Paladin Energy Ltd (ASX: PDN)

Initiation Research Report

26th April 2018	Speculative **BUY**	Target Price: **$0.19**

KEY FACTS

Closing Price	$0.145
Ticker	ASX: PDN
Company Website	www.paladin.com.au
Analysts	Kaiden Gilbert

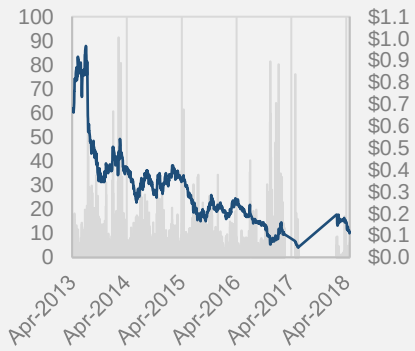
COMPANY STATISTICS

12 Month High	$0.130
12 Month Low	$0.026
Market Cap (A$Mil)	$A248m
Net Debt	$A44m
Enterprise Value	$A292m
Avg. Daily Volume (m)	1.6m

MAJOR SHAREHOLDERS (%)

Tembo	13.10%
David Kempner	12.40%
Vale Partners	11.80%
Duetsche Bank AG	10.20%

PDN SHARE PRICE



PALADIN ENERGY - UGLY DUCKLING TO BEAUTIFUL SWAN

Coverage is initiated on Paladin Energy (PDN) with a **BUY recommendation** and a price target of **$0.19 per Share**, implying an upside of 31% from current market prices.

INVESTMENT THESIS

- **Market primed for Uranium Price Reversal:** It's widely recognised that at a depressed uranium spot price of US$20-25/lb, it's unsustainable for uranium producers economically, including Paladin, to continue operating their core assets. However, with (i) an energy market requiring a solution for long term fuel diversity, (ii) expanding reactor growth in non-traditional markets like, China, India and the UAE, in conjunction with, (iii) a simultaneous industry supply squeeze as production disciple takes the forefront, we feel the uranium market is primed for a reversal in the short-to-medium term.

- **Optimization of Langer Heinrichs' Processing Plant:** Innovation remains key to increasing operation efficiencies and lowering production costs throughout the uranium industry. With a focus on optimization initiatives like the Back-end Upgrade project and U-pgrade process, the Langer Heinrich project has the potential capacity to reduce processing costs by ~US$4-5/lb, increase aggregate production by ~1.5-1.8MLB per annum while simultaneously reducing average costs by ~US$1-2/lb – reaffirming LHM as a global tier one production asset.

- **Langer Heinrich Mine Remains a Tier One Asset:** Paladin's flagship asset, the Langer Heinrich Mine, has proven robust, remaining to be one of the world's most prolific operating asset in the uranium industry. Langer Heinrich boasts the mantle of the lowest cost open-pit mine globally, positioning in the first quartile for all-in cash costs. While in production, LHM ranked the 4th largest open-pit mine in terms of production, with a staggering 42.4mlb in cumulative uranium production and mine life in excess of 20-years.

- **From Disastrous Debt Issue to Robust Balance Sheet:** Paladin's debt for equity swap with previous bondholders and former EDF pre-payment debt has reduced net debt by approximately 94% from US$715m to US$44m. The total new funding of US$115m in the form of senior secured 10% PIK with a 9% cash toggle will give Paladin a greater ability to fund liquidity for the period FY2018 to FY2021 if uranium prices persistently lag, leaving Paladin's balance sheet in a more robust position.

- **Potential Takeover target:** Paladin Energy Ltds' prolific operating assets, renewed balance sheet and continued focus on innovation have the potential to attract a strategic acquirer, which bodes well for Paladin shareholders.

PROJECT OVERVIEW

The "Flagship" Langer Heinrich Mine

The Langer Heinrich Mine (LMH) operation is located close to the western coast of central Namibia, Southern Africa. The mine lies 80km east of the major deep-water port at Walvis Bay and the coastal town of Swakopmund.

Since LHM commenced production in 2007, with a capacity of 2.7Mlb U3O8 per annum, the project has had cumulative production of 42.4 Mlbs of uranium (U3O8), and at the current processing feed rate, the revised mine plan allows a project life of over 20 years.

Mineral Resources

The Mineral Resource estimate as outlined in the 2010 Technical Report – Langer Heinrich, in conjunction with the Namibia Mineral Resource and Minerals Reserve Estimation (15th November 2010) – was undertaken in a comprehensive manner and the data, statistical analysis and geostatistical techniques were sound.

Mineral Resource at 30 June 2017 (250ppm U3O8 cut-off)				
	Tonnes (Mt)	Grade (%U3O8)	Contained Metal (tU3O8)	Contained Metal (MlbU308)
Measured + Indicated	82.19	0.050	41,022	90.44
Inferred	8.70	0.047	4,073	8.98
Stockpiles	33.90	0.038	12,915	28.47
Total Resources	**124.79**	**0.0470**	**58,010**	**127.89**

An updated mineral resource estimate was undertaken in 2017, and whilst a similar 'technical report' wasn't available, the un-depleted reconciliations between the two estimates was reasonable (referenced in the annual report 2017). There was a reduction in average grade above the cut-off of about 9% which could be due to the closer drill spacing mentioned in the report. Paladin would also have had a considerable amount of grade control data to use in the revised mineral resource estimate which should have allowed for the new mineral resource estimate, which will form the foundation for reserve definitions in our DCF valuations and any transaction multiples, if deemed appropriate.

Ore Reserves

LHM's Ore Reserves are outlined in detail in the 2010 technical report; estimates of un-depleted Measured and Indicated Mineral Resource of 151.8Mt at a grade of 0.054% U3O8. Again, there was no updated technical report available for Ore Reserves (2017), but the 2017 annual statement that accompanied the Annual Report 2017 stated that differences between the updated Ore Reserve (2017) are related to depletion due to mining, refinement of the pit design based on the new basement profile and better definition of mineralisation edges due to increased drilling density and removal of material from the Ore Reserve as a result of on-going conversion of existing pits to tailings facilities.

Ore Reserves at 30 June 2017 (250ppm U3O8 cut-off)				
	Tonnes (Mt)	Grade (%U3O8)	Contained Metal (tU3O8)	Contained Metal (MlbU308)
Proven	41.97	0.052	21,997	48.49
Probable	13.14	0.049	6,366	14.04
Stockpiles	33.90	0.038	12,915	28.47
Total Reserves	**89.01**	**0.0460**	**41,278**	**91.00**

We have interpreted this statement as meaning if Paladin had re-run the pit optimisations in 2017, as would be expected, the resulting optimal pits would have been very similar to those resulting in 2010. The pit optimisations in 2010 were carried out using the following inputs – sourced from the 2010 Technical Report:

Figure 1: Inputs utilised in 2010 pit optimisations

Source: 2010 Technical Report

Input 1: Average Mining Costs = $2.30/tonnes mined

Input 2: Average Processing Costs = $27.80/tonnes ore

Input 3: Fixed Owner Costs = $8.30/tonnes ore

Input 4: Price = $60/lb

If we compare these parameters to the inputs used in our DCF model valuation, the current average price for the Life-of-Mine (LOM) is $50, which is about ~17% lower than that used in the initial (2010) pit optimisations. However, the processing cost currently is about $14/t ore, which is almost 50% lower than the cost of $27.80/t ore used in the 2010 pit optimisation and is projected to decrease further. The mining and fixed costs are similar. As a result, we believe that the reduced spot price of uranium (TradeTech U3O8 spot $20.40/lb) is more than compensated by the reduction in processing cost.

Current Mine Plan

The current mine plan for LHM in our valuation is aligned with the Ore Reserve Statement (2017). There has been no meaningful change in the pit designs with the only difference being the application of a 200ppm cut-off grade achievable through the processing plant U-pgrades. In effect, this is material that would have to be moved anyway as part of the normal mining schedule and will be placed a low-grade stockpile that will provide future economic value rather than being simply discarded as waste.

