

Due Diligence and Valuation Report

Arrowhead Code:	11-01-02
Coverage initiated:	August 05, 2024
This document:	October 31, 2024
Fair share value bracket	AUD 0.12 – 0.16
Share price (October 31, 2024):	AUD 0.02

Analysts

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Market Data

52-Week Range:	AUD 0.018 – AUD 0.036 ^f
Average Daily Volume (3M Avg.):	1,617,750 ⁱⁱ
Market Cap (October 31, 2024):	AUD 26.29 million (mn) ⁱⁱⁱ

Company Overview:

Livium Ltd (ASX: LIT), formerly known as Lithium Australia Limited, is an Australian company focused on leading the circular economy in electrification by creating solutions for the lithium-ion circular battery materials industry. LIT moved away from being a mining and exploration company to now covering a range of touchpoints in the lithium-ion battery value chain through its technologies, operations and strategic agreements. LIT provides critical materials for the circular battery industry through battery recycling, lithium chemicals and battery materials.

LIT made a significant move by acquiring the Very Small Particle Company (VSPC) Pty Ltd in 2017, to produce critical components such as Lithium Iron Phosphate (LFP) and Lithium Manganese Iron Phosphate (LMFP), crucial for next-generation lithium-ion batteries. Additionally, LIT patented its LFP/LMFP technology to solidify its position.

In 2019, LIT acquired Envirostream Australia Pty Limited (Envirostream) to enter the battery recycling business. Today, it stands as Australia's premier battery recycler with a capacity of 2,400 tonnes annually, with onshore processing capabilities. LIT primarily focuses on the upstream 'fee for Service' recycling model and further extracts valuable materials such as lithium, cobalt, and nickel, commonly known as Mixed Metal Dust (MMD or Black Mass). MMD is sent back to battery manufacturers to produce new batteries.

The company also developed and patented its extraction technologies – SiLeach[®] and LieNA[®]. LieNA[®] has the potential to help increase lithium extraction yield by up to 50%, taking the average hard rock spodumene mines from ~60% yield to ~90%.

The company is listed on the Australian Securities Exchange (ASX) under the ticker 'LIT'.



Company:	Livium Ltd
Ticker:	ASX: LIT
Headquarters:	Victoria, Australia
Managing Director:	Simon Linge
CFO:	Stuart Tarrant
Website:	www.livium-au.com



Key Highlights: **(1)** In Q1 FY2025, Livium signed multi-year exclusive recycling agreements with BYD Auto and Infinitev, to recycle end-of-life batteries. These companies add to the company's list of existing partnerships with major firms such as LG Energy Solution, Hyundai Glovis, and Volvo Group Australia; **(2)** The company reported revenue of AUD 6.7 mn and Gross Profit of AUD 2.2 mn in FY2024. This revenue was primarily driven by their battery recycling operations. In Q1 FY2025, the battery recycling division generated Revenue of AUD 2.5 mn with a Gross Profit of AUD 1.7 mn; **(3)** On September 9, 2024, Livium sold 7.6 mn shares in Charger Metals NL (ASX:CHR) to Core Lithium Ltd (ASX:CXO), receiving 0.8 CXO shares for each CHR share, representing a consideration of AUD 541,000. Additionally, the company sold its 30% stake in the Bynoe Lithium Project to Core Lithium for AUD 500,000, pending Charger's pre-emptive rights; **(4)** On September 20, 2024, LIT raised AUD 952,625 after the successful closing of their Share Purchase Plan; **(5)** In June 2024, LIT signed a 3-year MMD offtake agreement with SungEel HiTech (SungEel), under which SungEel agreed to purchase 60% of LIT's MMD production; **(6)** Livium has completed pilot plant operations for disruptive lithium processing technology, LieNA[®], with the engineering study and layout development largely complete under the JDA with Mineral Resources Limited and refining of final product currently in progress; **(7)** In Q1 FY2025, Livium's LFP development technology was granted a patent certificate in Chile, further validating the Company's unique manufacturing process.

Key Risks: **(a)** Delay in securing funding to finance development of technology/building new commercial facilities; **(b)** Regulatory risk due to stringent waste management and recycling standards; **(c)** Commercialization risks at scale for LieNA[®] technology.

Valuation and Assumptions: Given the due diligence and valuation estimates, Arrowhead believes that Livium's fair market value per share is AUD 0.12 to AUD 0.16 using Net Present Value (NPV) methodology.

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1. Investment Thesis

Arrowhead is updating coverage for Livium Ltd (LIT) with a fair value of AUD 0.12 per share in the low-bracket scenario and AUD 0.16 per share in the high-bracket scenario, derived using NPV methodology.

Livium leads the advancement of materials for a sustainable future in the global battery industry. With integrated divisions focusing on recycling, battery materials and lithium chemicals, the company is pioneering a circular battery economy. LIT is well-placed, via its profit-generating recycling business and patented technologies, to capitalize on favorable market dynamics, including the continued global demand growth of lithium-ion batteries and growing diversification and adoption of alternatives within global lithium supply chains.

Driving toward profitability with strategic advancements in battery recycling

LIT operates its revenue-generating battery recycling division through its fully-owned subsidiary, Envirostream. As the only major Australian battery recycler processing LIBs domestically, LIT has secured multiple recycling agreements with Tier 1 electric vehicle (EV) and energy storage system (ESS) manufacturers such as LG Energy Solutions, Volvo, Hyundai Glovis, BYD and Infinitev. Through its battery recycling operations, the company reported AUD 2.5 mn in Revenue in Q1 FY2025, with a Gross Profit margin of 70%. LIT has shifted its commercial model to an upstream-focused operational approach, aiming to increase the 'fee for service' proportion of the recycling revenue mix. By changing the strategy, LIT has been able to increase its revenue per unit from AUD 3.05/Kg in Q1 FY2024 to AUD 6.51/kg in Q1 FY2025, resulting in an improvement in gross profit per unit from AUD 0.04/kg in Q1 FY2024 to AUD 4.61/kg in Q1 FY2025. This strategy allows the company to earn most of its revenue upfront, reducing exposure to market and pricing volatility associated with the sales of MMD and other commodities. The new agreements with BYD and Infinitev are expected to significantly increase LIB collection, further improving margins. Higher average revenue unit rates, effective cost management and increasing volumes under exclusive recycling agreements are expected to contribute toward a sustainable recycling economic model.

Landmark deal with MinRes to commercialize the LieNA[®] technology through a licensing model

LIT has advanced its innovative lithium extraction and refining technologies with the development of LieNA[®], designed for processing underutilized fine- and low-grade spodumene. In a strategic move toward commercialization, the company has entered a JDA with MinRes, a leading mining company. Under this agreement, MinRes has supplied raw materials for the extraction process and financed the pilot plant development and an engineering study for a demonstration plant up to AUD 4.5 mn. In return, LIT contributed its patented LieNA[®] technology to the collaboration. Progress on this has been substantial, with LIT completing the initial phase of LieNA[®] piloting alongside MinRes at ANSTO. This phase yielded intermediate product outputs from spodumene concentrate through multiple caustic conversion campaigns. In July 2024, the company completed lithium phosphate production from this intermediate product, marking completion of the final step in the process. The company has utilized AUD 4.2 mn out of AUD 4.5 mn until the present. Following the analysis of the lithium phosphate product and engineering study, a new 50:50 joint venture (JV) will be established between MinRes and LIT. This JV will fully own and commercialize the LieNA[®] technology under a licensing model, targeting an 8% gross product royalty rate for third-party licenses. This royalty structure significantly enhances LIT's market potential, enabling it to earn royalties on all processed tonnage using LieNA[®] technology. Once the technology is proven at a commercial scale, the joint venture plans to issue multiple licenses to brownfield and greenfield mines, extending the technology's adoption and influence across the industry. Each single license can generate up to USD 21 mn (AUD 31 mn) annually, exhibiting significant earning potential. In Q1 FY2025, the company completed its pilot plant operation. The lithium phosphate produced is currently being analyzed to determine final product specifications in preparation for refining. This analysis and associated refining are expected to be completed by the end of 2024. In addition, the engineering study and layout development are largely complete, with cost estimation activities well progressed.

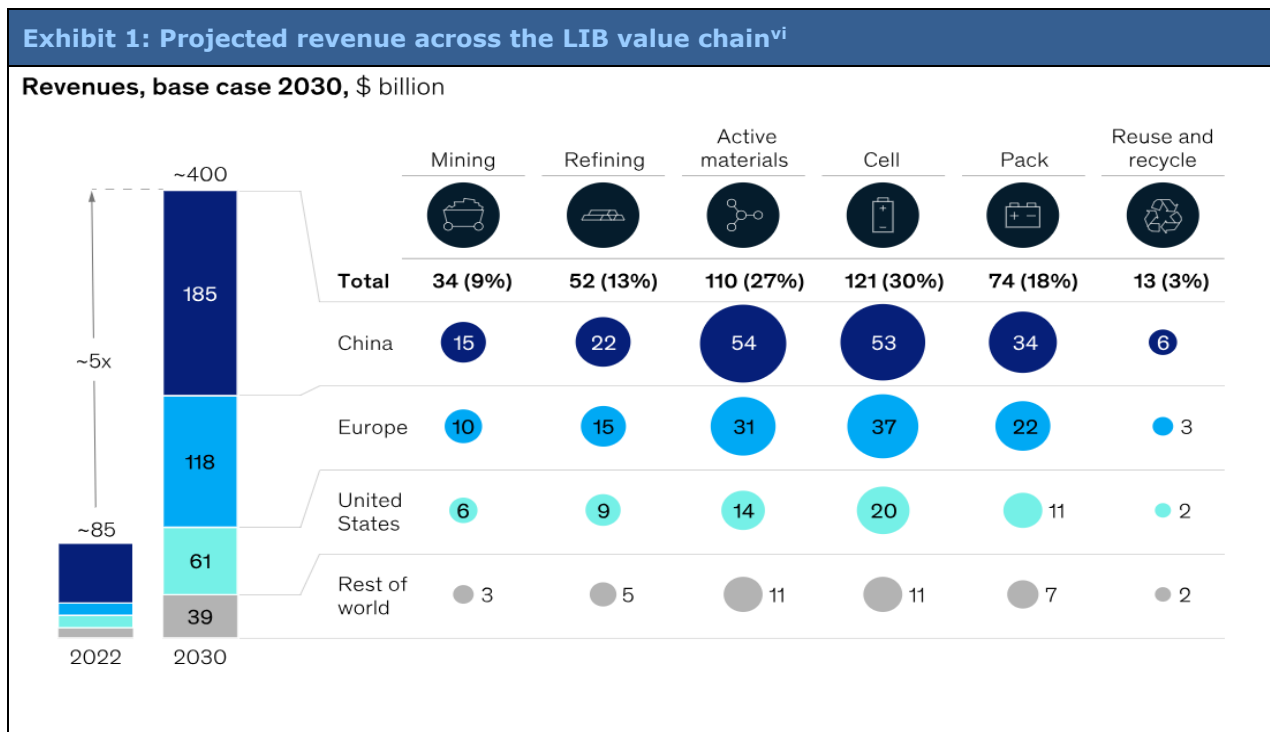
Pursuing global opportunity by unlocking value in Battery Material Technology

Through its fully owned subsidiary VSPC Pty Limited, LIT has over 20 years of experience in nanotechnology, nearly a decade of which has been spent developing LFP, a cathode-active material used in battery manufacturing. In 2023, NOVONIX Ltd. (ASX: NVX), a leading battery materials expert, independently assessed the company's LFP cathode powder, finding it the most stable among tested samples and capable of supporting long-lifetime cell designs. The global adoption of LFP and LMFP based batteries in EVs, combined with China's dominance in the global LFP battery supply chain, has led many governments to seek secure and diversified sources of critical minerals. In Q1 FY2025, LIT's LFP development technology was granted a patent certificate in Chile, further validating the Company's unique manufacturing process. The patent has an effective period of 20 years from the application date and will expire in 2041.

Demand for LFP represents more than half the global market for lithium-ion battery materials translating to a huge opportunity for LIT. The company is one of the few entities outside of China with the technical expertise to manufacture LFP powder of the highest quality to meet those burgeoning market pressures. To pursue this global opportunity, the company signed an MOU with First Phosphate Corp. and Agriflex Pty Limited (a subsidiary of Centrex Limited) marking a significant step toward commercializing its LFP and LMFP technologies. These initiatives underscore the company’s commitment to offering global battery manufacturers an alternative source for LFP and LMFP, enhancing the security and diversity of the battery supply chain. LIT is further committed to unlocking the value of its patented LFP technology through various pathways, including partnerships with domestic governments, strategic partners, upstream raw material manufacturers, battery manufacturers and financial investors. The company plans to develop and operate an LFP demonstration plant with a capacity of approx. 250 tpa or aims to secure an international strategic partner for an offshore semi-commercial facility with a capacity of 5,000 tpa. After that, LIT will focus on developing and operating an initial commercial-scale plant with a production capacity of approximately 25,000 tpa. With an LFP price of around USD 12.75/kg, this plant will generate annual revenue of up to USD 319 mn (AUD 471 mn), providing an additional revenue stream. The company further aims to scale up production to over 100,000 tpa of LFP/LMFP.

Capitalizing on growing lithium-ion batteries demand

Global demand for Li-ion batteries is expected to grow by 27% over 2022-2030, with required capacity rising from about 700 GWh in 2022 to approximately 4.7 TWh by 2030^{iv}. Mobility applications, particularly EVs, will drive this demand, accounting for around 4,300 GWh in 2030, reflecting the rapid growth in mobility. As the world shifts towards greener fuels and aims for net-zero emissions by 2050, the use of LIBs is increasing. According to McKinsey Battery Insights^v, revenues along the entire value chain are projected to increase five-fold, from about USD 85 bn in 2022 to over USD 400 bn by 2030, providing significant opportunity. China is expected to account for 45% of total lithium-ion demand in 2025 and 40% in 2030, as most battery-chain segments are already mature in that country. However, the highest growth is expected globally in the EU and the United States, driven by recent regulatory changes and a general trend toward the localization of supply chains. Although the recycling segment is expected to be small (3%) in 2030, it is projected to grow more than three-fold in the following decade as more batteries reach their end-of-life. Additionally, LIBs waste is expected to grow at 20% per annum through 2036. The company’s presence across the full lithium value chain provides a huge opportunity to capitalize on the growing demand for lithium-ion batteries.



Secured funding of AUD 2.8 mn through the successful completion of a placement and SPP

LIT has successfully raised an initial funding of AUD 1.8 mn, with the potential to secure up to AUD 7.5 mn from Lind Global Fund II, managed by The Lind Partners. Additionally, the company had launched a Share Purchase Plan (SPP) at AUD 0.021 per share, representing an 8.7% discount to the 5-day Volume-Weighted Average Price (VWAP), allowing existing shareholders to subscribe for up to AUD 30,000 worth of shares. Through this SPP, the company raised AUD 952,625 as of September 20, 2024. These funds will be utilized to accelerate operational improvements and advance the growth strategy within the battery recycling division. This includes continuing the momentum from recent recycling agreements featuring improved commercial terms, executing an off-take agreement with MMD, and undertaking business development activities such as off-take development and securing strategic partners and funding for the battery materials division. Additionally, LIT will complete a strategic assessment to explore potential monetization pathways for its existing technology portfolio and provide general working capital to support ongoing operations and strategic initiatives.

LIT's experienced leadership team instils confidence in stakeholders

Livium's management team is characterized by the depth of experience and strategic foresight, which are crucial for steering the company through the complexities of the global battery industry. The company has prioritized strategic initiatives under the leadership of Mr. Simon Linge, CEO and Managing Director with over 25 years in global manufacturing, recycling and engineering services. He has worked on expanding recycling volumes and forging joint development partnerships, exemplified by the significant agreement with Mineral Resources Ltd. The team, composed of seasoned executives adept in technology development, resource management and strategic alliances, inspires confidence among stakeholders and investors. With their expertise and strategic vision, LIT's leadership is well-positioned to capitalize on opportunities and navigate challenges, driving growth and innovation in the dynamic battery sector.

However, certain risks could impede growth plans

Securing funding for technological development and commercialization

As the company advances in developing its technologies and commercializing its business, securing additional funding is crucial. The company plans to seek funding from both government sources and private equity. Any delay or failure in obtaining the necessary funds could cause setbacks in the commercialization timelines and the company's plans and profitability.

Commercialization risk at scale

The LieNA[®] technology has undergone testing on a mini-plant scale. However, there exists a potential risk associated with its commercialization at scale. This includes uncertainties regarding technical feasibility, performance according to design specifications, economic viability, reliability, timely development and the ability to generate a marketable product.

Regulatory Risk

LIT may face increased operational costs due to the necessity of complying with stringent waste management, emissions and recycling standards. Additionally, shifts in government policies regarding battery recycling and disposal could disrupt LIT's business model. New laws could introduce more stringent requirements or modify existing recycling incentives, affecting the company's operational and financial landscape.

