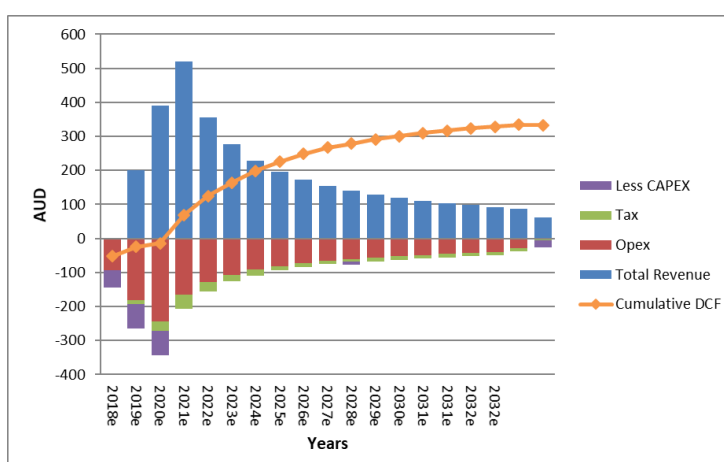


Figure 12: Xanadu high case revenue profile

Source: DJC

### State Gas Limited (ASX:GAS)

TEG own 47.8m share in State Gas (ASX:GAS) which listed on the 10<sup>th</sup> October 2017. At the close of trade on the 11<sup>th</sup>, GAS shares closed at \$0.35 (up from a listing price of \$0.20) valuing TEG shares at \$16.7m.

### Catalysts

- **Cliff Head Cost Savings:** TEG is working to lower the Opex costs of the Cliff Head field thereby improving margins. Good progress has already been made and we can expect further progress on this front.
- **Increased production from the Cliff Head field:** TEG has a in field optimisation program on foot that includes EOR recoveries, recompletions and in field drilling that is likely to result in greater production and a longer field life.
- **Near field exploration upside:** TEG is looking to drill the Mentelle prospect which if successful could add substantial additional reserves and production to the Cliff Head field.
- **Seismic survey of Xanadu:** A more detailed seismic survey of the Xanadu field is now warranted based on the discovery. The results of this will help to plan the side track well and any further drilling.
- **The drilling of a side track well at the Xanadu field:** There is the opportunity to drill a side track appraisal well to further test the up-dip structure. Results from this drill will be critical in determining the commercial potential of the field.
- **Expansion of exploration ground:** There is large amount of underexplored ground in the vicinity of the Cliff Head field and plant. As the key infrastructure owner in the basin, TEG is in a good position to explore and commercialise new and existing prospects in the area.

### Risks

- **Commodity prices:** The oil price has been volatile over the last several years and even though the recent trends have been upwards there is a danger that global factors could cause the price to fall making TEG's operations uneconomic.
- **Exchange rate:** A rising AUDUSD exchange rate will negatively impact TEG profitability.
- **Exploration risk:** While the Xanadu discovery is exciting there is not enough information available to determine the commercial potential of the field. There are also no guarantees that TEG Cliff Head optimisation efforts will improve the Cliff Head production profile.
- **Development risk:** To develop the Xanadu field and increasing production at Cliff Head will entail further drilling and development. There is always a risk this could, for technical reasons, lead to a less than optimal outcome.
- **Capital Risk:** TEG is a small cap company and it does not have a large cash reserve. If there was a major issue in terms of ongoing production it may not have the ability to raise the funds to rectify the issue and continue operations. It does however, have Tamarind as a partner that could help in the unlikely event of a major issue affecting production.

## Investment Thesis Detail

## Perth Basin Geology



Figure 13: Perth Basin location in WA

Source: PPO

The Perth Basin is a known hydrocarbon province with over 320 onshore and 60 offshore wells drilled since exploration began. The Northern Perth basin has only produced 20 commercial oil and gas fields with Cliff Head being the only offshore producing field. The Cliff Head discovery and subsequent commercialisation program have been one of the notable successes of the region.

The largest company active in the region is AWE who discovered the conventional Waitsia field (50% AWE and 50% Lattice Energy/Beach Energy (ASX:BPT)) which is the largest onshore gas discovery in Australia in 30 years. The discovery was made whilst AWE was drilling for tight gas and thanks to the well being ahead of schedule, a decision was made to drill the well deeper which then intersected a whole new play system below the tight gas accumulation. AWE is in the process of commercialising the discovery and recently achieved first gas sales. AWE is now moving towards full field development which will increase production capacity up to 100 Tj/d. The field is close to Dongara and close to TEG's projects.

The Perth Basin was formed during the separation of Australia and India in the Permian to Early Cretaceous. It was subjected to a large amount of tectonic activity during this and later periods, including extensive faulting from rifting during the Late Jurassic and Early Cretaceous period. This has made the basin structurally complex and while high quality reservoir rock, effective seal and a working hydrocarbon system is present, trap integrity has generally been an issue. Many exploration wells have encountered paleo oil columns where there was once an accumulation, but due to fault re-activation the oil migrated out of the trap leaving behind residual oil. This was a key risk factor attributed to the Xanadu prospect.