Current Mine Production Schedule

Figure 1: Langer Heinrich Production Schedule (Uranium Ore/Klbs)

Source: Paladin Management

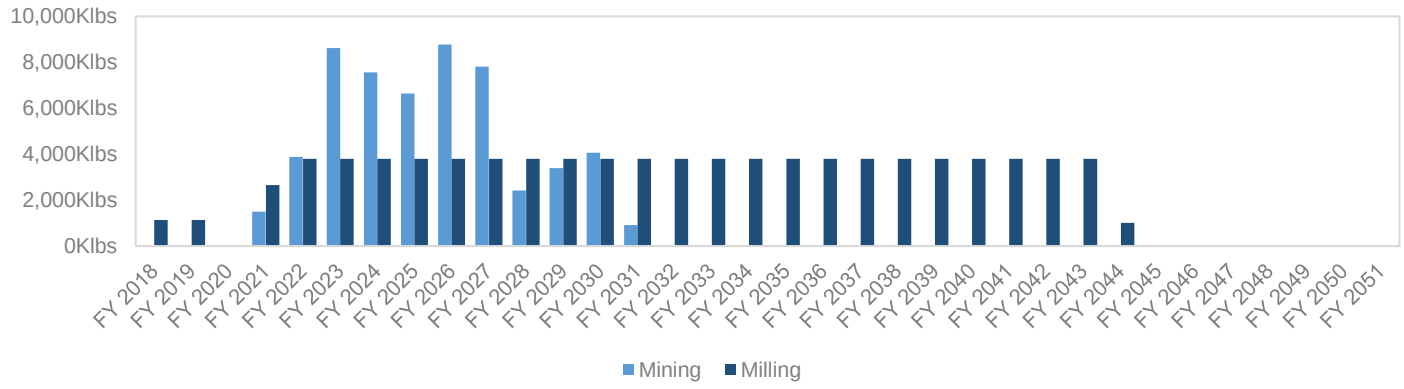
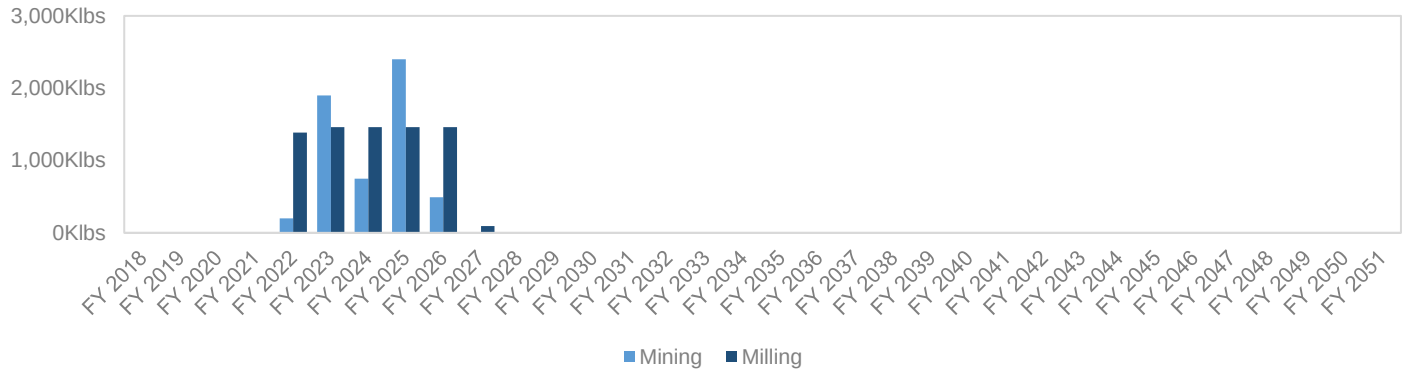


Figure 2: Kayelekera Production Schedule (Uranium Ore/Klbs)

Source: Paladin Management



Current Mining Status

Mining operations at the LHM have been suspended since November 2016 and the operation has been treating their medium grade stockpiles. The Langer Heingrich Mine still has significant levels of stockpiles according to the Paladin LOM mining schedule of approximately 540kt @ 1171ppm (High-Grade > 650 ppm), 8.2Mt @ 511ppm (Medium Grade > 400ppm) and 24Mt @ 322ppm (Low-Grade > 250ppm).

Mining was rescheduled to restart in January 2019, with operations to rely on processing medium and high-grade stockpiled ore until then; LHM's mining rate was estimated to ramp up over a six-month period to 2.7Mt per month. However, in April 2018, Paladin commenced preparatory steps towards being able to formalise a care and maintenance decision with relevant stakeholders, after continued deterioration of macro factors, including stubbornly low spot uranium price but also factors such as foreign exchange rates and prices of processing reagents.

In our view, by LHM commencing preparatory steps to formalise a C&M until uranium prices become sustainable for the mines cost of production, should impact the long-term Valuation of the Asset.

Processing Plant

There is room for future optimisation potential with the processing plan over the next one to two years costing an estimated $35M. The Back-end Upgrade Project (BUP) has completed the R&D phase with material benefits across the operations including; potential reduction to process costs by $4-5M/lb; vanadium produced for sale and; processes more stable and operability improved. Paladin state that the implementation period will take two-years and a Simple capex return period of 12-18 months.

In addition to the BUP, Mareinca Energy Ltd has performed initial test work and proceeded to calculate the possible benefit to LHU of feeding uneconomically low-grade ore into an upgrade plant. The preliminary results of the U-pgrade process are positive. The initial study and test work for a 3Mt (avg grade of 325ppm) per annum U-pgrade has the potential to increase mine production 1.5-1.8Mlb and reduce the average cost by $1-2/lb.

Recoveries

We have noted in our valuations that recoveries have been persistent at around 86% over the past four-years, which is marginally less than the budgeted 87%. Our DCF model assumes that LHM's recoveries will achieve an approximate 91% recovery rate when the BUP is completed. Our assumption is based off the fact that the BUP increases recovery through an improved process with reagents being recycled rather than needing an additional reagent supply; inherently lowering the operating cost of the mine.

Our team initially queried the continued high recoveries (91%) even though the feed grade has been steadily reducing and is forecasted to reduce by 300ppm by 2029. After discussion with analysts, we found that carnotite (uranium metal) is fully liberated and therefore always available to leach, so leach extraction is not head grade dependent. The recovery of Vanadium was stated to be >60% in the initial Technical Report in 2010. Because of this it will be included in the revenue generation of LHM, but the impact of Vanadium on the valuation is low.

Tailing Facilities

Due to the nature of the deposit being long, narrow and relatively shallow, backfilling of the pit is both an economic and practical method of waste management for both the mine waste and the plant tailings. Whilst the pits, and the in-pit tailings storage facilities, are being developed the mine waste will be placed in ex-pit dumps located generally on south side of the pit and used to form the boundaries of tailings storage facilities, both in and ex-pit.

Operating costs, All-In Sustainable Capital and Capital Costs

The major cost change is dependent on the success of the BUP. If successful, there is room for a net reduction in C1 costs of up to $20M per annum (based off the initial estimation of potential reduction to process costs by $4-5M/lb). This cost projection is also supported by projection that a successful BUP will almost negate the need for reagent purchases from the processing plant; this is due to the residual soda ash in the circuit being sufficient enough to maintain the operations for the remaining life of the asset.

KEY INVESTMENT OPPORTUNITIES

- **Forecasted Increase in Uranium Prices:** The current price of uranium is weak because of an oversupplied market in the immediate term. However, the performance of the uranium industry is poised for reversal on the back of positive sentiment in the demand for uranium – Japan's generating capacity will resume commercial service by 2020, while China is expected to increase its nuclear capacity by more than 300%. Likewise, the recent rationalised production from top uranium producers like KazAtomProm's, whose 10% reduction in production will reduce global production by 4%, will help reduce the demand-supply gap currently haunting the uranium market. See Appendix for details on price forecasts.

- **Back-End Upgrade Project:** The success of the Back-End Upgrade Project (BUP) has the potential to save ~US$4-5lbs per annum on C1 Cash Costs (up to ~US$20m per annum). This cost reduction is significant over the LOM, a result from mitigating the need for reagent purchases, as the residual ash in the circuit could be enough in maintaining operations for the rest of LHM's life. Additionally, the BUP can improve efficiencies with recoveries allowing LHM to achieve ~91% recoveries forecasted for the remaining life of the mine.

- **LHM's capacity for Vanadium:** If the BUP is successful, LHM's capacity for vanadium refinery will allow LHM to produce vanadium for sale at spot between US$14 - $16/lb, if it becomes viable moving forward. Nevertheless, it's still an upside opportunity for LHM, with potential to bolster underlying profits.

