On its way to building a major lithium resource and refinery

Materials

We initiate coverage on Lithium Universe (ASX: LU7) with a 12-month target price of $0.053 – representing a 151.7% upside from the current share price of $0.021. Led by lithium pioneer, Iggy Tan, Lithium Universe has gathered a big team of lithium industry experts with proven experience and a track record of successfully constructing and commissioning lithium projects on time and on budget. Drawing on its expertise, LU7's Dream Team is working on closing the massive gap in downstream lithium processing in North America by building a 16,000 tpa Lithium Carbonate Refinery in Quebec, for which the company is rapidly completing a DFS.

China's dominance over the lithium supply chain is a threat to the West

China has been securing its supply of raw lithium materials by acquiring numerous lithium mines around the globe as well as developing its domestic lithium resources. China also hosts nearly 60% of the world's lithium refining capacity for batteries, underscoring its predominant position in the lithium supply chain. The United States and its allies are worried China could exploit its control over lithium processing when Western automakers need refined lithium to power the switch to EVs. In response, the Western governments have come up with policies and strategic plans to support the expansion of their lithium refining capacities. However, the biggest challenge here is a lack of expertise that has led to a series of recent failures and delayed startups in the sector. This is where LU7's Dream Team shines with its proven track record of successfully constructing and commissioning such projects.

LU7 to build a Lithium Carbonate Refinery in Québec, Canada

LU7 is planning to replicate the Jiangsu Lithium Carbonate Refinery, using the same engineering manager (Hatch) and the key executives who built the world-class Jiangsu Refinery, therefore minimising the execution risks associated with the project. The company is completing a DFS for the project and has already finalised the Refinery's flow sheet design. It has also secured prime industrial land with existing infrastructure in Quebec for its Refinery. Canadian federal and provincial governments have assigned a substantial budget to assist with the expansion of the country's EV industry. With a significant downstream lithium processing gap in North America and given Canada's rapidly expanding EV industry and the current reliance on Chinese lithium processing capacity, we anticipate substantial support from Canadian governments as well as large industry players in the region for LU7's Lithium Carbonate Refinery Project.

Valuation range of A$0.047–0.058 per share

We have valued LU7 at A$0.047 per share in a base-case scenario and A$0.058 per share in a bull-case scenario using an NPV-based valuation approach. Our target price range is solely based on the Quebec Lithium Carbonate Refinery Project. It does not include the value of LU7's multiple prospective exploration assets or its Spodumene Concentrator Project in Quebec. Our mid-point target price of A$0.053 represents a significant valuation headroom to the current price. The key risks to our investment thesis include commodity price, market, exchange rate, execution, and funding risks.

LU7 NPV-Based Valuation (A$m)	**Base case**	**Bull case**
Lithium Carbonate Refinery Project's NPV (post-tax)	1,018	1,018
Average EV as a % of NPV	4.0%	5.0%
Total Equity Value	**44.7**	**54.9**
Fully diluted number of shares (m)	942	942
Implied price (A$)	**0.047**	**0.058**
Current price (A$)	0.021	0.021
Mid-point Target Price (A$)	**0.053**	
Upside (%)	*151.7%*	

Date	15 Apr 2024
Share Price (A$)	0.021
Target Price (A$)	0.047-0.058
Price / NAV (x)	0.40x
Market Cap (A$m)	11.7
52-week L/H (A$)	0.018/0.069
Free Float (%)	32.5%
Bloomberg	LU7.AU
Reuters	LU7.AX

Price Performance (in A$)

Business description

Led by Lithium pioneer Iggy Tan and the 'Dream Team', Lithium Universe (ASX: LU7) has a bold vision of building a Lithium resource and refinery facility in Canada that will provide the critical materials for batteries, helping the world transition towards cleaner energy. LU7 is completing a Definitive Feasibility Study (DFS) to construct a 16,000 tpa lithium carbonate refinery in Quebec, Canada. LU7 is also progression with the engineering studies for the construction of a spodumene concentrator in the same region. In addition, the company holds several lithium and REE exploration licences in tier 1 mining jurisdictions in Canada and Australia in proximity to existing significant discoveries.

Analyst

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Investment Rationale

Led by lithium pioneer, Iggy Tan, Lithium Universe (ASX: LU7) has gathered a big team of lithium industry experts with proven experience and a track record of successfully constructing and commissioning lithium projects on time and budget. The team consists of mainly former Galaxy Resources executives who successfully built and commissioned the world-class Mt Cattlin Spodumene Concentrator in Western Australia and the Jiangsu Lithium Carbonate Refinery in China.

Drawing on its expertise, LU7's Dream Team is working on closing the massive gap in downstream lithium processing in North America by building a 16,000 tpa Lithium Carbonate Refinery in Quebec, Canada, in the first stage and then building a spodumene concentrator in the same region in the second stage. The company has also acquired multiple highly prospective lithium and REE exploration assets in tier 1 mining jurisdictions of Canada and Australia in proximity to existing significant discoveries. The company is rapidly progressing with completing a DFS for its Quebec Lithium Carbonate Refinery Project

Lithium supply chain is dominated by China, posing security risks to the West

Lithium-ion batteries are leading the transition to a rechargeable world. Lithium is found in every lithium battery technology, giving the metal the title of the "white gold" or the "white oil" of the 21st century, owing to its key role in the energy transition. For the world to reach its emissions targets, Global refined lithium production capacity must multiply in the next 15-20 years. In between this, China started establishing its presence across the lithium supply chain years ahead of the Western countries. The country has been securing its supply of raw lithium materials by acquiring numerous lithium mines around the globe as well as developing its domestic lithium resources. In addition, China presently hosts nearly 60% of the world's lithium refining capacity for batteries, underscoring its predominant position in the lithium supply chain.

The United States and its allies are worried China could exploit its control over lithium processing, similar to its actions in 2023 when it imposed restrictions on the export of gallium and germanium. These metals are vital to the semiconductor, electric vehicle, and weapons industries. Geopolitical tensions could escalate into a sanction-driven conflict, potentially leading to China halting the supply of refined lithium when Western automakers need them to power the switch to EVs. In response, the Western governments have come up with policies and strategic plans to support the expansion of their lithium refining capacities. In the case of Canada, the country launched the "Mines to Mobility" initiative in 2019 to build a sustainable battery innovation and industrial ecosystem in Canada. By 2022, the initiative had already attracted more than CA$7 billion in announced investments to capture opportunities in Canada's value proposition in the battery sector.