Conclusion

LIT offers a compelling investment opportunity with its integrated presence across the lithium supply chain—from extraction to refining and recycling—enabling it to navigate evolving market dynamics effectively. The company is actively advancing strategic initiatives, such as boosting utilization rates and enhancing operational efficiencies in recycling. It is progressing rapidly with LieNA[®] JDA activities, set for completion in 2024, and exploring commercialization opportunities for its unique LFP technology, while securing partnerships to drive growth. Positioned to benefit from the projected 27% CAGR in LIB demand from 2022 to 2030^{vii}, LIT has significant upside potential through its innovative technologies and minimized exposure to commodity pricing swings. However, potential funding challenges and regulatory changes may present risks.

2. Business Overview






2.1 Background^{viii}

LIT was founded by previous managing director, Adrian Griffin, in 2007, originally focused on mining exploration for minerals such as copper and iron ore. However, the company soon pivoted to lithium exploration, anticipating its future importance. Through continuous research and innovation, the company has achieved vertical integration in lithium extraction and processing, battery materials manufacturing and spent-battery recycling. This approach supports an ethical and sustainable circular battery economy, aiming for a net-zero world. LIT encompasses every touchpoint of the lithium value chain through its operations and strategic agreements. The company is present in exploration and mining and battery manufacturing via its partnerships.

Committed to establishing a circular battery economy, LIT ensures resource security through its three vertically integrated business divisions: Lithium chemicals, battery materials and battery recycling.

- **Lithium Chemicals:** At the forefront of sustainable lithium extraction and processing, this division leverages proprietary technologies to efficiently recover lithium from unconventional sources such as discarded spodumene and micas. LIT has developed and patented extraction technologies and is focused on developing LieNA[®]. LieNA[®] technology’s unique method of processing unused fine and low-grade spodumene has the potential to increase lithium extraction yield by up to 50%.
- **Battery Materials:** The company runs its battery material division through its subsidiary, VSPC, an LFP cathode material developer. LIT focuses on producing essential components such as LFP and LMFP, crucial for high-performance lithium-ion batteries used in EV and ESS. Additionally, the company has secured LFP and LMFP technology patents, further strengthening its position in the market.
- **Battery Recycling:** LIT operates its revenue-generating battery recycling division through its fully owned subsidiary, Envirostream. LIT stands as Australia’s premier battery recycler, with onshore processing capabilities. The company primarily focuses on the upstream ‘Fee for service’ recycling model. Through advanced recycling technologies, the division efficiently extracts critical components such as lithium, cobalt and nickel, known as MMD, which is further sold to battery manufacturers and mining companies.

Exhibit 2: LIT presence across LIB Value Chain^{ix}

Exploration and Mining	Lithium Chemicals	Battery Materials	Battery Manufacturing	Battery Recycling
Passive investments in exploration assets 	Joint Development Agreement with Mineral Resources (ASX:MIN) 	Actively seeking partners for scale up towards commercialisation 	Relationships secured with leading battery manufacturers 	Market leading, revenue generating lithium-ion battery (LIB) recycler 
Overview	Proprietary technology to process fine and low-grade materials to improve mining yields by up to 50% ¹	Validated LFP / LMFP ³ product serves as an alternative supply source for global battery manufacturers		Provision of recycling services. Growing LIB volumes underpinning positive operating cashflows and then national expansion strategy
Commercial model	Licensing to domestic and global miners at a gross product royalty rate of 8% ²	Positioned for either licensing or owned and operated commercial scale plants		Prioritise upstream fees and complement with additional downstream sales

Notes: 1. Assumes existing mine concentrator is 60%: 60% to 90% Li recovery increase assumes lithium extraction technology recovers 75% of lithium units going to tails; 2. Company cautions that although it considers this to be a reasonable expectation, there is no guarantee that this rate will be achieved; 3. LFP: Lithium ferro phosphate, LMFP: Lithium manganese ferro phosphate

Additionally, the company has investments in Core Lithium (ASX: CXO) and Evion Group (ASX: EVG), reducing its overall investment exposure by previously farming out some of its exploration assets. The company retains potential upside in these assets by structuring free-carry arrangements at the project level and acquiring equity in the managing companies as part of the settlement.

LIT focuses on high-value opportunities across the lithium value chain by developing lithium extraction and material processing technology, partnering with leading battery manufacturers, and recycling batteries. Through its comprehensive approach, Livium is well-positioned to redefine the landscape of sustainable energy solutions. As the company scales up in the growing battery recycling industry, it remains focused on high-value opportunities across the lithium value chain.

2.2 Segments

2.2.1 Battery Recycling*

Overview

LIT operates its battery recycling division through its fully owned subsidiary – Envirostream Australia Pty Limited. The company acquired Envirostream in 2019, which at the time was an early-stage battery recycling business with lithium-ion battery capabilities. Envirostream is the only company in Australia with the integrated capacity to collect, sort, shred and separate all the components of spent LIBs at scale, making it a perfect fit with LIT’s critical battery-metal-processing expertise.

Australia’s LIB waste is expected to grow at 20% annually, driven by the rising demand for portable and rechargeable electronic devices and EVs. In 2016, Australia generated 3,300 tonnes of LIB waste, but only 2% of this was collected and exported for offshore recycling^{xi}. LIB waste generation is projected to exceed 136,000 tonnes by 2036. Unfortunately, most Australian LIB waste ends up in landfills, posing significant environmental and health risks. Envirostream addresses these critical waste challenges by recycling batteries, thereby conserving finite natural resources and preventing soil and groundwater contamination from toxic substances like cadmium, mercury, and lead. The company has developed innovative and safe management solutions to tackle one of the Australian waste industry’s most pressing issues: lithium-ion battery recycling.

It operates a plant in Laverton North in Victoria, Melbourne, which focuses on developing and implementing advanced lithium extraction and refining technologies. The Australian-owned enclosed battery processing facility, designed and built by the team at Envirostream, is based on international best practices. Its ISO-14001-accredited modular processing technology, involving continuous R&D, recovers around 95% of the materials from LIBs. Additionally, Copper Aluminium and Plastics Separation (CAPS) plant and a new shredder was installed at the Campbellfield facility which has significantly improved the recovery of MMD and processing throughput. The facility has a current processing capacity of 2,400 tonnes per annum and the company is continuously improving its processes to increase capacity, improve yields and meet market demand.



Process:

Envirostream's battery recycling process involves five key steps: collection, storage, sorting, processing and sales.

Collection: Given the fire hazards associated with batteries, Envirostream has developed innovative equipment to manage these risks, including specialized collection bags and deposit bins to handle thermal leakage. Envirostream collaborates with partners to facilitate the collection of consumer drop-off batteries.

- **Storage:** These collected batteries are transported to Envirostream’s Laverton North facility. At this facility, collected batteries are stored according to the highest safety standards, addressing the fire risks associated with incorrect storage of spent batteries.
- **Sorting:** The company has developed a semi-automated process to efficiently sort mixed batteries into categories, including lithium-ion batteries, nickel metal hydride batteries, alkaline batteries, and nickel-cadmium batteries.
- **Processing:** The company recovers materials from LIBs such as steel, copper, and aluminium through an EPA licensed processing facility. Components from lithium-ion batteries, including graphite, cobalt, nickel, and lithium, commonly known as MMD, which is a valuable commodity for new lithium-ion battery production are processed. Envirostream’s processing successfully recovers 95% of lithium-ion batteries.
- **Sales:** The high-value MMD is exported to Tier 1 mining companies, battery manufacturers and battery recyclers. The company has a binding MMD offtake agreement with SungEel HiTech, a leading global recycling organisation.

Envirostream offers a comprehensive range of battery collection and disposal services designed to meet Australian safety standards effectively. Their services include strategically placed collection units and multiple convenient drop-off locations, ensuring easy access for consumers and businesses alike. The company's operations include full battery processing, facilitated by a modular recycling system designed for efficiency and sustainability. This system allows maintenance without compromising processing capabilities and can be replicated across Australia, ensuring consistent, high-quality recycling operations nationwide.

Pathway to commercialization

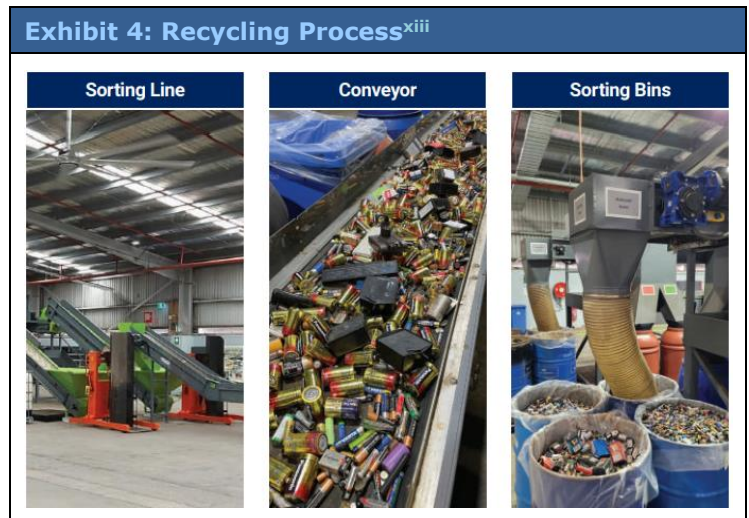
The recycling business generates revenue through three main streams: recycling services fees (upstream fees), downstream sales and complimentary services.

- Upstream fees come from charging customers for the collection and processing of batteries.
- Downstream sales involve selling processed materials such as MMD, metals and other by-products.
- Complimentary services include selling or leasing collection point boxes and storage services.

LIT has shifted its revenue strategy to emphasize the upstream operation model over downstream sales. This approach aims to increase the 'fee for services' portion of the recycling revenue mix, reducing exposure to market and pricing volatility associated with sales of MMD and other commodities. As a result of this strategic change, the company delivered a positive operating cash profit in Q4 FY2024 and Q1 FY2025.

The company is focusing on strategic partnerships to secure battery supply, focusing on lithium-ion batteries, given higher efficiencies. Spent lithium-ion batteries will continue to be received from multiple sources, including Passenger EV original equipment manufacturers (OEMs), ESS OEMs, Installers of industrial ESS applications, such as micro-grids, the mining industry, Waste management industry and Handheld tool and device OEMs. Partnerships signed with global EV and ESS manufacturers are expected to secure the highest volumes of future lithium-ion batteries for the next five years.

For batteries below 5kg, the company is supported by partnerships and government-backed schemes such as B-cycle via the Battery Stewardship Council, which provides rebates for collection, sorting and processing.



To move toward commercialization, the company signed a few crucial agreements in 2024:

- **3-year MMD off-take agreement and joint development progress with SungEel:** Envirostream has entered a 3-year MMD off-take agreement with SungEel, effective from July 1, 2024. SungEel is a South Korean company specializing in environmentally friendly recycling solutions for lithium-ion batteries. Under this agreement, SungEel will purchase a minimum of 60% of LIT's annual MMD production, contingent on meeting quality requirements. SungEel has been a customer of LIT since 2020 and has purchased over 300 tonnes of MMD, indicating a growing demand for recycled materials in battery manufacturing. SungEel recently opened the world's largest lithium-ion battery recycling plant in South Korea, capable of processing 20,000 tons of MMD in Phase 1, providing a huge opportunity for LIT. Through the off-take agreement, SungEel can now produce battery materials using MMD from Envirostream. If the agreement had been in place since July 1, 2023, the revenue under this agreement would have been about AUD 514,000 based on FY2024 YTD MMD sales. The company is currently progressing discussions with SungEel HiTech regarding a JDA, which includes investment focused on upgrading recycling equipment and expanding total processing capacity. This agreement validates the quality of LIT's MMD product and represents a strategic partnership for the company's recycling growth strategy.
- **Exclusive recycling agreement with Volvo Group Australia:** In June 2024, Envirostream entered into an exclusive 3-year agreement with the buses division of Volvo Group Australia to recycle end-of-life batteries from its fleet of electric and hybrid buses. Volvo Group is a global bus manufacturing leader, committed to creating sustainable public transport systems. Under this agreement, LIT will be the exclusive provider of battery recycling services for the company's electric and hybrid bus fleet in Australia. This collaboration aligns with both companies' dedication to sustainability and environmental responsibility.
- **Exclusive battery recycling agreement with LG Energy Solution:** Envirostream has signed an exclusive 3-year agreement with LG Energy Solution to recycle LIBs in Australia. LG Energy Solution is a leading global battery manufacturer for EV and ESS, holds a significant market share of around 14% (as of 2023) and is the largest EV battery producer outside of China. The new agreement is expected to help increase LIT's large-format LIBs collection volumes significantly. There are approx. 6,000 units of LG Energy Solution's large-format LIBs ready for Envirostream to collect and process, with an additional 5,000 units anticipated. This totals around 770 tonnes of LIB batteries, or 140% of Envirostream's total LIB collection volumes in FY2023, highlighting the substantial growth in LIB collection volumes that the new agreement brings. This agreement, which runs until March 10, 2027, provides visibility for recycling revenues for Envirostream and opens opportunities for additional revenue through the sale of mixed metal dust back to LG Energy Solution and third parties.
- **Exclusive battery recycling agreement with BYD Auto:** In September 2024, Envirostream signed an exclusive 3-year battery recycling agreement with BYD Auto Industry Company Limited, with an optionality for a further 2-year extension. BYD Auto, the automotive subsidiary of BYD Company Limited, is a global leader in EVs, which delivered ~3 mn EVs globally in 2023 and holds ~14% of Australia's EV market share^{xiv}. This agreement grants LIT the opportunity to recycle BYD's Blade Battery, which uses lithium-iron-phosphate as the cathode material, aligning with Livium's strategic plan to increase the processing capacity of LFP batteries.
- **Exclusive battery recycling agreement with Infinitiv:** Envirostream has signed a new exclusive recycling agreement with Infinitiv, to provide battery recycling services in Australia for lithium and nickel-based batteries. Infinitiv operates as a subsidiary of ASX-listed Amotiv Limited (ASX:AOV), formerly GUD Holdings Limited, an ASX 200 company. Amotiv is a leader in the automotive aftermarket industry across Asia Pacific^{xv}. This 3-year agreement will expand Livium's battery supply and complement their existing agreements with leading EV and ESS manufacturers. Under the Agreement, Livium will receive a service fee for the collection of lithium and nickel-based batteries owned by Infinitiv and will also derive revenue from third-party sales of Mixed Metal Dust and Nickel Metal Hydride Batteries generated from these batteries.

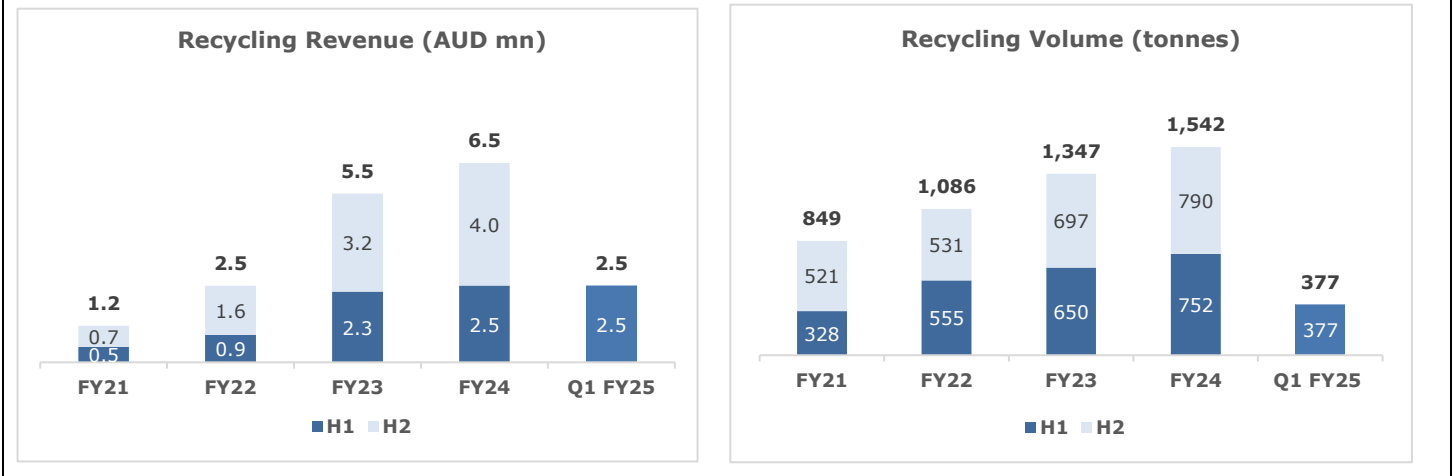
From a retail perspective, LIT has an extensive battery recycling network secured via agreements with household retail outlets. These outlets assist in the collection of used batteries under 5kg.