- **U-pgrade™:** The initial test work and preliminary results performed by Marenica Energy Ltd were positive. The U-pgrade process has a significant benefit on Langer Heinrich Uranium pertaining to the ability to feed current uneconomical low-grade ore into an upgraded plant. The potential increase in production can be projected to be an ~1.5-1.8Mlb p.a. and reduce the average cost of production by US$1-2/lb.

- **Langer Heinrich Mine, a Tier One Global Asset:** Despite Paladin announcing in April 2018 that LHM will commence preliminarily steps in entering care and maintenance, the flagship asset has continued to maintain its status as a world-class, tier-one. LHM is the lowest cost open-pit mine globally, positioning in the first quartile for all-in cash costs (with further operational efficiencies set to reduce these costs). When in production, LHM's tier-one operational strategy ranked it the 4th largest open-pit mine production with 42.4mlb in cumulative uranium production and mine life in excess of 20-years.

- **Strengthened Balance-Sheet from Debt Restructure:** The new funding of US$115m in the form of senior secured 10% PIK with a 19% cash toggle will give Paladin a greater ability to fund liquidity for FY2018 to FY2021 if uranium prices stay lower for longer, leaving Paladin's balance sheet in a more robust position.

- **Potential Takeover target:** With the outlook on the uranium market shifting upwards, we believe that Paladin Energy Ltd is currently positioned as a potential takeover target from larger firms, this offers the opportunity for a rapid value creation for shareholders

KEY INVESTMENT ISSUES

- **Prolonged weak Uranium Price:** If uranium prices stagnate at current weak spot prices, the restart of the KM and LHM (once in C&M) will be delayed, potentially causing those operations unsustainable at current prices to cease.

- **Political and Legislative Risks:** Due to uranium's perceived dangerous and hazardous nature as a fuel for power, there is always an inherent risk that political and legislative tape could have a negative impact on global demand for uranium – particularly in Western Jurisdictions.

- **Acquisition of contacts for miners:** Any issues with the acquisition of contracts for LHM and/or KM to sell uranium will prolong the restart of production, and potential abandonment of operations.

URANIUM MARKET ANALYSIS

The uranium price is currently placed for an upward inflection in price with strong drivers from both demand and supply sides of the market. On the demand side a forecasted growth in reactors is expected to increase annual uranium demand by upwards of 58% by the early 2020s. Looking at Uranium supply we can see that investments in uranium projects have slowed with low U3O8 prices. Accordingly, the lengthy process in turning mined uranium into yellow cake, and the fact that a large chunk of current production is propped up on higher long-term contract prices, means we'd expect to see the supply gap in the market contract putting upward pressure on spot prices.

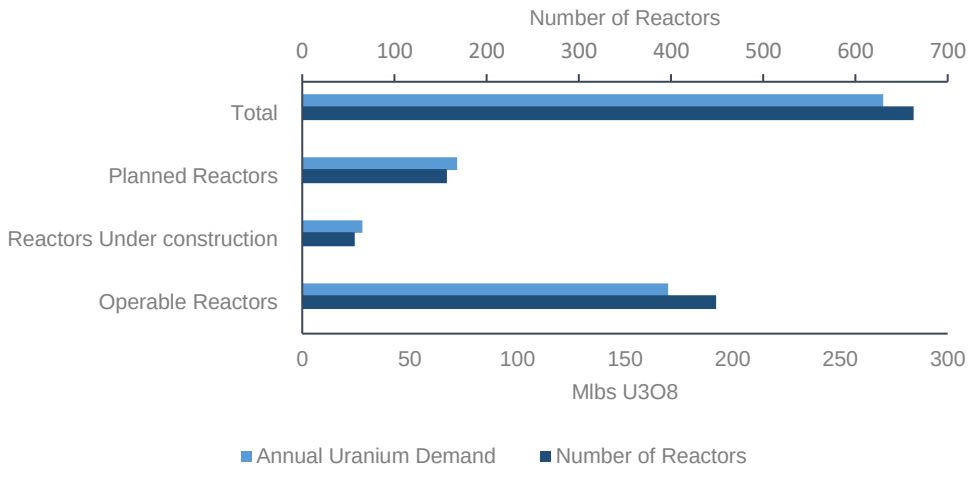
Market Demand

The influence of the Fukushima nuclear reactor explosion in March 2011 continues to impact uranium demand, particularly in western jurisdictions, whilst growing demand in developing and emerging economies is providing some gradual offsetting growth.

There are currently about 450 nuclear reactors around the world with heavy concentrations in Europe, North America, Russia, South Korea and Japan (Figure 3). The ever so modern energy source offers a concentrated energy source with a 24/7 base load to support an effective energy grid and its demands. More so it offers emerging economies the benefits of a safe, reliable and zero carbon emission energy source, in addition to energy security to feed worlds growing diverse energy demand.

Figure 3: Nuclear Reactor Outlook

Source(s): Shareholder Presentations, IAEA, and World Nuclear Association

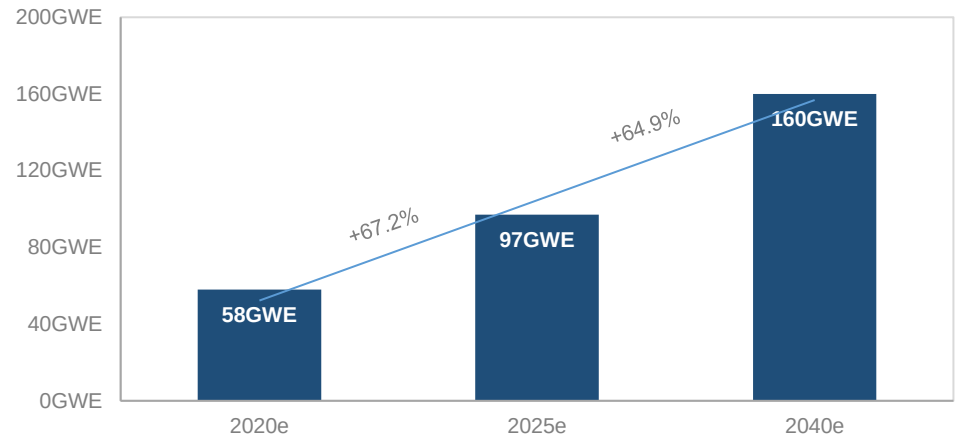


There are currently 450 operable nuclear reactors globally, with 57 under construction, 157 on order or planned and 351 proposed (as of Apr. 2018). Based on this, nuclear power generation capacity is expected to increase over 70% over the next decade to ~630GWe, leading to a ~60% increase in uranium demand from a current ~170Mlbs/pa (2017) to ~270Mlbs/pa in addition to the ~390Mlbs required as initial cores.

This energy outlook is forecasted to be driven off countries such as China and India who are planning rapid increases in their nuclear energy capacity. China is currently on a clean energy spree, aiming to invest US$365Bn by 2020 into clean energy (including nuclear). In 2013 the SNPTC outlined estimated 6-8 units to be constructed per year from 2015-2020, increasing to 10 units per year after 2020. These estimates were formalized in the 13th Five-Year plan in 2016, with a 2020 target of 58GWE of operational and 30GWE under construction nuclear energy capacity by that year's end (Figure 4).

Figure 4: Chinese Nuclear Energy Capacity Forecasts

Source: SNPT



Market Supply

The factors of a depressed uranium price have posed both short and long-term issues for the industry from the supply side. These factors are expected to catalyse an influx in the price of U3O8, via a decrease in both short-term and long-term production.

Short-Term Supply Focus

Examining the supply of uranium in the short term, inventories and secondary supply have proven to be more robust than expected and are poised to remain substantial, as a result prices may only rise gradually driven by production cuts and the pace of reactors coming online. Numerous producers are beginning to come to realisation surrounding the magnitude of the depressed uranium market, expressed through shut downs and/or production cuts by globally recognised uranium produces. This has exacerbated by a rundown of inventories alongside the timing of long-term contracts reaching the end of their tenor, forcing producer to uphold production discipline to raise the spot price of uranium in the market.

