

Glowing up; sector renaissance underway

Shaw and Partners Sector Report

Initiation of Uranium Sector coverage

Event

In this note we outline our views on the uranium sector. We reinforce our positive view on Paladin and initiate coverage on four uranium companies; Boss Energy (BOE, Buy, A\$0.11ps PT), Peninsula Energy (PEN, Buy, A\$0.13ps PT), Lotus Resources (LOT, Neutral, A\$0.11ps PT) and Bannerman Resources (BMN, Neutral, A\$0.05ps PT).

In our view the Uranium Miners are past the worst of the Fukushima-led downturn. Spot prices for uranium have increased over 60% since 2017, currently ~US\$30/lb. In our view uranium prices are likely to continue to strengthen in 2021.

Inventories are being drawn down due to production curtailments from key producers Kazatomprom and Cameco. The US Russian Suspension Agreement has been extended and the US election has passed. Utility companies are beginning to re-engage with producers on long-term contracts.

Longer-term we believe Uranium Miners are well placed to capitalise on the trend of decarbonisation and electrification of energy systems. Mine re-investment is required.

In our view sector risks are skewed to the upside due to a lack of industry investment since 2011. As the cycle turns, we would not be surprised if our coverage suite ultimately trades ahead of valuation support and U_3O_8 trades ahead of cost curve support (US\$40-50/lb).

Recommendation

Our company preference list is based on a combination of uranium price leverage, underlying asset quality and project lifecycle phase.

- Paladin (Buy, A\$0.26ps PT) in our view Paladin Energy is the stand-out in the sector on a risk-reward basis. We initiated on the company in June 2020. Paladin is preparing for a restart of the Langer Heinrich (PDN 75%) uranium mine in Namibia. In our view the company needs spot U₃O₈ prices to be ~US\$43/lb to re-start. Paladin has all necessary permits and licences to restart. The restart is estimated to cost US\$81m; we assume this occurs in FY23.
- Boss Energy (Buy, A\$0.11ps PT) the company's 100% owned fully permitted in situ recovery Honeymoon project in South Australia requires low upfront capital (US\$24m for 0.9Mlb/yr production re-start) and only 12 months to restart. BOE is the only company under our coverage suite with its key asset in Australia, which is important given the geopolitically sensitive nature of uranium. In our view BOE requires spot U₃O₈ prices ~US\$45/lb in order to sanction a restart.
- 3. Peninsula Energy (Buy A\$0.13ps PT) is the only company that has an existing contract book. The company's flagship in situ Lance Projects (PEN 100%) in Wyoming, USA, requires low upfront capital (US\$6m for 1.1Mlb/yr operations restart) and can restart 6 months post a Final Investment Decision. We believe the company requires spot U₃O₈ prices of ~US\$48/lb for a restart. Following the successful completion of a fully underwritten A\$40m share entitlement offer in June, the company is term debt free.
- 4. Lotus Resources (Neutral, A\$0.11ps PT) is looking to re-start operations of the fully permitted Kayelekera project in Malawi. The company acquired 65% equity in the project from Paladin in March 2020. A low upfront capital requirement of ~US\$50m for ~2Mlb/yr production is appealing. We believe the company needs a spot U₃O₈ price of ~US\$55/lb and asset consolidation in order to sanction re-start.
- 5. Bannerman Resources (Neutral, A\$0.05ps PT) a highly leveraged play on the uranium price. In our view the company's 95% owned open pit Etango-8 project in Namibia is lower grade (232ppm U₃O₈ vs >480ppm) but higher volume (8Mtpa vs <3Mtpa RoM) compared to its peers. In our view the company requires spot U₃O₈ prices ~US\$60/lb in order for this greenfield project to be sanctioned.

Base case valuations – our base case long-term U₃O₈ spot price assumption is US\$46/Ib 2020 Real.

	Current SP	Valuation	Δ	Rec'n
	A\$ps	A\$ps	%	
PDN	0.155	0.26	68%	Buy
BOE	0.064	0.11	72%	Buy
PEN	0.079	0.13	65%	Buy
LOT	0.086	0.11	28%	Neutral
BMN	0.041	0.05	22%	Neutral

Source: Company reports, Shaw

Upside scenario valuations – our upside scenario U_3O_8 spot price assumption is **US\$60/lb 2020 Real.**

	Current SP	Valuation	Δ
	A\$ps	A\$ps	%
PDN	0.155	0.45	190%
BOE	0.064	0.19	197%
PEN	0.079	0.25	216%
LOT	0.086	0.18	109%
BMN	0.041	0.10	144%

Source: Company reports, Shaw

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Executive summary – sector recovery underway, re-investment required

Figure 1: Spot U₃O₈ price (US\$/lb)



Source: Factset, Shaw forecasts

In our view uranium markets are past the cyclical downturn driven by the Fukushima earthquake. A commodity price recovery is well under way. Spot uranium prices have increased 25% to US\$30/lb this year due to supply-side discipline and inventory drawdowns. The inertia that took hold after the US Section 232 petition - compounded by COVID-19, the Russian Suspension Agreement and US election uncertainty - is finally ready to be dislodged.

The US and European Utilities have the clarity and bandwidth to think about procurement; existing stockpiles are not inexhaustible. We think utilities will have to act in 2021 to cover a shortage of term contacts from 2023, given the 2-3-year upfront contract lock-in period.

On the supply side, several of the world's largest uranium mines will cease production over the coming years, starting with Australia's Ranger mine and Niger's Cominak mine in 2021. These mines alone are the equivalent of ~6% of 2019 global production.

Longer-term, we believe fundamentals are increasingly appealing for the sector. Nuclear Energy is recognised as an essential element of the clean energy mix, which potentially enables nuclear power to increase its contribution from current ~10% of global electricity. Consensus believes uranium demand needs to increase by over 100% from current levels by 2050 if decarbonisation is to take place.

Re-investment in uranium mines is required. Most industry forecasters believe that a long-term sustainable uranium spot price based on cost curve support is in the US\$40-50/lb range. We use a long-term U_3O_8 spot price assumption of US\$46/lb (2020 Real).

Key discussion points

In our view, each company under coverage is past the worst of the difficult commodity price environment and each has material valuation upside (figure 1). We note:

- 1. The sector is heavily leveraged, with each company requiring a re-rate in spot U_3O_8 prices to commence operations (low US\$40s to US\$60/lb). Re-start of mining operations at more established precincts is generally a lower cost and hence a lower risk exposure to uranium. Re-start of operations is generally able to be achieved in 1-2 years compared with the average of 7-10yrs from greenfield exploration to production.
- 2. Balance sheets are generally manageable. Balance sheets appear manageable for most companies until the decision is made to sanction mining operations. The decision to recommence mining will not occur unless uranium prices increase.
- 3. Boards and management teams are strengthening as the industry continues to consolidate. Paladin recently appointed Ian Purdy to be CEO, ex-Quadrant CFO. Duncan Craib is Boss' CEO and has held executive roles in the industry in the UK, China, Namibia and Australia. Peninsula CEO Wayne Heili is a respected uranium industry veteran. Lotus Resources recently hired former Uranium One CEO Eduard Smirnov. Uranium One is among the top 5 of the world's uranium producers. Brandon Munro CEO of Bannerman is deeply involved in the World Nuclear Association.

Figure 2: U₃O₈ price assumptions

We model company realised prices as ~US\$6/lb greater than spot prices. This is because we assume that term contracts are at a US\$10/lb (notional) premium to spot prices and sales are split 75% term and 25% spot.

Uranium Price forecast	2019	2020	2021f	2022f	2023f	2024f	2025f	Longterm
Spot U3O8 price (US\$/Ib)	26	27	40	48	50	51	51	46
Achieved price (US\$/Ib)	29	35	47	55	58	58	58	52
AUD/USD	0.71	0.67	0.70	0.73	0.74	0.75	0.75	0.75

Source: Factset, Shaw forecasts

Figure 3: Base case valuations – our base case long-term U_3O_8 price assumption is US\$46/lb 2020 Real.

	Current SP	Valuation	Δ	Rec'n
	A\$ps	A\$ps	%	
PDN	0.155	0.26	68%	Buy
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Figure 4: Upside scenario valuations – our upside scenario U_3O_8 price assumption is US\$60/lb 2020 Real.

	Current SP	Valuation	Δ
	A\$ps	A\$ps	%
PDN	0.155	0.45	190%
BOE	0.064	0.19	197%
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LOT	0.086	0.18	109%
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Source: Company reports, Shaw and Partners analysis Shaw and Partners Source: Company reports, Shaw and Partners analysis Sector Report current as at -30/11/2020–Pg. 3



Uranium price sensitivities

Our preferred valuation technique is a discounted cash flow (DCF) valuation with post-tax operational cash flows discounted at a weighted average cost of capital of 10%.

We note the spot U3O8 price (US\$30/lb) is below our current forecast (LT US\$46/lb 2020 Real). Higher prices are required for each company to sanction their projects.

In the tables below our valuations are based on the company's fully diluted discounted cash flow valuation, assuming the project is sanctioned. Otherwise for uranium prices below the sanction value, we apply a notional asset valuation.

Figure 5: Shaw estimated spot U₃O₈ company break-evens, sanction price and sensitivities

	Project	NPV breakeven	Shaw estimate U3O8 price required for sanction	Sensitivity (+/- US\$10/lb)
		Spot (US\$/lb)	Spot (US\$/lb)	Fully diluted share price move (A\$ps)
Paladin	Langer Heinrich	25	43	0.14
Boss Energy	Honeymoon	36	45	0.05
Peninsula Energy	Lane Projects	37	48	0.08
Lotus Resources	Kayelekera	48	55	0.09
Bannerman Resources	Etango-8	52	60	0.06

Source: Factset, Shaw analysis

Figure 6: PDN valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 8: PEN valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 10: BMN valuation sensitivity (A\$ps)



Figure 7: BOE valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 9: LOT valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Balance sheets & financing

We anticipate all companies under coverage will be required to re-capitalise for project sanction. In our view this comes from three sources;

- 1. Prepayment of a portion of the offtake.
- 2. Project finance for the restart of the operation.
- 3. An equity raise.

In our base case modelling we assume in order to sanction each uranium project that companies raise a combination of equity and project finance debt. We have not modelled any prepayments.

The shape of each balance sheet is likely to be determined by the nature of the term contracts that are signed. Strong offtake agreements at prices in excess of US\$50/lb and >5 years tenor will allow companies to take on a higher proportion of debt.

The right level of equity raise will depend on the term contracts signed and the desire to balance a strong balance sheet whilst minimising dilution for existing shareholders.

Figure 11: Balance sheet summary

	PDN	BOE	PEN	LOT	BMN
Pre-operations					
Cash (Sep20q)	US\$32m	A\$18m	US\$13m	A\$20m (post \$5m raise) *A\$14m is restricted.	A\$3.7m
Shaw assumed next equity raise	End FY21/22	FY22	FY22	FY23	FY22
Reason for next equity raise	Project sanction (US\$50m)	Project sanction (A\$20m)	Project sanction (US\$10m)	Project sanction (US\$25m)	Working capital (A\$6m)
Gearing (ND / ND + E) (FY20)	52%	N/A (no debt)	N/A	N/A (no debt)	N/A (no debt)
Next maturity / refinance	US\$115 9%/10% payment in kind senior secured notes repayable in January 2023. The current accumulated position (end Sep20q) totals US\$149m, and will reach US\$187m by the repayment date.	N/A In September 2020 the company completed a placement to raise A\$15m equity.	N/A US\$17m in convertible notes were repaid in full with accrued interest in June 2020 following an underwritten A\$40m entitlement offer.	N/A The company's last equity raising was an A\$5m working capital placement in November 2020.	N/A The company's last equity raising was an A\$8m placement in June 2018.

Requirements to commence operations

Type of mine	Re-start, open pit	Re-start, in situ	Re-start, in situ	Re-start, open pit	Greenfield, open pit
Spot uranium price required for restart (Shaw, US\$/Ib)	43	45	48	55	60
Capital for operations	US\$81m	US\$64m = (1) US\$24m for Stage 1 (2) US\$40m for Stage 2 (+US\$5m in year 5 for a third IX train)	US\$120m = (1) US\$6m for Stage 1 (2) US\$113m for Stages 2&3 (project phasing for Stages 2&3 is possible US\$113 = US\$43 + US\$70)	US\$50m (+US\$16m at the end of yr 3 for a second tailings lift)	US\$254m
Total recapitalisation requirements (Shaw forecast)	FY21/22 US\$268m = US\$187m accumulated notes accrual + US\$81 for restart	A\$125m for full ramp up = A\$50m equity + A\$75m debt in two stages (1) FY22 - A\$50m (A\$20m equity) to restart operations to 0.9Mlb/yr (2) FY24 - A\$75m (A\$30m equity) to ramp-up operations to 2Mlb/yr.	US\$140m for full ramp up = US\$50m equity + US\$90m debt in two stages. (1) FY22 - US\$25m (US\$10m equity) to restart operations to 1.1MIb/yr (2) FY25 - US\$115m (US\$40m equity) to ramp- up operations to 3MIb/yr.	2HFY23 US\$60m = (1) US\$25 equity (2) US\$35m debt	FY23 A\$350m = (1) A\$170m equity (2) A\$180m debt
Peak gearing (ND / ND + E) (%) (spot U3O8 US\$46/Ib 2020 Real)	74%	43%	46%	N/A (higher U3O8 prices required)	N/A (higher U3O8 prices required)
Peak gearing (ND / ND + E) (%) (spot U3O8 US\$60/Ib 2020 Real)	74%	12%	9%	39%	43%

Cash flow break-evens

In our view cash flow break-evens (operating costs + capex + principal) are indicative that all companies require higher prices for project sanction. The spot U_3O_8 price (US\$30/lb) is below our current forecast (LT US\$46/lb). This is part of the reason why we believe uranium prices need to rebound; prices need to increase to incentivise further investment.

We note it's likely each company has the capacity to make further cuts to capex and operating costs as project studies are advanced. This may be more evident for projects that are less developed or still in the greenfield stage e.g. Bannerman's Etango-8 project. We would not be surprised to see expenditure reductions of US\$5-10/lb for this type of project.

Figure 12: PDN cash flow break-evens (US\$/Ib) - restart of the company's Langer-Heinrich open pit mine in Namibia should be technically straightforward.



Source: Company reports, Shaw and Partners analysis

Figure 14: PEN cash flow break-evens (US\$/lb) – the company increases capital expenditure to ramp-up U_3O_8 production from 1.1 to 3Mlb/yr.









Source: Company reports, Shaw and Partners analysis

Figure 13: BOE cash flow break-evens (US\$/lb) – should reduce once the company approaches steady state production at 2Mlb/yr U₃O₈.



Source: Company reports, Shaw and Partners analysis

Figure 15: LOT cash flow break-evens (US\$/lb) – some costs for the Kayelekera mine are higher given it is located in Malawi.



Source: Company reports, Shaw and Partners analysis

Nuclear power as a low carbon energy source

The view that the world is on an unsustainable path and its carbon budget is running out is becoming mainstream. The fact that supermajor Integrated Oil Companies have re-branded to Integrated Energy Companies in 2020 (Shell, BP, Total) is a significant indicator of the growing change in attitude. Energy systems are shifting towards renewable and other forms of zero or low-carbon energy.

A reduced carbon energy system is likely to be characterised by a substantial increase in the electrification of energy-consuming activities. We use BP's Annual Energy Outlook to help illustrate some of these trends. It considers three main scenarios to 2050 (figures 17 & 18). (1) Rapid – carbon emissions from energy use in 2050 fall by ~70% from 2018 levels. (2) Net Zero – emissions in 2050 fall by >95%. (3) Business-as-usual - emissions in 2050 fall by <10%.

India, Other Asia and Africa.

Figure 17: Global nuclear generation (TWh)

Nuclear energy grows throughout BP's outlook. This is because nuclear is a low carbon source of energy generation that ensures electricity grid reliability. Nuclear generation grows robustly in the more progressive scenarios, increasing over 100% by 2050. We believe this has a positive read-through for global uranium demand.

N.B. ~68kt U / 176Mlb U₃O₈ is required to operate 2,700TWh generation (2020f).

The pressure to decarbonise the power sector more quickly in the developed world is partially met by extending the operating lifetimes of nuclear power plants in the US and Europe, many to 60 years or more.



Source: 2020 BP Annual Energy Outlook

Re-investment required to meet demand

Figure 19: World Nuclear Association Supply Shortage Graph (tonnes U)

In our view uranium supply will be unable to meet demand by the mid-2020s. We believe mine reinvestment is required now due to the lag between investment and production. Re-start of idled mine capacity and the development of Planned & Prospective mines requires incentive prices US\$40-80/lb, which is higher than current spot levels US\$30/lb. There are approximately 12-14 potential projects globally for re-start.



Source: World Nuclear Association

Note: Secondary supplies include: (1) Stockpiles held by utilities and governments. (2) Re-enrichment of depleted uranium. (3) Underfeed at enrichment plants.

Figure 18: Change in nuclear generation by region (2018-50) (TWh)

China accounts for a significant portion of global nuclear generation

growth as the country diversifies away from coal. The share of nuclear

power in China's power generation increases from around 4% in 2018 to

more than 15% by 2050. Nuclear power generation also increases in

Key risks

As small mining companies broadly exposed to a single commodity and a single asset we consider an investment in any of the companies covered in this report to be high risk. The key risks include;

- The U₃O₈ market is relatively opaque and difficult to forecast. The actual uranium price may differ substantially from our forecasts.
- Operations for each company in this report have not yet started and there is a risk that each is unable to bring their operation in to production. The project may cost more than expected and may not operate as expected.
- Paladin Energy and Bannerman Resources are operating in Namibia. Although Namibia is an established mining province, the country is considered higher risk than OECD nations. Namibia relies on South Africa for power and is partially reliant on desalinated water.
- Lotus Resources is operating in Malawi. According to the World Bank, Malawi is one of the poorest a third world countries. Political conditions can change unfavourably for a range of reasons. The economy is heavily dependent on agriculture and it is vulnerable to external shocks, particularly climatic shocks. In addition, we note there are potential geotechnical related risks with the company's Kayelekera project. This is due to the high seismic activity in the area and potential impacts of high rainfall, especially during the care and maintenance period where significant water treatment / management is required. We also note the asset is proximate to the North Rukuru River which feeds into Lake Malawi.
- Each company will need to recapitalise to fund the commencement of operations. There is a risk that capital markets are not willing to fund the projects.
- Forecasting future operating costs has considerable uncertainty. Our forecasts may
 prove to be too optimistic. If each company's costs are higher than we expect then our
 cash flow forecasts will be too high.
- Smaller companies carry more significant 'key personnel' risk than larger organisations. If senior management depart the company then it could delay projects or exacerbate operational risks.
- Safe and reliable production from operations once projects are operational. The inability to maintain safe and reliable operations may result in a sustained, unplanned interruption to production and impact the company's licence to operate and financial performance. Production facilities are subject to operating hazards associated with major accident events, cyber-attack, inclement weather and disruption to supply chain, that may result in a loss of uranium (radioactive material) containment, harm to personnel, environmental damage, diminished production, additional costs, and impacts to reputation or brand.