Cliff Head's main reservoir is a series of stacked sands of the early Permian Irwin River Coal Measures overlain by the Triassic Kockatea Shale seal. The source for the field is believed to be Kockatea Shale and the early Permian Irwin River Coal Measures. The Kockatea Shale is a shallow marine shale which accounts for the more liquids-rich accumulations in the Cliff Head field. The Cliff Head oil is trapped in a fault and dip closed structure. The reservoir is a high-quality sandstone with good porosity averaging about 18% and continues to perform over and above expectations.

### TEG is the majority owner and operator of the Cliff Head and Arrowsmith Processing Plant

TEG is the 78.75% majority owner and operator of the Cliff Head oil field and nearby Arrowsmith processing plant. The Cliff Head field is a producing oil field that first produced crude oil in May 2006 and has, since commissioning, produced 15.5 mmbbls of oil. The field continues to perform above forecasts producing ~1,200 bbls/day or ~440,000 bbls per year. The balance of the project (22.25%) is owned by Royal which is a private investment vehicle based on the East Coast of Australia.

The installation consists of an onshore stabilisation plant and an unmanned offshore platform in 15m to 20m of water. The 6km<sup>2</sup> Cliff Head oil field is in Production License WA-31-L which covers 72km<sup>2</sup> and is close to the town of Dongara. It is estimated that the infrastructure has a replacement value of \$320m. The plant is connected to the field by a 14km pipeline to the onshore stabilisation plant.

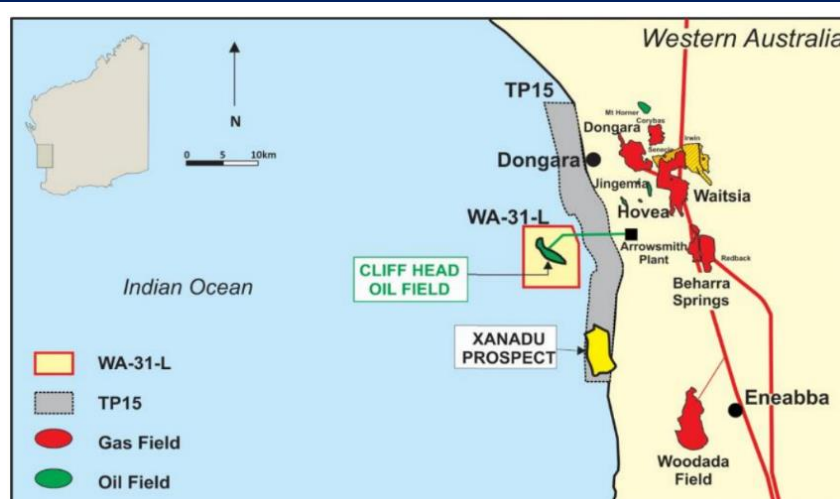


Figure 14: Location of TEG Assets in the Perth Basin

Source: Triangle

The facility is well situated in the basin to potentially process third party crude from any nearby onshore and offshore discoveries as the Arrowsmith plant has the capacity to process 15,000 bopd of crude.





Figure 15: The Cliff Head Production Platform

Source: DJ Carmichael

Currently, the field is producing circa 1,170 bopd of crude from 5 wells with produced water reinjected back into the reservoir via three injectors. The process of reinjecting water aids field recovery. In 2016 the field produced 0.43mmbbl with one of the key wells offline. Late last year a new ESP was installed in this key producer resulting in an improvement in field performance. The offshore platform is unmanned and remotely monitored from the Arrowsmith facility, which helps to contribute to low-cost nature of the project.



Figure 16: Arrowsmith Onshore Stabilisation Plant

Source: DJ Carmichael

The high quality 33° API produced crude is trucked 350km south to the BP's Kwinana refinery where TEG receive a Brent derived price. The light sweet nature of the crude benefits the refinery by offsetting some of the heavier imported crudes. TEG do however have other export options and considering the Geraldton Port is only ~65k from the plant it could potentially be used as an export point to transport crude via tanker to Singapore. Buru Energy (ASX:BRU) exports its crude to Singapore via Wyndham which provides proof that crude from WA can be sold internationally.

TEG report that the field has 2P reserves of 2.7MMstb. The company has plans in place to increase the reserves by infill drilling, near field exploration and secondary and tertiary recovery programs.

TEG acquired its Perth Basin position from AWE and Roc Oil in two separate transactions. TEG paid a very competitive price for the assets and ground and is well positioned to extract value from these investments relative to the competitive price paid. TEG has assumed the abandonment liability but the operation has paid a substantial amount of PRRT which will help to partially offset the decommissioning costs. The abandonment study was also done in a different oil price environment and many of the costs associated with rehabilitating the field and plant will have softened. The field and facility are fully permitted, with production and pipeline permits in place. The safety case was recently extended out for 5 years and TEG can realistically expect to be in production for another 10 years at least.

The Perth Basin is one of the premier hydrocarbon Basins in Australia due to its geology and associated infrastructure. The Dampier Bunbury gas pipeline runs through the basin and is close to major export points in Perth and Geraldton. The recent nearby Waitsia discovery made nearby by AWE is proof of the geological potential of the basin. Waitsia is the largest onshore discovery in Australia for 30 years and AWE are hoping to supply 10% of WA gas needs from the project.