A significant lithium conversion gap is being left in North America

Substantial funds and planning are going into North America's downstream battery manufacturing. More than 20 major battery manufacturers, predominantly situated on the East Coast of North America, are gearing up to deploy an estimated 900GW of battery capacity by 2028. Furthermore, Canada's recent emphasis on investing in battery plants, backed by collaborations with industry giants such as Volkswagen, Stellantis, LG Energy Solution, Ford, General Motors, and Honda, seeks to fortify its automotive sector.

Despite the anticipated substantial increase in battery manufacturing capacity in North America, the industry faces a significant challenge in establishing a reliable supply chain, particularly due to limited access to lithium converters in the region. The challenge stems from the scarcity of independent lithium converters planned for construction in North America, potentially attributed to a lack of expertise or a series of recent failures and delayed startups in the sector. Consequently, a notable gap in lithium conversion and processing is looming in North America. Lithium Universe estimates that 800,000t of LCE per annum will be required to satisfy demand

in North America. LU7's strategy is to bridge this lithium conversion and processing gap by leveraging a proven track record in constructing such converters.

Québec Lithium Carbonate Refinery — LU7's plan to help with North America's lithium conversion gap

Lithium Universe has appointed Hatch Ltd to undertake the engineering study for the design of its multi-purpose 16,000 tpa battery-grade lithium carbonate refinery in Quebec, Canada. Hatch was responsible for the engineering and delivery of the 17,000 tpa Jiangsu Lithium Carbonate Plant for Galaxy Resources Limited. Following completion and commissioning, this plant emerged as the world's largest lithium refinery of its kind, showcasing Hatch's prowess in groundbreaking project design and delivery. LU7 is essentially planning to replicate the Jiangsu lithium carbonate refinery in China, therefore minimising the technical risks that led to the cost blowouts and delays of other attempts to build lithium refineries in Canada and Australia.

Having the right team with the right expertise and experience is the key to successfully developing a highly technical and sophisticated project such as a lithium refinery. LU7 has the right team with the right expertise in place. Members of LU7's management team have previously constructed, commissioned, and operated a similar lithium carbonate refinery operation, therefore substantially lowering the execution risks associated with this type of startup.

LU7 is rapidly progressing with the completion of its Refinery's DFS

As LU7 is planning to replicate the Jiangsu Lithium Carbonate Refinery, using the same engineering manager (Hatch) and the key executives who built the Jiangsu Refinery, the management has opted to straightly conduct a detailed DFS-level study. Hatch has finalised the Refinery's design flow sheet, and LU7 has already secured Prime Quebec industrial land for its Refinery. The land has existing infrastructure and is in proximity to existing highways and railroads. The precinct also has an existing port facility on the St Lawrence River. In addition, a number of lithium carbonate end users are developing their plants in proximity to LU7's secured land for its refinery, potentially creating a ready market for the refinery's products.

As part of the ongoing DFS, the company has started metallurgical testing on a diverse range of commercial spodumene concentrates from around the world, utilising the flow sheet developed for its Refinery. A successful completion of this program will demonstrate the viability of the process in generating battery-grade lithium carbonate from various spodumene concentrates available in the market, which will be another significant benefit to LU7's Lithium Carbonate Refinery Project. Given the work that has already been done with regard to the process flow sheet design and land acquisition, we expect the DFS to be completed by the end of 2024. The high confidence level of a definitive feasibility study (DFS) will then be very helpful with the company's attempts to secure the required project financing.

With a significant downstream lithium processing gap in North America, and given Canada's rapidly expanding EV industry and the current reliance on Chinese lithium processing capacity, we anticipate substantial support from Canadian governments as well as large industry players for LU7's Lithium Carbonate Refinery Project.

Project financing – governments in Canada are highly supportive

Canadian federal and provincial governments highly support companies willing to set up their operations in Quebec, create jobs and contribute to the province's economic vitality. In 2023 alone, Canadian federal and Quebec's provincial governments provided billions of dollars of support for international companies trying to set up EV battery materials operations in Quebec. With a significant downstream lithium processing gap in North America, and given Canada's rapidly expanding EV industry and the current reliance on Chinese lithium processing capacity, we anticipate substantial support from Canadian governments as well as large industry players for LU7's Lithium Carbonate Refinery Project.

LU7 is planning to build a vertically integrated lithium operation in Quebec

LU7's Dream Team, drawing on its experience and expertise across the lithium value chain, aims to establish a major vertically integrated mine-to-battery-grade lithium carbonate processing hub in Québec. This strategy aims to benefit from the region's extensive lithium resources and provide locally sourced feedstock for the company's lithium carbonate refinery.

As a part of the Company Québec Lithium Processing Hub (QLPH) strategy, Lithium Universe has appointed Primero Group Limited (Primero) as lead manager in relation to the design of a multi-purpose stand-alone Spodumene concentrator in Quebec, which resembles that of the Mt Cattlin plant. LU7 has also acquired a number of highly prospective lithium and REE exploration tenements in Quebec, as well as in Western Australia, which are in proximity to major discoveries.

A valuation based on the NPV of the Quebec Lithium Carbonate Refinery Project indicates significant upside potential for LU7

LU7 has not officially released any numbers regarding the economics of the Quebec Lithium Carbonate Refinery Project. However, we've been able to estimate a preliminary NPV for the Refinery after discussions with the company and their experience with the Jiangsu Refinery's actual numbers adjusted for the Canadian business environment.

In discussion with LU7, we have estimated a project Capex of between US$450-550m. We have assumed a long-term battery-grade lithium carbonate (LC) price forecast of around US$31,000/t, leading to an annual revenue in the region of US$503m. Production costs are estimated at around US$300m per annum based on a long-term spodumene concentrate price assumption of US$1,850/t, leading to a gross profit margin estimate in the region of 40%. **Our assumptions have led to a pre-tax NPV(10%) of more than US$1bn.**

Given that the DFS is not complete yet, we have relied on a percentage of the NPV approach in our valuation of LU7. We value LU7 at A$0.047 per share in a base-case scenario and A$0.058 per share in a bull-case scenario. Our mid-point target price of A$0.053 represents a Price/NAV of 0.40x, indicating a valuation headroom of more than 150% to the current share price of A$0.021. We think a successful completion of the Quebec Lithium Carbonate Refinery DFS, including favourable metallurgical test work results, will demonstrate the technical feasibility of the Project and its economic viability, therefore potentially leading to a rerating in the stock price towards our valuation target. We expect to see substantial support from the EV battery and battery material producers in the Quebec region for LU7's Refinery project. As such, announcements of favourable offtake agreements for the Quebec Refinery Project's lithium carbonate products are possible, in our view, which would potentially lead to a massive rerating in the share price, so will an announcement of financing support and incentives from Canada's federal government and Quebec's provincial government.

