Hartleys

Oil & Gas: Explorer

PANCONTINENTAL OIL AND GAS NL (PCL)

8 Feb 2018

Share Price:	$0.006
12mth Price Target:	$0.010

Hartleys Brief Investment Conclusion

In Namibia, the PEL 37 JV recently voted to drill the Cormorant prospect in September 2018. This should mean that PCL participates in a very high impact offshore exporation well in 2018. In California, the imminent Tulainyo flow test is a potential play opener.

2018 – Fasten Your Seatbelts

2018 is set to be an exciting year of news flow for PCL. First up, is the imminent flow test of the Tulainyo well in California, it remains the most likely target (in our opinion) among those identified to 'naturally' flow at a high commercial rate. Secondly, and perhaps even more exciting, is the proposed drilling of the first offshore well in PCL's Namibian acreage in the second half of the year. At the moment we rate this well among the most prospective (if not the most prospective) for 2018 (relative to market capitalisation) in any portfolio across the whole ASX Junior Oil & Gas sector.

Californian Drilling Review

To date, results from the Dempsey Project have been underwhelming in our opinion. However, it was not unexpected (given the prevailing industry view the deeper reservoirs would be tight). A number of shallower zones remain to be tested, with the JV expecting that reservoir quality may improve as testing moves up the well. In our opinion, the JV will have to show materially increased flow rates post stimulation and/or improved natural permeability in the shallower zones to get the market to re-rate this project. Tulainyo remains the key focus for us and the most likely (based on the result of Tulainyo-1, location and reservoir targets) to naturally flow at high rates. A flow test targeting multiple zones is expected to commence in the coming weeks.

Namibia the Jewel in the Crown

We continue to view PCL's position in Namibia positively and the proposed drilling of the Cormorant prospect in 2018 will likely be one of the most exciting wells drilled this year by any ASX listed O&G player. PCL with a 20% interest has a very high quality joint venture (Tullow, ONGC and Africa Energy) and the recent farm in by ExxonMobil to the south of PEL 37 again highlights its potential. We value PCL's 20% stake at A$40m/0.68cps (from A$27m), which remains simply a cash equivalent transaction value (not a risked outcome).

Retain Speculative Buy. Upgrade target price on Namibia.

PCL is one of our top Oil & Gas sector picks for 2018. We have upgraded our price target to 1c per share (from 0.8c) on the back of Namibia. The Company had A$1.7m net cash at the end of the last quarter, with outgoings of A$1.25m (mostly on testing in California) expected this quarter. So, it is possible other funds may be required ahead of any spud date in Namibia.

Key Personnel

David Kennedy	Non-Executive Chairman
John Begg	Executive Director & CEO
Ernest Myers	Non-Executive Director
Barry Rushworth	Non-Executive Director
Marie Malaxos	Non-Executive Director

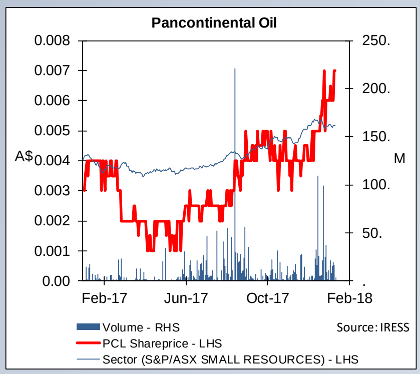
Top Shareholders

Sundowner International	7.8%

Company Address:
Level One, 10 Ord Street
West Perth, WA, 6005

Target Price:	$0.010
Issued Capital:	5261.8m
- fully diluted	5828.9m
Market Cap:	$31.6m
- fully diluted	$35.0m
Current Cash	$1.7m

Source: Hartleys Research



Key Chart: PCL Asset Valuation

Region	Project or Prospect	Type	Interest	Net Prospective Resource	Unrisked NPV10 (A$m)	Method of estimation
USA	*ASX Peer Group Implied Value*				*18*	*Hartleys / IRESS*
California	Dempsey	Gas field exploration	10%		5	Hartleys
California	Tulainyo	Gas discovery appraisal	13%	233 Bcf	165	Probabilistic (P50)
California	Alvares	Gas discovery appraisal	15%	90 Bcf	64	Hartleys
Namibia	*Farm in Value*	*Transaction Comparable*			*40*	*Hartleys*
(PEL 37)	Albatross	Oil exploration	20%	66.3 mmbbl	321	Deterministic Best Estimate
	Seagull & Gannet Sth	Oil exploration	20%	64.2 mmbbl	310	Deterministic Best Estimate
	Seagull & Gannet Nth	Oil exploration	20%	19.7 mmbbl	95	Deterministic Best Estimate
	Cormorant	Oil exploration	20%	23.5 mmbbl	114	Deterministic Best Estimate

*Source: PCL & Hartleys Research. * Net Prospective Resources are PCL Estimates excluding Dempsey. NPV10 (unrisked) are Hartleys estimates for the Net Prospective Resource case based on field modelling and comparable comps.*

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SUMMARY MODEL

Pancontinental Oil & Gas **PCL**

Share Price **$0.0060**

8 Feb 18
Speculative Buy

Key Market Information	
Share Price	**$0.0060**
Market Capitalisation	$32m
Net Cash	$1.7m
Issued Capital	5261.8m
ITM options	0.0m
Options	567.1m
Issued Capital (fully diluted ITM options)	5261.8m
Issued Capital (fully diluted all options)	5828.9m
EV	$29.8m
Valuation*	**$0.010**
12Mth Price Target	**$0.010**

* Valuation is based on farm out value for Namibia only and current implied value for US opportunities based on ASX listed peers

Valuation Summary		
Asset	**Valuation**	
	A$m	cps
PEL 0037 (20%)	40	0.68
California	18	0.31
Total	57	0.98

Key Permits / Prospects		Unrisked
Sacramento Basin	**Net Interest**	**NPV10****
Dempsey	10%	A$5m
Tulainyo	13%	A$165m
Alvares	15%	A$64m
Namibia		
PEL 37	20%	A$840m
PEL 87	75%	

** Full success case based on Company prospective resource estimates'

Directors	Company Details
David Kennedy	Non-Executive Chairman
John Begg	Executive Director & CEO
Ernest Myers	Non-Executive Director
Barry Rushworth	Non-Executive Director
Marie Malaxos	Non-Executive Director

Top Shareholders	m shs	%
Sundowner International	411.8	7.8%

Unpaid Capital	No (m)	$ (m)	Ave Pr	% Ord
21-Apr-20	100.0	0.5	0.01	1.9%
Various	467.1			8.9%

Investment Summary

In Namibia, the PEL 37 JV recently voted to drill the Cormorant prospect in September 2018. This should mean that PCL participates in a very high impact offshore exporation well in 2018. In California, the imminent Tulainyo flow test is a potential play opener.

Expected News flow		Project
2H CY17	Bombora Acquisition	Completed
2H17-1H18	Dempsey-1 Well	California
1H CY18	**Tulainyo-2 Well Testing**	**California**
2H CY18	**Namibia Drilling**	**Namibia**
2H18	Alvares Appraisal	California
CY18	Walyering 3D Seismic	Perth Basin

Analyst: Aiden Bradley
Phone: 08 9268 2876

Last Updated: 08/02/2018

Sources: IRESS, Company Information, Hartleys Research

HIGHLIGHTS

2018 is set to be an exciting year for PCL. First up, is the imminent flow test of the Tulainyo well in California, it remains the most likely target (in our opinion) among those identified to 'naturally' flow at a high commercial rate. Secondly, and perhaps even more exciting, is the proposed drilling of the first offshore well in PCL's Namibian acreage in the second half of the year. At the moment we rate this well among the most prospective (if not the most prospective) for 2018 (relative to market capitalisation) in any portfolio across the whole ASX Junior Oil & Gas sector. We continue to view PCL's Namibian exposure as worth more than the Group's total market capitalisation by itself. PCL has further positioned itself for any success from PEL 37 through the recent award of PEL 87 to the South. PCL has 75% and operatorship of this license and any exploration success in Namibia (including in PEL 37) would obviously have positive implications for the value of this acreage.

Californian Drilling Review:

1: Dempsey flows at very modest rates

The Dempsey 1-15 well in the Sacramento Basin has commenced production and initiated the sale of natural gas. The well was flowing at a rate of 140mcf/day with flowing tubing pressure of 670psi. This suggests that the reservoir has low permeability and indeed the partners have commenced the application process for the permitting of well stimulation, with field operations expected to commence this quarter.

A number of shallower zones remain to be tested, with the JV expecting that reservoir quality may improve as testing moves up the well. In our opinion, the JV (given the cost of the well to these depths) will have to show materially increased flow rates post stimulation and/or improved natural permeability in the shallower zones to get the market to re-rate this project.

Working Interests in the Dempsey Gas Project are:

- Sacgasco Limited (SGX.asx) (Operator) 50%
- Empyrean Energy PLC (EME.lse) 30%
- Pancontinental Oil and Gas NL (PCL.asx) 10%
- Xstate Resources Limited (XST.asx) 10%

Fig. 1: Dempsey 1-15 Zone 2 Initial Gas Flare

Source: PCL

2: Tulainyo remains the key well

The Dempsey result has not altered the risk/reward profile of the Tulainyo well, given its uplifted location and targeting of the older Early Cretaceous reservoirs. The Tulainyo JV (including California Resources Production Corporation (CRC.NYSE)) completed drilling as planned at total depth of 5,700ft (1,737m) with production casing being run ahead of a flow test program. Multiple, potential sandstone gas reservoirs are indicated based on interpretation of drill cuttings, gas shows and wireline log data. PCL interpreted up to 56 metres (183 feet) of potential gas pay in sandstones in the Early Cretaceous Lodogo Formation. PCL considers the sands penetrated are at least as good as expected pre-drill. A key positive is that the higher quality reservoir units exhibit porosities ranging from 15%-20%.

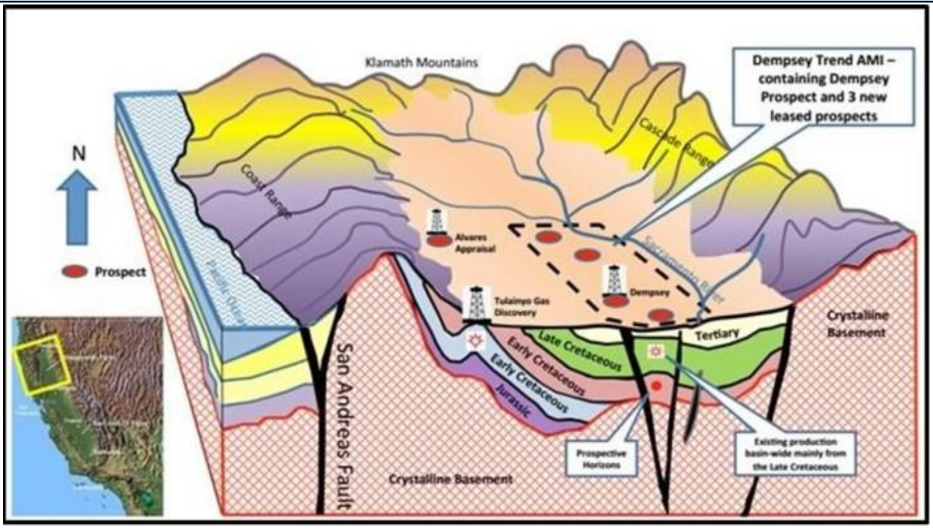
A flow test program, using a specialised testing rig and equipment is being brought to site with testing (multiple gas zones) operations expected to commence in the coming weeks.