Uranium 101

What is uranium?

Uranium (chemical symbol U) is a heavy metal which is predominantly used as a feedstock for the nuclear power industry. Uranium is relatively abundant in the Earth's crust and occurs at about the same concentration as tin, tungsten and molybdenum. Uranium also occurs in seawater.

Uranium was discovered in 1789 by Martin Klaproth, a German chemist, in the mineral called pitchblende. It was named after the planet Uranus, which had been discovered eight vears earlier.

Uranium occurs in two different isotopes: uranium-238 (U-238) and uranium-235 (U-235). U-238 is the more abundant of the two isotopes accounting for about 99.3% of naturally occurring uranium.

The largest producer of uranium is Kazakhstan, followed by Canada, Australia and Namibia. The largest resources are in Australia which includes the giant Olympic Dam resource operated by BHP.



Source: World Nuclear Association

Nuclear fission and nuclear reactors

U-238 and U-235 both experience slow radioactive decay and uranium is largely responsible for the heat inside the Earth. U-238 decays relatively slowly and is barely radioactive, however U-235 is important because under certain conditions it can be split in a process called fission, and release large amounts of energy as heat.

The nucleus of the U-235 atom comprises 92 protons and 143 neutrons (92 + 143 = 235). A U-235 split in two when it is impacted by an additional neutron. This process can cause a chain reaction because when the U-235 atom splits, it releases additional neutrons which in turn cause nearby U-235 atoms to split.

The chain reaction can be controlled by rods of material which absorb neutrons to moderate the speed at which the chain reaction proceeds. The heat generated can be captured by water, converted to steam, and the steam is used to generate electricity in turbines in the same way as coal fired power stations convert heat to steam to electricity.

U-238 does not split when it absorbs a neutron, instead it is converted into plutonium. U-238 makes up the bulk of the uranium fuel and so in a nuclear reactor a large amount of plutonium-239 or plutonium-240 is created. Pu-239 is 'fissile' and so adds to the nuclear fuel load, however Pu-240 is not fissile and so the longer the nuclear fuel remains in the reactor the percentage of Pu-240 increases and the fuel becomes 'spent'.

Figure 2: Uranium atom



Source: World Nuclear Association

Uranium processing

Uranium ore can either be mined by conventional open-cut or underground mining techniques or the uranium can be extracted via in-situ leaching.

- Open pit: relatively shallow deposits. Economics depend on the ratio of waste to ore, higher grade ores allow higher strip ratios to be economic.
- Underground: deposits too deep for open pit mining. For mining to be viable, these
 deposits must be comparatively high grade.
- In-situ leach: this method is applicable only to sandstone-hosted uranium deposits located below the water table in a confined aquifer. The uranium dissolves in an acid or alkali solution injected into and recovered from the aquifer by means of wells. The geology remains undisturbed.
- By-product: in association with other minerals such as gold (South Africa), phosphates (USA and elsewhere) and copper (Australia).

Post mining, uranium ore is processed using a leaching method and both methods end up with a uranium oxide concentrate (UOC, mostly U_3O_8) known as 'yellowcake'.

To convert UOC to a nuclear fuel the uranium oxide is converted to a gaseous form, uranium hexafluoride (UF₆) so that it can be enriched. The enrichment process concentrates the percentage of U-235 in the fuel from 0.7% to 4-5%.

Post enrichment, the UF_6 is converted to uranium dioxide UO_2 and formed into fuel pellets. The pellets are then formed into fuel rods for use in a nuclear reactor.

Uranium and plutonium have historically been used to build nuclear weapons, although the processing to create weapon grade fuel is different. Weapon-grade uranium is highlyenriched (>90% U-235, instead of up to 5%) and weapon-grade plutonium is produced in specialised reactors to produce highly concentrated Pu-239.



Figure 23: Schematic of the nuclear fuel cycle

Source: World Nuclear Association

Uranium demand

About 10% (2,500 TWh) of the world's electricity is generated from uranium in nuclear reactors. There are currently ~440 nuclear reactors in operation in 30 countries with combined output capacity of about 400 GWe. According to the World Nuclear Association there are currently about 50 new reactors being constructed and over 100 are planned.

The largest producer of nuclear power is the United States (around 30% of global capacity) and nuclear represents about 20% of USA electricity generation. France is the second largest consumer (14% of global demand), and around 70% of French electricity is generated by nuclear power. The percentage of power from nuclear has been relatively stable in most countries except for China, Japan and Germany.

China is an interesting case in that it represents 13% of global demand for uranium and is the third largest consumer of uranium, but only 5% of China's electricity demand is supplied from nuclear power. This provides significant potential future demand as more nuclear reactors are constructed in China.

Germany and Japan represent just 3% and 2% of global demand respectively. Both countries have been reducing their reliance on nuclear post the Fukushima accident in Japan in 2011. In that incident an earthquake and subsequent Tsunami resulted in a melt-down at the Fukushima Daiichi nuclear reactor. Japan closed all of its nuclear capacity in the aftermath and is only now reopening its reactor fleet.

Germany has made a policy decision to move away from nuclear and fossil fuels and has reduced its reliance on nuclear from 28% in 2010 to around 12% today.

In the longer term, key forecasting bodies often predict strong growth in China to offset weak or falling nuclear power generation in the developed world. We note that nuclear generation generally grows more robustly the more progressive the decarbonisation scenario. An increase of over 100% by 2050 is the consensus view (figure 27).



Figure 24: Nuclear power generation by country (2019)

Source: World Nuclear Association





Source: World Nuclear Association

Figure 25: Power generation - % from nuclear (2019)



Source: World Nuclear Association



Figure 27: Global nuclear generation (TWh) – ~68kt U / 176Mlb U_3O_8 is required to operate 2,700TWh generation (2020f).

Source: 2020 BP Annual Energy Outlook

Global supply cuts

Most industry forecasters believe that a long-term sustainable uranium spot price is in the US\$40-50/lb range (cost curve support shown in figure 35). For the past decade (post the Fukushima accident) the uranium price has been languishing below that level and for the past four years has been in the low US\$20/lb range.

Uranium prices at that level are considered unsustainable, and have resulted in substantial supply reductions. Tradetech is estimating around 40Mlb of annualised supply has been removed from the market since 2016 (about 22% of global supply).

The planned supply cuts have now been added to by COVID-19 related disruptions which have seen Cameco shut-in Cigar Lake and Kazatomprom cut back supply from its operations in Kazakhstan.

Figure 28: Cumulative uranium supply cuts (Mlb pa)

Primary Uranium production cut-backs announced since 2016 total ~40Mlb/yr (excluding one-off 2020 COVID disruptions of ~20Mlbs). Kazatomprom has announced plans to maintain a 20% production cut through 2022 which is expected to further tighten future supply dynamics.



Source: Tradetech Nuclear Market Review (via Paladin presentation Oct 2020)

As a result of the supply curtailments, the spot price of uranium has increased 25% in 2020 from ~US\$24/lb to ~US\$30/lb today. Market observers are cautiously watching the market and the consensus view is that uranium prices will continue to strengthen into 2021.

The uranium market is relatively opaque and the spot price of uranium may not be indicative of the price being received by uranium producers. Most (~80%) uranium is sold in long term contracts, which is linked to spot pricing, but will generally have some form of floor or ceiling price formula.

The term contract price will generally trade at about a US\$10/lb premium to the contract price. Tradetech (a leading industry data provider) is currently quoting a term contract price of US\$37/lb, but even that may not be indicative of the true market price. Our understanding is that the Tradetech price is the lowest price that has been offered into the term market, regardless of tenor or volume.

Figure 29: Uranium price – showing signs of life in 2020. Term contract trades at a premium to spot.

The uranium market can be volatile, and when demand outstrips supply the price is capable of spiking well above sustainable levels. In 2007, the price spiked to US\$140/lb, but this was relatively short lived as the GFC hit global economic output and demand. The GFC was quickly followed by the Fukushima accident and the uranium price has spent the past decade declining down into the low US\$20s/lb.



Source: Tradetech Nuclear Market Review (via Paladin presentation Nov 2020)

US Nuclear Fuel Working Group

The uranium market did show some improvement in 2018 following Cameco's decision to place McArthur River into care and maintenance. This was further supported when the US Government announced an investigation would be undertaken into uranium imports – a response to the concerns raised in a Section 232 petition launched by two US producers.

The US government is concerned that it only produces less than 1% of its own uranium demand and is reliant on imports from countries such as Kazakhstan, Russia and China. There was initial talk of potential trade quotas with Canada and Australia receiving friendly trade exemptions.

The investigation resulted in the formation of the Nuclear Fuel Working Group (NFWG) in July 2019 to assess the entirety of the US nuclear industry. Since the formation of the NFWG, there has been steady progress supportive of domestic investment in the sector.

- In Feb-2020 President Trump announced a US\$150mpa buying program for a strategic uranium stockpile, ~2Mlb/yr for 10 years (endorsed by the Senate Committee on Appropriations in November).
- The NFWG report was released in April 2020 with bipartisan support and stated that "it is in the nation's national security interests to preserve the assets and investments of the entire U.S. nuclear enterprise and to revitalize the sector to regain U.S. global nuclear leadership". The report focussed on increasing domestic uranium production, nuclear energy generation, technological innovation and ensuring US dominance in the sector.
- As recommended by the NFWG, a new Russian Suspension Agreement was signed during the Sep20q. This has effectively removed a significant impediment to US utility contracting and provides greater certainty for the market generally. It's likely the 20year extension on the limits of Russian uranium imports will not only encourage mine and enrichment investment in the US, but also force US utilities to adjust and reduce their dependence on cheap Russian supply.

Utility buying will be a key development - the clarity and bandwidth is there

For operations to restart and projects to be sanctioned again, we will need to see utility buyers returning to the term contract market. We estimate that Paladin with its Langer-Heinrich project will need to see term contracts of at least five-year duration at prices of US\$50/lb or above (i.e. spot at ~US\$43/lb, which is a US\$7/lb discount). Other projects for companies in this report will need to see slightly higher prices before being sanctioned.

In our view it is likely that utility buyers are getting ready to re-enter the market. Pre COVID-19 they may have considered that they still had 1-2 years before long term commitments need to be settled, but with recent supply curtailments, there may be less time than they expected. The level of uranium inventories is opaque, but industry forecasters believe supply lagged reactor consumption by around 20Mlb per annum in 2018/19, and 40Mlb in 2020. The stockpiles are not inexhaustible.

Figure 30: Future Contracted Coverage Rates of US & European Utilities (% of total requirements)

The US contract coverage reaching critical lows with minimal change in contract coverage since 2018. The extension of Russian Suspension Agreement provides regulatory certainty to future uranium supply requirements for US utilities.



Figure 31: Historic Term Contract Pricing Activity (Mlb)

Tightening of the spot market due to inventory drawdowns is expected to increase term contract activity in 2021 with an increased number of market "RFPs" (Request for Proposals) a precursor to improving term prices. There has been lack of term market activity since 2012 given global demand is ~175mlbs/yr.



Source: World Nuclear Association, PDN company reports

Shaw and Partners

Source: US EIA, EurAtom, LOT company reports

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Shaw and Partners U₃O₈ price forecast

At this stage, we are assuming that the spot market consolidates at current levels for a few months, but continues to increase in 2021. We are assuming an average 2021 spot price of US\$44/lb, which should be high enough for producers such as Paladin and Boss to lock in term contracts around the US\$50/lb range they require.

In our modelling of each company's realised pricing, we assume that term contracts are at a US\$10/Ib premium to spot prices and sales are split 75% term and 25% spot.

Given the history of the uranium market, it is possible that we are underestimating how quickly and how far the spot price spikes.

Longer-term, we assume a U_3O_8 price of US\$46/lb (2020 Real). This is consistent with most industry forecasters' view on cost curve support (figure 35).



Figure 33: Spot U₃O₈ price (real 2020 US\$/lb)



Source: World Nuclear Association, Factset, Shaw forecasts

Figure 34: U₃O₈ price assumptions

Uranium Price forecast	2019	2020	2021f	2022f	2023f	2024f	2025f	Longterm
Spot U3O8 price (US\$/Ib)	26	27	40	48	50	51	51	46
Achieved price (US\$/lb)	29	35	47	55	58	58	58	52
AUD/USD	0.71	0.67	0.70	0.73	0.74	0.75	0.75	0.75

Source: Factset, Shaw forecasts

Figure 35: 2019 Cost of production estimate (US\$/lbs U_3O_8) vs production capacity (Mlbs)

Most industry forecasters expect global demand to increase to ~200Mlb/yr by the mid-late 2020s, driven by nuclear facilities coming online in China (current levels ~176Mlb/yr).



Source: UxC, Lotus Resources company reports

Paladin – our top pick

- In our view Paladin Energy is the stand-out in the sector on a risk-reward basis. We initiated on the company in June 2020 and maintain our Buy recommendation and A\$0.26ps target price.
- Paladin is preparing for a restart of the Langer Heinrich (PDN 75%) uranium mine in Namibia. Paladin has all of the necessary permits and licences to restart. The restart is estimated to cost US\$81m; we assume a restart in FY23.
- Langer Heinrich is expected to operate at an all-in sustaining cost of about US\$32/lb, which places the operation at the low end of the second quartile of uranium producers. The combination of low capital intensity to restart with low operating costs means that Langer Heinrich should be one of the first restarts when market conditions allow.
- On our forecasts the project has a 1-year payback, an IRR of 114% and an NPV @10% of US\$651m (100%). Our forecasts assume a continued recovery in the spot uranium price to US\$50/lb by 2023, with a US\$10/lb premium in the term contract market.
- Paladin has a strong financial position with approximately US\$32.4m (end Sep20q, -US\$1.9m qoq) in cash reserves and a FY21 cash spend forecast of US\$9.5m (-44% vs FY20). We assume that the company will raise US\$50m of equity and US\$80m of additional debt (project finance) in FY21/22 to fund the restart and restructure the existing debt facility.
- PDN has US\$115m of high yield notes (US\$149m debt including accrued interest end Sep20q). The notes issued were 9%/10% payment in kind (PIK) senior secured notes repayable in January 2023. The notes are not convertible and trade on the Singapore Stock Exchange.

Paladin Valuation - diluted US\$m A\$m AŚps Langer Heinrich (75%) 488 707 0.30 Net debt -72 -104 -0.04 Exploration upside 20 29 0.01 Corporate costs -15 -0.01 -22 **Total Valuation** 421 610 0.26

Source: Company reports, Shaw and Partners analysis

Figure 38: Production profile (Mlbs)

Figure 36: PDN valuation (fully diluted)



Source: Company reports, Shaw and Partners analysis



Figure 37: PDN valuation sensitivity (A\$ps)

Source: Company reports, Shaw and Partners analysis

Figure 39: Cash flow break-evens (US\$/lb)

Restart of the company's Langer-Heinrich open pit mine in Namibia should be technically straightforward. Break-evens reduce marginally in ~2030, 7 years into operations, once inventory drawdowns commence.



Source: Company reports, Shaw and Partners analysis

Shawand Partners an EFG company



Figure 40: Capex (US\$m) – restart capex in 2021/22

Source: Company data & Shaw and Partners analysis



Figure 42: Pricing, costs and margin (US\$/lb)

Source: Company data & Shaw and Partners analysis

Figure 44: Net debt and gearing (US\$m, %)

In our base case modelling we assume that the company will raise US\$50m of equity and US\$80m of additional debt (project finance) in FY21/22 to fund the restart. We assume some portion of the company's senior notes will be rolled over on similar terms. This will leave Paladin with gearing (ND / ND+E) of 74% at the end of FY22.



Source: Company data & Shaw and Partners analysis

Figure 41: Free cash flow (US\$m) – strongly positive from 2022



Source: Company data & Shaw and Partners analysis

Figure 43: Returns (%)



Source: Company data & Shaw and Partners analysis

Figure 45: Dividends and yield (A\$cps, %) -

No dividend policy has been made, but we assume a payout increasing to 50% from FY24.





Langer Heinrich overview

Paladin Energy (PDN) is preparing to restart operations at the Langer Heinrich uranium mine in Namibia. Once operational, Langer Heinrich will produce approximately 5Mlb of U_3O_8 over a 17 year operating life. Production will peak at ~5.9Mlb in years 2-9.

The Langer Heinrich Mine is located in the Namib Desert in Namibia, 80km east of the major seaport of Walvis Bay and about 40km south-east of the world's longest running open pit uranium mine, Rössing uranium mine operated by Rio Tinto.

Paladin acquired Langer Heinrich Uranium (Pty) Ltd and its assets from Aztec Resources Ltd (formerly Acclaim Uranium NL) in August 2002. The purchase consideration was A\$15,000 and a production royalty of 12 Australian cents per kilogram of yellowcake produced and sold.

CNNC Overseas Uranium Holding Limited, a wholly-owned subsidiary of China National Nuclear Corporation (CNNC), took a 25% stake in Langer Heinrich in 2014 for US\$190m.

Paladin placed LHM into care and maintenance in May 2018, however Paladin is now preparing for a rapid restart once there is significant improvement in uranium market conditions.



Figure 26: Langer Heinrich location

Source: Paladin presentation Mar 2020

Langer Heinrich History

1973 The deposit was discovered in 1973 after a government-sponsored airborne radiometric survey of the area.

1980 Between 1974 and 1980, General Mining Union Corporation Limited (Gencor) undertook extensive evaluation work at the site and suspended work on the project in the mid-1980s, following a fall in the prevailing uranium price.

1998 Acclaim Uranium NL acquired the project from Gencor and completed a prefeasibility study. The project was again put on hold due to prevailing uranium prices.

2002 In August 2002, the Company acquired Langer Heinrich Uranium (Pty) Ltd and its assets from Aztec Resources Ltd (formally Acclaim Uranium NL). The purchase consideration was A\$15,000 and a production royalty of A\$0.12c per kilogram of uranium sold.

LHM commenced production in 2007 with a capacity of 2.7Mlbpa.

2008 Construction of the Stage 2 expansion to 3.7Mlbpa commenced

2009 LHM reached the State 2 design capacity in December 2009.

2012 Construction of the Stage 3 expansion to 5.2Mlbpa commenced at the beginning of 2010 and was competed on 31 March 2012.

2014 On 23 July 2014 the sale process for a 25% interest in LHM to CNNC was completed.

2015 Process innovation focused on the Bicarbonate Recovery Plant (BRP) which was commissioned in early March 2015 and resulted in significant reagent cost reductions.

2016 Following the continued decline in uranium prices, LHM introduced a mining curtailment strategy in November 2016.

2018 In May 2018 the Company placed LHM into care and maintenance (C&M) due to the sustained low uranium spot price and successfully transitioned the mine to full C&M in August 2018.

2019 In February 2019 the Company commenced a Prefeasibility Study to further refine and verify the LHM to restart plan. The study was released in October 2019.

2020 In June 2020 the Company released an updated restart plan to bring LHM back into operation at a cost of US\$81m once uranium market conditions allow.