It is imperative to note that our current valuation of LU7 does not include the value of the company's multiple attractive lithium exploration assets in tier 1 jurisdictions. Our valuation also has not assigned any value to LU7's Spodumene Concentrator Project in Quebec. All these assets have the potential to greatly impact the valuation of LU7 should the company yield significant exploration results at its tenements or make significant developments at its Spodumene Concentrator Project.

The key risks to our investment thesis include fluctuations in lithium carbonate prices, lithium hydroxide being preferred to lithium carbonate for the use in EV batteries, Exchange rate risk as LU7's earnings will be in Canada's local currency and most importantly, funding risk, as LU7 will need to raise substantial sums from both equity and debt markets to fund the Quebec Lithium Carbonate Refinery as well as its ongoing operating activities.

Lithium: the "white oil" of the 21st century

Almost everyone at this stage has heard the importance of lithium metal in the ongoing EV revolution and green energy transition. You know that electrifying everything will require a lot of lithium as the metal is the staple material in the fabrication of Lithium-ion batteries (LIBs). Lithium-ion batteries (LIBs) have long been recognised as efficient energy storage systems, thanks to their notable attributes such as energy density, power density, reliability, and stability. Although various materials are being used for the fabrication of cathode and anodes in LIBs, lithium is found in every lithium battery technology, hence giving the metal the title of the "white gold" or the "white oil" of the 21st century, owing to its key role in the energy transition.

Lithium-ion batteries are leading the transition to a rechargeable world. Lithium is found in every lithium battery technology, hence giving the metal the title of the "white gold" or the "white oil" of the 21st century, owing to its key role in the energy transition.

The distinctive chemical properties of lithium make it an exceptional element for applications in batteries. On the periodic table, lithium is classified as the third lightest element and the lightest among all metals. This characteristic translates to a higher electric charge per unit mass compared to other metals. In battery terminology, this results in lithium having a remarkably high specific (or volumetric) capacity, signifying its exceptional ability to store electric charge.

In the realm of batteries, achieving a high voltage is crucial. When one of the battery's electrodes incorporates lithium, high voltages can be attained due to lithium's pronounced tendency to release electrons, generating an electric current. This ease of electron release contributes to the formation of high voltage.

The stored electric energy in a battery is a product of both its capacity and voltage. Enhancing either of these factors, or ideally both, results in a high-energy battery. In typical Lithium-ion batteries (LIBs), the positive electrode utilises a synthetic lithium compound (e.g., LiNiMnCoO2), while the negative electrode employs graphite, essentially composed of graphitic carbon. During the charging process, lithium ions migrate to the graphite, forming LiC6. Upon discharge, these ions leave the lithiated graphite, reverting to graphite and LiNiMnCoO2.

This cyclic process can be repeated numerous times, making LIBs highly effective rechargeable batteries. The utilisation of such materials has led to the development of batteries with the highest energy and power density, actively contributing to the evolution of a rechargeable world. It's worth noting that pure lithium is not used in LIBs due to safety concerns during cycling. The types of lithium compounds (salts) used in battery manufacturing include "lithium hydroxide (LiOH)" and "lithium carbonate (Li_2CO_3)".

Commercial LIB currently uses various cathode compositions, including ~5–10% of lithium obtained from lithium salts (lithium carbonate or lithium hydroxide) and different ratios of other metals. The cathode materials found in LIBs, such as LiFePO4 (referred to as LFP) or LiNiMnCoO2 (referred to as NMC), are manufactured through chemical processes involving lithium salt and other metal salt precursors. In the case of lower energy density materials like LFP, lithium carbonate (Li2CO3) is commonly employed as one of the precursor chemicals. On the contrary, NMC materials, known for their higher energy density, are favoured in various sectors, including the automotive industry. The lithium precursor typically used for these materials is lithium hydroxide (LiOH).

Lithium carbonate is predominantly utilised in the production of LFP batteries, commonly employed in smaller EVs with iron phosphate in the cathode. Additionally, lithium carbonate is employed in batteries for home electronics and IT devices that require relatively lower energy density.

In contrast, lithium hydroxide finds primary application in high-nickel electric vehicle (EV) batteries known for their high density and capacity. The ease of synthesising lithium hydroxide with nickel contributes to elevating the energy density of batteries by enhancing the formulation of cathode materials. Consequently, secondary batteries produced using lithium hydroxide are generally categorised as nickel-bonded ternary[1] batteries, exemplified by types like NCM and

[1] Ternary battery refers to a battery configuration where the cathode comprises three metal elements, typically lithium cobalt oxide (LCO), nickel, and another element.

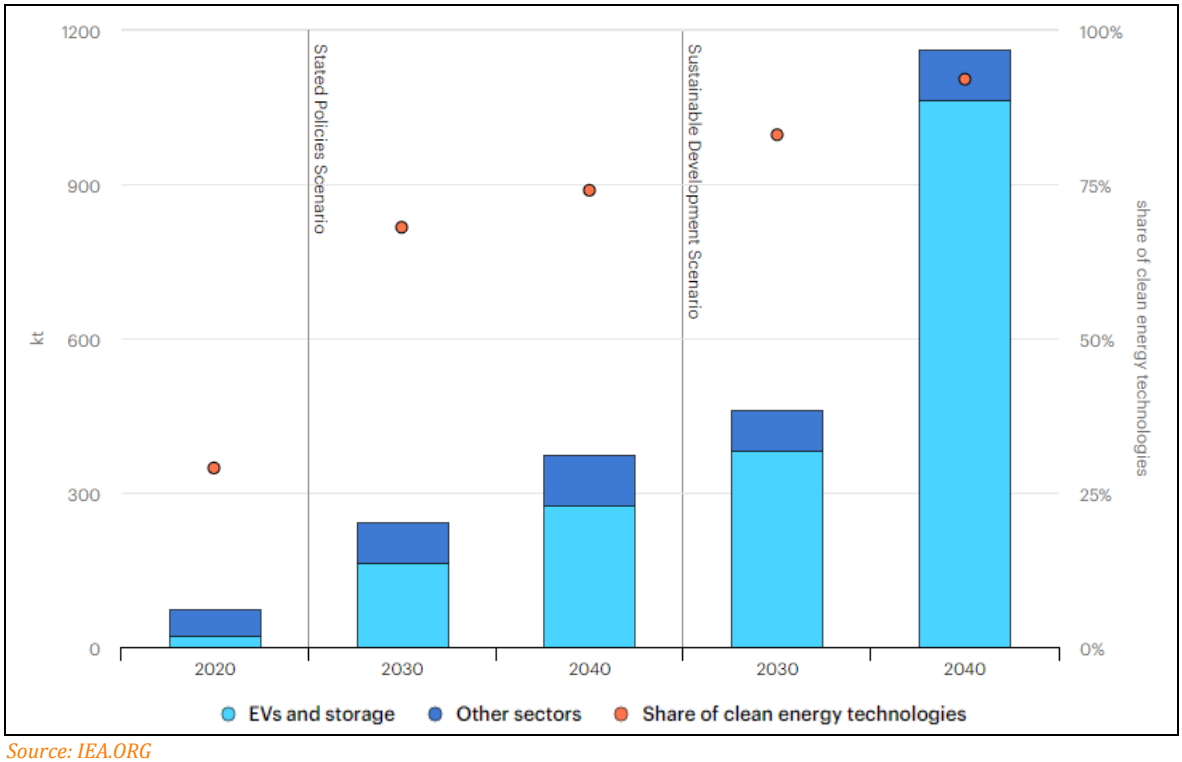
NCA. The nickel content in these lithium-ion battery types exceeds 60% of the weight of the cathode, making them substantially more expensive than LFP alternatives. As such, LFP batteries have found common use in the more affordable Chinese EVs.

