PENINSULA ENERGY LIMITED

Research Note

POSITIONING FOR URANIUM PRICE RECOVERY

Investment Highlights

- Peninsula Energy (PEN) is focussed on transitioning to a low pH operation at its uranium producing Lance Projects located in Wyoming USA which currently has a Mineral Resource totalling 51 Mt at 479 ppm U₃O₈ for 53.9 Mlb U₃O₈. PEN is planning on increasing its uranium production via a three stage process that will increase production from the current 0.14 Mlb/y to 3 Mlb/y, and is currently awaiting amendments to permits and licences to approve the proposed low pH operation for use at Lance Projects. We initiate coverage of PEN with a Speculative Buy rating and a \$0.28/share risked valuation.
- Benefitting from the low U₃O₈ price; positioning for its recovery. Approximately 50% of PEN's sales in 2019 and 2020 can be satisfied by buying uranium at a low cost in the spot market and delivering it into its higher priced contracts. Beyond 2020, we forecast the uranium price will enable economic expansion of the Project towards its 3 Mlb/y target.
- Positive catalyst for uranium coming... The outcome of the current US Section 232 investigation into uranium imports is scheduled to be completed by 14 April 2019 and is an important catalyst for uranium price. As a result of the uncertainty surrounding the investigation, 12+ months of pent up demand for uranium has built while the investigation is underway. Regardless of the investigation recommendations, we expect this demand will start to get filled and contracts are likely to be signed once buyers have more certainty on the role the US government will play in the market.
- ...and positive for PEN too. PEN is uniquely placed amongst its ASX listed peers to benefit should the Section 232 investigation outcome impose quotas or tariffs on imports. It is one of just three US uranium producers, and it is the only one that was not part of the Section 232 petition which could put it in good standing with its US customer base. Furthermore, a market bifurcated into US and non-US production could lead to premium prices for US production.
- Valuation: \$0.28/share. Our PEN valuation is based on a discounted cash flow analysis of the three stage development of the Lance Projects, risk weighted at 60% to reflect uncertainty around grade, recoveries, production rates, costs and timing of the development. The number of shares used to determine the valuation has been diluted to account for funding the Lance Projects production increase.

Year End Jun 30	2018A	2019F	2020F	2021F	2022F
Reported NPAT (\$m)	(9.1)	(15.0)	(17.3)	(11.9)	(9.7)
Recurrent NPAT (\$m)	(9.1)	(15.0)	(17.3)	(11.9)	(9.7)
Recurrent EPS (cents)	(3.9)	(6.1)	(7.0)	(4.9)	(3.9)
EPS Growth (%)	na	na	na	na	na
PER (x)	(5.2)	(3.3)	(2.9)	(4.2)	(5.1)
EBITDA (\$m)	(4.1)	(10.2)	(10.9)	(0.7)	7.9
EV/EBITDA (x)	(12.5)	(6.5)	(8.2)	(164.1)	17.0
Free Cashflow	10.4	(10.9)	(23.6)	(21.1)	(22.2)
FCFPS (cents)	4.5	(4.4)	(9.6)	(8.6)	(9.1)
PFCF (x)	4.5	(4.6)	(2.1)	(2.3)	(2.2)
DPS (cents)	0.0	0.0	0.0	0.0	0.0
Yield (%)	0.0	0.0	0.0	0.0	0.0
Franking (%)	0.0	0.0	0.0	0.0	0.0



13 March 2019		
12mth Rating	SPECUL	ATIVE BUY
Price	A\$	0.20
Target Price	A\$	0.28
12mth Total Return	%	39.5
RIC: PEN.AX	В	BG: PEN AU
Shares o/s	m	245.0
Free Float	%	97.7
Market Cap.	A\$m	49.6
Net Debt (Cash)	A\$m	4.1
Net Debt/Equity	%	5.1
3mth Av. D. T'over	A\$m	0.135
52wk High/Low	A\$	0.34/0.16
2yr adj. beta		1.08
Valuation:		
Methodology		DCF
Value per share	A\$	0.28
Analyst:		Cam Hardie
Phone:	(+61)	3 9242 4153
Email:	chardie@psl.com.au	



RESEARCH NOTE – PATERSONS SECURITIES LIMITED



COMPANY OVERVIEW AND INVESTMENT THESIS

Peninsula Energy (PEN) is a uranium mining company with a 100% interest in the uranium producing Lance Projects in Wyoming, USA. The Lance Projects includes the Ross Central Processing Plant (CPP) within the Ross Permit Area which is one of the six uranium in-situ recovery (ISR, also called in-situ leach or ISL) plants operating in the US today. Operating results to date have shown that the current alkaline based production method employed at the plant does not provide for a viable economic operation under current and projected uranium market prices. However, tests using acidic solutions have shown increased recovery potential, with peak solution grades over 10 times higher than the 22 mg/L achieved in actual alkaline operations. As such, PEN is transitioning the project into a low pH operation which, once successfully applied, will increase production to 3 Mlb/y in a three stage development.

We initiate coverage of PEN with a Speculative Buy rating and a \$0.28/share valuation. Key PEN investment considerations include:

- A rising tide may lift all boats, but be in a boat that doesn't leak when that happens. Upwards movement in the uranium price will be seen as a positive for all uranium companies, however we believe that low cost brownfield uranium projects such as PEN's Lance Projects offer the best pathway to generating strong, long term shareholder returns. As Warren Buffet famously said: "Only when the tide goes out do you discover who's been swimming naked".
- PEN is currently a uranium producer with long term contracts in place, but it is buying uranium in the spot market to satisfy some of its sales commitments and is therefore profitable on these sales. A total of 225,000 lbs of U₃O₈ has been purchased at a fixed average price of US\$23.69/lb. This U₃O₈ will be received and paid for by the Company during CY2019 and CY2020 and used to partially satisfy ~400,000 lbs of U₃O₈ of committed deliveries remaining under the existing contracts in this period.
- The Lance Projects offers a staged production build development which allows for performance targets to be achieved thereby giving increasing confidence to the low pH operation before committing to subsequent stages. Stage 1 of the proposed development is expected to cost a relatively modest US\$5.3m.
- PEN started the process to amend the licence and permits for the in-situ leach (ISL) project in 2017, after the testing showed greatly increased recovery using an acidic rather than the alkaline mining solution. The licence amendment and permit process is expected to be completed by mid-2019.
- A successful transition to low pH operations could align the Projects operating performance and cost profile with current industry-leading global uranium production projects. According to the World Nuclear Association, in 2017, 50% of global uranium was mined from ISR operations using low pH lixiviants such as that proposed by PEN.
- The current US Section 232 investigation into uranium imports is scheduled to be completed by 14 April 2019 and is an important catalyst for uranium price. Primary buyers of uranium have stayed out of the market since early 2018 when a petition calling for the investigation was submitted. As a result, the traditional buyers have not entered into new contracts in this time. This has resulted in 12+ months of pent up demand for uranium while the Section 232 investigation outcome is being determined. Regardless of the investigation recommendations, we expect this demand will start to get filled and contracts are likely to be signed as buyers will have more certainty on the role the US government will play in the uranium market.
- PEN is uniquely placed amongst its ASX listed peers to benefit should the Section 232 investigation
 outcome impose quotas or tariffs on imports, It is one of just three US uranium producers, and it is the only
 one that was not part of the Section 232 petition which could put it in good standing with its US customer
 base. Furthermore, a market bifurcated into US and non-US production could lead to premium prices for
 US production.

2



VALUATION

Our valuation is based on a discounted cash flow analysis of PEN's interest in the Lance Projects. We have risk weighted the Projects at 60%, reflecting uncertainty around flow rates and timing.