Figure 27: Langer Heinrich mine and processing plant



Source: Paladin presentation Mar 2020



Langer Heinrich Restart Plan

Paladin Energy is preparing Langer Heinrich for a restart when the uranium market is ready.

This will be a very low capital intensity restart. To build Langer Heinrich today would cost over US\$600m and probably take at least five years. The company has released an update and optimisation of the Oct-2019 pre-feasibility study, the central element of which is a US\$81m capital program to restart the operation and improve the plant availability to 95%.

Paladin is estimating a cost of US\$34m to restart the operation and a further US\$47m to improve the plant availability.

Prior to being placed on care and maintenance in May 2018 Langer Heinrich was producing around 5Mlbpa of U_3O_8 at a C1 cost of production of ~US\$28-30/lb.

One of the key issues with the operation historically was the poor plant availability which averaged around 85%. The main reason for the poor availability was the lack of surge tank capacity to act as a buffer between the crushing circuit and the leaching operation. This will be addressed through the installation of a surge tank.

Figure 29 Langer Heinrich historical performance

		FY2013	FY2014	FY2015	FY2016	FY2017	FY2018
Mining Rate (in-situ)	Mt	27.8	21.6	20.2	24.6	7.6	0
Mill Throughout	Mt	3.44	3.72	3.40	3.57	3.52	2.95
Mill Feed Grade	ppm	812	783	767	700	610	475
Recovery	%	85.9%	87.1%	87.7%	86.3%	87.7%	88.5%
U ₃ O ₈ Production	mlbs	5.3	5.6	5.0	4.8	4.2	2.7
C1 Cost of Production	US\$/lb	30.0	27.7	29.0	25.9	18.9	26.2

Figure 28: Restart capex estimate

Operational Readiness	US\$34M
Maintenance	13
Working capital replenishment	14
Work force and mobilisation	7
Improving plant availability and process stability	115¢47M
	0394714
Product drying and packaging	14
Product drying and packaging Leach surge capacity and water storage	14 7
Product drying and packaging Leach surge capacity and water storage Process control and stability	14 7 6
Product drying and packaging Leach surge capacity and water storage Process control and stability Infrastructure asset integrity	14 7 6 16

Source: Paladin presentation June 2020

Source: Paladin presentation June 2020

There will also be a number of other upgrades to the processing plant including a process control upgrade, additional water storage, instrumentation upgrades and an upgrade to the product drying and packaging plant.

Figure 30: Langer Heinrich processing plant – upgrading availability



Replace & improve product drying and packaging plant

Thickener and pumping upgrade to maximise density

Surge Tank decouples ore crushing from leaching

Second Hydrosorter improves metal selectivity for leaching

Source: Paladin presentation June 2020

Paladin is envisaging the operation running in three distinct phases;

- **Ramp-up Phase**: Using medium grade stockpiled ore to provide early cash flow and de-risk the ramp-up phase by decoupling the commencement of mining from the start-up of the plant.
- Mining Phase: A seven-year mining operation where the plant will be fed with mined ore at an average grade of 593ppm and ore will be stockpiled for processing during the stockpile phase. There will be the opportunity to run higher grade material through the plant if market conditions warrant. The mined ore grade will vary between 350-900 ppm and so Paladin could take advantage of periods of high prices by processing high grade ore rather than stockpiling it.
- Stockpile Phase: Once mining operations cease there will be a large stockpile of ore, enough to feed the plant for 9 years at an average grade of 336ppm.

Figure 31: Key operational metrics

	Ramp Up Phase (Year 1)	Mining Phase (Years 2-8)	Stockpile Phase (Years 9-17)
Mining Rate (TMM Mt pa)	0	28.8	0
Mill Throughput (Mt pa)	3.3 (from stockpile)	5.1	5.3 (from stockpile)
Mill Availability (%)	71	95	95
Mill Feed Grade (ppm)	520	593	336
Process Recovery (%)	88.5	88.4	88.5
Production (Mlb pa U ₃ 0 ₈)	3.3	5.9	3.5
Mining & Stockpile Rehandling Cost (\$M pa) ^{1,3}	11	72	16
Processing & Maintenance Cost (\$M pa)	57	81	67
G&A & Other (\$M pa)	9	9	9
Capex (\$M pa) ²	1.5	14.5	13.1

 Excludes stockpile inventory adjustments.
 Sustaining, minor improvement, progressive rehab and tailings mgt capex. Excludes preproduction capex and post-production closure costs.
 No in-situ mining occurs in Ramp Up and Stockpile phases. Stockpile re-handling only.
 Figures quoted in table reflect yearly average over the operational phases.

Source: Paladin presentation June 2020

Figure 32: Mill throughput (Mt), U₃O₈ production (Mlbs) and grade (ppm)



Source: Paladin presentation June 2020

Operating costs

Paladin is expecting an all-in sustaining cost of around US\$32.5/lb at a U_3O_8 price of US\$50/lb with production cash costs of US\$27/lb, freight at US\$1/lb, sustaining capex of US\$3/lb and a royalty of US\$1.5/lb (3% of revenue).

In the mining phase, ore will be stockpiled for processing in later years and so there will be a non-cash inventory adjustment to the P&L. Cash costs will be similar in the mining and processing phase, but the costs reported in the P&L will be significantly lower during the mining phase.

Figure 33: Langer Heinrich cost profile

US\$/lb U ₃ O ₈	Ramp Up Phase	Mining Phase	Stockpile Phase	Life of Mine (all 3 Phases)
Mining & Stockpile Rehandling ¹	3.3	12.2	4.6	8.7
Processing & Maintenance	16.9	13.7	19.3	16.2
G&A and Other	2.8	1.5	2.6	2.0
Production Cash Cost	23.0	27.4	26.5	26.9
Non-Cash Inventory Adjustments ⁴	5 - ((7.9)	10.5	
C1 Cost of Production	23.0	19.5	37.0	26.9
Freight & Logistics	0.95	0.95	0.95	0.95
Capex ³	0.45	2.4	3.7	2.9
Government Royalties ²	3%	3%	3%	3%

Figure 34 Production cash costs



Source: Paladin presentation June 2020

Source: Paladin presentation June 2020

Resources

The current resource stands at 97Mt which includes 30.8Mt of previously mined ore on stockpiles. These stockpiles have been fully written off.

		Measure	d		Indicate	d		Inferre	d		Total			
Uranium Mineral Resources 250ppm U ₃ O ₈ cutoff	Mt	Grade ppm U ₃ O ₈	Mib U ₃ O ₈ (100% basis)	Mt	Grade ppm U ₃ O ₈	Mib U ₃ O ₈ (100% basis)	Mt	Grade ppm U ₃ O ₈	Mib U ₃ O ₈ (100% basis)	Mt	Grade ppm U ₃ O ₈	Mib U ₃ O ₈ (100% basis)	Paladin Ownership (%)	
Langer Heir	nrich									_	-			
In-situ	66.2	490	71.9	18.8	435	18	6.3	420	5.8	91.3	475	95.7	75	
MG ¹ ROM Stockpiles	4.7	520	5.4	2	0	2	12	12	2	4.7	520	5.4	75	
LG ² ROM Stockpiles	26.1	325	18.7	<u>ت</u>	्र	2		5	5	26.1	325	18.7	75	
Total	97	445	95.9	18.8	435	18	6.3	420	5.8	122.1	445	119.7	75	

Figure 36: Langer Heinrich uranium resources

Source: Paladin presentation June 2020

Langer Heinrich financial modelling assumptions and risks

We have built a financial model of Langer Heinrich based on the parameters in the restart plan. On our forecasts the project has a 1-year payback, an IRR of 114% and an NPV @10% of US\$651m (100% basis).

The key assumptions in our model include;

- Capital costs of US\$81m to restart the operation this is a very low capital intensity. To build Langer Heinrich today would cost over US\$600m and probably take at least five years.
- First production in 2023 assuming contracts signed in early 2021 followed by a twelvemonth period to restart the operation.
- Plant throughput of 5.1Mtpa and grade profile as per the Paladin restart study.
- C1 and AISC costs as per the Paladin restart study.
- We assume that 25% of Paladin's U₃O₈ sales are on a spot pricing basis and 75% are on term contracts at a US\$10/lb premium to the spot price.
- Carry forward Namibian tax losses of US\$364m.

On our base case forecasts, we model Langer Heinrich generating around ~US\$210mpa of EBITDA when at full production (Paladin share US\$160m). Cash flow is lower than EBITDA during the mining phase due to the building of stockpiles for processing in later years.

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Langer Heinrich (US\$m)	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
Ore processed (kt)			0	3,300	5,100	5,100	5,100	5,100	5,100	5,100	5,100	5,300	5,300
Grade of mill feed (ppm)			0	520	593	593	593	593	593	593	593	440	336
U3O8 (Mlb) - sold			0.0	3.3	5.9	5.9	5.9	5.9	5.9	5.9	5.9	4.5	3.5
Revenue			0	193	345	345	352	359	366	373	381	299	233
Expenses			0	71	133	137	140	144	148	152	156	210	163
EBITDA			0	122	212	208	211	215	218	221	225	90	71
D&A			14	15	26	26	26	26	26	26	26	20	15
EBIT			-14	107	186	182	185	189	192	195	199	70	55
Net Operating Assets	224	235	279	277	264	251	238	224	211	198	185	175	170
Capex	0	25	58	13	13	13	13	13	13	13	13	10	10
EBITDA Margin (%)	0%	0%	0%	63%	61%	60%	60%	60%	60%	59%	59%	30%	30%
EBIT / Assets (%)	0%	0%	-5%	39%	70%	73%	78%	84%	91%	98%	107%	40%	32%
Spot U3O8 (US\$/lb)	27	40	48	50	51	51	52	53	55	56	57	58	60
AUD/USD	0.67	0.70	0.73	0.74	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Revenue (US\$/lb)				58	58	58	60	61	62	63	65	66	67
Expenses (US\$/Ib)				21	23	23	24	24	25	26	26	46	47
EBITDA (US\$/Ib)				36	36	35	36	36	37	37	38	20	20
D&A (US\$/lb)				4	4	4	4	4	4	4	4	4	4
EBIT (US\$/lb)				32	31	31	31	32	33	33	34	15	16
Nominal Tax @ 37.5%	0	0	0	0	0	0	0	-71	-72	-73	-74	-26	-21
Non-cash inventory movement	0	0	0	0	-47	-47	-47	-47	-47	-47	-47	48	36
Cash Flow	0	-25	-58	109	152	149	152	84	86	88	90	101	76

Figure 36: Langer Heinrich financials (US\$m, 100%) – Shaw forecasts

Source: Shaw and Partners analysis



Financing - balance sheet and cash flow

Currently US\$149m debt and US\$32m cash

In January 2018 Paladin was recapitalised through a deed of company arrangement (DOCA). The DOCA had two key elements;

- 1. A debt for equity swap in which 98% of Paladin's issued shares were allocated to creditors, and
- 2. The issue of US\$115m in high-yield secured notes.

The notes issued were 9%/10% payment in kind (PIK) senior secured notes repayable on 25 January 2023. The notes are not convertible and trade on the Singapore Stock Exchange.

The interest on the notes accrues at a rate of 10%pa and is deferred at each payment date. The current accumulated position (at 30 September) totals US\$149m, and will reach US\$187m by the repayment date in January 2023.

At the end of the Sep20q, the company had US\$32m cash.

Requirement to raise US\$50m equity in FY21/22

In addition to the existing notes, Paladin will require US\$81m to restart operations and so will need to raise a total of US\$268m to recapitalise the company.

In our base case modelling we assume that the company will raise US\$50m of equity and US\$80m of additional debt (project finance) in FY21/22 to fund the restart. We assume some portion of the company's senior notes will be rolled over on similar terms.

Gearing to peak at 74% in F22

This will leave Paladin with gearing (ND / ND+E) of 74% at the end of FY22. Although this appears high for a single commodity, single asset company, it does not concern us for three important reasons;

- Gearing appears high because the current book value of the assets (US\$66m) is very low compared to the true replacement value (~US\$600m) and our net present value of US\$651m (100% basis),
- Debt servicing ratios will be very strong once in production EBITDA/gross interest is ~9x in FY23, Gross debt / EBITDA is only 2x in FY23, and
- 3. Debt will reduce very quickly as operational cash flow commences. Our base case forecast has Paladin net cash in 2025 and paying dividends in 2024.

Figure 46: Paladin balance sheet (US\$m)

BALANCE SHEET (US\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Cash and cash equivalents	25	34	78	61	131	193	224	259	301	347	363	382
Trade and other receivables	1	1	1	1	16	28	28	29	29	30	31	31
Other	18	7	7	7	7	7	7	7	7	7	7	7
Total current assets	45	43	86	69	154	229	260	296	337	385	401	420
Property, plant and equipment	207	191	199	237	234	220	205	191	177	162	148	134
Exploration and evaluation expendi	91	93	95	97	99	101	103	105	107	109	111	113
Other	33	37	40	46	47	95	143	191	239	287	334	382
Total non-current assets	330	322	335	380	380	416	451	487	523	558	594	629
TOTAL ASSETS	375	364	421	449	534	645	711	783	860	943	995	1,050
Trade and other payables	2	2	2	2	10	18	19	19	20	20	21	21
Other	43	1	1	1	1	1	1	1	1	1	1	1
Total current liabilities	46	2	2	2	10	19	19	20	20	21	22	22
Deferred tax	0	0	0	0	0	0	0	0	0	55	57	58
Borrowings	118	134	178	246	238	208	178	148	118	88	58	28
Other	134	135	135	135	135	135	135	135	135	135	135	135
Total non-current liabilities	252	269	313	380	373	343	313	283	253	278	249	221
TOTAL LIABILITIES	298	271	315	383	383	362	332	303	273	299	271	243
NET ASSETS	77	93	106	67	151	283	379	480	587	644	724	807
Net debt	93	100	100	185	107	15	-46	-112	-183	-259	-305	-354
Gearing (ND/ND+E %)	55%	52%	48%	74%	41%	5%	0%	0%	0%	0%	0%	0%

Figure 47: Paladin cash flow (US\$m)

CASH FLOW (US\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Operating activities												
Receipts from customers	22	0	0	0	191	345	345	352	359	366	373	381
Payments to suppliers and employe	-36	-14	-10	-10	-82	-144	-148	-152	-156	-160	-164	-168
Income taxes paid	0	0	0	0	0	0	0	0	0	0	-55	-57
Working capital movement	0	0	0	0	-6	-51	-46	-47	-47	-47	-47	-47
Other	1	2	1	2	2	-8	-5	-2	0	3	6	8
Net cash flow from operating activities	-13	-11	-9	-8	105	142	147	151	157	163	114	117
Investing activities												
Payments for PPE	0	0	-25	-58	-13	-13	-13	-13	-13	-13	-13	-13
Other	-1	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
Net cash flow from investing activities	-1	0	-27	-60	-15	-15	-15	-15	-15	-15	-15	-15
Free cash flow	-13	-12	-34	-65	92	129	134	138	144	150	101	104
Financing activities												
Net proceeds from issue of shares	0	21	50	0	0	0	0	0	0	0	0	0
Proceeds from borrowings	0	0	30	50	0	0	0	0	0	0	0	0
Repayments of borrowings	0	0	0	0	-20	-30	-30	-30	-30	-30	-30	-30
Dividends paid	0	0	0	0	0	-35	-71	-71	-71	-71	-53	-53
Other	0	-1	0	0	0	0	0	0	0	0	0	0
Net cash flow from financing activities	0	20	80	50	-20	-65	-101	-101	-101	-101	-83	-83
Net increase/(decrease) in cash	-14	8	44	-17	70	62	31	36	41	47	16	19
Source: Company reports Shaw analysi	c .											

Paladin financial summary

FY19	FY20f	FY21f	FY22f	FY23f	
21.5	0.0	0.0	0.0	191.5	
-25.9	-0.1	-10.0	-10.2	-81.6	
-4.4	-0.1	-10.0	-10.2	109.9	
-22.3	-21.1	-14.0	-14.0	-14.8	
-26.6	-21.2	-24.0	-24.2	95.1	
-22.5	-24.9	-12.8	-15.4	-10.5	
-49.1	-46.1	-36.8	-39.7	84.7	
0.0	0.0	0.0	0.0	0.0	
-49.1	-46.1	-36.8	-39.7	84.7	
0.0	0.0	0.0	0.0	0.0	
-49.1	-46.1	-36.8	-39.7	84.7	
-12.6	-12.6	-9.2	-9.9	21.2	
-36.5	-33.5	-27.6	-29.8	63.5	
	FY19 21.5 -25.9 -4.4 -22.3 -26.6 -22.5 -49.1 0.0 -49.1 0.0 -49.1 -12.6 -36.5	FY19 FY20f 21.5 0.0 -25.9 -0.1 -4.4 -0.1 -22.3 -21.1 -26.6 -21.2 -22.5 -24.9 -49.1 -46.1 0.0 0.0 -49.1 -46.1 0.0 0.0 -49.1 -46.1 0.0 3.0 -49.1 -46.1 0.0 0.0	FY19 FY20f FY21f 21.5 0.0 0.0 -25.9 -0.1 -10.0 -4.4 -0.1 -10.0 -22.3 -21.1 -14.0 -26.6 -21.2 -24.0 -22.5 -24.9 -12.8 -49.1 -46.1 -36.8 0.0 0.0 0.0 -49.1 -46.1 -36.8 0.0 0.0 0.0 -49.1 -46.1 -36.8 0.0 0.0 0.0 -49.1 -46.1 -36.8 0.0 0.0 0.0 -49.1 -46.1 -36.8 0.0 0.0 0.0 -49.1 -46.1 -36.8 0.12.6 -12.6 -9.2 -36.5 -33.5 -27.6	FY19 FY20f FY21f FY22f 21.5 0.0 0.0 0.0 -25.9 -0.1 -10.0 -10.2 -4.4 -0.1 -10.0 -10.2 -22.3 -21.1 -14.0 -14.0 -26.6 -21.2 -24.0 -24.2 -22.5 -24.9 -12.8 -15.4 -49.1 -46.1 -36.8 -39.7 0.0 0.0 0.0 0.0 -49.1 -46.1 -36.8 -39.7 0.0 0.0 0.0 0.0 -49.1 -46.1 -36.8 -39.7 0.0 0.0 0.0 0.0 -49.1 -46.1 -36.8 -39.7 0.0 0.0 0.0 0.0 -49.1 -46.1 -36.8 -39.7 -12.6 -12.6 -9.2 -9.9 -36.5 -33.5 -27.6 -29.8	FY19FY20fFY21fFY22fFY23f21.50.00.00.0191.5-25.9-0.1-10.0-10.2-81.6-4.4-0.1-10.0-10.2109.9-22.3-21.1-14.0-14.0-14.8-26.6-21.2-24.0-24.295.1-22.5-24.9-12.8-15.4-10.5-49.1-46.1-36.8-39.784.70.00.00.00.00.0-49.1-46.1-36.8-39.784.70.00.00.00.00.0-49.1-46.1-36.8-39.784.70.00.00.00.00.0-49.1-46.1-36.8-39.784.70.00.00.00.00.0-49.1-46.1-36.8-39.784.70.12.6-12.6-9.2-9.921.2-36.5-33.5-27.6-29.863.5