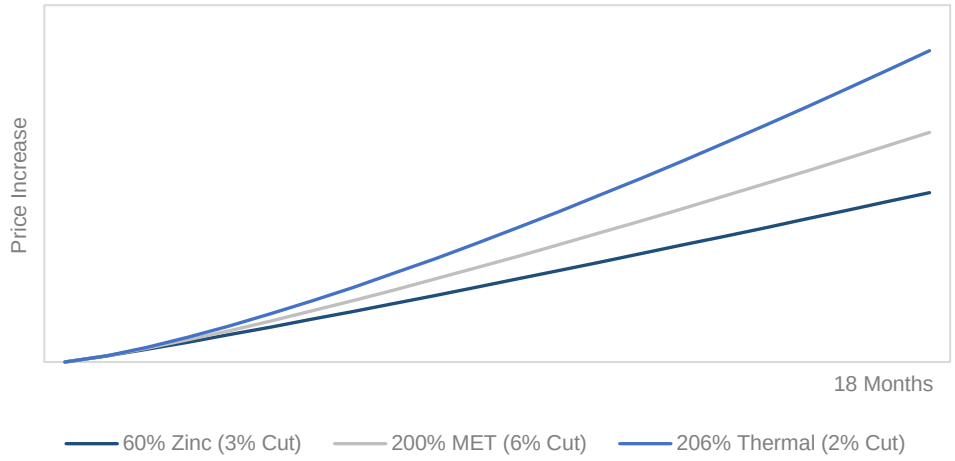
The previous contracting cycle, brought on by uranium price spikes in 2007 and 2010, resulted in utilities rushing to secure long-term contracts. While these contracts are expiring, the utilities have not been actively moving to replace their supplies. As a result, the forward coverage of utilities has fallen appreciably, increasing the uncommitted requirements that will need future contract coverage. These unfilled needs currently total around 742 million pounds over the next 10 years, which is higher than the 705 million pounds of uncommitted demand existing in 2011.

Most notably, Cameco shut down McArthur River mining and Key Lake milling operations, this decision will lead to a reduction equal to 10% of global production. Likewise, the statements made by KazAtomProm in January 2017, the world's largest uranium producer, is set to reduce its production by 10%, which equates to ~4% of global production.

It's reasonable to assume that the rationalising production is going to continue, as the long-term contracts that are priced at the higher long-term rate will expire and cease to provide protection for sources of higher cost of production. This should be especially true due to the size of the cuts, whereas in the past even smaller cuts in production in other resources have had significant effects on it price over time (Figure 5).

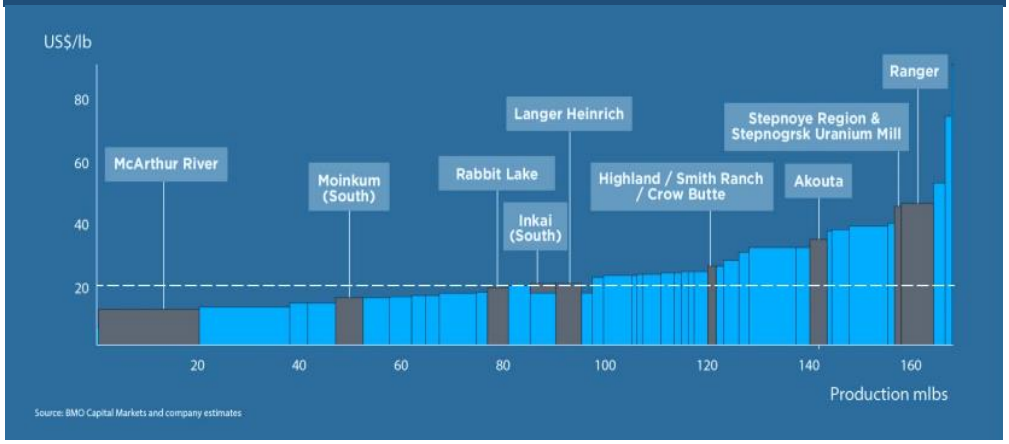
Figure 5: Impact of Historical Supply Squeeze

Source: Berkeley Energia Presentation



Going further and analysing the cost curve of all producers we can see that nearly half are producing at a cost higher than the spot price (Figure 6), and due to this 25% of all producers (in terms of production share) are either closed or in the process of closing production.

Figure 6: Uranium Producer Cost Curve (Source: : Berkeley Energia Presentation)



Long-Term Supply Focus

The supply-side of the uranium industry is positioned for long-term change. The potential for a supply squeeze seems possible given the long lead time associated with bringing uranium mine into production – up to seven years.

With a supply-gap growing each year due to the lack of incentives current prices provide for new mines to emerge or existing mines to expand, the capacity of existing production mines will be tested to hold, acting as a catalyst for a gradual increase in uranium prices over time.

VALUATION SUMMARY

Paladin Energy was valued using a blend between DCF and comparable multiples valuation for the operational and undeveloped projects respectively (Figure 7).

Discounted Cash Flows: The DCF is the most commonly adopted methodology for valuing mining activates due to the nature of mining assets having a finite life and irregular capital expenditure requirements. As a result, we found appropriateness in adopting a DCF valuation of Paladin's two primary value driven assets, LHM and KM in addition to using comparable valuation for the additional undeveloped projects and resources owned by Paladin. To value LHM and KM using the DCF methodology requires the determination of the following:

1. The LHM & KM's future cash flows over LOM
2. An appropriate discount rate to be applied to these future cash flows
3. Then finally, deducting net debt or borrowings to determine the assets implied equity value.

Our team estimated range of discount rates to apply to the ungeared, post-tax cash flows of both LHM and KM to consequently discount the future cash flows back to a present value as at the valuation date (25/05/2018). The goal of this is so our discount rates represent a nominal, post-tax weighted average cost of capital

Given the assets have been funded through a combination of debt and equity, the discount rate used in the valuation is subsequently required to account for the cost-of-debt (~10%), cost-of-equity (~15%) and the proportion of each type of funding. These requirements are essential in the calculation of the Weighted Average Cost of Capital (WACC) value of ~12.25%.

Calculating LHM and KM's cost of equity was achieved through using CAPM. Key CAPM assumptions included a derived beta value of 1.55x, a blended risk-free rate of 3.3%, market premium of ~6% and an alpha-factor to take into consideration sovereign risk of ~2.75%.

Comparable Multiples: The comparable multiples valuation of the undeveloped resources was completed by taking a mean comparable multiple across domestic producers, a multiple of ~0.8x EV/Resource (U3O8Lbs). This multiple was then applied to a probability adjusted sum of undeveloped resources (M&I&I).

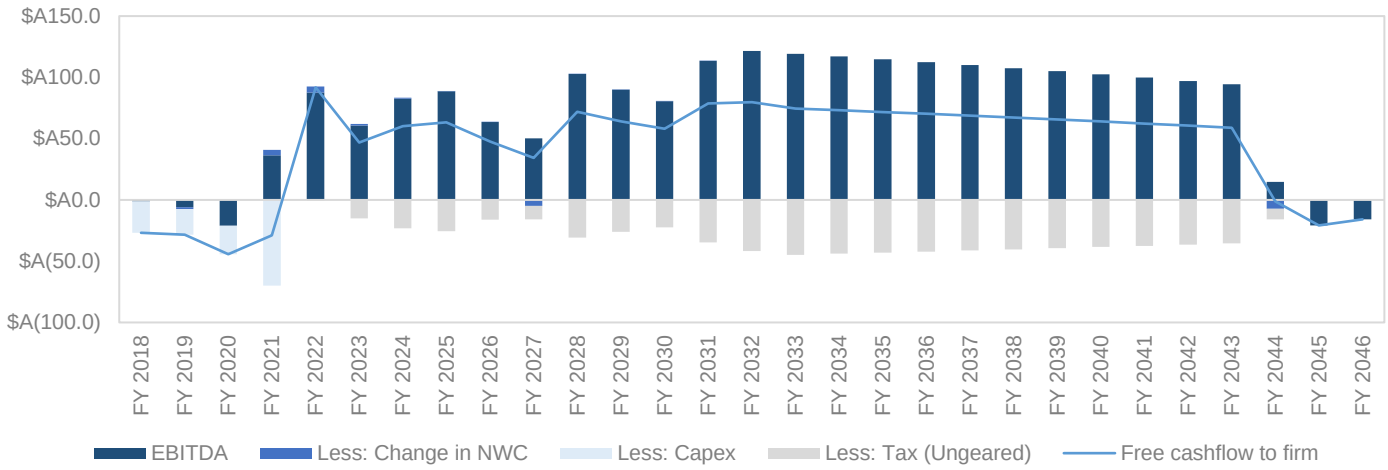
Figure 7: Valuation of Paladin Energy Ltd (Source: Team Analysis)