Financial Performance

- In FY2024, LIT collected 1,542 tonnes of mixed battery material for recycling—752 tonnes in H1 FY2024 and 789 tonnes in H2 FY2024. The company generated AUD 6.5 mn in revenue (revenue unit rate AUD 4.20/kg), with AUD 2.5 mn (revenue unit rate AUD 3.20/kg) earned in H1 FY2024 and AUD 4.0 mn (revenue unit rate AUD 5.00/kg) in H2 FY2024. In Q1 FY2025, the company reported AUD 2.5 mn in revenue from its battery recycling operations, with AUD 1.7 mn gross profits, representing a gross profit margin of ~70%. A strategic shift led to an increase in revenue

per unit from AUD 3.05/Kg in Q1 FY2024 to AUD 6.51/kg in Q1 FY2025, resulting in an improvement in gross profit per unit from AUD 0.04/kg in Q1 FY2024 to AUD 4.61/kg in Q1 FY2025.

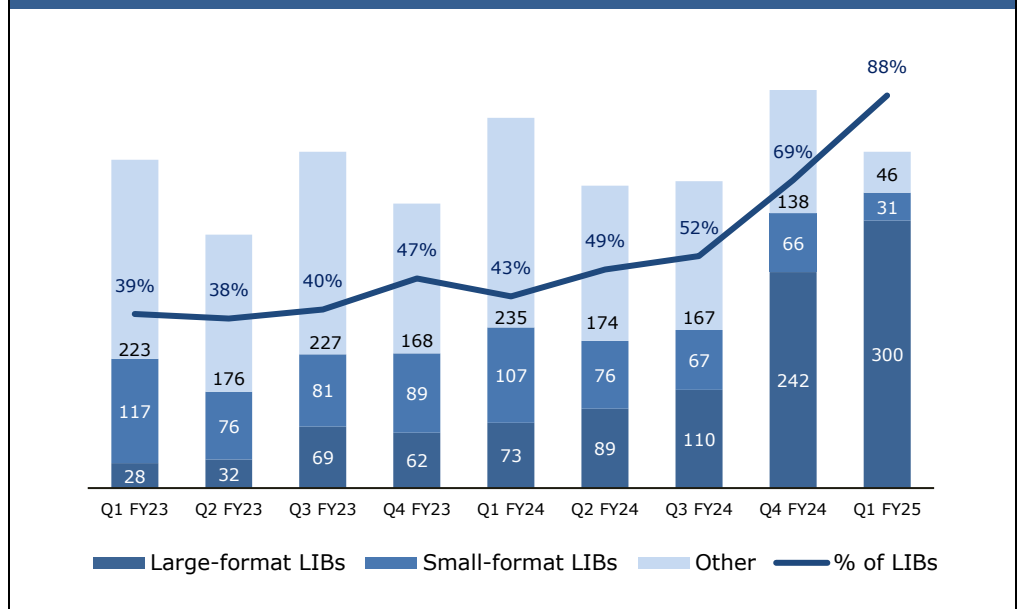
Exhibit 5: Recycling business ^{xvi}



This improved performance stems from LIT's strategic and operational transition, including new recycling agreements with customers that feature upstream gate fees and a downstream MMD revenue share scheme. These agreements have led to receiving most revenue upfront, reducing exposure to MMD pricing volatility. The company's focus on large-format LIB collections, the CAPS plant implementation and battery shredder upgrade to improve MMD recovery and processing throughput have also contributed to its success.

LIT is focused on large-format LIB collections and anticipates sustained growth in large-format LIB collection volumes, supported by exclusive recycling agreements with leading OEMs such as LG Energy Solution, Hyundai Glovis and Volvo. The company expects to further accelerate LIB collection growth by signing new recycling agreements with leading OEMs to accelerate battery collection volumes and delivering operational efficiencies in FY2025 and beyond. Higher average revenue unit rates, effective cost management and increasing volumes under exclusive recycling agreements support a sustainable recycling economic model.

Exhibit 6: Battery Collection Volume (Tonnes) ^{xvii}



Future strategy

LIT has successfully collected over 1,500 tonnes of batteries in FY2024. With an anticipated 20% annual growth in LIB waste until 2036^{xviii}, the company is strategically positioned to capitalize on this significant opportunity.

- **Build phase (1 year)** – LIT plans to enhance its collection efforts by focusing on large-format LIBs, optimizing current customer contracts and securing new recycling agreements with leading EV and ESS manufacturers. These initiatives have the potential to grow the company’s operating cash flows. Additionally, LIT aims to secure strategic partnerships and financing to support its capacity expansion.
- **Growth Phase (2-3 years)** – LIT’s growth strategy involves scaling its collection and processing capabilities. This includes developing a centralized facility in Victoria to increase battery processing capacity in line with growing collection volumes. The company also plans to establish a national "spoke" network for battery collection and storage while exploring international expansion opportunities.

2.2.2 Lithium Chemicals

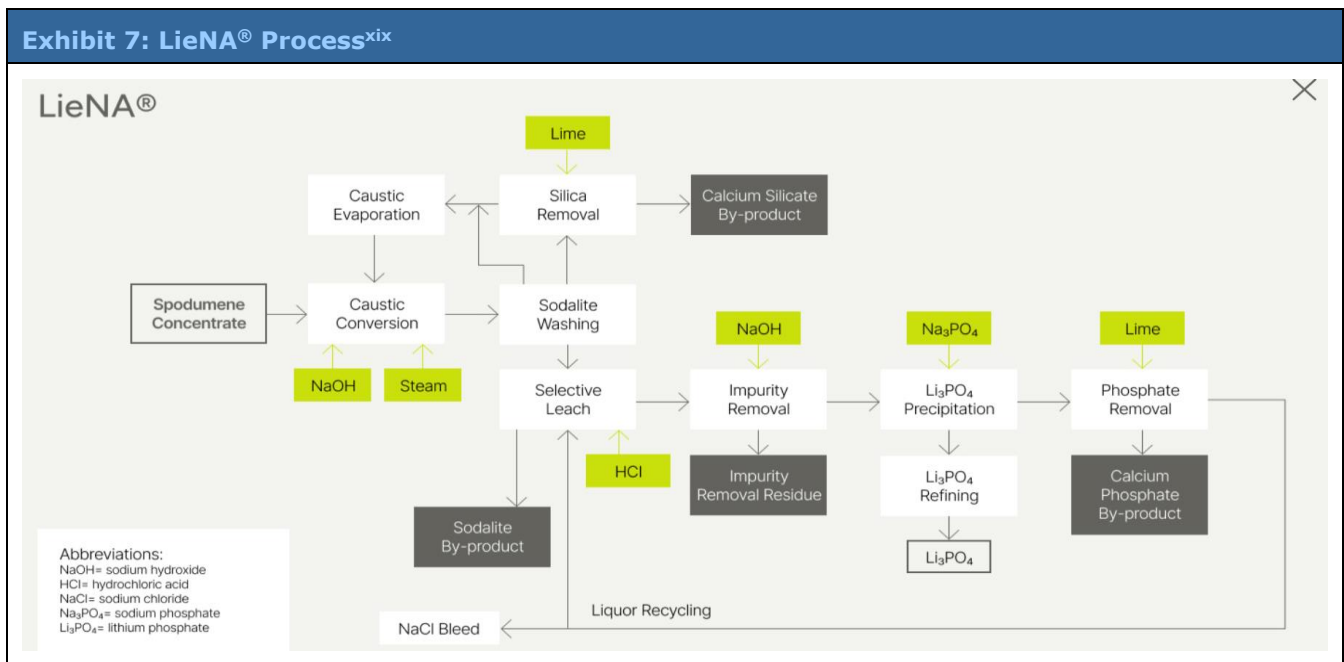
Overview

LIT has pioneered innovative extraction and refining technologies aimed at recovering lithium chemicals from underutilized fine and low-grade lithium minerals and concentrators. One of its key developments is the SiLeach® process, specifically designed to recover lithium from micas. However, the company has further advanced its technology with the development of LieNA®, which focuses on processing unused fine and low-grade spodumene. LieNA® yields higher levels of lithium output, leading to its prioritization over SiLeach®. The technologies have been developed through a long-term collaboration with ANSTO.

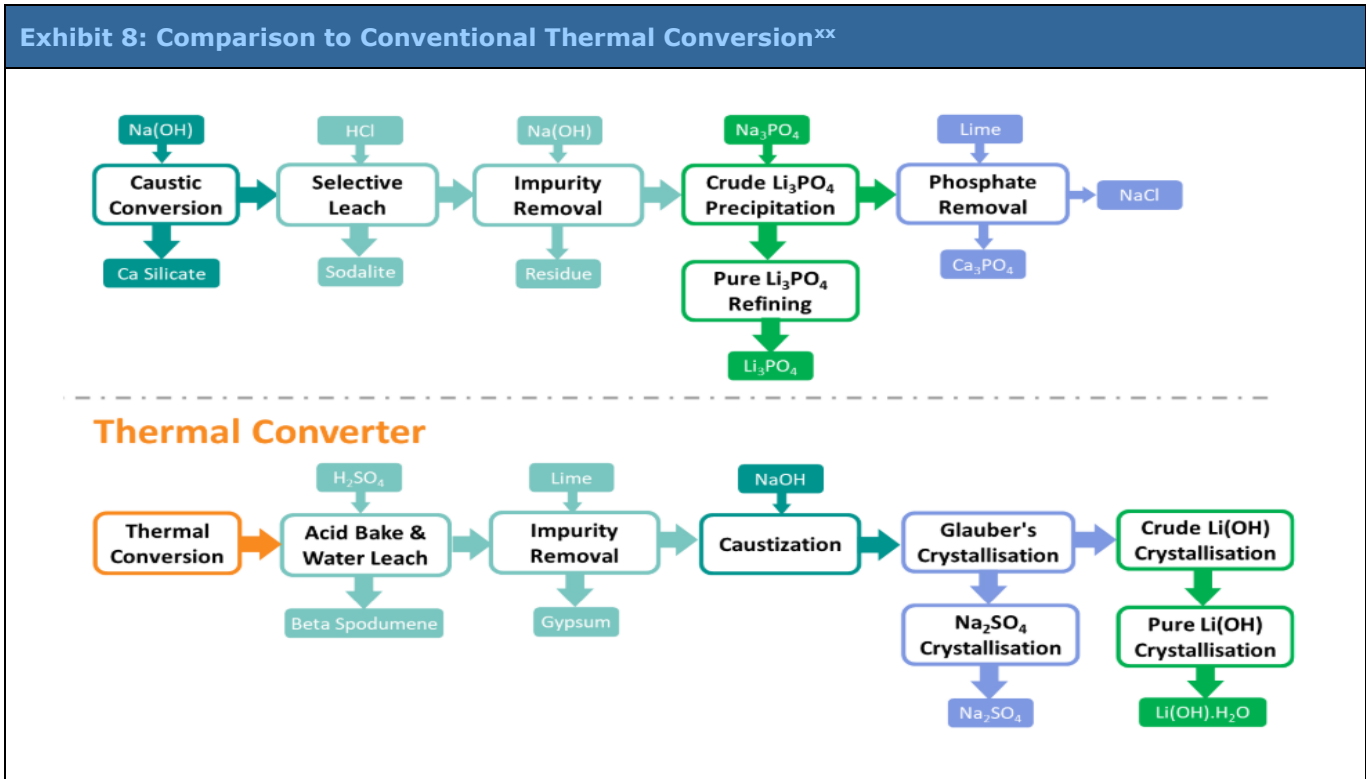
LieNA® Process

The company’s proprietary LieNA® process is engineered for low-energy lithium minerals processing. This innovative approach aims to supply the battery industry with essential chemicals produced ethically and sustainably. By extending the resource life of existing mining operations, LieNA® has the potential to improve its viability.

Conventional mineral processing of spodumene (the primary lithium mineral concentrated from hard-rock operations) involves comminution, separation of heavy media and flotation. Although this type of physical processing is simple, spodumene recovery is low, ranging from 50% to 75% at the mineral concentrator. To address that low rate of recovery, LIT in collaboration with ANSTO in Sydney, New South Wales has developed LieNA®. The process eliminates the need for high-temperature conversion of spodumene (~1,000°C or α to β conversion). Fine spodumene reacts with caustic soda in an autoclave to form lithium sodalite, from which lithium can be readily recovered via selective leaching in weak acid. This process has the potential to increase the lithium recovery of spodumene mineral-concentrate producers significantly. This has a lithium extraction efficiency of 50%, taking the average hard rock spodumene mines from ~60% yield to ~90%.



The LieNA[®] process presents distinct advantages over traditional thermal conversion methods for lithium extraction:

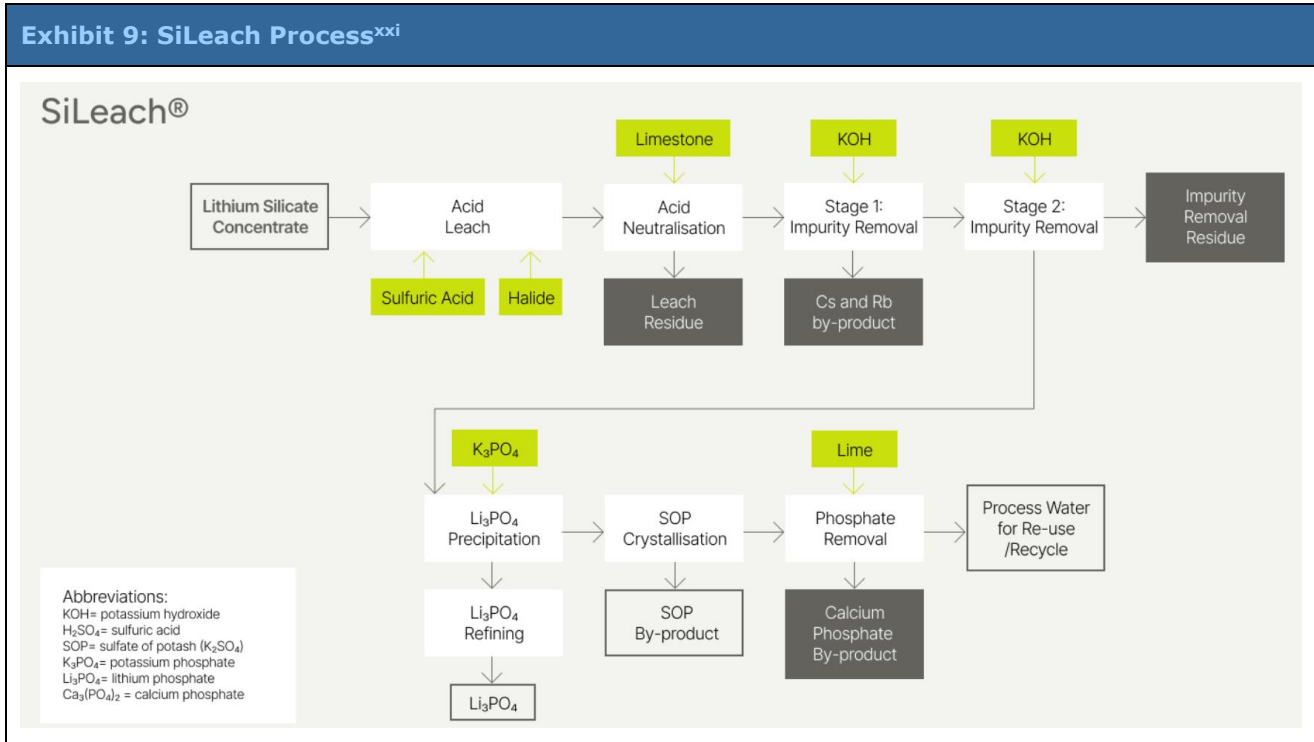


- It replaces the conventional alpha-to-beta thermal conversion with a phase change using caustic, making it a disruptive innovation in lithium extraction processes.
- It has been technically tested across a range of grades, including those lower than what current thermal converters can effectively process. This demonstrates its versatility and effectiveness in handling varying ore grades.
- It has the potential to regenerate its key reagents, which can lead to cost savings and a more sustainable extraction process.

Overall, the LieNA[®] process significantly advances lithium extraction technology, offering improved efficiency, flexibility and sustainability compared to conventional thermal conversion methods.

SiLeach[®] Process

SiLeach[®] efficiently processes lithium mica minerals, recovering valuable metals with low energy consumption and high recoveries. SiLeach[®] offers extensive by-product optionality, potentially becoming the benchmark for extracting lithium from mica minerals.



Pathway to Commercialization

In August 2023, LIT signed a JDA with MinRes to commercialize the lithium extraction technology, LieNA[®]. MinRes, a leading ASX-listed mining company with a growing portfolio of mining operations across multiple commodities, including lithium and iron ore, provided raw materials for the extraction process and fund the development and operation of a pilot plant, as well as an engineering study for a demonstration plant, with a total budgeted cost of AUD 4.5 mn. LIT contributed its patented LieNA[®] technology.