Fig. 2: Tulainyo Recoverable Gas Resource (Net PCL 13.33%)

Net Prospective Resource (Gasfields)	P90 169 Bcf	P50 582 Bcf	Mean 845 Bcf	P10 1.73 Tcf
Net Prospective Resource (Pancontinental)	**P90 68cf**	**P50 233 Bcf**	**Mean 338 Bcf**	**P10 691 Bcf**
Related Area of Closure	7,250 acres (29.4 km²)	12,570 Acres (51 km²)	13,470 (54.5 km²)	22,440 acres (91 km²)

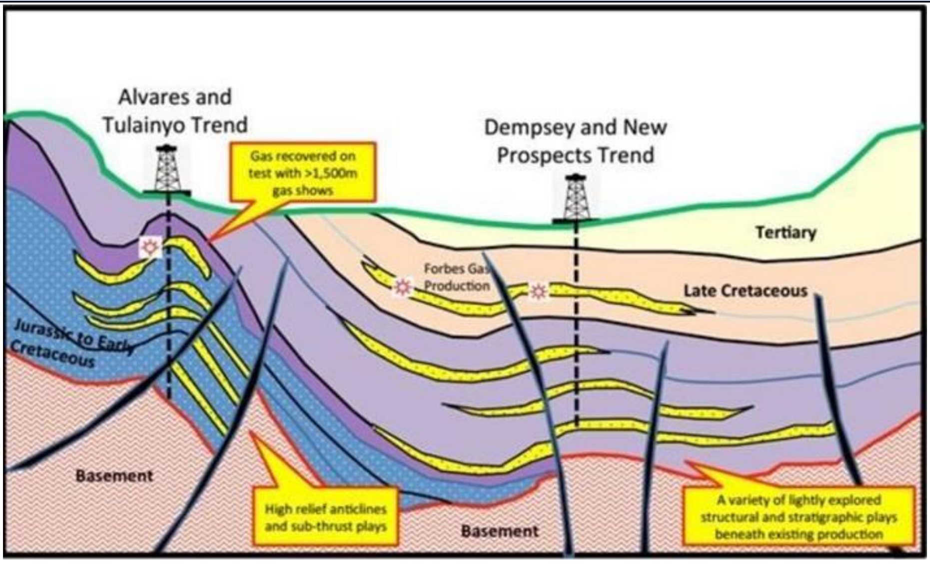
Source: PCL

Fig. 3: Sacramento Basin Plays



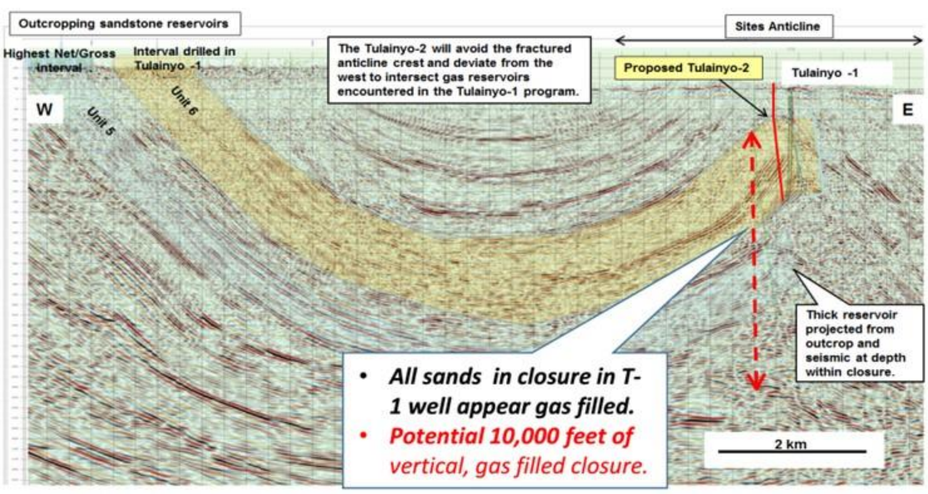
Source: PCL

Fig. 4: Location of Tulainyo and Dempsey



Source: PCL

Fig. 5: Gas recovered from Tulainyo-1, gas filled closures



Source: Cirque Resources LLC

Namibian Drilling Review

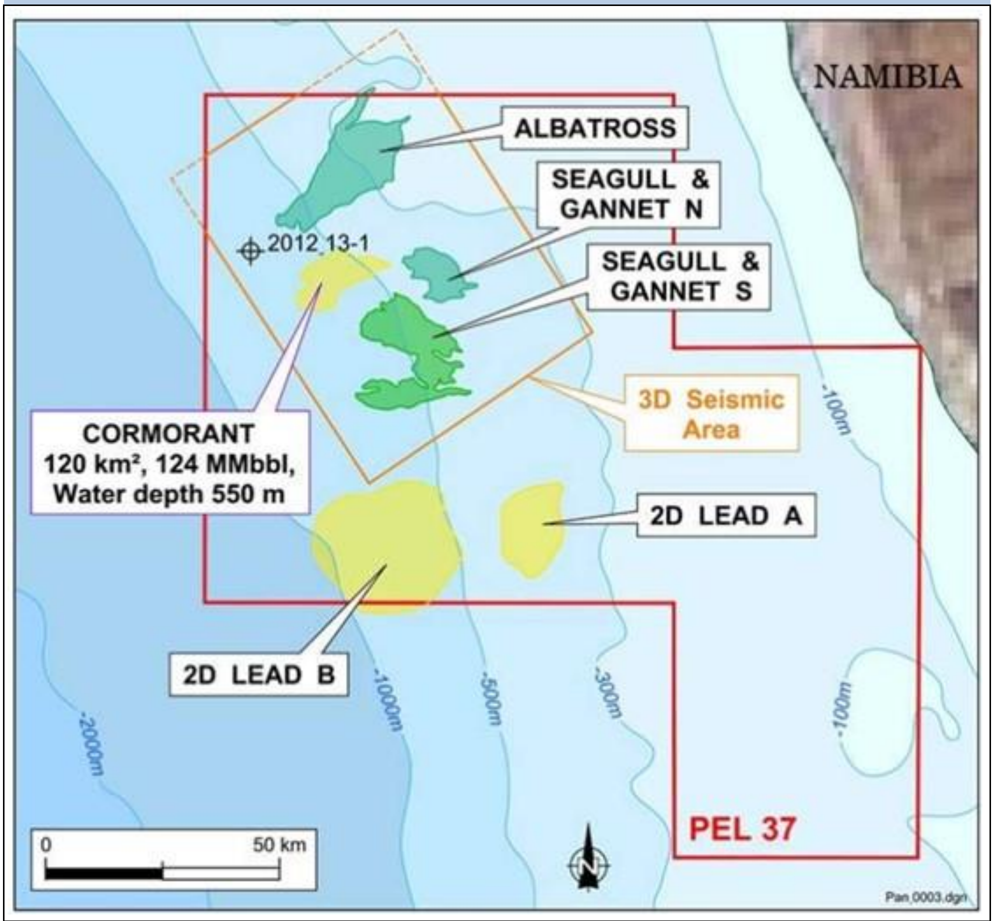
1: PEL 37 voted to drill the Cormorant Prospect

The PEL 37 Joint Venture has voted to drill the Cormorant Prospect offshore Namibia, with a targeted spud date of 1 September, 2018. PCL is partnered with highly regarded partners, Tullow (35%), ONGC Videsh (30%) and Africa Energy Corp (10%).

PCL will have an effective 20% carried interest uncapped through the cost of drilling the well. As part of PCL's deal with Africa Energy Corp. a second cash payment of US$5.5 million will be made to PCL on the commencement of Cormorant drilling.

PCL estimates that the Cormorant prospect has the potential to contain Prospective Resources of 124 mmbbls of recoverable oil on an un-risked Best Estimate basis. Post the confirmation of the drilling timetables, higher oil price and recent deals. **We now value Namibia alone at 0.68c per share and view the exposure to Tulainyo and the remaining assets (in California and Western Australia) as free options at the current price.**

Fig. 6: Recoverable Gas Resource Net to PCL (13.33%)

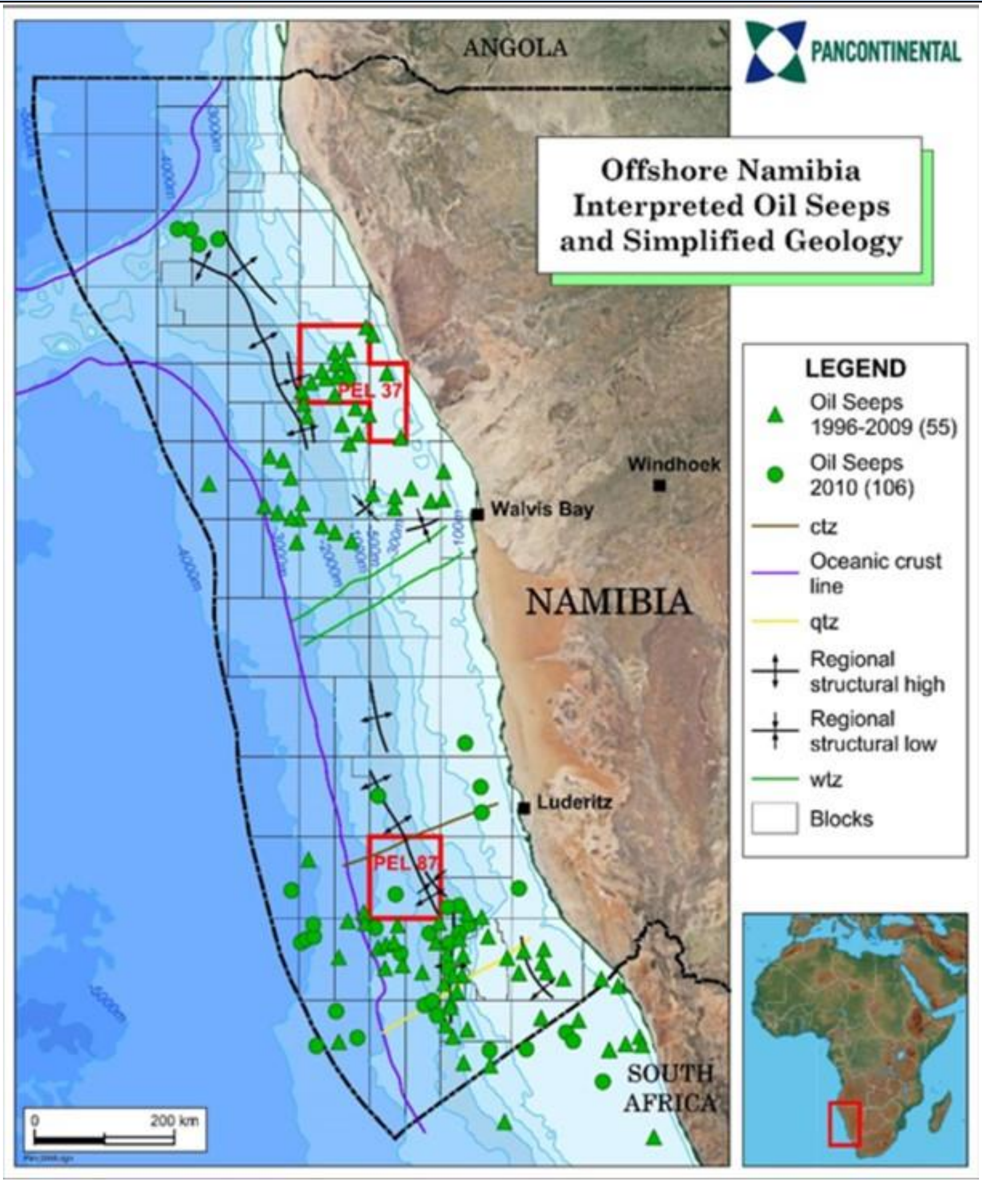


Source: PCL

2: PCL expanding its position offshore Namibia

PCL recently signed a Petroleum Agreement with the Ministry of Mines and Energy of Namibia (Ministry) and Namibian partners for Block 2713 (PEL 87) offshore Namibia.