Global refined lithium production capacity has to multiply in the next 15-20 years for the world to reach its emissions targets.

Historically, lithium has found extensive applications in various industries, such as ceramics, glass, steel, and chemicals, and it was also utilised in medicine to treat bipolar disorders. However, in recent times, the lithium market has experienced a shift, with lithium salts employed in rechargeable batteries emerging as the dominant sector, constituting approximately 65% of total lithium consumption in 2021[2], and projected to be the primary push factor for the soaring lithium demand projections (Figure 1). A lithium-ion battery pack for a single electric car contains about 8 kilograms (kg) of lithium, according to figures from the US Department of Energy Science and engineering research centre Argonne National Laboratory.

Prioritising the electrification of transportation has become a key focus in the transition towards a low-carbon future, particularly to align with the goals outlined in the Paris Climate Agreement, aiming to reduce carbon emissions by over a third by 2030. Various governmental initiatives are now encouraging or mandating vehicle owners to shift towards electric alternatives. For instance, Norway is set to prohibit the sale of petrol-powered cars by 2025, and the United Kingdom, Ireland, Germany, and the Netherlands plan to implement a similar ban by 2030, with France following suit by 2040. The recent European Union strategy to address global warming includes a proposal to prohibit new internal combustion engines by 2035. As long as lithium-ion batteries (LIBs) remain the primary power source for electric vehicles (EVs), the demand for lithium is expected to continue rising. Therefore, under the sustainable development scenario, the projected demand for lithium indicates the need to multiply the current global lithium production capacity in the next 16 years.

Figure 1: Total lithium demand by sector and scenario, 2020-2040



Source: IEA.ORG

[2] https://www.nature.com, Tracing the origin of lithium in Li-ion batteries using lithium isotopes

Lithium supply chain is heavily dominated by China, posing security risks to the West

From the perspective of lithium, the supply chain for manufacturing Lithium-ion Batteries (LIBs) is intricate and segmented into many stages. These stages encompass mining, extractive and refining metallurgy, synthesis of cathode active materials, battery-cell manufacturing, and the assembly of battery packs. It is common for these stages to be carried out in different locations and countries.

According to Nature.com, global lithium reserves are distributed across various regions, with significant proportions found in Chile (44%), Australia (22%), Argentina (9%), China (7%), and other countries contributing to the remaining 18%. Lithium resources are generally classified into three main categories:

Brine Reserves: Approximately 60% of globally identified lithium reserves come from brine sources. Notably, Salars in the "lithium triangle" of Bolivia, Argentina, and Chile, as well as in Qinghai province and the Tibetan region of China, host a significant portion of these lithium-brine reserves.

Hard-Rock Lithium Resources: This category, comprising lithium-rich pegmatite or hard-rock lithium resources, is the second-largest source of available lithium. Recent estimates attribute approximately 30% of identified lithium reserves to pegmatites. Spodumene ($LiAlSi_2O_6$) is the primary economic mineral among the lithium-containing minerals in pegmatites. Australia boasts the largest spodumene deposits, with significant deposits also found in Canada and China.

Sediment-Hosted Deposits: Representing less than 8% of global lithium resources, these deposits are sometimes inaccurately generalised as "clay-hosted deposits." Examples include hectorite (found in McDermitt, USA, and Sonora, Mexico) and jadarite (found in Jadar, Serbia). Extracting lithium from this source has proven challenging and expensive, with no company thus far achieving commercial-scale production from such deposits.

Hard rock lithium resources present greater flexibility as lithium contained in spodumene can be converted into either lithium hydroxide or lithium carbonate. Additionally, it facilitates faster processing and yields higher quality due to spodumene generally having a higher lithium content than brine deposits.

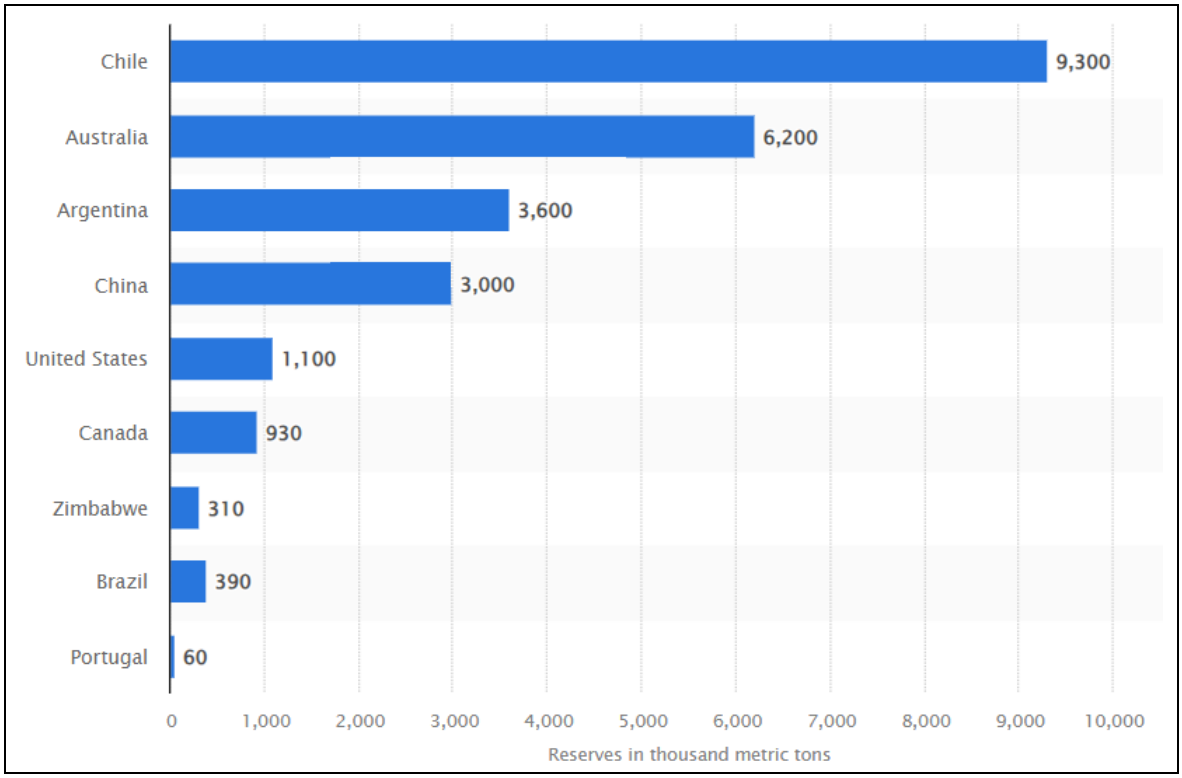
Lithium hydroxide is often produced industrially from lithium carbonate in a reaction with calcium hydroxide (limewater).