Balance Sheet	FY19	FY20f	FY21f	FY22f	FY23f
Cash	25.4	34.2	77.9	60.5	130.9
Net Receivables	1.0	1.1	1.1	1.1	15.7
Other	18.4	7.4	7.4	7.4	7.4
Current Assets	44.8	42.7	86.4	69.0	153.9
Property, Plant & Equipment	206.6	190.9	199.4	237.1	234.0
Other	123.3	130.8	135.3	143.1	146.4
Non Current Assets	329.9	321.7	334.7	380.2	380.4
Total Assets	374.7	364.4	421.1	449.2	534.3
Trade Creditors	2.4	1.5	1.5	1.5	9.7
Borrow ings	0.0	0.0	0.0	0.0	0.0
Other	43.2	0.7	0.7	0.7	0.7
Current Liabilities	45.6	2.3	2.3	2.3	10.5
Borrow ings	118.1	134.4	177.8	245.6	237.9
Other	134.3	134.7	134.7	134.7	134.7
Non Current Liabilities	252.5	269.1	312.6	380.3	372.6
Net Assets	76.6	93.0	106.2	66.6	151.2
Shareholder Capital	2,306.9	2,327.8	2,377.8	2,377.8	2,377.8
Retained earnings	-2,025.6	-2,104.1	-2,140.9	-2,180.6	-2,095.9
Minorities/others	-204.6	-130.7	-130.7	-130.7	-130.7
Total Equity	76.6	93.0	106.2	66.6	151.2

Cash Flow	FY19	FY20f	FY21f	FY22f	FY23f
Receipts	22.5	0.0	0.0	0.0	191.5
Payments	-36.0	-13.6	-10.0	-10.2	-81.6
Other Operating Cash Flow	0.7	2.2	0.7	2.3	-4.6
Operating Cash Flow	-12.8	-11.5	-9.3	-7.9	105.3
Capex	-0.1	-0.3	-25.0	-57.5	-13.0
Other Investing Cash Flow	-0.9	0.0	-2.0	-2.0	-2.0
Investing Cash Flow	-1.0	-0.3	-27.0	-59.5	-15.0
Net Equity raised	0.0	20.9	50.0	0.0	0.0
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Net Borrow ings	0.0	0.0	30.0	50.0	-20.0
Financing Cash flow	0.0	19.7	80.0	50.0	-20.0
Total Cash Change	-13.8	7.9	43.7	-17.4	70.3

Source: Company reports, Shaw and Partners analysis

Company Information	
Financial Year End Date	30-Jun
Share Price	0.16
Market Capitalisation	272
Valuation	0.26
Recommendation	Buy

Per Share Data (c)	FY19	FY20f	FY21f	FY22f	FY23f
Shares (m)	1,752	2,028	2,361	2,361	2,361
Normalised EPS	-2.1	-1.8	-1.3	-1.3	2.7
Dividends	0.0	0.0	0.0	0.0	1.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	6.5%
Book Value	0.04	0.05	0.04	0.03	0.06
P/E(x)	-5.2	-5.9	-8.8	-8.9	4.3
EV/EBITDA (x)	-65.2	-4452.0	-28.5	-27.9	2.6

Valuation (fully diluted)	US\$m	A\$m	A\$ps
Langer Heinrich (75%)	488	707	0.30
Net debt	-72	-104	-0.04
Exploration upside	20	29	0.01
Corporate costs	-15	-22	-0.01
Total Valuation	421	610	0.26

Assumptions	FY19	FY20f	FY21f	FY22f	FY23f
Prices					
A\$/US\$	0.71	0.67	0.71	0.73	0.74
U ₃ O ₈ (US\$/lb)	26	28	35	44	50

Operating Metrics	FY19	FY20f	FY21f	FY22f	FY23f
Ore processed (ktpa)	0	0	0	0	3300
Average grade (ppm)	0	0	0	0	520
U ₃ O ₈ sold (Mlb)	0.7	0.0	0.0	0.0	3.3
C1 cost (US\$/lb)	23	0	0	0	19
Average price (US\$/lb)	29	n/a	n/a	n/a	57
Average cost (US\$/lb)	23	n/a	n/a	n/a	21
Average margin (US\$/lb)	6	n/a	n/a	n/a	36

Financial metrics (%)	FY19	FY20f	FY21f	FY22f	FY23f
EBITDA margin	0.0%	0.0%	0.0%	0.0%	57.4%
EBIT margin	0.0%	0.0%	0.0%	0.0%	49.7%
ROIC	0.0%	0.0%	0.0%	0.0%	25.8%
Return on Assets	-11.0%	-25.0%	-9.4%	-9.1%	17.2%
Return on Equity	-46.9%	-109%	-36.9%	-45.9%	77.7%
Balance sheet metrics	FY19	FY20f	FY21f	FY22f	FY23f
Net Debt (m)	93	100	100	185	107
ND/ND+E	n/a	51.9%	48.5%	73.5%	41.4%

Boss Energy – restarting operations at Honeymoon

- Boss Energy's 100% owned fully permitted Honeymoon project in South Australia requires low upfront capital and only 12 months to restart. In our view BOE has the potential to be one of the lowest cost uranium producers in the Western World. We have a Buy recommendation and A\$0.11 target price.
- Boss is the only company under our coverage suite with its key asset in Australia. Australia has jurisdiction advantages; it is a stable and neutral location with established supply routes to all major western conversion facilities. We believe this is important given uranium is such a geopolitically sensitive commodity.
- The company has released a Feasibility study which details a Honeymoon project NPV8 (pre-tax) of US\$163m and 43% IRR (pre-tax) at an average U₃O₈ price of US\$50/lb. Other components include a life of mine (LOM) of 12 years, upfront capital expenditure of US\$24m for 0.9Mlb/a (+US\$40m for ramp-up to 2Mlb/a), estimated average all-in cost (AIC) of US\$32/lb U308 over LOM, and an all-in sustaining cost (AISC) of US\$27/lb U₃O₈ over LOM. The company believes production will be fast-tracked, within 12-months from Final Investment Decision. There may be further improvements in project economics in an Enhanced Feasibility Study, due for release 1HCY21.
- Our post-tax NPV of US\$146m and IRR of 37% are slightly lower than the DFS, mainly due to a higher WACC assumption of 10% and post-tax modelling basis. This is slightly offset by a longer mine life of 17 years to produce 30Mlbs of resource (vs 22Mlbs over 12 years in the DFS). We believe Boss requires A\$125m to restart operations and move through to 2Mlb/yr of U₃O₈ production, so will need to raise a total of A\$50m equity to recapitalise the company.
- There is exploration upside to the company's resource base of 72Mlbs U₃O₈ (average grade 620ppm and a cutoff 250ppm). BOE has identified three key exploration targets for 58-190Mlbs of U₃O₈ across an 80km mineralised strike.
- The balance sheet is in good shape the company carries no debt and ~A\$18m cash (post the Sept 20 placement, excludes ~A\$9m restricted as an environmental bond).
- The company has built out a new board of directors as the industry has consolidated, with a focus on technical, operational and project execution experience. Key appointments over the past 12 months include Peter O'Connor (Chairman), Bryn Jones (Technical Director), Wyatt Buck and Dudley Kingsnorth (Non-Executive Directors).



Figure 49: BOE valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 50: Production profile (Mlbs)

Figure 48: BOE valuation (fully diluted)



Figure 51: Cash flow break-evens (US\$/Ib)



Source: Company reports, Shaw and Partners analysis Shaw and Partners

ShawandPartners an EFG company

Figure 52: Capex (US\$m) – restart capex in two stages across FY22-27





Figure 54: Pricing, costs and margin (US\$/Ib)



Source: Company data & Shaw and Partners analysis

Figure 56: Net debt and gearing (US\$m, %)



We forecast peak gearing (ND / ND+E) for Boss of 43% at the end of FY26.

Source: Company data & Shaw and Partners analysis

Figure 53: Free cash flow (US\$m) - strongly positive from 2027



Source: Company data & Shaw and Partners analysis



Source: Company data & Shaw and Partners analysis

Figure 57: Dividends and yield (A\$cps, %)

Our base case forecast has Boss net cash in the sixth year of production FY28 and paying dividends in FY28.



Source: Company data & Shaw and Partners analysis

Shawand Partners

Honeymoon overview

Figure 58: Location of the Honeymoon project

The Honeymoon Uranium Project is located approximately 80km northwest of Broken Hill near the South Australia/New South Wales border. It is 100% owned by Boss Energy; the mining and exploration licence footprint covers a total area of 2,600km².

The company's Feasibility Study restart plan is to produce from a 36Mlbs U_3O_8 JORC resource (Honeymoon Restart Area) over a 12-year life of mine in two stages, up to 2Mlb/yr. A lower cut-off grade of 250ppm U_3O_8 is used, and the average grade in the restart area is 710ppm.



Figure 59: Honeymoon Uranium Project Area - exploration

Given the large landholding, we believe the company has material exploration upside - an exploration target of up to 190Mlbs. Until uranium market conditions improve, the company is focusing exploration activities on low-cost and non-invasive geophysical techniques, allowing for more focused drill ready programs. The company has identified three key exploration targets for 58-190Mlbs of U_3O_8 across an 80km mineralised strike. Much of the data used for the exploration target estimate has come from 5,000 drill holes across more than 50 years.



Source: Company reports

Source: Company reports

Figure 60: Aerial view of the Honeymoon site

Honeymoon is an in situ recovery mine (ISR) which produced ~600klbs U_3O_8 during commissioning (FY12-13). It was closed for care and maintenance in November 2013. A total of A\$170m was invested in infrastructure during the construction and commissioning phase. The site has access to road, power and water, and the mine is fully permitted to export 3.3Mlb/yr U_3O_8 equivalent.

ISR is the chemical process of extracting minerals from the host rock underground through wellfields. The ore exists in an underground aquifer. Oxygen and a weak acid mining solution is pumped through the ore body to dissolve the uranium minerals. The dissolved uranium is pumped to the surface via wells, where at Honeymoon, it has historically been processed via solvent extraction (SX), dried and packaged for export. BOE is looking to replace the existing solvent extraction columns with ion exchange (IX).



Source: Company reports

Figure 61: Honeymoon Project Mineral Resource (30/06/20), lower cut-off 250ppm U₃O₈

The company's Feasibility Study restart plan is limited to the Honeymoon Restart Area only, comprising 36Mlbs JORC resource, of which 75% is in the Measured + Indicated category and an average grade of 710ppm.

Resource Classification	Tonnage (Million Tonnes)	Average Grade (ppm U₃O₅)	Contained Metal (Kt, U3O8)	Contained Metal (Mlb, U₃O₀)
		Jason's (March 2017)		
Inferred	6.2	790	4.9	10.7
		Gould's Dam (April 2016)		
Indicated	4.4	650	2.9	6.3
Inferred	17.7	480	8.5	18.7
	Honey	moon Re-Start Area (Januar	y 2019)	
Measured	3.1	1,100	3.4	7.6
Indicated	14.0	610	8.7	19
Inferred	7.0	590	4.1	9.1
	TOTAL	HONEYMOON URANIUM P	ROJECT	
Measured	3.1	1,100	3.4	7.6
Indicated	18.4	630	12.0	25.5
Inferred	30.9	570	18.0	38.5
Total	52.4	620	32.5	71.6

Source: Company reports

Honeymoon asset history

- Honeymoon was discovered in the **1970's** by MIM and CSR. Given the restrictions around uranium resource development, it wasn't until Southern Cross Resources acquired the assets in **1997** that detailed field leach trials were allowed to commence under the Howard Liberal Government.
- Aflease Gold (South Africa) subsequently named Uranium One acquired Southern Cross in 2005.
- FID for Honeymoon occurred in 2006, and Mitsui participated as a 49% equity partner, contributing ~\$100m towards the ~\$140m construction cost.
- Rosatom acquired a 17% stake in Uranium One Inc in 2008 near the peak of the uranium price spike, and increased this stake to 51% in early 2011.
- Honeymoon entered commissioning in early 2011, and the Fukushima accident occurred in March 2011. Mitsui eventually withdrew from Honeymoon in May 2012 following the backlash to uranium in Japan.
- Honeymoon produced ~600klbs U₃O₈ in FY12/13 combined whilst still in the commissioning phase.
- ~\$170m had been invested in total by Uranium One and Mitsui by the time the mine was closed for care and maintenance in November 2013. Also around this time, Rosatom acquired the remainder of Uranium One.
- In November 2015, Uranium One Australia (a subsidiary of Uranium One) was purchased by Boss Energy 80% and Wattle Mining 20% (a company controlled by Grant Davey), for:
 - A\$0.2m site access fee, cash payment A\$2.44m, A\$3m promissory note repayable 2 yrs from acquisition, A\$4m promissory note repayable 2 yrs from acquisition.
 - Contingent payments A\$2m cash upon restart of production and 10% of net annual operating cashflow from Honeymoon, up to an aggregate total of A\$3m.
- In March 2018, Boss announced completion of the acquisition of the remaining 20% of Honeymoon from Grant Davey for a share issue of A\$12.6m. The majority of these shares were transferred from Mr Davey to Paradice Investment Management and Tribeca Investment Partners in August 2018.
- The project is **currently** 100% owned by Boss Energy; the aforementioned contingent payments to Uranium One are still in place.

Honeymoon financial modelling assumptions and risks

Boss completed the Honeymoon Feasibility Study in January 2020, and is looking to further improve project economics in an Enhanced Feasibility Study (EFS). The EFS is due for release 1HCY21 and will include mine optimisations (reduced on-site power demand and potential reagent savings) and the incorporation of an ion exchange system (instead of the existing solvent exchange).

Highlights include from the Base Case Project Feasibility Study include:

- NPV8 (pre-tax) of US\$163m and 43% IRR (pre-tax) (average U₃O₈ price of US\$50/lb).
- Fast-tracked production, within 12-months from Final Investment Decision.
- Life of mine (LOM) of 12 years, upfront capital expenditure of US\$57m (excluding offsite power provider upgrades), estimated average all-in cost (AIC) of US\$32/lb U308 over LOM, and an all-in sustaining cost (AISC) of US\$27/lb U308 over LOM.
- The FS Base Case restart plan is limited to the Honeymoon Restart Area only, comprising 36Mlbs JORC resource, of which 75% is in the Measured + Indicated category, there is a cut-off of 250ppm, and an average grade of 710ppm. This excludes an additional JORC resource of 36Mlbs at an average grade of 600ppm outside the restart area. There are two stages in the restart plan:
 - Stage 1 refurbishing the existing Solvent Extraction plant nameplate capacity 0.88Mlb/yr, capex US\$24m.
 - Stage 2 adding an Ion Exchange (IX) circuit annual production to 2Mlbs U₃O₈ equivalent, capex US\$40m. This stage will take approximately 20 months to design, construct and commission. In our modelling we also include the need for a third IX train in year 5 (additional capital requirement of US\$5m).
- Given the resource size and exploration upside there may be potential to extend the mine life beyond the initial 12 years and/ or increase the production profile.

Figure 62: Shaw Honeymoon financial model

Our post-tax NPV of US\$146m and IRR of 37% are slightly lower than the DFS, mainly due to a higher WACC assumption of 10% and post-tax modelling basis. This is slightly offset by a longer mine life of 17 years to produce 30Mlbs of resource (vs 22Mlbs over 12 years in the DFS).

Honeymoon (A\$m)	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Uranium extraction (kt)					250	700	750	1,650	1,650	1,650	1,650
Grade (ppm)					620	620	620	620	620	620	620
U308 (Mlb) - sold					0.3	0.8	0.9	2.0	2.0	2.0	2.0
Revenue					24	66	72	162	165	168	172
Expenses					17	48	52	86	87	89	91
EBITDA					7	18	20	76	78	79	81
D&A					1	4	4	9	9	9	9
EBIT					5	14	16	67	69	70	72
Net Operating Assets	23	30	44	50	64	92	107	123	126	136	139
Capex	0	7	14	7	15	32	19	25	12	19	12
EBITDA Margin (%)	0%	0%	0%	0%	29%	28%	28%	47%	47%	47%	47%
EBIT / Assets (%)	0%	0%	0%	0%	9%	16%	15%	55%	54%	52%	52%
Spot U3O8 (US\$/Ib)	28	35	44	50	51	51	52	53	55	56	57
AUD/USD	0.67	0.71	0.73	0.74	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Revenue (A\$/Ib)					78	78	80	81	83	84	86
Expenses (A\$/lb)					56	56	58	43	44	45	46
EBITDA (A\$/lb)					23	22	22	38	39	40	40
D&A (A\$/Ib)					4	4	4	4	4	4	4
EBIT (A\$/lb)					18	17	17	34	34	35	36
Nominal Tax @ 30.0%					0	0	0	0	-21	-21	-22
Non-cash inventory movement					0	0	0	0	0	0	0
Cash Flow	0	-7	-14	-7	-8	-14	1	51	45	39	47

Financing - balance sheet and cash flow

Currently no debt and ~A\$18m cash

Over the past several years, Boss has recapitalised through several key events:

- August 2017, A\$3m was raised via an institutional placement for the payment of a promissory note due to Uranium One (the vendor of the Honeymoon Project).
- March/ April 2018,
 - A\$12.6m share issue for the acquisition of Wattle Resources.
 - $\circ~$ A\$8m share placement funds used to advance Honeymoon development studies.
- October 2018, BOE signed an agreement to sell its gold project interests in Burkina Faso, West Africa, to its joint venture partner Teranga Gold (TSX:TGZ), for A\$10m cash.
- September 2020 the company completed an A\$15m placement at A\$0.067ps.

In mid-Oct-20, the company has no debt and ~A\$18m cash (post the Sept 20 placement). The cash balance excludes A\$8.8m held as a 100% backed environmental bond.

Requirement to raise A\$50m equity

We believe Boss require A\$125m to restart operations and move through to 2Mlb/yr of U_3O_8 production, so will need to raise a total of A\$50m equity to recapitalise the company.

In our base case modelling we assume this happens in two stages:

- FY22 raise A\$20m equity and A\$30m of debt (project finance) to fund stage 1 of the restart (0.9Mlb/yr).
- FY24 raise ~A\$30m equity and ~A\$45m of additional debt in order to ramp up operations through stage 2 (2Mlb/yr).

Given the long-lead nature of a stage 2 expansion from 0.9Mlb/yr to 2Mlb/yr (20-month for design, construction & commission), we have assumed production coming into effect in FY27.

Gearing to peak at 43% in FY26

This will leave Boss with gearing (ND / ND+E) of 43% at the end of FY26. Although this appears high for a single commodity, single asset company, it does not concern us for three important reasons;

- Gearing appears high because the current book value of the assets (A\$22m) is very low compared to the true replacement value (~A\$150m) and our net present value of ~A\$200m,
- Debt servicing ratios will be very strong once in full production EBITDA/gross interest is ~3x and Gross debt / EBITDA is 4x in FY26, and
- 3. Debt will reduce very quickly as operational cash flow commences. Our base case forecast has Boss net cash and paying dividends in the fifth year of production (FY28).