Fig. 7: PCL's Licenses in Namibia

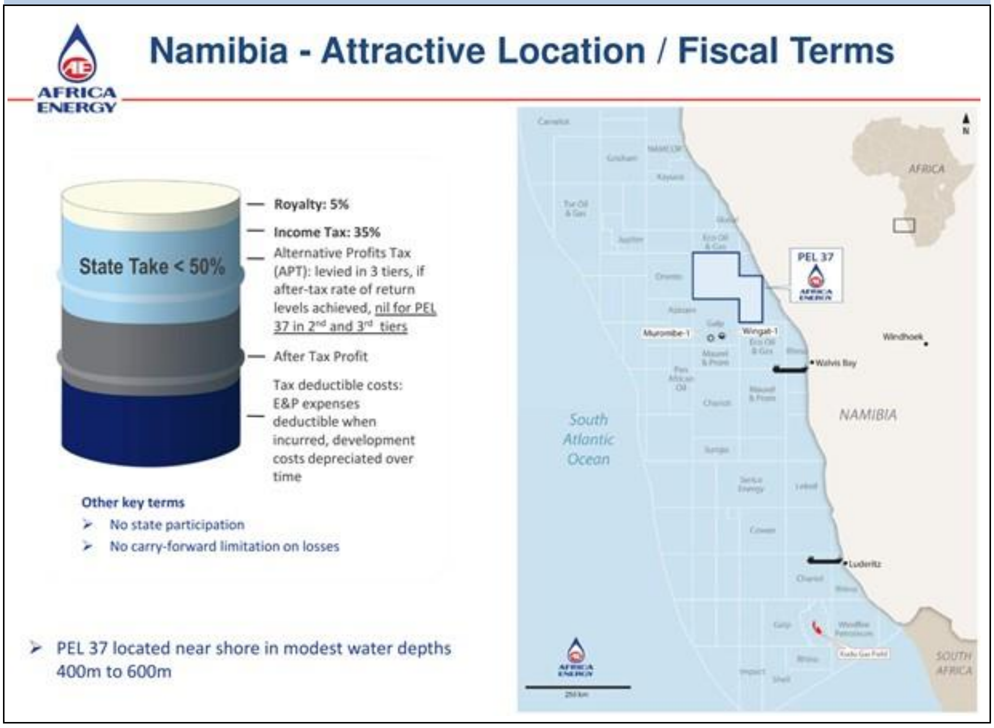


Source: PCL

PCL is to be the project Operator, with a 75% interest. PEL 87 is a large, 10,947 km² area on trend where industry giants Shell, GALP (Portugal) and Total (in 2017) have acquired interests. Water depths are between 500m and 3,200m.

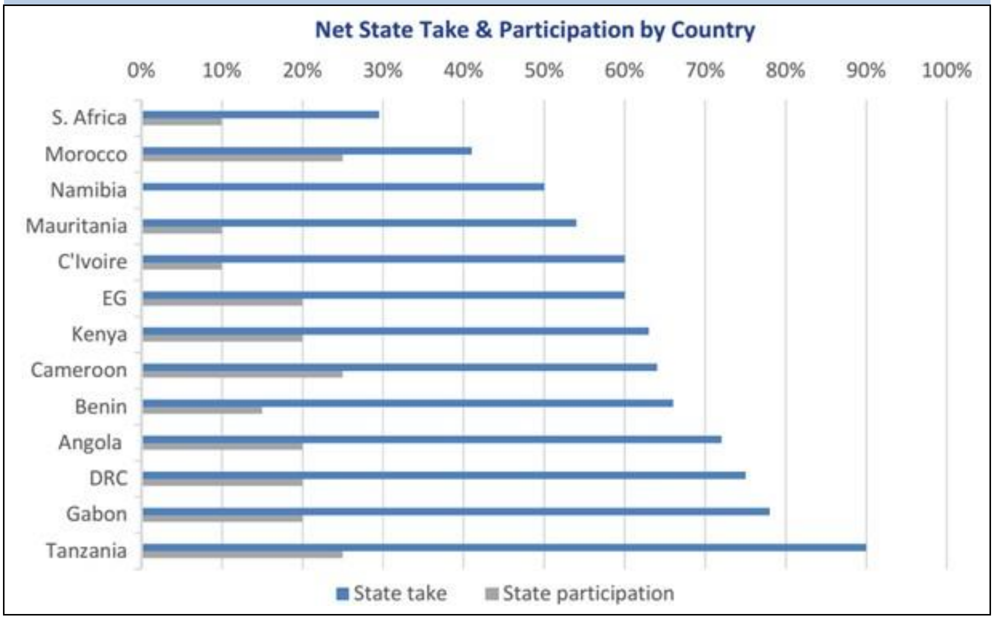
The Company has already mapped a number of leads with very large oil volume potential. The Block has an initial period of 4 years, and an innovative exploration program is planned. The Petroleum Agreement is subject to standard Namibian fiscal terms that are considered excellent by world standards, especially given the water depth and size of potential prospects.

Fig. 8: Namibia Attractive Location



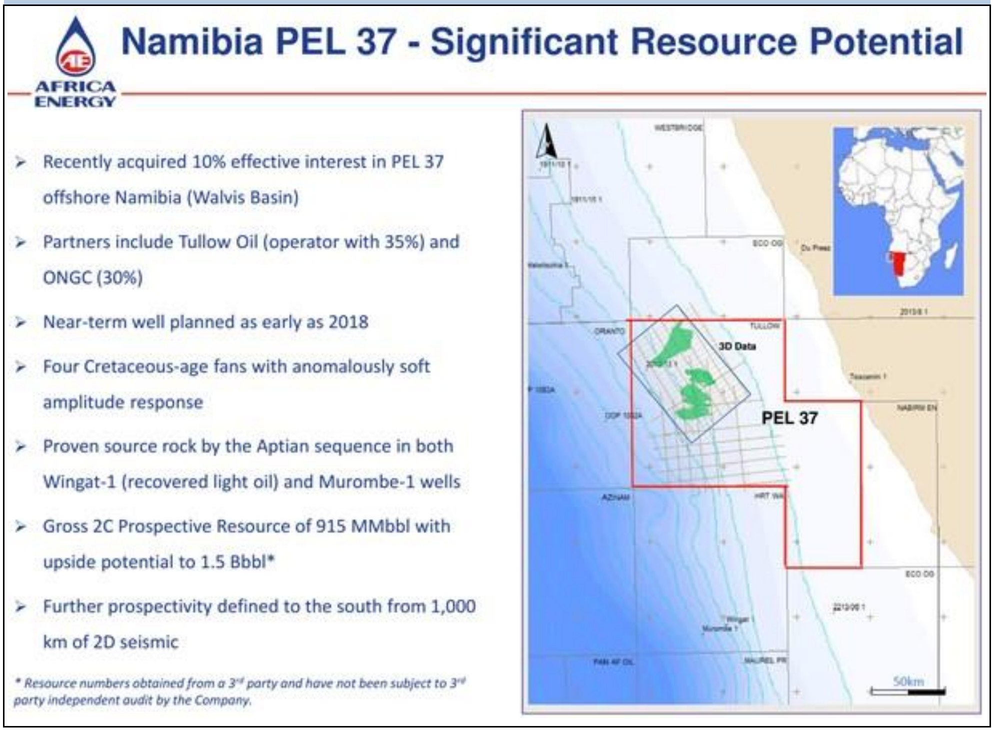
Source: Africa Energy

Fig. 9: Namibia Attractive Fiscal Terms



Source: Africa Energy.

Fig. 10: PEL 37 Significant Resource Potential



Source: Africa Energy

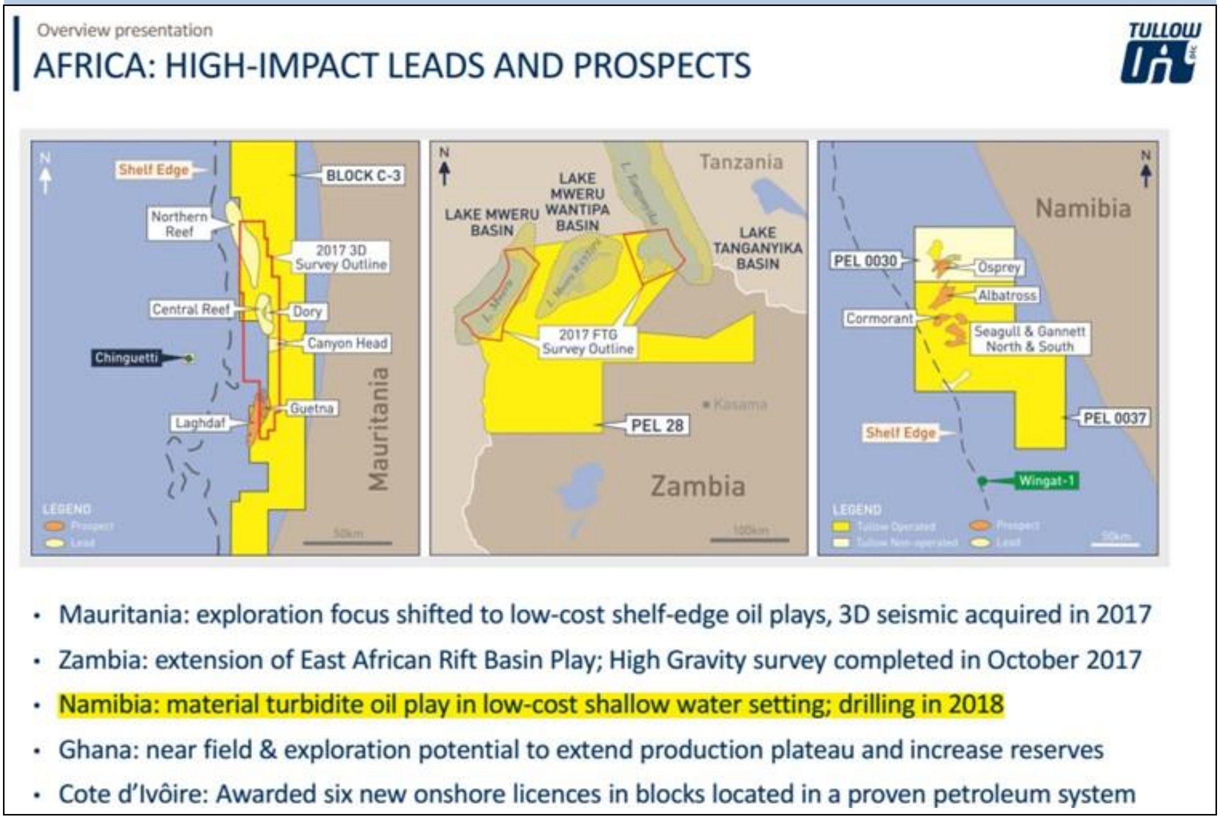
3: 'Tullow Oil back to exploration after three years of pain' *Bloomberg 11th January 2018.*

Tullow Oil as operator will likely continue to drive the timing (and extent) of exploration activities in PEL 37. After a number of quiet years for them in exploration, the recovery in oil prices and their improved debt position has seen them announce an increased budget for 2018.

From Bloomberg 11th January 2018 – '*Paul McDade, chief executive of Tullow, said the additions to its portfolio showed the company was refocusing on growth as increased production and higher oil prices help repair its balance sheets after a long downturn. "We are getting back to exploration, which we are good at, but still with a focus on cost control," he said.'*

Tullow announced that it would almost double capital expenditure this year to about $460m, with circa $90m ringfenced for Exploration and Appraisal. PEL 37 and Namibia generally continues to be a focus area for them, as flagged in its most recent corporate presentation.