TEG's operations are outsourced to Upstream Production Solutions (UPS) which is a wholly owned subsidiary of the ASX listed engineering group GR Engineering (ASX:GNG) headquartered in Perth. UPS have been involved in the Cliff Head field from initial development to today.

### **TEG working on a program to reduce costs, increase production and extend the life of the Cliff Head Field**

The oil industry has grappled with deflation as it has adjusted to the new normal of crude oil prices in the range of US\$40 to US\$56 over the last 18 months. Prior to that, the industry enjoyed oil prices north of \$75 for four and half years. This led to a big increase in costs along the value chain as rent seekers sought to erode the very high margins asset owners were enjoying. The reset has been hard for suppliers, rig providers, service companies and employees. It is probable that the Arrowsmith and Cliffhead operating model was geared to higher oil prices but now that TEG has taken over operatorship, it has the freedom to optimise costs to be more in line with the current oil price environment.



Figure 17: Oil price since Oct 2014

Source: CIQ

TEG has reported that it has re-negotiated all operating contracts and has achieved significant cost savings for the full year. This has made the operations profitable at current prices, allowing TEG to earn positive operating cash flow from the sale of crude oil.

Prior to the sale by Roc Oil one of the key wells had just had a workover with the installation of a new downhole pump. The cost of this was shared by the JV but the majority of benefit will accrue to TEG as this well is now back online and performing well compared to its performance prior to the workover.

TEG is also reviewing and continuing an enhanced oil recovery study started by Roc that could result in greater field recoveries. Cliff Head has generally performed above expectations as it has a very high-quality reservoir and there is potential that an EOR program will lead to an improvement in the field EUR.

There are also existing drill targets in the TEG permit that could offer opportunities to drill and tie in wells to the existing infrastructure. One of the most promising is the nearby Mentelle prospect. Mentelle-1 was drilled in early 2003 with poor seismic coverage and as a result was drilled in the wrong part of the structure. The well had oil shows but a more recent comprehensive seismic survey has identified what is now believed to be a better well location up-dip. The new well appears to be worth drilling considering there is a live petroleum system in the area and Mentelle-1 had oil shows, potentially indicating there is a live oil system present. It is estimated that a potential 2.4 mmbbls additional reserves could be unlocked from this program.

The Xanadu discovery reinforces the up-dip potential as real. If the Xanadu drill had intercepted the target sands downdip from the 4m oil column the result would have looked like the same as Mentelle-1 were a residual oil column was intercepted. The JV may very well have concluded that the interception of a residual oil column was proof of a failure in trap seal and may have abandoned the well and the project. Mentelle may very well prove to be the same, and as with Xanadu there is a real possibility that there could be oil trapped up-dip and the original well missed the charged reservoir.

The key risk will be around the effectiveness of the seal and the best way to test this is with the drill bit. The water is shallow and the well can be drilled with a Jack Up rig which is a cheaper option than a semi-submersible rig.

There is also a smaller West High prospect located closer to the current field that could also offer production upside. Recent production data indicates additional recoverable reserves in the northern part of the field. TEG is qualifying its prospects with extensive geophysical work and a review of the static and dynamic reservoir models. There is potential that these in-field wells can be drilled from the current platform.

The work on Mentelle, the West High prospect and in field analysis will more than likely lead to the development of a forward drilling program which, if successful, will help to extend the life of the field.



