



# PROSPECT RESOURCES LTD

# **Equity Research**

5<sup>th</sup> April 2018

## **SPECULATIVE BUY**

Price Target	\$0.140
Share Price	\$0.052

52-Week Range	\$0.020 - \$0.077
Market Capitalisation	\$103m
Shares Outstanding	1,981m
Options (\$0.005, 19 Nov 2018)	65m
Options (\$0.05, 31 Dec 2018)	65m
Options (\$0.10, 6 Feb 2019)	20m
Options (\$0.015, 15 Jun 2019)	115m
Cash (post Sinomine placement)	\$20m
Enterprise Value	\$83m
Major Shareholders:	
Pershing Nominees	12.6%
Sinomine	8.4%
MBM Capital Partners	7.1%
Elliott Holdings Group	6.3%
BNP Paribas	5.7%
Armoured Fox Capital	5.5%
Top 20 shareholders	65.7%



Prospect Resources is a battery minerals company based in Perth with operations in Zimbabwe, and exploration activities in Zimbabwe and the DRC. Prospect's flagship project is the Arcadia Lithium Project located on the outskirts of Harare in Zimbabwe.

# Research Analyst: J-François Bertincourt

Initiation of Coverage: Zimbabwe coming back on the lithium front

Tier 1 Asset: The Arcadia Lithium Project represents a globally significant hard rock lithium resource and has been aggressively developed focusing on near term production of petalite and spodumene concentrates.

Project Benchmarking: Using a number of different analytical charts such as grade vs. tonnage for mineral resource and potential mining inventory, capital intensity and mine life, the Arcadia Lithium Project keeps standing out as a large tonnage, relatively high grade project amenable to open pit mining with a modest capital expenditure required to produce lithium concentrates and a long mine life in excess of 20 years.

Fast Track to Production: Based on a detailed Pre-Feasibility Study, pre-development works at Arcadia Lithium Project site has commenced including the production of battery grade lithium carbonate (> 99.5% Li<sub>2</sub>CO<sub>3</sub>) from Arcadia's petalite from an established pilot plant. Full development is expected as soon as funding is in place.

Mining & Processing: The pit design and optimisation for a simple open cast mine (strip ratio 3.1:1) are completed. The mine shall use a conventional technology (dense media separation, flotation and spirals) to beneficiate the ore and produce concentrates.

Value-Add Upside: PSC is also evaluating the development of an integrated lithium chemical plant at Arcadia.

Tight Register: The top 20 shareholders including PSC board and management represent about more than 60% of the register.

Funding: Further to the placement to Sinomine (off-taker), Arcadia's development funding is well advanced with an existing A\$20m cash balance and US\$10m future prepayment. In addition, PSC is evaluating various financing options to develop the mine and concentrate plant including discussions with other off-takers, equity and debt investors, suppliers (equipment, infrastructure & services).

Financial Modelling:

					_	_
Arcadia proje	ect returns	using	different	metal	nrices sce	narios

Scenario	<u>Current</u>	PSC	LT Consensus	<u>Pre-Boom</u>
Initial Capex	\$52.5m	\$52.5m	\$52.5m	\$52.5m
Spodumene Price	\$850/t	\$902->694/t	\$550/t	\$450/t
NPV (pre tax)	\$586m	\$401m	\$184m	\$51m
IRR (pre tax)	96%	87%	45%	22%
NPV (pre tax)	A\$781m	A\$535m	A\$245m	A\$68m
Arcadia Value	A\$0.37/sh	A\$0.25/sh	A\$0.12/sh	A\$0.03/sh

Valuation: Our risk adjusted valuation is essentially based on the NPV of the Arcadia project using lithium prices decreasing from the current prices realised by existing producers towards the long-term consensus prices (PSC scenario). As the company delivers on its plan and strategy, PSC should experience a significant value uplift, towards a price target of \$0.14, resulting in a market capitalisation of \$304m. Note we have applied a risk factor of 50% to take into consideration the stage of development and the final financing requirement to fund the total capital expenditure.

Peer Comparison: Even if a discount for country risk (Zimbabwe vs. Australia) is considered, milestones such as securing development funding, off-take and construction of the Arcadia project should bring significant value uplift to PSC. A factor of 2x to 3x should apply to the market capitalisation as milestones are reached.



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#### PSC Valuation

#### **PSC** Assets

Prospect's flagship project is the **Arcadia** Lithium Project located on the outskirts of Harare in Zimbabwe. The Arcadia Lithium Project represents a globally significant hard rock lithium resource (see section 4. Arcadia Project Benchmarking) and is aggressively developed focusing on near term production of petalite and spodumene concentrates.

On 28th Feb 2018, PSC announced it has exercised its option to acquire the **Good Days** Lithium Project. The 8 km² Good Days lithium project is located in north eastern Zimbabwe and contains numerous mineralised pegmatites, including historical workings for spodumene and tantalite (amongst other minerals) at the Good Days and Jordywyitt mines. It is currently held by the Zimbabwean company Barrington Resources Pvt Ltd, who Prospect entered into an option agreement with in June 2017 to acquire a 70% direct interest in the project following a positive outcome from due diligence.

On  $2^{nd}$  Feb 2018, Prospect Resources announced it had secured an option to acquire a 100% direct interest in the **Tombolo Klippe** project (PEPM1787) in the Democratic Republic of Congo. The Option covers an area of 21 km² containing numerous cobalt and copper occurrences and the area is underlain by prospective stratigraphy of the Roan Mines Series rocks, which host many of the large copper and cobalt deposits of the Katangan Copperbelt.