The right level of equity raise will depend on the term contracts signed and the desire to balance a strong balance sheet with minimising dilution for existing shareholders.

Figure 63: BOE cash flow (A\$m)

CASH FLOW (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Operating activities												
Receipts from customers	0	0	0	0	0	24	66	72	162	165	168	172
Payments to suppliers and employe	-7	-4	-7	-8	-8	-25	-56	-61	-95	-97	-98	-101
Income taxes paid	0	0	0	0	0	0	0	0	0	0	-18	-18
Working capital movement	0	0	-1	0	0	-1	-2	0	-9	0	0	0
Other	0	2	0	0	1	-3	-2	-2	-2	-1	1	1
Net cash flow from operating activities	-6	-3	-8	-8	-7	-5	6	8	56	67	53	54
Investing activities												
Payments for PPE	0	0	-7	-14	-7	-15	-32	-19	-25	-12	-19	-12
Other	10	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
Net cash flow from investing activities	10	0	-9	-16	-9	-17	-34	-21	-27	-14	-21	-14
Free cash flow	-6	-3	-15	-22	-14	-21	-26	-10	31	55	34	42
Financing activities												
Net proceeds from issue of shares	0	0	14	22	6	30	0	0	0	0	0	0
Proceeds from borrowings	0	0	0	30	0	45	0	0	0	0	0	0
Repayments of borrowings	0	-4	0	0	0	0	-10	-20	-20	-20	-8	0
Dividends paid	0	0	0	0	0	0	0	0	0	-7	-20	-22
Other	0	0	0	0	0	0	0	0	0	0	0	0
Net cash flow from financing activities	0	-4	14	52	6	75	-10	-20	-20	-27	-28	-22
Net increase/(decrease) in cash	4	-7	-3	28	-10	52	-38	-32	9	26	4	18
Source: Company reports Shaw analysi	ic.											

Source: Company reports, Shaw analysis

Figure 64: BOE balance sheet (A\$m)

BALANCE SHEET (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Cash and cash equivalents	11	4	1	29	20	72	34	2	10	36	41	58
Trade and other receivables	1	0	0	0	0	2	5	6	13	14	14	14
Other	0	0	0	0	0	0	0	0	0	0	0	0
Total current assets	12	4	1	29	20	74	39	8	24	50	54	72
Property, plant and equipment	0	0	6	19	25	37	62	75	89	91	99	100
Exploration and evaluation expendi	9	9	11	13	15	17	19	21	23	25	27	29
Other	9	9	10	11	12	15	21	23	32	33	35	37
Total non-current assets	18	18	27	43	51	69	102	119	143	149	161	166
TOTAL ASSETS	30	22	28	72	71	143	141	127	167	199	215	238
Trade and other payables	1	1	0	0	0	2	7	7	12	12	12	12
Other	4	0	0	0	0	0	0	0	0	0	0	0
Total current liabilities	5	1	0	0	0	2	7	7	12	12	12	13
Deferred tax	0	0	0	0	0	0	0	0	0	18	18	19
Borrowings	0	0	0	30	33	78	68	48	28	8	0	0
Other	9	9	9	9	9	9	9	9	9	9	9	9
Total non-current liabilities	9	9	9	39	42	87	77	57	37	34	27	28
TOTAL LIABILITIES	14	10	9	39	42	89	83	64	49	46	40	40
NET ASSETS	16	12	19	33	29	54	58	62	118	152	176	198
Net debt	-7	-4	-1	1	13	6	34	46	18	-28	-41	-58
Gearing (ND/ND+E %)	0%	0%	0%	2%	31%	10%	37%	43%	13%	0%	0%	0%

Source: Company reports, Shaw analysis

Note: Cash balance excludes a fully cash backed environmental bond of A\$8.8m, which is included in 'Other' non-current assets.

Boss Energy financial summary

•••						
Profit & Loss	FY19	FY20	FY21f	FY22f	FY23f	
Revenue	0.4	0.2	0.0	0.0	0.0	
Expenses	-1.2	-5.1	-7.0	-8.0	-8.2	
Underlying EBITDA	-0.9	-4.8	-7.0	-8.0	-8.2	
Depreciation & Amort	-0.1	-0.1	0.0	0.0	0.0	
Underlying EBIT	-1.0	-4.9	-7.0	-8.0	-8.2	
Net Interest	-0.2	-0.1	0.1	0.0	-2.1	
Profit Before Tax	-1.2	-5.1	-6.9	-8.0	-10.3	
Тах	0.0	0.0	0.0	0.0	0.0	
NPAT (Underlying)	-1.2	-5.1	-6.9	-8.0	-10.3	
Exceptional items	-4.8	0.0	0.0	0.0	0.0	
NPAT (reported)	-6.0	-5.1	-6.9	-8.0	-10.3	
Minorities	0.0	0.0	0.0	0.0	0.0	
Attributable NPAT	-6.0	-5.1	-6.9	-8.0	-10.3	

Balance Sheet	FY19	FY20	FY21f	FY22f	FY23f
Cash	10.5	3.8	1.3	29.5	19.7
Net Receivables	1.3	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0
Current Assets	11.8	3.9	1.3	29.5	19.7
Property, Plant & Equipment	0.2	0.1	6.4	18.8	24.8
Other	17.7	17.8	20.4	23.8	26.5
Non Current Assets	17.9	17.9	26.9	42.6	51.3
Total Assets	29.7	21.7	28.2	72.1	71.0
Trade Creditors	0.8	0.7	0.0	0.0	0.0
Borrow ings	4.0	0.0	0.0	0.0	0.0
Other	0.0	0.1	0.1	0.1	0.1
Current Liabilities	4.9	0.8	0.1	0.1	0.1
Borrow ings	0.0	0.0	0.0	30.0	33.0
Other	8.7	8.8	8.8	8.8	8.8
Non Current Liabilities	8.7	8.8	8.8	38.8	41.8
Net Assets	16.1	12.1	19.3	33.2	29.1
Shareholder Capital	79.1	79.3	93.5	115.3	121.5
Retained earnings	-72.7	-77.8	-84.7	-92.7	-103.0
Minorities/others	9.7	10.6	10.6	10.6	10.6
Total Equity	16.1	12.1	19.3	33.2	29.1

Cash Flow	FY19	FY20	FY21f	FY22f	FY23f
Receipts	0.0	0.0	0.0	0.0	0.0
Payments	-6.9	-4.4	-7.0	-8.0	-8.2
Other Operating Cash Flow	0.5	1.7	-0.7	0.0	0.9
Operating Cash Flow	-6.4	-2.7	-7.7	-8.0	-7.3
Capex	0.0	-0.1	-7.0	-13.7	-6.7
Other Investing Cash Flow	9.8	0.0	-2.0	-2.0	-2.0
Investing Cash Flow	9.8	0.0	-9.0	-15.7	-8.7
Net Equity raised	0.2	0.0	14.1	21.9	6.2
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Net Borrow ings	0.0	-4.0	0.0	30.0	0.0
Financing Cash flow	0.2	-4.0	14.1	51.9	6.2
Total Cash Change	3.6	-6.7	-2.5	28.1	-9.8

Source: Company reports, Shaw and Partners analysis

Company Information	
Financial Year End Date	30-Jun
Share Price	0.064
Market Capitalisation	118
Valuation	0.11
Recommendation	Buy

Per Share Data (c)	FY19	FY20	FY21f	FY22f	FY23f
Shares (m)	1,584	1,587	1,838	2,077	2,155
Normalised EPS	-0.1	-0.3	-0.4	-0.4	-0.5
Dividends	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Book Value	0.01	0.01	0.01	0.02	0.01
P/E(x)	-40.2	-11.1	-11.3	-11.4	-9.8
EV/EBITDA (x)	-50.2	-8.9	-6.1	-5.3	-5.2

Valuation (fully diluted)	US\$m	A\$m	A\$ps
Honeymoon	146	195	0.08
Net debt	14	18	0.01
Exploration upside	15	20	0.01
Corporate costs	-11	-15	-0.01
Total Valuation	208	278	0.11

Assumptions	FY19	FY20	FY21f	FY22f	FY23f
Prices					
A\$/US\$	0.71	0.67	0.71	0.73	0.74
U ₃ O ₈ (US\$/lb)	26	28	26	44	50

Operating Metrics	FY19	FY20	FY21f	FY22f	FY23f
Ore processed (ktpa)	0	0	0	0	0
Average grade (ppm)	0	0	0	0	0
U ₃ O ₈ sold (Mlb)	0.0	0.0	0.0	0.0	0.0
C1 cost (US\$/lb)	0	0	0	0	0
Average price (US\$/lb)	0	n/a	n/a	n/a	n/a
Average cost (US\$/lb)	0	n/a	n/a	n/a	n/a
Average margin (US\$/lb)	0	n/a	n/a	n/a	n/a

Financial metrics (%)	FY19	FY20	FY21f	FY22f	FY23f
EBITDA margin	0.0%	0.0%	0.0%	0.0%	0.0%
EBIT margin	0.0%	0.0%	0.0%	0.0%	0.0%
ROIC	0.0%	0.0%	0.0%	0.0%	0.0%
Return on Assets	-20.2%	-19.8%	-27.7%	-15.9%	-14.4%
Return on Equity	-36.5%	-36.1%	-44.2%	-30.3%	-33.1%
Balance sheet metrics	FY19	FY20	FY21f	FY22f	FY23f
Net Debt (m)	-7	-4	-1	1	13
ND/ND+E	0.0%	0.0%	0.0%	1.6%	31.4%

Peninsula Energy – strategically located & long-term contracts in place

- In our view Peninsula Energy's flagship Lance Projects in Wyoming, USA, requires low upfront capital and can rapidly restart post a Final Investment Decision. PEN is the only ASX company with direct exposure to US Government initiatives which are prodomestic mine development. We have a Buy rec. and A\$0.13ps price target.
- Strong balance sheet following the successful completion of a fully underwritten A\$40m share entitlement offer in June, the company is term debt free and fully funded to meet all ongoing low pH ISR optimisation activities into CY22.
- PEN has an existing contract book and product inventory, with a binding purchase agreement netting a cash margin of US\$6-8m in CY2021 (400klbs). The company has long-term sales contracts extending to 2030, up to 5.5Mlbs at US\$51-53/lb U₃O₈ with utilities across Europe and the US.
- The company has released a Feasibility Study which details a Lance Projects NPV8 (pretax) of US\$157m and 30% IRR (pre-tax) at an average U₃O₈ price of US\$49/lb. Other components include a life of mine (LOM) of 17 years, upfront capital expenditure of US\$6m (+US\$113m for later stage developments), an estimated all-in sustaining cost (AISC) of US\$32/lb U308 over LOM. The company believes production will be fasttracked, within 6-months from Final Investment Decision.
- Our **post-tax NPV of US\$90m** is slightly lower than the DFS, mainly due to a higher WACC assumption of 10% and post-tax modelling basis. We believe PEN require US\$25m (A\$33m) to restart operations to 1.1Mlb/yr and US\$115m (A\$153m) to rampup operations to ~3Mlb/yr. In our view the company will need to raise a total of US\$50m equity to recapitalise in two stages (US\$10m in FY22 and US\$40m in FY25), and US\$90m in debt.
- In our view there are two key advantages to Peninsula's project being located in Wyoming, USA: (1) The Powder River Basin in Wyoming is in an established uranium and mining jurisdiction (uranium mining for ~70 years and coal mining for ~150 years).
 (2) The company has direct exposure to the US Government uranium purchase programme and the US Nuclear Fuel Working Group.



Figure 66: PEN valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 67: U_3O_8 sold (Mlbs) – the company has an existing contract book with 450klbs to be delivered in each of CY21 and CY22.



Figure 68: PEN DFS production profile (Mlbs) – we model a 2-3 year delay to this timeline due to weak spot markets post DFS publication (Sep18).



Source: Company reports

Shaw and Partners

Sector Report current as at -30/11/2020-Pg. 34

Figure 65: PEN valuation (fully diluted)

Figure 69: Capex (US\$m)

Restart capex in FY22 & ramp-up capex FY25-27. Sustaining capital requirements of ~US\$10/lb to maintain wellfield operations, in our view similar to US shale oilfield sustaining capital requirements.



Source: Company data & Shaw and Partners analysis

Figure 71: Pricing, costs and margin (US\$/Ib)



Source: Company data & Shaw and Partners analysis

Figure 73: Net debt and gearing (US\$m, %)

We forecast peak gearing (ND / ND+E) for PEN of 46% at the end of FY27, the company paying a dividend in FY30, and net cash FY31



Source: Company data & Shaw and Partners analysis

Figure 70: Free cash flow (US\$m) – strongly positive from FY28



Source: Company data & Shaw and Partners analysis





Source: Company data & Shaw and Partners analysis

Figure 74: Cash flow break-evens (US\$/lb)

Stages 2 & 3 investment expenditure totals US\$143m, which increases cash flow break-evens from ~US\$50/lb to >US\$80/lb through FY25-27.



Source: Company data & Shaw and Partners analysis

Lance Projects overview

The Lance Projects are located on the north-east flank of the Powder River Basin in Wyoming. Lance is a series of in situ recovery (ISR) deposits, and started producing from the Ross unit in December 2015. Alkane based operations were idled in July 2019 after ~350klbs U_3O_8 had been mined - the company had ongoing difficulties in maximising recoveries.

Since then, PEN has focused its efforts on a transition to low pH operations, which have the potential to recover a higher percentage of uranium (70-90% vs 60-70% for alkali). The company has successfully obtained the necessary amendments to its regulatory authorisations to allow Lance to operate using a low pH ISR process. Lance is licensed to produce up to 3M lbs U_3O_8 per annum.

ISR is the chemical process of extracting minerals from the host rock underground through wellfields. The ore exists in an underground aquifer. A mining solution is pumped through the ore body to dissolve the uranium minerals. The dissolved uranium is pumped to the surface via wells, where at Lance, it is recovered via ion exchange columns (IX), dried and packaged for export.

We note (1) In 2019, 57% of world uranium mined was from by low pH ISR methods, from 16% in 2000. (2) Greater than 95% of ISR operations globally are low pH (i.e. Kazakhstan and Uzbekistan). (3) ISR mines in the USA have typically used an alkali leach due to the presence of significant quantities of acid consuming minerals such as gypsum and limestone in the host aquifers (i.e. leading to a risk of precipitation or formation plugging).

Tonnes (million)

Figure 75: Powder River Basin, Wyoming, USA

The Powder River Basin in Wyoming, USA was discovered to host uranium in 1951. Deposits were found along a 60-mile trend, and a total of 190Mlbs of U_3O_8 has been produced from this region since first production in 1953.

Figure 76: Lance Projects Mineral Resource, cut-off 200ppm U₃O₈

PEN's Feasibility Study includes an assumed resource conversion of 90% for Measured and Indicated Resources, and an assumed resource conversion of 60% for Inferred Resources. The company notes there is a low level of geological confidence associated with Inferred Mineral resources (~70% of the resource base). The first 5 years of production can be sourced almost entirely from Measured and Indicated Resources.

U3O8(kg)

Grade (ppm U3O8)

U3O8(lbs)



Source: Company reports

Figure 77: Lance projects field & process facility



Source: Company reports

3.4 489 Measured 1.7 3.7 Indicated 11.1 5.5 496 12.1 Inferred 36.2 17.2 474 37.8 Total 50.7 24.4 480 53.6

Source: Company reports

Classification

Figure 78: Lance process facility



Source: Company reports

Lance – advantaged in the USA

In our view there are two key advantages to Peninsula's project being located in Wyoming, USA:

- The Powder River Basin in Wyoming is in an established uranium and mining jurisdiction, meaning there will be easy access to skilled labour. There has been uranium mining for ~70 years and coal mining for ~150 years in the region.
- 2. The company has direct exposure to the US Nuclear Fuel Working Group (established in 2019 to promote US domestic uranium mining). In addition, the company has access to the US Government uranium purchase programme, which is supported by Bipartisan Legislation. In the FY21 budget, the Government has allocated funds for the establishment of a US Uranium Reserve US\$150m/yr for 10 years.

Lance financial modelling assumptions and risks

Peninsula Energy completed the Lance Feasibility Study (FS) in September 2018, and is looking to conduct additional field testing to optimise process parameters. Highlights from FS include:

- NPV8 (pre-tax) of US\$157m and 30% IRR (pre-tax) (average U₃O₈ price of US\$49/lb).
- Life of mine (LOM) of 17 years for production of 33Mlbs, upfront capital expenditure of ~US\$6m (+US\$113m for full production ramp-up), estimated average all-in sustaining cost (AISC) of US\$32/lb U308 over LOM.
- The FS restart and expansion plan is through three phases, with fast-tracked production, within 6-months from Final Investment Decision for the first phase, and a gradual ~6-year ramp-up to get to 3Mlbs/yr production.
 - Stage 1 to ~1.1Mlb/a & capex US\$5.5m, transition to low pH
 - \circ ~ Stage 2 to ~2.3Mlb/a & capex US\$43m, plant & wellfield expansion
 - Stage 3 to ~3.0Mlb/a & capex US\$70m, wellfield expansion
 - We note wellfield replacement and sustaining capex ~US\$10/lb, and the company may opt to pursue a State 2 development independently of Stage 3.
- The Feasibility Study includes an assumed resource conversion of 90% for Measured and Indicated Resources, and an assumed resource conversion of 60% for Inferred Resources. The company notes there is a low level of geological confidence associated with Inferred Mineral Resources (70% of the resource base).

Figure 79: Lance financial model

Our post-tax NPV of US\$90m is slightly lower than the DFS, mainly due to a higher WACC assumption of 10% and post-tax basis.

