



## Lucrative prospects ahead

Share Price: A\$0.13

### Presence of high-grade lithium deposits

Prospect Resources Limited (ASX: PSC) is a Perth-based mining company that is currently focused on the Arcadia lithium project. PSC own an 87% stake in the project, located on the outskirts of Harare, Zimbabwe. The mine is in development phase with commissioning expected in 2022 after the project becomes fully funded. It is one of the largest hard-rock lithium mines in the world with a higher-than-average lithium grade. Demand for lithium is expected to be robust on the back of increasing uptake of electric vehicles as well as growing applications in the glass and ceramics industry.

### Investment case

The Arcadia project has considerable advantages as a lithium source, most notably its favourable mineralogy and support from the Zimbabwean government. A steady growth in lithium prices, further progress on the Arcadia development plan and clarity on project funding will help drive favourable sentiment and re-rate the stock into our valuation range.

### Valuation range of A\$0.44–0.93 per share

We value PSC at A\$0.44 per share base case and A\$0.93 per share optimistic case using a DCF approach with conservative assumptions on lithium prices and cost of capital. Currently, investors appear to be cautious on PSC's liquidity and country risk, but we expect the situation to reverse once the project funding is in place.

Year to June (AUD)	2018A	2019F	2020F	2021F	2022F
Sales (m)	3.9	4.3	4.5	4.6	295.0
EBITDA (m) Adjusted	-5.3	-5.9	-6.1	4.2	126.6
Net Profit (m) Adjusted	-5.6	-6.3	-7.0	-1.6	108.2
Adj. EBITDA Margin (%)	nm	nm	nm	91.0%	42.9%
RoA (%)	nm	nm	nm	nm	58.7%
EPS before extr. & amort.	-3.24c	-2.86c	-1.50c	-0.24c	15.45c
EPS	-3.24c	-2.86c	-1.50c	-0.24c	15.45c
DPS	na	na	na	na	na
EV/Sales	15.9x	7.0x	23.6x	50.1x	0.4x
EV/EBITDA	-11.6x	-5.1x	-17.2x	55.1x	1.0x
P/E	-12.4x	-4.5x	-8.7x	-55.3x	0.8x
Dividend yield %	na	na	na	na	na

Source: Company, Pitt Street Research

ASX: PSC

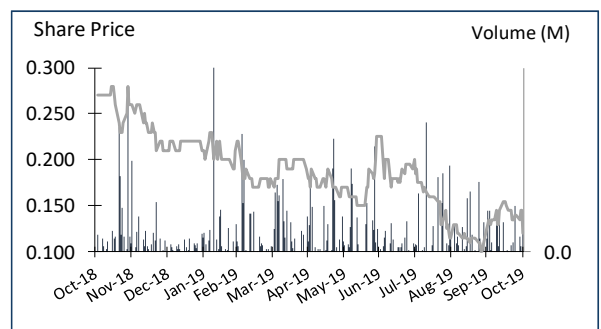
Sector: Materials

5 November 2019

Market Cap. (A\$ m)	30.7
# shares outstanding (m)	236.0
# share fully diluted	240.5
Market Cap Ful. Dil. (A\$ m)	31.3
Free Float	100%
12 months high/low	0.28 / 0.10
Average daily volume ('000)	82
Website	<a href="http://prospectresources.com.au">prospectresources.com.au</a>

Source: Company, Pitt Street Research

### Share price (A\$) and avg. daily volume (k, r.h.s.)



Source: Thomson Reuters, Pitt Street Research

Valuation metrics	
DCF fair valuation range (A\$)	0.44-0.93
WACC	15.6%
Assumed terminal growth rate	None

Source: Pitt Street Research

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Profit & Loss (A\$m)	2017A	2018A	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F
<b>Sales Revenue</b>	<b>0.1</b>	<b>3.9</b>	<b>4.3</b>	<b>4.5</b>	<b>4.6</b>	<b>295.0</b>	<b>354.4</b>	<b>354.5</b>	<b>354.6</b>	<b>346.0</b>
Operating expenses	-12.8	-9.2	-10.2	-10.6	-0.4	-168.4	-203.6	-203.6	-203.6	-202.8
<b>Adjusted EBITDA</b>	<b>-12.7</b>	<b>-5.3</b>	<b>-5.9</b>	<b>-6.1</b>	<b>4.2</b>	<b>126.6</b>	<b>150.9</b>	<b>150.9</b>	<b>151.0</b>	<b>143.2</b>
Depn & Amort	-0.1	-0.1	-0.1	-0.1	-0.1	-3.7	-3.7	-3.7	-3.7	-3.7
<b>Adjusted EBIT</b>	<b>-12.8</b>	<b>-5.4</b>	<b>-6.0</b>	<b>-6.3</b>	<b>4.0</b>	<b>122.9</b>	<b>147.2</b>	<b>147.2</b>	<b>147.3</b>	<b>139.5</b>
Net Interest	0.0	0.0	-0.3	-0.8	-5.7	-14.7	-10.2	-4.9	0.6	6.0
<b>Profit before tax (before exceptionals)</b>	<b>-12.8</b>	<b>-5.4</b>	<b>-6.3</b>	<b>-7.0</b>	<b>-1.6</b>	<b>108.2</b>	<b>137.0</b>	<b>142.4</b>	<b>147.9</b>	<b>145.5</b>
Tax expense	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Abnormals + Minorities	0.8	0.1	0.1	0.1	0.0	-1.1	-1.4	-1.5	-1.5	-1.5
<b>NPAT</b>	<b>-12.0</b>	<b>-5.6</b>	<b>-6.2</b>	<b>-7.0</b>	<b>-1.6</b>	<b>107.1</b>	<b>135.6</b>	<b>140.9</b>	<b>146.4</b>	<b>144.0</b>
Cash Flow (A\$m)	2017A	2018A	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F
Profit after tax	0.0	0.0	-6.3	-7.0	-1.6	108.2	137.0	142.4	147.9	145.5
Depreciation	0.0	0.0	0.1	0.1	0.1	3.7	3.7	3.7	3.7	3.7
Change in trade and other receivables	0.1	3.7	0.0	0.0	0.0	-23.9	9.7	0.0	0.0	0.4
Change in trade payables	-2.8	-6.9	0.1	0.1	0.0	26.9	-11.3	0.0	0.0	-0.4
Other operating activities	-1.3	-1.6	0.0	0.0	0.3	-4.3	1.5	0.0	0.0	0.0
<b>Operating cashflow</b>	<b>-4.0</b>	<b>-4.8</b>	<b>-6.1</b>	<b>-6.9</b>	<b>-1.2</b>	<b>110.6</b>	<b>140.6</b>	<b>146.1</b>	<b>151.6</b>	<b>149.1</b>
Capex (- asset sales)	-0.5	-0.9	-16.0	-90.0	-122.2	-3.7	-3.7	-3.7	-3.7	-3.7
Other investing activities	-6.7	-5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Investing cashflow</b>	<b>-7.2</b>	<b>-6.4</b>	<b>-16.0</b>	<b>-90.0</b>	<b>-122.2</b>	<b>-3.7</b>	<b>-3.7</b>	<b>-3.7</b>	<b>-3.7</b>	<b>-3.7</b>
Dividends										
Equity raised (repurchased)	17.4	20.2	5.2	80.6	0.0	0.0	0.0	0.0	0.0	0.0
Debt drawdown (repaid)	-0.1	0.0	10.0	60.0	79.3	-25.0	-25.0	-25.0	-23.0	0.0
Other financing activities	-1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Net change in cash</b>	<b>4.9</b>	<b>9.1</b>	<b>-6.9</b>	<b>43.7</b>	<b>-44.2</b>	<b>81.9</b>	<b>111.9</b>	<b>117.4</b>	<b>124.9</b>	<b>145.4</b>
Cash at End Period	7.3	16.4	9.5	53.2	9.0	90.9	202.8	320.2	445.1	590.5
Net Debt (Cash)	-7.3	-16.4	0.5	16.8	140.2	33.4	-103.6	-246.0	-393.9	-539.3
Balance Sheet (A\$m)	2017A	2018A	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F
Cash	7.3	16.4	9.5	53.2	9.0	90.9	202.8	320.2	445.1	590.5
Total Assets	14.5	30.3	39.3	172.9	250.5	360.6	461.3	578.7	703.6	848.7
Total Debt	0.0	0.0	10.0	70.0	149.3	124.3	99.3	74.3	51.3	51.3
Total Liabilities	1.1	1.5	11.6	71.7	151.0	152.8	116.5	91.5	68.5	68.1
Shareholders' Funds	13.4	28.7	27.6	101.2	99.5	207.7	344.7	487.1	635.1	780.5
Ratios	2017A	2018A	2019F	2020F	2021F	2022F	2023F	2024F	2025F	2026F
Net Debt/Equity (%)	-54.8%	-57.0%	1.8%	16.6%	140.9%	16.1%	-30.0%	-50.5%	-62.0%	-69.1%
Interest Cover (x)	nm	nm	nm	nm	0.7	8.4	14.5	30.3	nm	nm
Return on Equity (%)	nm	nm	nm	nm	nm	69.7%	49.1%	33.9%	26.1%	20.3%



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## Introducing Prospect Resources

Prospect Resources Ltd (PSC) is a Perth-based resources company focused on the Arcadia Lithium Project in Zimbabwe. PSC has been working on this project since 2016 and it owns an 87% stake in the mine, post the approval received from Reserve Bank of Zimbabwe on 19 July 2019 (shareholder approval was received on 11 June 2019). It has the potential to become one of the largest hard-rock lithium mines globally and is estimated to contain 26.9Mt of reserves, which contain 351Kt of lithium oxide and 7.2Mlbs of tantalum oxide. Under an intended plant throughput of 2.4Mtpa, the average Life of Mine (LOM) production will amount to 27Ktpa of lithium carbonate equivalent (LCE). The mine will primarily produce two important lithium ore minerals – spodumene (6% Li<sub>2</sub>O) and petalite (4.0% Li<sub>2</sub>O).