Progress on the JV has been promising, with around AUD 4.2 mn drawn from the AUD 4.5 mn convertible note to support piloting and study activities. The engineering study for the demonstration plant, managed by Carnac Project Delivery Services, is progressing according to schedule. The company has successfully completed the LieNA[®] piloting phase with MinRes at ANSTO, achieving lithium phosphate production from spodumene concentrate. This product is now being analysed, and the analysis is expected to be completed by the end of 2024. In addition, the engineering study and layout development are largely complete, with cost estimation activities well progressed.

Upon successful completion of the pilot plant operations and engineering study, a new 50:50 JV will be formed between MinRes and LIT. This JV will own and commercialize the LieNA[®] technology through a licensing model, targeting a headline gross product royalty rate of 8% for third-party licenses. This royalty model significantly expands LIT’s market potential, allowing it to capture fees on all tonnage processed using the LieNA[®] technology.

The JV plans to initially license the LieNA[®] technology to a larger demonstration plant, which MinRes can independently fund, develop and operate. The license will apply to current and future projects of MinRes, with royalties payable by MinRes at a discount to the headline rate due to its first-mover position.

Future strategy

LIT will focus on managing key piloting and engineering studies by the end of CY2024. These activities are crucial for refining its lithium extraction technology and ensuring its viability on a larger scale. Once these activities are completed, LIT and MinRes plan to form a 50:50 JV. This will be a significant step forward, combining LIT’s innovative technology with MinRes’s resources and mining and mineral processing expertise. The JV will also issue the first license to MinRes for the operation of a demonstration plant showcasing LIT’s technology. This plant will serve as a model for future commercial-scale operations and will help attract other potential partners and investors.

Looking ahead, the primary goal for LIT and MinRes is to prove the viability of their technology at a commercial scale. This will be achieved through the successful operation of the demonstration plant by MinRes. The plant will demonstrate

the efficient lithium extraction from MinRes operations. Once the technology is proven at a commercial scale, the JV plans to issue multiple licenses to other brownfield and greenfield mines. These licenses will allow other mining companies to adopt the LiENA[®] technology, further expanding its reach and impact in the industry. Each single license can generate up to USD 21 mn (AUD 31 mn) annually.

2.2.3 Battery Materials

Overview

VSPC Pty Limited, a fully owned subsidiary of LIT acquired in 2017, has over 20 years of experience in developing nanotechnology with nearly a decade spend on developing LFP, a crucial cathode active material used in battery manufacturing. The company has a rich history of researching, developing, and patenting processes for high-purity, nano-scale materials. VSPC's innovative work extends to developing materials for e-mobility, energy storage applications and contributing to the advancement of a zero-carbon economy.

VSPC's patents cover the production of cutting-edge powders for next-generation lithium-ion batteries, with a significant emphasis on LFP. VSPC employs a proprietary and cost-competitive production process to manufacture LFP at scale, allowing it to produce LMFP without significant process changes. LMFP batteries produced using this method can achieve an energy density 15% to 20% higher than that of LFP batteries, while maintaining a comparable cost profile for material inputs. The company operates a research and development facility in Brisbane. This facility is equipped with an integrated, laboratory-scale battery production and testing facility, enabling comprehensive testing and development of its materials. The facility has the capacity to produce 2 tpa of material with 8 employees.

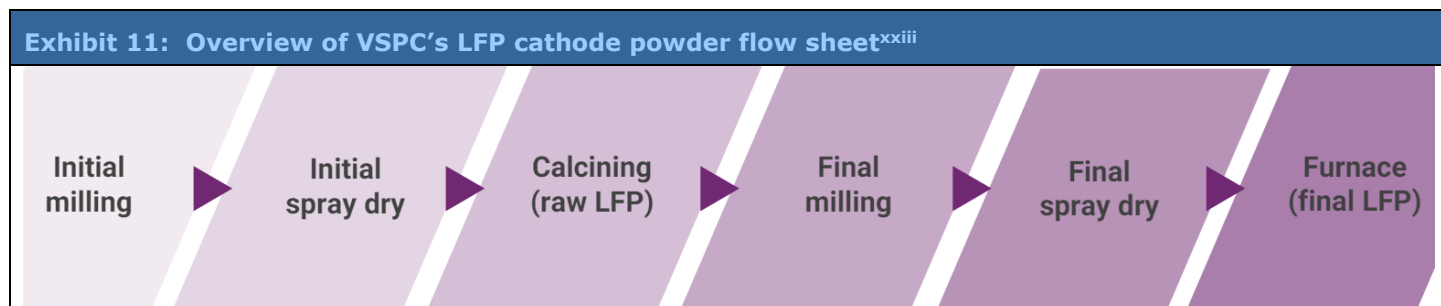
Exhibit 10: VSPC's pilot plant in Brisbane, Queensland^{xxii}



LFP Production Process

LIT utilizes a proprietary and cost-competitive production process to manufacture LFP at scale. This innovative process begins with sourcing high-quality raw materials, including lithium salt, iron and phosphate compounds, chosen for their purity and compatibility with the production process. The raw materials are then processed using advanced chemical techniques to create nano-scale particles of LFP, with precise control over reaction conditions to ensure uniformity and high purity. These nanoparticles undergo calcination, a high-temperature treatment that crystallizes the particles, enhancing their structural integrity and electrochemical properties. Subsequently, the LFP particles are coated with a thin, protective layer to improve conductivity and stability, which is crucial for the performance and lifespan of the batteries. Throughout the production, rigorous quality control measures are implemented to test each batch for purity, particle size distribution and electrochemical performance, ensuring they meet industry standards.

The optimized process flow minimizes production costs by efficiently using raw materials and energy, while the process's scalability allows for increased production capacity without significant changes. Additionally, the production process is environmentally friendly, generating minimal wastewater and solid waste and employing energy-efficient techniques to reduce the carbon footprint. This proprietary process enhances the safety and longevity of LFP batteries but also enables the production of LMFP with higher energy density, positioning LIT as a leading and sustainable supplier in the battery materials market.



Product Validation

In April 2023, LFP produced by VSPC Pty Ltd underwent independent assessment at NOVONIX Battery Technology Solutions Inc (NOVONIX). NOVONIX is renowned for manufacturing highly precise lithium-ion battery cell testing equipment and is a leader in battery materials R&D services. The testing was part of a customer joint materials selection program designed to independently validate the quality of VSPC's LFP to support the development of offtake agreements.

In September 2023, independent testing had confirmed that the LFP cathode material produced by LIT was of high quality, either matching or exceeding competitor products in capacity, stability and high-temperature performance. The testing compared LIT's LFP with other commercially available products, finding it to be the most stable among all tested samples. This stability supports the potential for long-lifetime cell designs.

Key findings from the testing included:

- Retention of the highest capacity at fast charging rates compared to market leaders.
- Superior stability among all tested samples, emphasizing safety and suitability for commercial-grade energy cell designs.
- Cycle life performance on par with market-leading products in ambient (22°C) and high-temperature (40°C) environments, indicating the product's resilience and suitability for hot climate markets such as India.

The results validate LIT as a capable manufacturer that can produce LFP at a competitive cost, which is highly valuable for ongoing discussions with potential partners. These positive results position the company's LFP as an attractive alternative to existing LFP supplies sourced from China. This diversification reduces the risk of political disruptions and over-reliance on a single geographic source. LIT is in discussions with multiple parties across North America, Europe, India, South Korea and Japan regarding potential partnerships for LFP offtake and development. The validation of its product serves as a robust negotiation tool. In Q1 FY2025, Livium's LFP development technology was granted a patent certificate in Chile, further validating the company's unique manufacturing process. The patent has an effective period of 20 years from the application date and will expire in 2041.

The company also reported significant advancements in its LMFP product in 2023, including increased manganese content and improved cycling stability. These improvements support higher energy density in the LMFP product compared to LFP, with substantial opportunities for further enhancement. The company's ability to switch production between LFP and LMFP is a strategic advantage, as evidenced by the increased demand for LMFP samples from the battery industry.

Overall, the strong validation results for Livium's LFP cathode material underscore the company's technological capabilities and competitive positioning in the battery materials market, facilitating ongoing commercial negotiations and potential partnerships.

Feasibility studies

LIT, through its subsidiary VSPC, has undertaken several studies, including a Pre-Feasibility Study (PFS) for a 10,000 tpa commercial facility in 2021 and an engineering study for a product qualification pilot plant (PQPP) in 2022, the latter

in collaboration with engineering firm Lycopodium. These PFS were conducted to evaluate the feasibility of establishing a commercial-scale LFP manufacturing facility.

The LFP PQPP has a planned production capacity of 200-300 tpa, however, due to robust industry demand, the company is considering developing a larger semi-commercial plant with a capacity of 5,000 tpa.

This decision was driven by increasing demand for LIT's products. Potential large-scale customers from various locations have requested cathode material samples for assessment. These customers are conducting tests to evaluate the cathode materials' quality, performance and suitability for their specific battery applications.

The successful completion of these tests could lead to deeper and more substantial partnerships with these potential customers. This expansion and potential partnership signify a significant step forward for LIT and VSPC in developing and commercializing their LFP technology, positioning them well in the rapidly growing battery materials market.

The facility aims to secure binding LFP/LMFP offtake agreements through a stringent qualification process. Once obtained, an initial commercial production facility is planned, expected to cost from USD 150 mn to USD 200 mn. The company intends to fund this through government debt funding and private capital.

In Q1 FY2025, LIT commissioned a new jet mill and rotary kiln to assist in the synthesis of next-generation cathode materials, including LFP and LMFP. This jet mill and rotary kiln, upgrades prior equipment to be in line with the intended commercial scale equipment and will support ongoing production of samples for customer assessment and qualification.

Pathway to commercialization

The company has provided samples to over 20 global customers with client base continuing to grow and is targeting 100 KT of material in the market by 2030. Few agreements have been signed to progress towards commercialization.



- **Agreement with First Phosphate:** In 2023, LIT signed an agreement with First Phosphate Corp. (CSE: PHOS) to potentially develop an LFP/LMFP cathode active material manufacturing plant in North America. First Phosphate is a mineral development company focused on extracting and refining phosphate to produce cathode-active material for the lithium iron phosphate battery industry. It has also made progress in business development activities, exploring opportunities to collaborate with joint development partners for commercialization.
- **MOU with Centrex:** In April 2024, Livium signed an MOU with Agriflex Pty Limited (a subsidiary of Centrex Limited), a prominent phosphate concentrate producer, marking a significant step in the company's efforts to commercialize its LFP and LMFP technologies. This MOU underscores LIT's commitment to establishing a domestic battery supply chain in Australia, offering global battery manufacturers an alternative source for LFP and LMFP. The plan outlined in the MOU includes the construction of a demonstration plant in Queensland with an estimated capacity of 250 tonnes per annum of LFP or LMFP, requiring approximately 200-300 tonnes per annum of phosphoric acid. Upon successful operation and pre-qualification of the cathode powders, LIT intends to build a commercial plant with an estimated capacity of around 25,000 tpa of LFP or LMFP, requiring approx. 20,000-25,000tpa of phosphoric acid. The company plans to align future expansions of the commercial plant's capacity with market demands. Agriflex and LIT will collaborate to establish a conditional binding offtake agreement for phosphate, with LIT providing technical input and testing phosphate samples from Agriflex to determine their suitability for producing LFP and LMFP. Agriflex, in turn, will conduct a study to produce phosphoric acid in Queensland and provide specifications for the phosphate product to LIT.

Future Roadmap

Global demand for LFP batteries is rising rapidly. In 2022, LFP batteries held around 30% market share^{xxiv}, with projections indicating growth to 48% by 2033. LIT is well positioned to capitalize on this opportunity, having provided samples to over 20 potential customers.

- In the short to medium term, LIT will focus on securing offtake agreements with potential customers. The company plans to develop and operate an LFP demonstration plant with a capacity of ~250 tpa domestically or aims to secure an international strategic partner for an offshore semi-commercial facility with a capacity of 5,000 tpa.
- Over the long term, LIT focuses on developing and operating an initial commercial-scale plant with a production capacity of approximately 25,000 tpa. With an LFP price of around USD 12.75/kg, this plant will generate annual revenue of up to USD 319 mn (AUD 471 mn). The company further aims to scale up production to over 100,000 tpa of LFP/LMFP.

Exhibit 12: LFP commercialization pathway^{xxv}

	Completed	Short to medium-term	Long-term
 Government Partnership	<ul style="list-style-type: none"> ✓ Pilot plant operational and producing ~1-2 tpa of LFP ✓ LFP product independently validated by NOVONIX 	<ul style="list-style-type: none"> • Secure government funding for Australian demonstration plant • Secure LFP off-take agreements • Development and operation of LFP demonstration plant to produce ~250 tpa 	<ul style="list-style-type: none"> • Development and operation of initial commercial scale plant to produce ~25,000 tpa • Scale up to achieve more than 100,000 tpa of LFP / LMFP³ production over the long-term
 International Strategic Partner	<ul style="list-style-type: none"> ✓ Progressed partnership discussions, as demonstrated by MOU's with First Phosphate¹ and Centrex² 	<ul style="list-style-type: none"> • Secure international strategic partner for offshore semi-commercial facility • Secure LFP off-take agreements • Development and operation of LFP semi-commercial plant to produce ~5k tpa 	

2.4 Milestones

Exhibit 13: Company Milestones	
Year/Period	Events
2007-2015	<ul style="list-style-type: none"> • Cobre Montana NL was founded • Listed on the Australian Securities Exchange as CXB • The company changed its name from Cobre Montana NL to Lithium Australia NL • Changed its ticker from ASX: CXB to ASX: LIT
2016	<ul style="list-style-type: none"> • Raised AUD 6.55 mn through the private placement and AUD 1.96 mn via Share Purchase Plan • Developed Sileach process for the recovery of lithium from spodumene • Pilot testing of Sileach at Lepidolite Hill lithium micas to progress toward commercialization • Received Innovations Connections Grant under the Entrepreneur’s Program run by the Department of Industry and Science for the Sileach process • Received a grant of AUD 195,632 from the Western Australia government for Sileach technology • Acquired 100% stake in Greenbushes Project, which abuts the Talison Lithium-owned mine
2017	<ul style="list-style-type: none"> • Acquired 75% of stake in Brisbane battery cathode developer – VSPC • VSPC product performed well compared to the laboratory standard reference material as tested by an independent laboratory
2018	<ul style="list-style-type: none"> • Secured AUD 18.27 mn convertible note facility with Arena Investors LP • Acquired 25% remaining stake in VSPC • LFP battery cathode material produced on the VSPC pilot production facility • Developed advanced anode materials for lithium-ion batteries
2019	<ul style="list-style-type: none"> • Acquired 90% stake in the recycling company – Envirostream • Formed a technology alliance with DLG Battery Co. Ltd to commercialize VSPC-patented cathode powders for use in DLG batteries • Raised AUD 6.5 mn via renounceable rights issue offered on a 1 to 6 basis at AUD 0.06 per share • First production of MMD from a recycling plant in Melbourne • Signed MMD offtake deal with SungEel Hitech • Secured AUD 6.3 mn funding agreement from Lind Partners • A 50:50 joint venture with DLG, operating as Soluna Australia Pty Ltd, to market lithium-ion batteries and Soluna energy storage products
2020	<ul style="list-style-type: none"> • VSPC Ltd signed an agreement with Beijing Saideli Technology Incorporated Company Ltd to commercialize VSPC cathode material • VSPC Ltd has received a co-funded grant of AUD 185,000 from the Advanced Manufacturing Growth Centre • Patent granted for LieNA® technology for 20 years • Received a grant of AUD 8.6 mn from the federal government • Received a grant funding of AUD 201,399 from Sustainability Victoria • Raised AUD 4 mn via private placement and raised AUD 4.5 mn via a share purchase plan to fund revenue growth • Signed recycling agreements with two batteries suppliers • Appointed Ms. Kristie Young as an Independent Non-Executive Director
2021	<ul style="list-style-type: none"> • Sold 80% of the Greenbushes South Lithium Project to Galan Lithium • VSPC Ltd process patent approved by the European Patent Office