Lance (US\$m)	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Uranium extraction (kt)		0	0	400	400	900	1,200	1,500	2,300	3,000	3,000
Grade (ppm)		0	0	470	470	470	470	470	470	470	470
U3O8 (Mlb) - sold		0.5	0.5	0.4	0.4	0.8	1.1	1.4	2.1	2.8	2.8
Revenue		9	23	21	21	48	66	84	131	174	177
Expenses		7	21	16	16	37	50	42	66	87	89
EBITDA		2	2	5	5	12	16	42	65	87	88
D&A		0	0	2	2	4	6	7	11	14	14
EBIT		2	2	3	4	7	10	35	54	73	74
Net Operating Assets	66	66	71	73	75	99	149	206	218	233	250
Capex	0	0	6	3	4	28	56	64	22	30	30
EBITDA Margin (%)	0%	0%	0%	25%	25%	24%	24%	50%	50%	50%	50%
EBIT / Assets (%)	0%	0%	0%	5%	5%	7%	7%	17%	25%	31%	30%
Spot U3O8 (US\$/Ib)	28	35	44	50	51	51	52	53	55	56	57
AUD/USD	0.67	0.71	0.73	0.74	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Revenue (A\$/lb)				57	58	58	60	61	62	63	65
Expenses (A\$/Ib)				43	44	44	45	31	31	32	32
EBITDA (A\$/lb)				14	15	14	14	30	31	31	32
D&A (A\$/Ib)				5	5	5	5	5	5	5	5
EBIT (A\$/Ib)				9	10	9	9	25	26	26	27
Nominal Tax @ 21%	0	0	0	0	0	0	0	0	0	-22	-22
Non-cash inventory movement	0	0	0	0	0	0	0	0	0	0	0
Cash Flow	0	2	-3	2	2	-17	-40	-22	43	35	36

Financing - balance sheet and cash flow

Currently no debt and ~US\$13m cash

Peninsula Energy recently recapitalised after repaying a convertible note agreement executed in 2016. We note the following events in the lead up to the re-structure:

- April 2016 convertible note agreements were executed with major shareholders Resource Capital Fund and Pala Investments for a total of US\$15m (maturing Apr18).
- October 2017 increased the total funding from US\$15m to US\$20m under the convertible note facility.
- April 2018 extend the maturity date of the convertible note facility by two years to April 2020 and decreased the facility from US\$20m to \$17m following a cash repayment of US\$3m.
- November 2019 restructured the convertible notes.
- March 2020 partial debt reduction of US\$0.75m through the issue of shares to Resource Capital Fund.
- June 2020 completed an underwritten A\$40m entitlement offer at A\$0.071ps, with a 41% take-up. The resulting shortfall of 335m shares was taken up in full by the underwriter and sub-underwriters. PEN subsequently repaid its corporate term debt balance (US\$16.8m / A\$24.7m), together with accrued quarterly interest US\$0.4m (~A\$0.6m).

In November 2020 the company has no term debt and ~US\$13m cash.

Requirement to raise ~A\$65m equity in two stages – FY22 and FY25

We believe PEN require ~A\$185m (US\$140m) to restart operations and move through to ~3Mlb/yr of U_3O_8 production, so will need to raise a total of A\$65m (US\$50m) equity and A\$120m (US\$90m) debt to ramp up to the full licence capacity.

In our base case modelling we assume that the company will recapitalise in two stages:

- FY22 raise ~A\$13m (US\$10m) equity and ~A\$20m (US\$15m) of debt (project finance) to fund stage 1 of the restart (1.1Mlb/yr).
- FY25 raise ~A\$53m (US\$40m) equity and ~A\$100m (US\$75m) of additional debt in order to ramp up operations through stages 2&3 of the re-start (3Mlb/yr). We have not modelled any prepayments, but this is an option for the company given PEN has an existing contract book.

Gearing to peak at 46% in FY27

This will leave PEN with gearing (ND / ND+E) of 46% at the end of FY27. Although this appears high for a single commodity, single asset company, we note that;

- Debt servicing ratios will be very strong through production ramp-up from stage 1 to stage 3 – EBITDA/gross interest is >7x and Gross debt / EBITDA is 3x in FY27.
- 2. Debt will reduce as operational cash flow ramps-up. Our base case forecast has PEN net cash in (FY31) and paying dividends in FY30.
- PEN is leveraged to rising uranium markets. We forecast the company generates US\$24m additional free cash flow for every US\$10/lb move in the uranium price once operations are fully ramped up (FY29f).

The right level of equity raise will depend on the term contracts signed and the desire to balance a strong balance sheet with minimising dilution for existing shareholders.

Figure 80: PEN cash flow (US\$m)

8 -15 0 0 0 - 7	7 -14 0 -1 - 8	9 -14 0 0 0 - 5	23 -29 0 1 0 -5	21 -24 0 -1 1 -3	21 -24 0 0 -1 -4	48 -45 0 1 -1 3	66 -59 0 -2 5	84 -51 0 -3 -4	131 -75 0 -1 -5	174 -97 0 -1 -4	177 -99 -18 0 -2
8 -15 0 0 0 -7	7 -14 0 -1 -8	9 -14 0 0 0 - 5	23 -29 0 1 0 -5	21 -24 0 -1 1 -3	21 -24 0 -1 - 4	48 -45 0 1 -1 3	66 -59 0 -2 5	84 -51 0 -3 -4	131 -75 0 -1 -5	174 -97 0 -1 -4	177 -99 -18 0 -2
-15 0 0 -7	-14 0 -1 -8	-14 0 0 -5	-29 0 1 0 -5	-24 0 -1 1 -3	-24 0 0 -1 -4	-45 0 1 -1 3	-59 0 0 -2 5	-51 0 -3 -4	-75 0 -1 -5	-97 0 -1 -4	-99 -18 0 -2
0 0 - 7	0 0 -1 -8	0 0 - 5	0 1 0 -5	0 -1 1 - 3	0 0 -1 - 4	0 1 -1 3	0 0 -2 5	0 -3 -4	0 -1 -5	0 -1 -4	-18 0 -2
0 0 - 7	0 -1 -8	0 0 - 5	1 0 - 5	-1 1 - 3	0 -1 -4	1 -1 3	0 -2 5	-3 -4 27	-1 -5	-1 -4	0 -2
0 - 7	-1 -8	0 - 5	0 - 5	1 - 3	-1 - 4	-1 3	-2 5	-4 27	-5	-4	-2
- 7	-8	-5	-5	-3	-4	3	5	27			
0								27	50	73	58
0											
5	0	0	-6	-3	-4	-28	-56	-64	-22	-30	-30
2	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
2	0	-2	-8	-5	-6	-30	-58	-66	-24	-32	-32
-8	-8	-5	-10	-6	-8	-25	-51	-38	28	43	28
0	31	0	10	0	0	40	0	0	0	0	0
0	1	0	15	0	3	75	0	4	0	0	0
-1	-17	0	0	0	0	0	0	0	-10	-10	-10
0	0	0	0	0	0	0	0	0	0	0	-4
-1	0	0	0	0	0	0	0	0	0	0	0
-1	15	0	25	0	3	115	0	4	-10	-10	-14
-7	7	-7	13	-8	-7	88	-53	-36	16	31	12
	0 2 2 -8 0 0 -1 0 -1 -1 -1 -7	0 0 2 0 2 0 -8 -8 0 31 0 1 -1 -17 0 0 -1 0 -1 15 -7 7	0 0 0 2 0 -2 2 0 -2 2 0 -2 -8 -8 -5 0 31 0 0 1 0 -1 -17 0 0 0 0 -1 15 0 -7 7 -7	0 0 0 -6 2 0 -2 -2 2 0 -2 -8 -8 -8 -5 -10 0 31 0 10 0 1 0 15 -1 -17 0 0 0 0 0 0 -11 0 0 25 -7 7 7 -7 13	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Source: Company reports, Shaw analysis

Figure 81: PEN balance sheet (US\$m)

BALANCE SHEET (US\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Cash and cash equivalents	5	12	5	18	9	2	90	37	1	17	48	60
Trade and other receivables	1	1	1	2	2	2	4	5	7	11	14	15
Other	4	4	4	4	4	4	4	4	4	4	4	4
Total current assets	10	16	9	23	15	8	98	46	12	32	67	79
Property, plant and equipment	19	19	19	24	25	26	47	92	143	152	165	178
Exploration and evaluation expend	0	0	2	4	6	8	10	12	14	16	18	20
Other	41	47	46	46	46	47	50	55	62	64	67	70
Total non-current assets	60	66	66	74	78	81	107	160	219	232	250	268
TOTAL ASSETS	70	82	76	97	92	89	205	206	230	264	316	347
Trade and other payables	2	1	1	3	2	2	5	7	6	9	12	12
Borrowings	16	1	1	1	1	1	1	1	1	1	1	1
Other	1	1	1	1	1	1	1	1	1	1	1	1
Total current liabilities	19	2	2	4	3	4	6	8	7	10	13	14
Deferred tax	0	2	0	0	0	0	0	0	0	0	18	19
Borrowings	0	0	0	15	17	20	95	95	98	88	78	68
Other	11	11	11	11	11	11	11	11	11	11	11	11
Total non-current liabilities	11	13	11	26	28	31	106	106	110	100	107	98
TOTAL LIABILITIES	30	15	14	31	32	35	112	114	117	110	121	112
NET ASSETS	41	67	62	67	61	54	92	92	114	154	196	235
Net debt	11	-11	-4	-2	8	18	5	58	98	72	30	8
Gearing (ND/ND+E %)	21%	0%	0%	0%	12%	25%	6%	39%	46%	32%	13%	3%

Peninsula Energy financial summary

•••		-				
Profit & Loss	FY19	FY20f	FY21f	FY22f	FY23f	
Revenue	6.6	6.1	7.1	23.1	21.0	
Expenses	-43.9	-8.0	-12.5	-28.7	-23.9	
Underlying EBITDA	-37.3	-1.9	-5.4	-5.6	-2.9	
Depreciation & Amort	-0.1	0.0	0.0	0.0	-1.9	
Underlying EBIT	-37.4	-1.9	-5.4	-5.6	-4.8	
Net Interest	-3.3	-4.2	0.3	0.1	-1.0	
Profit Before Tax	-40.7	-6.2	-5.1	-5.5	-5.8	
Тах	-0.3	-1.5	0.0	0.0	0.0	
NPAT (Underlying)	-40.9	-7.7	-5.1	-5.5	-5.8	
Exceptional items	0.0	0.0	0.0	0.0	0.0	
NPAT (reported)	-40.9	-7.7	-5.1	-5.5	-5.8	
Minorities	-0.5	0.0	0.0	0.0	0.0	
Attributable NPAT	-40.5	-7.7	-5.1	-5.5	-5.8	

Balance Sheet	FY19	FY20f	FY21f	FY22f	FY23f
Cash	5.3	11.9	4.9	17.7	9.4
Net Receivables	1.0	0.6	0.6	1.9	1.7
Other	4.0	3.8	3.8	3.8	3.8
Current Assets	10.3	16.3	9.3	23.4	14.9
Property, Plant & Equipment	18.9	18.8	18.8	23.8	25.0
Other	41.2	47.1	47.6	50.2	52.5
Non Current Assets	60.1	66.0	66.4	73.9	77.5
Total Assets	70.3	82.3	75.7	97.3	92.4
Trade Creditors	1.9	1.2	0.8	2.8	2.2
Borrow ings	16.0	0.6	0.6	0.6	0.6
Other	1.2	0.8	0.8	0.8	0.8
Current Liabilities	19.1	2.5	2.1	4.2	3.5
Borrow ings	0.0	0.0	0.1	15.2	16.7
Other	10.6	12.9	11.3	11.3	11.3
Non Current Liabilities	10.6	12.9	11.4	26.5	28.1
Net Assets	40.7	66.9	62.2	66.7	60.9
Shareholder Capital	207.5	240.6	240.6	250.6	250.6
Retained earnings	-172.6	-180.3	-185.4	-190.9	-196.7
Minorities/others	5.8	6.5	6.5	6.5	6.5
Total Equity	40.7	66.9	61.7	66.3	60.4

Cash Flow	FY19	FY20f	FY21f	FY22f	FY23f
Receipts	8.2	7.5	7.1	23.1	21.0
Payments	-14.9	-13.9	-12.5	-28.7	-23.9
Other Operating Cash Flow	-0.2	-1.6	0.4	0.9	0.0
Operating Cash Flow	-6.9	-8.0	-5.1	-4.7	-2.9
Capex	-0.4	-0.1	0.0	-5.5	-3.5
Other Investing Cash Flow	2.1	0.1	-2.0	-2.0	-2.0
Investing Cash Flow	1.7	-0.1	-2.0	-7.5	-5.5
Net Equity raised	0.0	31.3	0.0	10.0	0.0
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Net Borrow ings	-0.8	-16.4	0.0	15.0	0.0
Financing Cash flow	-1.5	14.7	0.0	25.0	0.0
Total Cash Change	-6.7	6.7	-7.1	12.8	-8.3

Source: Company reports, Shaw and Partners analysis

Company Information	
Financial Year End Date	30-Jun
Share Price	0.079
Market Capitalisation	70
Valuation	0.13
Recommendation	Buy

Per Share Data (c)	FY19	FY20f	FY21f	FY22f	FY23f
Shares (m)	247	882	892	1,035	1,035
Normalised EPS	-16.8	-1.4	-0.6	-0.6	-0.6
Dividends	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Book Value	0.16	0.08	0.07	0.06	0.06
P/E(x)	-1.1	-3.5	-9.8	-10.1	-10.4
EV/EBITDA (x)	-1.5	-29.7	-10.6	-10.3	-19.5

Valuation (fully diluted)	US\$m	A\$m	A\$ps
Lance	90	125	0.08
Net debt	11	16	0.01
Exploration upside	11	15	0.01
Corporate costs	-11	-15	-0.01
Total Valuation	151	210	0.13

Assumptions	FY19	FY20f	FY21f	FY22f	FY23f
Prices					
A\$/US\$	0.71	0.67	0.71	0.73	0.74
U ₃ O ₈ (US\$/lb)	26	28	26	44	50

Operating Metrics	FY19	FY20f	FY21f	FY22f	FY23f
Ore processed (ktpa)	0	0	0	0	400
Average grade (ppm)	0	0	0	0	470
U ₃ O ₈ sold (Mlb)	0.2	0.2	0.5	0.5	0.4
C1 cost (US\$/lb)	0	0	0	0	35
Average price (US\$/lb)	40	n/a	n/a	n/a	n/a
Average cost (US\$/lb)	0	n/a	n/a	n/a	n/a
Average margin (US\$/lb)	40	n/a	n/a	n/a	n/a

Financial metrics (%)	FY19	FY20f	FY21f	FY22f	FY23f
EBITDA margin	-565%	-31.6%	-75.8%	-24.1%	-13.9%
EBIT margin	-567%	-32.1%	-75.8%	-24.1%	-22.8%
ROIC	-50.8%	-2.5%	-6.5%	-6.0%	-4.9%
Return on Assets	-47.4%	-9.3%	-6.5%	-6.3%	-6.1%
Return on Equity	-70.9%	-13.1%	-8.0%	-8.6%	-9.2%
Balance sheet metrics	FY19	FY20f	FY21f	FY22f	FY23f
Net Debt (m)	11	-11	-4	-2	8
ND/ND+E	n/a	0.0%	0.0%	0.0%	11.6%

Lotus Resources – looking to re-develop Kayelekera

- Lotus Resources is looking to re-start operations of the fully permitted Kayelekera project in Malawi. The company acquired 65% equity from Paladin in March 2020. A low upfront capital requirement of ~US\$50m is appealing. We believe the company needs a spot uranium price of ~US\$55/lb in order to sanction re-start which is above our base case. We initiate with a Neutral recommendation and A\$0.11ps target price based on a notional A\$100m ascribed to its assets.
- The Kayelekera project was put on care and maintenance by Paladin in 2014 after five years of operations, 10.9M lb of U₃O₈ production, and ~US\$200m of capex. Peak production occurred in 2013 at ~3.0Mlbs U₃O₈.
- LOT is currently free carrying project partners Kayelekera Resources (20%) and The Government of Malawi (15%). In our view LOT will ultimately look to buy out Kayelekera Resources, a company controlled by LOT non-executive director Grant Davey. If uranium prices are supportive, we believe this may occur 2HFY23 for ~250m LOT shares, coinciding with a project sanction decision. We believe The Government of Malawi will be free carried for all growth capital expenditure.
- LOT released a Mine Restart Scoping Study in October 2020, which provides a development pathway for the re-start of Kayelekera. LOT is expected to deliver a Pre-Feasibility Study in 2HFY21. Key features of the medium grade stockpile scenario in the scoping study include (1) Open cut mine pit requiring low total initial capital expenditure of US\$50m due to Kayelekera's existing infrastructure. (2) 14-year life-of-mine production of 24Mlbs U₃O₈ at an average head grade of 680ppm and production rate of 1.8Mlb/yr (av. LoM). (3) All-in average life-of-mine sustaining costs of US\$45/lb.
- We believe the project is NPV positive at US\$48/lb spot U₃O₈. Using a U₃O₈ spot assumption of US\$60/lb (2020 Real), we model a post-tax NPV of US\$121m and IRR of 50%. We believe LOT require ~A\$80m (US\$60) to commence operations and ramp up to 2.4Mlb/yr. In our view the company will need to raise a total of ~A\$33m (~US\$25m) equity and ~A\$47m (~US\$35m) in debt in FY23 to recapitalise.
- The balance sheet is debt free and carries a cash balance of A\$20m post the A\$5m Nov20 working capital raise (A\$13m is restricted cash, an environmental performance bond). Following this, we assume the company can use the equity raised and access the environmental bond to continue to fund care and maintenance obligations (~A\$2m/yr), progress development studies, and pay its necessary mine acquisition obligations without needing to raise equity until FY23.

Figure 82: LOT valuation – base case assuming a U_3O_8 spot price of US\$46/lb (includes dilution from a Grant Davey buyout)

Lotus Resources Valuation	US\$m	A\$m	A\$ps
Kayelekera	0	0	0.00
Netdebt	15	21	0.02
Exploration upside	72	100	0.09
Corporate costs	-7	-10	-0.01
Total Valuation	80	111	0.11

Source: Company reports, Shaw and Partners analysis

Figure 84: LOT valuation sensitivity (A\$ps)





Figure 83: LOT valuation – fully diluted, assuming a U_3O_8 spot price of US\$60/lb 2020 Real and Kayelekera re-start

Lotus Resources Valuation - diluted	US\$m	A\$m	A\$ps
Kayelekera	124	172	0.13
Netdebt	15	21	0.02
Exploration upside	14	20	0.01
Cash from options + raise	26	37	0.03
Corporate costs	-7	-10	-0.01
Total Valuation	172	240	0.18

Source: Company reports, Shaw and Partners analysis

Figure 85: Cash flow break evens (US\$/Ib)



Source: Company reports, Shaw and Partners analysis

Company overview in charts – using a U₃O₈ price of US\$60/lb (2020 Real)

Figure 86: Capex (US\$m) - restart capex in 2023-25

A low upfront capital requirement of ~US\$50m to restart operations is appealing. We note the capital requirement for the second downstream tailings lift is US\$16m and will be required towards the end of year 3/4 in our development scenario.



Source: Company data & Shaw and Partners analysis

Figure 88: Pricing, costs and margin (US\$/lb)



Source: Company data & Shaw and Partners analysis

Figure 90: Net debt and gearing (US\$m, %)

We forecast peak gearing (ND / ND+E) for LOT of 39% at the end of FY24.







Figure 87: Free cash flow (US\$m) – strongly positive from FY26

Source: Company data & Shaw and Partners analysis





Source: Company data & Shaw and Partners analysis

Figure 91: Dividends and yield (A\$cps, %) -

Our base case forecast has LOT net cash and paying dividends in the second year of production (FY26).





Kayelekera overview

The Kayelekera sandstone uranium deposit is located in northern Malawi, southern Africa, 52km west (by road) of the township of Karonga. The resource was discovered by the Central Electricity Generating Board of Great Britain (CEGB) in the early 1980s.