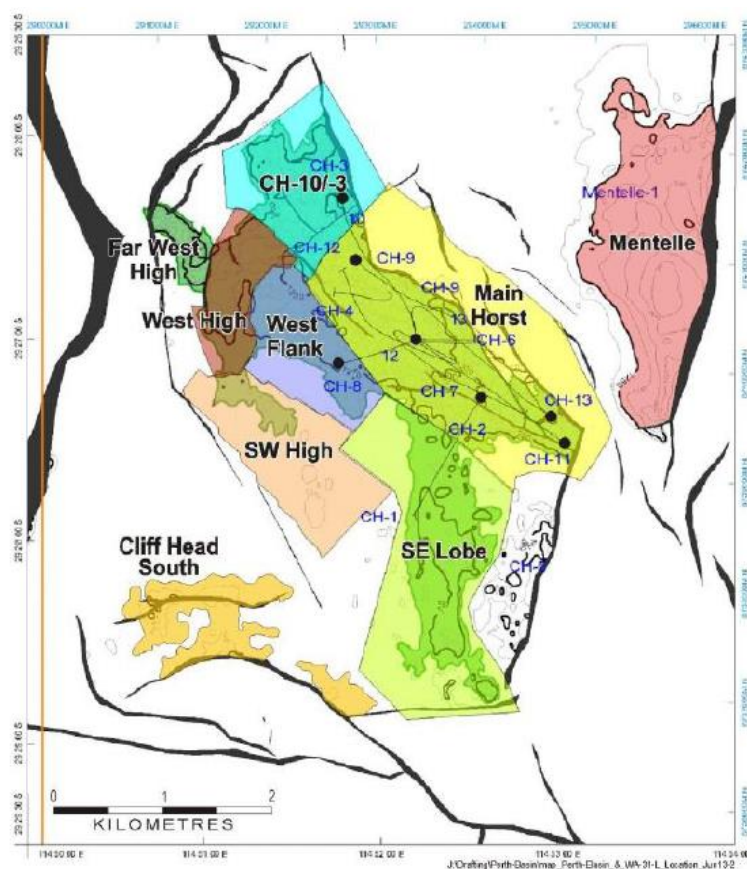


Figure 18: Cliff Head Field Map

Source: Triangle

TEG assets are close to AWE's large Waitsia discovery which is the largest onshore discovery made in Australia in 30 years. TEG therefore, is in the most interesting part of the North Perth Basin which has the potential to host further large accumulations like Waitsia and the Cliff Head field.

### TEG is a 30% shareholder in the newly discovered Xanadu oil field

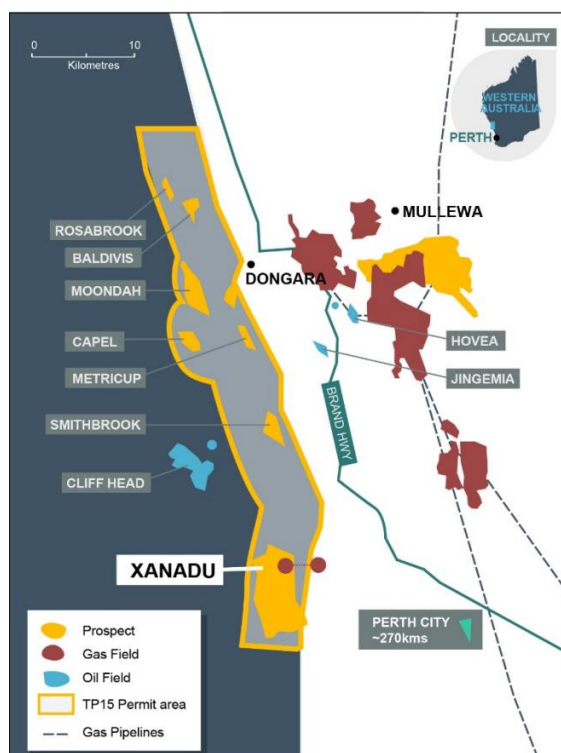


Figure 19: Map showing the location of Xanadu and nearby prospects and fields

Source: Whitebark Energy

TEG is a partner with Norwest Energy (ASX:NWE) (25% Equity), Whitebark Energy (ASX:WBE) (15% Equity) and the private 3C Group (30% Equity) in the recently discovered Xanadu oil field in the TP/15 permit. TEG now own 30% of the TP/15 permit which increases its footprint in the Perth Basin. As TEG is the owner of the nearby Arrowsmith facility the field will be commercialised through the plant as it is sited approximately 11km from the proposed well location.

Un-risked Prospective Resource: recoverable volumes oil (MMstb) <sup>1</sup>			
Reservoir	Low estimate	Best estimate	High estimate
Dongara Sandstone	3	12	22
Irwin River Coal Measures	13	88	159
High Cliff Sandstone	29	60	256
<b>Total</b>	<b>45</b>	<b>160</b>	<b>437</b>

Figure 20: Xanadu's Estimated un-risked recoverable volumes

Source: Norwest

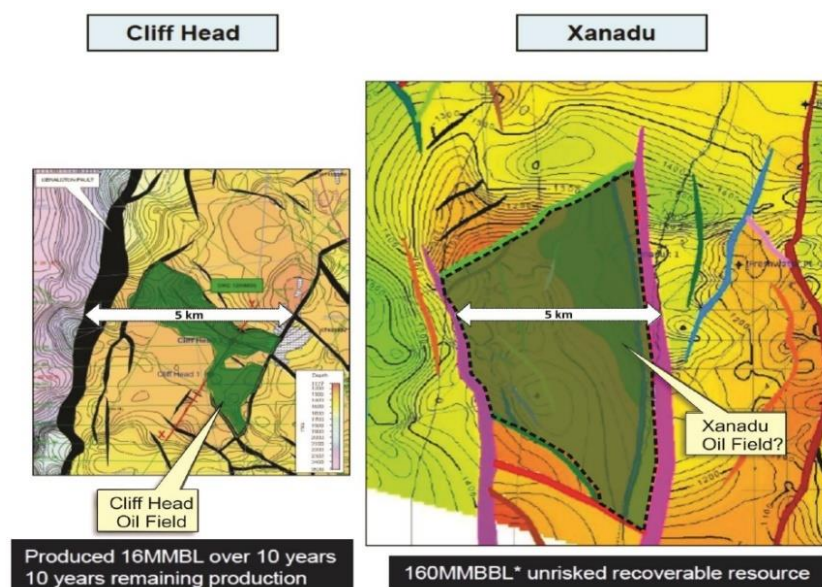


Figure 21: Comparison of the Cliff Head and Xanadu Structures

Source: Triangle

The play is the same as Hovea/Eremia fields and nearby Cliff Head field but is a larger structure. Cliff Head has produced 15m bbls of oil and Hovea has produced 4m bbls and it is estimated that Xanadu could be 8 times larger than Hovea. Structurally the field is a horst block lying parallel to the coastline in very shallow water. The closer to shore sands of the Dongara sandstone is the primary target and the secondary targets are the fluvio-deltaic Irwin River Coal Measures and the regressive marine sands of the High Cliff Sandstone.