Valuation Summary	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**//**	**FY 2024-2046**
EBITDA	(1.18)	(5.93)	(20.96)	36.48	87.50	60.65		1,951.04
Less: Change in NWC	-	(1.52)	-	4.48	5.16	1.28		(10.92)
Less: Capex	(25.67)	(21.00)	(23.33)	(70.00)	-	-		-
Less: Tax (Ungeared)	-	-	-	-	(0.83)	(14.98)		(682.59)
Free cashflow to firm	(26.85)	(28.44)	(44.30)	(29.04)	91.83	46.95		1,257.53
Discount Factor	0.95x	0.89x	0.77x	0.71x	0.62x	0.56x		
Discount Rate	12.25%							
Discount FCFF	(25.48)	(25.40)	(33.90)	(20.57)	57.25	26.16		252.30
NPV FCFF	**230.37**							
NPV FCFF	230.37							
Add: Undevelopped Resource	137.22							
Enterprise Value	367.59							
Less: Net Debt	(44.00)							
Implied Equity Value	323.59							
(÷) Shares Oustanding	1,710							
INTRINSIC VALUE PER SHARE	**0.19**							

The first stage of our DCF valuation is derived around forecasting the future free-cashflow generated from Paladin's core operating assets. In this case, we focus on the potential free-cash flow generated from the Langer Heinrich Mine and the Kayelekera Mine in the case of restarted production (Figure 8). Projecting cashflow was done by researching Paladin's technical reports, annual reports and independent expert reports conducted by the likes of KPMG and PwC.

Figure 8: Free Cashflow Derived from Core Operating Assets (LHM & KM)

Source: Analyst Calculations



The full-breakdown of how we calculated the free-cash flow from Paladin's core operating assets can be seen below. Essentially, we incorporated the assets C1, C2 and C3 costs alongside the revenue generated from normal mining operations at both Langer Heinrich and Kayelekera, in addition to factoring in corporate costs.

Figure 9: Income Statement

Income Statement	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**//**	**FY 2024-0**
LHM	-	49.52	-	31.50	148.28	173.48		4,412.34
KM	-	-	-	-	61.59	143.37		591.78
Revenue	**-**	**49.52**	**-**	**31.50**	**209.86**	**316.85**		**5,004.12**
C&M	-	-	(3.75)	(1.25)	-	-		-
Fixed	-	-	-	-	-	-		-
Variable	-	(28.75)	-	(14.25)	(67.49)	(101.92)		(2,012.71)
Royalty	-	(1.61)	-	(1.02)	(4.82)	(5.64)		(143.40)
C&M	-	(5.75)	(5.90)	(6.05)	-	-		-
Fixed	-	-	-	-	-	-		-
Variable	-	-	-	-	(49.38)	(114.97)		(479.69)
Royalty	-	-	-	-	(1.85)	(4.30)		(17.75)
Corporate	-	(10.82)	(11.10)	(11.38)	(11.67)	(11.96)		(375.08)
Operating costs	-	(46.93)	(20.75)	(33.95)	(135.20)	(238.78)		(3,028.63)
EBITDA	**-**	**2.59**	**(20.75)**	**(2.45)**	**74.66**	**78.07**		**1,975.49**
Depreciation	-	(13.03)	-	(4.66)	(20.19)	(20.70)		(186.33)
EBIT	**-**	**(10.44)**	**(20.75)**	**(7.11)**	**54.47**	**57.36**		**1,789.16**
Interest expense	-	-	-	-	(14.45)	(20.72)		(132.38)
EBT	**-**	**(10.44)**	**(20.75)**	**(7.11)**	**40.02**	**36.64**		**1,656.78**
Income tax expense	-	-	-	-	-	-		529.07
Rollforward of Decom. Prov.	-	(0.01)	(0.00)	(0.01)	(0.03)	(0.04)		(61.35)
NPAT	**-**	**(10.45)**	**(20.76)**	**(7.11)**	**39.99**	**36.61**		**2,124.50**

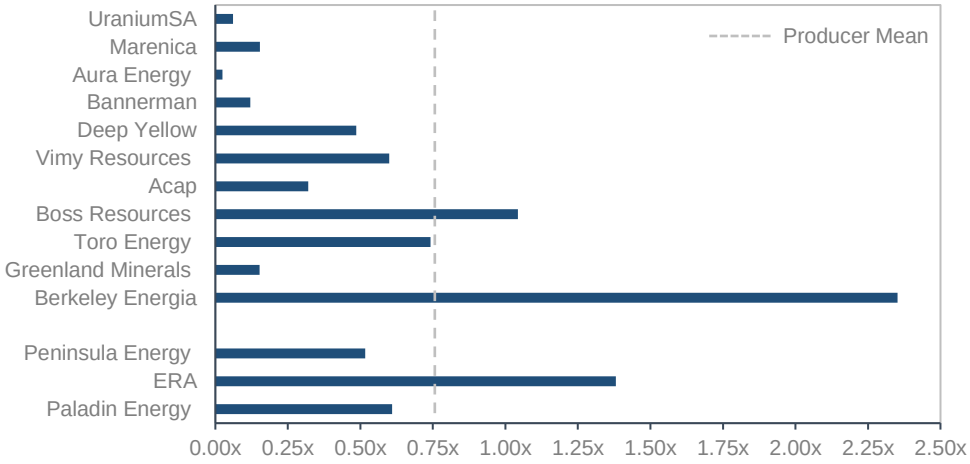
Figure 10: Statement of Cashflows

Cash Flow Statement	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	//	FY 2024-2046
NPAT	-	(17.44)	(20.76)	(7.11)	39.99	36.61		2,124.50
Add: D&A	-	13.03	-	4.66	20.19	20.70		186.33
Less: Change in NWC	-	0.27	(1.79)	4.20	5.06	1.38		(10.63)
Net Cash flows from Operations	**-**	**(4.14)**	**(22.54)**	**1.75**	**65.23**	**58.69**		**2,300.20**
Less: Capex (LHM)	-	(46.67)	-	(46.67)	-	-		-
Less: Capex (KM)	-	-	-	-	(46.67)	-		-
Less: Additions	-	-	-	-	-	-		-
Net Cash flows from Investing	**-**	**(46.67)**	**-**	**(46.67)**	**(46.67)**	**-**		**-**
Issu. / Repay. of Debt(s)	-	-	-	-	-	(160.61)		-
Less: Disrtibutions	-	-	-	-	-	-		-
Add: Required Borrowing	-	-	-	27.70	8.80	86.26		-
Net Cash flows from Financing	**-**	**-**	**-**	**27.70**	**8.80**	**(74.35)**		**-**
Net cashflow	**-**	**(50.81)**	**(22.54)**	**(17.22)**	**27.37**	**(15.66)**		**2,300.20**
Cash balance b/f	92.10	92.10	41.29	18.75	1.54	28.91		
Cash balance c/f	**92.10**	**41.29**	**18.75**	**1.54**	**28.91**	**13.24**		

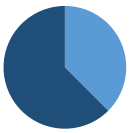
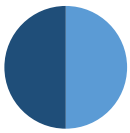
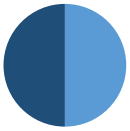
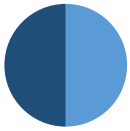
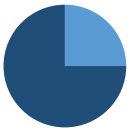
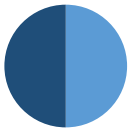
The below (Figure 11) multiples graph visualises the multiples applied in the valuation of the undeveloped resource assets. This being with a mean 'Producer' multiple of ~0.85x applied.