Figure 1: PEN Sum of the Parts Valuation			
	A\$m	\$/share	
Lance Projects (Risked at 60%)	153	0.33	
Karoo Projects, South Africa	0	0.00	
Net Cash (Debt)	-8	-0.02	
Corporate Costs	-13	-0.03	
Total Valuation	132	0.28	

Source: Patersons Securities estimates

We utilise a 10% Weighted Average Cost of Capital to derive our valuation.

We do not include any value for PEN's 74% effective interest in the Karoo Projects located in South Africa as the Company is in the process of relinquishing this asset and has impaired its value to zero.

Figure 2 shows the U₃O₈ price and A\$/US\$ forecasts used to derive our valuation.

Figure 2: Uranium Price and A\$/US\$ Forecasts					
	2019	2020	2021	2022	2023
U ₃ O ₈ (US\$/lb)	32.50	40.00	40.00	50.00	55.00
A\$/US\$	0.72	0.72	0.73	0.73	0.72

Source: Patersons Securities estimates

Figure 3 shows the sensitivity of our valuation to the U₃O₈ price, both on a risked and unrisked basis.

Figure 3: PEN Risked & Unrisked Valuation Sensitivity to Uranium Price					
		U ₃ O ₈	orice (US\$/lb)		
	40	45	50	55	60
PEN Risked Valuation (\$/share)	0.01	0.10	0.15	0.22	0.29
PEN Unrisked Valuation (\$/share)	0.04	0.16	0.28	0.39	0.51

Source: Patersons Securities estimates

The Lance Projects Low pH Feasibility Study completed in September 2018 assumes 33.4 Mlb of U_3O_8 is produced over a 17-year mine life which results in a pre-tax NPV of US\$156.5m for the Project using an 8% discount rate and a long-term average sales U_3O_8 price assumption of US\$49/lb. Using a long term U_3O_8 price of US\$57/lb, the feasibility study pre-tax NPV increases to US\$254m.



RESERVES & RESOURCES

PEN has a Mineral Resource for the Lance Projects totalling 51 Mt at 479 ppm U_3O_8 for 53.9 Mlb U_3O_8 . The Resource has been calculated by applying a combined constraint of a grade thickness product (GT) of 0.2 contour and a cut-off grade of 200 ppm. The Resource estimate is based on a database of over 4,500 historic drill holes together with over 3,000 drill holes completed by PEN between 2008 and the end of 2017.

-igure 4: Lance Projects Resource Estimate as at 31 December 2017					
Classification	Tonnes (M)	Grade (ppm U ₃ O ₈)	U₃O ₈ (Mkg)	U ₃ O ₈ (MIb)	
Measured	3.8	488	1.9	3.9	
Indicated	10.9	495	5.4	11.9	
Inferred	36.3	476	17.3	38.1	
Total	51.0	479	24.5	53.9	

Source: Peninsula Energy, Patersons Securities

The Lance Projects Resource is classified into three separate production areas, as shown in Figure 5.

Figure 5: Lance Project	cts Resource Estimate by Proc	duction Area		
	Grade (ppm U ₃ O ₈)	U ₃ O ₈ (lb)	Av. Thickness (ft)	Average GT
Ross Permit Area				
Measured	510	1,739,676	9.2	0.47
Indicated	460	2,634,601	9.2	0.42
Inferred	450	1,692,765	9.2	0.41
Total		6,067,042		
Kendrick Expansion A	rea			
Measured	535	1,410,769	10.3	0.55
Indicated	583	6,860,498	10.0	0.58
Inferred	510	7,659,018	10.8	0.55
Total		15,930,285		
Barber Expansion Are	a			
Measured	479	710,294	8.8	0.42
Indicated	427	2,415,045	8.3	0.35
Inferred	485	28,734,096	9.8	0.48
Total		31,859,435		
Lance Projects Total				
Measured	488	3,860,739	9.5	0.46
Indicated	495	11,910,144	9.5	0.47
Inferred	476	38,085,879	10.0	0.48
Total		53,856,762		

Source: Peninsula Energy, Patersons Securities



5

THE IN-SITU RECOVERY (ISR) PROCESS

In-Situ Recovery (ISR) of uranium is a very common uranium extraction method in both the US and globally. The ISR process works by injecting a solution (lixiviant), comprising native groundwater with reagents (alkaline, acid, and/or oxidants), into the host formation containing uranium mineralization. The lixiviant dissolves the uranium and forms a soluble complex with the dissolved uranium, which is pumped out of the formation through a recovery well. The recovered lixiviant is typically processed using ion exchange (IX) resin, which selectively removes the uranium complexes from the solution. The lixiviant is recharged with reagents and injected back into the formation so the process can repeat. There are three primary controls to prevent the spread of lixiviant outside of the mineralized horizon. These include natural geologic confining layers above and below the mineralized horizon, injecting less lixiviant than is withdrawn in order to maintain an inward groundwater flow direction into each wellfield, and implementing a monitor well network that surrounds each wellfield horizontally and vertically.

Today, Wyoming ISR operations, including PEN's plant, and other U.S. operations currently apply alkaline leach methods, typically using a combination of carbon dioxide or sodium bicarbonate along with gaseous oxygen to dissolve and mobilize the uranium. Low pH ISR reagents are used worldwide to recover a variety of minerals, including copper in Arizona and uranium in Australia, Kazakhstan, China, Uzbekistan, and the Russian Federation. According to the World Nuclear Association, in 2017, 50% of global uranium was mined from ISR operations using low pH lixiviants, and this will likely be higher when 2018 numbers become available as Cameco's underground operation at MacArthur River / Key Lake is now on care and maintenance. At present, no US uranium ISR operations use low pH lixiviants, although we note that there are no regulatory prohibitions on their use in Wyoming.

US deposits tend to be higher carbonate concentration and this results in higher acid consumption and higher cost on the acid leach. One of the motivating factors for PEN pursuing acid leaching was the acknowledgement that the Lance Projects have a lower carbonate content, and therefore had the right ore body to change chemistry.

Lance Projects has relatively good quality groundwater with total dissolved solids (TDS) of around 1,000ppm which makes processing more straight forward as TDS up to 1,000 ppm is typically classified as fresh water by many environmental agencies. Simplistically speaking, the way the acid leach process works is the acid dissolves the uranium and complexes with the sulphates, however when the TDS is high, there are a lot of competing ions, so the process has to be more sophisticated.

ACID LEACH PERMITTING

In order to convert to a low pH operation, PEN needs to acquire the necessary permits and licences. As discussed previously, acid leaching is not undertaken in US uranium projects, and it is therefore unique in the USA. However Boss Resources Honeymoon Project and the Beverly mine in South Australia both utilise acid leaching. Similarly, operations in Kazakhstan, Uzbekistan and Russia all utilise the acid leach process, so it is not a novel process, and these are all amongst the lowest cost U₃O₈ producing operations in the world.

There are two facets to PEN's amended permitting currently underway, (1) the Permit to Mine, and (2) the Source Material Licence. PEN's guidance is currently that it will have its permitting in place by mid-2019.