## PSC's key products

The Arcadia mine project is a hard rock (Figure 1) asset which is a reference to all pegmatite hosted lithium deposits (spodumene and petalite). It also hosts tantalum.

*Arcadia project has 26.9Mt of reserves, which contain 351Kt of lithium oxide and 7.2Mlbs of tantalum oxide*

**Spodumene** – This mineral (lithium aluminium inosilicate) is mainly found in North America, Brazil, Zimbabwe, China, Portugal, Argentina and Australia. Historically the Greenbushes mine in Western Australia produced the majority of the world's spodumene output. Pegmatites are generally further processed into lithium carbonate and lithium hydroxide. The amount of lithium obtained depends on source and varies accordingly. PSC will produce on average 212Ktpa of high-grade spodumene concentrate (>6% Li<sub>2</sub>O).

**Petalite** – Petalite, also known as castorite, is a lithium aluminum silicate. Petalite is a natural gemstone which makes it useful in glass and ceramics industry. PSC will produce on average 216Ktpa high-grade, low iron petalite concentrate (>4% Li<sub>2</sub>O). The glass and ceramics industries demand purity of petalite as iron contamination significantly impacts the output quality. PSC produces high quality petalite which contains very low amount of iron.

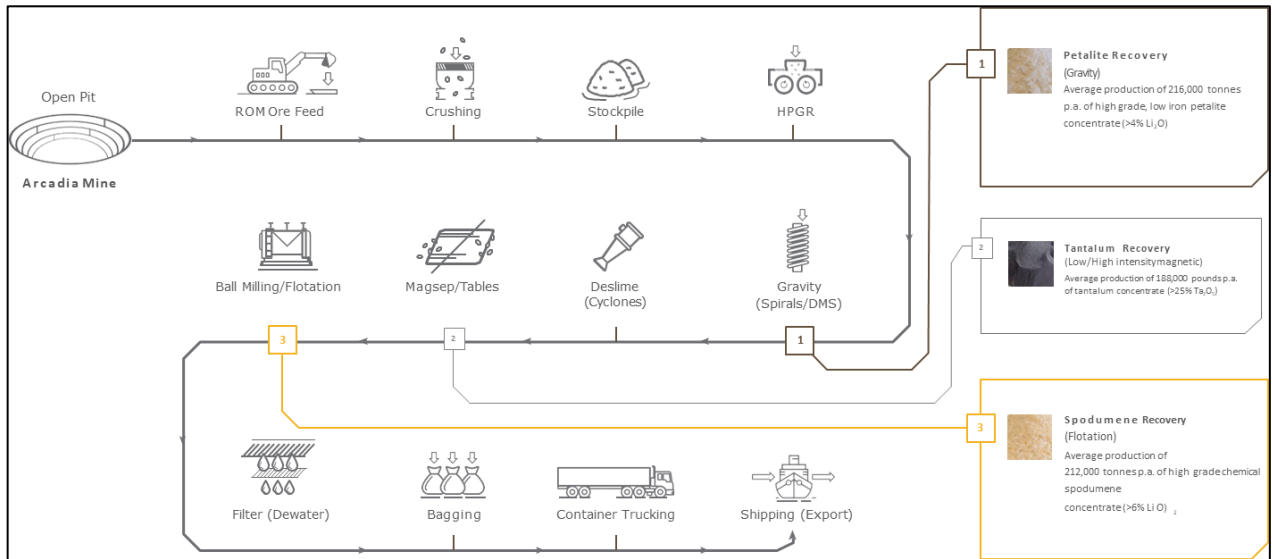
**Tantalum** – More than half of this metal's use is for electrolytic capacitors and vacuum furnace parts. That is because tantalum is a hard but ductile metal which can be drawn into a wire, is immune to chemical reactions below 150°C, and, as an oxide film, is very stable and has good rectifying and dielectric properties. PSC will produce on average 188Klb of tantalum concentrate (>25% Ta<sub>2</sub>O<sub>5</sub>) every year.

## Lithium and its growing importance

Lithium is a soft, silvery alkali metal, widely used in batteries, glass and ceramics, lubricants and medicine. The increasing adoption of Electric Vehicles (EVs) as a transportation option will depend, in part, on the supply of lithium. The exponential increase in the consumption of lithium is proportional to China's economic rise. The country has built massive manufacturing capabilities and can sell lithium at very low price-points, which has resulted in the country's dominance in this space. Chinese companies, such as Tianqi and Ganfeng Lithium, contribute to a large portion of the global lithium production.



Figure 1: Conventional hard rock processing



Source: Company

## Arcadia's current state of development

The Arcadia mine is currently in development phase. The project is expected to be commissioned in 2022 post funding completion.

PSC has received Special Economic Zone (SEZ) status from the Zimbabwean government, which includes tax relief and exemptions, and reductions of costs and trade barriers associated with the import of raw materials and capital goods.

A key step forward for PSC is the offtake agreement with Sinomine Resource Group (Sinomine) of China. PSC has contracted to supply 40,000tpa spodumene and 112,000tpa petalite (~34% of its lithium production) for the first seven years to Sinomine, which has the technical knowhow to convert spodumene to lithium carbonate. Sinomine fully owns Jiangxi Dongpeng, which is the world's largest petalite lithium chemical converter. Sinomine has also recently purchased the specialty fluid segment of Cabot Corporation (US\$135m) which will further strengthen its position in this industry<sup>1</sup>. PSC has completed a share placement of A\$10m with Sinomine and this partnership provides PSC with a financial buffer as well as revenue visibility.

PSC produced >99.5% lithium carbonate in 2018 in its Kwekwe laboratory using Arcadia petalite. The addition of a lithium chemical plant at Arcadia will make the Arcadia project one of the rare vertically integrated lithium projects in the world. Arcadia has the added benefit of its proximity to key infrastructure such as electricity, by-product consumers and transportation resources, as well as regional access to major consumables such as coal and sulfuric acid that are required for the conversion process.

## What comes next for Prospect Resources?

The Arcadia mine is currently in the development phase and has received all the necessary environmental approvals. It is expected to start production in 2022. The company requires funds for developing the Arcadia mine. It will

**Mine production is expected to commence in 2022**

<sup>1</sup> See the Cabot press release dated 29 June 2019 and headlined 'Cabot Corporation Completes Sale of Specialty Fluids Business'.



have to raise debt and equity from external sources since it is not at the revenue generation stage.

## Business still highly undervalued

**We believe there are two main reasons for the apparent undervaluation of PSC.** Firstly, investors are wary of the country risk associated with Zimbabwe. Secondly, as the company is currently not in the revenue generation stage, it is dependent on external investors for funding to carry out its mine development activities. We look for a re-rating once financing is secured and there is firm visibility on the commissioning of the project.

**The Wodgina transactions of 2018 and 2019 point to the upside.** We believe that the sale by the Perth-based Mineral Resources (ASX: MIN) of a major stake in the Wodgina lithium project bodes well for PSC, once its project is up and running.

- Wodgina sits in the middle of an emerging hard rock lithium province in the Pilbara region of Western Australia. Mineral Resources had bought the project in 2016 and was originally selling Direct Shipping Ore before taking the strategic decision to move to production of higher value spodumene concentrate. The first shipments of this concentrate are expected late this year.
- In November 2018, Albemarle, the American specialty chemicals company, which is a major lithium producer, bought 50% of Wodgina in late 2018 for US\$1.15bn.
- In August 2019, the Albemarle/Mineral Resources relationship was revised. Albemarle moved to 60% of Wodgina for US\$820m plus 40% of two lithium hydroxide plants which the American company is establishing at Kemerton, near Bunbury in southwest WA. The much higher price for a Wodgina interest in this second agreement reflects, in our view, an improved long-term view of spodumene as well as lithium on the part of Albemarle, combined with the established nature of the Wodgina resource.

## Ten reasons to look at PSC

- 1) The Arcadia Mine project possesses rich lithium oxide reserves sources (26.9Mt) with a higher-than-average lithium grade (1.31%).
- 2) The project has access to vital infrastructure such as electricity, groundwater, logistical support, and skilled and semiskilled labour owing to its proximity to Zimbabwe's capital city, Harare.
- 3) Increasing EV uptake bodes well for lithium prices as it is a key component in EV batteries. Governments across the globe have taken various initiatives to increase the number of EVs on the roads.
- 4) PSC is the only listed miner that will produce both spodumene and petalite. This will enable the company to target diverse end-use markets for lithium. While spodumene will be useful for EV and energy storage, petalite will have applications in the glass and ceramics industry.
- 5) The glass and ceramics industries demand purity of petalite, since iron contamination impacts the quality of output. PSC stands to gain as its petalite is expected to be a low-iron product.
- 6) The Zimbabwean government's efforts to revive its economy by focusing on mining will positively impact PSC. The company has received several



benefits from the current government including SEZ status. Besides the tax relief and exemptions, the SEZ status will provide a significant benefit of operating without currency constraints.