Fig. 11:Tullow remains focused on Namibia



Source: Tullow Oil Plc – Overview Presentation – January 2018

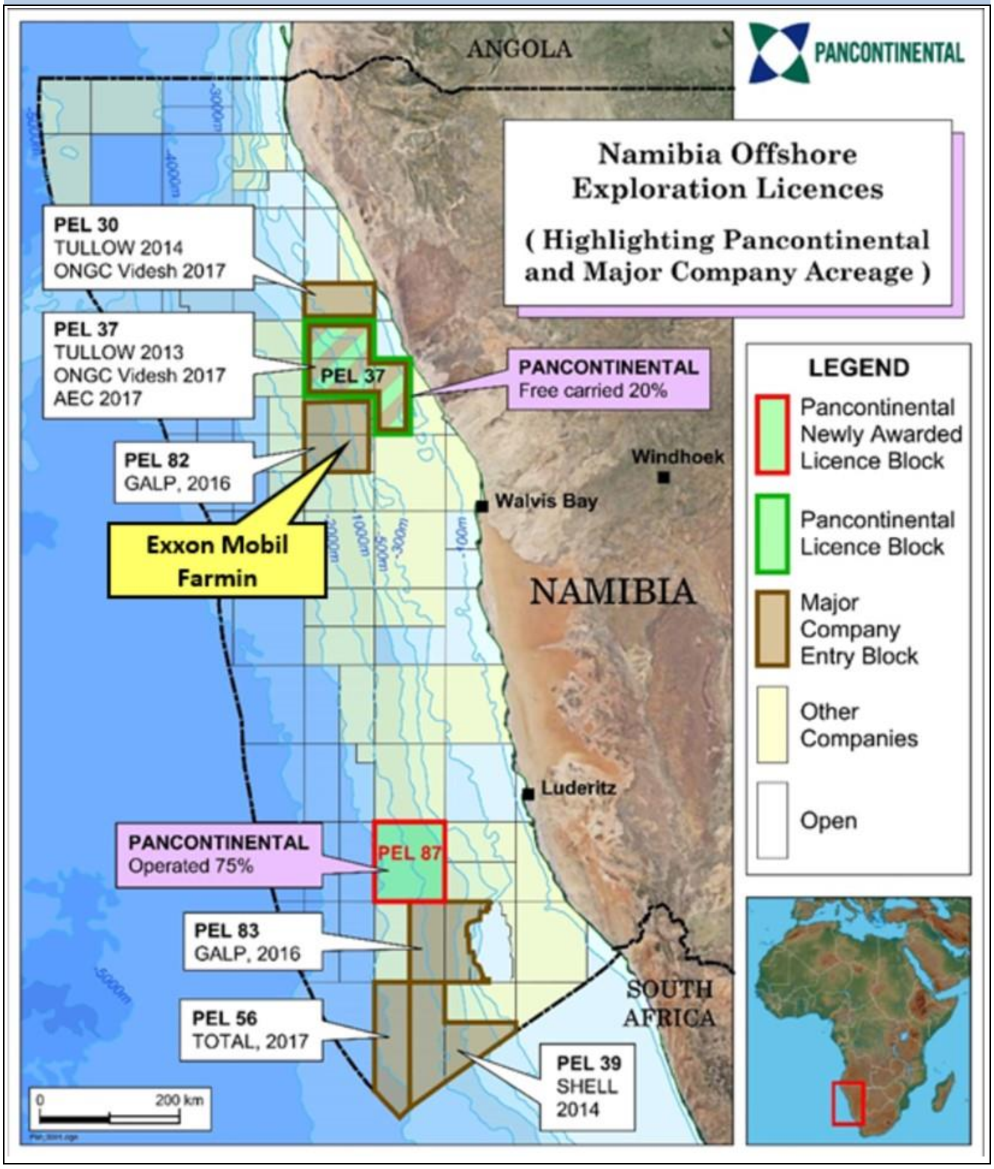
4: Exxon moves in next door.

ExxonMobil (among the most successful offshore explorers in the industry) farming into its first Namibian Block, next door to PCL, is further evidence that Namibian exploration is likely to pick up and also underlines the prospectivity of PEL 37 itself.

Galp Energia reported on the 31st of January that ExxonMobil is farming into exploration permit PEL 82 for a 40% interest. The licence covers an area of 11,444km² in water depths ranging from 200m to 2,000m. It is located directly south of PEL 37, operated by Tullow Oil in which PCL has a 20% interest.

The ExxonMobil farmin block, PEL 82, is operated by Galp in partnership with the National Petroleum Corporation of Namibia (NAMCOR) and Custos Investments, a local Namibian company. These are the same Namibian partners that Pancontinental has in its recently awarded PEL 87 (formerly Block 2713) which covers 10,947 km² and is located further to the south, offshore Namibia. Pancontinental is operator of PEL 87 with a 75% interest.

Fig. 12: Exxon moves in next door



Source: PCL

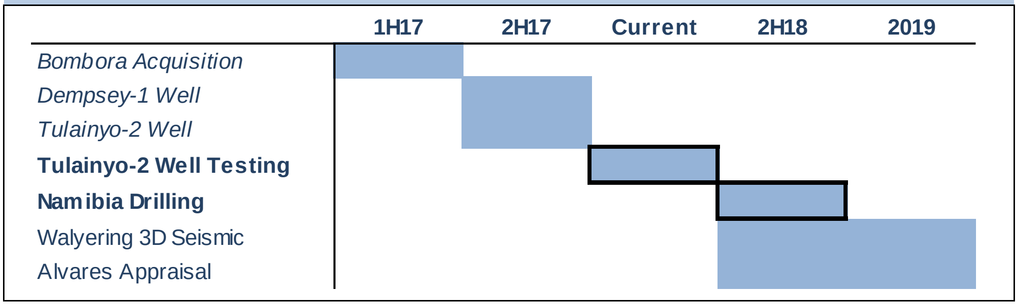
RECOMMENDATION & RISKS

INVESTMENT THESIS & RECOMMENDATION

PCL has witnessed strong share price performance over the past few months on the back of a reinvigorated portfolio and business plan, with a steady stream of progress announcements. We expect this strong pipeline of news flow to continue through the rest of 2018.

First up, is the imminent flow test of the Tulainyo well in California, it remains the most likely target (in our opinion) among those identified to 'naturally' flow at a high commercial rate. Secondly, and perhaps even more excitedly, is the proposed drilling of the first offshore well in PCL's Namibian acreage in the second half of the year. At the moment we rate this well among the most prospective (if not the most prospective) for 2018 (relative to market capitalisation) in any portfolio across the whole ASX Junior Oil & Gas sector. We continue to view PCL's Namibian exposure as worth more than the Group's total market capitalisation by itself.

Fig. 13: News Flow to year end 2018



Source: PCL and Hartleys.

On the back of these catalysts and modest valuation, we rate PCL as one of our top Oil & Gas sector picks for 2018.

In California, Tulainyo remains the key focus for us and the most likely (based on the result of Tulainyo-1, location and reservoir targets) to flow at high rates. A flow test targeting multiple zones) is expected to commence in the coming weeks.

We continue to view PCL's position in Namibia positively and the proposed drilling of the Cormorant prospect in 2018 will likely be one of the most exciting wells drilled this year by any ASX listed Oil & Gas player this year. PCL with 20% has a very high quality joint venture (Tullow, ONGC and Africa Energy) and the recent farm in by ExxonMobil directly to the south of PEL 37 again highlights its potential. We value PCL's 20% stake now at A$40m / 0.68cps (from A$27m), which remains simply a transaction value (not a risked outcome).

Drilling in Sacramento Basin still a free option at the current share price

The Californian wells are relatively low cost and the targets are extremely large (with a wide range of potential outcomes). While calculating a catch all NPV10 per mmbtu is difficult (given the breath of potential outcomes) we have modelled a base case NPV10 for a 100bcf discovery of US$0.53/mmbtu (assuming a realised gas price of US$3.20/mmbtu). **So as an extremely rough rule of thumb, every 1bcf net to PCL discovered would likely be worth around US$500,000.**

Our current valuation for PCL's US exposure is simply the implied value calculated based on the respective market values of the ASX listed peers participating in these wells (until we get more flow test results). The success or otherwise of testing at Tulainyo in the coming months will obviously have a major impact on these valuations (including PCL).

*Fig. 14: Projects and Prospects**

Region	Project or Prospect	Type	Interest	Net Prospective Resource	Unrisked NPV10 (A$m)	Method of estimation
USA	*ASX Peer Group Implied Value*				*18*	*Hartleys / IRESS*
California	Dempsey	Gas field exploration	10%		5	Hartleys
California	Tulainyo	Gas discovery appraisal	13%	233 Bcf	165	Probabilistic (P50)
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Namibia	*Farm in Value*	*Transaction Comparable*			*40*	*Hartleys*
(PEL 37)	Albatross	Oil exploration	20%	66.3 mmbbl	321	Deterministic Best Estimate
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*Source: PCL and Hartleys.. * Net Prospective Resources are PCL Estimates excluding Dempsey. NPV10 (unrisked) are Hartleys estimates for the Net Prospective Resource case based on field modelling and comparable comps.*

Namibia exposure still undervalued

Offshore Namibia generally looked like becoming one of the next 'hot spots' for offshore exploration worldwide just before the oil price collapse with PEL 37 being one of the more prospective licenses in Namibia. We therefore continue to see high potential in PCL's remaining 20% stake in PEL 37.

Fig. 15: EL 0037 Leads and Prospects

Prospect Lead		AREA (Sq Km)	Prospective Resource 100% (MmBbls)*
Albatross	Prospect	293	349
Seagull & Gannet S	Prospect	273	338
Seagull & Gannet N	Prospect	90	104
Cormorant	Prospect	120	124
Upper Fan 2	Lead	85	
Lower Fan 3	Lead	352	
Lower Fan 4	Lead	170	
	TOTAL (Prospects Only)		915*

Source: PCL

PCL's free carry has real value and this was evidenced by the deal with Africa Energy. Tullow has already spent US$34m on the license (mainly high quality seismic) and a well is likely to cost in the region of US$35-50m (relatively cheap as moderate water depth). So, the 'value' of PCL's 20% carried stake in the well could now (post the JV voting on a drilling date and ExxonMobil's entry into the neighbouring license) be worth circa A$40m or 0.68c per share. We see this as the base value for PCL ex the US. It is also worth noting that we have not 'yet' included any value for PCL's 75% and operatorship of PEL 87. We await further releases and details from the Company on the likely prospectivity of this block. It could provide further upside in the medium term as it seems to be ideally located at the Northern end of a prospective fairway inhabited by Galp, Total and Shell (see Figures 7 and 12).

We rate PCL a Speculative Buy

While acknowledging there are exploration and timing risks regarding both Namibia and the Sacramento Basin, the share price upside potential is large from a relatively low base. Namibia alone we value at 0.68c per share and view the exposure to California still as free option at a price at or below that level. We therefore at current levels rate PCL a Speculative Buy with a base case value of 1.0c per share. This has increased from 0.8c per share on the back of a further upgrade to our fair value for Namibia. As further progress is achieved (such as contracting a rig) later this year we expect this valuation to increase further with these milestones. Very material upside exists from this target price, as outlined in Figure 14, upon exploration success in any one of the two to three wells they will likely participate in over the coming 12 months.

