

Due Diligence and Valuation Report

Arrowhead code:	27-03-04
Coverage initiated:	June 3, 2021
This document:	May 24, 2022
Fair Value Bracket (per share):	AUD 0.89 to AUD 1.08
Share Price (May 24, 2022):	AUD 0.54

Analyst

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Market Data

52-Week Range:	AUD 0.18-1.04
Average Daily Volume:	3,205,487
Market Cap as on date:	AUD 188.5 million

Financial Forecast (in AUD) (FY Ending – June)

AUD	'22P	'23P	'24P	'25P	'26P
NI (mn)	(3.5)	(3.7)	(3.8)	(3.8)	44.2
EPS (cents)	(0.01)	(0.01)	(0.01)	(0.01)	0.13

Company Overview

Lithium Power International Limited (“LPI” or “the Company”) is a pre-revenue pure play, diversified lithium exploration, and development company involved in the acquisition and advancement of promising lithium projects. The Company has a geologically and geographically diversified asset base, with projects in Chile and Australia. All of the Company’s projects with the exception of the Minera Salar Blanco S.A. (“MSB”) joint venture (“JV”) in Chile are currently in exploration stage. The MSB JV is about to enter the construction stage with production likely to begin in 2025.

LPI’s stock price has been volatile in the last 12 months although it has generally trended upwards. The Company’s stock fell sharply from AUD 0.30 on Jan 3, 2020, to AUD 0.11 on Mar 27, 2020, in the immediate aftermath of the Covid-19 outbreak. The stock price has since recovered and closed at AUD 0.54 on May 24, 2021. The volatility in LPI’s stock price since the Covid-19 outbreak in late 2019 is consistent with other commodity stocks as investors have preferred to invest in safer assets since the outbreak.

Key Highlights

- LPI currently has one brine asset in Chile (MSB JV) and three hard rock assets in Australia. LPI’s flagship MSB JV is among the most advanced development-stage projects in the market. It is about to enter the construction phase with production likely to begin in 2025. The Company’s other three assets are currently in exploration stage.



Company:	Lithium Power International Ltd
Ticker:	ASX: LPI
Headquarters:	Sydney, Australia
CEO & MD:	Cristobal Garcia-Huidobro
CFO:	Andrew Phillips

Website: www.lithiumpowerinternational.com

- LPI owns 51.6% of the MSB JV while Borda Group owns 31.3%, and Bearing Lithium owns 17.1%.
- According to the latest Definitive Feasibility Study (“DFS”) released in 2022 only for Stage One of MSB, the annual production of Lithium Carbonate Equivalent (“LCE”) is estimated to be 15,200 tonnes per annum, with an expected mine life of 20 years.
- MSB has obtained environmental approval as well as basic infrastructure permissions and approvals for water, roads, electricity, port, logistics etc. It has also signed non-binding Memorandum of Understanding (“MoU”) with Japan’s Mitsui & Co., Ltd. (“Mitsui”) for the project’s further development. The Mitsui MoU covers a comprehensive lithium offtake arrangement, partnership for developing MSB and other assets in Chile, and entering related businesses.
- LPI’s other projects in Western Australia are Tabba Tabba (WA), Pilgangoora (WA), and Greenbushes (WA). The Company is planning to spin out its Pilgangoora and Greenbushes assets within the next few months and create a new WA-focused lithium exploration company for these assets.

Key Risks

We believe that LPI has a mid-high risk profile because all of its assets are currently in the pre-production stage and none of them is expected to generate revenue until early 2026. The Company requires significant capex to bring all of its projects online and to support its aggressive future acquisition plans.

Valuation and Assumptions

Based on its due diligence and valuation estimates, Arrowhead believes that LPI’s fair share value lies in the AUD 0.89 to AUD 1.08 bracket, which has been calculated using a blended valuation method for MSB project; with 50% weighting to the DCF method and 50% weighting to Comparable Companies Valuation method and then adding the book value of other exploration & evaluation assets to the weighted average equity value of MSB project. Our model suggests a fair value of AUD 0.98. Our DCF model suggests a fair value of AUD 1.48 per share, while a relative valuation provides a fair value of AUD 0.47.

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Investment Thesis

Arrowhead is updating equity research coverage of Lithium Power International Ltd. ("LPI") with the following investment highlights:

Strong demand for lithium-ion batteries to benefit early movers like LPI the most

Lithium is primarily used for manufacturing lithium-ion batteries used in Electric Vehicles ("EVs"), mobile phones, tablets, grid-level mass storage systems etc. The demand for these batteries has grown significantly in recent years due to the growing demand for these products and is likely to continue growing sharply. The demand growth for battery-grade lithium is expected to exceed its supply growth in the coming years, resulting in a significant lithium shortage by 2025 and could potentially skyrocket lithium prices. According to Macquarie's estimates, lithium prices could almost double over the next four years, especially due to the expected upsurge in EV sales. Many new players are entering the lithium mining space to benefit from these rising prices. Existing players are also trying to aggressively expand by accelerating the development of existing assets, acquiring new assets, and merging or entering JVs with competitors. Companies like LPI that were early to identify the strong growth potential of the lithium market and acquire promising lithium assets are likely to benefit the most from the upcoming lithium boom.

Smooth progress of the high-potential MSB asset a major positive

LPI's MSB asset is among the most advanced development-stage lithium assets in the market. The development of this asset has been managed commendably, making it among very few assets whose Definitive Feasibility Study ("DFS") has been concluded and all the important approvals and permits, (including EIA and water) have been secured. A DFS released on the project in 2019 supported LCE production potential of 20,000 tonnes per annum over a 20-year period. This DFS was conducted on the complete project including both the Old Code Mining Concessions ("OCC"), known as Stage One and the New Code Concessions, also referred to as Stage Two by the Company.

An updated Resource Report was released by the Company in September 2021, showing a 91% increase in the Measured and Indicated Resources. In January 2022, the Company released the results of an updated DFS, which was conducted only on OCC (Stage One concessions) by engineering consultancy, Worley. As per the latest DFS, the production from OCC is estimated at an average of 15,200 tonnes per annum of battery-grade lithium carbonate for 20 years. This result is based on exploration work carried out to a depth of 400-meters only on Stage One concessions as compared to the previous DFS released in 2019, which was done on the complete asset and was only up to 200-meters. The latest DFS on OCC also provides an estimate of USD 626 million for the CAPEX, which includes project development costs, indirect costs, and contingency costs. The estimate includes all the information contained on the proposals received as part of the international EPC bidding process carried out by the company in 2020, after accounting for the expected inflation on different materials and supplies.

The Company's current goal is to finalize the financing for the project by 2022. LPI is working with both international and Chilean financial institutions to raise capital for the development of the mine. Given the positive results from the latest DFS of Stage One project, the Company is continuing to work on the development of subsequent stages at Maricunga. LPI has entered a non-binding MoU with Mitsui for the Stage One development of MSB, among many other things. If the Company can crystalize this partnership, it would go a long way in maintaining the smooth progress of MSB as it enters its critical construction stage, as LPI is counting on the partnership to bring the capital and technical knowhow that are crucial for the project's success.

Focus on high-grade lithium properties

LPI specifically focusses on identifying, exploring, and developing high-grade lithium properties. The Company currently has assets in Chile and Australia, which have the world's largest and highest-grade lithium reserves. It is also exploring tenements in these countries both independently and through strategic partnerships. The Company's flagship MSB JV in Chile has among the world's highest-grade lithium resources at 957 mg/l lithium and 8,500 mg/l potassium concentration. The updated DFS on Stage One of MSB released in January 2022, shows approximately 2x increase in the Measured and Indicated resource of LCE as compared to the resource estimated in DFS released in 2019.

MSB produced its first battery-grade lithium carbonate sample in 2018 with GEA Messo. LPI expects to produce a high purity and a high-quality battery grade lithium carbonate. This will allow the Company to make the most of the expected growth in demand for lithium-ion batteries used in EVs, as well as tablets, mobile phones, and other consumer electronics.

Partnerships with established miners to offset lack of operating experience

LPI does not have any experience of operating and managing in-production assets since none of its assets have entered production yet. The Company's leadership team have extensive experience of managing in-production assets at other organizations but have not worked with such assets together, as one team. The Company also has an MoU with Japanese major Mitsui, which could soon culminate into a JV with MSB. This partnership is likely to go a long way in offsetting LPI's lack of operating experience, at least for MSB.

Converting Mitsui MoU into a binding agreement and the ability to finance other ambitious growth plans will be critical going forward

LPI has periodically tapped capital markets to fund its growth plans. After its AUD 8.9 million IPO in 2016, the Company raised an additional AUD 28.3 million and AUD 8.0 million through private placements in 2017 and 2020, respectively. LPI's most recently raised capital in August 2021, bringing in AUD 12.4 million through a placement of its shares to sophisticated and institutional investors. The Company plans to primarily use the proceeds for the development of the MSB project and use the remaining proceeds for renewed exploration programs at the Greenbushes project in Western Australia. The Company is currently in discussions with investors for raising capital required for the next stage of MSB's development. MSB has entered into a non-binding MoU with a Japanese company Mitsui for the further development of the MSB project, including potential off-take agreements and funding rights for the Stage One of the project. Although this is an encouraging first step and the Company expects to convert the MoU into a binding agreement in due course, its financial uncertainty cannot be completely ruled out in the absence of a firm commitment from Mitsui. LPI will also need to raise additional debt and equity capital to finance MSB's further development and the Company's other growth plans that include acquiring new assets and vigorously resuming exploration and drilling work at some of its properties after a Covid-related pause. The ability to convince investors about the viability of the Company's future plans and the management's ability to execute these plans successfully would be critical to raise these funds.

Increasing prices of Potassium Chloride ("KCl") could further lower operating costs

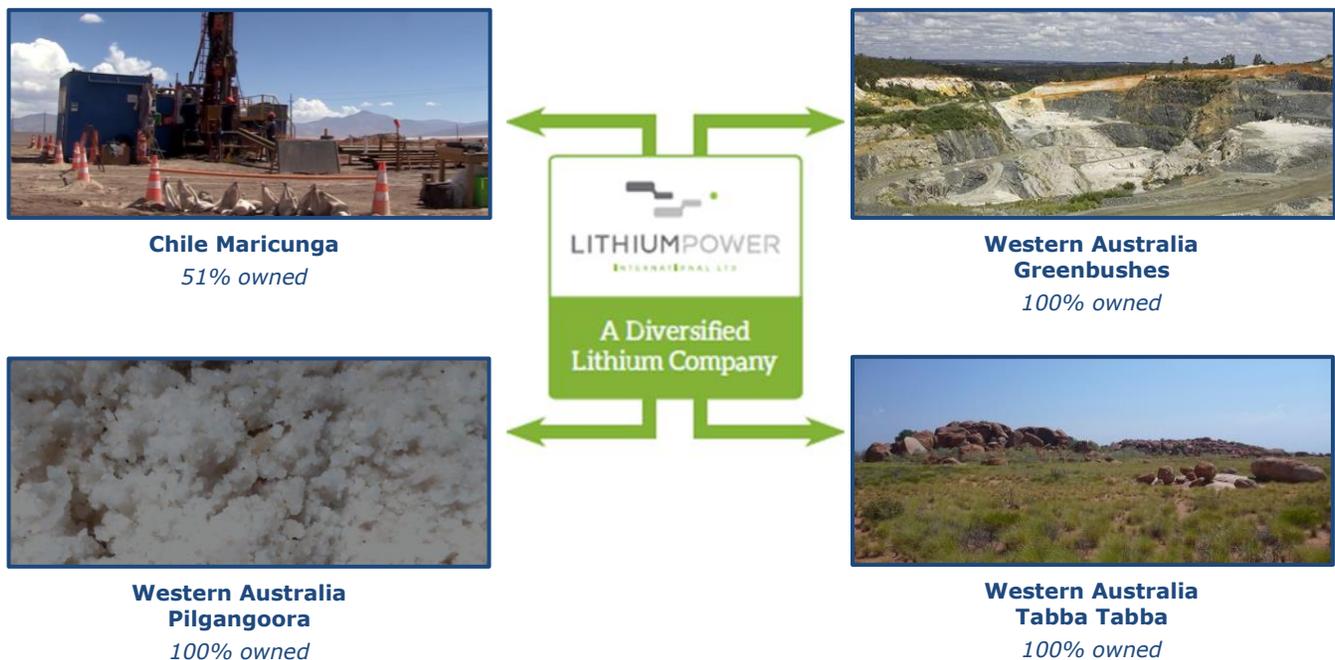
Along with the production of Lithium on Stage One, LPI also has permits to produce KCl, which is a by-product during the production of Lithium. Until now, the Company did not plan to process and sell potash due to its depressed prices. The recent recovery of the prices will allow the Company to consider the production and sale of KCl at no additional costs, thus effectively reducing its lithium cash operating costs.