- 7) PSC has signed an important offtake agreement with Sinomine wherein the latter has agreed to purchase ~34% of total lithium production for the first seven years. This arrangement has ensured a ready market for PSC's future production. Sinomine has already invested A\$10m in PSC and can provide a further A\$10m upon installation of the ball mill.
- 8) The Arcadia mine is an advanced stage of project implementation. Surface rights and all environment approvals have been secured. The site is ready to commence project development.
- 9) PSC has an experienced team, which includes years of lithium and mine development experience. Team members have previously delivered large complex mine and plant projects in the region, with total project capital expenditure of over US\$10bn.
- 10) We believe PSC is currently undervalued. We value the company at A\$0.44 per share base case and A\$0.93 per share optimistic case using a DCF approach with conservative assumptions on lithium prices and cost of capital.

## Arcadia mine – PSC's flagship project

PSC owns an 87% stake (post the approval from Reserve Bank of Zimbabwe on 19 July 2019), in the Arcadia mine, which is presently in development stage. The current landowner owns 6% and the remaining 7% shareholder is the project's vendor, Paul Chimbodza. The project is expected to be commissioned in 2022 post completion of funding.

Figure 2: Location of Arcadia project



Source: Company

## Strategic benefits of the Arcadia project

The project has a number of qualities that provide strategic benefits to PSC.

**Favourable location and infrastructure.** The Arcadia project is located 35km east of Harare (Figure 2). The project is located close to highways and railheads. The Port of Beira in Mozambique is ~580km by rail and road, which makes transporting materials easy. As the project is close to Harare,





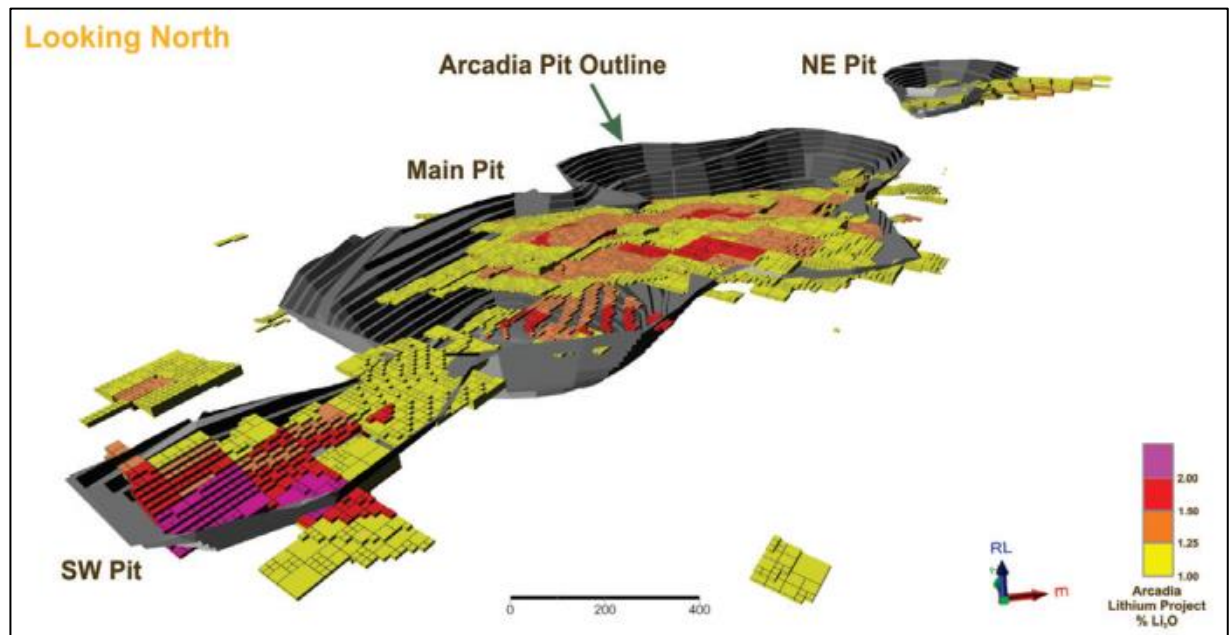
professional, skilled and semiskilled labor is easily available. There is a grid power in the vicinity that will soon be connected to the site. This grid will provide 20MVA power supply, which is sufficient for a lithium chemical plant. The area also has ample amount of groundwater.

Arcadia's products will possibly be transported to Beira via the main Harare–Mozambique road. These roads are used by several trucking companies; hence trucking the concentrates to Beira will not be a problem.

**Favourable geology.** The Arcadia mine is a conventional open pit mine. The Arcadia lithium deposit is hosted within a series of 14 stacked, sub-parallel petalite-spodumene bearing pegmatites that intrude the local Archaean age Harare Greenstone Belt. Dimensions of the pegmatites defined by drilling to date are 4.5km along strike (SW-NE), with an average thickness of 15 meter and dipping 15 degrees to the NW (Figure 3).

Structural logging to ascertain Rock Quality Design has been undertaken by PSC's exploration team. Inspection of the core has confirmed much of what is observed in the open pit; highly weathered, blocky shallow ground, transitioning into moderately jointed competent rock, eventually followed by slightly jointed but very competent lithology. Both the pegmatites and metabasalt were observed to be very competent, with distinct brittle contacts between lithologies that will enable easy separation and limited technical issues during mining. The inspection confirmed that there are no fatal flaws or critical risk factors to the design.

Figure 3: Pit map of Arcadia project



Source: Company

**Favourable mineralogy.** Lithium mineralisation in the pegmatites is dominated by petalite and spodumene. Preliminary results show that the Arcadia's 'Lower' Pegmatite contains five times more spodumene (15%) than petalite (3%). Initial results from the Main Pegmatite suggest equal quantities of spodumene and petalite (11–13%), with 39% quartz, 33% feldspar and the balance largely muscovite.





Hence, PSC has the advantage of being one of the few global producers of both spodumene and petalite. These minerals have different characteristics and varied end uses. Spodumene is predominantly used for battery minerals. Petalite is mainly used in glass and ceramics. PSC has one of the purest (low iron component) petalite and it plans to leverage this competitive difference in its quest to become the largest petalite producer in the world.

**Project implementation is on track.** PSC has been granted a mining lease over a total plot area of 14km<sup>2</sup> and mining area of 10km<sup>2</sup> and it has secured all the necessary environmental approvals. The Arcadia project is at a critical juncture in its development. Its design, procurement and financing decisions will have far-reaching impact over the life of mine. The mine is expected to be commissioned in 2022.

**High-quality mineral reserves.** PSC has undertaken diamond and reverse circulation drilling, geological mapping and channel sampling, and topographic, geophysical as well as hydrographical surveys to estimate mineral resources that are compliant with JORC<sup>2</sup> guidelines. PSC conducted its first JORC Mineral Resource estimate in October 2016, shortly after acquisition of the project, and it followed this with another estimate in July 2017. This was further ratified by the Definitive Feasibility Study (DFS) of November 2018 (Figure 4). According to these studies, the Arcadia ore reserve hosts 868,000 LCE and 26.9Mt reserves at an average lithium grade of 1.31%, with a 12-year mine life.

**Figure 4: Mineral reserves at Arcadia**

Ore Reserves declared at the Arcadia Lithium Project (>1% Li <sub>2</sub> O cut off)					
Category	Tonnes (Mt)	Lithium Oxide (%)	Tantalum Oxide (ppm)	Lithium Oxide (t)	Tantalum Oxide (Mlbs)
Proven	8.0	1.36%	128	109,000	2.2
Probable	18.9	1.28%	127	242,000	5.3
<b>Total</b>	<b>26.9</b>	<b>1.31%</b>	<b>128</b>	<b>351,000</b>	<b>7.6</b>
Ore Resource declared at the Arcadia Lithium Project (>1% Li <sub>2</sub> O cut off)					
Category	Tonnes (Mt)	Lithium Oxide (%)	Tantalum Oxide (ppm)	Lithium Oxide (t)	Tantalum Oxide (Mlbs)
Measured	10.2	1.45%	132	148,100	3.0
Indicated	27.2	1.39%	119	378,400	7.1
Inferred	5.8	1.45%	97	84,000	1.2
<b>Total</b>	<b>43.2</b>	<b>1.41%</b>	<b>119</b>	<b>610,500</b>	<b>11.3</b>

Source: Company, Pitt Street Research

**Favourable project economics.** In November 2018, PSC completed its DFS for the Arcadia lithium project, estimating the project life of 12 years, with a base case of 2.4Mtpa, while confirming the financial strength of the project. PSC also undertook a value engineering programme which demonstrated that it will be able to use High Pressure Grinding Rolls (HPGR) in its process design. The use of HPGR will lead to better project economics than that postulated in the DFS earlier. Improved data suggest an annual average EBITDA of ~US\$109m, operating expenditure at US\$278/ton and pre-tax NPV of ~US\$533m. The rapid payback period of ~2.5 years from the commencement

<sup>2</sup> The Joint Ore Reserves Committee (JORC) code is the Australian professional code of practice that sets minimum standards for public reporting of exploration results, mineral resources and ore reserves.



of production highlights the superior financial strength of the project. PSC has also conducted extensive petalite bulk metallurgical test work and three-stage dense media separation (DMS) programme. The results indicate there is a potential for an overall increase in lithium recovery from 67.9% to +70%. This finding will further improve project economics.

## Conducive political environment will support growth plans

Zimbabwe is currently the fifth largest producer of lithium globally and has ambitious plans as a mineral-exporting nation. The current government has been favourable to PSC in many ways.