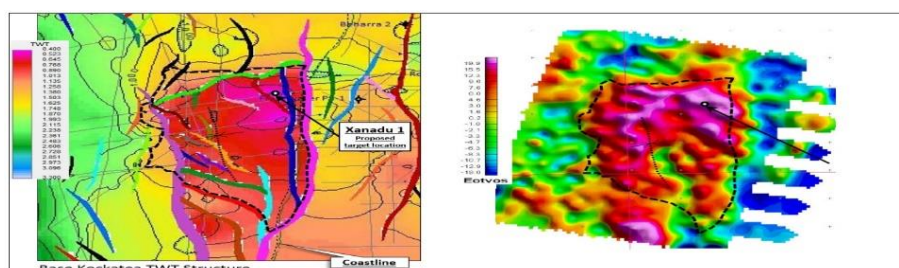


Figure 22: Left: Seismically derived structural definition at the top of the Permian reservoir sequence (Dongara/Wagina-IRCM – Kingia/High Cliff Sandstone) Right: Gravity expression supports seismic mapping.

Source: Whitebark Energy

Wireline logs run over 330m of reservoir quality sand intervals and have confirmed the presence of a 4.6m oil column at the top of the Irwin Coal Measures. Porosity in this sand package ranges from 15% to 16% with hydrocarbon saturation ranging from 41% to 66% over the entire package. The JV believes this field is therefore analogous with nearby Cliff Head. The hydrocarbon saturated zones are near the top of the area of interest and the JV is of the opinion that drilling up-dip could intersect a larger oil column. Preliminary analysis has shown that the well may only have only intersected a small part of the accumulation and the bulk of the oil lies updip from the position of the Xanadu-1 well. This is analogous with the initial Cliff Head discovery which intersected a gross oil column of 4.8m in a structurally similar setting. A side-track was then drilled up-dip and this intersected a 36m gross oil column and the JV believe that a similar scenario could play out in the Xanadu field.

The JV recovered oil to surface via a specialised sampling tool from Schlumberger. Due to the deviated nature of the well bore, it has been challenging to retrieve logs from the well. To log

the areas of interest the operator has had to attach the logging equipment to the bottom of the drill stem. The oil samples have been sent to Perth for further analysis and confirmation that it is the same as the oil found at Cliff Head.

While it has not been confirmed, it is expected that the JV will undertake a seismic survey over the field to assist with determining the field size and the best place to drill the planned up-dip side track well. Once the analysis is complete it is expected the Xanadu-1 well can be re-entered and the side track drilled from below the last casing point.

Thanks to the proximity of the Arrowsmith plant it will be possible to rapidly commercialise this discovery with a minimal capital injection. The Arrowsmith plant has the capacity to produce 15,000 bbls of oil a day and is currently running at 1,200 bbls per day. On a recent site visit, DJC observed a disused railway line that runs near the Xanadu drill pad up to the Arrowsmith plant. This could be used as a corridor for a private haul road or a path for a pipeline.

The Xanadu structure is very large at 5km<sup>2</sup> and the fact that the very first drill hole into the prospect has resulted in a discovery is a major event. The bulk of the structure remains untested as this well only intersects a relatively small area. A key risk in the Perth Basin is trap seal integrity, and now that it has been confirmed that movable hydrocarbons are present, any further work on the field is considerably de-risked. Norwest, the operator has stated, that it seems if the well has missed the crest of the discovery and drilling further up the structure is likely to intercept a thicker oil column nearer the apex of the structure. As one moves up-dip, oil saturation increases from 41% to 66% and oil saturation is likely to increase the further away from the oil/water contact the side track well is positioned potentially improving the commerciality of the discovery.



Figure 23: Sample of the oil recovered from Xanadu

Source: TEG



Figure 24: The Enerdrill 3 rig onsite at the Xanadu-1 well.

Source: DJC

**TEG is a major shareholder of State Gas (ASX:GAS) in Queensland which gives TEG exposure to the East Coast Gas Thematic.**

TEG owns 47.8m shares which are worth \$16.7m at \$0.35 (11 October 2017) in the recently listed State Gas. State Gas's key asset is Reids Dome (PL231) which is a conventional gas accumulation in the Bowen Basin in Queensland. This is an appraisal asset and 13 wells have been drilled and tested with shallow sands horizon achieving flow rates up to 2.8MMcfd. Of the wells drilled, 2 have been deep wells and significant gas shows have been encountered below 1,000m. According to the Independent Technical Expert "PL231 has to potential to produce commercial quantities of conventional gas from the Cattle Creek Formation."