RISKS

The key risks for PCL (like most oil & gas exploration and development companies) is making an economic discovery and obtaining the funding for ongoing exploration. Other risks include delays, key person risk, country/sovereign risk, weather, JV partner obligations and cost inflation. Investing in explorers is very risky given the exploration value of the company in essence assumes that the market will recognise a portion of potential value before the results of an exploration program are known, conscious that the ultimate chance of success is low (typically 1%-20%) and that failure is much more likely, in most cases. Other risks are earnings and cash flow disappointments given the industry is volatile and cash flow expectations can disappoint due to cost overruns, project delays, cost inflation, environmental regulations, resource estimate errors and management performance and contract negotiation skills. High financial leverage (if it exists at that time) would add to the problem.

SIMPLE S.W.O.T. TABLE

Strengths	Experienced management team. Fully funded offshore well in Namibia. Significant near-term Sacramento Basin drilling activity including fully funded wells.
Weaknesses	Frontier Exploration risks. Non-Operated interests. Limited Balance Sheet Capacity. Relying on partners to secure their own funding requirements on an ongoing basis.
Opportunities	Further farm in opportunities in US and Australia. M&A potential.
Threats	Oil and US and WA Gas prices. License expiry / not fulfilling license commitments. Potential further share dilution. The AUD/USD Exchange rate.

Source: Hartleys Research

APPENDIX: NAMIBIA – THE HIDDEN GEM

The oil price collapse which began in 2014 impacted many companies in the oil sector, from explorers to producers through to the companies that provide services to the industry.

PCL among the junior explorers listed on the ASX was perhaps one of the most unfortunate in regards to timing. In September 2013, PCL announced an excellent farm out deal with Tullow Oil, one of the highest profile and successful African focused oil explorers.

In exchange for 65% of license PEL 37 and taking over as Operator, Tullow Oil obligated to fund 100% of the costs of a 3D seismic survey of not less than 3,000 km2 commencing before 31 December 2014, fund 100% of the costs of a 2D seismic survey of not less than 1,000 km and subject to identifying a drillable prospect (which we view their subsequent releases as satisfying this condition), fully fund 100% of the costs of one exploration well with no expenditure 'cap' to not less than 3,500 metres below the sea surface.

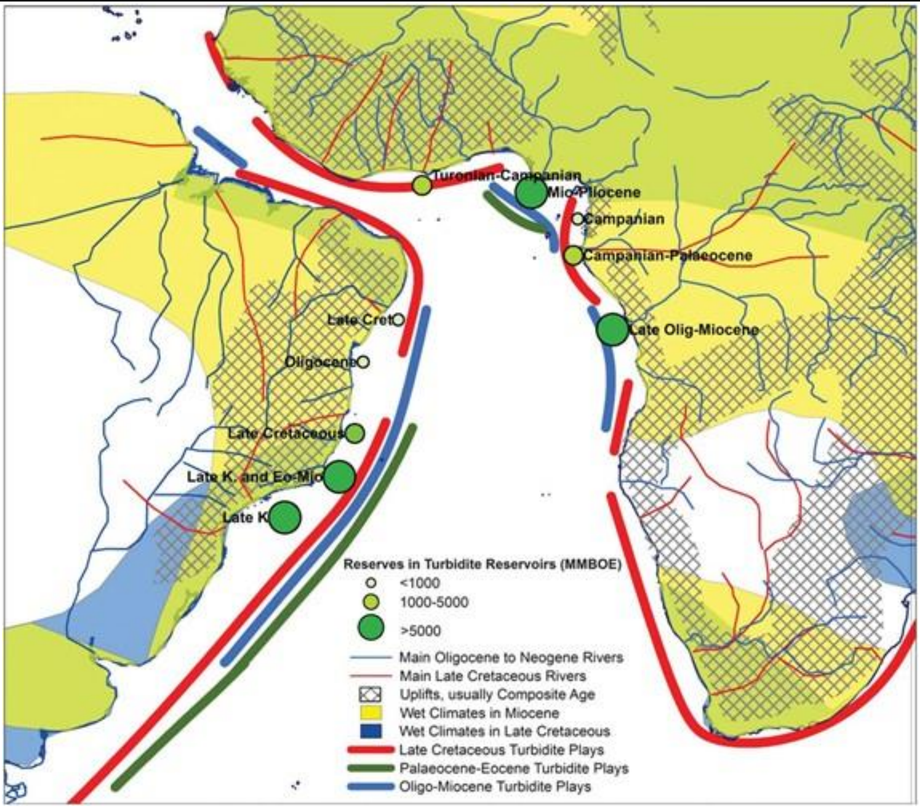
Offshore Namibia generally looked like becoming one the next ‘hot spots’ for offshore exploration worldwide just before the oil price collapse with PEL 37 being one of the more prospective licenses. We believe the attractiveness of this license has subsequently been confirmed by the interest expressed by African Energy Corp and ONGC Videsh’s entry into the license (and ExxonMobil’s farm in to a license just directly to the south).

We therefore continue to view PCL’s now 20% stake in PEL 37 as a jewel in the crown. As we previously outlined Namibia was fast becoming an exploration ‘hot spot’ before the oil price collapse and EL 0037 had attracted in one of West Africa’s premier explorers in Tullow Oil.

Namibian offshore exploration – once again attracting interest

Prior to the oil price collapse the South Atlantic Margin was arguably the hottest exploration play globally.

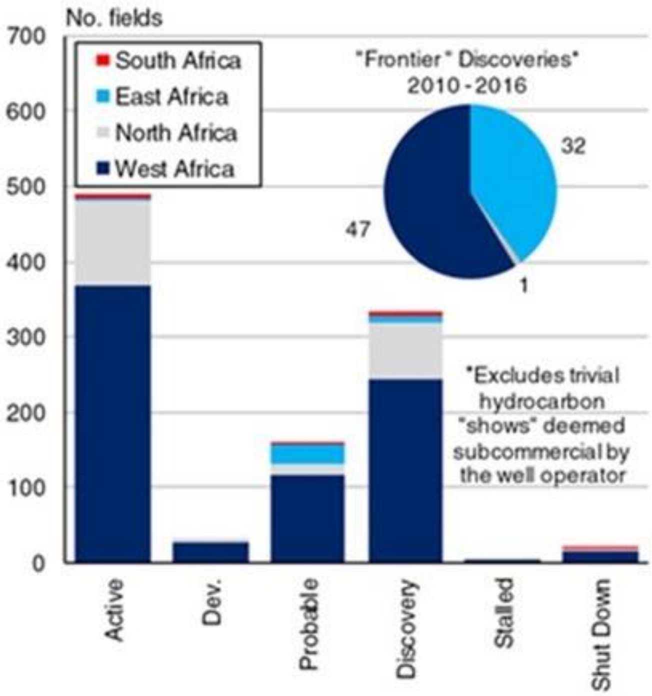
Fig. 16: South Atlantic Margin



Source: The Geological Society of London 2013

The exploration successes offshore Brazil were getting matched by the pace of frontier discoveries in West Africa.

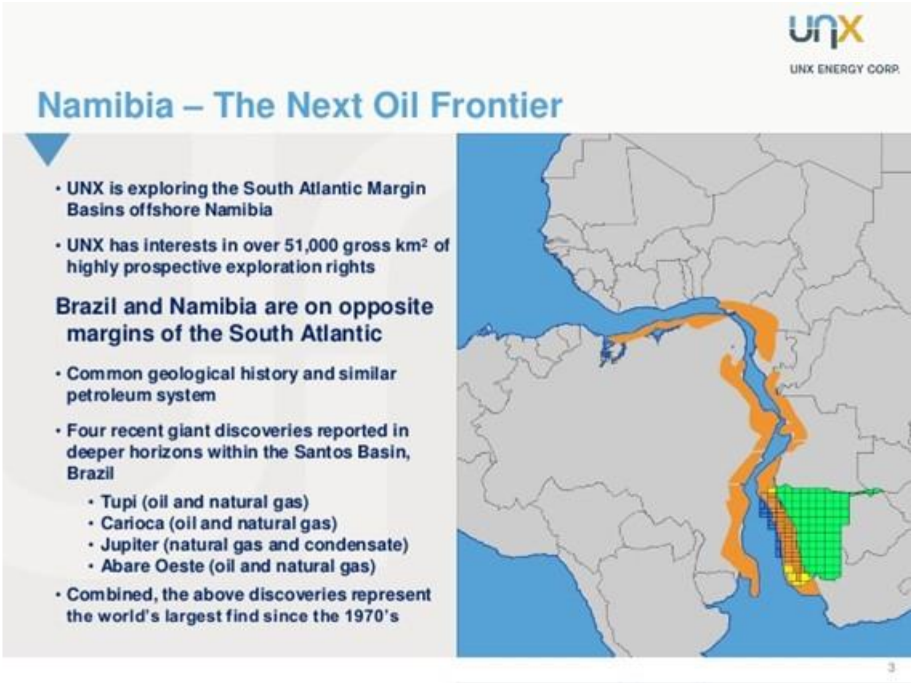
Fig. 17: Frontier Discoveries Africa



Source: Clarksons Research

Namibia was being heralded as the next big thing.

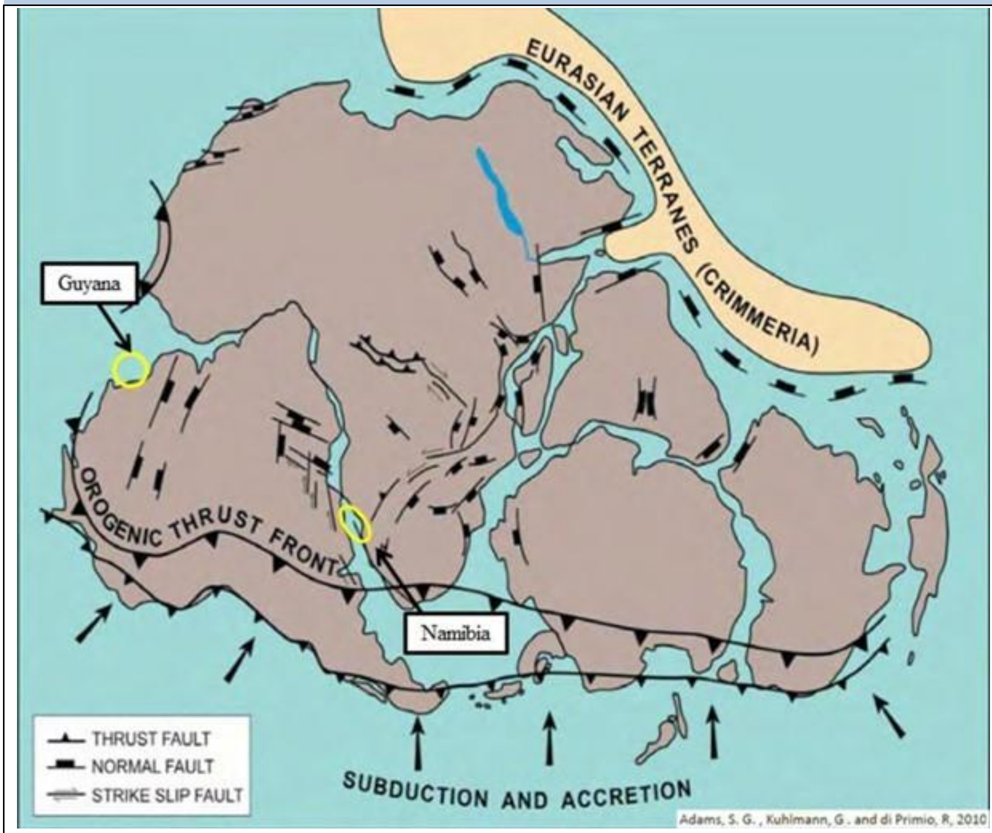
Fig. 18: Namibia – the Next Big Thing



Source: UNX Energy Corp.