- The Permit to Mine amendment has been reviewed by the Wyoming Department of Environmental Quality (DEQ), and published for public comment in December 2018, and the public comment period closed at the end of January 2019. PEN received some comments, but no requests for a formal hearing. The State's process is that once a company has concluded the public comment period and there is no request for a hearing, it will then issue the Permit to Mine within one month. As such, the Permit to Mine is expected shortly. The Permit to Mine addresses the environmental impacts of low pH mining and is therefore considered the more sensitive permitting document from a public comment perspective.
- The Source and By-product Material Licence addresses radiological materials and their associated impacts. The amendment to the Source Material Licence is now being reviewed by the State. PEN expects that the review will be completed and a draft document prepared in early March 2019. The draft decision document then goes through a 60-day public comment period, which should therefore be completed in May/June. It is considered that the same groups will comment on both the Source Materials Licence as the Permit to Mine, and therefore PEN believes the Permit to Mine will be instructive on how the Source Material Licence is received. A call for a hearing could see timing for receipt of the Licence delayed by several months.



Through its US subsidiary, Strata Energy, Inc, PEN holds a 100% interest in the Lance Projects in Wyoming, USA. The Lance Projects includes the Ross Central Processing Plant within the Ross Permit Area which is one of the six uranium in-situ leach plants operating in the US today. PEN acquired the mineral holdings in the Lance Projects in 2007-08.





Source: Peninsula Energy

Source: Peninsula Energy

Geology & Hydrogeology

The uranium mineralization at the Lance ISR Project is located in sandstones of the Upper Fox Hills Formation and Lower Lance Formation. The production zone aquifer is saturated and confined above and below by low-permeability shales. Within the project area, the thickness of the production zone aquifer ranges from 100 to 180 feet, and the depth to the top of the aquifer ranges from 250 to 660 feet. Structural dips within the permit area are measured at 1 to 2 degrees west.

Regionally, the groundwater in the project area follows the formation dip and flows from the outcrops in the east towards the synclinal axis of the Powder River Basin in the west. Within each active mine unit, an inward groundwater flow direction is maintained by Strata's requirement to inject less water than is recovered from each mine unit. Based on the pre-operational water samples from 46 production or injection wells within the two operating mine units, the production zone aquifer has moderate TDS levels (1,200-2,500 mg/L), low calcium concentrations (2-9 mg/L) and moderate sodium (430-870 mg/L), bicarbonate (400-680 mg/L), and sulfate (400-1,320 mg/L) concentrations.

Operating History

In late 2014 PEN completed US\$35m funding for a development which was to develop a satellite plant facility with a flow rate of around 3,700 gallons per minute (gpm), which at the time equated to a production rate of 600,000 lb/y (at an average alkaline head grade of 38 mg/L). The US\$35m covered seven well fields, construction of the IX plant plus associated site infrastructure including a deep disposal well, evaporation ponds, admin building and workshop.

PEN commenced injecting alkaline based solution in December 2015. However, by mid-2016, it was apparent that despite extensive pre-start-up laboratory leach testing and operational experimentation with well design, well reversals, and well workovers, the uranium recovery rate to date was lower than anticipated. At this point PEN determined that the deposit was not fully amenable to the approved alkaline and oxidant ISR reagents.

PATERSONS

In late 2016, PEN commenced laboratory testing, and mineralogical investigations that demonstrated that more than twice as much uranium may be recoverable using low pH lixiviants rather than alkaline lixiviants. As a result, PEN has since pursued the low pH option further by conducting field demonstration activities.

Since PEN commenced production operations at the Lance Projects in December 2015, it has transported uranium-rich resin to the Irigaray Central Processing Plant owned by Uranium One Americas, Inc. At Irigaray, uranium is eluted from the resin, and is then precipitated, filtered, dried and drummed.



Figure 8: Lance Projects Production History (2017 to 2018)

Source: Peninsula Energy, Patersons Securities

Field Demonstration Activities

The field demonstration activities commenced in December 2018 and are planned to run for approximately six months from three production patterns in the test area. At the current low head grade (15 ppm), 3,000 gallons per minute (gpm) is flowing through the plant which results in a production rate of approximately 200 klb/y which is lower than the nameplate capacity of 1 Mlb/y. The plant capacity is largely driven by the amount of fluid that can be pumped, so increasing the head grade will increase the output with no change to flow rates, other things being equal. This is the main premise behind the proposed use of low pH lixiviant in the process, ie laboratory testing has shown that the Lance Projects can achieve a consistent head grade of around 70 ppm using the low pH process. This grade sits in the 50 to 125 ppm grade range achieved in Kazakhstan operations, and PEN is seeking to confirm this with the current field demonstration activities.

The low pH ISR field demonstration is being undertaken over three wellfield patterns located in Mine Unit 1of the Ross Permit Area. The first two months of the demonstration was focussed on bringing the pH level within the pattern area down to 2.0, and in doing so PEN has displaced the field volume twice. PEN has noted that while the field demonstration is still at a relatively early stage, results to date have been consistent with the laboratory testing. We would expect no change in the acidity measured in the first several weeks as the acid would likely be initially consumed by the carbonate.

The testing is being undertaken on an area that was previously mined by alkaline, and on average the three patterns had 50% recovery. We see potential for significantly higher recoveries using the low pH lixiviant.

Production Outlook

PEN's Feasibility Study for the Lance Projects is based on a three-stage production ramp-up with an initial maximum flow rate capacity of around 3,750 gpm through the existing process plant IX circuit, once it is converted to be compatible with low pH solutions (Stage 1). Stage 2 involves expanding the plant capacity to 7,500 gpm and processing functionality of the CPP. This is then expected to be followed by Stage 3 which

RESEARCH NOTE – PATERSONS SECURITIES LIMITED

All information and advice is confidential and for the private information of the person to whom it is provided and is provided without any responsibility or liability on any account whatsoever on the part of this firm or any member or employee thereof.

PATERSONS



includes the construction of a Satellite Plant within Barber with a flow rate capacity of 7,500 gpm. More detail on the proposed stages is included below.

- Stage 1 includes the changeover of the current facility and wellfields to utilise low pH solutions at the existing flow capacity of 3,750 gpm through the IX circuit. This is expected to result in a production capacity of 1.15 Mlb/y U₃O₈ assuming an average head grade of 70 ppm. Head grade is currently around 10 to 20 ppm resulting in production of around 100 klb/y.
- Stage 2 will include (1) expansion of the current facility allowing production flow to increase to 7,500 gpm from both the Ross and Kendrick Areas; (2) addition of elution systems; and (3) addition of precipitation and drying capacity. Assuming a head grade of 70 ppm, Stage 2 capacity is expected to reach 2.3 Mlb/y U₃O₈. Stage 2 will also include the capability to produce dried yellowcake on site eliminating the need for toll milling agreements. Stage 2 will require permit approval for operation of wellfields within Kendrick.
- Stage 3 includes construction of a satellite plant at Barber and the installation of expanded production capacity at the Ross CPP. The planned production rate at the Barber satellite plant is 2.3 Mlb/y U₃O₈ at an average head grade of 70 ppm and the processing of the Barber satellite plant resin at the CPP. Stage 3 operations require permit approval for operation of both the associated wellfields and the satellite plant at Barber.

The current upper limit to the three stage ramp-up steady state production is set at the existing uranium production permitted output which allows for 3.0 Mlb/y U_3O_8 .



Source: Peninsula Energy, Patersons Securities

Given the current low plant output, the AISC for alkaline IRS operations is estimated to be over US\$50/lb, and therefore any sales that can be satisfied by buying in the spot market will be the preference for the Company in the short term, rather than from loss making own production.

Once the Lance Projects gets up to its Stage 1 output of around 1.15 Mlb/y, the AISC is expected to reduce to around US\$40/lb. This includes ongoing wellfield development (US\$10-12/lb), restoration accrual (US\$3/lb), royalties and state taxes (US\$5 to 7/lb). Direct operating costs are around US\$15/lb.

8



9



Source: Peninsula Energy

AISC for Stage 1 is expected to be high (US\$40.58/lb) compared to costs for subsequent stages, as shown in Figure 11. LOM AISC is forecast to be US\$31.78/lb.