Company Presentation

Lithium Power International Limited (ASX: LPI) (“LPI” or “the Company”) was incorporated in 2015 and listed on the Australian Securities Exchange in 2016. LPI is as a pure-play, diversified lithium company that acquires, explores, and develops promising lithium projects.

LPI is currently working in four distinct project regions, consistent with its objective of maintaining a geographically and geologically diverse asset base. The Company has one project in South America’s lithium brine region in Chile and three projects in Western Australia’s spodumene hard rock areas (one each in Tabba Tabba, Pilgangoora, and Greenbushes). The Company is planning to spin out its Pilgangoora and Greenbushes assets within the next few months and create a new WA-focused lithium exploration company. The Company is targeting to complete the demerger process by Q3’22. The demerger will allow the company to effectively allocate its resources on MSB and maximize the value of its WA assets. The Company further announced that the new demerged entity will be named Western Lithium Ltd (“WLI”), and it has applied to the Australian Securities and Investment Commission to get listed as a public company.

Currently, LPI is primarily focusing on developing its flagship MSB project in Chile, with an objective of becoming one of Chile’s lowest-cost high-grade lithium producers. MSB’s Stage One project is among the most advanced development-stage asset in the market with all key approvals and licenses in place. It is the only new mining asset to be granted Chile’s prized environmental approval in the last five years. LPI is also continuing its exploration work in Western Australia. The Maricunga Salar, the location of the MSB properties, is within South America’s “Lithium Triangle” that comprises Chile, Argentina and Bolivia, and hosts approximately half of the world’s lithium reserves.



Company Milestones

Year	Event
2015	<ul style="list-style-type: none"> Incorporated in Sydney, Australia, as Lithium Power International
2016	<ul style="list-style-type: none"> Raised AUD 8.9 million through an IPO and listed on the Australian Stock Exchange Acquired several properties in Western Australia’s Centenario Salar region
2017	<ul style="list-style-type: none"> Formed a JV by acquiring 50% stake in MSB in Chile Raised AUD 28.3 million equity capital Acquired assets in Western Australia’s Tabba Tabba and Strelley regions. Identified Greenbushes region for exploration through targeted rock and soil sampling programs
2018	<ul style="list-style-type: none"> Acquired another 1% stake in the MSB JV Sold 30% stake in the properties acquired in Centenario
2019	<ul style="list-style-type: none"> Released its first Definitive Feasibility Study for MSB
2020	<ul style="list-style-type: none"> Received environmental permit for MSB Received approval for Program of Works (POW) for the Greenbushes project Sold Strelley tenements to Carnaby Resources Ltd. Raised AUD 8 million from sophisticated and institutional investors for developing the MSB project and conducting exploration activities at Greenbushes project Adopted a staged strategy to continue the development at Maricunga, accelerating the Stage One, based on part of its mining concessions.
2021	<ul style="list-style-type: none"> Commenced exploration program adjacent to Greenbushes lithium mine owned and operated by Albemarle and Tianqi Completed further resource drilling to the target depth of 400-meters at MSB and confirmed favorable specific yield and permeability characteristics Signed a non-binding MoU with Mitsui & Co., Ltd. For the development of the MSB project and future developments in Chile Sold remaining 70% interest in Centenario asset to Vertex Lithium Corporation Raised AUD 12.4 million from institutional investors Measured and Indicated resource from 200-meters to 400-meters depth at Maricunga Stage One Lithium project is estimated to be 1,905,000 tonnes of LCE
2022	<ul style="list-style-type: none"> Released an updated DFS for the Stage One Maricunga Lithium Brine Project Planned to spin out its Western Australian Greenbushes and Pilgangoora lithium assets

Lithium Properties

Asset / Project	Project Overview	Working Interest	Stage / Status
Maricunga Lithium Brine, Chile	Minera Salar Blanco S.A. is a joint venture that owns the MSB project. LPI has a 51.6% stake in the JV along with Borda Group (31.3%) and Bearing Lithium (17.1%).	51%	Advanced Exploration
Tabba Tabba, Western Australia	The project covers a 20 km strike of highly prospective greenstone units identified through mapping and regional magnetic surveys. A 31-hole drilling program was carried out in 2019. Further exploration restarted in Feb 2021.	100%	Early-Stage Exploration
Greenbushes, Western Australia	Tenements include the Balingup project, the Brockman Highway project, the Blackwood prospect, and the East Kirup Prospect. An environmental management plan for exploration and a program of works has been approved for a period of four years. Plans for conducting detailed magnetic and fauna survey at Blackwood and East Kirup have been prepared. A drilling program has also been planned for East Kirup, however, the Company is planning to spin out the asset in the first half of 2022 and operate it through a new WA-focused company that has the technical, human, and financial resources to manage it.	100%	Early-Stage Exploration
Pilgangoora, Western Australia	The tenement is situated adjacent to Pilbara Minerals' and Altura Mining's lithium pegmatite deposits. A program of soil sampling has been planned and application for further works has been submitted to the Department of Mines, Industry, Regulation and Safety. The Company is planning to spin out the asset in the first half of 2022 and operate it through a new WA-focused company that has the technical, human, and financial resources to manage it.	100%	Early-Stage Exploration

Corporate Strategy & Future Outlook

LPI's core strategic focus over the next few years will be completing the construction on Stage One of MSB and bringing it into production by 2025. LPI aims to become one of Chile's lowest-cost high-grade lithium producers and an eminent global producer of battery-grade lithium. Signing a non-binding MoU with Japan's Mitsui & Co., Ltd. in May 2021 was a landmark accomplishment towards operationalizing MSB soon and tapping the vast potential of Chile's Lithium industry. LPI and Mitsui have been in partnership discussions for over two years now and are in the process of finalizing the structure of this partnership in the hope of signing a definitive agreement in the coming months.

According to the MoU, Mitsui will have offtake and financing rights for MSB's Stage One development as well as future development. The MoU also lays out a broad framework for collaboration between LPI and Mitsui for future lithium mining projects in Chile as well as for related businesses, such as manufacturing lithium-based products. The MoU also discusses a collaboration for facilitating the development and testing of the Direct Lithium Extraction ("DLE") technology at MSB for the production of lithium hydroxide.

LPI's aims to leverage Mitsui's financial strength to build significant financial capacity for the future development of MSB as well as investments in other lithium assets in Chile. Mitsui will contribute equity capital as well as bring Japan Bank of International Cooperation ("JBIC") and Japan Oil, Gas and Metals Corporation ("JOGMEC") as a senior participant for debt capital. In parallel with finalizing the development of the Stage One, LPI will continue working on the future expansion and growth of Maricunga, with the development of the rest of its mining concessions at the project.

In addition to operationalizing MSB, LPI is likely to continue acquiring more high-grade lithium tenements in the coming years as its Mitsui partnership approaches finalization. However, exploration and development work on these assets is likely to remain slow until MSB's Stage One construction is underway. These new acquisitions are likely to be consistent with the Company's philosophy of acquiring assets that are geographically and geologically diverse so that it can maintain a low risk profile. Pursuant to this strategy, the Company has until now acquired assets in lithium-rich areas of Chile, Australia, and Argentina (LPI recently sold its only asset in Argentina) and is likely to continue focusing mainly on assets in Chile, followed by Australia and other geographies.

News

[LPI releases the updated DFS for the Stage One Maricunga project](#)

January 20, 2022

The updated DFS results for the State One Maricunga Lithium Brine project shows production of 15,200 tonnes of LCE per annum for 20 years, with a CAPEX of USD 626 million. The project is expected to deliver an after tax NPV of USD 1.4 billion at an 8% discount rate, an IRR of 39.6%, and a 2-year payback period.

[LPI to spin out its Western Australian assets](#)

January 12, 2022

LPI announced that it will spin out Western Australian Greenbushes and Pilgangoora lithium assets in the next six months. The demerger will result in the creation of a dedicated, WA-focused lithium exploration company with the management team and resources to realize the value of the WA assets. The Demerger will enable LPI to focus its resources exclusively on developing its Maricunga Lithium Brine Project in Chile.

[LPI receives payment for sales of the Centenario asset](#)

November 24, 2021

LPI announced the completion of a share purchase agreement with Vertex Lithium Corporation ("Vertex"), to acquire LPI's 70% of lithium exploration properties on the Centenario Salar (Centenario) in Argentina. The transaction involved a cash payment of USD 700,000 in exchange for 70% shareholding in the asset and USD 40,000 to cover the costs to execute the transaction. LPI has opted for the CAD 250,000 worth of fully paid ordinary shares in Vertex to be paid in cash, due to the delay in the IPO of Vertex on the TSX. Therefore, USD\$200,000 has been received in lieu of shares.

[LPI's Maricunga Project sees a 90 percent in Measured & Indicated Resources](#)

September 29, 2021

A new updated report stated a 90 percent increase in Measured and Indicated Resource of Lithium in Maricunga. The new estimate of 1,905,000 tonnes is almost double in number when compared with the "Definitive Feasibility Study" conducted in 2019. The latest drilling for Stage One mining concessions at Maricunga has also been completed, with the five exploration core holes each reaching target depth of 400-meters.

[LPI Completes AUD 12.4 million Private Placement](#)

August 23, 2021

LPI has raised AUD 12.4 million through placement of new and fully paid ordinary shares to new and existing institutional investors. The issue was undertaken at a price of AUD 0.26 per share. The placement resulted in an increase of 47.69 million shares. These funds will be used for the in-progress Maricunga Lithium Brine project, and also for Greenbushes project and other possible targets in Western Australia.

[MSB Completed Drilling Program with 5 Core Holes](#)

July 8, 2021

An additional drilling program was initiated on MSB and was completed in July 2021. The drilling program on the Stage One mining concessions involved drilling of five exploration core holes (S-25, S-26, S-27, S-28 and S-29) each reaching target depth of 400-meters. There is a significant resource expansion expected for Stage One from this drilling program that tested the 200-meters to 400-meters mineralized zone. Worley, GEA Messo, and Atacama Waters are working on updating the DFS. Review and certification processes have been initiated for ESG protocols. Proposals from specialized advisors are expected during Q3 2021 to review all project information along with carbon footprint metrics.

[MSB Completes Sale of Remaining Stake in Centenario Salar Properties](#)

May 19, 2021

LPI announced the execution of a share purchase agreement with Canada-based Vertex Lithium Corporation to acquire 70% of lithium exploration properties on the Centenario Salar in Argentina. The Company sold 30% of its interest in the Centenario properties to ASX-listed Marquee Resources Ltd in 2019.

[MSB agrees on a Strategic Alliance with Mitsui for the Development of MSB Project](#)

May 11, 2021

MSB has signed a non-binding MoU with the Japanese conglomerate Mitsui & Co., Ltd. to advance the development of the MSB project and future developments in the Chilean lithium industry. The alliance will include potential off-take and funding rights for the Stage One of the MSB project.

[MSB Completed Drilling for the Third Hole and Started Drilling in the Fourth Hole in the MSB Project](#)

April 21, 2021

MSB has completed resource drilling in three out of five diamond core holes (S-25, S-26, and S-27) to the target depth of 400-meters. The fourth core hole is currently under drilling and all five holes are expected to be completed by early May, which is two weeks ahead of schedule. The first set of 31 undisturbed core samples collected from holes S-25 and S-26 have been sent to Geosystems Analysis laboratories in Tucson, Arizona and the results of drainable porosity and other hydraulic parameters are expected by the middle of May. Of a total of 56 brine samples collected at 12-meter intervals during the drilling, 20 samples have been sent to Andes Analytical Assay for analysis. Preliminary analysis shows average lithium concentrations above 1,000 ppm and positive lithium / calcium / magnesium ratios.

[Resource Drilling at MSB's Maricunga Project Expected to Expand Current Resource](#)

March 11, 2021

MSB completed resource drilling in two of the five diamond core holes (S-25 and S-26) to the target depth of 400-meters ahead of schedule. Undisturbed core samples were collected between 200-meters and 400-meters depth and sent for analysis for laboratory measurement of drainable porosity and other hydraulic parameters. Positive brine density from the samples collected at 12m intervals during the drilling and preliminary measurements at the wellhead indicate high lithium concentrations, similar to the ones found on the 0-meters to 200-meters interval. Significant resource expansion is expected.

[LPI Commences Lithium Exploration Program Adjacent to Greenbushes Lithium Mine](#)

February 11, 2021

LPI commenced exploration to define drill targets within the previously identified arsenic lithium anomalies. Regional laterite and rock chip sampling is also commencing in areas that previously were not tested by LPI. The Company's Greenbushes tenements cover approximately 40,000 ha north and south of the Greenbushes mine.