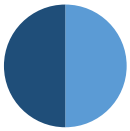
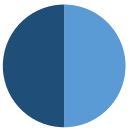
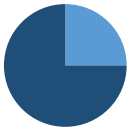
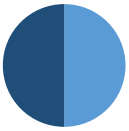
Figure 11: Producer Comparables (EV/Resource U3O8 Mlbs)

Source: Analyst Calculations



INVESTMENT RISKS

Company Issues	Likelihood	Impact	Description
OPEX Variance	**Low-Moderate** 	**Moderate** 	Higher operating expense (OPEX) and will deteriorate profitability margins and overall value. ▪ **Exposure:** Moderate exposure as projects have been operational and the company has taken steps to reduce overall company exposure to these risks. ▪ **Mitigant(s):** Planned Back-end Upgrade project to be implemented over next 2 years, and is expected to reduce process costs by US$4-5/lb. Management has reduced corporate office size by 32%, and expat numbers by 63%. ▪ **Effect on Valuation:** Suppresses overall valuation, contributes to Project variance sensitivity and Bear Case assumption.
Capital Management	**Low** 	**Moderate** 	Management must ensure adequate cash resources required to fund mining operations, after Care and Maintenance. ▪ **Exposure:** Complete exposure is present as it may delay production ▪ **Mitigant(s):** Paladin currently has $50m on its Balance sheet, and in addition to this, the balance sheet restructuring places them in a healthier position to raise capital. ▪ **Effect on Valuation:** Subdues the valuation via time value of money.
Production Risk	**Moderate** 	**Moderate** 	Mechanical plant failures have occurred in the past and will adversely affect production levels. ▪ **Exposure:** Complete exposure is present if there is any breakdown. ▪ **Mitigant(s):** World-class management team, with a high level of focus on execution. Constant maintenance and repairs of plants and machinery. ▪ **Effect on Valuation:** Subdues the valuation via production volumes and revenues recorded.
Logistics	**Low** 	**Moderate** 	Availability of affordable and reliable transport and infrastructure. ▪ **Exposure:** Complete exposure is present if there is a logistics breakdown. ▪ **Mitigant(s):** Secure supply lines for logistical services and other supporting facilities. **Effect on Valuation:** Subdues the valuation via a delay in production and revenues recorded.
Mineral Resources	**Low** 	**Moderate** 	Grades of mineral resources being miss-calculated or inaccurate ▪ **Exposure:** Complete exposure is present as it's the basis of operations ▪ **Mitigant(s):** Further drilling and testing to increase assurance ▪ **Effect on Valuation:** Subdues the valuation via lower production and therefore a higher cost per lbs

Market Issues	Likelihood	Impact	Description
Uranium Price	**Moderate** 	**Moderate** 	Further depressed uranium prices will continue to delay production restart, posing once again a “Temporal Risk” ▪ **Exposure:** Complete exposure is present as uranium price is the main determinant of revenues ▪ **Mitigant(s):** Uranium market analysis discusses the implausibility of a continued depression in the moderate to long term. This risk is deteriorated when showing how uranium is mostly sold over contracts which currently sit at an average well above the depressed spot price and Boss Resources operating costs. ▪ **Effect on Valuation:** Supresses overall valuation, contributes Bear case assumption and is further discussed in scenario analysis ‘Restart Delay’
Strengthening NAD	**Low** 	**Moderate** 	Stronger Namibian Dollar increases the value of Paladin’s operating costs. ▪ **Exposure:** Complete exposure is present as operating costs of LHM are quoted in NAD. ▪ **Mitigant(s):** The likelihood of the NAD continuing to strengthen against the USD is not likely. ▪ **Effect on Valuation:** Supresses overall valuation.
Political	**Low** 	**Moderate** 	Projects in Southern Africa may be subject to the effects of political instability. ▪ **Exposure:** Complete exposure is present as framework will impact all shareholders. ▪ **Mitigant(s):** Constant review of the political climate, through consultations with the relevant stakeholders. ▪ **Effect on Valuation:** Increases the country-specific risk discount.
Regulatory	**Low** 	**Moderate** 	Increased regulatory requirements, to reduce risks of processing facilities. ▪ **Exposure:** Complete exposure as regulation may influence production methodologies and strategic decision making. ▪ **Mitigant(s):** Addition of individuals with experience in the industry, and constant review of regulatory environment.

MANAGEMENT

Management has prioritised the following initiatives:

- Maximising operating cash flows from LHM through optimisation and cost reduction initiatives preserving integrity of the long-term mine plan.
- Exploration business and KM being maintained at minimal capex.
- Corporate cost and admin expenses are minimised.
- Committed to maintaining capital structure that is sustainable for the uranium price environment.

Name	Role	Shares Owned	Experience
Alexander Molyneux	**CEO**	3m Options	Has 10 years of experience providing investment banking services and advisory services to natural resource corporations. Mr Molyneux has served as Chairman of Azarga Uranium (TSX: AZZ), Chairman of Celsius Coal (ASX: CLA) and was President and CEO of SouthGobi Resources (TSX: SGQ).
Michael Introna		NIL	Michael has been with Paladin since 2009, he was promoted to Managing Director in March 2017. Michael is a qualified Chartered Accountant and has extensive mining experience with Australian and Canadian mining companies. ~*Shares (Nil)*
Shangxiong Gao		NIL	Mr Gao, served as Vice General Manager of CNNC International Limited from 2015 to 2017.
Sebby Kankondi		NIL	Sebby has had extensive career as a business executive, he has served as CEO of Bidvest Namibia and serves as the Chairman of Namibia Post Limited.

Name	Role	Shares Owned	Experience
Rick Crabb	**Chairman**	5.9 million	Rick has practiced as lawyer specialising in mining, corporate and commercial law in Africa and Australia. He has been a director and strategic shareholder of several successful public companies. He is also the non-executive Chairman of Platypus.
David Riekie	**Non-Exec**	NIL	Mr Riekie has operated in a variety of counties globally and throughout Africa; notably Namibia and Tanzania. David is Managing Director of junior explorer iCobalt Limited. David has throughout his career provided corporate, strategic and compliance services.
Daniel Harris	**Non-Exec**	NIL	Mr Harris is a seasoned and highly experienced mining executive and director and has most recently held the role of interim CEO and Managing Director of ASX listed Atlas Iron. Mr Harris has 37 years in the industry and has served as CFO and CEO of several other companies.
John Hodder	**Non-Exec**	NIL	John Hodder was one of 3 principals who established Tembo Capital a ~AUD$1.25bn mining focused private equity fund. Mr Hodder has served as director of several junior mining companies and has significant experience mining and investing in Africa.

Management Remuneration

The remuneration strategy was formed on the basis of providing a competitive and fair reward, aligning the executive's interests with those of the Company Shareholders.

Short-Term Incentive:

CEO - is entitled to a success fee of 100% of his bases upon successfully completing the following:

- Approximately 20% or more equity issuance to a party which is not an existing shareholder. With Rights of director appointments.
- A change of control (defined as greater than a 50% change in Paladin Energy Ltd (subject to Deed of company arrangement) shareholding).
- Sale of a material asset or assets, requiring shareholder approval, with such success fee only pertaining to transactions that are recommended by the board of directors.

Long-Term Incentive:

The CEO was granted 3 million options upon appointment on the 10th of August 2015.

SENSITIVITY ANALYSIS

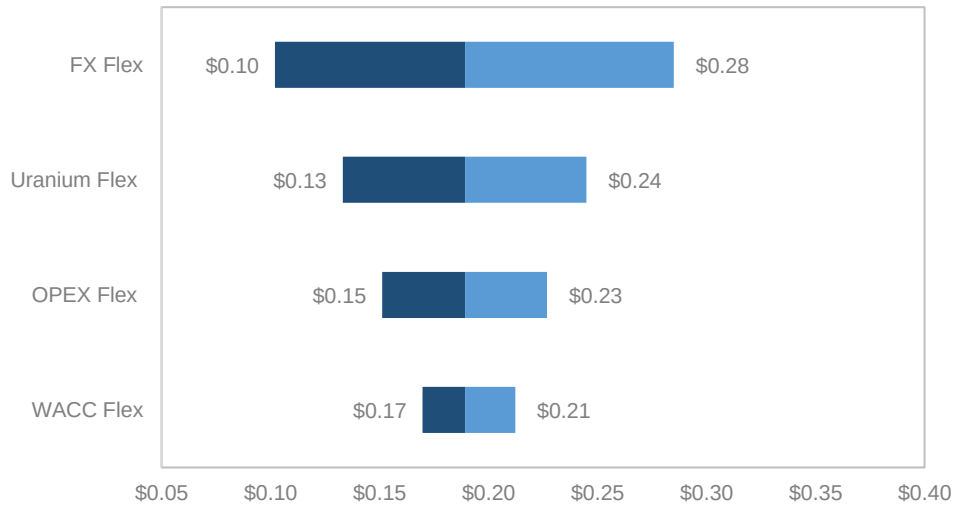
In our analysis of Paladin Energy, we have included analyses of sensitivity in the valuation model. These a further discussed below.