Source: Peninsula Energy, Patersons Securities. * excludes capex for low pH transition and expansion



The capex for each stage of the expansion is shown in Figure 12.

Figure 12: Three Stage Expansion Plan						
	Year	Capacity (MIb/y)	Expansion Capex (US\$m)	Prod'n Cost (US\$/Ib)	AISC (US\$/Ib)	
Stage 1	2019	1.15	5.3	14.67	40.58	
Stage 2	2024	2.3	43.1	8.93	31.52	
Stage 3	2026	3	70.3	9.16	30.36	

Source: Peninsula Energy, Patersons Securities

PEN will also need to invest in wellfield replacement as part of the staged development, and we note these costs are included in the AISC for each stage highlighted above. A capital expenditure profile, including wellfield capex, is shown in Figure 19 later in this report.

Sales Agreements, Contracts & Sales Outlook

As at the end of December 2018, PEN had five sales agreements with utilities located in the US and Europe with up to 6.4 Mlbs of U_3O_8 remaining under contract for delivery through to 2030 at a weighted average delivery price of US\$51-53/lb U_3O_8 . Within the 6.4 Mlbs, 4.5 Mlbs are committed quantities for delivery through to 2030, and up to 1.9 Mlbs U_3O_8 are deliveries that are optional, at the election of the respective customers, to be delivered between 2021 and 2026. These contracts provide an earnings stream to the Company whilst allowing it to preserve planned U_3O_8 production for contracting in the future.

PEN has recently modified certain contracts to include delivery contract provisions that provide flexibility to the Company during the time it may take to receive authorisation for and to ramp up production under the low pH operational plan. Approximately 50% of committed deliveries in CY2019 and CY2020 can be sourced from either production or market purchases at the Company's election without a price variation, meaning that PEN is not dependent on Lance production to meet its entire delivery commitments over the next two years. It has not been disclosed how much can be purchased on-market for sales in 2021 to 23, however we estimate it is significantly less than 50%. As a result, operating costs in 2021 to 23 are expected to be materially higher than in 2019 and 2020.

A total of 225,000 lbs U_3O_8 has been purchased at a fixed average price of US\$23.69/lb and the purchased U_3O_8 will be received and paid for by the Company during CY2019 and CY2020 and used to partially satisfy ~400,000 lbs of U_3O_8 of committed deliveries remaining under the existing contracts in these two years.

PEN expects to produce around 100 klb for 2019, before increasing production in 2020 to build inventory going into the higher sales years. It is important to build inventories going in to 2021 as PEN will not know the required timing of deliveries in 2021 until mid-2020; in theory a substantial portion of deliveries in each year could be required at the beginning of the year. Current output is set to meet PEN's contractual demands.







Source: Peninsula Energy, Patersons Securities

OTHER ASSETS

PEN holds 41 Prospecting Rights in South Africa that comprise the Karoo Projects. The Company has an effective 74% interest in each of the Prospecting Rights, with the remaining 26% held by Black Economic Empowerment partners in accordance with South African laws and regulations. In 2017, Karoo contained a JORC Resource of 56.9 Mlbs.

In 2017 PEN commenced relinquishing its Prospecting Rights at Karoo, and recorded an impairment against Karoo capitalised exploration and evaluation costs of US\$6.88m in FY17, and US\$8.44m in FY18. The carrying value of the Karoo exploration and evaluation assets has now been impaired to zero, and any future expenditure is expected to be expensed. PEN is now in the process of fully withdrawing from further development activities for the Karoo Projects and has suspended all financial support for development activities, including progression of mining and prospecting right applications.

There are minimal ongoing obligations at Karoo (sub 1m), and this is likely to be covered by the selling of 322 km² of freehold farmland in the Karoo Basin.

URANIUM MARKET AND OUTLOOK

Uranium was one of the strongest performing commodities in 2018, finishing the year up 24%. The primary driver of the increase was the string of mine closures, cutbacks and suspensions which has resulted in producers buying in the spot market to fulfil contractual commitments.

Whilst the price of uranium remains historically low, we expect to see continued buying in the spot market, as for many producers, buying at the current spot price to supply long-term contracts is cheaper than it is to produce. Cameco, who suspended production at its McArthur River mine, is expected to buy nine to eleven million pounds of uranium by the end of 2019, representing approximately one quarter of the entire spot market.







Source: Cameco, Patersons Securities

Adding to this secondary buying', financial institutions are also entering the uranium market directly, buying physical uranium under a buy and hold strategy with the intent of realising a return on investment from the appreciation in value of uranium holdings. As an example of this, Yellow Cake plc listed on the AIM market in London in July 2018 and has purchased US\$178m (8.4 Mlb) of U_3O_8 from the world's largest U_3O_8 producer, Kazatomprom in Kazakhstan. Yellow Cake's initial 8.1 Mlb purchase made following the IPO represented approximately 25% of Kazatomprom's annual production. Yellow Cake also has the right to purchase up to US\$100m of U_3O_8 each year for the next nine years.

Between Cameco's mine suspensions and the financial vehicles such as Yellow Cake plc, approximately 50% of the total spot market for uranium is being withheld, which we believe will continue to put upward pressure on the U_3O_8 spot price.

Of course, the above commentary just relates to the spot market, so what about the long term contract pricing? As can be seen in Figure 14 above, the spread between spot and contract pricing narrowed significantly in 2018, falling from US\$8.1/lb in January to a low of US\$2.2/lb in November. One explanation for this is the ongoing uncertainty related to the potential introduction of US uranium import quotas or tariffs, stemming from the United States Department of Commerce's investigation under Section 232 of the U.S. Trade Expansion Act. This investigation has contributed to a continued lack of significant long-term contracting activity in the market, and therefore there have been no data points to reference over the last six months, making it challenging to get a read on what the true premium in contract pricing really is. The spread between spot and term contracts has averaged US\$10.4/lb over the last four years.

While the demand outlook in the short term is growing positive. The demand outlook from a medium- to longerterm perspective is somewhat more balanced. On the negative side, in 2018 United Arab Emirates' Nawah Energy Company updated the reactor construction schedule for Barakah-1 - the UAE's first nuclear power plant, and the largest nuclear energy new build in the world - indicating it is not expected to come on line before late 2019 / early 2020 (previously 2018). Furthermore, the pace of reactor restarts in Japan remained slow, with only nine units approved to operate at the end of 2018 (five more than the end of 2017). However, from a more positive demand perspective, in 2018 the French government announced a new energy policy, in which previous plans to reduce the nuclear share of power generation to 50% were delayed until 2035 (previous target was 2025). Adding to the positive side of the demand ledger, a referendum in Taiwan regarding the potential abolishment of nuclear power was defeated in 2018 with nearly 60% of votes against the plan, which may help improve public opinion in the country. Finally, South Korea's nuclear phase-out policy is facing growing pressure.

Weighing up all these factors, we are bullish on the outlook for uranium and see the Section 232 investigation outcome as a catalyst for the uranium price. We estimate the incentive uranium price to bring on further production to be around \$US55/lb and we use this as our long term uranium price. We note this is significantly higher than PEN's LOM AISC of approximately US\$32/lb.

Figure 15: U ₃ O ₈ Price Forecast					
	2019	2020	2021	2022	2023
U ₃ O ₈ Price (US\$/lb)	32.50	40.00	40.00	50.00	55.00

Source: Patersons Securities estimates

RESEARCH NOTE – PATERSONS SECURITIES LIMITED



U.S. SECTION 232 INVESTIGATION – WHAT YOU NEED TO KNOW

Section 232 of the United States Trade Expansion Act of 1962 provides the US President with the ability to impose restrictions on certain imports based on an affirmative determination by the Department of Commerce that the product under investigation "is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security."