**SEZ status.** In February 2019, the Arcadia project received approval from the CEO of the Zimbabwe Special Economic Zones Authority<sup>3</sup>, to be granted the SEZ status. The license is valid for 10 years, with the option of renewal and extension, granted it is renewed prior to expiry. As part of this license, PSC stands to benefit from corporate tax exemptions for the first five years (15% thereafter), exemptions from non-resident taxes, and the ability to operate a foreign currency account. We believe the grant of this status will greatly help in the operations of the project as PSC will be able to easily make payments to suppliers and customers, thanks to the foreign currency account. Moreover, the exemption of the requirement to obtain permits for imports and exports will stimulate the transferability of goods across the borders.

**National Project status.** In October 2017, the Zimbabwean government granted the Arcadia project the status of 'National Project' for a period of five years. Subsequent to this, in January 2018, Arcadia was selected as a priority project under the 'Rapid Results Initiative' by the government as it looks to promote the ease of doing business in the country. On the event of the groundbreaking of the Arcadia mine, the president of Zimbabwe, Emmerson Mnangagwa, stated that the project was in line with the government's efforts on stimulating economic growth.

## Offtake agreement with Sinomine to be a key value driver

Sinomine Resource is a major Chinese geo-tech services company listed on the Shenzhen Stock Exchange<sup>4</sup>. In April 2018 PSC completed an A\$10m placement with two entities of Sinomine. It also amended the offtake agreement with another Sinomine entity for Arcadia and secured a more favourable placement price. The offtake agreement was changed to terminate the build-and-finance component and include a US\$10m offtake prepayment. The scrapping of the build-and-finance term will enable PSC to have better control over project timeline and financing. Sinomine will pay US\$10m after the ball mill has been installed at the Arcadia mine. Sinomine also owns Jiangxi Dongpeng which is the world's largest petalite chemical converter and it has commenced the construction of a 15Ktpa lithium hydroxide plant in China. Sinomine will purchase petalite and spodumene from PSC and use its facilities to convert it to lithium hydroxide.

The renegotiated offtake agreement with Sinomine pertains to ~34% of the annual production over Arcadia's first seven years of operation. It will include ~19% of the LOM average annual production of spodumene (40,000tpa) and

*The offtake agreement with Sinomine was renegotiated in favour of PSC*

<sup>3</sup> See [www.zimseza.co.zw](http://www.zimseza.co.zw).

<sup>4</sup> Beijing, SHE: 002738, [www.nfmec.com](http://www.nfmec.com). This company originated from the state-owned China Nonferrous Metal Mining. Sinomine's services include mineral prospecting, mining investment, trade and logistics, and construction services. The company offers services for overseas resources exploration, including exploration material production, storage and freight.



~52% of the LOM average annual production of petalite (112,000tpa). PSC had initially agreed to an offtake agreement with Sinomine for 280Kt of spodumene concentrate and more than 784Kt of petalite concentrate over the mine's first seven years. PSC intends to use the surplus to negotiate an offtake agreement with other downstream customers.

Besides the benefits of offtake agreement (ready market for PSC's future production) and financing, PSC can leverage the technical knowhow and expertise of Sinomine to fast track the development of Arcadia mine.

## Other projects beyond Arcadia mine

In addition to the Arcadia mine, PSC has several earlier-stage projects:

**Gwanda East Gold Project** – This project is located on the Gwanda Greenstone Belt, southeast of Bulawayo. It covers several historic gold mines including Bucks Reef, Prestwood, Sally, Colleen Bawn and Valley. These mines are almost contiguous and cover ~25km<sup>2</sup> of the Gwanda Greenstone Belt. PSC has evaluated the potential of gold in the region through accessing and developing existing historical infrastructure, surface and underground diamond drilling, as well as focused surface geochemical surveys. Though PSC discovered gold within the Sally and Prestwood mines, it is not enough to run a standalone mine.

**Penhalonga Gold Project** – This project is located on the Mutare Greenstone Belt, which extends eastward into Mozambique and one of the more productive greenstone belts in Zimbabwe<sup>5</sup>. The project consists of shear and vein hosted gold deposits along the Penhalonga Valley, covering an area of ~1.8km<sup>2</sup>.

**Good Days Lithium Project** – In early 2018, PSC exercised its option over this project, which is located ~30km east of the town of Mutoka in northeastern Zimbabwe. The project area consists of Lithium-Caesium-Tantalum (LCT) type pegmatites. The option covers an area of 8 km<sup>2</sup>, including historical workings at the Good Days and Jordywyitt mines. PSC has performed two phases of soil sampling totaling 2,556 samples. A total of 195 samples returned anomalous values greater than the statistically determined threshold of 60ppm. 33 of these samples assayed greater than 100ppm, with a peak value of 8,531ppm. PSC is also evaluating the **Chisanya Phosphate Project** in Zimbabwe.

## Key addressable markets for PSC

### Importance of lithium for the global economy

Today, lithium is used in almost every electronic device, from laptops and mobile phone batteries to EVs. It also features prominently in modern power tools and battery-operated material handling equipment. In addition to its use as a battery mineral resource, lithium is widely used in the production of glass and glass ceramic products, such as fire viewing windows, cooktop panels, telescopic mirror substrates and fire-resistant glass (Figure 5). While the rechargeable battery sector is the major driver of lithium demand and is expected to maintain its dominant position (~86% share estimated by 2025 as per Roskill), the glass and ceramics, and industrial sectors are also

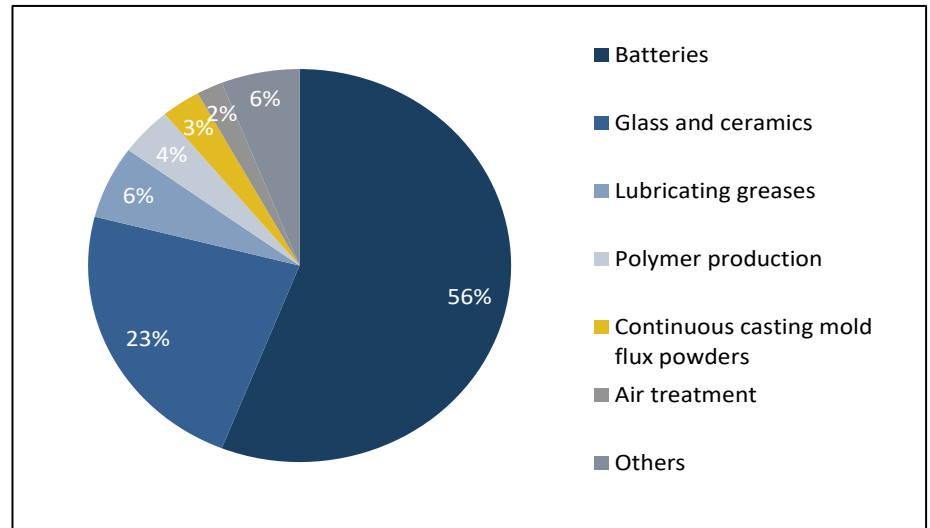
*Lithium has far-ranging applications across diverse end markets*

<sup>5</sup> This belt is notable for the Manica Gold Project of Xtract Resources plc.



significant users of this metal. PSC's low-iron petalite concentrate meets the specifications to directly cater to the glass and ceramics sector.

Figure 5: Global end-use markets



Source: US Geological Survey

Lithium is used in glass and ceramics due to its commendable heat absorption capability and zero thermal expansion quality. Furthermore, supported by its heat absorption capability, lithium is also used as a soap thickener compound in grease production, primarily in the auto industry. On the back of growing demand for automobiles in emerging economies such as China and India, the market size for high-temperature grease is projected to increase at a 5.3% CAGR over 2016–2021, to reach US\$26.5bn. Interestingly, lithium-based greases, due to their multipurpose nature, are considered superior to both calcium- and sodium-based greases. While sodium-based greases are excellent for wheel bearings and calcium-based ones for chassis, they cannot be used interchangeably due to their poor water resistance and heat-bearing capability, respectively, compelling manufacturers to consider lithium as a common solution for both the automobile parts.

A lesser-known use of lithium is as a mood stabiliser, as well as a supplement to boost mental fitness due its beneficial neurological effects. Studies have shown that the calming properties of lithium carbonate help patients suffering from mania and reduce the risk of suicide, which is why the World Health Organization recommends the use of lithium for the maintenance treatment of bipolar disorder.

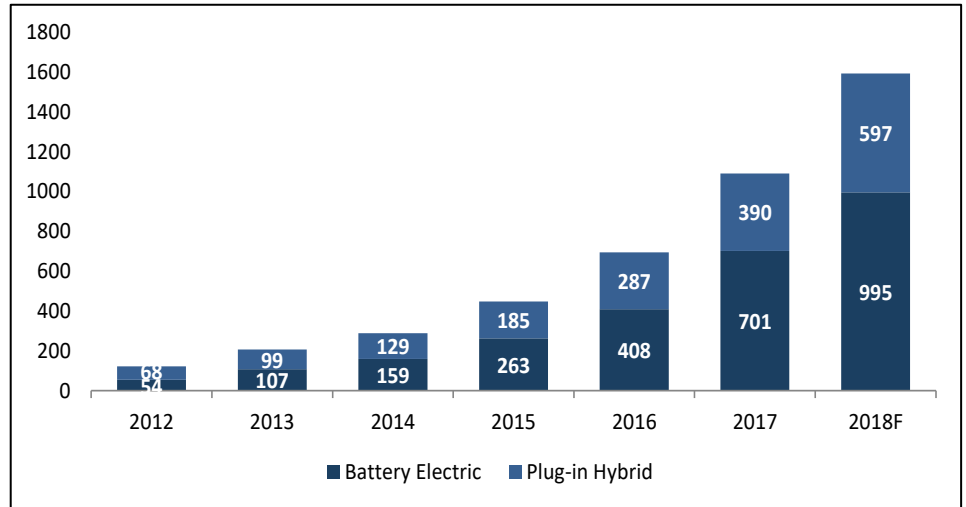
## EVs are the catalysts for growth in battery mineral resources

Although lithium has multiple uses in various industries, its demand is largely set to be propelled by the increasing adoption of EVs. As evidenced by a 55% CAGR rise in the total global sales of passenger EVs – from 122k units sold in 2012 (Figure 6) to 1.2m units in 2017 – the auto industry is witnessing a clear shift toward EVs. Notably, the global EV market is projected to grow at a CAGR of 22.3% from 2018 to reach US\$567.3bn by 2025. Consequently, demand for lithium-ion batteries will also increase, with the market projected to grow at a 16.2% CAGR to reach US\$ 92.2bn by 2024, from US\$37.4bn in 2018.