[LPI to Undertake New Field Program for Maricunga Lithium Brine Project](#)

January 27, 2021

A new field program will be undertaken from February 2021 to update derailed engineering work to re-size and optimize the revised Maricunga Stage One development. The target is to expand the current resource, which is from near surface to 200-meters depth, to include the interval between 200-meters and 400-meters. Drilling contracts have been awarded to international companies Major Drilling and Andinor, and all drilling equipment has been mobilized to the site.

[LPI to Recommence Exploration Activity Adjacent to the Greenbushes Lithium Mine](#)

January 7, 2021

LPI has received drilling approval for the Greenbushes tenements and will conduct additional geochemical sampling before drilling commences. 201 surface samples have been taken over 60 km², with further sampling planned to define drill targets. The Company identified further drill targets in the East Kirup area to the north of Balingup, with pegmatite outcrop in the prospective amphibolite unit.

[LPI Issues New Shares Without a Prospectus](#)

December 22, 2020

LPI has issued 35,000,000 new fully paid ordinary shares following the capital placement of shares at AUD 0.22 without disclosure to investors. With this notice, the Company has complied with the provisions of Chapter 2M and section 674 of the Act.

[LPI Completes Placement of AUD 8 million equity](#)

December 16, 2020

LPI has received firm commitments for placement of AUD 8 million equity from sophisticated and institutional investors. Directors are to participate for AUD 0.3 million in the second tranche of this placement subject to shareholder approval. Funds raised are to be applied to the development of Maricunga Lithium Brine Project and exploration at the Greenbushes Projects in Western Australia.

[LPI to Proceed with Staged Development of its Maricunga Lithium Brine Project in Chile](#)

December 9, 2020

LPI has decided to fast-track the first stage development of the low-cost Maricunga Lithium Brine Project. This fast-tracked development will be undertaken alongside the continued development of the original project. The initial development stage will be undertaken in the 'Old Code' concessions of the project. The licenses for these developments have been grandfathered from the current lithium legislation and the Company does not require any further significant permits for lithium production.

[LPI Completes Sale of Strelley Tenement in Western Australia](#)

July 15, 2020

LPI has completed a transaction to sell the Strelley tenement in Western Australia to Carnaby Resources Limited (ASX: CNB) in exchange for 1,250,000 fully paid ordinary shares in Carnaby and 1% Net Smelter Return royalty for any gold produced from the Strelley tenement. LPI will also retain all mineral rights for lithium, caesium, tantalum, and tin contained within the tenement. This provides LPI some value realization from this asset, which has not indicated any significant lithium reserves in studies conducted thus far.

[MSB Receives Environmental Approval for the Maricunga Lithium Project](#)

February 5, 2020

Chile's Central Environmental Committee has approved the Environmental Impact Assessment (EIA) on LPI's Minera Salar Blanco S.A. (MSB) JV in the Atacama Region of northern Chile. This is among the few EIAs approved in Chile in recent years and makes MSB the third significant lithium operation in the country with an anticipated annual production of 20,000 tonnes.

[Environmental Impact Assessment Updated for Maricunga Lithium Project](#)

October 16, 2019

LPI's JV company, Minera Salar Blanco S.A. (MSB) were informed that the Chilean Environmental Service has extended the Environmental Impact Assessment (EIA) evaluation process for 60 days. The Chilean regulations sets a timeframe of 120 business days for the final environmental evaluation of any project submitted in the country. The use of this extension is customary among large and/or complex projects in Chile and was expected by MSB. This request by Environmental Service for an extension is a result of no specific question or query, but rather to grant more time to review the comprehensive data that has already been provided by MSB.

[LPI & Codelco Sign MoU to Jointly Develop Maricunga Lithium Project](#)

August 1, 2019

LPI's MSB JV entered a non-binding Memorandum of Understanding (MoU) with the Chilean State-owned mining company, Codelco. The MoU lays down the terms for a definitive JV agreement that might be negotiated at a later stage for MSB's further development. The agreement will be subject to mutual due diligence, detailed documentation, the establishment of a "NewCo" under Chilean corporate law and the finalization of a "NewCo" Shareholders Agreement, among other conditions.

[Commencement of Drilling Program at Tabba Tabba](#)

July 24, 2019

LPI has commenced its initial drilling at the Company's 100% owned Tabba Tabba Lithium project. The project is located along the Tabba Tabba shear zone, which has hosted important historical tantalum mineralization and lithium discoveries. 4,000m of RC drilling is planned to test pegmatite targets in three parallel greenstone belts, with pegmatites located within an area of elevated lithium and other geochemistry over 4.3km of strike.

[Expiry of Listed Options Trading Under LPIOA](#)

June 19, 2019

LPI advises that the 34,578,947 listed options under the code LPIOA will expire, unless exercised before, on 6 July 2019. Each LPIOA options is exercisable at a price of AUD 0.55 (55 cents) and entitles the holder to subscribe for one fully paid ordinary share of the Company. The options were issued on 7 July 2017 under a prospectus dated 18 May 2017.

[Marquee Acquires LPI's Argentina JV Partner Centenario](#)

June 13, 2019

Marquee Resources Limited agreed to acquire Centenario Lithium Limited ("CLL"), which holds a 30% interest in Lithium Power International Holdings (Argentina) Pty Ltd ("LPIH") while LPI holds the remaining 70% interest. LPIH owns 100% of seven leases in Centenario Salar in Northern Argentina. As part of the transaction, Marquee will receive commitments for a capital raise of not less than AUD 500,000 at AUD 0.10 per share from the CLL Shareholders or investors introduced by them.

[LPI to Start Drilling at Its Highly Prospective Western Australia Assets](#)

April 3, 2019

LPI will start drilling at its highly prospective lithium pegmatite assets in Western Australia as part of the first stage of these assets' development. Drilling activities will commence in May 2019 and will continue over H2'19. Positive preliminary sampling over the greenstone belts at Tabba Tabba demonstrate elevated concentrations of lithium 9up to 689 ppm in addition to caesium, tantalum, tin, and beryllium – all indicators for productive LCT lithium pegmatites. The objective of these activities is to define an initial resource that can serve as the base for a Scoping Study and PFS preparation.

Listing Information

Lithium Power International, headquartered in Sydney, Australia is listed on the Australian Securities Exchange – (ASX: LPI).

Contacts

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Top Shareholders as on September 9, 2021

Equity Holder	No. of ordinary shares held	% Shareholding
HSBC Custody Nominees (Australia) Limited	39,500,802	11.33%
Citicorp Nominees Pty Limited	24,114,532	6.91%
Chifley Portfolios Pty Limited (David Hannon Retirement A/C)	21,485,888	6.16%
ArmaTrust Pty Ltd (Arma A/C)	18,050,620	5.18%
Treasury Services Group Pty Ltd (Nero Resource Fund A/C)	17,219,314	4.94%
Minera Salar Blanco Spa	16,227,273	4.65%
Nabide Pty Limited (The Griffith Family A/C)	11,833,132	3.39%
BNP Paribas Nominees Pty Ltd Acf Clearstream	7,607,416	2.18%
Others		55.26%
Total		100%

Source – LPI's Annual Report 2021

Management and Governance

David R Hannon*Chairman*

- Over 30 years of experience in finance industry with a focus on property, mining, and international investing
- Founding Director and former Chairman of Atlas Iron Limited
- Led Chifley Investor Group Pty Limited for over 15 years

Cristobal Garcia-Huidobro R*CEO and Managing Director*

- Civil Engineer with over 21 years of experience developing and financing of mining, energy, infrastructure, and property projects
- Led MSB's exploration and development program at Maricunga Salar
- Previously a director and committee member of various mining, property, and agricultural funds in North and South America

Richard A Crookes*Executive Director – Corporate Finance*

- Geologist with more than 30 years of experience in mining and finance sectors
- Highly regarded mining and investment professional with deep involvement in all aspects of mining projects including exploration, mineral resource development, operations, project finance, and project management

Andrew G Philips*CFO, Company Secretary and Executive Director*

- Over 25 years of international experience in commercial, finance and corporate governance
- Held senior management and board positions at several public and private companies, including multinationals, such as Aristocrat, Allianz, Hoya Lens, and Sequoia Financial Group
- On the board of small cap companies in the Mineral and Resources sector

Russell C Barwick*Non-Executive Director*

- Mining Engineer with over 43 years of experience globally and specially in Latin America
- Previously COO of Wheaton River – Goldcorp, one of the largest gold company in the world by market capitalization
- Also served as CEO of Newcrest Mining and was with Placer Dome Inc. for 16 years

Martin Borda

Non-Executive Director

- An economist with over 40 years of experience in a range of industries in Chile and internationally
- A major stakeholder in the early development stages of the Maricunga Lithium Brine Project which included the establishment of the joint venture company, Minera Salar Blanco S.A., of which he owns 30.98% through a private investment entity. Mr Borda has served on many boards in Chile, including as a Non-Executive of Banco Scotiabank and Compania Molinera San Cristobal.
- Held board positions at many companies in Chile, including as a Non-Executive of Banco Scotiabank and Compania Molinera San Cristobal.

Assets

LPI currently has four properties in Chile and Australia. The Company owned two other properties – one each in Strelley, Australia, and Centenario Salar, Argentina. The Company sold the Strelley properties in July 2020, but it will receive a 1% Net Smelter Return Royalty for any gold produced and also retains the mineral rights for lithium, caesium, tantalum, and tin. LPI sold 30% of its Centenario property to Marquee Resources in June 2019 and the remaining 70% to Vertex Lithium Corporation in May 2021.

LPI's MSB asset is among the most advanced development-stage lithium assets in the market. It is among very few assets whose DFS has been concluded and all the important approvals and permits, (including EIA) have been secured. LPI has devoted approximately 90% of its resources and efforts towards MSB's development. The Company's MSB asset is about to enter the construction stage with production expected to start in 2025.

LPI's other three assets are in the early exploration stage. Neither of the remaining properties is likely to enter production in the near future since LPI has prioritized MSB over these. Moreover, the Company is planning to spin out two of its properties in Western Australia – Greenbushes and Pilgangoora, to focus its resources exclusively on MSB. A brief overview of all four properties is as follows.

Maricunga Lithium Brine – Chile

Overview: LPI's Maricunga Lithium Brine Project ("MSB project") is located approximately 170 km north-east of the mining town of Copiapo, 250 km from the Chilean coast, and adjacent to International Highway 31 which connects northern Chile and Argentina. The Maricunga Salar is regarded as the highest quality pre-production lithium brine project in South America, with characteristics comparable to the world-leading Atacama lithium brine deposit.

LPI is banking on its MSB project to become one of Chile's lowest-cost high-grade lithium producers and an eminent global producer of battery-grade lithium. MSB produced its first battery-grade lithium carbonate sample in 2018 with GEA Messo. This sample was produced using MSB brine from its pilot evaporation ponds operated for more than 2 years at the Salar. LPI expects to produce a high purity and a high-quality battery grade lithium carbonate.

MSB's mining concessions have been divided into two groups – OCC, also referred to as the Stage One concessions and New Code concessions, where future expansions will be based. The primary difference between OCC and New Code concessions is that the OCC were constituted under the 1932 Chilean mining law and do not require any special regulatory permits for lithium exploration. On the other hand, New Code concessions were constituted after 1979 and require additional regulatory approvals to exploit lithium including a Special Lithium Operation Contract ("CEOL") between the state and the Company and environmental permits. Out of the total, the New Code Mining Concessions account for 1,438 hectares and the OCC accounts for 1,125 hectares and contains about 54% of the total resources of the Company. This division of the concessions has helped the Company to reduce the uncertainty of the project due to regulatory approvals and licenses. This will enable the Company to independently start the construction relatively early on Stage One as it does not require any regulatory approvals. If the Company is successful in obtaining the CEOL and other permits and licenses, it will be able to substantially increase production in the future.

The project is under a JV named Minera Salar Blanco S.A. ("MSB") between LPI, Borda Group, and Bearing Lithium (TSXV: BRZ). LPI, Borda Group, and Bearing Lithium hold respectively 51.6%, 31.3% and 17.1% equity interest in this JV. The first DFS was conducted by Worley (previously WorleyParsons) for MSB on

both the New Code Mining Concessions and OCC to a depth of 200-meters (out of the total depth of up to 800-meters in 2018) and was released in early 2019. The 2019 DFS supported LCE production potential of 20,000 tonnes per annum over a 20-year period. The Company has recently released the results of an updated DFS conducted only on the Stage One, which includes just the OCC. As per the revised DFS, the Stage One project will have an annual average production of 15,200 tonnes of battery-grade lithium carbonate for 20 years. This result is based on exploration work carried out to a depth of 400-meters as compared to the previous DFS released in 2019, which was only up to 200-meters. The DFS also estimates the CAPEX for Stage One project at USD 626 million which includes project development costs, indirect costs, and contingency costs. The estimate includes all the information contained on the proposals received as part of the international EPC bidding process carried out by the company in 2020, after accounting for the expected inflation on different materials and supplies.