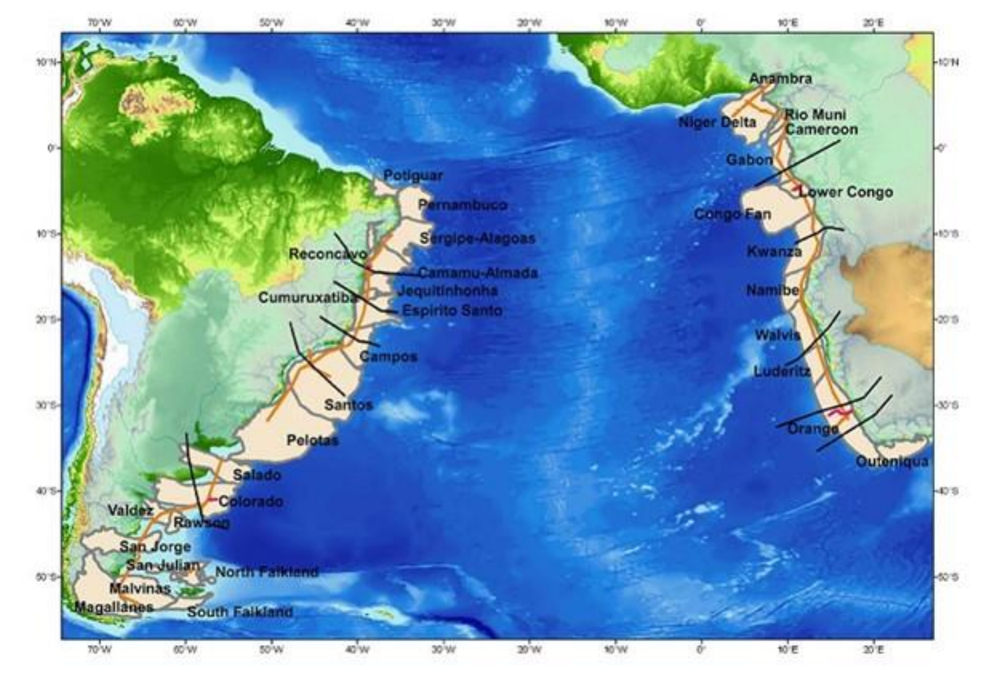
Namibia seemed to offer in the words of Tullow Oil a "material turbidite oil play in low cost shallow water setting", with the huge successes in the Santos Basin offshore Brazil seen as the analogy.

Fig. 19: Offshore Namibia and Santos Basin Analog



Source: Adams, Kuhlmann, Primio.

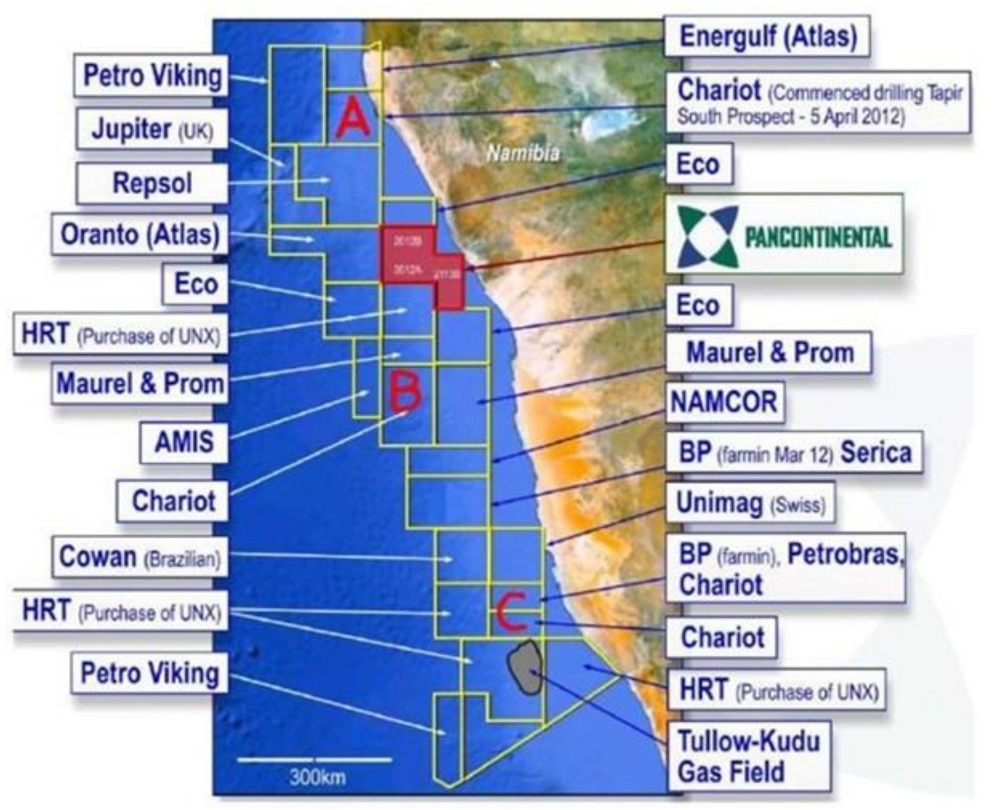
Fig. 20: South Atlantic Conjugate Margin Basins



Source: GEO ExPro.

Acreage was gazetted, with PCL securing the highly prospective EL 0037 license.

Fig. 21: Operators Offshore Namibia



Source: PCL

Initial exploration well results while not generating any commercial discoveries were generally encouraging. Some key wells;

- Tapir South-1

In 2012, Chariot drilled the Tapir South-1 well to a depth of 4,879 meters north of the Walvis Ridge and found wet Upper Cretaceous sandstones.

- 1911/15-1

The Norsk Hydro well, drilled to the north of Cooper Block, encountered thick Tertiary to Late Cretaceous age reservoir rock with good reservoir properties. The reported average porosity was 24.3% and the lower portion of the Cretaceous section was described as predominately fine-grained rocks and limestone/dolomite

- Murombe-1

The Murombe-1 well encountered 36 meters of net sand. The reported average estimated porosity was 19% and up to 28% in the Baobab sand.

- Wingat-1

The HRT Wingat-1 well penetrated several thin-bedded oil-saturated sands. Analysis of this oil indicated 41-degree API oil with a 1,193 GOR within the Cretaceous section. Oil was not in commercial volumes.

The main objective of the well was to test the resource potential of the Albian age carbonate platform but its reservoir quality is much less developed than originally expected.

Wingat-1 did identify two well-developed source rocks, which are rich in organic carbon and both are within the oil-generating window.

In the view of the operator the fact that the source rock is in the oil window and generating liquid hydrocarbons of excellent quality confirms the source potential of the basin.

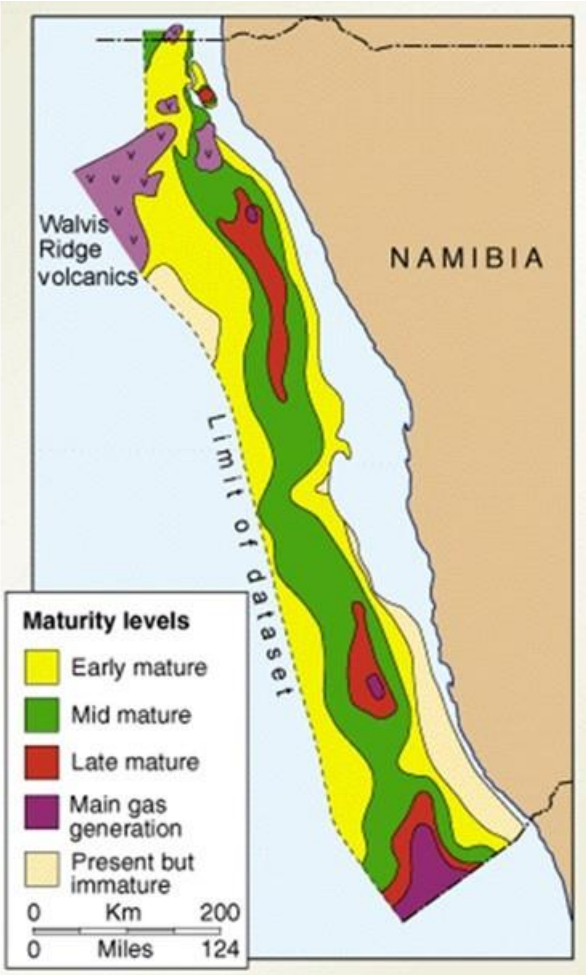
- Welwitschia-1

In 2014, Repsol and Tower Resources drilled the Welwitschia-1 well in License PEL0010 (Blocks 1910A, 1911, and 2011A). The Paleocene, Maastrichtian and upper Campanian reservoirs were found to be poorly developed and no hydrocarbons were encountered.

- Moosehead-1

In Block 2713 northwest of Kudu field, HRT drilled the Moosehead-1 which encountered 100 meters of carbonates and ‘wet’ gas shows were seen along with a well-developed Aptian age source rock.

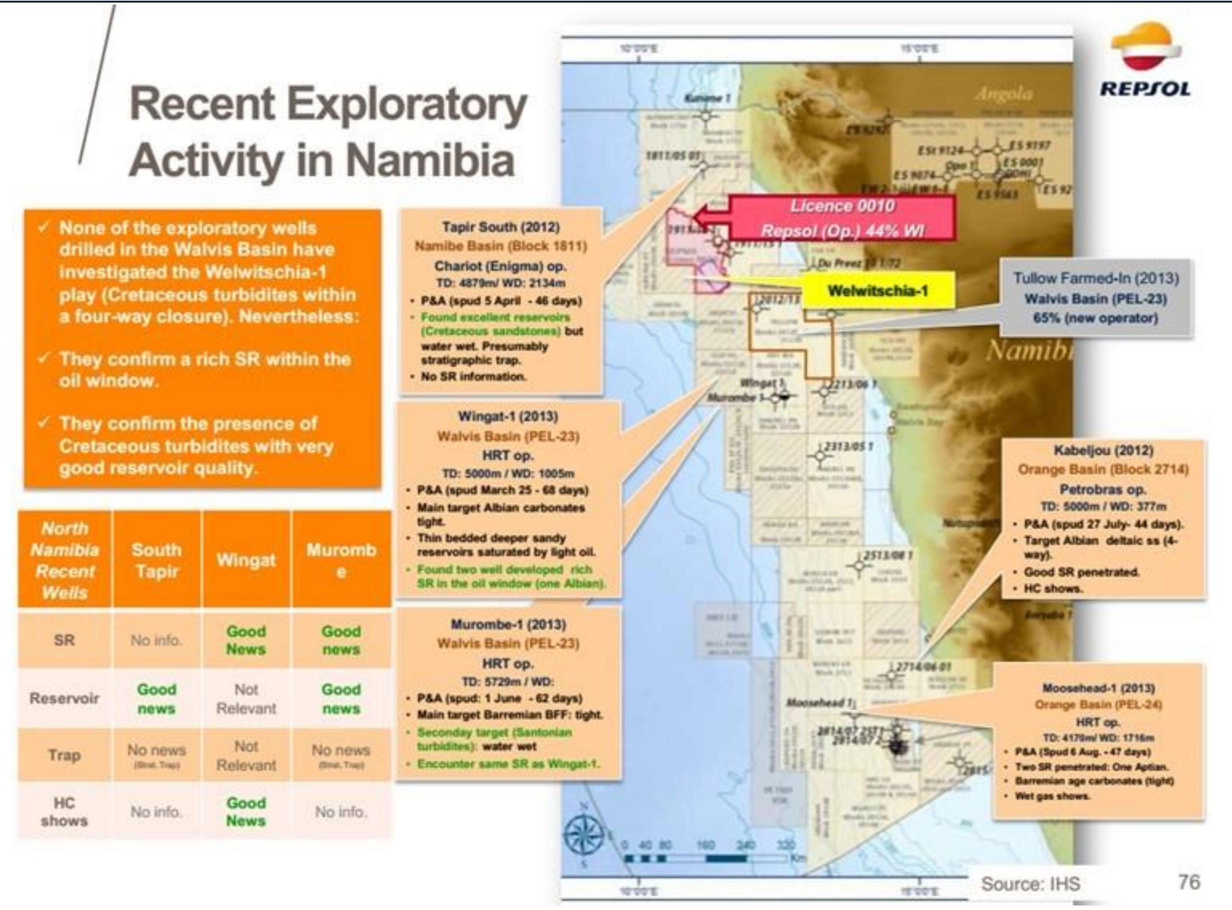
Fig. 22: Aptian Source Rock



Source: Eco

While these initial wells did not make a commercial find, the overall results were positive (source, reservoir and migration) and the likelihood of a major discovery once the right structure was drilled remained high.