In contrast, extracting lithium from brine offers the benefit of reduced production costs and a smaller environmental footprint. However, brine extraction may also encounter challenges related to water availability and potential environmental impacts on local ecosystems. Furthermore, lithium contained in brine resources can only be converted into lithium carbonate using the existing technologies. However, lithium carbonate can be further processed into lithium hydroxide. A reaction of lithium carbonate with lime is used for this process, which is not very complex[3]. Lithium hydroxide is often produced industrially from lithium carbonate using this method[4].

[3] Mario Grageda et al, Analysis of a Process for Producing Battery Grade Lithium Hydroxide by Membrane Electrodialysis

[4] Wikipedia, Lithium hydroxide

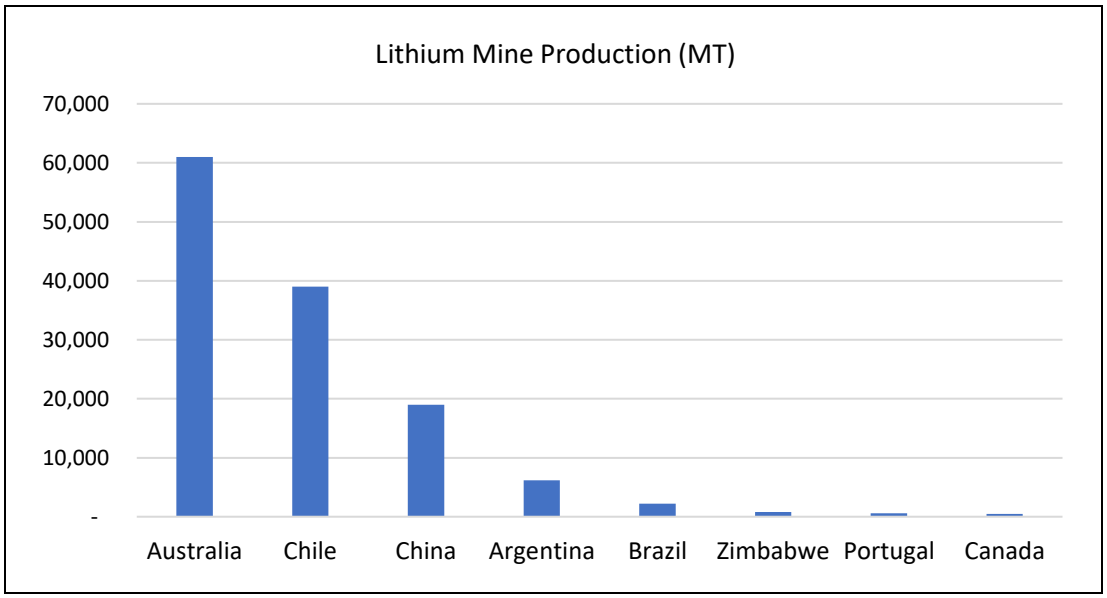
Figure 2: Reserves of lithium worldwide as of 2023 by country



Source: STATISTA.COM

During the 1990s, the United States was the leading lithium producer, contributing to over one-third of the global production by 1995. However, Chile surpassed the U.S., undergoing a mine production surge in the Salar de Atacama lithium brine deposits. Subsequently, Australia's lithium production experienced a substantial increase, and it is currently by far the largest lithium miner in the world. In 2022, global lithium mine production, Australian hard-rock deposits contributed 47%, followed by Chile (30%), China (15%), Argentina (5%), and a group of countries, including Zimbabwe, Canada, Brazil, and Portugal (7%).

Figure 3: Major countries in worldwide lithium mine production in 2022



Source: BatteryJuniors.com, East Coast Research

China has been securing its supply of raw lithium materials by acquiring numerous lithium mines around the globe as well as developing its domestic lithium resources.

As the world's third-largest producer, China has not only concentrated on developing its domestic mines but has also strategically acquired approximately $US7.9 billion worth of lithium assets in countries such as Chile, Canada, and Australia over the past decade. According to AFR.COM[5], Chinese companies have acquired half of the world's largest lithium mines that were made available for sale since 2018, highlighting the increasing influence of the world's second-largest economy over the global battery metal supply chain. However, a more detailed examination indicates that arguments based on national interests are becoming a barrier to future deals, particularly concerning the United States and its allies. This situation is compelling China to explore emerging markets for new sources of the sought-after raw material.

Chinese automotive manufacturers and battery producers are progressively assuming control over the supply of raw materials to ensure a steady provision of lithium, nickel, and cobalt. They have acquired 23 equity stakes in companies involved in the production of these essential minerals. The global push to manufacture electric vehicles, wind turbines, and solar panels in support of the clean energy transition has surged demand for these resources.

The Western countries are strategically supporting an expansion in downstream lithium processing

Although much of the lithium is mined outside of China, the country presently hosts nearly 60% of the world's lithium refining capacity for batteries, underscoring its predominant position in the lithium supply chain. Australia, for example, dominates lithium mining by producing nearly half of the global lithium supplies but exports 90 per cent of its output to China for refining.