In January 2018, two of the three current US uranium producers lodged a petition with the US Department of Commerce. On 18 July 2018, the Trump Administration launched a Section 232 investigation into uranium ore and product details, and the investigation findings are scheduled to be released on 14 April 2019.

Who lodged the petition?

The petitioners are Energy Fuels Resources Inc (EFR.TSX, market cap \$360m) and Ur-Energy USA Inc (URE.TSX, market cap \$157m).

- Energy Fuels Resources Inc produces uranium via conventional and ISR technology from two sites White Mesa Mill in Utah (conventional), and the Nicholas Ranch Plant in Wyoming (ISR). It also has a licensed, permitted and constructed ISR facility on care and maintenance at Alta Mesa in Texas, plus other uranium projects.
- **Ur-Energy USA Inc** operates the Lost Creek ISR facility in Wyoming which commenced operations in 2013. Lost Creek has a processing capacity of 2 Mlb/y, but is operating at significantly lower levels having produced 302 klb in 2018, with 480 lb sold.

Why did they submit the petition?

The US is the largest consumer of uranium in the world, however it only produces around 5% of its requirements domestically. Furthermore, approximately 20% of US electricity is supplied from nuclear power plants. As a result, the petitioners believe that the US' defence (eg nuclear weapons, and fuel for US Navy submarines and ships), and infrastructure is threatened by "state-sponsored producers in Russia, Kazakhstan, Uzbekistan and China", and that "with no free market constraints, producers in these countries are destroying [the US] uranium mining industry".

What the proposed solutions in the petition?

The petition calls for (1) a quota that would reserve a limited portion (25%) of the US market for US produced uranium; and (2) a 'Buy American' policy for federal agencies that essentially requires government utilities and federal government agencies to purchase domestic uranium for its own needs. The proposed solutions would essentially force the US producers on their customers. At this point it is worth noting that PEN is not associated with the petition in any way, and this could potentially work in its favour in our view when it comes time to renegotiating contracts with the utilities.

US domestic uranium demand is approximately 50 Mlb/y. With a 25% quota, 12.5 Mlb/y would therefore need to be sourced from US producers. The US currently has 20 Mlb/y of licenced capacity (including PEN's 3 Mlb/y), and we therefore see that the US producers could fill the quota if it was imposed, however the price would need to incentivise production.

While not a recommendation of the petition, tariffs are another outcome that has been implemented by the Trump Administration. However, tariffs are not an optimal solution (for the producers) in our view, as it is unlikely that they would stop production from the state run countries entering the US, and so in theory there would be no benefit to the US producers.

What do the US utilities think of the petition?

On the flipside of the producers' argument for quotas, the majority of US nuclear energy generators have formed an alliance named the Ad-Hoc Utilities Group (AHUG) to oppose the Department of Commerce's Section 232 investigation of uranium imports. AHUG believes there is no national security basis for imposing quotas or tariffs. In addition, it argues that the rising costs for uranium creates potential for further nuclear plant closures that will cause "significant domestic economic harm, impact national security by increasing reliance on a finite, depletable domestic resource and weaken our civil nuclear energy sector". AHUG goes on to argue that quotas or tariffs on the industry "is inconsistent with President Trump's executive order and the Department of Energy's policies to prevent further nuclear plant shutdowns."



What was the outcome of the 1989 investigation into uranium imports?

In 1989 a Section 232 investigation of uranium imports was triggered, in part, because the share of imported uranium at the time exceeded 37.5% (we note that imports are forecast to be around 98% of US consumption in 2019). The 1989 investigation concluded that domestic sources of uranium were vital to national security, however it stated that imports ultimately did not pose a risk to national security and recommended that no action be taken.

What was the outcome of the Section 232 investigation on US steel and aluminium imports?

Following concerns about global overcapacity in steel and aluminium production, in April 2017 the Trump Administration initiated Section 232 investigations on US steel and aluminium imports. As a result, in March 2018, the US President applied 25% and 10% tariffs, respectively, on certain steel and aluminium imports. The President temporarily exempted several countries from the tariffs pending negotiations on potential alternative measures. Permanent tariff exemptions in exchange for quantitative limitations on US imports were eventually announced covering steel for Brazil and South Korea, and both steel and aluminium for Argentina. Australia was permanently exempted from both tariffs with no quantitative restrictions.

When can we expect announcement of the investigation findings?

The investigation into the effects of uranium imports on national security commenced on 18 July 2018, and the Department of Commerce has up to 270 days to conclude the investigation and submit its report and recommendations to the president which equates to a date of 14 April 2019. It is noted however that the recent government shutdown could impact that deadline.

In summary...

The Section 232 investigation looks like a political hot potato, but the actual outcome is somewhat less important than what it means in our view; the secondary impact of the outcome, ie certainty in the market, is far more important. There has been uncertainty in the market since the initial rumblings of the Section 232 uranium investigation. As a result, buyers have stayed out of the market as they are not clear on what the outcome of the investigation will be, and therefore they have not entered into any new contracts. This has resulted in 12+ months of pent up demand for uranium while the Section 232 investigation outcome is being determined. Regardless of the outcomes of the investigation, demand will start to get filled and contracts are likely to be signed as buyers will have more certainty on the role the US government will play in the uranium market.

SHAREHOLDERS & LIQUIDITY

The top five shareholders hold 35% of the outstanding shares in PEN and are shown in Figure 16. The Board of Directors and management hold approximately 2.3% in PEN stock.

Fig	Figure 16: Top Five PEN Shareholders as at				
	Holder Name	Shares Held (m)	% holding		
1	Resource Capital Funds	57	23.3%		
2	Pala Investments Limited	12	5.0%		
3	Collins St Asset Management & Associates	6	2.3%		
4	Orano	6	2.3%		
5	Gulkesh Tinku Singh Kooner (private investor)	5	2.1%		
	Total, Top 5 Shareholders	86	35.0%		

Source: Peninsula Energy, Patersons Securities



PEN has 27.8m unlisted options outstanding, none of which are currently in the money.

Figure 17: Unlisted Options Outstanding		
Expiry Date	Number	Exercise Price
1-Dec-19	384,747	1.52
30-Nov-22	1,950,000	0.50
30-Nov-22	2,975,000	0.55
22-Apr-22	22,500,000	0.50
Total	27,809,747	

Source: Iress, Patersons Securities

We have assessed PEN stock liquidity by dividing the market cap by the three-month average daily turnover for PEN and a range of other uranium stocks. Figure 18 shows that it takes on average 826 days for the market cap of the stock to turnover in the market, putting it in the middle of its ASX-listed uranium peers.



Figure 18: Comparison of Market Cap Divided by 3-Month Average Daily Turnover

Source: Patersons Securities

FINANCIAL

At the end of December 2018, PEN had US\$7.5m in available cash, with a further US\$2.8m of restricted cash freed up in February 2019, and US\$17m in drawn debt with US\$6.5m in forecast cash outflow in the March 2019 quarter.

Convertible Notes

On 26 April 2016 Peninsula announced it had executed convertible note agreements with major shareholders Resource Capital Fund VI L.P (RCF VI) and Pala Investments Ltd (Pala) for a total of US\$15m. The amount was increased to US\$20m in October 2017, and in April 2018, the maturity date was extended to 22 April 2020, and the total convertible notes was reduced to US\$17m following a US\$3m cash payment by PEN. The US\$17m convertible loan agreement comprises of a US\$10.91m convertible loan provided by RCF VI and a US\$6.09m convertible loan provided by Pala.