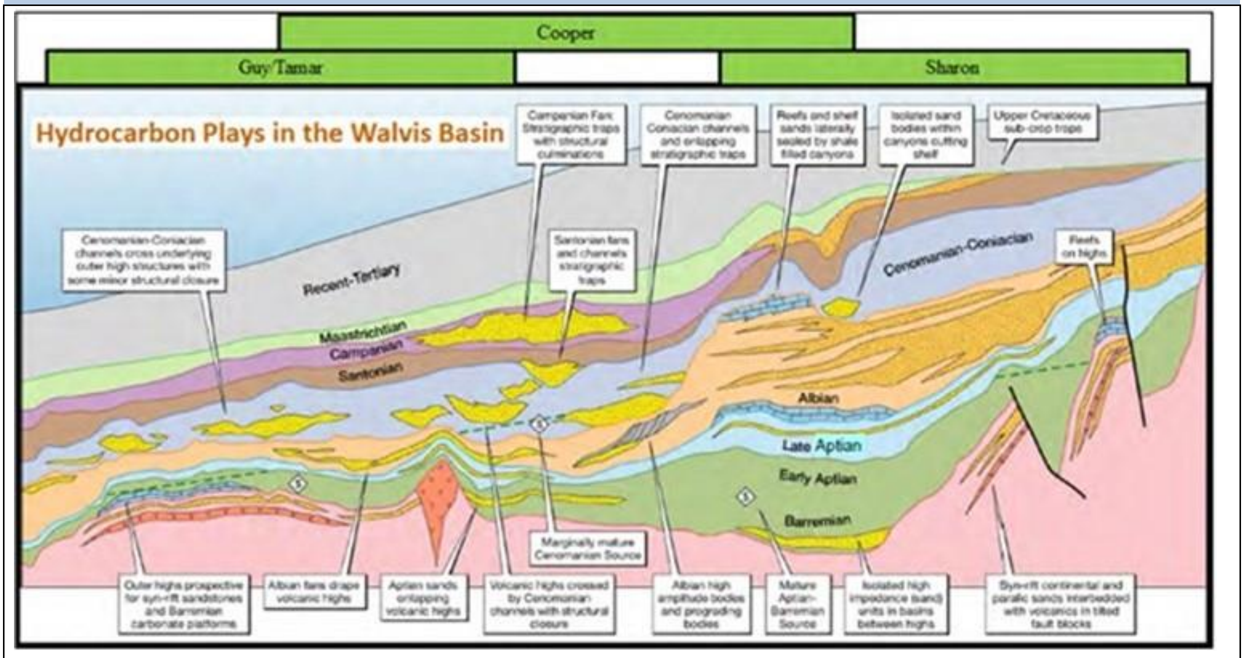
Fig. 23:Key Wells Offshore Namibia – No good news on Traps



Source: Repsol

A number of potential Cretaceous leads were identified.

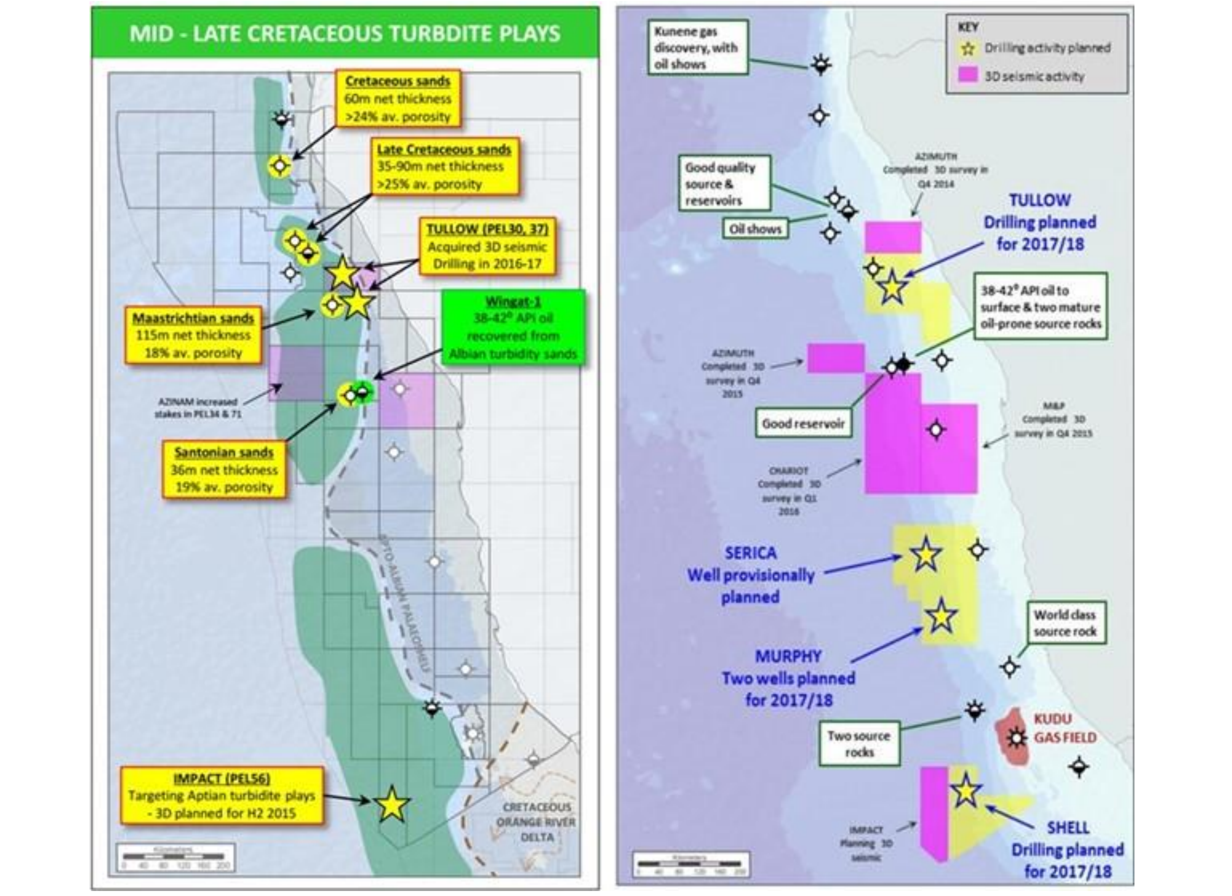
Fig. 24:Hydrocarbon Plays in the Walvis Basin



Source: Eco

A number of follow up wells were planned targeting the mid-late Cretaceous Turbidite Plays when the oil price collapsed.

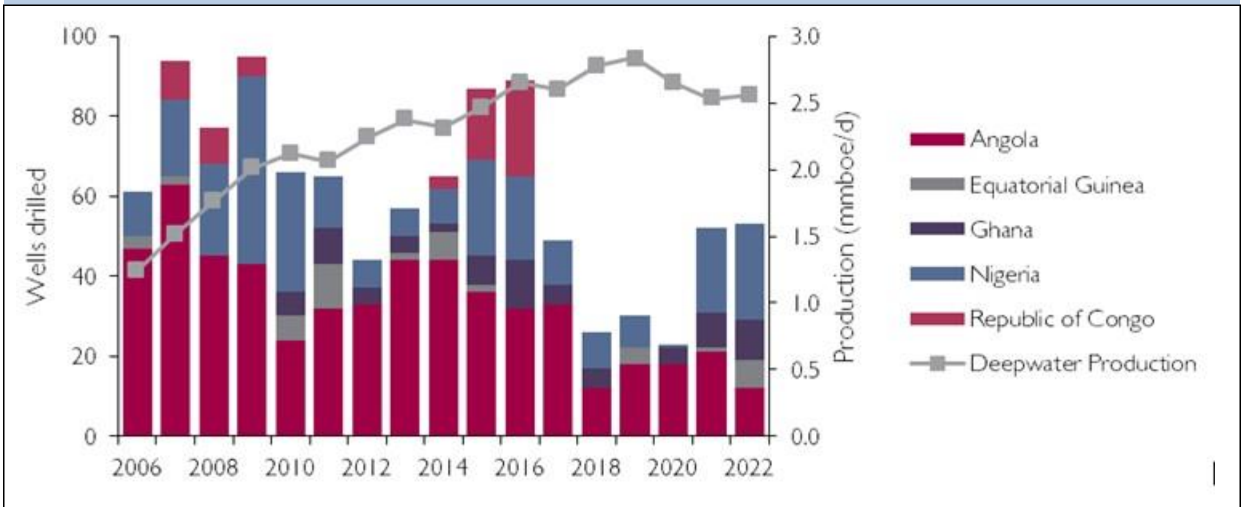
Fig. 25:Mid-Late Cretaceous Turbidite Plays



Source: Tower Resources

The appetite for offshore exploration fell with the oil price (note that well numbers in 2015-16 were boosted by drilling on committed developments in Angola and Nigeria). However, once these developments are completed, a Douglas Westwood update in 2016 only expected 23 deep-water wells will be drilled in West African waters in 2020 compared with 89 in 2016. While the oil price has begun to recover, the recovery in offshore exploration remains modest given the risks and costs involved. A key advantage for the Walvis Basin and PEL 37 in particular is its shallow water depth, so explorers can access deep-water sized targets for less than half the cost.

Fig. 26:West African Deepwater Exploration



Source: Douglas Westwood

Given the encouraging results to date and relative low drill costs we therefore expect drilling activity offshore Namibia to restart in the next couple of years (assuming oil prices of (at least) circa US$50/bbl).