The **Gwanda East** Project is located in the Gwanda Greenstone Belt southeast of Bulawayo in Zimbabawe and covers a number of gold mines. These mines are situated within an almost contiguous block of claims, held by Prospect Resources, which cover approximately 25 km² of the productive gold bearing Gwanda Greenstone Belt.

The **Penhalonga** Gold Project is located in the Mutare Greenstone Belt which extends eastward into Mozambique and is considerd to be one of the richest greenstone belts in Zimbabwe in terms of gold production per unit area at 122kg Au/km². Historical production from the Penhalonga valley between 1897 and 1937 amounted to 1.3 Moz Au, 1.6 Moz Ag, 7,300t Pb and 5.2t Cu. The project is located opposite Metallon's Redwing Gold Mine that has produced 3.6 Moz Au to date (remaining resources of 2.5 Moz Au) and has restarted production following a period of care and maintenance. Along strike and across the border in Mozambique several large gold projects have been developed such as Xtract Resources plc's Manica Fair Bride Au Project that has just had a DFS completed. The proposed operation is based on total compliant resources of 14Mt grading 1.7 g/t Au.

This report is solely focused on the **Arcadia** project.



#### **PSC Valuation**

Based on the Updated PFS, we have derived a valuation for Prospect Resources as follows:

Asset	Valuation	A\$/share
Arcadia		
Risked NPV (50% x A\$535m)	\$267.5m	\$0.127
Production and exploration upside	\$10.0m	\$0.005
Other assets	\$5.0m	\$0.002
Cash	\$20.0m	\$0.009
Conversion of 2018 options	\$3.6m	\$0.002
Corporate costs	(\$2.0m)	(\$0.001)
Total	\$304.1m	\$0.144

Beyond the conservative assumptions used to derive the DCF model, we have applied a risk factor of 50% to take into consideration the stage of development and the additional financing required to fund the capital expenditure. The valuation also assumes the exercise of the options (in-themoney) expiring in 2018.

# 2. Recent Lithium Market Developments

### Significant Transactions

This section focuses on transactions related to hard rock lithium companies and projects in Australia or listed in Australia.

- On 28th February 2018, Pilbara Minerals executed a landmark agreement with POSCO taking a A\$79.6 million direct equity investment into PLS to accelerate Stage 2 of the Pilgangoora project. The agreement includes a binding life-of-mine off-take for an initial 80,000 tpa of chemical grade spodumene concentrate (SC6.0 basis). In addition, a Convertible Bond Agreement was executed on attractive terms with POSCO for the provision of A\$79.6 million in unsecured convertible bonds to fund Pilbara's 30% participation in the Downstream Joint Venture.
- On 5<sup>th</sup> February 2018, Tawana Resources through its subsidiary Lithco No.2 Pty Ltd (Lithco), which holds Tawana's 50% interest in the Bald Hill lithium mine executed a binding A\$5 million loan agreement with Red Coast Investment Ltd, an investment company nominated by German company Weier Antriebe und Energietechnik GmbH (Weier). The loan agreement is part of the A\$25 million funding package to support works at the Bald Hill project, initially announced on 20<sup>th</sup> October 2017. Weier is a 100%-owned subsidiary of lithium industry specialist Jiangte Special Electric Motor Co. Ltd (JSMC), a company listed on the Shenzhen Stock Exchange.
- In December 2017, Pilbara Minerals finalised a mine gate sale agreement with Atlas Iron for a minimum of 1.0 Mt of run-of-mine lithium-tantalum ore (direct shipping ore or DSO) from the Pilgangoora project. A US\$3 million prepayment facility is a pre-condition to the commencement of DSO sales to Atlas.

The intense corporate/M&A activity reflects the appetite of off-takers and battery manufacturers (particularly Chinese and South Korean) to secure raw materials.

Note this list excludes a number of transactions taking place globally with lithium brines explorers and developers



- In November 2017, Sayona Mining signed a MoU with Huan Changuan Lico Co Ltd, a subsidiary of Minmetals Group. The strategic alliance is to explore marketing, technical, and financial development options for the Authier lithium project in Quebec. Changyuan, is a battery research, development and production company. In 2016, the company produced more than 16,000 tonnes of battery cathode materials and is expanding its production capacity to 36,000 tonnes in 2018. The main products produced include, lithium cobalt oxide and lithium manganese oxide batteries, and ternary composite lithium-ion cathode materials.
- In September 2017, Altura Mining received the final payment (US\$77m) of the US\$110 million senior secured debt facility to complete construction and development of its Pilgangoora project.
- In September 2017, Tawana Resources through its wholly-owned subsidiary Lithco No. 2 Pty Ltd (Lithco), received the third payment of A\$4,375,000 in accordance with the lithium concentrate off-take agreement executed in April 2017 from a subsidiary of Burwill Holdings Ltd, a company listed on the Hong Kong Stock Exchange. The full A\$12.5 million prepayment committed by Burwill has now been received by Lithco. The funds are to be used towards the capital and operational costs in respect of the Bald Hill lithium mine. The prepayment is interest free and to be repaid from 20% of each lithium concentrate shipment until the prepayment has been repaid.