In 1998 Paladin acquired a 90% interest in Kayelekera through a Joint Venture with Balmain Resources, which then held exploration rights over the project area. In July 2005 Paladin acquired the remaining 10% interest held by Balmain.

After completing the Development Agreement with the Malawi Government, the BFS and a full Environmental Impact Assessment, a mining licence was granted in April 2007.

Construction started in 2007 and open pit mining commencing in 2008. In July 2009, Paladin issued 15% equity in the project to the Government of Malawi.

Peak production in 2013 was ~3.0Mlb U3O8. In 2014 - after five years of operations, 10.9M lb of U_3O_8 production, and ~US\$200m of capex - the mine was put on care and maintenance. Paladin noted difficult uranium market conditions as the primary reason for mine closure.

Figure 92: Kayelekera – project location & associated exploration licences

The tenement package is large, at 157km², with significant exploration potential, and hosts a high-grade resource with an existing open pit mine.



Source: Company reports, Shaw analysis

Asset transfer from Paladin Energy to Lily Resources

In March 2020, Lotus Resources (formerly Hylea Metals) and Kayelekera Resources (formerly Chichewa, an entity controlled by Grant Davey) acquired Paladin's 85% stake in the project in a vehicle called Lily Resources for:

- Initial Consideration A\$0.2m + A\$3.06m worth of Lotus ordinary shares.
- Deferred Consideration A\$3m worth of Lotus ordinary shares to be issued March 2023 (we assume this occurs at A\$0.15ps i.e. 30m LOT shares issued).
- Royalty 3.5% of gross returns at the Kayelekera mine up to a maximum of US\$5m.
- Environmental Bond replacement of the environmental of US\$10m to be paid in four installments over three years (March 2020/21/22/23 at US\$4/1/2/3m).
- Paladin to pay Lotus US\$2m in site restoration.

As per figure 93, Lotus currently own 65% of Kayelekera through its 76.5% holding of Lily Resources.

Figure 93: Kayelekera current ownership structure



Source: Company reports, Shaw analysis

Lotus from 65% asset ownership to 85%

We believe the company will ultimately own 100% of Lily Resources, which owns 85% of Kayelekera. There are two potential ways this will occur:

- Lotus Resources effectively has a call option to acquire Kayelekera Resources' interest in the project at any time. The terms of the buyout are Fair Value - as determined by a third-party valuer - payable in LOT shares at the 20-day VWAP of LOT. Given LOT only owns the Kayelekera Project, we believe this valuation is likely to be straight forward in line with Lotus' share count pro-rated on project equity.
- Similarly, Kayelekera Resources effectively has a put option in our view which may be exercised at the end of its free carry period (which is the later of A\$10m group expenditure or June 2022) - to sell Lotus its stake in the project at Fair Value on similar terms to the call option above.

We assume Lotus increases its stake in the asset from 65% to 85% by issuing ~250m LOT shares to Grant Davey. This is derived by using the current share count (808m) multiplied by 20% / 65% (i.e. effectively assuming 100% of the value of LOT is the value of the Kayelekera asset).

Other background information relevant to the project

- The company has identified an ~A\$45m rehabilitation and mine closure provision. It is anticipated that ongoing monitoring closure costs (which have been included in the \$45m estimate) will be funded from the company's US\$10m Environmental Performance Bond.
- The company's US\$10m Environmental Performance Bond is considered a reserve fund held by the government to remedy any issues. US\$6m is payable by LOT over the coming years.
- There are potential seismic risks associated with the area that could impact the tailings dam integrity and other infrastructure. The impacts of high rainfall events must also be managed carefully, especially during the care and maintenance phase when water treatment is required. We also note the asset is proximate to the North Rukuru River which feeds into Lake Malawi.

Kayelekera financial modelling assumptions and risks

LOT released a Mine Restart Scoping Study in October 2020, which provides a development pathway for the re-start of Kayelekera. The project is an open cut mine pit which requires low total initial capital expenditure of US\$50m due to Kayelekera's existing infrastructure. The company outlines two possible development scenarios:

- High-grade ore (~900 ppm U₃O₈) (Shaw forecast a post-tax NPV US\$70m & IRR of 50%
 @ US\$60/lb spot)
 - \circ ~16Mlb U₃O₈ produced and 8-year mine life.
 - Average annual production rate 2.3Mlb/yr.
 - All-in average life-of-mine sustaining costs of US\$41/lb.
- High grade ore **incorporating the treatment of medium grade stockpiles** from year 8 (Shaw forecast a post-tax NPV US\$121m & IRR of 50% @ US\$60/Ib spot).
 - This option extends the mine-life to 14 years and ~24Mlb U_3O_8 is produced at a lower average grade of ~680 ppm U_3O_8 .
 - Average annual production rate 1.8Mlb/yr.
 - All-in average life-of-mine sustaining costs of US\$45/lb.

We model the company on the basis of the latter scenario – a higher NPV and similar IRR - with production extending for a longer period of time. The treatment of medium grade tailings may prove conservative given the company has a large exploration footprint in Malawi. In our view it is likely the company maintains operations past 8-years if a re-start is sanctioned.

LOT completed its recent Scoping Study using a realised U_3O_8 price of US\$65/lb. We have used a spot price of US\$60/lb (US\$66/lb 2020 Real realised) for our financial analysis. We note LOT is expected to deliver a Pre-Feasibility Study in 2HFY21.

Figure 94: Kayelekera financial model – using a U₃O₈ spot price of US\$60/lb (2020 Real)

Using a U_3O_8 assumption of US\$60/lb, we model the company's high-grade ore with the treatment of medium grade stockpiles scenario at a post-tax NPV of US\$121m and IRR of 50%. We model first production in FY25, approximately 12-18 months after a project sanction in late FY23.

Kayelekera (A\$m)	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f
Ore processed (kt)						800	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Grade of mill feed (ppm)						900	900	900	900	900	900	757	400
U3O8 (MIb) - sold						1.3	2.4	2.4	2.4	2.4	2.4	2.0	1.0
Revenue						134	239	244	249	254	260	223	120
Expenses						91	163	167	171	174	178	149	86
EBITDA						43	77	78	79	80	81	73	34
D&A						7	13	13	13	13	13	11	6
EBIT						36	64	65	66	67	68	63	28
Net Operating Assets	12	12	12	25	52	76	71	67	85	81	77	74	73
Capex	0	0	0	13	27	31	9	9	30	9	9	8	4
EBITDA Margin (%)						32%	32%	32%	32%	31%	31%	33%	28%
EBIT / Assets (%)						47%	89%	96%	78%	83%	88%	84%	39%
Spot U3O8 (US\$/Ib)	60	61	63	64	66	67	69	70	72	73	75	77	78
AUD/USD	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Revenue (A\$/lb)						99	101	103	106	108	110	112	114
Expenses (A\$/lb)						67	69	71	72	74	76	75	82
EBITDA (A\$/lb)						32	32	33	33	34	34	37	32
D&A (A\$/Ib)						5	5	5	5	5	5	5	5
EBIT (A\$/Ib)						27	27	27	28	28	29	32	27
Nominal Tax @ 27.5%	0	0	0	0	0	0	0	0	0	0	0	0	0
Non-cash inventory movement	0	0	0	0	0	-9	-17	-17	-17	-17	-17	-9	10
Cash Flow	0	0	0	-13	-27	2	51	52	32	54	55	57	40

Financing - balance sheet and cash flow

Balance sheet in good shape until project sanction

Post the company's A5m November 2020 working capital equity raising, the company has a cash balance of ~A20m and no debt. We note that A13m of the cash is restricted – an environmental performance bond.

Over the coming years, we assume the company can use the equity raised and partially access the environmental bond to continue to fund care and maintenance obligations (~A\$2m/yr), progress development studies, and pay its necessary Kayelekera acquisition obligations - without needing to raise equity until 2HFY23. We believe if the uranium price is supportive, a project sanction will occur around this timeframe, which coincides with the last environmental bond payment (US\$3m) and a deferred consideration payment to Paladin (A\$3m shares issued).

During FY20 LOT raised \$8.0m via the issue of shares, a further \$2.3m from the exercise of options, and \$0.5m from the conversion of convertible notes.

Requirement to raise ~A\$85m in FY23 if the project is sanctioned

We believe LOT require ~A\$80m (US\$60) to commence operations and ramp up to 2.4Mlb/yr. In our view the company will need to raise a total of ~A\$33m (~US\$25m) equity and ~A\$47m (~US\$35m) in debt to recapitalise. We assume this occurs 2HFY23.

Gearing to peak at 39% in FY24

This will leave LOT with gearing (ND / ND+E) of 39% at the end of FY24. Our forecast at these U_3O_8 spot prices (US\$60/lb) has LOT net cash and paying dividends in FY26.

CASH FLOW (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Operating activities												
Receipts from customers	0	0	0	0	0	0	134	239	244	249	254	260
Payments to suppliers and employe	-1	-4	-3	-3	-5	-5	-96	-168	-172	-176	-180	-184
Income taxes paid	0	0	0	0	0	0	0	0	0	0	0	0
Working capital movement	0	0	-1	0	0	0	-8	-15	-16	-16	-16	-16
Other	0	0	0	0	0	-3	-2	-1	0	1	1	2
Net cash flow from operating activities	-1	-4	-4	-3	-5	-8	28	54	56	58	59	61
Investing activities												
Payments for PPE	0	0	0	0	-13	-27	-31	-9	-9	-30	-9	-9
Other	0	10	-3	-5	-9	-2	-2	-2	-2	-2	-2	-2
Net cash flow from investing activities	0	10	-3	-5	-22	-29	-33	-11	-11	-32	-11	-11
Free cash flow	-1	-4	-4	-3	-18	-35	-3	46	47	28	50	52
Financing activities												
Net proceeds from issue of shares	0	10	5	0	37	0	0	0	0	0	0	0
Proceeds from borrowings	0	0	0	0	47	0	0	0	0	0	0	0
Repayments of borrowings	0	0	0	0	0	0	-10	-10	-10	-10	-7	0
Dividends paid	0	0	0	0	0	0	0	0	-16	-25	-27	-27
Other	0	0	0	0	0	0	0	0	0	0	0	0
Net cash flow from financing activities	0	10	5	0	83	0	-10	-10	-26	-35	-33	-27
Net increase/(decrease) in cash	-1	16	-2	-7	56	-37	-15	34	19	-10	15	23

Figure 95: LOT cash flow (A\$m) - – using a U₃O₈ spot price of US\$60/lb (2020 Real)

Figure 96: LOT balance sheet (A\$m) - using a U₃O₈ spot price of US\$60/lb (2020 Real)

BALANCE SHEET (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Cash and cash equivalents	0	16	14	7	63	26	11	45	64	54	69	92
Trade and other receivables	0	0	0	0	0	0	11	20	20	20	21	21
Other	0	1	1	1	1	1	1	1	1	1	1	1
Total current assets	0	17	15	7	64	27	23	65	85	76	91	114
Property, plant and equipment	0	0	0	0	12	36	57	52	47	61	57	52
Exploration and evaluation expendi	12	65	67	69	71	73	75	77	79	81	83	85
Other	0	0	0	0	1	4	17	34	51	71	88	106
Total non-current assets	12	65	67	69	84	113	149	163	177	213	228	243
TOTAL ASSETS	12	82	82	77	148	140	172	228	262	289	319	357
Trade and other payables	0	1	0	0	0	0	12	22	23	23	24	24
Other	0	1	0	0	0	0	0	0	0	0	0	0
Total current liabilities	0	3	0	0	0	0	12	22	23	23	24	24
Deferred tax	0	0	0	0	0	0	0	0	0	0	0	0
Borrowings	0	0	0	0	47	47	37	27	17	7	0	0
Other	0	72	72	69	62	62	62	62	62	62	62	62
Total non-current liabilities	0	72	72	69	109	109	99	89	79	69	62	62
TOTAL LIABILITIES	0	75	72	69	109	109	111	111	102	92	86	87
NET ASSETS	12	8	10	7	39	31	60	117	161	197	233	271
Net debt	0	-16	-14	-7	-16	20	25	-19	-48	-48	-69	-92
Gearing (ND/ND+E %)	1%	0%	0%	0%	0%	39%	29%	0%	0%	0%	0%	0%

Lotus Resources financial summary

Profit & Loss	FY19	FY20f	FY21f	FY22f	FY23f	
Revenue	0.0	0.0	0.0	0.0	0.0	
Expenses	-0.8	-3.8	-3.0	-3.1	-5.0	
Underlying EBITDA	-0.8	-3.8	-3.0	-3.1	-5.0	
Depreciation & Amort	0.0	0.0	0.0	0.0	0.0	
Underlying EBIT	-0.8	-3.8	-3.0	-3.1	-5.0	
Net Interest	0.0	0.0	0.3	0.4	0.2	
Profit Before Tax	-0.8	-3.8	-2.7	-2.6	-4.8	
Тах	0.0	0.0	0.0	0.0	0.0	
NPAT (Underlying)	-0.8	-3.8	-2.7	-2.6	-4.8	
Exceptional items	0.0	-12.8	0.0	0.0	0.0	
NPAT (reported)	-0.8	-16.6	-2.7	-2.6	-4.8	
Minorities	0.0	-0.7	0.0	0.0	0.0	
Attributable NPAT	-0.8	-15.9	-2.7	-2.6	-4.8	

Balance Sheet	FY19	FY20f	FY21f	FY22f	FY23f
Cash	0.1	16.5	14.2	6.9	62.9
Net Receivables	0.0	0.0	0.0	0.0	0.0
Other	0.1	0.6	0.6	0.6	0.6
Current Assets	0.1	17.1	14.8	7.5	63.5
Property, Plant & Equipment	0.0	0.0	0.0	0.0	12.1
Other	11.8	65.1	67.1	69.1	72.4
Non Current Assets	11.8	65.1	67.1	69.1	84.5
Total Assets	11.9	82.2	81.9	76.6	148.1
Trade Creditors	0.2	1.4	0.0	0.0	0.0
Borrow ings	0.2	0.0	0.0	0.0	0.0
Other	0.0	1.5	0.0	0.0	0.0
Current Liabilities	0.4	2.9	0.0	0.0	0.0
Borrow ings	0.0	0.0	0.0	0.0	46.7
Other	0.0	71.7	71.7	69.0	62.0
Non Current Liabilities	0.0	71.7	71.7	69.0	108.7
Net Assets	11.5	7.6	10.1	7.5	39.3
Shareholder Capital	43.8	57.2	62.4	62.4	99.0
Retained earnings	-33.3	-51.4	-54.1	-56.7	-61.5
Minorities/others	1.1	1.9	1.9	1.9	1.9
Total Equity	11.5	7.6	10.1	7.5	39.3

Cash Flow	FY19	FY20f	FY21f	FY22f	FY23f
Receipts	0.0	0.2	0.0	0.0	0.0
Payments	-0.8	-4.0	-3.0	-3.1	-5.0
Other Operating Cash Flow	0.0	0.0	-1.1	0.4	0.2
Operating Cash Flow	-0.8	-3.8	-4.1	-2.6	-4.8
Capex	0.0	0.0	0.0	0.0	-13.4
Other Investing Cash Flow	-0.4	10.2	-3.5	-4.7	-9.0
Investing Cash Flow	-0.4	10.2	-3.5	-4.7	-22.4
Net Equity raised	0.0	10.3	5.2	0.0	36.6
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Net Borrow ings	0.2	-0.2	0.0	0.0	46.7
Financing Cash flow	0.2	10.1	5.2	0.0	83.3
Total Cash Change	-1.0	16.4	-2.3	-7.3	56.0

Source: Company reports, Shaw and Partners analysis

Company Information	
Financial Year End Date	30-Jun
Share Price	0.086
Market Capitalisation	69
Valuation	0.11
Recommendation	Neutral

Per Share Data (c)	FY19	FY20f	FY21f	FY22f	FY23f
Shares (m)	100	672	808	810	1,337
Normalised EPS	-0.1	-0.8	-0.4	-0.3	-0.4
Dividends	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Book Value	0.12	0.01	0.01	0.01	0.03
P/E(x)	-42.4	-5.8	-17.0	-19.2	-14.3
EV/EBITDA (x)	-3.0	-0.7	-0.9	-0.8	-0.5

Valuation (fully diluted)	US\$m	A\$m	A\$ps
Kayelekera	0	0	0.00
Net debt	15	21	0.02
Exploration upside	72	100	0.07
Corporate costs	-7	-10	-0.01
Total Valuation	106	148	0.11

Assumptions	FY19	FY20f	FY21f	FY22f	FY23f
Prices					
A\$/US\$	0.71	0.67	0.71	0.73	0.74
U ₃ O ₈ (US\$/lb)	26	28	26	44	50

Operating Metrics	FY19	FY20f	FY21f	FY22f	FY23f
Ore processed (ktpa)	0	0	0	0	0
Average grade (ppm)	0	0	0	0	0
U ₃ O ₈ sold (Mlb)	0.0	0.0	0.0	0.0	0.0
C1 cost (US\$/lb)	0	0	0	0	0
Average price (US\$/lb)	0	n/a	n/a	n/a	n/a
Average cost (US\$/lb)	0	n/a	n/a	n/a	n/a
Average margin (US\$/lb)	0	n/a	n/a	n/a	n/a

Financial metrics (%)	FY19	FY20f	FY21f	FY22f	FY23f
EBITDA margin	0.0%	0.0%	0.0%	0.0%	0.0%
EBIT margin	0.0%	0.0%	0.0%	0.0%	0.0%
ROIC	0.0%	0.0%	0.0%	0.0%	0.0%
Return on Assets	-6.9%	-36.8%	-3.3%	-3.3%	-4.3%
Return on Equity	-7.1%	-181%	-30.1%	-30.0%	-20.5%
Balance sheet metrics	FY19	FY20f	FY21f	FY22f	FY23f
Net Debt (m)	0	-16	-14	-7	-16
ND / ND+E	n/a	0.0%	0.0%	0.0%	0.0%

Bannerman Resources – Etango-8 greenfields development in Namibia

- Bannerman Resources is a highly leveraged play on the uranium price. In our view the company's 95% owned open pit Etango-8 project in Namibia is lower grade (232ppm U₃O₈ vs >480ppm) but higher volume (8Mtpa vs <3Mtpa RoM) compared to its competitors listed on the ASX. In our view the company requires a spot uranium price ~US\$60/lb in order for this project to be sanctioned. We initiate with a Neutral recommendation and A\$0.05ps price target, based on a notional A\$60m ascribed to its assets still in the greenfield development stage requiring U₃O₈ prices above our base case for development.
- The management team is led by CEO Brandon Munro. Brandon is deeply involved in the World Nuclear Association, including chairing its Nuclear Fuel Demand working group, the body responsible for projecting global uranium demand out to 2040. He is also an expert contributor to the UN Economic Commission for Europe on uranium.
- The company released a Scoping Study in August 2020, which provides a smaller scaled, 8Mtpa alternative development pathway for the company's Etango resource. Previously the company assessed a 20Mtpa development at DFS level in 2015. Following the Scoping Study, BMN is expected to deliver a Pre-Feasibility Study for the project by mid 2021. There may be further improvements in project economics as design and value engineering works are progressed.
- Key features from the Scoping Study include (1) Open pit heap leached operation. (2) 14-year life-of-mine production of 51Mlbs U₃O₈. (3) Annual average production 3.5Mlbs U₃O₈. (4) Pre-production capital expenditure of US\$254m. (5) NPV8 (post-tax) of US\$212m and 21% IRR (post-tax) at an average U₃O₈ price of US\$65/lb.
- We believe the project is NPV positive at a spot U₃O₈ price of US\$52/lb. Our post-tax NPV of US\$132m and IRR of 19% using a U₃O₈ spot assumption of US\$60/lb (2020 Real) are slightly lower than the DFS, mainly due to a higher WACC assumption of 10%. We believe BMN require ~US\$260m (A\$350) to commence operations and ramp up to 3.5Mlb/yr. In our view the company will need to raise a total of A\$170m (US\$120m) equity to recapitalise and fund operations; we assume this occurs in FY23.
- The balance sheet is debt free a cash balance of \$3.7m at end Sep20q (vs \$6.3m end FY19). We assume a small equity raise in FY22 of A\$6m to continue development studies post a PFS, expected mid 2021.