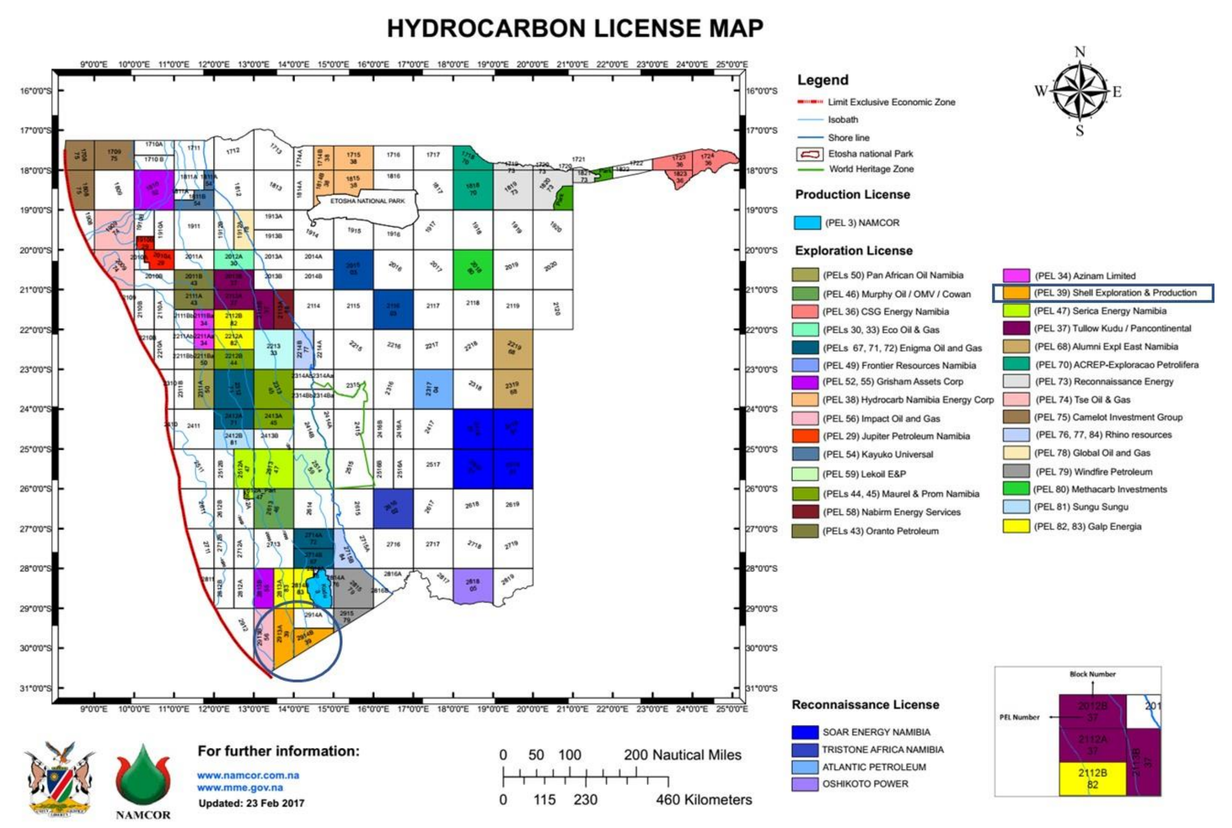
In addition to the two deals in PEL 37 and ExxonMobil's farm in, other key recent developments that are positive indicators for an upturn in activity in Namibia was BW Offshore signing a farm-out deal in February 2017 to become operator of the Kudu license offshore Namibia with a 56% stake.

The Kudu field is estimated to contain 1C-2C-3C Contingent Resource range within the main reservoir (K3) of 755-1330-2308 Bcf, respectively. The Kudu Gas to Power project calls for gas to be produced by a floating production unit before being exported by pipeline to a new 885 MW gas to power plant onshore Namibia.

Additionally, Shell (April 2017) announced its intention in an application for an environmental impact assessment prepared by SLR Consulting.

Shell currently holds a 90% interest in PEL 39 (Namcor 10%). "Shell will drill one or two exploration wells in the northern portion of the license area" according to SLR in the application. PEL is directly to the South West of the Kudu Field.

Fig. 27:Hydrocarbon Plays in the Walvis Basin



Source: Eco

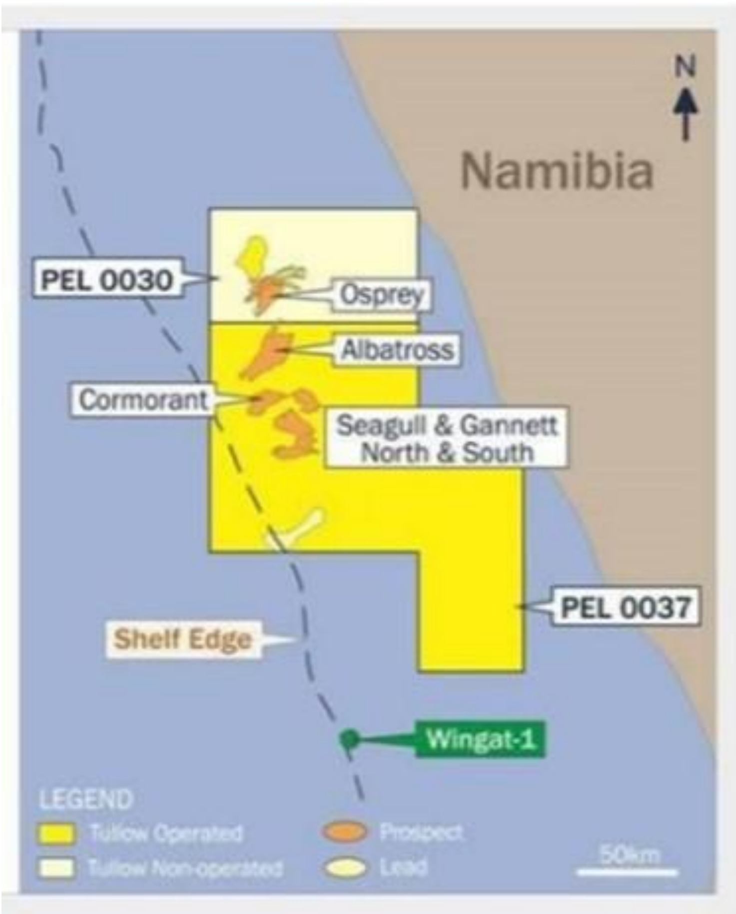
Tullow Oil remains a key factor in the timing of any exploration in PEL 37, although its capital requirement has been reduced post the deal with ONGC Videsh. Also, as we have seen its financial position has improved and it has begun to increase its exploration budget and activities once more.

Fig. 28: *Tullow Exploration and Appraisal Activity in 2017*

Source: Tullow

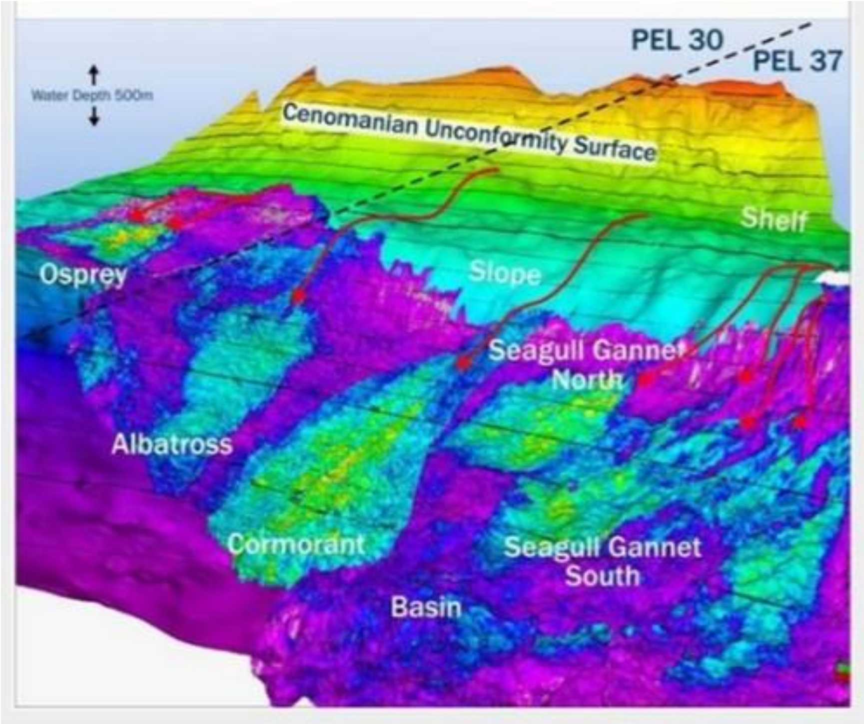
Tullow also has exposure to Namibia through license PEL 30 just to the North of PCL.

Fig. 29: *Tullow Acreage Offshore Namibia*



Source: Tullow

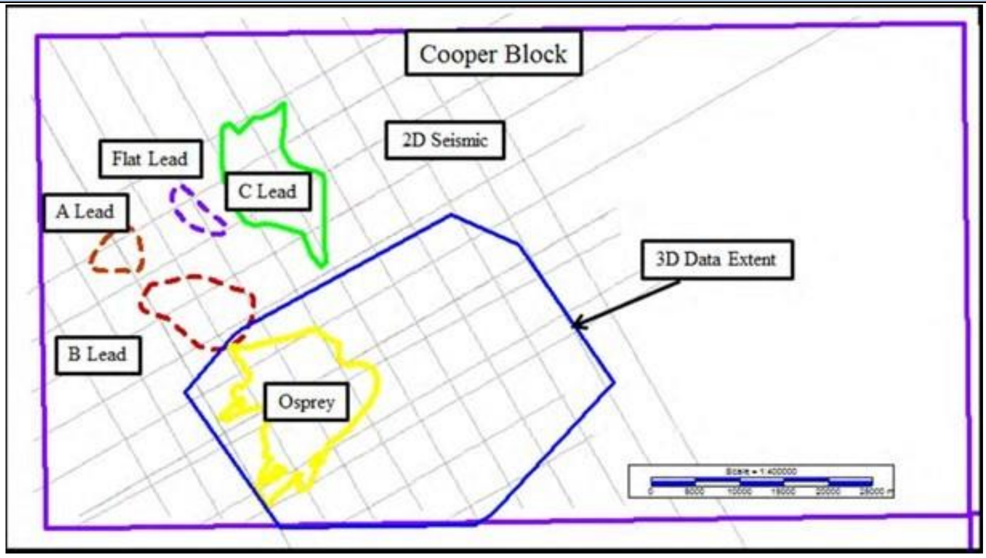
Fig. 30: Tullow Prospects PEL 30 and PEL 37



Source: Tullow

The operator of this block (Eco) has also identified a number of leads and the Osprey Prospect on trend with PEL 37, however we expect Cormorant in PEL 37 to be the first well drilled by Tullow in this acreage.

Fig. 31: Eco - Cooper Block Prospects and Leads



Source: Eco

Fig. 32: Eco - Cooper Block Leads and Prospects

Lead/Prospect	Minimum (P10) km^2 / Acres	Most Likely (P50) km^2 / Acres	Maximum (P90) km^2 / Acres	Gross Prospective Oil Resources (P50) Most Likely MMBO	Risk COS%
Lead A	4.4 / 1,087	11.0 / 2,718	14.1 / 3,494	70.5	3.2
Lead B	14.1 / 3,494	35.3 / 8,735	70.7 / 17,470	205.3	3.5
Lead C	22.8 / 5,634	57.0 / 14,085	114.0 / 28,170	179.3	3.5
Lead Flat	3.2 / 791	8.0 / 1,977	16.0 / 3,954	52.3	3.0
Osprey	49.8 / 12,300	89.8 / 22,200	175.0 / 43,250	245.5	17.9

Source: Eco

Eco retained Gustavson Associates to undertake a technical review of their licenses in Namibia, including the Cooper block directly to the North of PCL's acreage. Along with the well results outlined earlier it highlights the various exploration risk parameters, with high quality 3D Seismic significantly de-risking prospects such as Osprey (COS of 17.9%).

Fig. 33: Eco Cooper Block – Range of Probability of Success

Probability of Success (POS)	Range % Min	Max	Comments
Trap	50	80	Seismic data indicates the presence of structures and stratigraphic traps
Seal	25	40	Typical shale layers
Reservoir	30	70	Reservoir quality sands encountered in local wells
Presence of HC	50	80	Production in Angola, Brazil, seeps, oil shows in local wells
Overall	**1.9**	**17.9**	The product of the above factors

Source: Gustavson Associates

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Neutral	Take no action. Upside & downside risk/reward is evenly balanced.
Reduce / Take profits	It is anticipated to be unlikely that there will be gains over the investment time horizon but there is a possibility of some price weakness over that period.
Sell	Significant price depreciation anticipated.
No Rating	No recommendation.
Speculative Buy	Share price could be volatile. While it is anticipated that, on a risk/reward basis, an investment is attractive, there is at least one identifiable risk that has a meaningful possibility of occurring, which, if it did occur, could lead to significant share price reduction. Consequently, the investment is considered high risk.

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