The East Coast is experiencing a shortage of gas due to constrained development in NSW and Victoria as well as the prioritisation of gas for exports. There is therefore, a strong case that the gas that will be produced from Reid's Dome will fetch very attractive prices.



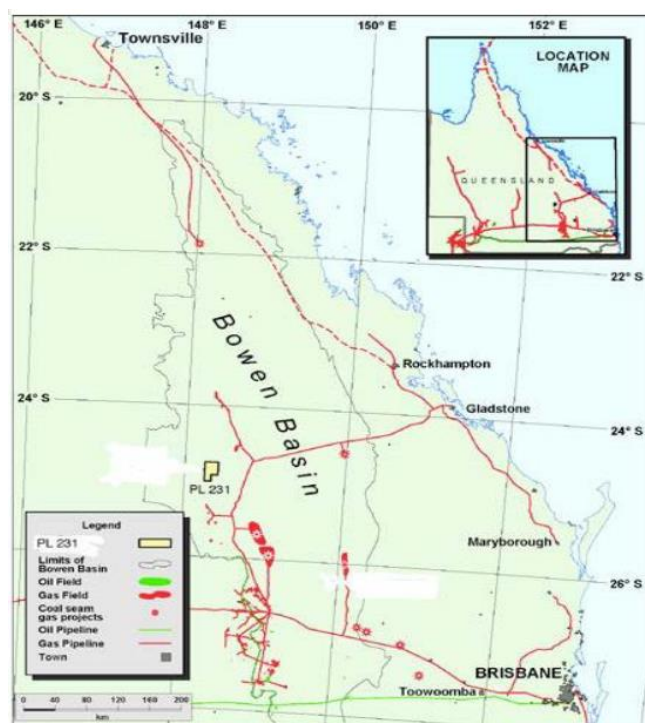


Figure 25: Location of Reids Dome in Queensland

Source: Triangle

### TEG is supported by two key partners

TEG is a small Perth-based oiler but it has partnered with two larger players that provide expertise, funding and potential services. The most active partner is Tamarind who have provided financing and advice to TEG. They are also a shareholder. Tamarind is a blue-chip partner who owns and operates the Tui Area oil project which was acquired from AWE earlier this year. The Tamarind team are experts in managing mature assets, which is beneficial to TEG as the Cliff Head field and plant is a mature asset. Tamarind was also Blackstone's oil and gas arm for a time and was tasked with investing a large amount of capital on Blackstone's behalf. The arrangement ceased following the expiry of the initial two-year agreement and coincidental with the oil price decline.



Figure 26: Tui Oil Field in New Zealand

Source: Pan Pacific Petroleum

TEG's other partner is T7 Global Berhad (KLSE:T7GLOBAL) who own 9.8% of TEG which they acquired in July 2017. T7GLOBAL is a listed Malaysian investment holding company that provides upstream and downstream offshore oilfield services to the oil and gas and related industries in Malaysia. The company said of its investment in TEG "The investment enables the company to explore opportunities in the emerging Perth Basin oil and gas area located at the north of Perth, Western Australia." T7GLOBAL clearly see an opportunity to enter the WA market via TEG and will be in a position to offer key support services to TEG going forward.

TEG has the benefit and backing of two key partners that can help its business in terms of expertise and funding as well as provide services at a competitive rate. TEG is a small E&P (Exploration and Production) company but these partnerships give it the technical and operations profile of a much larger group.

## Directors

### Edward ('Ted') Farrell - Non-Executive Chairman

Mr Farrell was appointed Non-Executive Chairman of Triangle Energy in May 2014.

His career includes over 25 years experience owning and managing a private client share broking and financial advisory practice. He currently provides corporate consultancy services and international consultancy services with relation to Financial Services Industry and Trade, and Economic development projects, between Asia and Australia.

He has been substantially involved with capital raisings, initial public offerings, and company reconstructions over the past 25 years. Mr Farrell brings to the Company extensive experience from the financial services, corporate financing and capital management sectors.

Mr Farrell has held various directorships with private and public companies. He is a Fellow of the National Institute of Accountants, a member of the Australian Institute of Management and a Justice of the Peace.

### Robert Towner - Managing Director/CEO

Mr Towner has over 20 years' experience in the corporate advisory and finance sectors. He was appointed managing director of Triangle Energy (Global) Ltd in February 2015, and managed the Company's transition from operating Indonesian based assets to establishing a portfolio of Australian oil and gas projects.

In 2009 Mr Towner founded Cornerstone Corporate Pty Ltd, consulting to Australian public companies on corporate planning & advisory, capital raisings and compliance. The Company was engaged to recapitalise and act as Lead Manager to ASX listed Bone Medical Limited completing a capital raising \$3.8 million. Upon completion of the recapitalisation he accepted the role of non-executive chairman.

In March 2004, he founded and was executive director of bioMD Limited (now Admedus Limited) for over eight years. Mr Towner played an integral role in the merger of bioMD Limited with unlisted public company Allied Medical Limited.

Mr Towner currently is a non-executive director of Botanix Pharmaceuticals Limited (formerly Bone Medical) and a non-executive director of the Telethon Type 1 Diabetes Family Centre.