The Company's current goal is to finalize the financing for the project by 2022. LPI is working with both international and Chilean financial institutions to raise capital for the development of the mine. Given the positive results from the revised DFS of Stage One project, the Company is continuing to work on the development of Stage Two at Maricunga. The tables below show the Measured and Indicated resource estimates only for Stage One as per the DFS released in 2022.

Mineral Resource Estimate for Lithium Metal (Li) and Potassium (K) only for Stage One						
	Measured (M)		Indicated (I)		M + I	
	Li	K	Li	K	Li	K
Area (Km²)	4.5		6.76		11.25	
Aquifer volume (Km³)	1.8		1.8		3.6	
Mean specific yield (Sy)	0.09		0.12		0.1	
Brine volume (km³)	0.162		0.216		0.378	
Mean grade (g/m³)	87	641	111	794	99	708
Concentration (mg/l)	968	7,125	939	6,746	953	6,933
Resource (tonnes)	154,500	1,140,000	203,500	1,460,000	358,000	2,600,000

Source: LPI's ASX announcement dated September 29, 2021

Mineral Resource Estimate for Lithium Carbonate Equivalent (LCE) and Potash only for Stage One		
M + I Resources		
	LCE	KCL
Tonnes	1,905,000	4,950,000

Source: LPI's ASX announcement dated September 29, 2021

Note: Lithium is converted to lithium carbonate (Li₂CO₃) with a conversion factor of 5.32 and Potassium is converted to potash with a conversion factor of 1.91

A new exploration target ranging between 400 meters – 550 meters of depth has been defined for further resource expansion below the Old Code concessions, and between 200 meters – 550 meters below the New Code concessions. This could potentially harness 1.2 mt - 2.1 mt of LCE.

LPI also has permits to produce KCl, which is a byproduct during the production of Lithium. As indicated in the table, the Company has a Measured and Indicated resource of 4.95 million tonnes of KCl. Until now, the Company did not plan to process and sell potash due to its depressed prices. However, the prices have gone up significantly in 2022, mainly due to the sanctions imposed by many countries on Russia. These sanctions have led to supply chain disruptions and thus a shortage of the salt in the market. With the prevailing prices, it will be profitable for the Company to process and sell KCl at no additional costs, thus effectively reducing its lithium cash operating costs.

The MSB JV's immediate focus is on completing the Stage One construction on the property and soon bringing it into production. MSB has signed an important non-binding MoU with Mitsui for this. The MoU grants offtake and financing rights for MSB's Stage One development as well as future development to Mitsui. The MoU also discusses a collaboration for facilitating the development and testing of the Direct Lithium Extraction ("DLE") technology at MSB for the production of lithium hydroxide.

LPI has appointed Deloitte as Lead Advisor for the new Environmental, Social and Governance ("ESG") program at Maricunga. Under the program, Deloitte will conduct a verification, evaluation, and gap analysis of the various processes at MSB. Deloitte will take measures to check whether operational, environmental, and social requirements align with legal and regulatory requirements. The aim of the project is to become a carbon neutral producer by using sustainable protocols in future lithium extraction operations.

Mitsui MoU: MSB signed the Mitsui & Co., Ltd. MoU for a strategic alliance to advance the Stage One development of the MSB Project in May 2021. MSB and Mitsui agreed on the following:

- **Off-Take Rights:** Mitsui will have the right to purchase up to 15,000 tonnes annually of high purity lithium carbonate battery grade production from Stage One of the MSB Project for 10 years, that can be further extended for two consecutive five-year periods. Under the agreement, parties can decide on a price structure and terms for the off take in order to be sufficiently bankable to support MSB's debt funding requirements.
- **Logistics and Distribution:** MSB plans to make use of Mitsui's global logistics and battery materials marketing expertise for the distribution of products.
- **Project Funding:** Mitsui will have the right to participate directly in the Stage One funding of the Project through a combination of equity-like and debt-like options.
- **Future Expansion of the MSB project:** Mitsui will have the first option for an off-take agreement to purchase a relevant portion of the future production of the expansion on the basis that it will provide a relevant portion of the necessary capital expenditure requirements for the future expansion of the MSB project, subject to the parties agreeing to the financing proposal.
- **Strategic Collaboration:** MSB and Mitsui will collaborate on developing efficient and environment friendly lithium processing technologies. Under the agreement, MSB will have to facilitate the development and testing of the DLE technology at the MSB project in collaboration with Mitsui and its technical partner. Mitsui has also advanced the due diligence process, and the Company believes that it will likely progress to a binding agreement once the due diligence is complete.

Financing: MSB is currently in its Stage One development and the forecasted capital expenditure for this stage is AUD 626 million, including approximately AUD 419 million direct development costs, AUD 145

million indirect costs, and 63 million contingencies. The financing for this stage would comprise an equal amount being raised from debt and equity. The Company plans to prioritize financing activities for the MSB project in 2021, with the objective of starting Stage One construction in 2023. MSB brought Mitsui as a strategic partner for equity / debt participation in this Stage One financing as well as for bringing Japanese government agencies like JBIC and JOGMEC with them. LPI is also looking for investors in mezzanine and other categories of debt.

Production: As per the DFS released in 2022, the Stage One LCE reserve is estimated to be 479,000 tonnes of LCE, out of which 75,000 tonnes is classified as Proven and 404,000 tonnes as Probable. Considering a 65% lithium process recovery efficiency, the total amount of recoverable LCE is 311,000 tonnes.

Mining Reserve for Pumped Lithium and Lithium Carbonate Equivalent for Stage One						
Concession	Category	Extraction Years	Brine Vol. (Mm3)	Avg Li Conc. (mg/l)	Li Metal (tonnes)	LCE (tonnes)
Old Mining Code	Proven	1-7	19	1,024	14,000	75,000
	Probable	1-7	13		19,000	102,000
	Probable	8-20	60	950	57,000	3,02,000
Total Production in 20 years					90,000	479,000

Production of Lithium Carbonate ("LCE") (Reflecting the 65 % Lithium Process Recovery Efficiency Post Pumping)						
Concession	Category	Extraction Years	Brine Vol. (Mm3)	Avg Li Conc. (mg/l)	Li Metal (tonnes)	LCE (tonnes)
Old Mining Code	Proven	1-7	19	1,024	9,000	49,000
	Probable	1-7	13		12,000	66,000
	Probable	8-20	60	950	37,000	196,000
Total Production in 20 years					58,000	311,000

Operations: The technical engineering partner for MSB, GEA Messo, has received brine from Maricunga to test the production processes. GEA will be accompanied by Outotec and Eurodia in this process, which is expected to commence in early May. The target is to produce up to 10 kg of battery-grade lithium carbonate. Additionally, Worley and Bechtel have started updating EPC proposals, with a Final Investment Decision expected in Q4'22.

Electricity for the MSB project was secured through a permit granted in 2018 by the Chilean National Electricity Coordinator. According to MSB, all electricity will be from renewable sources via long-term contracts from solar power providers. The Stage One project has an average connected load of 13.7 MW of electric power. Furthermore, the production process has been designed to reduce the water consumption. MSB secured all its water requirements by 2018 through a long-term contract for the use of the CAN 6 water well at the Salar. This water well was approved within the environmental process for consumption of up to 60 lt /sec. MSB's expected actual consumption is 12 lt /sec and the project is expected to produce 25% of this water through its own process, implying that the water supply is likely to be adequate even for future expansions.

MSB employed Andinor, a contractor, for the water drilling program. A water well was drilled to a 200-meters depth in early April 2021 for fresh water supply to the project. The preliminary testing suggests that this well will be able to meet the project's water supply requirements. Additionally, this new well will serve as a backup for future requirements.

Codelco JV: MSB signed a non-binding Memorandum of Understanding (“MoU”) with Chile’s state-owned mining company Codelco for a potential JV for Stage Two study and development of the MSB project. This potential JV is still under review between the parties and is expected to progress at slow pace. In February 2020, MSB’s Environmental Impact Assessment (“EIA”) completed all permits required for LPI’s ‘Old Code’ mining concessions. This means that the existing permits would allow for the construction of the project to commence immediately.

The consolidation of the mining concessions under the JV would give MSB access to the Entity’s Special Contract for the Operation of Lithium (“CEOL”). This will result in the option of increasing the production capacity and / or the life of the mine beyond its expected 20-year life span. Making the additional mining concessions operational will be relatively quick once the Stage Two commences because exploration for resources and reserves, which is the slowest part of the process and represents a major portion of the total effort, is already done.

Tabba Tabba – Australia

LPI acquired the Tabba Tabba lithium exploration tenements on the greenstone belt in Western Australia in October 2015 and owns 100% of these tenements. Extensive soil survey over the belt have demonstrated lithium concentrations of up to 689 parts per million (“ppm”) in addition to caesium, tantalum, tin, and beryllium, which indicate the presence of productive lithium-caesium-tantalum (“LCT”) pegmatites.

A 31-hole drilling program for 3,081m was carried out in 2019 targeting outcropping and sub-cropping of pegmatites associated with the 4.3 km long zone of elevated lithium in soils. The program tested pegmatites in the upper 100-meters of the target area and demonstrated the presence of a large system of elevated lithium. All tracks and pads constructed for this drilling program have been rehabilitated. No additional pegmatites in this area were drill tested during this program. Initial results warrant further exploration. Further exploration will be carried out in a section of the property that was previously not accessible during the 2019 drilling program. The Company has budgeted approximately AUD 400,000 for drilling at this location.

Pilgangoora-Pilbara – Australia

LPI acquired the Pilgangoora tenement in September 2015 and owns 100% of it. This tenement is situated adjacent to lithium pegmatite deposits owned by Pilbara Minerals and Altura Mining, and forms one of the world’s largest lithium pegmatite resources together with these deposits. LPI explored the lithium pegmatites in continuation of the same sequence of rocks immediately west of the tenements held by these companies.

A review of the Pilgangoora tenement (E45/4610) was completed in September 2021 and it highlighted a young, hot granite within one of the Greenstone Belts, indicating potential hosting of lithium. A soil sampling program has also been completed on the project, where 544 samples were collected. The sampling was done to define previous lithium anomalies associated with the greenstone belts and also find the potential of gold within a younger granite and its contact aureole. The Company has planned to demerge its Pilgangoora asset and create a new subsidiary for its hard rock WA assets. LPI has submitted applications to the Department of Mines, Industry, Regulation and Safety for E45/4610 for further works in the winter months of 2022.

Greenbushes – Australia

The Greenbushes tenements which span across 350 sq. km. and are 100% owned by LPI, contain large strike lengths of the same rock suite that hosts the Talison Greenbushes lithium mine, which is the world's largest lithium producer. In late 2019 and early 2020, a soil sampling and mapping program was conducted, and an additional 174 laterite and soil samples were collected from the forestry areas that make up most of the target area of the Greenbushes tenements. Sampling results were encouraging, with elevated lithium concentrations of up to 71 ppm found, along with other trace metals. Subsequently, the Company submitted to the WA Department of Mines and received approval for POW on these tenements in 2020. The approval is valid for four years and will enable further exploration activity in areas of interest that were identified in the field work. However, the Environment Management Plan approved by the WA Department of Conservation and the Department of Mines, Industry, Regulation, and Safety ("DMIRS") only allows field work in the forest areas to be conducted in the summer months.

The Company had stopped exploration work on this property in the wake of the Covid-19 outbreak. However, it resumed exploration work in February 2021.

LPI will be commencing an extensive exploration and drilling program at Blackwood Prospect and East Kirup tenements which are immediately adjacent to Talison Lithium's Greenbushes lithium mine. A five-year term extension to the term of tenements hosting the Blackwood Prospect – E70/4774 and the East Kirup Prospect – E70/4763 have been granted by the Department of Mines, Industry, Regulation and Safety (DMIRS). The Company is planning to demerge this asset by the first half of 2022, to focus exclusively on its flagship MSB project and create a new subsidiary for its WA assets.

Blackwood Prospect

The Blackwood Prospect is the southernmost of the two properties owned by LPI and is located on the regional co-incident magnetic and gravity structure which is part of the Donnybrook Shear Zone ("DSZ"). Greenbushes' pegmatite is located along north-west subsidiary structures of the DSZ. The DSZ and its subsidiary faults do not have a strong surface expression as they are hidden by soil and/or laterite. The Company has completed a drone magnetometry survey over the prospect which will provide high resolution, accurate data. This data is being processed to provide the details of the structural architecture DSZ. This will allow LPI to ascertain where pegmatites are most likely located and focus its future work in these areas. Previous samples collected by LPI within the DSZ at the Blackwood Prospect showed elevated lithium (253 ppm), rubidium (2048 ppm), tin (95 ppm). In addition, the Company also discovered mafic host rocks which are anomalous in arsenic (110 ppm) and consistent with the Greenbushes model.