Under the terms of the Convertible Notes, RCF VI and Pala may elect to convert all or part of the principal amount of the convertible notes (including any capitalised interest) into fully paid ordinary shares at any time prior to maturity at a conversion price of A\$0.40/share. The convertible notes bear an interest rate of 10% pa

RESEARCH NOTE – PATERSONS SECURITIES LIMITED



for the first twelve-month period up until 22 April 2019 and then 12% pa thereafter, payable quarterly in arrears in cash or shares at PEN's election until 30 June 2019 and the Lenders' election thereafter.

Capital Required for Low pH Transition and Stage's 1 to 3

The transition to accepting acid into the plant is estimated to cost approximately US\$5.3m plus working capital. This will be spent on converting the existing wellfield infrastructure and process plant to make it amenable for acid.

The two existing wellfields will be mined first where US\$20m has already been invested. PEN will also need to invest in Mine Unit 3 which will cost around US\$9m and will include everything required to connect the field into the plant and 240 wells, of these around 90 will be extraction wells. This will target output of 1 Mlb/y under Stage 1 of the planned plant expansion. PEN has around 7 to 800 klb left in MU1 and 2, so this will see approximately two years of production ramp up in the existing mine units.

Beyond Stage 1, PEN estimates approximately US\$113.4m (US\$43.1m for Stage 2, US\$70.3m for Stage 3) in capital expenditure is required to achieve PEN's production target of 3 Mlb/y by 2026. This includes an average contingency of 5.8%, which appears on the low side, and unlikely to satisfy potential debt lenders requirements in our view. The profile of forecast expenditures is shown in Figure 19.

For the purposes of our valuation, we assume Stages 1, 2 and 3 are funded via 50% equity, which may include cash from existing balances and future operational cash flows, plus 50% debt.



Source: Peninsula Energy, Patersons Securities

RISKS

Investment risks associated with the uranium sector and PEN include, but are not limited to, the following:

- Commodity price and FX assumption risk. Uranium price and currency movements may differ materially
 from the assumptions used in this report, and may cause economic prospects of projects to deteriorate or
 improve.
- **Exploration and geological risk.** Resource exploration relies upon the interpretation of complex and uncertain data and information which cannot necessarily be relied upon to lead to a successful outcome. Resource exploration is inherently uncertain and involves significant risk of failure. We do note that the PEN's Lance Projects is not dependent on exploration success.



17

- Reserves and Resource estimation risk. Resource estimates are based on standard industry practice, experience and judgement that carry inherent uncertainty, and future exploration may alter the current resource estimates. Changes to resource estimation may affect the economics of future developments, and uranium price movement can have an impact on reserve estimates.
- **Project execution risk.** There is potential for developments to cost more and/or take longer to complete than originally anticipated which can have a material impact on the valuation of the assets being developed. Furthermore, head grade can have a material impact on production output.
- **Financing risk.** Ability to source funds for the development will have a significant impact on our forecast production expectations.
- Licensing risk. The Source Material Licence is currently being reviewed. A call for a hearing could see the approvals process timeframe delayed.

DIRECTORS AND KEY MANAGEMENT

John Harrison – Non-executive Chairman. John has a 45 year career, including broking, corporate finance and 20 years of investment banking experience. During this time, Mr Harrison advised companies across a range of commodities (including uranium), as well as related engineering and service businesses, in both an M&A and Equity Capital markets context. He acted for numerous companies quoted on the Main List and the Alternative Investment Market of the London Stock Exchange, as well as the Australian, Johannesburg and Toronto Exchanges. John founded the UK coking coal company, West Cumbria Mininig Pty Ltd, and is currently a Non-executive Director of that company. He is also a Non-executive Director of Newscape Capital Group Ltd, a diversified UK fund management and advisory group based in St James's, London.

Wayne Heili – Managing Director / Chief Executive Officer. Wayne has spent the bulk of his 30-year professional career in the uranium mining industry. He most recently served as President and Chief Executive Officer of Ur-Energy, Inc. where he oversaw the design, construction, commissioning and ramp-up of the Lost Creek in-situ uranium project in Wyoming USA. Prior to joining Ur-Energy, Inc., Wayne served as Operations Manager of the Christensen/Irigaray in-situ uranium mines in Wyoming and also has experience on conventional uranium mines in Texas. He holds a Bachelor of Science in Metallurgical Engineering from Michigan Technological University and is a past President of the Uranium Producers of America

Harrison (Hink) Barker – Non-executive Director. From 1992 until 2015, Hink had been the manager responsible for Dominion Resources procurement of nuclear fuel and the related processing steps of conversion from U_3O_8 to UF₆, enrichment of UF₆, and fabrication of nuclear fuel assemblies. He is a former chair of the Nuclear Energy Institute's Utility Fuel Committee, and a past member of the World Nuclear Fuel Market Board of Directors (Chairman for two years). He served on an Advisory Board to American Uranium Corporation while they attempted to develop the Wyoming Reno Creek uranium deposit. From 1975 to 1984 he worked as an engineer and supervisor in the areas of nuclear fuel quality assurance, nuclear core design, nuclear fabrication contract administration, nuclear fuel procurement, spent fuel transportation and disposal planning during a period when Dominion was building its regulated nuclear operating fleet in Virginia. Mr Barker holds a Bachelor of Science degree in Electrical Engineering, and a Master's in Nuclear Engineering Science both from the University of Florida.

Mark Wheatley – Non-executive Director. Mark is an experienced resources company CEO, Non-executive Director and Chairman with a career spanning more than 30 years in mining and related industries. He has worked in the uranium industry since 2003 and been involved in ISR project exploration, feasibility studies, start up, production, rehabilitation and closure. Mark's uranium experience includes the roles of Chairman and CEO of Southern Cross Resources Inc., the operator of the Honeymoon ISR uranium project, Non-executive Director of Uranium One Inc. and Uranium Resources Inc. His other board roles have included Non-executive Chairman of Xanadu Mines Ltd, Gold One International Ltd, Goliath Gold Mining Ltd, Norton Gold Fields Ltd and directorship of St Barbara Ltd.

David Coyne – Finance Director / Chief Financial Officer. David has over 20 years' experience in the mining, and engineering and construction industries, both within Australia and internationally. Prior to joining Peninsula, My Coyne held senior executive positions with Australia listed companies Macmahon Holdings Limited and VDM Group Limited, and with unlisted global manganese miner Consolidated Minerals. Over the past 10 years, Mr Coyne has been directly involved in a number of equity and debt raising transactions and has been the project director on a company-wide systems implementation project. Mr Coyne has previously served on the Board of listed iron ore miner, BC Iron limited, where he also held the role of Chairman of the Audit and Risk Committee.