### Darren Bromley - Executive Director/CFO/Company Secretary

Mr Bromley has over 25 years' experience in business management and the corporate sector. He was appointed Executive Director of Triangle Energy (Global) Ltd in July 2014, and also holds the positions of Chief Financial Officer (April 2010) and Company Secretary (June 2010).

Mr Bromley was integral in managing the divestment of Triangle's Indonesian interests and acquisition of the Cliff Head Oil Field in the Perth Basin, Australia. His executive capacity at Triangle includes operational management and corporate governance functions.

His experience includes; financial modelling and analysis, capital raisings, business development, company administration and operation management.



Mr Bromley previously held CFO positions at ASX listed entities Prairie Downs Metals Limited and QRSciences Holdings Limited, as well as numerous company directorships and secretary positions.

He holds a Bachelor of Business Degree in Finance, a Master of e-business and has a great depth of business management and financial experience.



# Triangle Energy (Global) Limited

Shares on Issue (m)	189.5
Fully Diluted (m)	197.5
Market Capitalisation (\$m)	A\$37.91
Fiscal Year End	June

Date	12/10/2017
Share Price:	\$0.20/share
Valuation:	\$0.38/share
Price Target:	\$0.38/share

Equity Valuation, Return	A\$m	A\$/share
Cliff Head	78%	49.71
Xanadu	30%	7.88
<b>Total Operations NPV</b>	<b>57.60</b>	<b>0.29</b>
State Gas (ASX:GAS)	16.73	0.08
Cash	3.00	0.02
Corporate Costs	(6.00)	(0.03)
<b>Total</b>	<b>71.33</b>	<b>0.38</b>
<b>Capital Return</b>		<b>88.2%</b>

## Financial Ratios

Key Metrics	FY17a	FY18e	FY19e	FY19e
Revenue Growth	0%	24%	7%	71%
EBIT Growth (Adj)	(569%)	(536%)	(36%)	79%
NPAT Growth (Adj)	(178%)	(215%)	(36%)	50%
EBITDA Margin (Adj)	1.3%	36.5%	21.8%	25.9%
EBIT Margin (Adj)	(10%)	37%	22%	23%
EPS - Reported	(0.03)	0.03	0.02	0.03
EPS - Fully Diluted Adjusted	(0.03)	0.03	0.02	0.03
EPS Growth	(171%)	(188%)	(36%)	50%
Effective Tax Rate	32%	(30%)	(30%)	(30%)

Earnings Multiples (A\$)	FY17a	FY18e	FY19e	FY19e
EPS	(0.03)	0.03	0.02	0.03
EPS Growth	(171%)	(188%)	(36%)	50%
P/E	NM	7.16	11.23	7.47
EV/EBIT	(19.47)	4.47	7.02	3.92
EV/EBITDA	151.62	4.47	7.02	3.46

Balance Sheet	FY17a	FY18e	FY19e	FY19e
Gearing (Debt/Equity)	0%	0%	111%	32%
Gearing (Net Debt/Equity)	270%	(91%)	(85%)	(97%)
EBIT Interest Cover	-11.2x	0.0x	3.5x	8.0x
ROE	569%	118%	43%	39%
ROA	(15%)	14%	7%	8%
Book Value per share	(0.01)	0.00	0.00	0.00

Dividends	FY17a	FY18e	FY19e	FY19e
Dividend Per Share	0.0¢	0.0¢	0.0¢	0.0¢
Dividend Yield	0.0%	0.0%	0.0%	0.0%
Dividend Franking	0.0¢	0.0¢	0.0¢	0.0¢
Dividend Payout Ratio	0.0%	0.0%	0.0%	0.0%

Income Statement (\$m)	FY17a	FY18e	FY19e	FY19e
Sales Revenue	16.78	20.73	22.11	37.75
Operating Costs	(12.69)	(10.66)	(14.66)	(25.22)
Other	1.11	0.00	0.00	0.00
<b>EBITDA</b>	<b>0.22</b>	<b>7.57</b>	<b>4.82</b>	<b>9.77</b>
Depreciation & Amort.	(1.96)	0.00	(1.14)	(1.14)
<b>EBIT</b>	<b>(1.74)</b>	<b>7.57</b>	<b>4.82</b>	<b>8.63</b>
Finance costs	(0.16)	0.00	(1.38)	(1.08)
<b>Profit Before Tax</b>	<b>(3.49)</b>	<b>7.57</b>	<b>4.82</b>	<b>7.25</b>
Income Tax Expense	(1.10)	(2.27)	(1.45)	(2.18)
<b>Underlying NPAT</b>	<b>(4.59)</b>	<b>5.30</b>	<b>3.38</b>	<b>5.08</b>
Non-recurrent items	0.00	0.00	0.00	0.00
<b>Reported NPAT</b>	<b>(4.59)</b>	<b>5.30</b>	<b>3.38</b>	<b>5.08</b>