In order to test for concealed pegmatites, an UltraGPR ("Ground Penetration Radar") orientation was conducted across several parts of the Blackwood prospect. The GPR proved to be successful over known pegmatites. A 30 MHz Ultra GPR unit that was suited to greater depths was used for this survey across east-west traverses to map and identify sub-surface bodies that may be correlated with a pegmatite.

An orientation soil sampling program of 42 samples on 300m x 300m spacing was completed at a newly defined target at the southern end of the Blackwood Prospect. The soil sampling was interpreted NE trending dilutional jogs along the NW orientated structures. Small outcrops of pegmatites had already been identified within the dilutional jogs. Once the results of the orientation sampling have been returned, an infill program will be planned.

East Kirup Prospect

The Fauna survey and RC drilling program for the initial 1,600m of the East Kirup Prospect was initially planned for Q4 2021. However, the drilling program planned in December was delayed due to drilling contractor capacity limitations and the program planned in January has been delayed due to COVID.

As per the initial surface geochemical sampling done along the DSZ, the defined area has a four-kilometer strike length lithium-tantalum-niobium-tin-arsenic anomaly. A drilling company has been engaged, with drilling to commence in December. The RC drilling will be conducted along existing tracks which run perpendicular to the trend of the DSZ and the defined anomaly. This work will assist in developing an understanding of the geology along the Bridgetown-DSZ as well as examining the geochemical anomalies identified by the laterite program. The conditions set out in the CMP, however, restrict the drilling to the existing tracks and to a depth of 100m, and to only occur in dry conditions. The completion of the program will be weather dependent. The approval for 1,600m of this work is already granted with program of work for a further 1,600m pending approval. Detailed flora surveys and assessment has begun at the prospect and two surveys have been completed as of Q4'22. These surveys will continue for two seasons and will provide detailed information of the environment and help the Company to devise a conservation management plan.

Industry Analysis

Lithium Demand

The global Lithium market size was valued at USD 2.7 billion 2020 and is expected to reach 8.1 billion at a CAGR of 14.8 % during 2021-2028. Out of all the segments, lithium carbonate has the largest share of over 58%, in terms of volumeⁱ. Lithium is used in several industries, including batteries, ceramics and glass, and lubricating greases. The highest demand for lithium comes from battery manufacturers, who accounted for 71% of total demand in 2020. This was followed by ceramics and glass (14%), lubricating greases (4%), continuous casting mold flux powders (2%), polymer production (2%), air treatment (1%), and others (6%)ⁱⁱ.

Global Lithium Consumption to Grow Significantly: Lithium consumption has increased significantly from 65,000 tonnes of LCE (12,000 tonnes of lithium content) in 2000 to 297,000 tonnes of LCE (82,000 tonnes of lithium content) in 2020, particularly on the back of extensive use of rechargeable lithium batteries in electric vehicles (EVs), portable electronic devices, electric tools, and grid storage applicationsⁱⁱⁱ.

While all these industries are expected to continue generating high demand for lithium in the coming years, the highest demand growth is expected to come from the EV industry. According to Benchmark Mineral Intelligence, in 2015, 32% (55,680 tonnes of LCE) of the total lithium consumption of 174,000 tonnes of LCE was used for manufacturing lithium-ion batteries. While the total consumption of lithium is forecasted to go up by 129% from 2015 levels to 398,000 tonnes of LCE in 2021, the share of lithium-ion batteries is forecasted to go up to 67% (266,660 tonnes of LCE), implying a growth of 379% from 2015 levels^{iv}. Consequently, the demand for lithium compounds (lithium carbonate, lithium hydroxide, lithium concentrate, lithium metal, butyl lithium, lithium chloride) that are directly used in batteries is projected to grow from USD 5.3 billion in 2020 to USD 13.5 billion by 2025, at an implied CAGR of 20.6%^v.

APAC Leading Global Lithium Demand: The highest demand for lithium has traditionally come from Asia Pacific (APAC) because it is the manufacturing hub for automobiles, electronics, and other industries that consume lithium the most. APAC accounted for 56.3% of the total demand for lithium (in US dollar terms) in 2020.^{vi} China, being the largest battery manufacturer in the world, is among the world's top consumers of lithium. It accounted for 40% of APAC's volume share of the battery market in 2019 and is expected to continue dominating the world Battery market in the coming years owing to its low wage rates, large manufacturers, and high lithium reserves.

China's lithium reserves were nearly 30 times that of the US in 2018. China's continued dominance of the lithium battery market implies that the demand for lithium is expected to continue being the highest in the APAC going forward. APAC also dominates other geographies in terms of lithium reserves, primarily due to Australia having 25% of the world's total reserves – the highest after Chile.

Europe Catching Up Fast on The Back of German EV Production: Europe was the second-largest market for lithium in 2020 thanks to its large and growing EV manufacturing sector. Germany alone accounted for 18% of the world's EV production in 2019 and its share is expected to increase to 29% by 2024, as it surpasses China and the US to become the world's largest EV manufacturer. German automobile giant Volkswagen recently announced that its demand for batteries in Europe alone will increase by 240 gigawatt-hours (GWh) by 2030. This is more than the combined requirement of all automakers globally in 2020.

Battery production will have to increase significantly to keep up with the demand from EV manufacturers, especially now that battery manufacturers have been able to cut prices significantly. BCG estimates that

a tenfold increase in the production of battery cells and their key materials, such as lithium and nickel, will be required by 2030^{vii}. With increasing exploration and production activity, producers of these battery materials might be able to match demand over the long term. However, supply bottlenecks might develop in the short run, keeping lithium prices high and reducing the momentum of decline in battery prices. Lithium mining activity is at an all-time high as existing producers expand capacity and new producers enter the industry to make the most of soaring lithium prices.

Lithium Production

There was a historical upsurge in lithium exploration and mining activity in the mid-2010s due to expectations of a continued increase in the demand for lithium from battery manufacturers. Global production of lithium has increased at a higher rate than increase in demand since 2018, resulting in an oversupply of lithium and a fall in lithium prices. Lithium producers tried to stem falling lithium prices in 2020 by cutting production by 5% to 434,000 tonnes of LCE (82,000 tonnes of lithium content) compared to 456,000 tonnes of LCE (86,000 tonnes of lithium content) in 2019^{viii}.

Traditionally, lithium was extracted from lithium brine deposits and hard rock spodumene deposits. Oil and gas operators have now also started extracting lithium from wastewater left in reservoirs. Approximately two-thirds of the world's lithium reserves are in the 'Lithium Triangle'. According to the US Geological Survey 2021, approximately 45% of global lithium reserves are in Chile, followed by Australia (23%), and Argentina (9%).

Regulatory Obstacles Stifling Lithium Production in Chile: According to the BP Statistical Review of World Energy, despite having 48.5% of the world's lithium reserves, Chile only produced 23.9% of world's total lithium output in 2020 and was a distant second behind Australia, which produced 46.4% of world's total lithium output despite having a much smaller 24.8% of the world's total lithium reserves^{ix}. Although there is strong investor interest to start new projects and expand existing projects in Chile, no new project has come online in the country in recent years due to its regulatory opaqueness. Among investors' chief concerns is the obligation to either partner with the state for lithium mining (as MSB is trying to do through a potential JV with Codelco) or obtain a special mining permit. The path to obtaining the mining permit, as well as an environmental permit that is mandatory for selling or exporting lithium from Chile, is unclear and unpredictable.

Currently, only seven projects in the country have received approval for exports and out of these only two projects owned by sector leaders SQM and Albemarle have utilized their permits. The remaining five projects, including two Codelco projects, are yet to start production. The concerned regulator CCHEN as well as the mining ministry have given repeated assurances that they will review the procedure and shed the opaqueness. The ministries of mining and economy have also taken part in a review of CCHEN's protocols. However, no concrete steps have yet been taken to address investor concerns.

Australian Miners Expanding Aggressively to Meet Long-Term Demand: Recent announcements from leading lithium miners indicate that they are working aggressively to meet the expected manifold increase in long-term demand and benefit. Australia's top miners Mineral Resources Ltd, Orocobre Ltd, and Galaxy Resources filed reports in late April 2021 announcing new projects and signaling strong earnings with covid-related stimulus measures buoying the real economy and the demand for EVs.

Orocobre (ASX: ORE) announced that lithium carbonate production from its Olaroz operations in Argentina is sold out until the end of June 2022 and more will be available in H2'22 as an expansion comes online. Mineral Resources (ASX: MIN) announced that its lithium hydroxide plant in Western Australia, which it holds through a 40:60 JV with Albemarle, was on track for commissioning in the H2'21. Galaxy Resources (ASX: GXY) released detailed plans to produce lithium carbonate at its Sal de Vida project in Argentina

and updated investors on the amount of lithium reserves it has. It plans to produce 10,700 tonnes per year of battery-grade lithium carbonate starting 2022.

Orocobre-Galaxy Merger Could Further Increase Australia’s Dominance: Companies in the Lithium mining space have also been actively engaging in inorganic initiatives such as JVs, M&A deals, and asset acquisitions to benefit from rising lithium prices by increasing production capacity and fast-tracking projects. The most significant recent transaction under this theme is Orocobre’s acquisition of Galaxy Resources in an AUD 4 billion all-stock deal. The deal was finalized in April 2021 with an objective of accelerating growth projects, materially increasing liquidity, and improving access to capital for further development and expansion. The deal will create the world’s fifth-biggest lithium producer with projects across Australia, Canada, and South America. The combined entity will have the potential to expand lithium carbonate production from 40,000 to 100,000 tonnes per year in the next few years. The combined entity will subsume several big development projects that the companies were planning, including projects in Olaroz and Sal de Vida in Argentina and James Bay in Canada, which is forecasted to require capex of over AUD 1 billion.

Lithium Prices

Lithium prices increased sharply from USD 5,180 per metric ton in 2011 to USD 17,000 per metric ton in 2018, primarily due to strong demand from battery manufacturers. However, between 2018 and 2020, the growth in lithium production outpaced demand, resulting in a fall in price to USD 8,000 per metric ton in 2020. Lithium producers tried to support the falling prices through a production cut in 2020 but found limited success due to the Covid-19-induced fall in global demand*. Lithium prices rebounded in 2021 due to the increasing demand from battery manufacturers that cater to the EV and high-tech devices industries. Spot lithium prices in China started recovering towards the end of 2020 and this recovery accelerated in Q1’21.



Lithium carbonate prices soared about 496.7% in 2021 on strong demand for electric vehicles^{xi} Macquarie believes that with Chinese lithium carbonate prices up 110% and lithium hydroxide prices up around 40% from the beginning of 2020, prices could go up further in the coming months. Macquarie forecasts a 30% to 100% price increase over the next four years, as EVs begin displacing approximately 1 billion internal combustion engines globally. Macquarie expects that the market will start facing a lithium deficit starting 2022 with material shortages emerging from 2025. According to Macquarie, this deficit will push spodumene prices to above USD 720 a tonne and significantly increase lithium carbonate and lithium hydroxide prices going forward. Macquarie expects lithium carbonate to remain above its “incentive” price of USD 13,000 per tonne and lithium hydroxide to remain comfortably above USD 16,000 a tonne going forward^{iii, xii, xiii}.

Lithium prices are expected to remain strong due to the disbalance in demand and supply. According to S&P Global Market Intelligence, lithium chemical supply is forecasted at 636,000 mt lithium carbonate equivalent in 2022, increasing from an estimated 497,000 mt in 2021 and 408,000 mt in 2020. S&P

forecasts a deficit of 5,000 mt LCE in 2022. In 2020, there was a surplus of 66,000 mt due to decrease in demand because of slowed economic activity attributing to Covid-19, which was reduced to 8,000 mt in 2021. This current deficit and increase in prices has incentivized existing suppliers to expand their production and restart dormant mines. Recently, Albemarle's MARBL joint venture with Minerals Resources in Western Australia announced plans to restart one of the Wodgina mine's three 250,000 mt per year processing lines in Q3'22. ^{xiv}

Social and Environmental Impacts of Lithium Mining

The ecological impact of lithium production is a topic of constant concern for environmentalists and is inspiring end-use industries to look for lithium alternatives. It is estimated that approximately 500,000 gallons of water is used to produce one tonne of lithium, which significantly depletes water resources in areas of water scarcity.

Most of mining activity in Chile is concentrated in the northeast, which is among the driest regions in the world. It is estimated that the mining industry consumes enough water annually to provide for 75% of the needs of Chile's population. In regions like Chile's Salar de Atacama, mining activities consume 65% of the water supply that local communities rely on.