Exhibit 13: Company Milestones	
Year/ Period	Events
	<ul style="list-style-type: none"> • SiLeach® patent approved by US Patent and Trademark Office • Initiated pilot testing for its LieNA® spodumene conversion process • Positive Pre-feasibility study indicated high-value potential of LFP battery materials • Livium retained a 30% interest in the exploration projects and became the major shareholder in Charger • Appointed Mr. Phil Thick as an Independent Non-Executive Director • Appointed Stuart Tarrant as CFO • Raised AUD 1.77 mn via issuing shares to Acuity Capital • Appointed Ms. Merrill Gray to the VSPC board • EPA Victoria issued Envirostream Australia with a 99-year operating license for battery recycling • Envirostream has extended its operations in Victoria by acquiring a larger site in Laverton
2022	<ul style="list-style-type: none"> • Acquired the remaining 10% stake in Envirostream, making it a fully-owned subsidiary • Mr. Adrain Griffin retired as LIT managing director • Envirostream signed an agreement with Battery World, adding over 100 collection sites nationally • Appointed Simon Linge as CEO • Envirostream signed an agreement with LG Energy Solution to recycle significant lithium-ion battery volumes • Raised AUD 12.1 mn via private placement • Reclassified ASX listing classification from a mining entity to a materials entity
2023	<ul style="list-style-type: none"> • VSPC’s cathode material independently tested by NOVONIX Battery Technology Solutions validated high-quality product • Received AUD 150,000 by selling a 70% stake in the Lake Johnston Lithium Project • Launched Unmarketable Parcel Sale Facility • Simon Linge promoted to Managing Director • Signed joint development agreement with Mineral Resources to fund development of pilot plant up to AUD 4.5 mn in return for LiENA® technology • Withdrew AUD 0.9 mn from convertible note issued by Mineral Resources • Signed MOU with First Phosphate regarding the development of LFP manufacturing
2024	<ul style="list-style-type: none"> • Received AUD 1.8 mn in R&D tax incentives rebate • Drew AUD 3.3 mn from a convertible note issued by Mineral Resources • Commenced LieNA® piloting with Mineral Resource Limited • Entered sales and purchase contract with SungEel to facilitate MMD sales • Signed a 3-year agreement with LG Energy Solution and Hyundai Glovis to provide battery recycling services • Signed a 3-year agreement with Volvo Group to recycle batteries from its buses • Signed an MOU with Centrex Limited to commercialize its LFP and LMFP technologies • Received AUD 2.0 mn from the sale of a stake in the Lake Johnston Lithium Project • Signed a 3-year MMD off-take agreement with SungEel to supply 60% of LIT annual production and progressing well towards Joint Development Agreement • Recycling operations achieved operating cash profit of AUD 0.52 mn in Q4 2024 • Raised initial investment of ~AUD 1.8 mn from The Lind Partners, with potential total funding of up to AUD 7.5 mn

Exhibit 13: Company Milestones

Year/ Period	Events
	<ul style="list-style-type: none"> In July 2024, LIT launched a SPP at AUD 0.021/sh for eligible shareholders to subscribe up to AUD 30,000 worth of new shares. The fund will be utilized for operational improvements in the battery recycling division and business development activities within the battery materials division In Q1 2025, LIT signed 3-year agreement exclusive battery recycling agreements with BYD Auto and Infinitev. Sold its remaining 7.6 mn shares in Charger Metals NL (ASX:CHR) to Core Lithium Ltd (ASX:CXO), receiving 0.8 CXO shares for each CHR share. Additionally, Livium has sold its 30% stake in the Bynoe Lithium Project to Core Lithium for AUD 500,000, pending Charger's pre-emptive rights. Raised AUD 952,625 through the SPP. The company changed its name from Lithium Australia Limited to Livium Ltd.

2.5 Company Premium^{xxvi}

- Leading Australia's Battery Recycling Industry:** LIT stands as Australia's foremost battery recycler, processing LIBs domestically. By securing recycling agreements with Tier 1 EV and ESS manufacturers such as LG Energy Solutions, Volvo and Hyundai Glovis, LIT ensures a stable supply of end-of-life LIBs. Only 10% of Australia's end-of-life LIBs are recycled, with the remainder disposed of in landfills. The volume of LIB waste is growing at 20% annually and is projected to exceed 136,000 tons by 2036, positioning LIT favorably for substantial growth in the future.
- High Entry Barriers:** The company holds patents for lithium extraction technology – LieNA[®] and a proprietary materials production process capable of producing high-quality LFP/LMFP. These patented innovations represent substantial entry barriers, owing to their extensive development over many years and novel technological nature. LIT via VSPC has invested AUD 50 mn in collaborative R&D to achieve this goal. Additionally, the company recycling facility has established operations with high barriers to entry via rigorous compliance standards, which require investment in safety as LIBs have fire hazards.
- Significant Upside by Commercializing LieNA[®]:** The company possesses a patented lithium extraction technology – LieNA[®]. LIT has completed the final stage of LieNA[®] piloting in collaboration with MinRes to produce a lithium phosphate product. Upon successful analysis of the product, LIT and MinRes plan to form a 50:50 JV to commercialize the LieNA[®] technology through a licensing model. The JV aims to license the technology to third parties with a target headline gross product royalty rate of 8%. Following this initial license, the JV anticipates issuing licenses to both greenfield and brownfield spodumene mines worldwide. Each license can generate up to USD 21 mn annually, providing substantial upside.
- Capitalizing on growing demand of LFP batteries:** LFP batteries are rapidly gaining traction among EV and ESS manufacturers due to their superior chemistry. However, with over 95% of LFP production controlled by China, there is a significant geopolitical supply chain risk for global EV manufacturers. LIT stands out as one of the few developers outside China with patented technology that delivers high-quality LFP products. The company boasts a proprietary production process, honed over 10+ years, that is ready for large-scale, competitive LFP manufacturing. LIT is strategically positioned to capitalize on the increasing LFP demand outside of China.

2.6 Company Risks^{xxvii}

- Funding risk:** As the company progresses with the development of its technologies and commercialization of its business, securing additional funding is essential. The company plans to seek funding from both government sources and private equity. Any delay in obtaining the necessary funds could result in setbacks in the commercialization timeline.
- Commercialization risk:** The LieNA[®] technology has undergone testing at a mini-plant scale. However, there exists a potential risk associated with its commercialization at scale. This includes uncertainties regarding technical feasibility, performance according to design specifications, economic viability, reliability, timely development and the ability to generate a marketable product.

- **Regulatory Risk:** LIT may face increased operational costs due to the necessity of complying with stringent waste management, emissions and recycling standards. Additionally, shifts in government policies regarding battery recycling and disposal could disrupt LIT’s business model. New laws could introduce more stringent requirements or modify existing recycling incentives, affecting the company’s operational and financial landscape.
- **Key Personnel Risk:** The company depends on the experience, skills and knowledge of its senior management and key employees to implement its growth strategy. The loss of any of them, or the inability to recruit relevant staff, could lead to disruption and adversely affect the business, cash flows, financial condition, and LIT performance results.

2.7 Shareholding Pattern^{xxviii}

The Company had 1,240,341,672 shares of common stock issued and outstanding on August 05, 2024. The shareholding pattern is as follows:

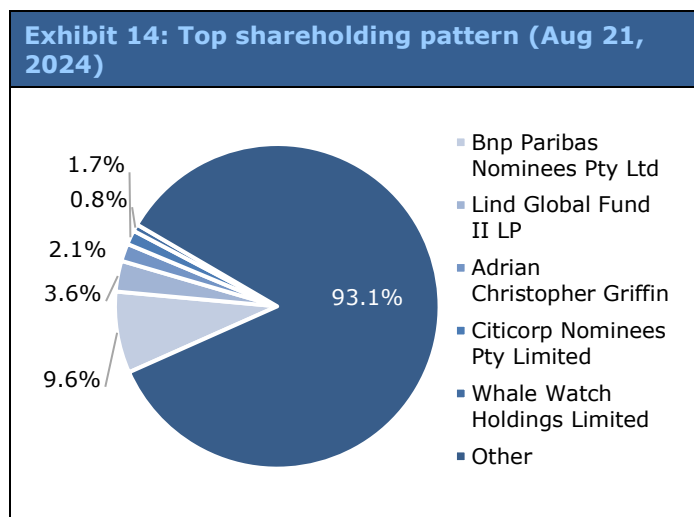


Exhibit 15: Top shareholding pattern (Aug 21, 2024)

Shareholders	Shares outstanding
Bnp Paribas Nominees Pty Ltd	118,682,047
Lind Global Fund II LP	44,750,000
Adrian Christopher Griffin	25,740,461
Citicorp Nominees Pty Limited	20,734,523
Whale Watch Holdings Limited	10,268,928
Other	1,020,165,713
Total	1,240,341,672

2.8 Listing and Contact Details

Livium is publicly listed on the Australian Stock Exchange (ASX) and is traded under the symbol 'LIT'.

Company Contacts

Home Office

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 Website: www.lithium-au.com
 Email Id: info@lithium-au.com

3. News^{xxix}

- **Change of Company Name:** On October 30, 2024, the company changed its name from Lithium Australia Limited to Livium Ltd.
- **Signed Battery Recycling Agreement with Infinitev:** On October 9, 2024, LIT signed an exclusive recycling agreement with Infinitev, a provider of repurposed EV1 batteries and a subsidiary of Amotiv Limited (ASX:AOV). The agreement has an initial 3-year term with an optional term of 1-year and will allow LIT to provide battery recycling services in Australia for lithium and nickel-based batteries.
- **Sold Charger Metals shares and interest in the Bynoe Lithium Project to Core Lithium (ASX:CXO):** On September 9, 2024, Livium agreed to sell its remaining 7.6 mn shares in Charger Metals NL (ASX:CHR) to Core Lithium Ltd (ASX:CXO), receiving 0.8 CXO shares for each CHR share. This transaction represents a consideration of AUD 541,000 (Initial Valuation), based on CXO's 5-day volume weighted average trading price (VWAP) as of 6 September 2024. This transaction also includes a Control Event clause, which allows LIT to capture any upside from a potential qualifying takeover event for Charger Metals in the next 9 months. Additionally, Livium has sold its 30% stake in the Bynoe Lithium Project to Core Lithium for AUD 500,000, pending Charger's pre-emptive rights.
- **Signed exclusive battery recycling agreement with BYD Auto:** On September 4, 2024, LIT signed an exclusive agreement with BYD Auto Industry Company Limited, one of the largest electric vehicle manufacturers, to recycle their end-of-life lithium iron-phosphate batteries. The contract has a 3-year initial term with a 2-year extension option. Under the Agreement, Livium will receive a service fee for the collection of BYD Auto's end-of-life LFP batteries.
- **Secured AUD 1.8 mn The Lind Partners from and launched SPP:** On July 22, 2024, LIT signed two agreements with The Lind Partners securing initial investment of ~AUD 1.8 mn, with potential total funding of up to AUD 7.5 mn. Additionally, the company has launched a SPP at AUD 0.021/sh, representing an 8.7% discount to the 5-day VWAP. Eligible shareholders can apply for up to AUD 30,000 worth of new shares. The funds raised will be allocated to accelerate operational improvements in the battery recycling division and support business development activities within the battery materials division.
- **Recycling operations achieved positive operating cash profit:** On July 11, 2024, Livium achieved a significant milestone by generating an operating cash profit of AUD 0.52 mn in Q4 2024. In Q4 2024, the company achieved collection volumes of 445 tonnes, generating revenue of AUD 2.50 mn and gross profit of AUD 1.56 mn. The company's strategic shift toward an upstream-focused operational model is aimed at increasing 'fee for service' as a proportion of the recycling revenue mix while also reducing exposure to market and pricing volatility related to the sales of MMD and other commodities.
- **Update on LieNA[®] piloting with MinRes:** On June 27, 2024, Livium completed the initial stage of LieNA[®] piloting with MinRes at ANSTO to produce an intermediate product from spodumene concentrate provided by MinRes. The intermediate product was used as a key input in the final LieNA[®] pilot plant at ANSTO to produce lithium phosphate, which commenced in late June 2024.
- **Signed MMD off-take agreement with SungEel:** On June 13, 2024, the company signed a new 3-year MMD off-take agreement with SungEel, a prominent South Korean battery recycler. Effective July 1, 2024, this agreement stipulates that SungEel would purchase at least 60% of LIT's annual MMD production, provided that the quality requirements are met.
- **Signed exclusive recycling agreement with Volvo Group Australia:** On June 5, 2024, Envirostream entered into an agreement with the buses business arm of Volvo Group Australia to recycle end-of-life batteries from its fleet of electric and hybrid buses. This exclusive recycling agreement between LIT and Volvo was for an initial term of 3 years, during which LIT would be the sole provider of battery recycling services to Volvo for its electric and hybrid buses in Australia.
- **Claim to be managed by Envirostream's insurance company:** On May 8, 2024, Envirostream's insurance company has settled claims worth AUD 1.7 mn for the fire caused at 31 Colbert Road, Campbellfield, Victoria in January 2019. The Company has now received a writ regarding a statement of claim valued at AUD 4.1 mn.
- **MOU with Centrex Ltd:** On April 16, 2024, LIT Ltd signed a non-binding MoU with Agriflex Pty Limited, a subsidiary of Centrex Limited, aiming to commercialize its LFP and LMFP technologies. The MOU outlined a plan for a demonstration plant in Queensland with a 250tpa capacity, scaling up to a commercial plant producing 25,000tpa of LFP or LMFP. Agriflex conducted a study to produce phosphoric acid in Queensland, aligning with LIT's commitment

to establishing a domestic battery supply chain. The companies collaborated on a conditional binding offtake agreement for phosphate, with LIT providing technical input and testing phosphate samples.

- **Made third drawdown from MinRes:** On April 5, 2024, LIT drew AUD 1.3 mn from the convertible note issued by MinRes as part of their joint development agreement. The amount was used to fund ongoing activities during Q4 FY2024. Agreed activities under the agreement included piloting activities, which commenced in March 2024, as well as the demonstration plant engineering study, which was delivered by Carnac Project Delivery Services.
- **Signed a new exclusive battery recycling agreement with Hyundai Glovis:** On March 25, 2024, LIT signed an exclusive 3-year recycling agreement with Hyundai Glovis. During the initial 3-year term, ending on March 21, 2027, Envirostream became the exclusive provider of battery recycling services for all of Hyundai Glovis' batteries in Australia.
- **Commenced LieNA[®] piloting with MinRes:** On March 19, 2024, LIT commenced piloting its LieNA[®] technology. Piloting was a key activity under the Joint Development Agreement and followed the successful commissioning of equipment and receipt of raw material samples from MinRes.
- **Signed a new exclusive battery recycling agreement in Australia with LG Energy Solution:** On March 18, 2024, Envirostream signed a new exclusive three-year agreement with LG Energy Solution to provide battery recycling services for all its spent LIBs collected in Australia.
- **Signed an MOU with SungEel for MMD off-take:** On March 7, 2024, LIT entered a sale and purchase contract with SungEel to facilitate MMD sales. The MOU between LIT and SungEel was intended to progress discussions on MMD off-take, with an off-take agreement expected to be completed by June 30, 2024.
- **Issued shares:** On February 28, 2024, the company issued 100,000 ordinary shares.
- **Received R&D Tax incentive rebates:** On February 1, 2024, the company received total R&D tax incentive rebates totaling AUD 1.8 mn from the Australian Tax Office for the FY2023, of which AUD 1.2 mn was received on February 1, 2024.
- **Second drawdown from MinRes and appointment of lead engineer:** On January 15, 2024, LIT successfully drew down a further AUD 0.8 mn of the AUD 4.5 mn convertible note issued by MinRes. The company appointed Carnac Project Delivery Services Pty Ltd as the lead engineer for the demonstration plant engineering study.
- **Change in holding for Charge Metals:** On January 12, 2024, the company's voting power changed from 12.24% to 10.45% in charge metals.
- **Completed Sale of the Lake Johnston Lithium Project:** On January 11, 2024, the company sold its remaining 30% interest in the Lake Johnston Lithium Project to Charger Metals NL. The sale resulted in a total cash consideration of AUD 2 mn, consisting of an initial AUD 0.15 mn nonrefundable exclusivity payment and the balance of AUD 1.85 mn received on completion.
- **Signed binding agreement for the sale of the Lake Johnston Lithium Project:** On November 20, 2023, the company signed a binding agreement with Charger Metals NL for the sale of Livium's remaining interest in the Lake Johnston Lithium Project.
- **First drawdown from MinRes's convertible note:** On October 30, 2023, the company drew initial funding from the AUD 4.5 mn convertible note issued by MinRes.
- **Final testing conducted for LFP cathode material:** On September 22, 2023, Independent testing conducted by NOVONIX of its LFP cathode material confirmed the product to be of high quality, either matching or exceeding the competitor set across capacity, stability and high-temperature performance.
- **Issued shares:** On August 24, 2023, the company issued 1,000,000 ordinary shares upon conversion of performance rights.
- **Simon Linge promoted to Managing Director:** On August 21, 2023, Simon Linge was promoted from CEO to the company's board, in addition to his ongoing role as CEO.
- **Signed a landmark joint development agreement with MinRes:** On August 7, 2023, MinRes agreed to solely fund the development and operation of a pilot plant up to the total budgeted cost of AUD 4.5 mn. Additionally, MinRes will provide raw materials for the pilot plant at no cost to LIT. LIT contributed its LieNA[®] technology to the project.