Lithium Carbonate and Spodumene Concentrate Prices

Here are some of the publicly announced lithium prices realised by market participants:

- Average Free on Board (FOB) price received up 3% QoQ to US\$11,550/tonne with higher priced contracts reflecting firmer market conditions. Prices for June half 2018 are expected to be approximately 25% higher per tonne FOB than in the December half 2017 with market conditions remaining tight. Gross cash margins increased 23% QoQ to a record US\$7,604/tonne on the back of higher sales prices and lower costs. Source: Orocobre Ltd December 2017 quarterly report. Those prices are realised at the Olaroz Lithium Facility, generating gross cash margins in excess of US\$6,000/t. This operation sits next door to LKE mineral properties.
- The Mt Cattlin spodumene mine achieved an average realized selling price (before royalties and marketing fees) of US\$868 (A\$1,125) per dmt sold during the December 2017 quarter, an increase of 3% over Q3 2017 (after an increase of 17% QoQ recorded in September quarter 2017). Source: Galaxy Resources Ltd December 2017 quarterly report.
- Reed Industrial Minerals Pty Ltd (13.8% Neometals Ltd) shipped lithium concentrates to Ganfeng at pricing linked to international lithium carbonate and hydroxide prices. The SC6 price for the December quarter was agreed at US\$843/t CIF China and US\$900/t CIF China for the March quarter.

All lithium product prices are still rising with spodumene prices around US\$850/t concentrate (6% Li<sub>2</sub>0)



# 3. PSC Company Benchmarking

Figure 3.1 below compares the market capitalisation of a number of ASX & TSX-listed companies with hardrock lithium assets. The companies are grouped according to the stage of development

\$1,400 Production \$1,200 Market Capitalisation (A\$ million) \$1,000 Construction \$800 \$600 Development \$400 E&D \$200 Exploration \$0 30 8c sp " hy so to sh to the " ce " the be tex Es HAT TANK LOR CRE OSC STA

Figure 3.1 - PSC Company Benchmarking

Source: Terra Studio.

We placed PSC among the companies in development considering its fast track timeline towards production. All the companies in this group have defined an ore reserve. We note the following points:

- The Arcadia project from PSC has the same throughput as Bald Hill (TAW) at 1.2 mtpa currently in construction
- In terms of initial ore reserves and mine life, the Arcadia project is close to the Pilgangoora project of Altura Mining (AJM)

Even if a discount for country risk (Zimbabwe vs. Australia) is considered, milestones such as securing development funding, off-take and construction of the Arcadia project should bring significant value uplift to PSC. A factor of 2x or 3x should apply to the market capitalisation as milestones are reached.



# 4. Arcadia Project Benchmarking

### Mineral Resource

Figure 4.1 indicates that the Arcadia mineral resource sit well within the range of projects currently operating or in construction both in terms of size and lithium grade.

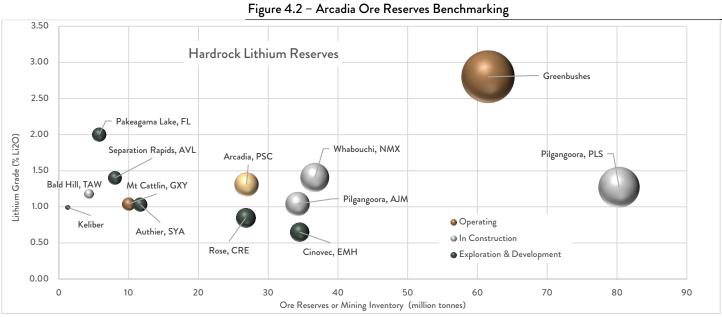
2.50 Greenbushes Hardrock Lithium Resources Pakeagama Lake, FL 2.00 Goulamina, BGS Whabouchi, NMX James Bay, GXY Pilgangoora, PLS Mt Cattlin, GXY Mt Marion, Reed Lithiug Grade (% Li20) Zulu, PREM Arcadia (>0.2% Li2O) Rose, CRE Wodgina, MIN Authier, SYA San Jose, INF Bald Hill, TAW Pilgangoora, AJM 0.50 Zinnwald, BCN Operating In Construction Volta Grande, AMG Exploration & Development 0.00 0 50 100 150 200 Mineral Resources (million tonnes)

Figure 4.1 - Arcadia Mineral Resource Benchmarking

Source: Terra Studio

# Mining Inventory

Similarly, Figure 4.2 indicates that the mining inventory defined at Arcadia sits well within the range of projects operating or in construction both in terms of size and lithium grade.



Source: Terra Studio



# Capital Intensity - Mine Life

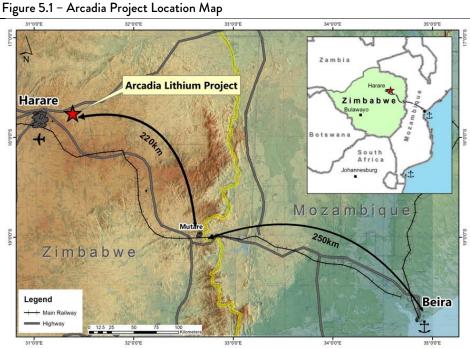
Figure 4.3 highlights a low capital intensity combined with an extended initial mine life.