Toxic chemicals, such as hydrochloric acid, that are used in the separation process for lithium contaminate local water supply and air quality. Companies, especially in China, are working on recycling and reusing lithium-ion batteries as an option to reduce the environmental impact of lithium mining. A BCG analysis suggests that the economics of EV battery recycling at scale are attractive, while generating profits from reuse is likely to be much harder. Alternatives to lithium-ion, such as sodium-ion, zinc-ion, and hydrogen cell are also under active research and development. However, most of these alternatives are in the development stage and, despite their long-term potential, are unlikely to pose a serious competitive threat to lithium-ion in the short and medium term.^v

Recycling and Reusing Lithium Batteries

Recycling and reusing lithium-ion EV batteries are new trends with strong growth potential, given their economic lucrativeness and their potential of enabling better use of resources and reducing carbon emissions by reducing the need for lithium mining over the long term. Recycling is a specialized method of recovering valuable metals such as cobalt, manganese, nickel, and lithium from battery cells and selling them to manufacturers for use in future batteries. Reusing involves repurposing battery cells, without dismantling them, for a second (mostly stationary) use. This second use is typically in combination with new power electronics, software, and housing structure.

The useful life of lithium-ion batteries used in EVs is around ten years on an average suggests a recent analysis by Geotab. Newer models are likely to have an average useful life of over 20 years or over 300,000 miles. This is primarily a function of the number of charge cycles, the intensity of charge cycles, and the manufacturing quality. These batteries are no longer fit for use in an EV once their rated capacity fall below 80% of the original. At this stage, lithium-ion batteries typically enter the waste stream i.e., they are placed in a disposal facility, such as a landfill, and its remaining value is never recovered.

According to BCG, more than 32 million EVs are currently on the roads globally, including 8 million fully electric passenger vehicles and 24 million partially electrified vehicles. Batteries of close to 1 million of these passenger vehicles (excluding commercial EVs and two-wheelers) are nearing the end of their useful life, with an estimated capacity of 4 GWh. The number of passenger EVs is likely to exceed 300 million by 2030 and nearly 4 million EVs are expected to be retired in 2030, with a combined originally rated capacity

of nearly 100 GWh. Regulations regarding what happens to the battery after its first use are evolving in most countries and are increasingly mandating that these batteries be recycled and reused rather than discarded, e.g., the EU's End of Life Vehicles Directive^v.

Commercial-scale recycling of EV batteries is currently the most established in China. The country is witnessing the emergence of clear market leaders after years of high fragmentation. Battery material suppliers GEM, Huayou Cobalt, and Ganfeng Lithium currently hold the largest market shares. EVs, cathodes, cells, and battery packs manufacturer, BYD, and a subsidiary of cathode manufacturer CATL, Brunp Recycling, are other major players.

Leading EV battery recyclers outside China include VW, Umicore, SungEel, and 4R Energy, which is a JV between Nissan and Sumitomo. New players, such as Li-Cycle, Battery Resourcers, Deussenfeld, and Redwood Materials are experimenting with a wide range of technologies for pretreatment and metal recovery. However, recycling is still a long way from becoming an established industry and posing a serious potential threat to lithium miners.

Alternatives to Lithium Batteries

Given the adverse environmental impacts of lithium production and expectation of a lithium shortage causing a sharp rise in lithium prices over the next four years, active research is underway for alternatives to lithium-ion batteries. While none of these alternatives is likely to become a major competitive threat to lithium-ion batteries in the short and medium term, they could emerge as strong competitors in the long term. Some of the front runners to compete with lithium-ion in the long-term are as follows:

Zinc-ion: Zinc-ion batteries are likely to be the first major competitor to lithium-ion. Zinc-ion's most significant differentiators from lithium-ion are their safety and supply chain predictability. A significant part of the production process when using lithium has to be conducted in a highly controlled atmosphere because it violently reacts with water. This makes the process expensive and complicated. Zinc-ion batteries are not constrained in this way because they are water-based batteries.

Additionally, zinc-ion batteries can move from the manufacturing line to the customers faster than lithium-ion batteries because they do not require formation cycling at the end of their life. Additionally, zinc-ion is built using materials that are available more abundantly and at lower prices than those used for lithium-ion. This means that zinc-ion can be produced more widely than lithium-ion, for which there is overdependence on countries like China, and foster greater supply chain predictability. California-based Salient Energy is among the zinc-ion innovation leaders. The Company claims that its zinc-ion based energy-storage technology will be at least 30% less expensive, as well as safer and longer-lasting than standard lithium batteries.

Sodium-ion: Research & development work done on sodium-ion until now has mostly been for non-EV purposes, although there have also been some successes in the EV space. A pigment known as Prussian Blue is a key component in sodium batteries. This component is cheap and abundantly available, and its chemical structure is ideal for electrodes, which store and release energy in a battery. Prussian blue allows ions to pass back and forth more easily than other materials such as lithium. This makes its electrodes more durable than lithium-ion batteries, whose electrodes are carbon and metal-based.

Although prices of lithium-ion packs have fallen almost 90% since 2010, sodium-ion batteries are most cost-effective because their main ingredient sodium is the sixth-most-abundant element on Earth. In contrast, lithium-ion batteries are made from a combination of expensive metals such as nickel, and cobalt etc. that can constitute close to 60% of the battery cell's cost, according to BNEF. Additionally, sodium-

ion batteries are faster to recharge than lithium-ion batteries and can deliver short bursts of energy in quick time.

Natron Energy and Faradion are among the eminent companies developing sodium-ion batteries. Natron is developing batteries for critical stationary applications including data-center UPS, electric forklifts, smart grids/microgrids, and renewables support. The company's batteries can be fully charged or discharged in minutes and are highly cost-efficient. Natron has raised close to USD 70 million from investors including Chevron Corp, as well as received USD 19 million in Department of Energy funding in April 2021.

Faradion is a UK-based developer of sodium-ion batteries. It recently signed supply agreements for Australia's residential energy storage market and EV batteries for commercial vehicles in India.

Hydrogen fuel cells: Hydrogen produces water as a byproduct and is much more efficient and cleaner than lithium when it comes to producing and recycling it at the end of the vehicle's life. This is why major automobile manufacturers, led by Toyota are working on hydrogen fuel cells as an alternative clean energy product. Hydrogen fuel cells can be used to power anything that uses electricity, such as EVs and electronic devices and these fuel cells don't need to be recharged as long as they have hydrogen fuel. Energy efficiency provided by hydrogen fuel cells for EVs is two to three times more efficient than an internal combustion engine fueled by gas and the refueling time averages less than four minutes^{xv}.

The most significant hurdle that is keeping hydrogen cells from becoming a major clean fuel technology is that at present hydrogen is mostly produced using fossil fuels. Several research efforts are underway globally to convert water into hydrogen using a variety of materials, such as modified algae. However, present methods are neither environmentally friendly nor cost-effective. There are some companies that are trying to produce hydrogen using alternatives like biomass but these companies currently operate at a very small scale.

Green hydrogen, which is created using renewable energy instead of fossil fuels, is emerging as the most promising option. The electrolysis method that splits water into hydrogen and oxygen using an electric current in an electrolyzer is one of the popular methods of producing green hydrogen. Green hydrogen is also produced from solar and wind energy. The use of green hydrogen is expected to increase significantly in future because energy from hydrogen can be used and stored in gas or liquid form and quickly converted into electricity or fuel^{xi}.

Extensive use of green hydrogen in areas that require high energy density fuel or intense heat, such as transportation, electricity generation, manufacturing, aviation, shipping, long-distance trucking, and steel production, is considered essential to meet the goals of the Paris Agreement because green hydrogen can help reduce greenhouse emissions^{xi}. Although green hydrogen is being pushed by public policy in Europe as well as the US, a lack of appropriate storage and transportation infrastructure such as transmission lines and pipelines are preventing its wider adoption^{xi}.

Solar panels: The consistently improving capabilities of solar panels have made them a viable clean energy option for several static purposes. However, they are still not efficient enough to power EVs. Although, with Tesla and other major automobile companies working on viable solar roofs, solar panels seem set to emerge as a major alternative to lithium-ion batteries to power EVs. It is possible that the whole surface of the car would be a solar panel in the future. However, this is likely to require years of effort and fine tuning, implying no immediate threat to lithium-ion battery manufacturers.

Solid state batteries: The mechanics of solid state batteries are similar to solid state drives (SSDs) used in laptops, and has the potential to impact the performance of EVs just as SSDs impacted the data storage capabilities of laptops. In addition to their compact packaging and capability to improve the energy

efficiency of EVs, solid state batteries are also considered to be much safer than contemporary batteries. These batteries are claimed to reduce fire risk to almost zero, be more durable, and perform well even in inhospitable weather conditions.

Risk Profile Analysis

1. Operational Risk

LPI has a moderately high operational risk profile since most of its projects are currently in the exploration stage. The success of these projects depends on discovering high-grade lithium reserves and establishing the economic viability of production. The Company recently released a revised DFS only for Stage One of MSB, confirming significant Proven and Probable LCE resources. According to the DFS, the Company is expected to start production in 2026, with an average annual production of 15,200 tonnes of LCE per annum. Additionally, MSB's JV-related risk is moderately low since its JV partners are established companies, one of which is publicly listed. These JV partners have a stable operating history and a stable financial position. They can generally be trusted to fulfill their JV commitments on time. However, at a time when several companies are facing Covid-19 related challenges, including liquidity concerns and operational uncertainties, the risk of LPI's JV partners' failing to meet their JV commitments on time cannot be ruled out. We believe that for these reasons, LPI has a MID-HIGH operational risk profile.

2. Political and Regulatory Risk

LPI's flagship MSB JV as well as many of its other assets are in Chile. The Company has ambitious long-term expansion plans in Chile in partnership with Mitsui, including significant investments in MSB as well as other lithium mining and lithium product projects. Although Chile has enjoyed relative geopolitical stability in recent times, its unstable geopolitical history exposes LPI to a small degree of political risk.

Additionally, Chile has acquired a reputation for opaque rules governing the lithium mining sector because of which no new project has come online in the country in recent years and the country is a distant second in global lithium production despite having almost half of the world's lithium reserves. The relevant regulatory body, CCHEN, as well as the country's ministry of mining have repeatedly affirmed their commitment to improving transparency, but no tangible steps have been taken yet and none seem imminent.

Fortunately for LPI, MSB has received all the necessary permits in Chile, including the 30-year CCHEN approval and the all-important Environmental Approval (EIA). MSB was the first new mining project to receive EIA in 5 years in Chile and took three long years to prepare, submit, and obtain it.

We believe that MSB is relatively immune to political risks and bureaucratic inefficiencies. However, LPI and Mitsui might have to endure significant regulatory unpredictability as they strengthen their partnership and make tangible commitments in Chile's Lithium sector. Consequently, we believe LPI has a MID-LOW political and regulatory risk profile.

3. Financing Risk

LPI is currently in the pre-revenue stage and is unlikely to generate any meaningful revenue to fund its operations until MSB comes online. The Company has funded its research, exploration, and development activities by periodically tapping capital markets. LPI and other JV partners have been successful to have reached a mutually beneficial MoU with Mitsui. Although the MoU is an encouraging first step as it is comprehensive and sets a defined framework for the Stage One development of the MSB project, it is non-binding. The parties have been working on it for over two years and key terms (such as the structure) might not be finalized imminently since the ensuing due diligence process might take time to complete.

The Company will also need to raise additional capital to finance future expansions of MSB as well as to finance its growth plans that include acquiring new assets and vigorously resuming exploration and drilling work at some of its properties after a Covid-related pause. Although the Company is hopeful of securing a strong financial partner for most of its growth plans by converting its non-binding Mitsui MoU to a binding partnership in due course, its financial risk cannot be completely ruled out. The ability to convince Mitsui and other debt and equity investors about the viability of the Company's future plans and the management's ability to execute these plans successfully would be critical to raise these funds. Consequently, we believe LPI has a MID-HIGH financing risk profile.

4. Environmental Risk

LPI currently does not face any major environment risk since MSB has already obtained EIA and, as per current Chilean regulations, neither requires renewing it nor obtaining any other environmental permit. However, since regulations in Chile are not firmly established and procedures are known to be interpreted and applied differently by officials, this risk cannot be completely discounted. The Company has also hired Deloitte to ensure a robust Environmental, Social and Governance ("ESG") program at Maricunga. Deloitte will conduct a verification, evaluation, and gap analysis of all MSB process to ensure that the project is aligned with the operational, environmental, and social requirements. Additionally, LPI might be exposed to a higher level of environmental risk in the future once its Mitsui partnership crystalizes and starts investing in new projects. Since these investments are a long time away, we believe that LPI's environmental risk profile is LOW.