Tornado Analysis

Tornado Analysis – In order to understand the sensitivity of the valuation we performed a tornado analysis on the key inputs of the valuation. The results of this analysis are shown below in a graphical form.

Figure 12: Tornado Analysis (+10%/-10%)

Source: Analyst Calculations



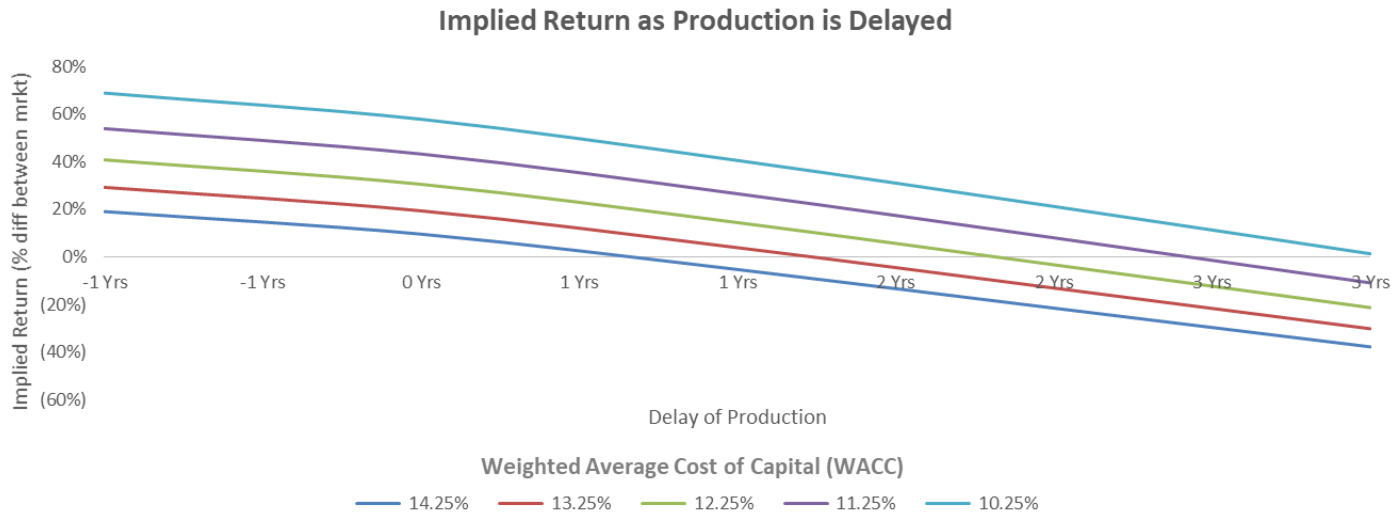
Production Delay

Finally, we have included a sensitivity analysis on delay of production. This has been included on the basis that Paladin's Langer Heinrich and KM mines are both on Care and maintenance now, albeit Langer Heinrich is still milling for the time being. Our assumption includes Paladin entering full care and maintenance of the Langer Heinrich mine in mid-2019 after the medium grade ore stockpiles are exhausted, at this point we have assumed they remain in care & maintenance until 2021, in addition to assuming KM exits care & maintenance in 2022.

Based on these key assumptions we have included an analysis to see the effect on remaining in care & maintenance. The main effects being paladin incurring care and maintenance costs every year the mine is kept in that state, in addition to pushing future cash flows forward and therefore incurring additional discounting based on time value of money.

	Target Price	Production Delay in Years				
	$ 0.19	-1 Yrs	0 Yrs	1 Yrs	2 Yrs	3 Yrs
WACC	14.25%	$ 0.17	$ 0.16	$ 0.14	$ 0.11	$ 0.09
	13.25%	$ 0.19	$ 0.17	$ 0.15	$ 0.13	$ 0.10
	12.25%	$ 0.20	$ 0.19	$ 0.17	$ 0.14	$ 0.11
	11.25%	$ 0.22	$ 0.21	$ 0.18	$ 0.16	$ 0.13
	10.25%	$ 0.24	$ 0.23	$ 0.20	$ 0.18	$ 0.15

	Implied Return	Production Delay in Years				
	30.51%	-1 Yrs	0 Yrs	1 Yrs	2 Yrs	3 Yrs
WACC	14.25%	19.0%	9.6%	(5.3%)	(21.5%)	(37.8%)
	13.25%	29.2%	19.4%	3.9%	(13.1%)	(30.2%)
	12.25%	40.8%	30.5%	14.4%	(3.3%)	(21.3%)
	11.25%	53.9%	43.2%	26.5%	8.0%	(10.9%)
	10.25%	68.8%	57.8%	40.5%	21.2%	1.3%



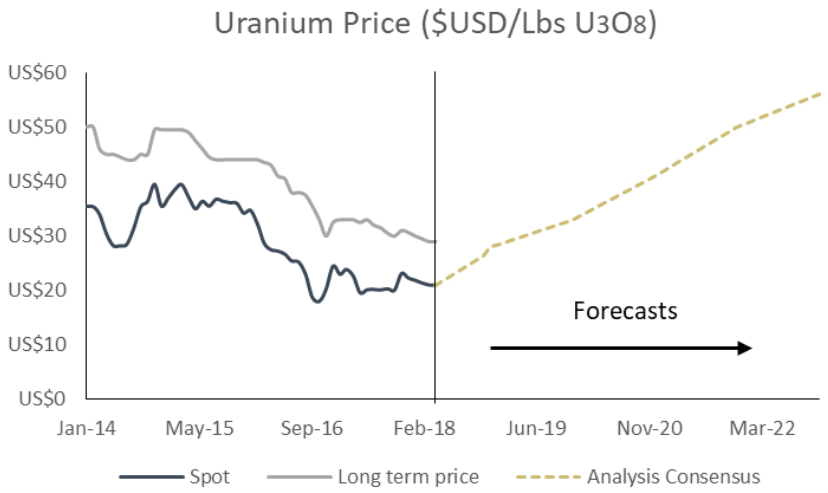
APPENDICES

APPENDIX A

We have not applied the capitalisation of future maintainable earnings (CFME) because this methodology implies cash flow to perpetuity and mining operations have limited lives – LHM life of mine of 22 years & KM life of mine of 5 years. Additionally, CFME can't be adopted with the KM valuation due to KM reporting EBITA losses.

We have not applied the Net Asset methodology because KM is in care and maintenance (C&M) and incurring costs, and LHM is an operating mine likely to enter C&M, therefore it's unreasonable to justify that the book values of LHM and KM would be reflective of their fair values.