China's dominance over the lithium supply chain didn't take place overnight. In 2015, China elevated lithium to a national priority under its "Made in 2025" industrial strategy. Substantial electric vehicle subsidies, estimated at $60 billion, played a pivotal role in establishing a market and the accompanying battery supply chain. Unlike elsewhere in the world, battery companies in China have consistently invested billions in domestic lithium sources. According to Benchmark Minerals, China hosted nearly 80% of the world's lithium-ion battery production capacity as of August 2022.

Lithium projects beyond China have been subject to market fluctuations, expanding and contracting in response to lithium price fluctuations. Conversely, domestic investment in China has remained relatively stable. Consequently, China stands alone as the only country capable of overseeing the entire lithium production process, from raw material extraction to finished batteries, without relying on imported chemicals or components. This unique position is largely attributed to a political environment that prioritises reducing the cost of lithium over maximising shareholder value, according to Wired[6].

Without immediate investment in the intermediary processing stage, lithium extracted from new mines in the US, Canada, Australia, and Europe will still need transportation to Asia and back for refining before being suitable for use in electric cars. This process could increase emissions, jeopardise energy independence, and inadvertently provide China with a strategic advantage.

While China is securing its supply of raw lithium materials, the United States and its allies are worried China could exploit its control over lithium processing, similar to its actions in 2023 when it imposed restrictions on the export of gallium and germanium. These metals are vital to the semiconductor, electric vehicle, and weapons industries.

Given China's steadfast control over the worldwide lithium refining capacity, there are concerns among experts about a potential replay of the oil and gas crisis triggered by Russia's invasion of Ukraine in 2022. Geopolitical tensions could escalate into a sanction-driven conflict, potentially

[5] Afr.com, China buys half of the lithium mines on the market.

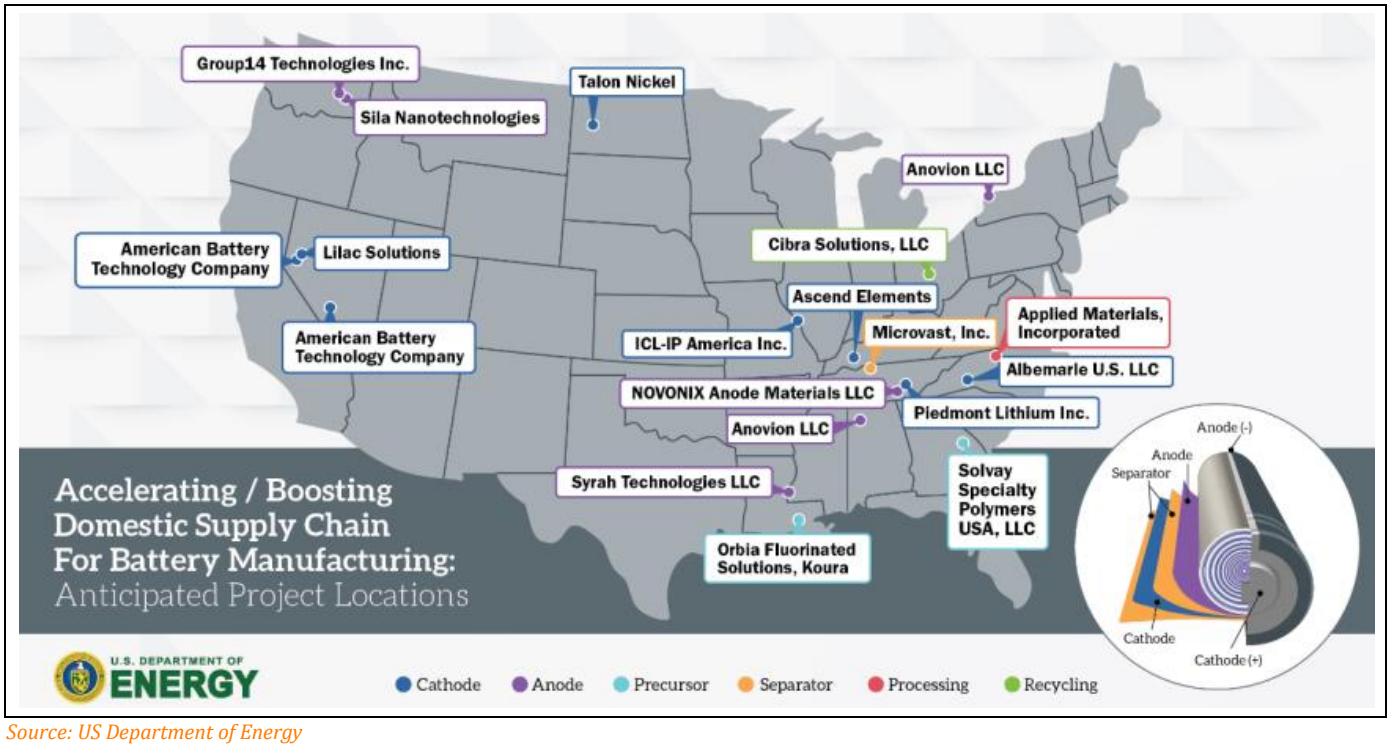
[6] Wired.com, The World Can't Wean Itself Off Chinese Lithium

leading to China halting the supply of refined lithium just when Western automakers need them to power the switch to EVs. That makes Western efforts to expand lithium refining capacity more imperative than ever.

In response, the Western governments have come up with policies and strategic plans to support the expansion of their lithium refining capacities. In the US, the Biden administration has laid out the National Blueprint for Lithium Batteries to help guide investments in developing a domestic lithium value chain. In 2022, The US Department of Energy announced over US$2.8 billion in funding to support domestic manufacturing of battery materials. This is part of the US's Bipartisan Infrastructure Law, which is set to spend hundreds of billions of dollars on the nation's infrastructure development.

Funded through $2.8 billion from the Bipartisan Infrastructure Law, the portfolio of projects will support new and expanded commercial-scale domestic facilities to process lithium, graphite and other battery materials, manufacture components, and demonstrate new approaches, including manufacturing components from recycled materials[7] (Figure 4). Some of these projects are directly related to developing domestic lithium refining capabilities in the US. These include Albermale's Kings Mountain Lithium Materials Processing Plant, Lilac's Lithium Production Project and Piedmont's Lithium Hydroxide Plant, each receiving significant Federal cost shares of US$150m, US$50m and US$142m, respectively.

Figure 4: Anticipated battery supply chain projects in the US



Source: US Department of Energy

Similarly, Canada launched the "Mines to Mobility" initiative in 2019 to build a sustainable battery innovation and industrial ecosystem in Canada. By 2022, the initiative had already attracted more than CA$7 billion in announced investments to capture opportunities in Canada's value proposition in the battery sector. The investors consisted of notable global players in the midstream and upstream of the country's battery value chain (Figure 5).