**Global EV market to grow at an impressive CAGR of ~22% during 2018-2025**



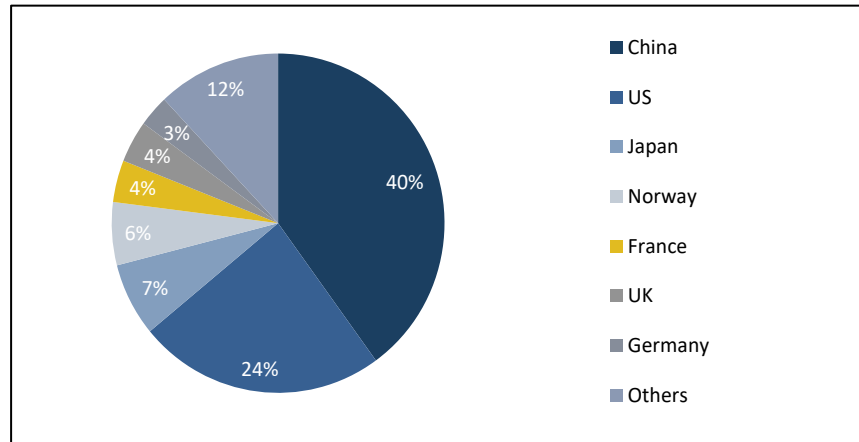
Figure 6: Growth in global passenger EVs (thousand units)



Source: Bloomberg New Energy Finance

Currently, China accounts for ~40% stock of global electric cars, followed by the US at 24% and Japan at 7% (Figure 7).

Figure 7: Breakdown of electric car stock of 3.1m units – by country



Source: IEA Global EV Outlook 2018

## Countries' move toward environment-friendly measures set to fuel demand for EVs

With global warming on the rise, governments around the world are actively looking at alternative sources of energy to solve their transportation problem. Leading the charge is China, which launched the New Energy Vehicle (NEV) initiatives in 2010, with a goal to ensure that EVs account for 20% of the Chinese auto market by 2025. Under the NEV initiatives, the Chinese government provides subsidies to consumers on purchase of EVs, with the value of the individual subsidies varying by model. Consequently, in 2017, the sale of plug-in vehicles in China exceeded the 750k mark. While the Chinese government plans to phase out these incentives by 2020, the Italian government is only now introducing them to their economy. Some of the key initiatives and targets by different governments are as follows:



## China

- Plans to reach 5m EVs by 2020; including 4.6m passenger light-duty vehicles (PLDVs) and 0.2m each of buses and trucks.
- The NEV mandate stipulates timeline goals of NEV sales share of 7-10% by 2020, 15-20% by 2025 and 40-45% by 2030.

## US

- Aims to have combined EV units of 3.3m in 8 states by 2025.
- Introduced the Zero Emission Vehicle (ZEV) mandate in 10 states stipulating a target of 22% ZEV credit sales of passenger cars and light-duty trucks by 2025.
- Mandate for the state of California to have 1.5m ZEVs by 2025 and 5m ZEVs by 2030; additionally, 15% of effective sales should comprise ZEVs by 2025.

## Japan

- Targeting EV market share of 20-30% by 2030.

## EU

- Proposed CO<sub>2</sub> emission targets for cars and vans sold after 2020 benchmarked against EV sales of 15% by 2025 and 30% by 2030.
- If the countries manage to exceed these benchmarks, the EU will allow for less stringent emissions targets for OEMs.

## Norway

- Targeting sales of PDLVs, light commercial vehicles and urban buses to include 100% of EVs by 2030.
- For long-distance buses EVs to account for 75% and for truck sales 50% to include EVs by 2030.

## UK

- Target to have 396,000-431,000 units of electric cars in the market by 2020.

## Italy

- In February 2019, the Italian government passed a legislation providing 30% discount on the list price of electric scooters.

## India

- Proposed to achieve the sales target of 30% EVs by 2030.
- Target to have 100% Battery Electric Vehicle sales for the requirement of urban buses by 2030.

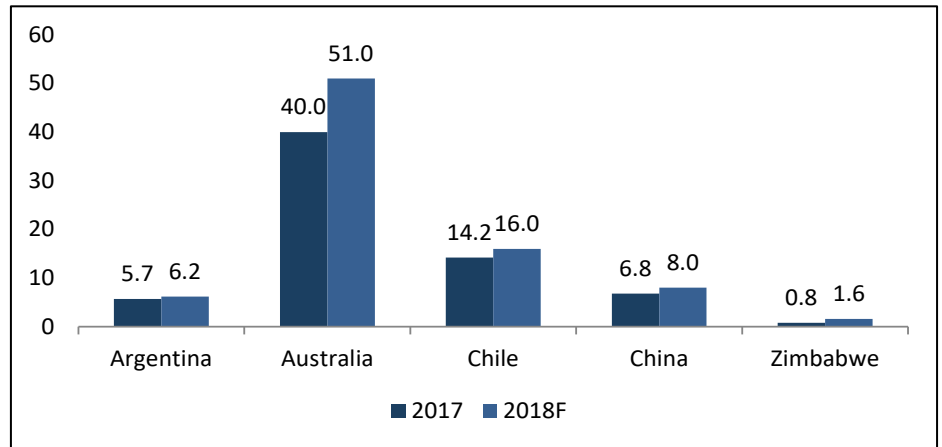
## Major lithium producing countries and players

The global annual production of lithium rose from 69Kt in 2017 to 85Kt in 2018. Australia is the largest producer, with an estimated annual production of 51Kt (Figure 8). The Greenbushes lithium mine in Australia has been operational for more than 25 years and is the longest continuously operating mine. Chile stands second in production after Australia, with production estimated at 16Kt in 2018. By contrast with Australia, where lithium is extracted from hard rock, in Chile, lithium is extracted from brine deposits.





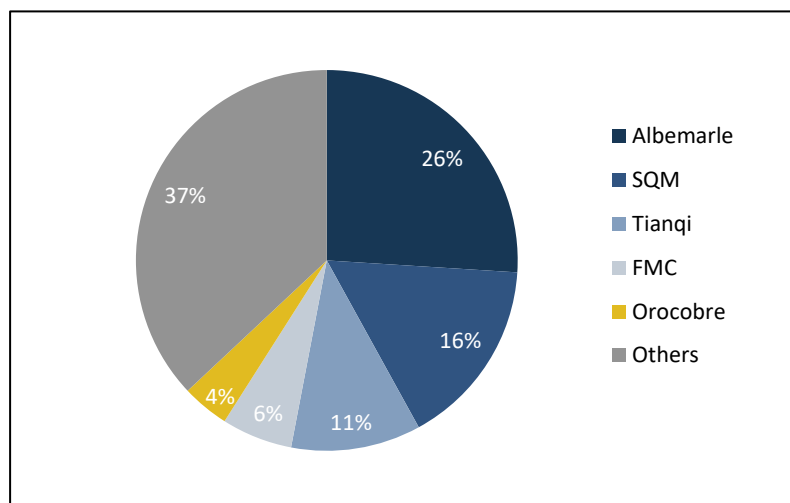
Figure 8: Lithium mine production (Kt) - by country



Source: US Geological Survey

The lithium production market is dominated by three large players - Albemarle, SQM and Tianqi - which accounted for a total of 53% market share by volume in 2018 (Figure 9). The concentration of suppliers generally provides great bargaining power in influencing global lithium prices.

Figure 9: Lithium market share by production (2018)



Source: Bloomberg New Energy Finance

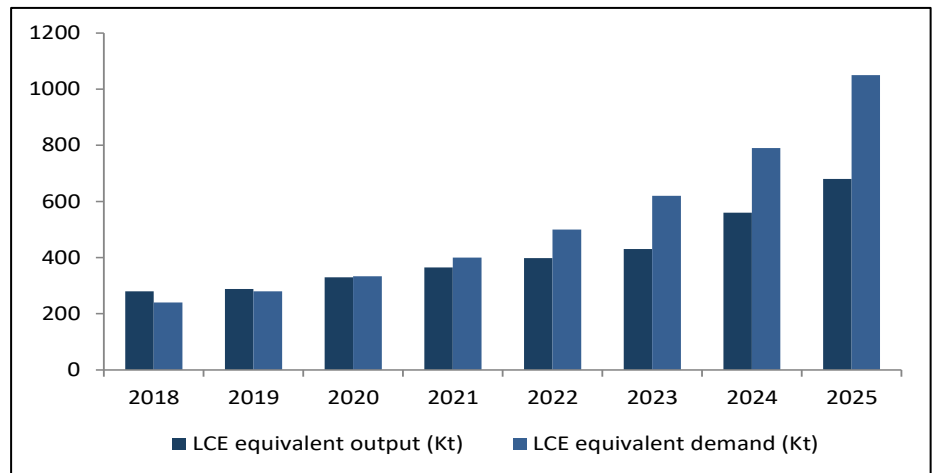
## Demand-supply gap and lithium prices

According to the Roskill Lithium report (2018), global lithium supply is sufficient to meet the demand for the metal during 2018-2020. From 2021 onwards, though, lithium demand will start surpassing its supply and the demand-supply gap is expected to widen significantly by 2025 (Figure 10). This assumes growth in lithium demand at 22% p.a. till 2025 or demand more than tripling over the next 5-6 years. A widening demand-supply gap bodes well for lithium prices in future and producers such as PSC can expect to command higher prices for their outputs.