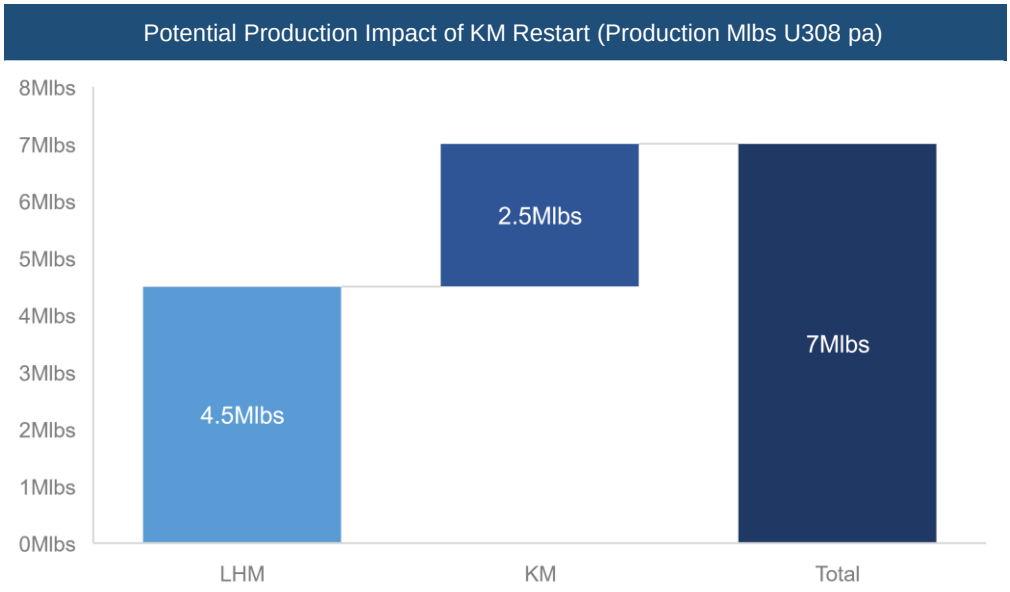
APPENDIX B: URANIUM PRICE FORECAST



USB/lb	Nom. / real: Date	Nom. 2017	Nom. 2018	Nom. 2019	Nom. 2020	Nom. 2021	Real LT (2017 real)
BMO Capital	24-May-17	27	38	48			
BMO Capital	3-Oct-17				60		
BMO Capital	17-Apr-17						60
BoA - Merrill Lynch	13-Apr-17	25	28	30			57
CIBC	17-Mar-17	40	40	75	75		75
Deutsche Bank	3-Apr-17	59	62	64	65	66	55
Haywood Securities	20-Jul-17	26	39	47	55	64	
Haywood Securities	17-Feb-17						70
JP Morgan	16-Mar-17	24	35	40			75
Cantor Fitzgerald	26-Jul-17	22	29	43	63		
Cantro Fitzgerald	27-Apr-17					80	80
Paradigm Capital	9-Feb-17	30	35	40	55		55
RBC	18-Apr-17	25	30	35	40	45	65
Renaissance Capital	7-Jul-17	24	32	41	50		
Renaissance Capital	7-Aug-17					54	
Renaissance Capital	4-Apr-17						50
UBS	11-Apr-17	27	33	45	55	60	55
Credit Suisse	28-Sep-17	22	25	30	30		40
Eight Capital	6-Jul-17	27	29	35	40	50	
Macquarie	10-Oct-17	22	24	27	30	33	33
Raymond James	15-Aug-17	23	27	32	37		50
Scotiabank	1-Oct-17	21	20	25			50
Average		**28**	**33**	**41**	**50**	**56**	**58**

APPENDIX C: KAYELEKERA CARE & MAINTENANCE (C&M)

KM is a fully-built and commissioned mine in Malawi. The mine was placed on Care and Maintenance in December 2014, due to low prices and has not recorded any sales revenue since then. KM produced 10.7Mlb of U3O8 in the period that it was operational and has the capacity to produce 2.5Mlb per annum. A feasibility study of KM was conducted in 2016 and the results stated that mine was still a valuable asset and can be quickly turned into production.



APPENDIX D: EVOLUTION OF STRUCTURE

Cost Structure Comparison

Paladin aims to optimise its projects and enhance its operating margins by managing costs going forward. Paladin has a large burden of fixed costs in comparison to its peers, for example Cameco's fixed costs make up 21% (FY17) of its Total costs, with 46.9% being Cash Cost of Production Costs and Paladin's fixed costs make up 67% of their Total costs with Cash Costs of production taking up 32.4% (FY17). Paladin has implemented a Back-End Upgrade Project, which is set to be completed over the next 12-18 months, This project is forecasted to reduce Cash Costs by $4-5$/lb.

APPENDIX E: COMPETITOR COMPARISON

We have compared Langer Heinrich Mine to 3 other Uranium mining operations with similar characteristics namely Salamunca, Mulga Rock and Entango to assess the quality of the asset. The Salamunca project has the lowest cost profile due to the lack of depth of the mine, followed closely by LHM, in a market turn around both these assets have a high potential to have a high degree of margin expansion. In regard to the Resource base and grade quality Mulga Rock has the highest grade quality with 0.15% followed by LHM with 0.05%, however LHM has a larger resource base with 124.79Mlbs as compared to Mulga Rock with only 24.2Mlbs. LHM's Namibian counter-part Etango is a mine that is vastly inferior to LHM because of its higher costs of production and low-quality resource grade.

Berkeley - Salamunca

Salamunca project will be one of the world's lowest cost open-pit producers in the world, with a Cash cost of US$13.3/lb and an AISC of US$17.15. Due to the low cost of production the project is capable of being cash flow positive in the current low-price environment. The company has already engaged customers and signed off-take agreements to sell 2.75Mlbs of Uranium over 6 years. 50% of the contract price is fixed and 50% sold at Spot with a price floors and price ceilings. The Salamunca project has an NPV of (insert figure), with an initial capital cost of US$93.8m and 14-year mine life.

Vimy Mulga

Mulga Rock is an Open-pit mine located in Western Australia. Mulga Rock is estimated to contain 90.1Mlbs of Uranium, which will be mined over 15 years at a production rate of 3.5Mlbspa. Mulga Rock has a cash cost of US$27.95/lb and an AISC of US$34/lb.

Bannerman Resources

The Etango Project is located in Namibia similarly to Langer Heinrich Mine. Etango consists of 165Mlbs of resources with an average grade of 0.02%. The mine is capable of producing 7.2Mlbs/pa at a cash operating cost of US$46/lb over a 16 year mining life with an estimated recovery rate of 87%. The Pre-production capital cost of Etango is $131 million and has an estimated NPV of $923 million.

Asset	Salamunca	Mulga Rock	Etango	McArthur River	Cigar Lake	LHM
Location	Spain	Australia	Namibia	Canada	Canada	Namibia
Owner	Berkeley	Vimy	Bannerman	Cameco	Cameco	Paladin
Mine type	Open-pit	Open-Pit	Open-Pit	Multiple	Jet-Boring System	Open-Pit
Reserves (P&P)	60.7	71.2	132	269.1	99	89.1
Resources (M&I&I)	89.4	24.2	165	4.9	49.1	124.79
Grade (M&I)	0.012%	0.150%	0.019%	9.630%	14.910%	0.047%
Production	3.5	3.5	7.2	11.2	9	2.7
Recovery rate	88.0%	87.3%	87.0%	98.7%	98.5%	86.0%
Mine Life	14 Yrs	15 Yrs	16 Yrs	17 Yrs	13 Yrs	20 Yrs
AISC	$US 17	$US 34	$US 46	$US 19	$US 19	
C1	$US 13	$US 28	$US 41	$US 17	$US 19	$US 20

APPENDIX F: RECAPITALISATION

New Capital Structure

Paladin engaged its previous bondholders and EDF to restructure its balance sheet. The debt capital restructuring in Paladin's Net Debt being reduced from US$715m to US$44m, with an average debt tenor of 5 years. The Debt restructuring also included the appointment of a new board of directors and the extinguishment of all "subordinate" claims against Paladin.

APPENDIX G: POLITICAL CLIMATE

Namibia

The South West Africa People's Organisation, has governed Namibia since 1990. Recently the Namibian economy has fallen under pressure due to low commodity prices, leading to the government implementing austerity measure and decreasing spending. Historically the government has supported the exploration of Uranium, and there is no evidence of that changing. The government has not spoken of any nationalisation of mines of existing mines or threats to the industry.

Country: Namibia	FY17	FY18E	FY19E	FY20E	FY21E	FY22E
Real GDP Growth (%)	2.3	3.9	3.2	2.2	3.4	3.3
CPI (average) (%)	6.1	5.8	5.5	5.4	5.5	5.6
Exchange Rate AUD:USD	13.2	13.7	16.1	18.1	19.3	19.5

Malawi

Malawi is one of the most stable African countries, despite erosion of public confidence due to corruption allegations against the government, the country remains politically stable. Political instability may ramp-up towards the 2019 election, but the underlying stability of the country is expected to remain. The government has a reputation for making concessions when pressured by the public through public demonstrations and mass demonstrations, which may result in poorly-calculated shifts in policy.

Country: Malawi	FY17	FY18E	FY19E	FY20E	FY21E	FY22E
Real GDP Growth (%)	2.5	4.4	4.7	4.9	5.0	4.7
CPI (average) (%)	21.7	13.2	9.9	9.2	8.3	7.9
Exchange Rate MK:USD	713.80	729.10	798.40	877.90	916.60	947.80

Increasing Nationalism Trend in Africa

Last year in July 2017 Tanzania announced changes to the country's mining legislation, these changes significantly impacted international companies with operations in the country. The changes included government acquiring an interest in companies and a change to the royalties on minerals We see this trend playing out in countries such as South Africa whereby government is increasing pressure on companies through BEE requirements. We see the possibility that political sentiment may over flow from South Africa into its Neighbour Namibia. In 2017 Namibia's score on the Fraser Institute Investment Attractiveness Index fell to 60.67 from 66.11 the previous year. We believe Paladin maybe able to mitigate see the possible impact of increasing sovereign risk by closely monitoring the political situation and adding politically influential individuals to their board.

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