[7] https://www.energy.gov/ Bipartisan Infrastructure Law Battery Materials Processing and Battery Manufacturing & Recycling Funding Opportunity Announcement

Figure 5: Investments across Canada's battery value chain as of 2022

Source: Canada Minister of Natural Resources

The Canadian federal government continues to support Canada's battery ecosystem through the "Canadian Critical Minerals Strategy." The Canadian Critical Minerals Strategy was announced in 2022 with a $4 billion budget, a project that sets out a course for Canada to become a global supplier of choice for critical minerals[8].

[8] www.canada.ca, The Canadian Critical Minerals Strategy

A significant lithium conversion gap is being left in North America

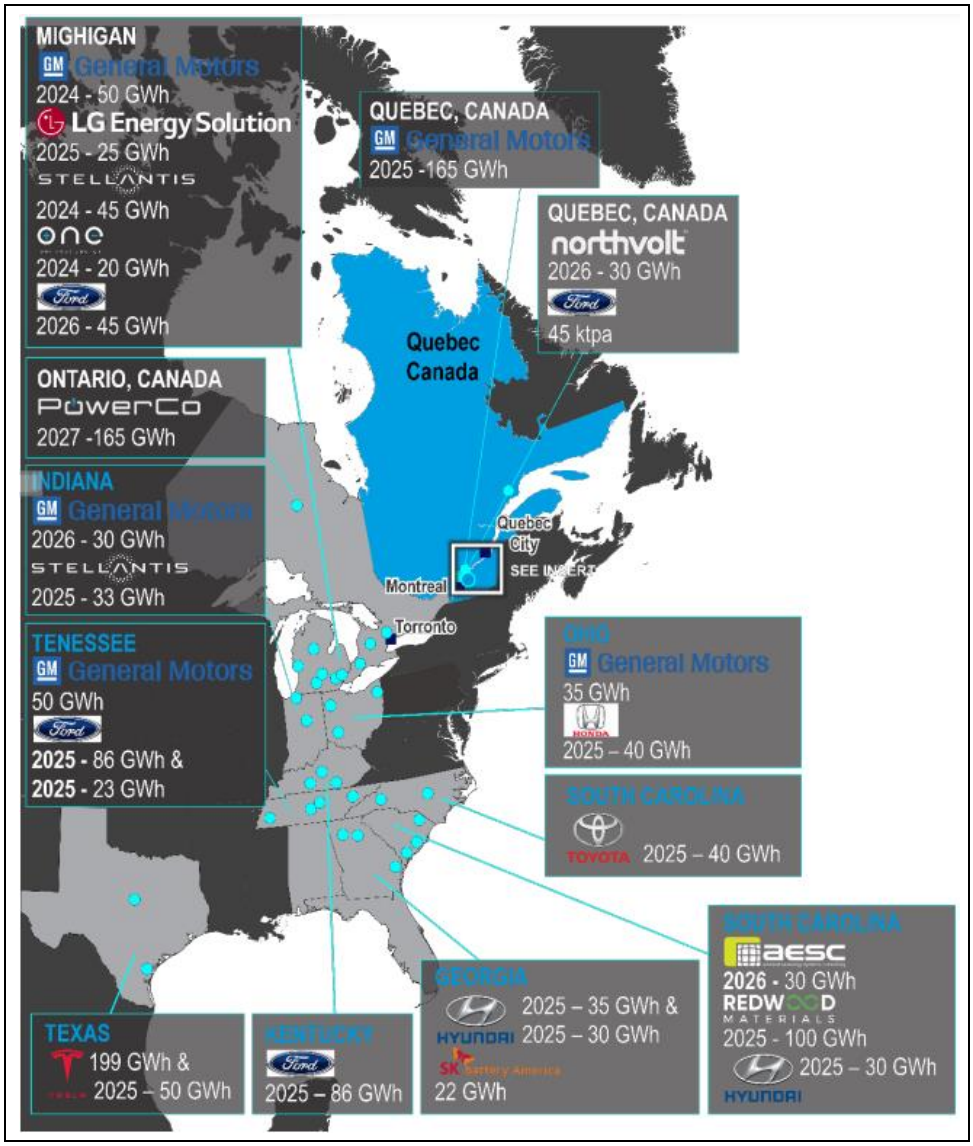
As you can see in (Figures 4 and 5), substantial funds and planning are going into the downstream battery manufacturing in North America. More than 20 major battery manufacturers, predominantly situated on the East Coast of North America, are gearing up to deploy an estimated 900GW of battery capacity by 2028 (Figure 6). In response to the surging demand for electric vehicles (EVs), North America's EV battery manufacturing capacity is anticipated to soar from 55 gigawatt-hours in 2021 to nearly 1,000 gigawatt-hours by 2030, necessitating an investment exceeding $40 billion. This strategic expansion aims to bolster the production of 10 to 13 million all-electric vehicles annually by 2030, positioning the United States as a formidable global competitor in the EV market.

Furthermore, Canada's recent emphasis on investing in battery plants, backed by collaborations with industry giants such as Volkswagen, Stellantis, LG Energy Solution, Ford, General Motors, and Honda, seeks to fortify its automotive sector. This initiative has the potential to create around 250,000 jobs and contribute $48 billion annually to the Canadian economy by 2030.

Despite the anticipated substantial increase in battery manufacturing capacity in North America, the industry faces a significant challenge in establishing a reliable supply chain, particularly due to limited access to lithium converters in the region. The challenge stems from the scarcity of independent lithium converters planned for construction in North America, potentially attributed to a lack of expertise or a series of recent failures and delayed startups in the sector. Consequently, a notable gap in lithium conversion and processing is looming in North America.

Considering the projected battery manufacturing capacity of 900 GWh by 2028 and using a ratio of 850g lithium carbonate equivalent (LCE) per KWh, Lithium Universe estimates that 800,000t of LCE per annum will be required to satisfy demand in North America. Lithium Universe's strategy is to bridge this lithium conversion and processing gap by leveraging a proven track record in constructing such converters.

Figure 6: Some of the new battery manufacturing and cathode facilities proposed to be in operation by the end of 2027 on the eastern seaboard of North America



Source: Company

Québec Lithium Carbonate Refinery — LU7's plan to help with North America's lithium conversion gap

Lithium Universe, led by the lithium pioneer Iggy Tan, has assembled what the company rightfully calls the "Dream Team" to construct Canada's first lithium carbonate refinery in Quebec. The team includes former Galaxy executives involved in the construction and operation of Mt Cattlin and Jiangsu, and former Talison Lithium Greenbushes Mine management.