RESEARCH NOTE – PATERSONS SECURITIES LIMITED

PENINSULA ENERGY LIMITED (PEN.AX)	Price	\$0.20
Valuation		
	A\$m	\$/share
Lance Projects, risked at 60%	153	0.33
Karoo Projects, South Africa	0	0.00
Net Cash (Debt)	(8)	(0.02)
Corporate Costs	(13)	(0.03)
Total Valuation	132	0.28

Reserves & Resources								
	Tonnes	Grade	U ₃ O ₈	U ₃ O ₉				
	(M)	(ppm)	(MIb)	(Mkg)				
Lance Projects Resource Estimate, as at 31 December 2017.								
Measured	3.8	488	3.9	1.9				
Indicated	10.9	495	11.9	5.4				
Inferred	36.3	476	38.1	17.3				
Total	51	479	53.9	24.5				

81,639	91,272	338,000	500,000
425	249	930	1,370
2018A	2019F	2020F	2021F
13.2	7.8	8.1	14.6
(14.9)	(14.7)	(15.6)	(11.8)
0.0	0.0	0.0	0.0
(2.7)	(2.2)	(2.3)	(2.3)
0.3	(1.1)	(1.1)	(1.2)
(4.1)	(10.2)	(10.9)	(0.7)
(2.2)	(1.4)	(0.6)	(1.0)
(6.3)	(11.6)	(11.5)	(1.7)
(2.8)	(3.2)	(5.7)	(10.2)
0.0	-0.3	0.0	0.0
(9.1)	(15.0)	(17.3)	(11.9)
(3.9)	(6.1)	(7.0)	(4.9)
0.0	0.0	0.0	0.0
20184	20195	20205	20215
(6.3)	(11.6)	(11.5)	(1.7)
(2.2)	(11.0)	(0.6)	(1.0)
(2.8)	(3.2)	(5.7)	(10.2)
2.2	1.4	0.6	1.0
0.0	0.0	0.0	0.0
(9.1)	(14.7)	(17.3)	(11.9)
(3.0)	(0.8)	(6.9)	(10.2)
0.0	0.0	0.0	0.0
(12.1)	(15.5)	(24.2)	(22.1)
0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0
(4.6)	14.4	25.0	40.0
(16.7)	(1.1)	0.8	17.9
12.0	14.6	15.6	34.1
(4.1)	(16.2)	(40.0)	(61.5)
2018A	2019F	2020F	2021F
12.0	14.6	15.6	34.1
111.4	108.1	115.8	143.9
3.2	2.4	2.4	2.4
15.7	0.3	0.0	0.0
0.4	30.6	55.6	95.6
10.6	10.8	10.8	10.8
30.6	44.6	69.6	109.5
81.5	64.8	47.6	35.7
	2018A 13.2 (14.9) 0.0 (2.7) 0.3 (4.1) (2.2) (6.3) (2.8) 0.0 (9.1) (3.9) 0.0 2018A (6.3) (2.2) (2.8) (2.2) (2.8) (2.2) (2.8) (2.2) (2.8) (2.2) (2.8) (2.2) (0.0 (9.1) (3.0) (9.1) (1.1.4) (3.2) 15.7 0.4 10.6 30.6 81.5	81,639 91,272 425 249 13.2 7.8 (14.9) (14.7) 0.0 0.0 (2.7) (2.2) 0.3 (1.1) (4.1) (10.2) (2.2) (1.4) (6.3) (11.6) (2.8) (3.2) 0.0 -0.3 (9.1) (15.0) (3.9) (6.1) 0.0 0.0 (2.2) (1.4) (2.8) (3.2) 0.0 -0.3 (9.1) (15.0) (3.9) (6.1) 0.0 0.0 (2.2) (1.4) (2.2) 1.4 0.0 0.0 (3.0) (0.8) 0.0 0.0 (12.1) (15.5) 0.0 0.0 0.12.1) (15.5) 0.0 0.0 0.1 1.4.6 (4.1) (16.2) <td>81,639 91,272 336,000 425 249 930 2018A 2019F 2020F 13.2 7.8 8.1 (14.9) (14.7) (15.6) 0.0 0.0 0.0 (2.7) (2.2) (2.3) 0.3 (1.1) (1.1.1) (4.1) (10.2) (10.9) (2.2) (1.4) (0.6) (6.3) (11.6) (11.5) (2.8) (3.2) (5.7) 0.0 -0.3 0.0 (9.1) (15.0) (17.3) (3.9) (6.1) (7.0) 0.0 0.0 0.0 (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) 1.4 0.6 0.0 0.0 0.0 (2.2) 1</td>	81,639 91,272 336,000 425 249 930 2018A 2019F 2020F 13.2 7.8 8.1 (14.9) (14.7) (15.6) 0.0 0.0 0.0 (2.7) (2.2) (2.3) 0.3 (1.1) (1.1.1) (4.1) (10.2) (10.9) (2.2) (1.4) (0.6) (6.3) (11.6) (11.5) (2.8) (3.2) (5.7) 0.0 -0.3 0.0 (9.1) (15.0) (17.3) (3.9) (6.1) (7.0) 0.0 0.0 0.0 (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) (1.4) (0.6) (2.2) 1.4 0.6 0.0 0.0 0.0 (2.2) 1

2018A

0.77

21.8

2018A

Commodity Assumptions

Uranium Price (US\$/lb)

Production Summary

US\$/A\$

2019F

0.72

28.4

2019F

PATERSONS

2021F

0.73

40.0

2021F

Year End 30 June

2020F

0.73

37.5

2020F

Ratios	2018A	2019F	2020F	2021F
P/E (x)	-5.2	-3.3	-2.9	-4.2
Enterprise Value	51.4	65.8	89.6	111.1
EV/EBITDA (x)	-12.5	-6.5	-8.2	-164.1
EV/Free Cash Flow	4.9	(6.0)	(3.8)	(5.3)
PFCF (x)	4.5	(4.6)	(2.1)	(2.3)
DPS (cents)	0	0	0	0
Div. Yield (%)	na	na	na	na
Franking (%)	na	na	na	na

Directors & Management	
Name	Position
John Harrison	Non-Executive Chairman
Wayne Heili	Managing Director / CEO
Harrison (Hink) Barker	Non-Executive Director
Mark Wheatley	Non-Executive Director
David Coyne	Finance Director / CFO

Top Shareholders (as at 31 January 2019)					
	Shares (m)	%			
Resource Capital Funds	57.0	23.3			
Pala Investments Limited	12.2	5.0			
Collins St Asset Management & Associates	5.7	2.3			
Orano	5.7	2.3			
Gulkesh Tinku Singh Kooner (private investor)	5.1	2.1			
Top 5 Shareholders	85.6	35.0			

RESEARCH	NOTE -	PATERSONS	SECURITIES	
ILCCLARCH	NOIL -	TATENOUND	SECONTIES	



Recommendation History



Date	Туре	Target Price	Share Price	Recommendation	Return
16 Jan 15	Research Note	0.06	0.02	SB	
17 Mar 15	Resources Review	0.06	0.02	SB	-10.0%
28 Apr 15	Hot off the Press	0.06	0.02	SB	5.6%
23 Jul 15	Hot off the Press	0.06	0.02	SB	0.0%
17 Aug 15	Research Note	0.06	0.03	SB	31.6%
26 Aug 15	Hot off the Press	0.06	0.03	SB	0.0%
17 Sep 15	Resources Review	0.06	0.03	SB	20.0%
09 Oct 15	Hot off the Press	0.06	1.19	SB	N/A
20 Oct 15	Research Note	2.35	1.38	SB	16.0%
26 Nov 15	Commodity Analysis	2.35	1.03	SB	-25.7%
22 Jan 16	Hot off the Press	2.35	0.88	SB	-14.1%
11 Mar 16	Hot off the Press	1.90	0.80	SB	-9.1%
26 Apr 16	Hot off the Press	1.90	0.84	SB	5.0%
09 Jun 16	Hot off the Press	1.90	0.64		-24.4%
29 Jul 16	Research Note	1.20	0.68	SB	7.1%
08 Dec 16	Ceased Coverage	1.20	0.52	SB	-24.3%

Stock recommendations: Investment ratings are a function of Patersons expectation of total return (forecast price appreciation plus dividend yield) within the next 12 months. The investment ratings are Buy (expected total return of 10% or more), Hold (-10% to +10% total return) and Sell (> 10% negative total return). In addition we have a Speculative Buy rating covering higher risk stocks that may not be of investment grade due to low market capitalisation, high debt levels, or significant risks in the business model. Investment ratings are determined at the time of initiation of coverage, or a change in target price. At other times the expected total return may fall outside of these ranges because of price movements and/or volatility. Such interim deviations from specified ranges will be permitted but will become subject to review by Research Management. This Document is not to be passed on to any third party without our prior written consent.