- **Retained holding in the Lake Johnston Lithium Project:** On June 14, 2023, LIT retained its 30% interest in the Lake Johnston Lithium Project following Charger Metals not receiving shareholder approval to acquire the project.
- **Completed sale of Lepidolite Hill Lithium Project:** On June 7, 2023, the company completed a sale of 70% of the Lepidolite Hill Lithium Project to Eastern Resources. The company received AUD 150,000 in cash, with the final tranche of AUD 400,000 payable within 10 business days of Mining Lease M15/1874 being granted and transferred to Eastern Resources.
- **Launched Unmarketable Parcel Sale Facility:** On May 23, 2023, the company established an Unmarketable Parcel Sale Facility for shareholders who hold less than AUD 500 worth of fully paid ordinary shares.
- **VSPC's cathode material independently tested:** On April 13, 2023, VSPC's LFP was independently tested against commercially available products by leading battery research, test equipment and services company NOVONIX. VSPC supplied a sample of its energy product to test against two leading commercial brands. The results demonstrated that VSPC's LFP was the most stable of the three LFP samples tested and indicated that the combination of commercial-grade graphite and VSPC's LFP has the potential to support long-lifetime cell designs.
- **Entered into a binding agreement for the sale of the Lake Johnston Lithium Project:** On February 7, 2023, Livium and Charger Metals entered into a binding agreement with Charger Metals to acquire Livium's remaining 30% interest in the Lake Johnston Lithium Project.
- **Completed next step toward commercialization of LFP:** On December 19, 2022, VSPC Pty Ltd completed an engineering study for an LFP pre-qualification pilot plant to satisfy customer offtake requirements by increasing sample volume requirements above VSPC's current facility capacity.
- **Signed binding agreement for the sale of the Greenbushes South Lithium Project:** On December 13, 2022, LIT and Galan entered into a binding agreement, with Galan acquiring the company's 20% interest in the Greenbushes South Lithium Project. Galan issued LIT AUD 1 mn worth of fully paid ordinary shares in the capital of Galan and made a cash payment of AUD 2 mn as consideration for the sale of the Greenbushes South Lithium Project. Galan granted LIT the first right of refusal for offtake of up to 20% of Galan's share of lithium produced by the Greenbushes South Lithium Project for future commercial production of lithium ferro phosphate.
- **Transitioned ASX listing from mining to materials:** On December 12, 2022, the ASX listing classification of the Company transitioned from a "mining exploration entity" to a standard materials listing. The reclassification, which reflected the evolution in LIT's business focus from mineral exploration to recycling technologies and lithium processing over the past eight years, provided greater clarity for existing shareholders and investors on the Company's operating activities and better aligned periodic reporting requirements with underlying operations.
- **Issued Shares and Options:** On October 19, 2022, the company issued 1,538,462 ordinary shares and 139,329,261 options exercisable at AUD 0.10 and expiring on October 19, 2025.

4. Management and Governance^{xxx}

Exhibit 16: Management and governance		
Name	Position	Experience
Simon Linge	Chief Executive Officer & Managing Director	<ul style="list-style-type: none"> Over 30 years of experience in the manufacturing, logistics and infrastructure industries Worked as EGM Contract Manufacturing at Pact Group (ASX: PGH) and served as Managing Director & CEO of Bradken Limited An Advisory Board member at Connect Precision Holds a Bachelor of Economics (Hons) and has completed several executive certifications
Stuart Tarrant	Chief Financial Officer	<ul style="list-style-type: none"> More than 20 years of experience as a senior finance professional in mineral extraction, mineral exploration, finance and agribusiness Previously worked as CFO at Danakali Limited (ASX: DNK) Held roles with BHP (ASX: BHP), Leighton Contractors and Great Southern Limited
George Bauk	Non-Executive Chairman	<ul style="list-style-type: none"> More than 30 years' experience in the resource industry and over 15 years' experience as a listed Group director in Australia, primarily in the mining exploration and production within Australia and overseas Holds a Bachelor of Business (Accounting and Finance) from Edith Cowan University, is a Fellow of the CPA and holds an MBA from the University of New England Held global operational and corporate roles with WMC Resources and Western Metals Serves as Executive Director of Thunderbird Resources Limited (ASX:THB), Non-Executive Chair of PVW Resources Ltd (ASX:PVW) and Non-Executive Director of Firetail Resources Ltd (ASX:FTL) Actively involved in the Western Australian resources sector and has held several senior governing positions with the Chamber of Minerals and Energy, including Vice President
Kristie Young	Non-Executive Director	<ul style="list-style-type: none"> Over 20 years of diverse experience in engineering, project evaluation, strategy, business development, marketing and governance Held senior growth and business development director roles at PwC and EY Serves as a Non-Executive Director for: Corazon Mining Ltd (ASX:CZN), Brazilian Rare Earths Ltd (ASX:BRE) and Tasmaea Ltd (ASX:TEA) Holds a Bachelor of Engineering (Mining) with Honors from the University of Queensland and a Post Graduate Diploma of Education (Mathematics and IT) from the University of Western Australia. Also, graduated from the Australian Institute of Directors and holds a CertIV HR from the Australian HR Institute
Phil Thick	Non-Executive Director	<ul style="list-style-type: none"> Over 30 years of senior executive experience in Oil and Gas, Mining and Chemical Processing Spent 20 years with Shell in Australia and overseas, culminating in his role as Downstream Director on the Board of Shell Australia Served as a director and CEO of Coogee Chemicals and CEO of New Standard Energy Serves as a Non-Executive Director of Patriot Lithium Limited (ASX:PAT)

5. Industry Overview

5.1 LIB Market^{xxxi}

LIBs are rechargeable batteries that utilize lithium ions as their primary electrochemical component. Known for their high energy density, long cycle life, and relatively low maintenance, LIBs have become integral in a wide range of applications, from consumer electronics to EVs and renewable energy storage systems.

The adoption of LIBs has been accelerating as the global community moves towards greener fuels and targets net-zero emissions by 2050. The increasing urgency to combat climate change, driven by rising global temperatures, has significantly boosted the demand for LIBs. The electrification of the automotive sector and the broader energy transition are pivotal in reducing global pollution and potentially mitigating temperature increases.

LIBs are emerging as a critical technology in the quest to meet the global 2°C Paris Agreement target, especially in the transport and power sectors. When combined with other advanced technologies and collaborative efforts, LIBs can help set the course towards the more ambitious 1.5°C goal.

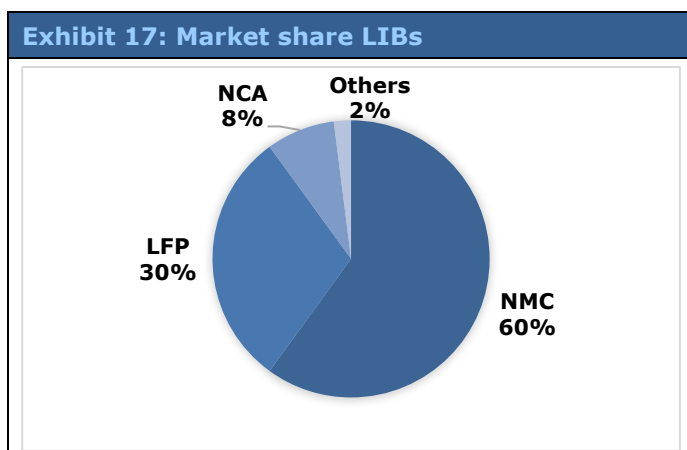
5.1.1 Different types of LIBs^{xxxii}

There are six different types of lithium batteries:

- 1. Lithium Nickel Manganese Cobalt Oxide (NMC):** NMC batteries utilize nickel-rich cathodes to enhance energy density, boosting EV range. The addition of manganese and cobalt improves thermal stability and safety, mitigating potential instability from high nickel content. NMC batteries offer superior energy density, longer lifecycles, and better thermal stability making it a popular choice for EVs.
- 2. Lithium Nickel Cobalt Aluminum Oxide (NCA):** NCA batteries also benefit from nickel's high energy density and specific power, substituting manganese with aluminum to increase stability. However, NCA technology has trade-offs: lower safety ratings compared to other lithium-ion batteries, higher production costs, and a narrower application range, primarily limited to high-performance EVs. These factors make NCA batteries less common but valuable for premium EV models where top performance is critical.
- 3. Lithium Iron Phosphate (LFP):** LFP batteries use iron and phosphate, making them more cost-effective than nickel-based alternatives. While their lower specific energy limits their use to standard or short-range EVs, LFP batteries excel in safety and longevity, making them ideal for energy storage systems.
- 4. Lithium Cobalt Oxide (LCO):** LCO batteries have high energy density but suffer from short lifespans, poor thermal stability and limited specific power. These characteristics make them best suited for low-load, long-duration applications such as smartphones and laptops rather than high-power devices.
- 5. Lithium Manganese Oxide (LMO):** LMO, or manganese spinel batteries, prioritize safety and rapid charge/discharge capabilities. In EVs, LMO is often combined with NMC to create a hybrid that balances high current output for acceleration (LMO) with extended driving range (NMC).
- 6. Lithium Titanate (LTO):** LTO batteries feature a unique anode composition of lithium and titanium oxides, offering superior safety and performance in extreme temperatures. However, their low capacity and high-cost limit widespread adoption, making them suitable only for specialized applications.

5.1.2 Market Share of LIBs^{xxxiii}

In 2022, NMC batteries maintained their dominance in the battery market with a substantial 60% market share. LFP batteries followed with nearly 30% market share, while NCA batteries held about 8%. The market dynamics, however, are expected to shift significantly in the coming years, with LFP batteries projected to capture a larger share of the market, reaching 48% by 2033. This growth will be largely driven by the preferences of Chinese OEMs. LFP batteries have gained popularity due to their cost-effectiveness compared to nickel-based alternatives, making them a highly attractive option. Known for their superior safety and longevity, LFP batteries are particularly advantageous for applications in ESS and standard-range EVs.



5.1.3 Worldwide application of LIBs^{xxxiv}

LIBs are a critical technology across various industries due to their high energy density, long cycle life, and lightweight properties. Here are the primary applications of LIBs worldwide:

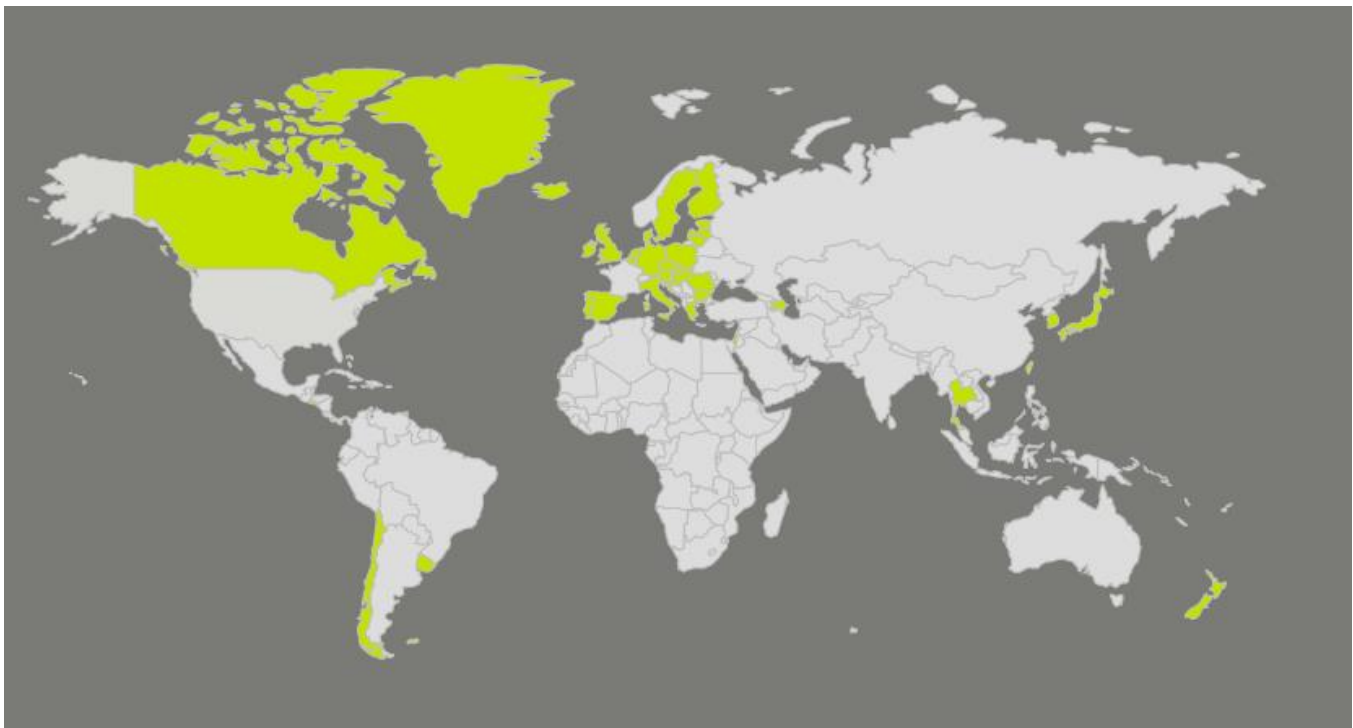
- **EVs:** The most significant and rapidly growing application of LIBs is in EVs. These batteries are used in a wide range of vehicles, including electric cars, buses, bikes, and scooters. The push for reducing carbon emissions and the global transition to greener energy sources have accelerated the adoption of LIBs in the automotive sector. Companies like Tesla, BYD, and Nissan heavily rely on LIBs for their EVs.
- **Consumer Electronics:** LIBs are extensively used in consumer electronics such as smartphones, laptops, tablets, digital cameras, and wearable devices. Their high energy density and lightweight properties make them ideal for portable electronic devices. Brands like Apple, Samsung, and Dell incorporate LIBs to ensure long-lasting battery life and efficient performance in their products.
- **ESS:** LIBs are increasingly being used in ESS to store energy from renewable sources like solar and wind. These systems help in managing energy supply, ensuring grid stability, and providing backup power. Residential, commercial, and utility-scale ESS deployments are rising, driven by the need for efficient energy management and the transition to renewable energy sources.
- **Industrial Applications:** In industrial settings, LIBs power a variety of equipment, including forklifts, automated guided vehicles (AGVs), and other industrial machinery. Their ability to provide consistent power and their relatively low maintenance needs make them suitable for heavy-duty and demanding industrial applications.
- **Medical Devices:** LIBs are used in medical devices such as pacemakers, defibrillators, and portable medical equipment. Their reliability and long-life span are crucial for ensuring the continuous and safe operation of life-saving medical technologies.
- **Aerospace and Defense:** LIBs are utilized in drones, military vehicles, satellites, and other aerospace equipment. The high energy density and lightweight characteristics of LIBs are vital for these applications where performance and efficiency are critical.

5.2 EV Market growth

The EV market is experiencing rapid growth and is expected to continue its upward trajectory in the coming years, resulting in significant demand for LIB. As of 2023, global EV sales reached 14.2 mn units and is projected to grow at a CAGR of 27% from 2023 to 2030, potentially reaching ~47 mn units by 2030^{xxxv}.

This growth is expected to be driven by several key factors, including stricter regulatory pressures to cut emissions, advancements in battery technology, and declining costs despite rising raw material prices. China has experienced the most significant growth, leading both in market share and in absolute terms, with Europe also showing strong performance. 44 countries have committed to phase out petrol car sales between 2035-2040.

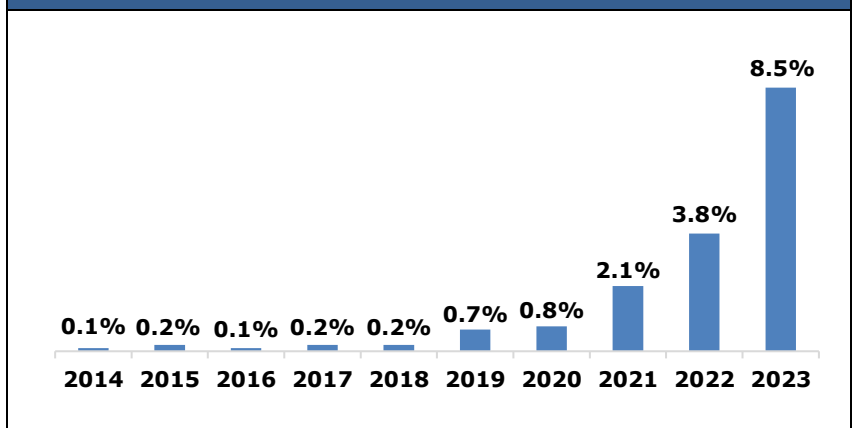
Exhibit 18: Global shift towards EVs^{xxxvi}



5.2.1 Australia EV Market

Australia's EV market has been experiencing consistent growth in recent years, driven by a combination of increasing environmental awareness, supportive government incentives, and advancements in EV technology. Although Australia's EV market is smaller compared to major global markets such as China and Europe, it is showing encouraging signs of expansion and adoption. Currently, Australia's EV market share stands at 8.50%. This represents a significant increase from previous years, highlighting a growing acceptance of EV among Australian consumers. The market growth is evident in the rising number of EV registrations and the expanding variety of available EV models.