**Lithium demand expected to outstrip supply over the next five years**



Figure 10: Outlook for lithium demand and supply



Source: Roskill Lithium report (2018), Company

Lithium prices have risen rapidly in the past 3-4 years, fueled by increasing adoption of EVs. However, from H2 2018, lithium prices started trending downward on account of low demand for the metal from China (Figure 11 and Figure 12) as well as concerns about oversupply in the market.

Figure 11: Lithium carbonate min 99.5% ex-works China CNY/Mt<sup>6</sup>

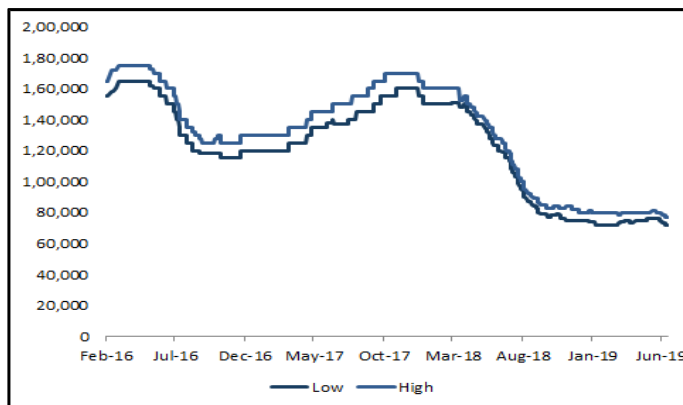
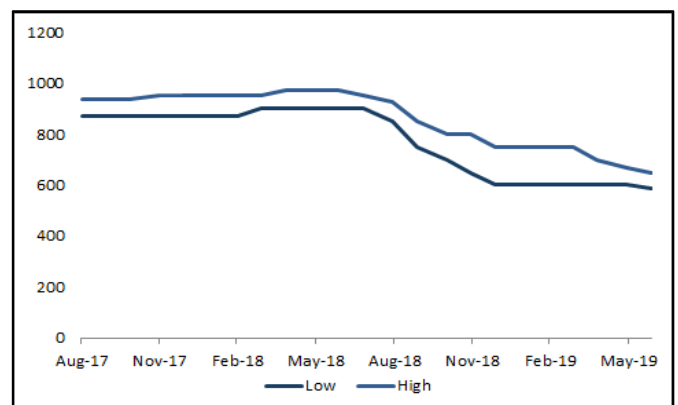


Figure 12: Spodumene min 5–6% Li<sub>2</sub>O, CIF China, US\$/ton



Source: Argus Metals, Metal Bulletin

**Concerns of oversupply raised in 2018 appear to be unfounded**

In early 2018, certain banks and research houses predicted ‘a tsunami of oversupply’ of lithium in the near term and this impacted investor sentiment and prices. However, as the year progressed, these fears turned out to be unfounded. The estimates by some of the major banks failed to take into account the long conversion time, as evidenced by the delays experienced in the Chilean projects of SQM and Albemarle. Albemarle spent a majority of 2018 in laying the foundation to expand to full capacity its La Negra II project and SQM ran into technical hurdles at its new conversion facilities towards the end of 2018.

Additionally, the much more threatening supply that was anticipated from the expansion of brine operations in China did not turn out to be a risk. The 10 producers in the Qinghai region of China, that were set to turn the tide, could

<sup>6</sup> The pricing for the offtake agreement between PSC and Sinomine is linked to Chinese sold lithium carbonate prices.



only add 5,000-10,000t of material to the market, crippled as they were by the technical challenges relating to the high magnesium concentration in the region. These producers now expect to triple their capacities over the next 3-4 years.

## Competitive landscape

PSC's global competitors have been ramping up production in anticipation of increased lithium demand from the higher uptake of EVs. PSC will face competition in the lithium market from multiple upcoming projects. We have compared PSC's flagship Arcadia mine with mines of other lithium players below (Figure 13). We have considered global lithium mines with reserves below 100Mt for comparison with the Arcadia mine.

While the Arcadia mine is marginally lower than the average of its peer mines in terms of reserves, it has a superior lithium grade and the highest capacity among the peer set. Investors who are interested in the lithium play but want to diversify their geographical risk will find PSC to be an attractive investment.

Figure 13: Key lithium mines comparable to the Arcadia mine

Mine	Company	Region	Reserve (Mt)	Li Grade (%)	Tantalum Grade (ppm)	Capacity (Ktpa)
Bald Hill	Tawana Resources and Alliance Mineral Assets Ltd.	Australia	11.3	1.01	160	1,500
Mt. Marion	Mineral Resources (43%) Neometals Ltd. (14%) Jiangxi Ganfeng Lithium (43%)	Australia	60.5	1.36	NM	400
Mt. Cattlin	Galaxy Resources	Australia	10.7	1.15	137	2,000
Pilgangoora	Altura Mining Ltd.	Australia	34.2	1.04	NM	1,487
Authier	Sayona Mining	Canada	12.1	1.00	NM	676
Rose	Critical Elements Corp.	Canada	26.8	0.85	133	1,610
Whabouch	Nemaska Lithium Inc.	Canada	37.0	1.40	NM	1,121
Goulamina	Birimian	Mali	31.2	1.56	NM	2,000
Bikita	Bikita Minerals	Zimbabwe	10.8	1.40	NM	NM
Arcadia mine	Prospect Resources (87%)	Zimbabwe	26.9	1.31	128	2,400

Source: Pitt Street Research



## Valuation

We value PSC at 44 cents per share base case and 93 cents per share optimistic (bull) case. Our basic valuation approach is as follows:

- Our Discounted Cash Flow (DCF) model of the Arcadia Lithium project is broadly based on the outcomes of the 2018 DFS and the company's March 2019 update to that study. We have assumed a WACC of 15.6% which factors in the country risk pertaining to Zimbabwean/African operations and we believe this is a highly conservative estimate.
- We have used a long run AUD/USD exchange rate of 0.70.
- We have assumed that the mine will become operational from the September 2021 quarter.
- We assumed a 12-year mine life based on the current 26.9Mt JORC reserve estimate with throughput of 2.4Mtpa, average lithia head grade of 1.35% and average lithia recovery rate of 70%.
- The project has been awarded SEZ status which grants 0% tax rate for the first five years of its operations, and a flat rate of 15% thereafter. Hence, we assumed a 15% corporate tax rate from FY 2027.
- The project has been awarded 'National Project' status meaning that it is eligible to claim exemption from import duties and VAT on the value of imported capital goods to be used on the project, but all sales are subject to a 2% government royalty and a 5% marketing fee payable to the Minerals Marketing Corporation Zimbabwe.

**Capital costs.** According to the 2018 DFS, the capital cost estimate for the production facility with a throughput of 2.4Mtpa is US\$163m or A\$228.2m<sup>7</sup>. In the bull case scenario, we have assumed that the total capital outlay over LOM will be ~US\$10m lower than the base case because of usage of equipment such as high-pressure grinding rolls.

**Funding of the project.** PSC has received prepayment of US\$10m from Sinomine under its offtake agreement. Further, in June 2019, the company raised ~A\$5m through a placement of 23.5 million fully paid ordinary shares at 17 cents per share, as well as through options exercise of 7.84 million options at 15 cents per option. We have conservatively modelled PSC raising ~A\$245m (65% Debt, 35% Equity) not only to cover its capital development requirement as well as fees for the project financing but also to maintain a reasonable cash balance on its books.

The current equity capital structure (Figure 14) of PSC, post the 10:1 share consolidation and exercise of options, comprises ~240.5m diluted shares. We assumed additional equity capital raising of ~A\$81m in 2020 at 18 cents per share, which represents the average closing share price since Prospect published its Definitive Feasibility Study in November 2018. At this assumed raising price the share count is ~698m diluted shares and this is the basis for computing our DCF equity value per share. We think this is reasonable given the potential for Prospect to re-rate once its project obtains debt financing.

### *Major funding requirement for mine development activities*

<sup>7</sup> This is based on capex of ~US\$163m as per the investor presentation dated 20 March 2019.



Figure 14: PSC's current capital structure

		% of fully diluted	Notes
Ordinary shares, ASX Code PSC (million)	236	98.1%	
Options and performance rights (million)	5	1.9%	4.5 mn exercisable at 60 cents before 12 May 2022
Fully diluted shares	240		

Source: Pitt Street Research

**Spodumene and petalite pricing.** We have started our forecasts using the LOM concentrate prices as per the 2018 DFS (US\$689/t and US\$457/t for spodumene and petalite, respectively) for the base case scenario. In the base case we have assumed a gradual decline in spodumene and petalite prices over the forecast horizon and we believe these are conservative estimates considering the long-term demand and supply dynamics of the lithium market.