5. Key Personnel Risk

LPI's leadership team is knowledgeable and has decades of experience in the mining industry, including extensive experience of managing in-production assets at several leading organizations. The Company also has a separate Technical Committee, including experienced industry experts, consultants, engineers, and professors, to oversee the exploration and mining operations in Chile and Australia. However, the Company's leadership has no experience managing an in-production business as a single team yet. Its real test will come when LPI starts producing and marketing lithium because this is when the leadership will have to come together to take tough decisions and face stiffer challenges. Consequently, we believe that the Company has MEDIUM key personnel risk.

Financial Analysis

LPI has not generated any significant cash flows yet because it has been focusing on acquiring and exploring promising mining assets, with the expectation of generating cash flows once lithium reserves are discovered and these assets enter production. The Company expects its Stage One of MSB to soon enter the developing stage and start generating cash flows in 2025. LPI has been incurring substantial operating expenses, which is typical of pre-production mining companies. The major costs until now have been exploration and development related. The Company will also require significant additional capital to meet its MSB obligations and support its own growth plans going forward, which is typical of pre-production mining companies. The Company's ability to sell its vision and its execution capabilities to investors will be critical to raise these funds.

Revenue and Profitability: LPI's financials are primarily driven by MSB because it is the closest to entering production and is the only project that is expected to generate revenue in the short and medium term. Since MSB is currently a pre-revenue project with heavy pre-production costs, LPI is also currently in deep losses. MSB incurred AUD 3.8 million in pre-production costs in FY 2021 and LPI recorded its proportionate share (51%) of these JV losses, i.e. AUD 1.9 million.

We have assumed in our projections that MSB will start generating revenue and profits in FY 2026, resulting in LPI's proportionate share of these profits and dividends reflecting on its income statement. However, we expect the potential dividend payout to be higher starting FY2029 when MSB will have adequate liquidity. However, these expectations are based on the assumption that lithium prices will continue to remain high and are highly sensitive to lithium price volatility.

LPI's operating expenses (which primarily include employee costs and administrative costs) increased from AUD 1.9 million in FY 2016 to AUD 4.3 million in FY 2021. We expect LPI's operating costs to remain relatively stable between AUD 3.5 million to AUD 4.0 million between FY 2022 to FY 2025 unless the Company acquires new assets or accelerates exploration and development work on one of exits existing assets.

LPI made a Net Loss of AUD 1.8 million in FY 2016 and this loss increased to AUD 6.1 million in FY 2021. The Company's losses are likely to decrease going forward and reach AUD 3.8 million in FY 2024. We expect the Company to become profitable from FY 2026 when MSB goes online and generate a Net Profit of AUD 44.3 million during the year. We expect the Company's profitability is expected to continue increasing each year starting FY 2026 unless it works aggressively on bringing its other assets online.

Capital Requirement: LPI's share capital increased from AUD 69.6 million in FY 2020 to AUD 77.4 million in FY 2021, as the Company primarily relied on equity capital to meet both short-term and long-term capital requirements. The Company has raised a small amount of debt in the past and was prompt to repay it. The Company currently has no outstanding debt on its books and is not planning to raise any debt in the near future.

LPI has tapped into the capital markets thrice since its IPO in 2016 and might have to do so again in the next three years. The Company will be required to contribute its proportionate share (AUD 225.5 million) of AUD 438.5 million equity required for further development and construction for Stage One MSB. The Company will also require a significant amount of capital for exploration work at its other assets and for the acquisition of new assets.

With such a significant amount of additional capital required to run the business, LPI's ability to convince investors about the business' future potential and the Company's ability to manage the execution phase will be critical. Although this is typical of early-stage mining businesses, the inability to raise enough capital could be a significant threat going forward.

Income Statement – Historical

<i>(All figures are in AUD thousands)</i>	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Revenue	9	(4,078)	(5,545)	(8,826)	(3,600)	(1,660)
Expenses						
Employee Benefit Expense	970	1,087	1,964	1,532	1,577	1,606
<i>%age of Revenue</i>	10650.1%	-26.7%	-35.4%	-17.4%	-43.8%	-96.7%
Occupancy Costs	57	77	92	133	155	113
<i>%age of Revenue</i>	621.9%	-1.9%	-1.7%	-1.5%	-4.3%	-6.8%
Depreciation and Ammortization Expense	-	0	3	6	10	8
<i>%age of Revenue</i>	0.0%	0.0%	0.0%	-0.1%	-0.3%	-0.5%
IPO Transaction Costs	319	-	-	-	-	-
<i>%age of Revenue</i>	3506.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Legal and Professional Fees	333	912	1,060	471	402	227
<i>%age of Revenue</i>	3662.2%	-22.4%	-19.1%	-5.3%	-11.2%	-13.7%
Travel Expense	109	267	451	220	231	31
<i>%age of Revenue</i>	1202.5%	-6.6%	-8.1%	-2.5%	-6.4%	-1.9%
Administration Expense	70	398	738	433	486	612
<i>%age of Revenue</i>	771.9%	-9.8%	-13.3%	-4.9%	-13.5%	-36.9%
Net Foreign Exchange Gains / Lossers	25	400	(1,354)	(1,817)	6,381	1,573
<i>%age of Revenue</i>	272.9%	-9.8%	24.4%	20.6%	-177.2%	-94.8%
Other Expenses	-	17	135	220	204	147
<i>%age of Revenue</i>	0.0%	-0.4%	-2.4%	-2.5%	-5.7%	-8.9%
Finance Costs	2	9	9	40	23	3
<i>%age of Revenue</i>	25.6%	-0.2%	-0.2%	-0.5%	-0.6%	-0.2%
Total Expenses	1,886	3,169	3,097	1,238	9,468	4,321
<i>%age of Revenue</i>	20713.9%	-77.7%	-55.9%	-14.0%	-263.0%	-260.3%
Profit / (Loss) before income tax	(1,877)	(7,247)	(8,642)	(10,064)	(13,068)	(5,980)
<i>%age of Revenue</i>	-20613.9%	177.7%	155.9%	114.0%	363.0%	360.3%
Income Tax Expense / (Benefit)	-	-	(143)	(147)	-	-
Profit / (Loss) After Income Tax	(1,877)	(7,247)	(8,785)	(10,212)	(13,068)	(6,171)
<i>%age of Revenue</i>	-20613.9%	177.7%	158.4%	115.7%	363.0%	371.8%

Balance Sheet – Historical

<i>(All figures are in AUD thousands)</i>	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
ASSETS						
Current Assets						
Cash & Cash Equivalents	7,237	3,617	23,364	15,341	7,142	6,281
GST Receivable	103	21	104	125	75	16
Income Tax Refund Due	-	-	-	68	0	-
Others	4	52	159	116	175	188
Assets of Disposal Groups classified as held for sale	-	298	-	-	-	317
Total Current Assets	7,344	3,988	23,627	15,651	7,392	6,802
Non Current Assets						
Investment in JV Accounted for using the Equity Method	-	37,456	33,233	30,124	25,075	28,595
Property, Plant and Equipment	-	5	9	148	26	24
Exploration and Evaluation	1,056	1,472	1,934	2,886	4,199	4,077
Total Non Current Assets	1,056	38,934	35,175	33,158	29,301	32,696
TOTAL ASSETS	8,400	42,922	58,802	48,808	36,693	39,498
LIABILITIES AND EQUITY						
LIABILITIES						
Current Liabilities						
Trade and Other Payables	956	8,036	563	250	294	322
Income Tax	-	-	142	-	-	-
Provisions (Employee Benefits)	-	-	29	58	42	82
Liabilities directly associated with Assets classified as held for sale	-	34	-	-	-	45
Total Current Liabilities	956	8,070	734	309	336	449
Non Current Liabilities						
Long Term Borrowings	-	-	-	-	-	-
Payables	-	4,590	-	-	-	-
Total Non Current Liabilities	-	4,590	-	-	-	-
TOTAL LIABILITIES	956	12,660	734	309	336	449
EQUITY						
Contributed Equity	8,921	37,259	69,513	69,513	69,613	77,403
Reserves	400	2,127	6,573	7,202	7,964	8,977
Accumulated Profits/ (Losses)	(1,877)	(9,124)	(17,907)	(28,062)	(41,034)	(47,148)
Non-Controlling Interest	-	-	(111)	(154)	(187)	(183)
TOTAL EQUITY	7,444	30,262	58,069	48,500	36,357	39,049
TOTAL LIABILITIES AND EQUITY	8,400	42,922	58,802	48,808	36,693	39,498

Income Statement Summary – Projected (1/2)

<i>(All figures are in AUD thousands)</i>	FY 2022P	FY 2023P	FY 2024P	FY 2025P	FY 2026P
Revenue	-	-	-	-	62,609
<i>YoY Growth</i>		-	-	-	-
Total Expenses	3,585	3,705	3,831	3,870	8,282
<i>%age of Revenue</i>	0.0%	0.0%	0.0%	0.0%	13.2%
EBIT / Operating Income (Loss)	(3,585)	(3,705)	(3,831)	(3,870)	44,291
<i>%age of Revenue</i>	0.0%	0.0%	0.0%	0.0%	86.8%
Net Income / (Loss)	(3,585)	(3,705)	(3,831)	(3,870)	44,291
<i>%age of Revenue</i>	0.0%	0.0%	0.0%	0.0%	70.7%
EPS	(0.01)	(0.01)	(0.01)	(0.01)	0.13
<i>YoY Growth</i>		-	-	-	-1244.4%

Income Statement Summary – Projected (2/2)

<i>(All figures are in AUD thousands)</i>	FY 2027P	FY 2028P	FY 2029P	FY 2030P	FY 2042P*
Revenue	118,757	137,993	142,484	147,130	382,813
<i>YoY Growth</i>	89.7%	16.2%	3.3%	3.3%	2.5%
Total Expenses	13,663	15,586	16,112	16,605	40,020
<i>%age of Revenue</i>	11.5%	11.3%	11.3%	11.3%	10.5%
EBIT / Operating Income (Loss)	96,862	112,739	116,396	120,213	314,848
<i>%age of Revenue</i>	88.5%	88.7%	88.7%	88.7%	89.5%
Net Income / (Loss)	96,862	112,739	116,396	120,213	314,848
<i>%age of Revenue</i>	81.6%	81.7%	81.7%	81.7%	82.2%
EPS	0.28	0.32	0.33	0.34	0.90
<i>YoY Growth</i>	118.7%	16.4%	3.2%	3.3%	2.5%

*Note: The last year of production for the MSB asset according to our projections is FY 2042

Balance Sheet – Projected (1/2)

<i>(All figures are in AUD thousands)</i>	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
ASSETS					
Current Assets					
Cash & Cash Equivalents	15,599	11,917	8,109	4,246	39,872
Other	175	175	175	175	175
Total Current Assets	15,774	12,092	8,284	4,421	40,047
Non Current Assets					
Investment in JV Accounted for	28,595	52,219	164,432	254,095	263,487
Property, Plant and Equipment	7	3	2	1	0
Exploration and Evaluation Assets	4,077	4,077	4,077	4,077	4,077
Total Non Current Assets	32,679	56,300	168,511	258,174	267,564
TOTAL ASSETS	48,452	68,392	176,795	262,595	307,612
LIABILITIES AND EQUITY					
LIABILITIES					
Current Liabilities					
Trade and Other Payables	588	608	629	636	1,361
Total Current Liabilities	588	608	629	636	1,361
TOTAL LIABILITIES	588	608	629	636	1,361
EQUITY					
Contributed Equity	89,803	113,427	225,640	315,303	315,303
Reserves	8,977	8,977	8,977	8,977	8,977
Accumulated Profits/ (Losses)	(50,733)	(54,438)	(58,268)	(62,139)	(17,847)
Non-controlling Interest	(183)	(183)	(183)	(183)	(183)
TOTAL EQUITY	47,864	67,784	176,166	261,959	306,250
TOTAL LIABILITIES AND EQUITY	48,452	68,392	176,795	262,595	307,612

Balance Sheet – Projected (2/2)

<i>(All figures are in AUD thousands)</i>	FY 2027	FY 2028	FY 2029	FY 2030	FY 2042*
ASSETS					
Current Assets					
Cash & Cash Equivalents	120,993	217,489	319,724	428,248	3,471,498
Other	175	175	175	175	175
Total Current Assets	121,168	217,664	319,899	428,423	3,471,673
Non Current Assets					
Investment in JV Accounted for	280,113	296,672	323,295	393,842	506,912
Property, Plant and Equipment	0	0	0	0	0
Exploration and Evaluation Assets	4,077	4,077	4,077	4,077	4,077
Total Non Current Assets	284,190	300,749	327,372	397,920	510,989
TOTAL ASSETS	405,358	518,413	647,271	826,342	3,982,662
LIABILITIES AND EQUITY					
LIABILITIES					
Current Liabilities					
Trade and Other Payables	2,246	2,562	2,649	2,730	6,579
Total Current Liabilities	2,246	2,562	2,649	2,730	6,579
TOTAL LIABILITIES	2,246	2,562	2,649	2,730	6,579
EQUITY					
Contributed Equity	315,303	315,303	327,677	386,455	433,420
Reserves	8,977	8,977	8,977	8,977	8,977
Accumulated Profits/ (Losses)	79,015	191,754	308,150	428,364	3,533,869
Non-controlling Interest	(183)	(183)	(183)	(183)	(183)
TOTAL EQUITY	403,112	515,851	644,622	823,613	3,976,083
TOTAL LIABILITIES AND EQUITY	405,358	518,413	647,271	826,342	3,982,662

*Note: The last year of production for the MSB asset according to our projections is FY 2042

Valuation

Equity value of LPI stands between **AUD 309.1 million and AUD 377.8 million**

Equity Value per share for LPI stands between **AUD 0.89 and AUD 1.08**

	Variance	Equity Values as on 05/24/2022 (in AUD thousands)	Price per Share (in AUD)
Downside Case	-10%	309,121	0.885
Base Case	0%	343,468	0.984
Upside Case	10%	377,815	1.082

Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent, depending on the sub-sectors in which the research is conducted. But all Arrowhead valuation research possess an underlying set of common principles and a generally common quantitative process.