Source: Terra Studio. Post beneficiation capex has been deducted when present

# 5. Arcadia Lithium Project

#### Location and Infrastructure

The Arcadia Lithium Project is located approximately 38 km east of Harare, Zimbabwe and occupies an area of more than 9 km² of granted Mining Rights and consists of several historical lithium and beryl workings within an existing agricultural area. The Project is located close to major highways and railheads, with the Beira Port being less than 450 km away by rail/road transport (Figure 5.1).



Source: PSC



The proximity to Harare as a source of skilled and semi-skilled labour, engineering skills and its location as a regional transport hub serves the project's infrastructure and logistics needs very well. The Project area has access to sufficient ground and surface water resources to service the Project's development and operational needs. Grid power (33 kVA) is located less than 3 km away from the Project, although onsite generation will initially be used.

Arcadia's products may be transported to Beira via the main Harare-Mozambique road, with a section of road approximatively 20 km long being upgraded for the haulage of concentrate through Goromonzi district to the Harare Mutare /Mozambique road. The road system to Beira is currently used by many trucking companies and thus very few problems are foreseen in the trucking of the concentrate to Beira.

#### Historical Work

The Arcadia Lithium Camp includes the Winston, Takashi, Green Mamba, Bing, Tourit and the Oribi Li-Be claims. None of these claims have been in formal production since the early 1970s.

Production history is limited and largely restricted to the declared output figures available from the Department of Mines. The concrete foundations of a small crushing plant, and dual milling circuit are all that remain of the old Arcadia plant. A few rails are testament to the short loading and hauling system employing hand pushed cocopan, that was probably in place from the pit to the plant site and rock dump.

# Geology

The geology of the greater Arcadia area is dominated by greenstone lithologies of the Arcturus formation of the Harare Greenstone Belt (HGB). These greenstones are encircled and intruded by a variable suite of granitic rocks.

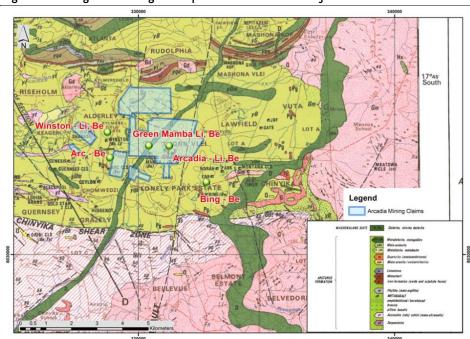


Figure 5.2 - Regional Geological Map of Arcadia Lithium Project

Source: PSC



The Arcadia Lithium deposit is hosted within a series of 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 3.5 km along strike (SW-NE), with an average thickness of 15 m and dipping 15 degrees to the NW.

The Main Pegmatite is exposed in the historical pit, and the deposit is open along strike to the southwest, where drilling is ongoing. The deposit is cut by the NNE-SSW trending Mashonganyika Fault zone, as well as a regional SW-NE trending dolerite dyke that appears to truncate the pegmatite to the NW. Continuation of the Lower Main Pegmatite has been identified and tested to the north east of the Mashonganyika Fault Zone.



Figure 5.3 - Main Pegmatite outcrop in Arcadia Pit - looking North

Source: PSC

A package of up to 14 significant (>1m thick) stacked, sub-parallel pegmatites has been identified during the current phases of drilling. From youngest to oldest these are the Upper Pegmatite (U3), U2, U1, Main Pegmatite (MP), Lower Pegmatite (L1), L2, L3, L4/ LMP (Lower Main Pegmatite), L5, L6, L7 and L8.

The most significant bodies both in terms of thickness, lithium grade and lateral consistency are the Main Pegmatite and Lower Main Pegmatite, whose maximum thicknesses are 7- 10m and 25-50m respectively. The other pegmatites are much thinner, bifurcate and coalesce along strike and downdip, but are also mineralised.

The drilling programmes undertaken by Prospect Resources have proved that the package of stacked pegmatites extends for over 3 km of strike length, while surface mapping and trenching has shown the total strike length to be almost 4.5 km.

#### Mineralogy

The potentially economic lithium mineralisation in the Arcadia pegmatites is dominated by petalite and spodumene. Petalite appears to have crystallised prior or co-genetically with primary spodumene. Secondary mineralisation resulted from the alteration of primary petalite and spodumene to SQI (spodumene-quartz intergrowth) and eucryptite respectively.

Prospect has embarked on a detailed mineralogical study utilising XRD on >3,000 samples drawn from both the Main Pegmatite as well as the Lower Pegmatite, and from within the conceptual pit design.



Results to date show that the Lower Pegmatite contains five times more spodumene (15%) than petalite (3%), and has similar gangue mineralogy to the Main Pegmatite. The XRD results completed to date on the Lower Pegmatite show a broad mineralogical zonation through the Lower Pegmatite based on the spodumene-petalite ratio and quartz content. Sampled holes located within the modeled Lower Pegmatite display higher spodumene-petalite ratios along the edges and towards the upper contacts and a higher spodumene-petalite ratio in the central and lower portions of the Lower Pegmatite. The quartz content tends to be higher in the high spodumene zones; this can be ascribed to the re-equilibration post crystallization of the petalite to form spodumene-quartz intergrowths (SQI) in the slower cooling central, and to a lesser extent in the lower portions, of the pegmatite.

Initial results from the Main Pegmatite suggest approximately equal quantities of spodumene and petalite (around 11–13%), with 39% quartz, 33% feldspar, and the balance largely muscovite.