Exhibit 19: Australia EV market share^{xxxvii}



Australia's EV market is poised for strong growth, supported by a range of government policies:

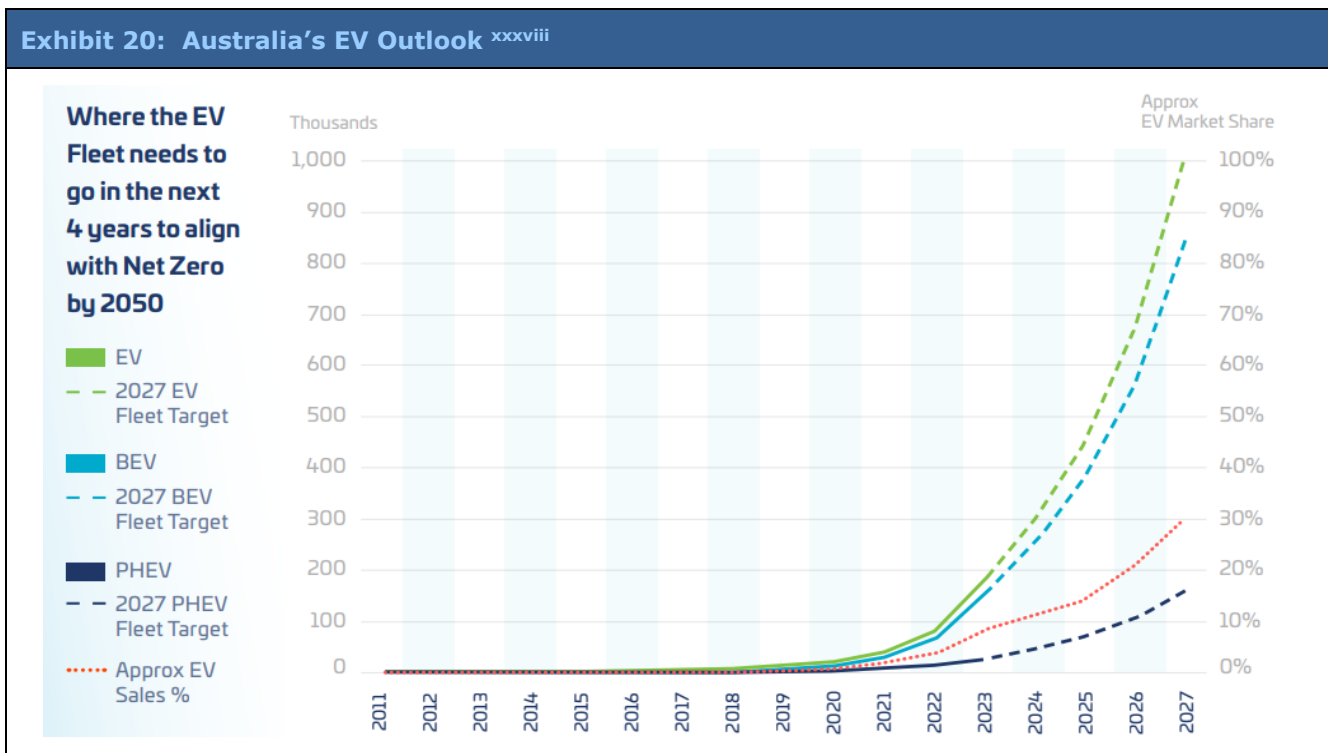
- **National EV Strategy:** On 19 April 2023, the Australian Federal Government released its first National Electric Vehicle Strategy, designed as a roadmap with the goal of increasing the uptake of EV across Australia. The strategy involves collaboration between the state and territory governments and the Australian Government in six key areas, including national standards, data sharing, EV affordability, development of remote and regional EV charging infrastructure, fleet procurement, and education and awareness.
- **Consultation on Introduction of New Vehicle Efficiency standard:** As part of the National EV Strategy, the government confirmed its intention to introduce a New Vehicle Efficiency Standard for light vehicles in Australia.

This standard aims to reduce the average CO₂ emissions across all cars sold in Australia by each manufacturer, incentivizing the supply of more fuel-efficient petrol and diesel vehicles, as well as hybrid and EVs. The details of the Standard are to be finalized in 2024.

- **National EV charging network:** On 26 April 2023, the Minister for Climate Change and Energy announced funding of USD 39.3 mn, matched by the National Roads and Motorists' Association, to significantly expand Australia's EV charging network through the installation of 117 fast EV charging sites on national highways across the country. This initiative is aimed at enhancing charging infrastructure in rural and regional areas, helping to close the gaps and known black spots in Australia's fast charging network.
- **National Net Zero Economy Authority:** Established on 1 July 2023, the Net Zero Economy Agency (NZEA) is responsible for promoting orderly and positive economic transformation across Australia as the world decarbonizes, to ensure Australia, its regions and workers realize and share the benefits of the net zero economy. The work of the Net Zero Economy Agency is a precursor to the establishment of a legislated Net Zero Economy Authority. Work is ongoing to design and stand up the Authority in accordance with established Parliamentary processes. The NZEA is engaging with a variety of stakeholders to support a positive transition to a net zero economy, including First Nations groups; education and training groups; industry; investors; regional bodies and communities; state, territory and local governments; and unions.

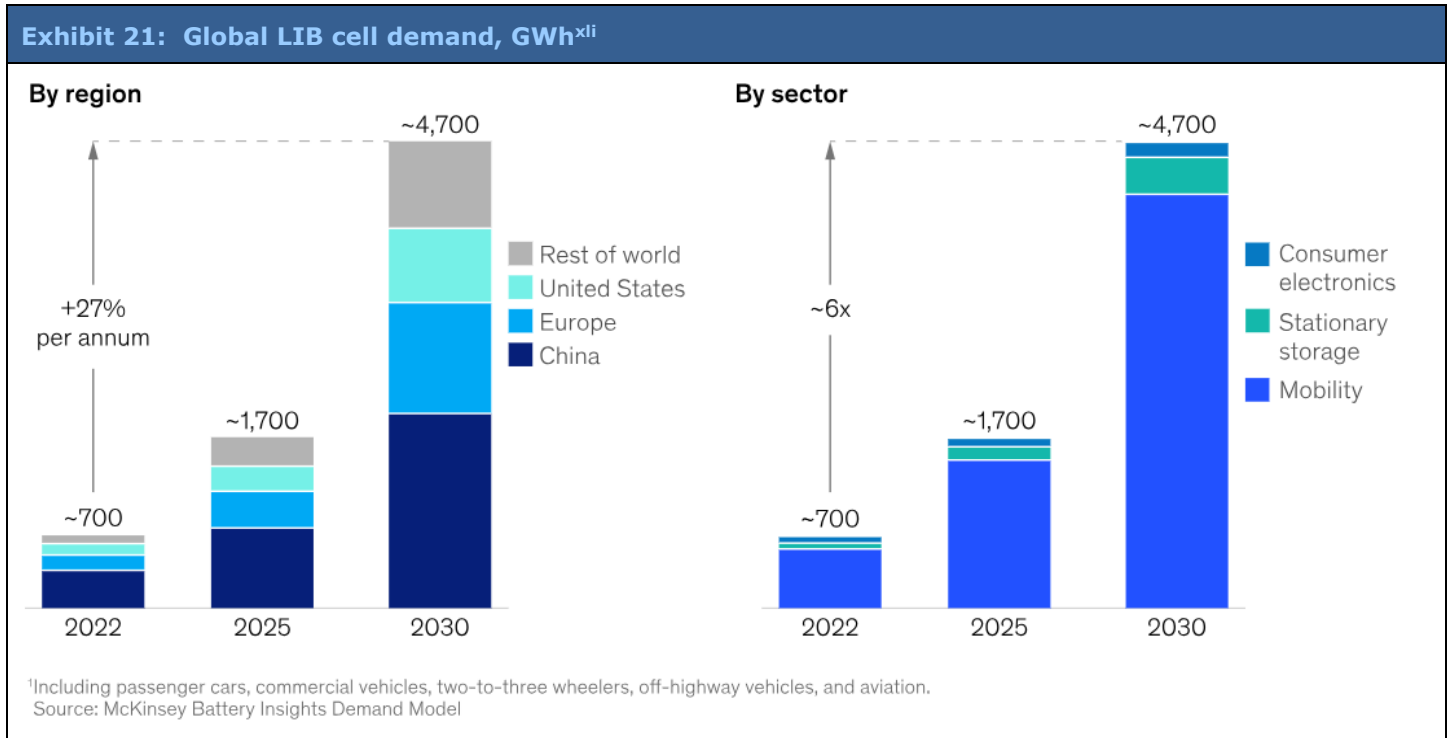
Outlook

The Electric Vehicle Council has set an ambitious target for the market, aiming to have 1 mn EVs on Australian roads by the end of 2027. Achieving this goal would increase the market share to approximately 30% from the current 8.5%, marking a substantial leap forward in EV adoption. Achieving this goal is seen as a crucial step towards the broader objective of having approximately 2.5 mn EVs by 2030, representing 50-60% of all new vehicle purchases. This progress is essential for Australia to reach its aim of a 100% zero-emission vehicle fleet by 2050.



5.3 The Increasing Demand for LIBs^{xxxix}

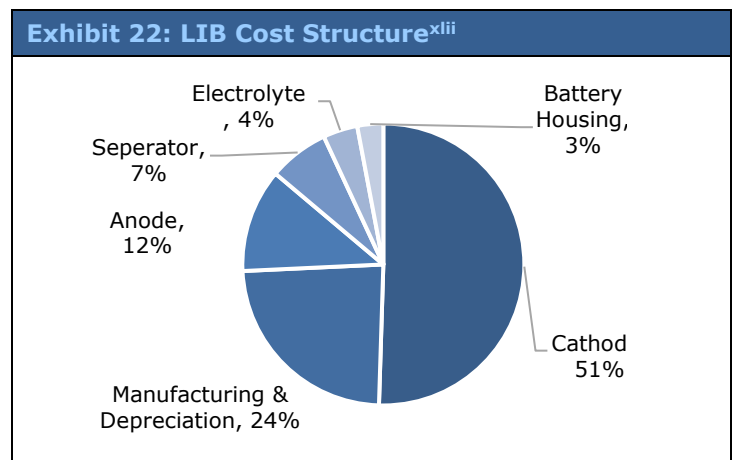
Global demand for LIBs is expected to grow 27% annually over 2022-2030, with the required capacity increasing dramatically from approx. 700 GWh in 2022 to around 4.7 TWh by 2030. This significant growth is driven by several factors, with mobility applications, particularly EVs, playing a pivotal role. By 2030, batteries for EVs will account for the vast majority of this demand, estimated at around 4,300 GWh^{xl}. This trend is unsurprising given the rapid advancements and increasing adoption of EV technology, driven by consumer demand for sustainable transportation solutions and stringent environmental regulations aimed at reducing carbon emissions. Additionally, the push for renewable energy sources and the need for efficient energy storage solutions further bolster the demand for LIB, highlighting their critical role in the future of both transportation and energy sectors.



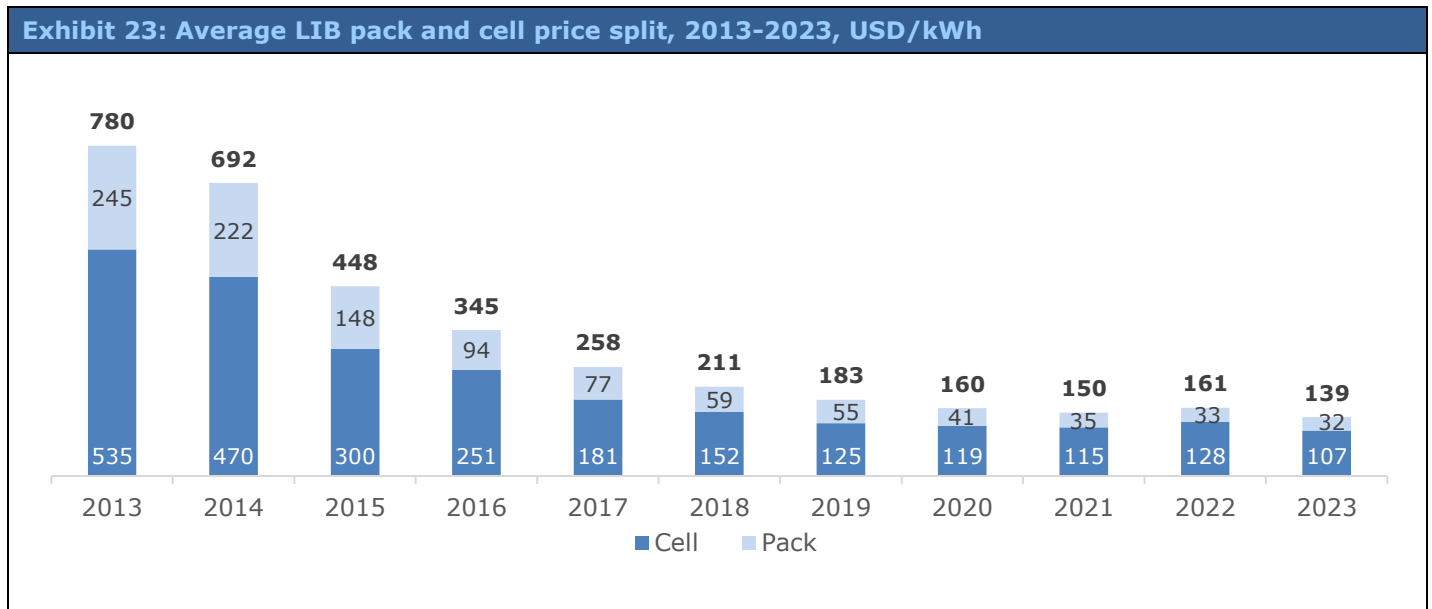
5.4 LIB Cell Price Dynamics^{xliii}

LIB cells are composed of several critical raw materials, including lithium, cobalt, manganese, and nickel. These materials account for more than 70% of the total cost of a LIB cell. The cost structure of these cells is predominantly driven by material costs, which exceed 70% of the total cost, while manufacturing and depreciation expenses account for over 24%. Utility costs contribute more than 7%, and additional expenses such as labor, selling, general and administrative (SG&A) costs, and R&D costs are partially included in the manufacturing costs.

Fluctuations in the prices of these raw materials significantly affect the entire battery industry, as batteries represent a substantial cost component in all battery-powered devices. For instance, changes in the prices of cobalt and nickel can directly impact the cost of LIB cells, influencing the overall cost of EVs and consumer electronics.



Despite the high dependency on raw material prices, the overall cost of LIB cells has decreased substantially since 2001. This decline is primarily attributed to increased demand and widespread adoption of battery technologies. Technological advancements expanded production capacities, and economies of scale have all played a role in reducing costs. For example, the average price of a lithium-ion battery pack dropped from nearly USD 780 per kilowatt-hour (kWh) in 2013 to approximately USD 139 per kWh by 2023.



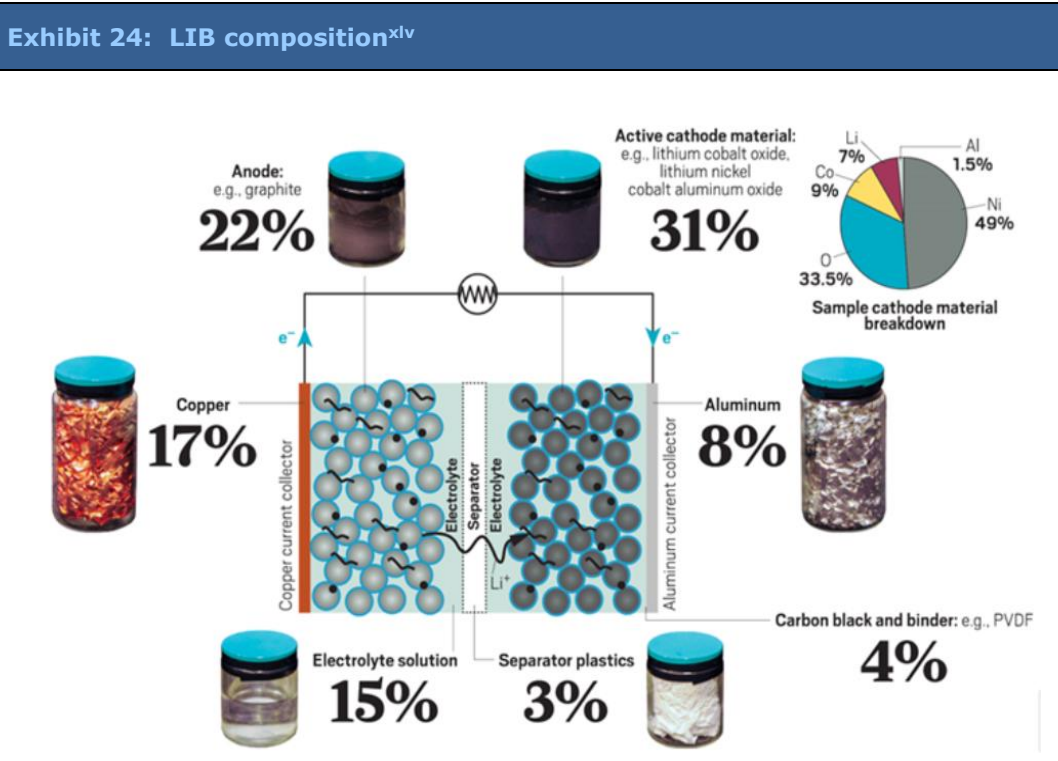
Outlook

This significant price reduction highlights the ongoing advancements in battery technology and manufacturing efficiencies. Innovations in cell chemistry, improved production techniques, and the scaling up of production facilities have collectively contributed to lowering costs. Additionally, as the demand for EVs and ESS continues to surge, further cost reductions are expected. The industry is poised to benefit from sustained technological innovation and heightened competition, which will likely drive prices even lower in the coming years. With these advancements, battery pack prices are projected to decline further, reaching USD 113/kWh by 2025 and USD 80/kWh by 2030.