RESEARCH NOTE – PATERSONS SECURITIES LIMITED





1300 582 256 patersons@psl.com.au www.psl.com.au

Patersons Securities Limited Disclosure of Interest

Patersons Securities and its respective officers and associates may have an interest in the securities or derivatives of any entities referred to in this material

Patersons Securities does, and seeks to do, business with companies that are the subjects of its research reports.

Patersons Securities Corporate Relationship Disclosure

88E Patersons Securities have acted for 88 Energy Limited (88E) within the past two years and have received fees for these services. AKM Patersons Securities have acted for Aspire Nmining Limited (AKM) within the past two years and have received fees for these services. AXL Patersons Securities have acted for Axsesstoday Limited (AXL) within the past two years and have received fees for these services. BOE Patersons Securities have acted for Boss Resources Limited (BOE) within the past two years and have received fees for these services. BRB Patersons Securities have acted for Breaker Resources NL (BRB) within the past two years and have received fees for these services. BSX Patersons Securities have acted for Blackstone Minerals Limited (BSX) within the past two years and have received fees for these services. BUX Patersons Securities have acted for Buxton Resources Limited (BUX) within the past two years and have received fees for these services. CSS Patersons Securities have acted for Clean Seas Seafood Limited (CSS) within the past two years and have received fees for these services. GLL Patersons Securities have acted for Galilee Energy Limited (GLL) within the past two years and have received fees for these services. IBG Patersons Securities have acted for Ironbark Zinc Limited (IBG) within the past two years and have received fees for these services. NUS Patersons Securities have acted for Nusantara Resources (NUS) within the past two years and have received fees for these services. PEX Patersons Securities have acted for Peel Mining Limited (PEX) within the past two years and have received fees for these services. RCL Patersons Securities have acted for ReadCloud Limited (RCL) within the past two years and have received fees for these services. STN Patersons Securities have acted for Saturn Metals Limited (STN) within the past two years and have received fees for these services. Patersons Securities have acted for Sayona Mining Limited (SYA) within the past two years and have received fees for these services. SYA Patersons Securities have acted for Vimy Resources Limited (VMY) within the past two years and have received fees for these services. VMY WKT Patersons Securities have acted for Walkabout Resources Ltd (WKT) within the past two years and have received fees for these services. XTE Patersons Securities have acted for Xtek Limited (XTE) within the past two years and have received fees for these services.

RESEARCH NOTE – PATERSONS SECURITIES LIMITED



1300 582 256 patersons@psl.com.au www.psl.com.au

Research				
Cathy Moises - Head of Research	Phone:	(+61 3) 9242 4030	Email:	cmoises@psl.com.au
James Farr - Associate Analyst	Phone:	(+61 8) 9263 1215	Email:	jfarr@psl.com.au
Daniel Veasey - Research Assistant	Phone:	(+61 8) 9225 2818	Email:	dveæsey@psl.com.au
Strategy & Economics				
Greg Galton - Director Private Wealth	Phone:	(+61 8) 9263 1612	Email:	ggalton@psl.com.au
Commodities				
Cathy Moises - Head of Research	Phone:	(+61 3) 9242 4030	Email:	cmoises@psl.com.au
Cam Hardie - Analyst	Phone:	(+61 3) 9242 4153	Email:	chardie@ps1.com.au
Xavier Braud - Analyst	Phone:	(+61 8) 9225 2813	Email:	xbraud@psl.com.au
Industrials				
Martyn Jacobs - Analyst	Phone:	(+61 3) 9242 4153	Email:	mjacobs@psl.com.au
Phil Carter - Analyst	Phone	(+61 8) 9225 2819	Email:	Pcarter@psl.com.au
Allan Franklin - Analyst	Phone	(+61 3) 9242 4155	Email:	afranklin@psl.com.au
Institutional Dealing				
Dan Bahen	Phone:	(+61 8) 9263 1274	Email:	dbahen@psl.com.au
Michael Brindal	Phone:	(+61 8) 9263 1186	Email:	mbrindal@psl.com.au
Tom Bahen	Phone:	(+61 8) 9263 1180	Email:	tbahen@psl.com.au
Artie Damaa	Phone:	(+61 2) 8238 6215	Email:	adamaa@psl.com.au
Paul Doherty	Phone:	(+61 3) 8803 0108	Email:	pdoherty@psl.com.au
Chris Kelly	Phone:	(+61 3) 9242 4078	Email:	ckelly@psl.com.au
Jeremy Nugara	Phone:	(+61 3) 8803 0166	Email:	jnugara@psl.com.au
Phil Schofield	Phone:	(+61 2) 8238 6223	Email:	pschofield@psl.com.au
Sandy Wylie	Phone:	(+61 8) 9263 1232	Email:	swylie@psl.com.au

Important Notice: Copyright 2018. The Contents contained in this report are owned by Patersons Securites Limited ('Patersons') and are protected by the Copyright Act 1968 and the copyright laws of other countires. The material contained in this report may not be copied, reproduced, republished, posted, transmitted or distributed in any way without prior written permission from Patersons. Modification of the materials for any other purpose is a violation of the copyrights and other proprietary rights of Patersons.

Disclaimer: Patersons believes that the information or advise (including any financial product advice) contained in this report has been obtained from sources that are accurate at the time of issue, but it has not independently checked or verified that information and as such does not warrant its accuracy or reliability. Except to the Extent that liability cannot be excluded. Patersons accepts no liability or responsibility for any indirect loss or damage caused by any error in or omission from this report. You should make and rely on your own independent inquiries. If not specifically disclosed otherwise, investors should assume that Patersons is seeking or will seek corporate finance business from the companies disclosed in this report.

We ming: This report is intended to provide general securities advice, and does not purport to make any recommendation that any securities transaction is appropriate to your particular investment objectives, financial situation or particular needs. Prior to making any investment decision, you should assess, or seek advice from your adviser, on whether any relevant part of this report is appropriate to your financial circumstances and investment objectives.

Discloture: Patersons, its directors and/or employees may earn brokerage, fees, commissions and other benefits as a result of a transaction arising from any advice mentioned in this report. Patersons as principal, its directors and/or employees and their associates may hold securities in the companies the subject of this report, as at the date of publication. These interests do not influence Patersons in giving the advice contained in this report. Details of any interests may be obtained from your adviser. Patersons as principal, its directors and/or employees and their associates may trade in these securities in a manner which may be contrary to recommendations given by an authorised representative of Patersons to clients. They may sell shares the subject of a general 'Buy' recommendation, or buy shares the subject of a general 'Sell' recommendation.

Stock recommendations: investment ratings are a function of Patersons expediation of total return (forecast price appreciation plus dividend yield) within the next 12 months. The investment ratings are Buy (expected total return of 10% or more), Hold (-10% to +10% total return) and Sell (> 10% negative total return). In addition we have a Speculative Buy rating covering higher risk stocks that may no be of investment ratings are due to low market capitalisation, high debt levels, or significant risks in the business model. Investment ratings are determined at the time of initiation of coverage, or a change in target price. At other times the expected total return may fail outside these ranges because of price movements and/or volatility. Such interim deviations from specified ranges will be parsed to any third but will become subject to review by Research Management. This Document is not to be passed to any third next with on consent.