#### Mineral Resource

Since acquisition of the project in June 2016, Prospect has embarked on an aggressive, phased drilling program in order to delineate JORC compliant Mineral Resource estimates. The work has included diamond and reverse circulation drilling, geological mapping and channel sampling, topographic, geophysical as well as hydrographical surveys.

To date a total of 14 mineralised stacked pegmatites have been identified covering almost 100m vertical distance, with a strike of almost 4.5km SW-NE, by over 1km down dip.

Following announcement of a maiden JORC-compliant mineral resource estimate in October 2016, the mineral resource estimate was updated again in July 2017 and again in October 2017.

As announced on 25th October 2017, the JORC compliant Mineral Resource estimates for the Arcadia Lithium Project amount to:

#### Arcadia Mineral Resource Estimate

Category	Tonnes	Li <sub>2</sub> O	Ta <sub>2</sub> O <sub>5</sub>	Li <sub>2</sub> O	Ta <sub>2</sub> O <sub>5</sub>
Global Resource	ce 0.2% Li <sub>2</sub> O cut-of	ff			
Measured	15,900,000	1.17%	121 ppm	184,900 t	4,200,000 lb
Indicated	45,400,000	1.10%	121 ppm	501,500 t	12,100,000 ІЬ
Inferred	11,400,000	1.06%	111 ppm	121,400 t	2,800,000 lь
Total	72,700,000	1.11%	117 ppm	807,800 t	19,100,000 ІЬ
High Grade Zo	ne 1.0% Li <sub>2</sub> O cut-o	ff			
Measured	10,200,000	1.45%	132 ppm	148,100 t	3,000,000 lь
Indicated	27,200,000	1.39%	119 ppm	378,400 t	7,100,000 ІЬ
Inferred	5,800,000	1.45%	97ppm	84,000 t	1,200,000 lь
Total	43,200,000	1.41%	119 ppm	610,500 t	11,300,000 lь

Source: PSC



#### Ore Reserve

On  $6^{th}$  Dec 2017, Prospect announced a significant increase to Arcadia's maiden Ore Reserve estimate amounting to 26.9 Mt (+70%) at 1.31% Li<sub>2</sub>O and 128ppm Ta<sub>2</sub>O<sub>5</sub> for 351,000 tonnes Li<sub>2</sub>O (+66%). The ore reserves supports a mine life in excess of 20 years.

#### Arcadia Ore Reserve Estimate

Category	Tonnes	Li <sub>2</sub> O	$Ta_2O_5$	Li <sub>2</sub> O	$Ta_2O_5$	$Fe_2O_3$
Proven	8.0 Mt	1.36%	128 ppm	109,000 t	2.2 Mlb	0.93%
Probable	18.9 Mt	1.28%	127 ppm	242,000 t	5.3 MIb	1.25%
Total	26.9 Mt	1.31%	128 ppm	351,000 t	7.6 MIb	1.15%

Source: PSC

# Mining

Conventional open pit mining is proposed for the delivery of  $100\,000\,t/month$  or  $1.2\,Mtpa$  of ROM material to the comminution and processing facilities. The mining method is based on six nested sequential Main pit and two satellite pits.

Looking North

Arcadia Pit Outline

Main Pit

Main Pit

SW Pit

SW Pit

NE Pit

Arcadia Pit Outline

NE Pit

SW Pit

Arcadia Pit Outline

NE Pit

SW Pit

SW Pit

Arcadia Pit Outline

NE Pit

SW Pit

Figure 5.4 - Arcadia Open Pit Schedule - looking North

Source: PSC

Mining is anticipated to commence from the location of the historical open pit where the Main Pegmatite is exposed (Figures 5.4 and 5.5). Pit slope parameters were designed based on recommendations made by Geotechnical Consultants (Practara) with overall slope angles planned to be  $54^{\circ}$ - $56^{\circ}$ , with a batter angle of  $80^{\circ}$ . 10 m high benches are planned, with an operating berm width of 15 m, and a final width of 5 m.

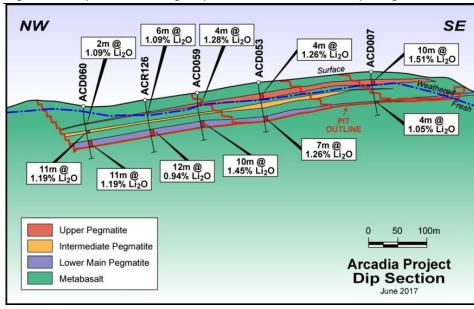


Figure 5.5 - Dip Section showing the pit outlines for the successive pit stages

Source: PSC

Mining operations will be conducted utilising a contracted fleet for key equipment with some ancillary vehicles being supplied by the Company. Ore and waste will be handled by diesel hydraulic excavators and articulated dump trucks. Ore will be trucked to the crushing station where it will be directly dumped to the primary crusher, or stockpiled prior to front-end loader feeding. Waste material comprising meta basalt and some pegmatites will require blasting except for some of the very upper weathered rocks.

The mining dilution was estimated at 5 %, and the total ore losses have also been estimated at 5 %. Those values appear reasonable considering the characteristics of the ore and the shallow dipping geometry of the deposit. The grade of the dilution material, added to the ore stream is taken to have an average value of 0 %  $\text{Li}_2\text{O}$ . This conservative approach does not make any allowance for  $\text{Li}_2\text{O}$  values which are likely to be contained in the diluting material. This scenario maximises the recovery of ore during mining, hence the mining recovery of the open pit minable resource is considered to be 95%.