Cash Flow Statement (US\$m)	FY17a	FY18e	FY19e	FY19e
Net operating cash flow	2.23	7.57	4.82	9.77
Net interest	(0.16)	0.00	(0.87)	(1.38)
Tax Paid	(1.10)	(2.27)	(1.45)	(2.18)
<b>Operating Cash Flow</b>	<b>(1.03)</b>	<b>5.30</b>	<b>2.51</b>	<b>6.22</b>
Capital Expenditure	(0.34)	0.00	(7.20)	(4.20)
Exploration & Eval	(0.33)	(3.00)	0.00	0.00
<b>Investing Cash Flow</b>	<b>(2.77)</b>	<b>(3.00)</b>	<b>(7.20)</b>	<b>(4.20)</b>
<b>Free Cash Flow</b>	<b>(1.70)</b>	<b>3.80</b>	<b>4.88</b>	<b>3.28</b>
Equity Raised	0.28	1.50	0.00	0.00
Inc/(Dec) in Borrowings	0.00	0.00	8.70	4.20
Dividends Paid	0.00	0.00	0.00	0.00
<b>Financing Cash Flow</b>	<b>1.73</b>	<b>1.50</b>	<b>9.57</b>	<b>1.27</b>
Effects of Exchange Rates	0.05	0.00	0.00	0.00
<b>Movement in Net Cash</b>	<b>(1.70)</b>	<b>3.80</b>	<b>4.88</b>	<b>3.28</b>

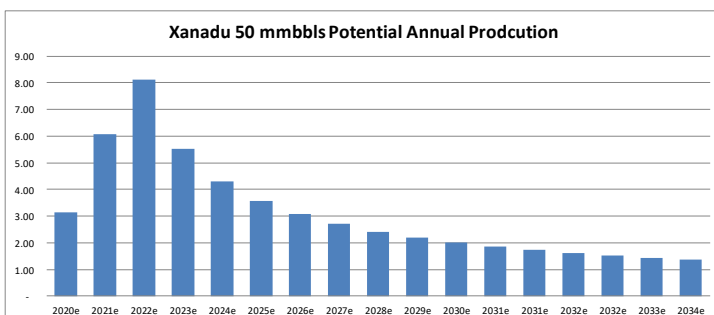
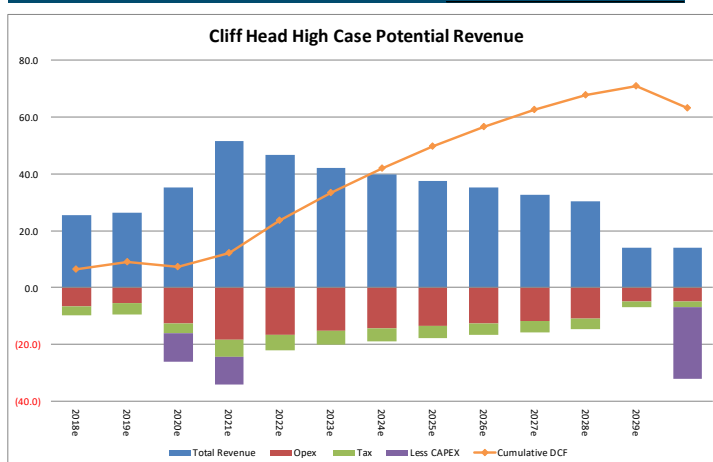
Balance Sheet (US\$m)	FY17a	FY18e	FY19e	FY19e
Cash	2.18	4.08	8.41	12.49
Other	0.20	0.00	0.00	0.00
<b>Current Assets</b>	<b>4.29</b>	<b>5.74</b>	<b>10.93</b>	<b>18.02</b>
PP&E	13.40	17.99	25.19	28.25
Other Assets	11.38	11.38	11.38	11.38
<b>Total Assets</b>	<b>31.17</b>	<b>37.20</b>	<b>49.59</b>	<b>59.74</b>
Current Liabilities	6.38	7.11	10.91	14.32
Borrowings	0.00	(0.00)	5.22	6.88
Other Liabilities	25.60	25.60	25.60	25.60
<b>Total Liabilities</b>	<b>31.97</b>	<b>32.71</b>	<b>41.73</b>	<b>46.80</b>
<b>Total Shareholders' Equity</b>	<b>(0.81)</b>	<b>4.49</b>	<b>7.87</b>	<b>12.94</b>

## Directors

Edward Farrell - Non Executive Chairman  
Robert Townner - Managing Director/CEO  
Darren Bromley - Exec Director/CFO/Co Sec

## Shareholders

T7 Global Berhad 9.85%  
HSBC Custody Nom (Aus) 7.68%  
Ucan Nominees 5.47%  
Jarrad Street Corp Pty Ltd 5.34%  
Sochrastem Sas 4.36%



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Chad South	Head of Retail Advisory	<a href="mailto:csouth@djcmichael.com.au">csouth@djcmichael.com.au</a>	+61 8 9263 5225
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Recommendation Definitions

SPECULATIVE BUY – Potential 10% or more outperformance, high risk

BUY – Potential 10% or more outperformance

HOLD – Potential 10% underperformance to 10% over performance

SELL – Potential 10% or more underperformance

Period: During the forthcoming 12 months, at any time during that period and not necessarily just at the end of those 12 months.

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