5.5 Battery Recycling

Australia's reliance on LIBs is rapidly increasing due to their long lifespan, high efficiency, and diverse applications. As LIBs become more integral to various technologies, including EV and renewable energy storage, it is crucial to develop effective battery recycling practices to ensure they have a positive environmental impact and support the growth of a circular economy. As these batteries contain valuable raw materials, such as lithium, cobalt, and nickel. These materials can be reused in new batteries, reducing the need for mining and extraction, which in turn lowers emissions and environmental degradation.

Despite the benefits, recycling LIBs at the end of their service life remains a complex and costly process. As of 2021, only about 10% of LIBs in Australia were recycled, compared to a global average of around 5%^{xliv}. This low recycling rate highlights the challenges and limitations in the current recycling infrastructure and practices. In contrast, Australia has achieved a high recycling rate for lead-acid batteries, with 99% being recycled in 2021. This success demonstrates Australia's capability in battery recycling but also underscores the need for improved systems for lithium-ion batteries, which are currently less efficient in terms of recycling rates.



Key Challenges in LIB Recycling

- **Complexity and Cost:** The recycling of LIBs is intricate due to the diverse materials used in different battery types, as well as the need for careful handling to manage safety risks associated with hazardous substances. The process is also expensive, making it less economically viable without sufficient scale and infrastructure.
- **Feedstock Limitations:** A significant challenge is the limited availability of used LIBs, which affects the viability of recycling operations. Many LIBs are currently sent overseas for processing, where they may still end up in landfills due to inadequate recycling facilities in those regions.
- **Safety Concerns:** The handling of spent LIBs involves safety risks, including the potential for fires or chemical leaks, which complicates recycling efforts and increases costs.

Factors driving EV battery recycling

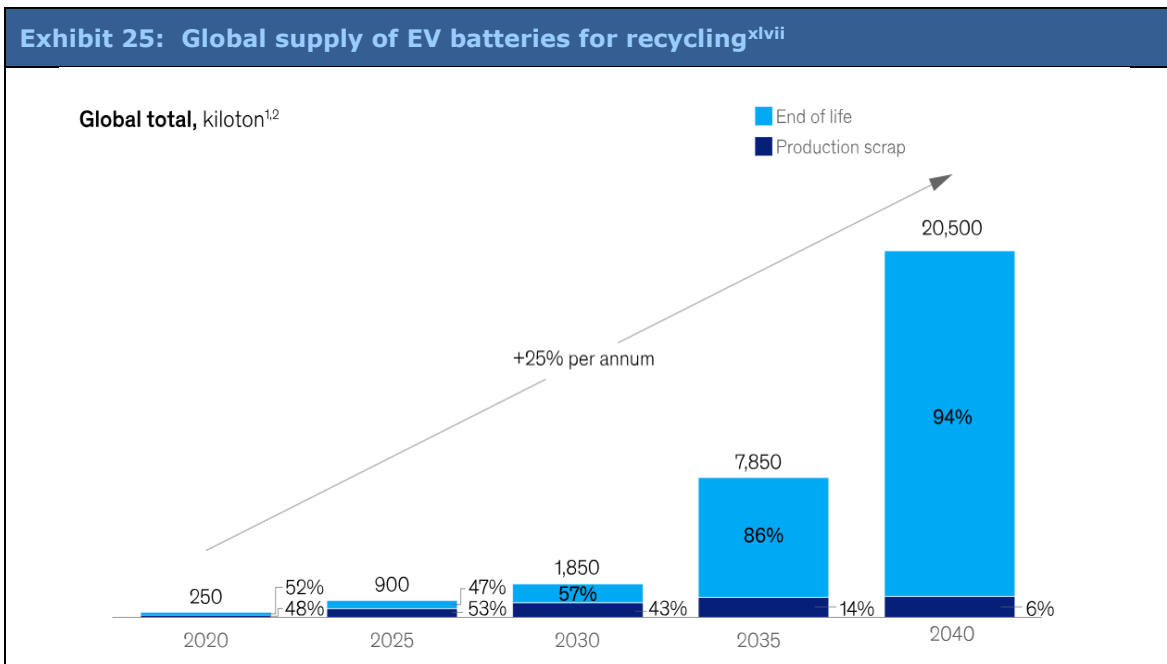
- **Technological Advances:** As recycling processes scale and mature, they achieve higher recovery rates, reduce greenhouse-gas footprints, and improve economic viability. Government grants, like the EU's European Battery Alliance and the US National Science Foundation's Phase II Small Business Innovation Research grants, are fostering these advancements.
- **Supply Chain Stability:** Automotive OEMs and cell producers are prioritizing stable, local sources of recycled raw materials. Notable partnerships include VW with Redwood Materials in the US, and GM with Li-Cycle and Cirba Solutions.

These efforts collectively enhance the sustainability and stability of the battery-recycling industry.

Outlook^{xlvi}

EV batteries need replacing when they reach 70–80% of their original capacity and no longer meet performance standards. The considerable growth in end-of-life EV battery volumes, with over 100 mn vehicle batteries expected to retire in the next decade, presents significant recycling opportunities. In key markets like China, Europe, and the US, initial recycling sources primarily include consumer electronics and manufacturing scrap from new battery factories, where up to 30% of cells may be discarded. As EV adoption progresses, especially in mature markets like China, end-

of-life EV batteries will increasingly dominate recycling volumes. However, globally, production scrap will remain the primary recycling source until around 2030, when retired EV batteries will begin to overtake it.



By 2036, Australia could generate more than 136,000 tonnes of LIBs waste annually. This presents a significant opportunity for the development of a domestic recycling industry, which could be valued between USD 603 mn and USD 3.1 bn over the next decade^{xlviii}. Establishing a robust local recycling sector could reduce environmental impacts, prevent supply chain disruptions, and contribute to economic growth.

Effective recycling of LIBs plays a crucial role in promoting the circular economy by reclaiming valuable raw materials like lithium, cobalt, and nickel. These materials are essential components of LIBs and can be reused in manufacturing new batteries, thereby reducing reliance on fresh mining and extraction. This process not only conserves natural resources but also mitigates environmental impacts such as greenhouse gas emissions and ecosystem degradation.

In Europe, estimates indicate that with advancements in recycling technologies and their widespread adoption in commercial practices, recycled battery materials could potentially satisfy a significant portion—ranging from 45% to 77%—of the demand for these critical metals by 2050. This shift towards a more sustainable approach not only addresses resource scarcity but also supports the long-term viability of the EV market and other battery-dependent industries. By closing the loop through effective recycling, industries can contribute to a more sustainable future, reducing reliance on primary resources and minimizing the environmental footprint associated with battery production and disposal.

5.6 Battery Materials

LFP and LMFP are types of LIB chemistries. LFP batteries, made from lithium iron phosphate, are known for their safety, longevity, cost-effectiveness, and environmental benefits due to the absence of cobalt, though they have lower energy density. They are widely used in EVs, ESS, and power tools. LMFP batteries enhance the LFP structure with manganese, offering improved energy density while maintaining similar safety and cost benefits. These batteries are suitable for applications requiring a balance of cost, safety, and energy density, such as EVs and ESS.

Need for LFP/LMFP

The growth of LFP/LMFP batteries is driven by several key factors:

- **Safety and Stability:** LFP batteries are known for their excellent thermal and chemical stability, reducing the risk of overheating and fires.
- **Cost-Effectiveness:** The use of abundant and inexpensive materials like iron and phosphate makes LFP batteries more affordable than other lithium-ion chemistries.

- **Longevity:** With a long cycle life, often exceeding 2000 cycles, LFP batteries are highly durable, making them ideal for applications that require long-term reliability.
- **Environmental Benefits:** LFP batteries do not contain cobalt or nickel, which are associated with environmental and ethical concerns, making them more eco-friendly.
- **Technological Advancements:** Continuous improvements in LFP battery technology are enhancing their performance, particularly in energy density and charging speed.




However, LFP batteries have lower energy density compared to NMC batteries. Additionally, LFP batteries contain phosphorus, a critical component for food production. If all current batteries were LFP, they would account for nearly 1% of the current agricultural phosphorus usage by mass. This indicates potential future conflicts over phosphorus resources as battery demand increases.

Global Efforts to Mitigate Dependency from China

China currently maintains a dominant position in the upstream stages of the lithium-ion value chain. It holds nearly 90% of global installed production capacities for active cathode materials and over 97% for active anode materials. Outside of China, notable production capacities for active cathode materials are concentrated in Korea (9%) and Japan (3%). China's role as the world's largest exporter of battery cells, cathodes, and anodes underscores its influence and the challenges it poses for manufacturers elsewhere.

Given China's overwhelming production dominance, efforts to reduce dependency are gaining momentum globally. Governments worldwide are implementing policies to secure future access to critical materials. These initiatives include investing in domestic mining and processing capabilities, forging strategic partnerships with resource-rich countries, and incentivizing diversification of supply chains. Concurrently, there is a strong push towards research and development in alternative battery technologies and recycling methods. These measures aim to mitigate supply chain vulnerabilities while fostering economic growth and innovation in the active materials segment.

Exhibit 26: Government policies ^{xlix}

 <p>Australian policies</p>	<ul style="list-style-type: none"> ✓ National Battery Strategy³ – Aimed at ensuring Australia’s position in global battery supply chains ✓ Australia Critical Minerals Facility⁴ - A\$6 billion in funding directed at critical minerals financing
 <p>Inflation Reduction Act (US)</p>	<ul style="list-style-type: none"> ✓ Invest into domestic energy production with Australia set to become a domestic source for critical sectors
 <p>EU regulatory framework for batteries</p>	<ul style="list-style-type: none"> ✓ Framework to promote a circular economy and reduce the environmental impact throughout all stages of the battery life cycle

Outlook

LFP batteries are projected to capture 48% of the market by 2033, up from a 26% share in 2022. This growth will be driven by their safety, cost-effectiveness, and longevity. Renowned for their thermal stability and environmental benefits, due to the absence of cobalt and nickel, LFP batteries are increasingly preferred for EVs and ESS. Technological advancements and supportive government policies further boost their attractiveness, enhancing their market presence. Technological progress, cost reductions, and favorable regulations will be pivotal in shaping these technologies' future, positioning LFP and LFMP batteries as key contributors to a sustainable energy transition.

5.7 LIT's Strategic Positioning in the Growing LIB Market

As the world shifts towards greener fuels and aims for net-zero emissions by 2050, the use of LIBs is increasing. According to McKinsey Battery Insights, revenues along the entire value chain are projected to increase five-fold, from about USD 85 bn in 2022 to over USD 400 bn by 2030, providing significant opportunity. Amid this growing demand, LIT is strategically positioned to leverage its established presence within LIB value chain. The company's innovative technologies, robust operations, and strategic agreements uniquely equip it to seize emerging opportunities in this rapidly expanding market.

Recycling Business:

LIT is a leader in battery recycling in Australia, a sector poised for significant expansion. With LIB waste expected to increase by 20% annually through 2036, coupled with heightened governmental focus on recycling, LIT is well-positioned to benefit from this trend. The company has forged strategic partnerships with EV manufacturers for battery collection, enhancing its recycling capabilities. LIT's advanced recycling technologies are designed to efficiently recover valuable materials from spent batteries, addressing environmental concerns while ensuring a steady supply of critical resources. This proactive approach not only solidifies LIT's position as a key player in the recycling sector but also aligns with global sustainability initiatives.

Battery Materials:

LIT's focus on LFP/LMFP materials presents a significant growth opportunity. Currently, 90% of active materials for these batteries are sourced from China, posing a substantial supply chain risk for OEMs worldwide. Livium's production of high-quality LFP materials provides a viable alternative, enabling OEMs to diversify their supply chains and reduce dependency on Chinese suppliers. With LFP market share increasing 30% in 2022 to 43% in 2033 and offering a reliable source of premium LFP materials outside of China, LIT is positioned to meet the rising demand from manufacturers seeking to secure a stable supply of essential battery components.

Lithium Chemicals:

The company has developed a patented lithium extraction technology – LieNA® that presents a significant revenue-generating opportunity through licensing. By entering JV with MinRes, the company can issue multiple licenses to both brownfield and greenfield mining operations and can earn royalty rate of 8%. This licensing model not only enhances the company's financial prospects but also strengthens its position in the lithium extraction industry by establishing a broad network of licensees. As demand for lithium continues to grow, driven by the expansion of EVs and energy storage systems, the company's patented technology offers a valuable asset that can significantly contribute to its long-term profitability and strategic goals.

In summary, Livium is strategically positioned to leverage its strengths in recycling, battery materials, and lithium chemicals to capitalize on the rapid growth of the LIB market. The company's innovative technologies and strategic partnerships will play crucial roles in its success, supporting its long-term goals and contributing to the transition towards a more sustainable energy landscape.

6. Valuation

The fair market value for the Company's shares stood between AUD 154.8 mn and AUD 204.4 mn, and the fair market value for one of the company's publicly traded shares stood between AUD 0.12 and AUD 0.16. The valuation approach followed is the NPV method.

6.1 NPV Method

	Low	High
Discount rate	13.0%	12.0%
Arrowhead premium/discount	40.0%	40.0%
Adjusted discount rate	18.2%	16.8%
NPV of cash flows	154,287	203,865
Debt	4,205	4,205
Cash and cash equivalents	4,749	4,749
Net Debt	-544	-544
No. of shares	1,314,594	1,314,594
Equity Value	154,831	204,409
Intrinsic value per share	0.12	0.16
CMP (as on October 31, 2024)	0.02	0.02
Upside	489.0%	677.0%

6.2 Approach for NPV Valuation

Time horizon: The time period chosen for the valuation is 240 months (2025E-2044E).

Prudential nature of valuation: It should be noted that Arrowhead's fair value bracket estimate is relatively prudent, as it discounts the eventuality of any new products being launched in the market or any significant change in strategy.

Important information on Arrowhead methodology

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

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a Company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

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

Elements of comparison, such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In case of this Livium report, there are no multiple analyses integrated in the valuation.

Arrowhead BID fair market value bracket

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

In principle, an investor who is 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 take into account the Company intangibles – as presented in the first few pages of this document in the analysis of strengths and weaknesses and other essential Company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in the investor's own analysis. The bracket should be understood as a tool provided 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 on one hand, global capital markets contain inefficiencies, especially in terms of information, and that on the other hand, 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). The reader should refer to important disclosures on page 37 of this report.

7. Analyst Certifications

I, Karan Mehta, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

I, Aditya Ahluwalia, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

Important disclosures

Arrowhead Business and Investment Decisions, LLC has received fees in 2024 and will receive further fees in 2024 and beyond from Livium Ltd for researching and drafting this report and for a series of other services to Livium Ltd, including distribution of this report and networking services. Neither Arrowhead BID nor any of its principals or employees own any long or short positions in Livium Ltd. Arrowhead BID's principals intend to seek a mandate for investment banking services from Livium Ltd in 2024 or beyond and intend to receive compensation for investment banking activities from Livium Ltd in 2024 or beyond.

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Any opinions expressed in this report are statements of Arrowhead BID's judgment to this date and are subject to change without notice.

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Investors must make their own investment decisions based upon their specific investment objectives and financial situation utilizing their own financial advisors as they deem necessary.

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Arrowhead Business and Investment Decisions, LLC is not responsible for any loss, financial or other, directly or indirectly linked to any price movement or absence of price movement of the securities described in this report.

8. Notes and References

- ⁱ Source: ASX as on October 31, 2024
- ⁱⁱ Source: ASX as on October 31, 2024
- ⁱⁱⁱ Source: ASX as on October 31, 2024
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- ^{viii} Source: [Company website](#)
- ^{ix} Source: [Corporate Presentation – July 2024](#)
- ^x Source: Annual Report 2023, ASX Announcements, Company website, Corporate Presentations
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