#### Capital Expenditure

Capital Expenditure Estimate					
Capital Item	U	S\$			
Initial Capital Expenditure		\$38.6m			
Crushing and Screening	\$2.8m				
Density Media Separation	\$3.7m				
Filtration Drying Bagging	\$3.7m				
Reagents and Stores	\$4.1m				
Engineering and Services	\$4.6m				
Utilities, Infrastructure, Transport	\$5.8m				
Tailings Storage Facility	\$3.8m				
Mining		\$9.1m			
Pre-stripping	\$9.1m				
Contingency		\$4.8m			
Total		\$52.5m			

Source: PSC



The costs have been estimated using firm prices, budget prices, list prices and current industry costs. Ongoing discussions continue with suppliers on pricing to confirm no material change. The capital estimate remains at an accuracy of  $\pm$ 25 %.

The project assumes the services of a mining contractor.

# **Operating Costs**

Operating costs for each of the activities within the project have not substantially varied on a unit basis between the PFS and Updated PFS. The two areas that have changed are:

- Mining as a result of the slight increase in the stripping ratio
- Transport with the lithium concentrates in the Updated PFS being sold on a FOB port of Beira, Mozambique, rather than CFR China basis

The latter has a material impact on the overall unit cost of concentrate.

Below is a table detailing the difference in unit OPEX between the two studies.

Operating Costs in US dollars		
Item	PFS	Updated PFS
Mining	\$69/t conc.	\$74/t conc.
Processing	\$153/t conc.	\$150/t conc.
Administration	\$25/t conc.	\$26/t conc.
Freight & port	\$94/t conc.	\$62/t conc.
Operating costs	\$342/t conc.	\$311/t conc.
with tantalum credits	\$320/t conc.	\$287/t conc.

Source: PSC

Operating costs disclosed by some of PSC peers are as follows:

### Operating Costs Comparison (US\$)

Project	Ticker	Throughput	Opex US\$/t conc.	Notes
Pilgangoora, Australia	PLS	2.0 Mtpa	US\$189/t	CFR \$207 - \$18 Ocean Freight
Mt Holland, Australia	KDR	2.0 Mtpa	US\$205/t	C1 cost
Whabouchi, Canada	NMX	1.0 Mtpa	US\$219/t	OP ex works mine
Pilgangoora, Australia	AJM	1.4 Mtpa	US\$237/t	FOB Port Hedland
Arcadia, Zimbabwe	PSC	1.2 Mtpa	US\$287/t	FOB Port of Beira, incl. royalties
Authier, Canada	SYA	0.7 Mtpa	US\$294/t	FOB Port of Montreal
Bald Hill, Australia	TAW	1.2 Mtpa	US\$381/t	FOB Port of Esperance
Goulamina, BGS	BGS	1.0 Mtpa	US\$383/t	C1 cost

Source: company announcements, Terra Studio

Considering similar throughput, Arcadia operating costs are in line with other projects.



#### **Metal Prices**

Historical lithium carbonate and lithium hydroxide prices have been recorded by Benchmark Mineral Intelligence as follows:

■ North America Lithium Carbonate ■ South America Lithium Carbonate ■ Asia Lithium Carbonate Asia Lithium Hydroxide ■ North America Lithium Hydroxide Europe Lithium Carbonate 22000 20000 18000 16000 14000 12000 10000 8000 6000 4000 2011 2012 2013 2014 2015 2016 2017

Figure 5.6 - Lithium Carbonate and Hydroxide Prices

Source: Benchmark Mineral Intelligence

The spodumene and petalite prices are linked to the lithium carbonate price.

We have selected the following metal prices scenarios:

- "Current": prices in line with the current prices realised by spodumene producers
- "PSC": base case price scenario set by PSC, i.e. prices decreasing gradually from US\$902/t to about US\$694/t for spodumene concentrates and from US\$601/t to US\$463/t for petalite concentrates
- "Long-term Consensus": average of banks and brokers set from 2019
- "Pre-Boom": average of lithium prices over the 2009-15 period, set from 2019.

For each scenario, the metal prices are set <u>flat</u> over the life of mine, except for the "PSC" scenario.

Metal prices assumptions				
US\$	<u>Current</u>	PSC	LT Consensus	<u>Pre-Boom</u>
Spodumene (6% Li <sub>2</sub> O)	\$850/t	\$902 -> 694/t	\$550/t	\$450/t
Petalite (4.1% Li <sub>2</sub> O)	\$567/t	\$601 -> 463/t	\$367/t	\$300/t
Tantalite (25% $Ta_2O_5$ )	\$60/lb	\$60/lb	\$60/lb	\$60/lb

Source: BMI, banks and brokers, PSC, Terra Studio



# Updated Pre-Feasibility Study

Further to an increase in mineral resources (Oct 2017) and ore reserve (Dec 2017), PSC revised its Pre Feasibility Study in March 2018, with the results of the PFS confirming the project's technical and financial viability to become a significant producer of spodumene, petalite and tantalite concentrates. Highlights of the updated PFS include:

- Anticipated production of 96,000t spodumene concentrates/year (>6% Li $_2$ 0) and 127,000t petalite concentrates/year (>4.1% Li $_2$ 0) and 98,000 lb/year tantalite in concentrate (>25% Ta $_2$ 0 $_5$ ) over the life of mine
- Update JORC compliant ore reserves declared of 26.9Mt @ 1.31% Li<sub>2</sub>O and 128 ppm Ta<sub>2</sub>O<sub>5</sub>
- The current Ore Reserves support a Life of Mine of 22 Years at an average strip ratio of 3.14:1
- Comprehensive metallurgical testwork completed confirms ability to produce >6% Li<sub>2</sub>O spodumene and >4.1% Li<sub>2</sub>O petalite concentrates with an average Lithia recovery of 71%
- PFS underway on the establishment of lithium carbonate & hydroxide plant to become a vertically integrated producer
- LoM Revenue US\$2.6 Billion at a Cash Operating Cost of US\$287 per tonne concentrate
- Capital Expenditure of US\$52.5 Million
- Net Present Value (pre-tax) at 10% discount rate: US\$340m
- Internal Rate of Return: 77%

### Off-take with Sinomine

Following on the change of government in Zimbabwe in November 2017, PSC has managed to renegotiate and complete a Placement and Off-take Agreement with Sinomine in April 2017 for 70% of the Arcadia concentrate production.

With the new Government of Zimbabwe and its promotion to the international community that it is 'open for business' Prospect has received numerous enquiries from investors, financiers, commodity traders and off-take partners. Prospect intends to pursue discussions with these parties to finalise the development funding of the Arcadia project and diversify its customers.

The off-take agreement with Sinomine is a long-term (7 year) agreement for 70% of Arcadia's concentrate production with a spodumene and petalite concentrate price formulae based on the price of lithium carbonate imported into China and concentrate prices sold on an FOB Port of Beira basis.

#### Sinomine

Founded in 1999, Sinomine Resource Exploration Co., Ltd., (Sinomine) was spun out from China Nonferrous Metal Mining (Group) Co., Ltd and is now a modern integrated geo-tech services company with head offices in Beijing, China.

The company is listed on the Shenzhen Stock Exchange (002738) since December 2014 with a market capitalisation of ~A\$1.1Billion.

Sinomine has the technical and financial resources to help Prospect fast track the development of Arcadia.

The company employs over 300 senior professional technicians and managers and its main business lines include solid mineral prospecting



PSC is expected to benefit from

a corporate tax holiday for the

first few years followed by a

reduced rate thereafter.

services, mining investment, resource evaluation services and international trade and logistics services.

Sinomine has carried out exploration and mining activities in over 20 different countries around the world including Zimbabwe, Zambia, Congo (DRC) and has subsidiaries in each of these jurisdictions.

Sinomine has ambition to become a leading battery minerals company. They have entered into conditional agreements (in conjunction with Shenzhen Oriental Fortune Capital Co., Ltd) to acquire the DRC operations of Tiger Resources Ltd (ASX code: TGS) (principally cobalt assets, see Tiger Resources announcement dated 22 January 2018) for some US\$260m. Additionally, they have conditionally agreed to purchase Jiangxi Dongpeng New Materials Co., Ltd (Dongpeng) for some 1.8 billion Yuan (approximately US\$280m) to be settled in shares and cash. Dongpeng is one of the main suppliers of lithium fluoride, which is a key raw material of lithium-ion electrolyte in China, as well as the largest manufacturer and supplier of caesium salt and rubidium salt in China.

#### Cashflow Model

A cashflow model was built using the final assumptions as follows:

• Lithium minerals tax: 5%

Royalty: 2%

- Zimbabwe standard tax rate of 25% (applied conservatively here)
- Discount rate of 10% per annum
- AUD/USD exchange rate of 0.75

Results for the different scenarios are summarised below:

Arcadia project returns using different metal prices scenarios

Scenario	<u>Current</u>	PSC	LT Consensus	<u>Pre-Boom</u>
Initial Capex	\$52.5m	\$52.5m	\$52.5m	\$52.5m
Spodumene Price	\$850/t	\$902 -> 694/t	\$550/t	\$450/t
Petalite Price	\$567/t	\$601 -> 463/t	\$367/t	\$300/t
NPV (pre tax)	\$586m	\$401m	\$184m	\$51m
IRR (pre tax)	96%	87%	45%	22%
NPV (post tax)	\$440m	\$301m	\$138m	\$38m
NPV (pre tax)	A\$781m	A\$535m	A\$245m	A\$68m
Initial Capex	A\$70m	A\$70m	A\$70m	A\$70m

Source: Terra Studio

The Arcadia project is highly leveraged to lithium prices. In the first three scenarios, the project generates some excellent cash flows. The first three scenarios show some good returns with NPVs generated equal to more than three times the initial capital expenditure. The last scenario indicates the robustness of the project should lithium prices seen before the current boom be repeated and recorded over the 22 year mine life. In this extreme adverse case, the NPV remains positive.



All environment and government approvals are in place

PSC is now entering a time where it should deliver numerous significant milestones: being fully funded, acceleration of construction, commissioning and delivery of first concentrates

PSC Board of Directors and management combines the business, financial and technical and political skills to develop the Arcadia project.

# **Environment and Government Approvals**

The Arcadia project now has all approvals in place, as well as a publicised full support of the Zimbabwe Government, to start mining and construction on site. A ground breaking ceremony involving the President of Zimbabwe is planned for in April 2018.