With Arrowhead commercial and technical due diligence, Arrowhead researches the fundamentals, assets and liabilities of a company, and builds estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance such as price/earnings ratios, indicated as applicable, are mainly for reference. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

We have presented the discounted cash flow estimate approach for FCFE valuation. We have also presented Comparable Company Analysis. The fair value bracket is built on the basis of these two methods.

Arrowhead BID Fair Market Value Bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analyses such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a valuation tool.

In principle, an investor comfortable with the high brackets of our key variable analysis will align with the high bracket in the Arrowhead Fair Value Bracket, and, likewise, in terms of low estimates. The investor will also note the company intangibles to analyze the strengths and weaknesses, and other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in investor's own analysis.

The bracket should be taken as a tool by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that while on the one hand global capital markets contain inefficiencies, especially in terms of information, on the other, corporations and their commercial and technical positions evolve rapidly. This present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months).

Estimation of Equity Value

Value of LPI's equity has been arrived at using a blend of two approaches - Comparable Company Analysis and DCF Valuation Approach. The results have been summarized in the table below.

LPI's major focus is on the Chile based MSB project, although it also has other early exploration stage assets in Western Australia. To value LPI, we have first calculated the value of MSB project using comparable company analysis and DCF valuation analysis. We added the book value of other exploration & evaluation stage assets to the weighted average equity value of LPI's MSB project to arrive at the equity value of LPI.

Valuation Summary – MSB Project

(All figures in AUD thousands)

Valuation Approach	Equity Value as on 05/24/2022	Price per share (AUD)	Weight (%)
Comparable Company Analysis	163,243	0.47	50%
DCF Valuation	515,539	1.48	50%
Weighted Average Equity Value	339,391	0.97	100%

Equity Value - LPI

(All figures in AUD thousands)

Business Segment	Equity Value as on 05/24/2022
Weighted Average Equity Value of MSB project	339,391
Book Value of Exploration & Evaluation Assets	4,077
Equity Value - LPI	343,468
Price per share	0.98

Following is the detailed methodology of the two valuation approaches:

1. Comparable Company Analysis

Comparable Company Analysis method operates under the assumption that similar companies will have similar valuation multiples, such as EV/Proven and Probable Reserves. We have shortlisted companies similar in business with Lithium Power International based on parameters such as market size, regions of operations etc.

A list of available statistics for the companies was compiled, and the EV/Proven and Probable Reserves multiple was calculated for each of the comparable companies. Since most of the data was not normalized, we have left outliers in our calculations. The weighted average of the resulting multiple was then calculated and used as benchmark for valuing the LPI's MSB project.

The weights allocated to the comparable companies were based on the degree of their business match with the subject company.

(All figures in AUD thousands)

Relative Valuation based on:	Weight	Equity Value as on 05/24/2022	Implied Share Price (AUD)
EV / Proven & Probable Reserves	100%	163,243	0.47

Business Match Score

We have considered nine junior lithium mining companies in our Comparable Company Analysis. Most of these companies are Australian and have assets in Australia, Argentina, and Spain. A majority of these companies are in pre-production stage and have completed their DFS.

We have assigned a business match score to these companies based on the country in which their assets are located, the lifecycle stage of their assets (exploration / development / production), and the nature of their reserves (measured / indicated / inferred).

Stock Exchange	Ticker	Company Name	Business Match Score	EV/Proven & Probable Reserves
ASX	AGY	Argosy Minerals Limited	80%	2,226.8
ASX	GLN	Galan Lithium Limited	90%	142.2
ASX	CXO	Core Lithium Limited	80%	9,359.6
ASX	EUR	European Lithium Limited	70%	17.3
ASX	INF	Infinity Lithium Corporation	70%	232.0
ASX	AVZ	AVZ Minerals Limited	50%	6,891.5
ASX	LTR	Liontown Resources Limited	80%	16.4
ASX	LKE	Lake Resources	75%	3,101.3
Median				232.0
Mean without Outliers				187.1
Weighted Average without Outliers				181.5
ASX	LPI	Lithium Power International		210.7

Sensitivity Analysis

We have also analyzed the sensitivity of Company's equity value to the EV/Proven and Probable Reserves multiple, calculated in the Comparable Company Analysis method.

Sensitivity based on EV/Proven & Probable Reserves Multiple

Target Multiple	Equity Value (AUD)	Price per share (AUD)
170.0x	155,744	0.45
180.0x	164,530	0.47
190.0x	173,316	0.50

2. Discounted Cash Flow (DCF) Approach for valuing LPI's MSB project

- **Valuation Methodology:** The Arrowhead fair valuation for Lithium Power International is based on the Discounted Cash Flow (DCF) analysis of the Company's investment in MSB, Chile joint venture project.
- **Time Horizon:** The time period chosen is based on the production reserves available for the asset under MSB joint venture. Period chosen for valuation is 20 years (2023 – 2042).
- **Terminal Value:** Terminal Value is considered to be zero as the production reserves are depleted by the end of FY 2042.

The following table calculates the cost of equity for LPI. The expected return on the market is assumed for the broader market. We have additionally assumed a company-specific risk to account for the risk involved in bringing the lithium mine into the production stage:

Cost of Equity

Valuation	
Risk free rate (Rf)	2.10%
Beta	1.6
Expected Return on Market	9.00%
Additional Company-specific Risk	3.50%
Cost of Equity	16.64%

The following tables summarize the Free Cash Flow to Equity computation for LPI, which is subsequently discounted at the Cost of Equity.

FCFE (All figures in AUD thousands)						
	2023	2024	2025	2026	2027	2028
Tax Adjusted Net Income – LPI	(3,705)	(3,831)	(3,870)	44,291	96,862	112,739
Add: Depreciation and Amortization - LPI	3	2	1	0	0	0
Add: Amortization Expense – MSB	-	-	-	8,673	15,488	17,037
Less: Increase in Non-Cash Working Capital - LPI	20	21	7	725	885	316
Less: Increase in Non-Cash Working Capital - MSB	-	-	-	-	-	-
Less: Investment in MSB – LPI	23,624	112,213	89,663	-	-	-
Less: Capital Expenditure – LPI	-	-	-	-	-	-
Add: Increase in Debt – MSB	23,624	112,213	89,663	(15,566)	(16,811)	(18,156)
Free Cash Flow to Equity	(3,722)	(3,850)	(3,876)	36,674	94,654	111,304
Present Value	(3,191)	(2,830)	(2,443)	19,814	43,843	44,200

FCFE (All figures in AUD thousands)						
	2029	2030	2031	2032	2033	2034
Tax Adjusted Net Income – LPI	116,396	120,213	124,132	238,124	233,019	241,759
Add: Depreciation and Amortization - LPI	0	0	0	0	0	0
Add: Amortization Expense – MSB	17,037	17,037	17,037	32,099	30,034	30,034
Less: Increase in Non-Cash Working Capital - LPI	86	81	92	2,158	(86)	175
Less: Increase in Non-Cash Working Capital - MSB	-	-	-	-	-	-
Less: Investment in MSB – LPI	12,374	58,777	46,966	-	-	-
Less: Capital Expenditure – LPI	-	-	-	-	-	-
Add: Increase in Debt – MSB	(7,235)	37,600	24,094	(32,855)	(35,484)	(38,322)
Free Cash Flow to Equity	113,738	115,992	118,205	235,211	227,656	233,296
Present Value	38,723	33,857	29,581	50,464	41,875	36,791

FCFE (All figures in AUD thousands)						
	2035	2036	2037	2038	2039	2040
Tax Adjusted Net Income – LPI	249,205	256,986	263,422	284,558	292,535	299,727
Add: Depreciation and Amortization - LPI	0	0	0	0	0	0
Add: Amortization Expense – MSB	30,034	30,034	30,034	30,866	29,398	29,398
Less: Increase in Non-Cash Working Capital - LPI	170	157	132	410	162	169
Less: Increase in Non-Cash Working Capital - MSB	-	-	-	-	-	-
Less: Investment in MSB – LPI	-	-	-	-	-	-
Less: Capital Expenditure – LPI	-	-	-	-	-	-
Add: Increase in Debt – MSB	(41,388)	(11,093)	(11,980)	(12,939)	(13,974)	(15,092)
Free Cash Flow to Equity	237,680	275,770	281,343	302,076	307,797	313,865
Present Value	32,135	31,966	27,959	25,737	22,483	19,656

FCFE (All figures in AUD thousands)		
	2041	2042
Tax Adjusted Net Income – LPI	307,189	314,848
Add: Depreciation and Amortization - LPI	0	0
Add: Amortization Expense – MSB	29,398	29,398
Less: Increase in Non-Cash Working Capital - LPI	153	157
Less: Increase in Non-Cash Working Capital - MSB	-	-
Less: Investment in MSB – LPI	-	-
Less: Capital Expenditure – LPI	-	-
Add: Increase in Debt – MSB	(16,299)	-
Free Cash Flow to Equity	320,135	344,089
Present Value	17,188	15,839

(All figures in AUD thousands)

Valuation	
Equity Value as on 6/30/2022	523,647
Equity Value as on 5/24/2022	515,539
Number of Shares Outstanding (in thousands)	349,145
Value per Share (AUD)	1.48

The equity value of the Company is sensitive to cost of equity. The following table captures the sensitivity of LPI's Value to these assumptions.

(All figures in AUD thousands)

Cost of Equity	Equity Value
10%	1,029,988
11%	921,599
12%	826,741
13%	743,507
14%	670,285
15%	605,708
16%	548,615
17%	498,016
18%	453,065
19%	413,038

Analyst Certifications

We, Dhruv Sawhney and Aman Sabherwal, certify that all of the views expressed in this research report accurately reflect our personal views about the subject security and the subject company.

Important disclosures

Arrowhead Business and Investment Decisions, LLC received fees in 2021 and will receive fees in 2022 from Lithium Power International Ltd. for researching and drafting this report and for a series of other services to Lithium Power International Ltd., including distribution of this report, investor relations and networking services. Neither Arrowhead BID nor any of its principals or employees own any long or short positions in Lithium Power International Ltd. Arrowhead BID's principals have a mandate for investment banking services from Lithium Power International Ltd. and expect to receive compensation for investment banking activities from Lithium Power International Ltd. in 2022.

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Appendix

Glossary

LPI	Lithium Power International
JV	Joint Venture
MSB	Minera Salar Blanco S.A.
DFS	Definitive Feasibility Study
MoU	Memorandum of Understanding
Mitsui	Mitsui & Co., Ltd.
DLE	Direct Lithium Extraction
GEA Messo	GEA Messo GmbH
CLL	Centenario Lithium Limited
LPIH	Lithium Power International Holdings (Argentina) Pty Ltd
CP	Competent Person
QP	Qualified Person
LCE	Lithium Carbonate Equivalent
EPC	Engineering, Procurement and Construction
IRR	Internal Rate of Return
NPV	Net Present Value
EIA	Environmental Impact Assessment
CEOL	Special Contract for the Operation of Lithium
PPM	Parts Per Million
LCT	Lithium-Caesium-Tantalum
EDC	Export Development Canada
JBIC	Japan Bank for International Cooperation
EFA	Export Finance Australia
Vertex	Vertex Lithium Corporation

Notes and References

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