**Cash operating costs.** We have assumed the average LOM cash operating cost (FOB) estimate, i.e., US\$279.4/t and US\$272.4/t as the starting point for the base and bull case, respectively. However, in the base case we have assumed stable cash costs over the forecast period while for the bull case we have assumed a marginal y-o-y improvement (~1-2%) in cash costs. PSC's C1 cash cost places the company in the lowest cost quartile for operating costs.

Figure 15: DCF valuation for PSC

Valuation (AUD)	Base case	Bull case
Present value of FCF (m)	325.8	664.1
<b>Enterprise Value (m)</b>	<b>325.8</b>	<b>664.1</b>
Net debt (cash) (m)	16.8	16.8
Minority interest (m)	1.1	1.1
Provisions (m)	0.0	0.0
Financial assets (m)		-
Equity value (m)	307.8	646.1
Share outstanding (Diluted)	697.6	697.6
Implied price (AUD cents)	44.1	92.6
Current price (AUD cents)	13.0	13.0
Upside (%)	239.4%	612.5%

Source: Pitt Street Research

**Our DCF valuations have been summarised above** (Figure 15) with our base case and bull case scenario yielding a value per share of 44 cents and 93 cents per share, respectively.

**Importantly, in the bull case scenario,** we have considered higher petalite realisation based on the report published by Benchmark Mineral Intelligence, a market analysis firm, in July 2019. The report highlights that low iron petalite



concentrates are expected to command a premium over spodumene prices because of high demand from glass and ceramics industry and restricted supply from key players.

Globally, there are currently two producers of low iron lithium concentrates that meet glass and ceramics market specifications, thus, providing PSC with a strong competitive advantage and pricing power.

The Benchmark Mineral Intelligence report expects an average price ratio relationship of 1.61:1 low iron petalite to chemical grade spodumene (i.e., 61% premium for low iron petalite concentrate over chemical grade 6% Li<sub>2</sub>O spodumene concentrate). To be on the conservative side, we have used the average (USD 783/t) of petalite price used in the base case (USD 457/t) and the 61% premium over spodumene price (USD 1109/t) as per the Benchmark Mineral Intelligence report. For forward years, i.e., from 2024 onwards, we have normalised the petalite price levels to ~USD 700/t.

## Re-rating Prospective Resources

PSC's stock is currently trading below our base case valuation. The primary factors that will help result in a re-rating of the stock are as follows:

- Once PSC is able to fund its development plans for the Arcadia mine, most shareholder concerns will be addressed and potential investors will have more confidence on the management plans for commissioning of the mine from FY 2022.
- Binding offtake agreements with other partners on remaining production from Arcadia.
- Completion of further feasibility studies wherein certain resources are reclassified as reserves.
- Further value engineering or continuous improvement initiatives to increase the projects economics.
- Inclusion of the potential premium pricing available for low iron petalite, which would generate a material lift in the projects economics.

Furthermore, in our opinion, PSC's experienced management team (Figure 16) can steer the company through the development stage. **Hugh Warner**, Executive Chairman, has served as director at several public companies in the mining, oil & gas, biotechnology and service industries. **Sam Hosack**, Managing Director, was with First Quantum Minerals for 12 years where he managed mining and infrastructure projects. He has mining and operations experience in Northern and Southern Africa, Europe, Australia, and Central America. Executive Director **Harry Greaves** brings strong local knowledge of the Zimbabwean mining industry. **Chris Hilbrands**, CFO, has worked at this post for several public companies listed on ASX and AIM.





Figure 16: PSC's proficient management team

Name and Designation	Profile
<p>Hugh Warner <b>Executive Chairman</b></p>	<ul style="list-style-type: none"> <li>Hugh Warner has experience of several years as a director of companies in the mining, oil &amp; gas, biotechnology and service industries.</li> <li>He holds a Bachelor's in Economics from the University of Western Australia.</li> </ul>
<p>Sam Hosack <b>Managing Director</b></p>	<ul style="list-style-type: none"> <li>Sam Hosack is a Zimbabwean who resides in Western Australia. He worked as a project manager for 12 years for First Quantum Minerals.</li> <li>He holds an Honour's in Engineering from Essex University (UK) and an Masters of Business Administration from Ashcroft Business School (UK).</li> </ul>
<p>Duncan (Harry) Greaves <b>Executive Director</b></p>	<ul style="list-style-type: none"> <li>Harry is the founding shareholder of Farvic Consolidated Mines.</li> <li>He was instrumental in the acquisition of Penhalonga Gold and Bushtick Gold projects.</li> <li>Harry has a Bachelor's in Science in Agriculture from University of Natal (South Africa).</li> </ul>
<p>Chris Hilbrands <b>CFO</b></p>	<ul style="list-style-type: none"> <li>Chris has been a CFO for a number of resource-focused public companies. He was responsible for financial and administrative operations, as well as statutory reporting and compliance obligations of these organisations.</li> <li>He has a Bachelor's in Commerce and is a chartered accountant.</li> </ul>
<p>Roger Tyler <b>Chief Geologist</b></p>	<ul style="list-style-type: none"> <li>Roger is a geologist who has ~30 years of experience in Africa and currently serves as a technical director for Farvic Mines.</li> <li>He holds a degree in mining geology from the Royal School of Mines (UK) and a Master of Engineering degree in mineral resource estimation from Witwatersrand University (South Africa).</li> </ul>
<p>Trevor Barnard <b>General Manager</b></p>	<ul style="list-style-type: none"> <li>Trevor joined PSC in August 2018 and currently serves as a general manager. He holds a Masters of Engineering degree.</li> <li>He is responsible for the design, fabrication, supply of materials and equipment, construction and commissioning.</li> </ul>
<p>Nicholas Rathjen <b>General Manager (Corporate Affairs)</b></p>	<ul style="list-style-type: none"> <li>Nicholas has 8 years of experience in investor relations, stockbroking and banking.</li> <li>He has a master's in Applied Finance from Kaplan University and is a graduate and member of the Australian Institute of Company Directors.</li> </ul>
<p>Mike Kitney <b>Consultant, Metallurgy, Process Design</b></p>	<ul style="list-style-type: none"> <li>Mike has over 46 years of experience in mineral processing ranging from R&amp;D, operations, project design, construction and commissioning.</li> <li>He holds a Master of Science in Mineral Economics.</li> </ul>



<p>David Miller <b>Consultant Marketing and Offtake</b></p>	<ul style="list-style-type: none"><li>• David, a mining engineer, has over 35 years of experience in the resources industry. He holds a Bachelor of Engineering (Mining) degree.</li><li>• He has held a number of mine management positions in Australia as well as business development and marketing roles in companies and projects in Australia and Southern Africa.</li><li>• He has over 10 years of experience in the lithium industry and has been involved in the evaluation and early expansions of the Greenbushes lithium mine, and the listing of Talison Lithium on the Toronto Stock Exchange.</li></ul>
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Source: Company

The Prospect Resources board, which includes Warner, Hosack and Greaves, has the requisite skills to guide Arcadia into a major producer. **Gerry Fahey**, a mining geologist, worked for many years on Delta Gold's Zimbabwean projects. **Zed Rusike** is a Zimbabwean business leader. **Henian Chen** represents the Sinomine interests.

## Risks

We see five main risks related to PSC's investment thesis:

- 1) **Funding risk:** PSC currently does not generate significant revenue from its mine, and it will require funds for its capital outlay plans. Raising funds on favourable terms (both debt and equity) along with timeliness will be a key challenge for the company. In June 2019, PSC raised ~A\$5m through a placement of 23.5 million fully paid ordinary shares as well as through options exercise of 7.84 million options.
- 2) **Country risk:** Zimbabwe has previously experienced long periods of hyperinflation that has wrecked its economy in the past. The political climate is currently stable but political stability remains a risk. This risk is somewhat mitigated by the company's SEZ status which provides it the benefit of cost reduction and trade barriers associated with the import of raw materials and capital goods.
- 3) **Geological risk:** The reserves and resources figures for the Arcadia mine are estimates, and it is possible that their characteristics may differ. There could be a downside risk if a portion of reserves is re-categorised as resources at a later stage.
- 4) **Currency risk:** PSC will generate revenue by selling a commodity that trades in the US dollar. Also, its cost base is in US dollar but its reporting currency is Australian dollar. This risk is mitigated by the SEZ status that provides a significant benefit of operating without currency constraints and allows the company to hold and trade in foreign currency.
- 5) **Underlying commodity risk:** PSC will generate revenue by largely selling spodumene and petalite. These will further be converted to lithium and tantalum by downstream players. This exposes PSC to commodity price risk, which depends on macroeconomic factors and demand and supply dynamics of the underlying commodity, i.e., lithium.



## Major shareholders

The top five shareholders of PSC constitute ~40% of the total shares outstanding as of 30 June 2019. They are Citicorp (11.28%), Lord of Seven Hills (10.98%), Sinomine International Exploration (7.06%), MBM Capital (5.99%) and BNP Paribas (4.73%).

## Companies to watch in the lithium space

Based on our assessment, the following six companies are comparable to Prospect Resources (Figure 17):

**Galaxy Resources** (ASX: GXY). This global lithium company has lithium production facilities, hard rock mines, and brine assets in Australia, Canada and Argentina. It owns 100% stake in the James Bay lithium pegmatite project in Quebec, Canada, and the Mt. Cattlin mine in Ravensthorpe, WA. The Mt. Cattlin mine has 10.7Mt of reserves at a grade of 1.15%.

**Altura Mining** (ASX: AJM). Altura, a global lithium player, owns and operates the Altura Lithium Mine at Pilgangoora, WA, which commenced production in 2018. It has a production capacity of 220Ktpa. The mine has 34.2Mt of reserves at 1.04% lithium grade.