# Development Timeline and Funding

PSC intends to enter into first engineering contracts and pioneer mine strip and tailings dam construction contracts during April 2018.

Completion of the mine finance is expected to occur during Q2 of 2018. With the re- engagement of Zimbabwe with the world, PSC is confident that it can finance the build on more favourable terms than previously offered. PSC currently has over A\$20m cash, no debt and a future prepayment of US\$10m from Sinomine to contribute to the construction and commissioning of the mine and processing facilities. PSC has also received a number of additional indicative financing proposals to finance the balance of the estimated US\$52.5m total capital expenditure.

# 6. Zimbabwe Mining Revival

The long awaited resignation of President Mugabe represents a highly significant turn-around for the country. Zimbabwe, under its new Government is "open for business" and the country is again a focus for international investors and off-takers.

As such, Prospect Resources is receiving significant domestic support for its plans and operations from all relevant government departments.

# 7. Directors & Management Team

Hugh Warner, Chairman

Mr Warner holds a Bachelor of Economics from the University of Western Australia. He has broad experience as a public company director, having been a director of a number of publicly listed companies involved in the mining, oil and gas, biotechnology and service industries.

#### Duncan (Harry) Greaves, Executive Director

Mr Greaves is a fourth generation Zimbabwean. He holds a B. Sc. (Agriculture) from University of Natal (in South Africa). He is the founding shareholder of Farvic Consolidated Mines (Pvt) Ltd which operates the Prince Olaf, Farvic and Nicolson gold mines in southern Zimbabwe all of which he brought back into production over the last 10 years including the design and construction of two milling facilities. He was also the driving force behind the acquisition of the Penhalonga Gold Project and the Bushtick Gold Project. He is a well respected and well known member of the Zimbabwe mining fraternity.

### Gerry Fahey, Non-Executive Director

Mr Fahey has over 40 years' experience in both the international and local minerals industry. He is a specialist in mining geology, mine development and training and worked for 10 years as Chief Geologist Mining for Delta Gold where he was actively involved with the development of the Eureka, Chaka, Globe and Phoenix gold mines and the following Australian gold projects:



in Africa

Local team has a track record of discovering, proving, building

The majority of the development and operating team is based on the ground in the region

and operating mining projects

Kanowna Belle, Golden Feather, Sunrise and Wallaby. Mr Fahey is currently a Director of Focus Minerals Ltd and formerly a Director of CSA Global Pty Ltd, and member of the Joint Ore Reserve Committee (JORC).

# Zed Rusike, Non-Executive Director

Mr Rusike is a qualified accountant and resident of Zimbabwe. He was previously the Managing Director of United Builders Merchant before being promoted to Group Managing Director for Radar Holdings Limited, a large quoted company on the Zimbabwe Stock Exchange. He retired from the Radar Group of companies to pursue personal interests and currently sits on the board of Cairns Holdings, TSL Limited, Dulux Paints Limited and Halsted Brothers (Pvt) Limited to name a few. Mr Rusike is a former President of and current Chairman of the board of the Confederation of Zimbabwe Industries.

## Manana Nhlanhla, Non-Executive Director

Ms Nhlanhla is Chairperson of Mion Limited, the parent company of Armoured Fox Capital (Pty) Ltd, one of the Company's largest shareholders. Mion Limited is a 100% black owned South African based investment company with investments in Maritime, Gaming, Energy, Industrial, Engineering Industries and general listed entities.

### Qingjiao Yu, Non Executive Director

Mr Yu has over fifteen years of experience in the Lithium-ion battery industry in China and is well known for being a key figure in the China battery technology sector.

Currently, Mr Yu is Chairman and CEO of Energy Finance Net and China Battery Net. He is also the President for the China Battery Magazine, Secretary-General for ABEC BBS (Lithium electricity "Davos") committee and also a Director of Zhongguancun Battery Industry Technology Innovation Alliance.

# 8. Investment Risks

PSC is exposed to a number of risks including:

- **Geological risk**: the actual characteristics of an ore deposit may differ significantly from initial interpretations.
- Resource risk: all resource estimates are expressions of judgment based on knowledge, experience and industry practice. Estimates, which were valid when originally calculated may alter significantly when new information or techniques become available. In addition, by their very nature, resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate.
- Commodity price risk: the revenues PSC will derive through the sale of lithium and tantalum concentrates expose the potential income to metals price risk. The prices of lithium and tantalum fluctuate and are affected by many factors beyond the control of PSC. Such factors include supply and demand fluctuations, technological advancements and macro-economic factors.
- Exchange Rate risk: The revenue PSC derives from the sale of metal products exposes the potential income to exchange rate risk. International prices of various commodities are denominated



in United States dollars, whereas the costs base is in Rand and the financial reporting currency of PSC is the Australian dollar, exposing the company to the fluctuations and volatility of the rate of exchange between the USD, the Rand and the AUD as determined by international markets.

- Mining risk: A reduction in mine production would result in reduced revenue.
- Processing risks: A reduction in plant throughput would result in reduced revenue. In all processing plants, some metal is lost rather than reporting to the valuable product. If the recovery of metal is less than forecast, then revenue will be reduced.
- Operational cost risk: an increase in operating costs will reduce the profitability and free cash generation of the project.
- Management and labour risk: an experienced and skilled management team is essential to the successful development and operation of mining projects.

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