Figure 97: BMN valuation – base case - U₃O₈ spot price of US\$46/lb

Bannerman Resources Valuation	US\$m	A\$m	A\$ps
Etango-8	0	0	0.00
Netdebt	3	4	0.00
Exploration upside	43	60	0.06
Corporate costs	-7	-10	-0.01
Total Valuation	39	54	0.05

Source: Company reports, Shaw and Partners analysis

Figure 99: BMN valuation sensitivity (A\$ps)



Source: Company reports, Shaw and Partners analysis

Figure 98: BMN valuation – fully diluted, assuming a U_3O_8 spot price of US\$60/lb and Etango-8 sanction

Bannerman Resources Valuation - diluted	US\$m	A\$m	A\$ps
Etango-8	125	174	0.05
Netdebt	3	4	0.00
Exploration upside	25	35	0.01
Cash from options + raise	128	178	0.05
Corporate costs	-7	-10	0.00
Total Valuation	274	381	0.10

Source: Company reports, Shaw and Partners analysis

Figure 100: Cash flow break evens (US\$/lb)



Source: Company reports, Shaw and Partners analysis

Shawand Partners

Company overview – using a U₃O₈ spot price of US\$60/lb (2020 Real)



Figure 9: Production profile (Mlbs)

Source: Company data & Shaw and Partners analysis





Source: Company data & Shaw and Partners analysis

Figure 13: Net debt and gearing (US\$m, %) – net cash and paying a dividend in FY29



Source: Company data & Shaw and Partners analysis

Figure 10: Free cash flow (US\$m) – strongly positive from FY27



Source: Company data & Shaw and Partners analysis

Figure 10: Pricing, costs and margin (US\$/Ib)



Source: Company data & Shaw and Partners analysis

Figure 14: Dividends and yield (A\$cps, %)



Source: Company data & Shaw and Partners analysis

Etango Project overview

The Etango Uranium Project is located in the Erongo Region of Namibia, ~30km to the eastsouth-east of Swakopmund. It is positioned within an established uranium mining jurisdiction, where the mining and export of uranium via the Walvis Bay deep-sea port facility has been ongoing for over 40 years. The resource is enormous and relatively homogenous, with ~165Mlbs U_3O_8 already contained in the Measured and Indicated resource classification, within a total resource of 271Mlbs U_3O_8 .

The project is 95% owned by Bannerman, the balance held by One Economy Foundation, a Namibian not-for-profit. One Economy are effectively a 5% loan-carried shareholder – the loan capital and accrued interest are repayable from future dividends.

Planned development of Etango involves bulk open pit mining followed by crushing, acid heap leaching, Ion Exchange with Nano Filtration, and uranium recovery into yellowcake product (U_3O_8) .

In 2012, Bannerman completed a Definitive Feasibility Study for Etango, based on a 20Mtpa mine and heap leach process throughput. In 2015, Bannerman commissioned an industrial scale plant which demonstrated strong support for the heap leach configuration and assumptions - the metallurgical parameters.

The company commissioned a DFS Optimisation Study, which saw a pre-production capital cost estimate of US\$793M for average life-of-mine production of 7.2 Mlbs U_3O_8 per annum at an average C1 cash cost of US\$38/lb.

In recent times the company has looked to scaled-down initial development of the Etango Project. A Scoping Study released August 2020 provides an early stage assessment of an 8Mtpa throughput rate (Etango-8 Project). The Scoping Study development also maintains the option of modular expansion to the 20Mtpa scale envisaged in previous studies.

The company is expected to deliver a Pre-Feasibility Study for the project in mid 2021. In our view it's likely there are improvements in project economics as design and value engineering works are progressed.



Figure 101: Location of the Etango Project

Source: Company reports, Shaw analysis



Bannerman - a leveraged play on the uranium price

BMN is highly leveraged to rising uranium markets. We note the following in regards to the Etango-8 project:

- It generates ~A\$45m additional free cash flow per annum for every US\$10/lb move in the uranium price once operations are fully ramped up (FY28).
- NPV break-even at US\$52/lb. In our view financiers may require higher U₃O₈ prices in order for the project to be sanctioned, we believe a spot U₃O₈ price of ~US\$60/lb.

BMN completed its August-20 Scoping Study using a U_3O_8 price of US\$65/lb. We have used a spot price of US\$60/lb (US\$66/lb 2020 Real realised) for our financial analysis.

Etango-8 financial modelling assumptions and risks

Key features from the Scoping Study

- A US\$65/lb U₃O₈ price
- Open pit heap leached operation and 14-year life-of-mine production of 51Mlbs U₃O₈.
- Annual average production 3.5Mlbs U₃O₈. The resource is lower grade (232ppm U₃O₈ vs >480ppm) but higher volume (8Mtpa vs <3Mtpa RoM) compared to its competitors listed on the ASX.
- Pre-production capital expenditure of US\$254m, and final product cash operating cost (ex-royalties) of US\$37/lb U₃O₈.
- NPV8 (post-tax) of US\$212m and 21% IRR (post-tax) at an average U₃O₈ price of US\$65/lb.

Figure 102: Etango-8 financial model – using a spot U₃O₈ price of US\$60/lb (2020 Real)

Our post-tax NPV of US\$132m and IRR of 19% using a spot U₃O₈ assumption of US\$60/lb is slightly lower than the Scoping Study, mainly due to a higher WACC assumption of 10%.

Etango-8 (A\$m)	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Ore processed (kt)							2,500	6,500	7,900	7,900	7,900
Grade of mill feed (ppm)							232	232	232	232	232
U3O8 (MIb) - sold							1.1	2.9	3.5	3.5	3.5
Revenue							113	299	371	379	386
Expenses							70	185	230	234	239
EBITDA							43	114	142	144	147
D&A							3	8	9	9	9
EBIT							40	106	132	135	138
Net Operating Assets	55	56	58	78	185	292	403	417	433	451	469
Capex	0	1	2	20	107	107	115	21	26	27	27
EBITDA Margin (%)	0%	0%	0%	0%	0%	0%	38%	38%	38%	38%	38%
EBIT / Assets (%)	0%	0%	0%	0%	0%	0%	10%	26%	30%	30%	29%
Spot U3O8 (US\$/Ib)	60	61	63	64	66	67	69	70	72	73	75
AUD/USD	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Revenue (A\$/Ib)							101	103	106	108	110
Expenses (A\$/lb)							63	64	65	67	68
EBITDA (A\$/Ib)							39	39	40	41	42
D&A (A\$/Ib)							3	3	3	3	3
EBIT (A\$/Ib)							36	37	38	38	39
Nominal Tax @ 37.5%	0	0	0	0	0	0	0	-16	-50	-51	-52
Non-cash inventory movement	0	0	0	0	0	0	0	0	0	0	0
Cash Flow	0	-1	-2	-20	-107	-107	-72	77	66	67	68

Source: Company reports, Shaw analysis

Financing - balance sheet and cash flow

Currently no debt and ~A\$3.7m cash – we assume an A\$6m equity raise in FY21

In November 2020 the company has no debt, and a cash balance of \$3.7m (vs \$6.3m end FY19). We assume a small equity raise in FY22 (A\$6m) to continue development studies post a PFS, expected mid 2021.

The last time the company completed an equity raising was June 2018 - an A\$8m private placement to institutional and sophisticated investors.

Requirement to raise ~A\$170m equity in FY23 if the project is sanctioned

We believe BMN require ~US\$260m (A\$350) to commence operations and ramp up to 3Mlb/yr U_3O_8 , and so will need to raise a total of US\$120m (A\$170m) to recapitalise and fund operations. We assume this occurs in FY23.

Gearing to peak at 43% in FY26 with spot U₃O₈ at US\$60/lb

This will leave BMN with gearing (ND / ND+E) of 43% at the end of FY26. We note that in an **elevated uranium price environment (spot U₃O₈ US\$60/lb)**, debt servicing ratios will be very strong once the company is at full production ramp-up (FY28). EBITDA/gross interest is 17x and Gross debt / EBITDA is 0.9x in FY28. Our forecast at these U₃O₈ prices has BMN net cash and paying dividends in FY29.

Figure 103: BMN cash flow (Am) - – using a U₃O₈ spot price of US60/lb (2020 Real)

CASH FLOW (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Operating activities												
Receipts from customers	0	0	0	0	0	0	0	113	299	371	379	386
Payments to suppliers and employe	-2	-2	-3	-3	-6	-8	-8	-78	-194	-238	-243	-248
Income taxes paid	0	0	0	0	0	0	0	0	0	-13	-35	-37
Working capital movement	0	0	0	0	0	0	0	-7	-12	-5	-1	-1
Other	0	0	0	0	0	-9	-3	-6	-9	-7	-3	-1
Net cash flow from operating activities	-1	-2	-3	-2	-6	-17	-11	21	84	108	97	100
Investing activities												
Payments for PPE	0	0	-1	-2	-20	-107	-107	-115	-21	-26	-27	-27
Other	-1	-1	-1	-1	0	4	4	5	0	0	0	0
Net cash flow from investing activities	-1	-1	-2	-3	-20	-102	-102	-110	-21	-26	-26	-27
Free cash flow	-1	-2	-4	-4	-26	-123	-118	-94	63	82	70	73
Financing activities												
Net proceeds from issue of shares	0	0	0	6	170	0	0	0	0	0	0	0
Proceeds from borrowings	0	0	3	0	180	0	0	0	0	0	0	0
Repayments of borrowings	0	0	0	0	0	0	0	0	-30	-30	-30	-30
Dividends paid	0	0	0	0	0	0	0	0	0	0	0	-33
Other	0	0	0	0	0	0	0	0	0	0	0	0
Net cash flow from financing activities	0	0	3	6	350	0	0	0	-30	-30	-30	-63
Net increase/(decrease) in cash	-2	-2	-2	1	324	-119	-113	-89	33	52	40	10

Source: Company reports, Shaw analysis

Figure 104: BMN balance sheet (A\$m) - using a U₃O₈ spot price of US\$60/lb (2020 Real)

BALANCE SHEET (A\$m)	2019	2020	2021f	2022f	2023f	2024f	2025f	2026f	2027f	2028f	2029f	2030f
Cash and cash equivalents	6	4	2	3	327	208	95	6	39	91	131	142
Trade and other receivables	0	0	0	0	0	0	0	9	25	31	31	32
Other	0	0	0	0	0	0	0	0	0	0	0	0
Total current assets	6	4	2	3	327	208	95	15	64	122	163	174
Property, plant and equipment	0	0	1	3	21	117	213	313	324	339	353	368
Exploration and evaluation expendi	57	48	49	50	51	52	53	54	55	56	57	58
Other	0	0	0	0	2	13	24	43	58	65	69	72
Total non-current assets	57	48	50	53	74	182	290	410	437	460	479	498
TOTAL ASSETS	63	52	53	56	401	390	384	425	501	582	641	672
Trade and other payables	0	0	0	0	0	0	0	10	25	31	32	33
Other	0	0	0	0	0	0	0	0	0	0	0	0
Total current liabilities	0	0	0	0	0	0	0	10	25	32	32	33
Deferred tax	0	0	0	0	0	0	0	0	13	35	37	38
Borrowings	0	0	3	3	184	184	184	184	154	124	94	64
Other	0	0	0	0	0	0	0	0	0	0	0	0
Total non-current liabilities	0	0	3	4	184	184	184	184	167	159	131	102
TOTAL LIABILITIES	1	1	3	4	184	184	184	194	193	191	163	135
NET ASSETS	63	52	49	53	217	206	200	231	308	391	478	536
Net debt	-6	-4	1	0	-143	-25	89	178	115	32	-38	-78
Gearing (ND/ND+E %)	0%	0%	1%	1%	0%	0%	31%	43%	27%	8%	0%	0%

Bannerman Resources financial summary

			-			
Profit & Loss	FY19	FY20f	FY21f	FY22f	FY23f	
Revenue	0.0	0.0	0.0	0.0	0.0	
Expenses	-2.2	-2.3	-2.5	-2.5	-6.0	
Underlying EBITDA	-2.2	-2.3	-2.5	-2.5	-6.0	
Depreciation & Amort	0.0	0.0	0.0	0.0	0.0	
Underlying EBIT	-2.3	-2.3	-2.5	-2.5	-6.0	
Net Interest	0.0	0.0	0.1	-0.2	-0.2	
Profit Before Tax	-2.3	-2.3	-2.4	-2.7	-6.2	
Tax	0.0	0.0	0.0	0.0	0.0	
NPAT (Underlying)	-2.3	-2.3	-2.4	-2.7	-6.2	
Exceptional items	0.0	0.0	0.0	0.0	0.0	
NPAT (reported)	-2.3	-2.3	-2.4	-2.7	-6.2	
Minorities	0.0	0.0	0.0	-0.1	-0.3	
Attributable NPAT	-2.2	-2.3	-2.4	-2.6	-5.9	

Balance Sheet	FY19	FY20f	FY21f	FY22f	FY23f
Cash	6.3	4.2	2.2	2.8	326.7
Net Receivables	0.1	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0
Current Assets	6.5	4.3	2.3	2.9	326.8
Property, Plant & Equipment	0.0	0.0	1.3	3.1	21.3
Other	57.0	48.0	49.2	50.4	53.4
Non Current Assets	57.0	48.0	50.4	53.5	74.6
Total Assets	63.5	52.3	52.7	56.3	401.4
Trade Creditors	0.1	0.2	0.0	0.0	0.0
Borrow ings	0.0	0.0	0.0	0.0	0.0
Other	0.1	0.1	0.1	0.1	0.1
Current Liabilities	0.2	0.3	0.1	0.1	0.1
Borrow ings	0.0	0.0	3.0	3.3	183.6
Other	0.3	0.3	0.3	0.3	0.3
Non Current Liabilities	0.3	0.3	3.3	3.6	183.9
Net Assets	63.0	51.7	49.3	52.7	217.4
Shareholder Capital	141.2	141.2	141.2	147.2	317.2
Retained earnings	-108.2	-110.5	-112.9	-115.5	-121.4
Minorities/others	30.0	21.0	21.0	21.0	21.7
Total Equity	63.0	51.7	49.3	52.7	217.4

Cash Flow	FY19	FY20f	FY21f	FY22f	FY23f
Receipts	0.0	0.0	0.0	0.0	0.0
Payments	-1.6	-1.6	-2.5	-2.5	-6.0
Other Operating Cash Flow	0.1	0.1	-0.1	0.1	0.1
Operating Cash Flow	-1.4	-1.5	-2.6	-2.4	-5.9
Capex	0.0	0.0	-1.4	-2.1	-20.2
Other Investing Cash Flow	-0.8	-0.6	-1.0	-0.9	0.0
Investing Cash Flow	-0.8	-0.6	-2.4	-3.0	-20.2
Net Equity raised	0.2	0.0	0.0	6.0	170.0
Dividends Paid	0.0	0.0	0.0	0.0	0.0
Net Borrow ings	0.0	0.0	3.0	0.0	180.0
Financing Cash flow	0.2	0.0	3.0	6.0	350.0
Total Cash Change	-2.1	-2.1	-2.0	0.6	323.9

Source: Company reports, Shaw and Partners analysis

Company Information	
Financial Year End Date	30-Jun
Share Price	0.041
Market Capitalisation	45
Valuation	0.05
Recommendation	Neutral

Per Share Data (c)	FY19	FY20f	FY21f	FY22f	FY23f
Shares (m)	1,042	1,059	1,089	1,211	3,655
Normalised EPS	-0.2	-0.2	-0.2	-0.2	-0.2
Dividends	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Book Value	0.06	0.05	0.05	0.04	0.06
P/E(x)	-14.8	-9.3	-13.0	-13.2	-12.5
EV/EBITDA (x)	-12.0	-11.7	-10.8	-10.8	-4.5

Valuation	US\$m	A\$m	A\$ps
Etango-8	0	0	0.00
Net debt	3	4	0.00
Exploration upside	43	60	0.06
Corporate costs	-7	-10	-0.01
Total Valuation	39	54	0.05

Assumptions	FY19	FY20f	FY21f	FY22f	FY23f
Prices					
A\$/US\$	0.71	0.67	0.71	0.73	0.74
U ₃ O ₈ (US\$/lb)	26	28	26	44	50

Operating Metrics	FY19	FY20f	FY21f	FY22f	FY23f
Ore processed (ktpa)	0	0	0	0	0
Average grade (ppm)	0	0	0	0	0
U ₃ O ₈ sold (Mlb)	0.0	0.0	0.0	0.0	0.0
C1 cost (US\$/lb)	0	0	0	0	0
Average price (US\$/lb)	0	n/a	n/a	n/a	n/a
Average cost (US\$/lb)	0	n/a	n/a	n/a	n/a
Average margin (US\$/lb)	0	n/a	n/a	n/a	n/a

Financial metrics (%)	FY19	FY20f	FY21f	FY22f	FY23f
EBITDA margin	0.0%	0.0%	0.0%	0.0%	0.0%
EBIT margin	0.0%	0.0%	0.0%	0.0%	0.0%
ROIC	0.0%	0.0%	0.0%	0.0%	0.0%
Return on Assets	-1.2%	-20.8%	-4.6%	-5.0%	-2.7%
Return on Equity	-1.3%	-21.0%	-4.8%	-5.4%	-4.6%
Balance sheet metrics	FY19	FY20f	FY21f	FY22f	FY23f
Net Debt (m)	-6	-4	1	0	-143
ND / ND+E	n/a	0.0%	1.6%	0.9%	0.0%

Rating Classification

Buy	Expected to outperform the overall market
Hold	Expected to perform in line with the overall market
Sell	Expected to underperform the overall market
Not Rated	Shaw has issued a factual note on the company but does not have a recommendation

Risk Rating

High	Higher risk than the overall market – investors should be aware this stock may be speculative
Medium	Risk broadly in line with the overall market
Low	Lower risk than the overall market

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