**Nemaska Lithium Inc** (TSE: NMX). Canada-based NMX aims to become a lithium hydroxide and lithium carbonate supplier to the lithium battery market. It owns 100% interest in the Whabouchi mine, which will produce spodumene. The mine has a reserve of 37Mt at a lithium grade of 1.4%. The company will be vertically integrated and convert spodumene to lithium hydroxide on its own.

**Critical Elements Lithium Corp** (TSXV: CRE). CRE's main project is the Rose Lithium-Tantalum project located in James Bay, Quebec. It is in an advanced exploration stage. The mine will excavate a total of 26.8m tons of ore grading an average of 0.85% Li<sub>2</sub>O and 133ppm Ta<sub>2</sub>O<sub>5</sub>. It has a processing capacity of 1.61Mtpa and will produce 236.5Kt of spodumene and 0.95Mlbs of tantalite concentrate.

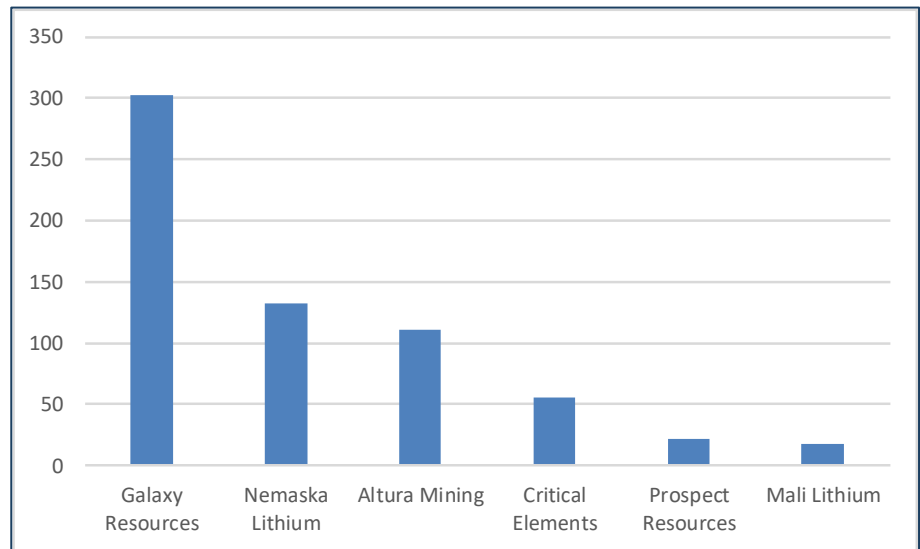
**Mali Lithium Ltd** (ASX: MLL). Formerly Birimian Limited, it is an Australia-based lithium company focused on the development of the Goulamina Lithium Project in Mali, Africa. It is estimated to contain ore reserves of 31.2Mt at 1.56% lithium grade. The project is on track to commence lithium production by 2020.

## Conclusion: Favourable project dynamics

PSC possesses high-quality lithium reserves, an experienced management team, and favourable project dynamics. It has received all the requisite environmental approvals and is slated to commence production in 2022. Its offtake agreement with Sinomine will provide revenue visibility and financial cushion. Further clarity on the Arcadia project funding and on track progress of the development plan are expected to contribute to a potential re-rating of the stock. Based on our base and bull case DCF calculation, we arrived at a fair value range of A\$0.47–1.00.



Figure 17: Peer group market capitalisation (US\$ m)



Source: Pitt Street Research

## SWOT Analysis

### Strengths

- PSC has high-quality ore reserves and higher-than-average lithium grade. Its petalite is one of the purest, which is a sought-after quality in the end-user glass and ceramic industry.
- The Arcadia mine project has several qualities such as favourable infrastructure, supportive government policies and compelling project economics.
- The offtake agreement with Sinomine will help the company in its development phase. Also, Sinomine has numerous businesses in Zimbabwe, especially related to ferrochrome, and the technical knowhow to convert spodumene and petalite to lithium carbonate.
- Its products are suitable for chemical conversion and direct low-iron concentrate feed. Hence, PSC can tap multiple customer channels.
- Arcadia's cost base is likely to be in the world's lowest quartile, while the project itself has a low capital intensity and low strip ratio
- Grant of SEZ status is expected to provide further financial and non-financial benefits that will aid the development of the project.

### Weaknesses

- As the development phase starts, the company will need funding. As it is not currently generating significant revenue, it will have to rely on external sources for funding.

### Opportunities

- Its spodumene and petalite will be used by industries that are poised for growth. Spodumene is converted to battery minerals, and demand for EVs is expected to increase significantly in the coming years. Petalite is predominantly used in glass and ceramics. According to Grand View



Research, the ceramic industry is expected to grow at 9.1% CAGR from 2019 to 2025.

- Offtake agreements with other partners for remaining production of Arcadia in near future will provide solid revenue visibility.

### **Threats**

- The Arcadia mine is located in Zimbabwe, which does not have a stable government. Although the political environment has been benign in the past two years, it still remains a risk.
- Much of the project economics depends on the price of lithium. If lithium prices were to trend downward, PSC may experience erosion in shareholder value.



## Appendix I – Recent Deals (Valuation)

Timeline	Buyer	Target	% Acquired	Deal currency	Deal value (m)	EV value (m)	Reserves (Mt)	Attributable Reserves (Mt)	Total LCE (Mt)	Attributable LCE (Mt)
May-19	Wesfarmers	Kidman	50%	AUD	\$776	\$1,552	189.0	94.5	7.030	3.5
Dec-18	Albemarle	Wodgina	50%	USD	\$1,150	\$2,300	151.9	151.9	3.000	3.0
	Prospect	Arcadia	87%	AUD		\$35	26.9	23.4	0.868	0.8

Timeline	Buyer	Target	Mine life (Years)	Li Grade	Target Region	EV/Attributable Reserves	EV/Attributable LCE (Mt)
May-19	Wesfarmers	Kidman	47	1.50%	Australia	16.4	441.5
Dec-18	Albemarle	Wodgina	30	1.17%	Australia	15.1	766.7
	Prospect	Arcadia	12	1.31%	Zimbabwe	1.5	46.3

Avg. EV/Attributable Reserve (x)	15.8
Implied EV of Prospect Resources (A\$m) without any discount/premium	369

Source: Pitt Street Research





## Appendix II – PSC’s Board of Directors

Name and Designation	Profile
Hugh Warner <b>Executive Chairman</b>	<ul style="list-style-type: none"><li>• Hugh Warner has experience of several years as a director of companies in the mining, oil &amp; gas, biotechnology and service industries.</li><li>• He holds a Bachelor’s in Economics from the University of Western Australia.</li></ul>
Sam Hosack <b>Managing Director</b>	<ul style="list-style-type: none"><li>• Sam Hosack is a Zimbabwean who resides in Western Australia. He worked a project manager for 12 years for First Quantum minerals.</li><li>• He holds a Bachelor’s in Engineering from Essex University (UK) and an MBA from Ashcroft Business School (UK).</li></ul>
Duncan (Harry) Greaves <b>Executive Director</b>	<ul style="list-style-type: none"><li>• Duncan is a fourth-generation Zimbabwean. He has more than 10 years of experience in mining, exploration, development and production activities.</li><li>• He is a founding shareholder of Farvic Consolidated Mines, which operates gold mines in Southern Zimbabwe.</li></ul>
Gerry Fahey <b>Non-Executive Director</b>	<ul style="list-style-type: none"><li>• Gerry has over 40 years of experience in the minerals industry. He is a specialist in mining geology and mine development.</li><li>• He is the Director of Focus Minerals Ltd and formerly served as a Director of CSA Global Pty Ltd, and member of the JORC.</li></ul>
Zed Rusike <b>Non-Executive Director</b>	<ul style="list-style-type: none"><li>• Zed is a resident of Zimbabwe and a qualified accountant.</li><li>• He is the Director of Cairns Holdings, TSL Ltd, Dulux Paints Ltd and Halsted Brothers Ltd.</li></ul>
Henian Chen <b>Non-Executive Director</b>	<ul style="list-style-type: none"><li>• Chen has been serving as the Chairman of Changshu Yuhua Property Co Ltd since 2003.</li><li>• He has also been serving as the Deputy Chairman of Afore New Energy Technology (Shanghai) Co Ltd since 2007.</li></ul>

Source: Company



## Appendix III – Analyst qualifications

Stuart Roberts, lead analyst on this report, has been covering the Life Sciences sector as an analyst since 2002.

- Stuart obtained a Master of Applied Finance and Investment from the Securities Institute of Australia in 2002. Previously, from the Securities Institute of Australia, he obtained a Certificate of Financial Markets (1994) and a Graduate Diploma in Finance and Investment (1999).
- Stuart joined Southern Cross Equities as an equities analyst in April 2001. From February 2002 to July 2013, his research specialty at Southern Cross Equities and its acquirer, Bell Potter Securities, was Healthcare and Biotechnology. During this time, he covered a variety of established healthcare companies such as CSL, Cochlear and Resmed, as well as numerous emerging companies. Stuart was a Healthcare and Biotechnology analyst at Baillieu Holst from October 2013 to January 2015.
- After 15 months in 2015 and 2016 doing Investor Relations for two ASX-listed cancer drug developers, Stuart founded NDF Research in May 2016 to provide issuer-sponsored equity research on ASX-listed Life Science companies
- In July 2016, with Marc Kennis, Stuart co-founded Pitt Street Research Pty Ltd, which provides issuer-sponsored research on ASX-listed companies across the entire market, including Life Science companies.

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