The team includes Iggy Tan as the Chairman, who was the former leader of Galaxy Resources Limited (Galaxy). He was responsible for the construction of Galaxy's Mt Catlin Spodumene Project and the downstream Jiangsu Lithium Carbonate Project. When he started at Galaxy the company's market capitalisation was less than A$10 million and rose to A$2.5 billion when the company merged with Orocobre Limited in August 2021. Iggy's previous

LU7 has the right team with the right expertise in place. Members of LU7's management team have previously constructed, commissioned and operated a similar lithium carbonate refinery operation before, therefore substantially lowering the execution risks associated with this type of startups.

experience working with Lithium dates back to the early 1990s when he briefly managed the Greenbushes Lithium Mine and commissioned the first Lithium Carbonate plant for Gwalia Consolidated.

Patrick Scallan, a non-executive director at LU7, was a former manager of 25 years at the world-class Greenbushes Lithium Mine in Western Australia. Greenbushes is the largest lithium hard rock mine globally and also hosts the highest-grade orebody in the world. Patrick specialises in hard rock mining and spodumene concentrating, with downstream relationships with major spodumene converters worldwide.

Dr Jingyuan Liu, a non-executive director at LU7, is widely regarded as a leading technical expert in the lithium industry. He previously was General Manager of Development and Technologies at Galaxy Resources Limited, where he was responsible for overseeing the construction and commissioning of the Mt Cattlin Spodumene Project and the world-renowned Jiangsu Lithium Carbonate plant. Following his work with Galaxy, he has acted as a special adviser to various lithium carbonate and lithium hydroxide projects globally, including the Lithium Hydroxide Plant operated by Tianqi in Kwinana, Western Australia.

John Sobolewski, recently appointed as the Chief Financial Officer (CFO) of Lithium Universe, is a former CFO of Galaxy Resources, where he played a pivotal role during the feasibility, funding, construction and operation phases of the Mt Cattlin Spodumene mine and Jiangsu Lithium Carbonate Refinery.

Figure 7 shows some of LU7's Lithium Dream Team members and their previous involvement in Galaxy Resources' lithium success story. LU7's management team has experience in successfully building lithium projects. For a full description of LU7's entire management team, please refer to Appendix II.

Figure 7: Some of LU7's Lithium Dream Team members responsible for Galaxy Resource's success story

Source: Company

Having the right team with the right expertise who have successfully constructed and commissioned a similar project before is a key de-risking factor, in our view. This is because the biggest risk associated with developing a sophisticated operation such as a lithium carbonate

refinery is the execution risk. This is clearly demonstrated by a series of recent failures and delayed startups in the sector.

Having the right team with the right expertise and experience is the key to successfully developing a high technical and sophisticated project such as a lithium refinery.

For example, Australia's only lithium refinery, the Kwinana Lithium Hydroxide Refinery in Western Australia, was commissioned after 4 years of delays and at a cost in multiples of what was initially estimated.

The Kwinana Refinery started construction in 2017 through a joint venture between the Chinese company Tianqi Lithium Corporation and IGO (ASX: IGO). The refinery was supposed to be commissioned by 2018 and was originally meant to cost $299m. By 2019, Tianqi had increased its investment to $525 million and deferred it to 2020. However, by August 2020, the Kwinana Phase 1 project was put on hold as costs doubled. It was revealed that the company's investment per ton of lithium hydroxide ($/t LiOH) for Kwinana was ten times higher than that of a similar converter developed by Ganfeng in China.

In December 2020, Tianqi entered into a $1.4 billion deal with IGO to secure the $200 million required to complete Phase 1 by 2022, four years behind schedule. The challenges persisted. In March 2021, MSP Engineering downsized to 400 employees as Tianqi refused to compensate the company for building the plant, leading to a legal dispute. Subsequently, in April, IGO announced the engagement of a new contractor to resume work on the refinery. Finally, by the September quarter of the same year, commissioning had commenced, marking the production of the first lithium hydroxide from Kwinana—likely boosted by the surging prices in the market.

Currently, there are no lithium refineries operating in Canada due to failed attempts. In 2011, Canada Lithium started the construction of the Quebec Lithium Spodumene Mine (currently called North American Lithium or "NAL"), including a lithium carbonate refinery. The Original owner, Canada Lithium, struggled to achieve commercial production, and after a merger with Sirocco Mining and a name change to RB Energy, shut down operations in 2014 and ultimately filed for bankruptcy. The mine began operation again in 2017, but a drop in lithium prices forced it back into care and maintenance in 2019. NAL, which was a subsidiary of the Chinese firm Contemporary Amperex Technology Co. Ltd (CATL), filed for bankruptcy protection the same year. Sayona Québec—a 75-25 joint venture between Australian miner Sayona Mining and American company Piedmont Lithium—purchased NAL in August 2021. The string of previous owners had already invested significant capital into the operation, estimated at C$400m by Sayona. The JV produced the first tonnes of lithium spodumene concentrate in 2023 after investing considerable additional capital into the operation. No plans to bring the lithium carbonate refinery at the project into production have been reported by the JV.

Many lithium refinery startups experienced significant cost blowouts and technical failures due to the complicated nature of such refineries and the managements' lack of experience.

Nemaska Lithium was another Canadian attempt to build a vertically integrated lithium carbonate producer. The company was planning to produce lithium hydroxide and lithium carbonate from its Whabouchi spodumene deposit, located in the James Bay region of Quebec, Canada, using its proprietary hydroelectric-powered hydrolysis lithium extraction technique. The initial plan for the project was to be in full production by 2Q 2018. However, after spending more than C$400 on project development, it failed to start production in 2019 after experiencing cost overruns of more than C$300m. The company raised an additional C$600m equity capital as part of a C$1.1b financing package to finish the mine and the plant. Per the company's press release in June 2023, the mine is scheduled for commissioning in 2025 and the plant in 2026.

That is while Lithium Universe's management team, which was part of the Galaxy Resources' management team at the time, completed the construction of the Jiangsu Lithium Carbonate Plant in China in a period of 2 years (25 months), from groundbreaking in February 2010 to steady state commercial production in May 2012, within budget and schedule (Figure 8). This proven track record in execution excellence at a similar project is a key de-risking factor for LU7, in our view. This means we can trust in LU7's ability to deliver on its mission to build a similar lithium carbonate refinery elsewhere, in this case, Canada.

Figure 8: LU7's management team's track record in delivering Jiangsu Lithium Carbonate Refinery in China

Source: Company

The Refinery's design flow sheet has been finalised by Hatch

Lithium Universe has appointed Hatch Ltd to undertake the engineering study for the design of its multi-purpose battery-grade lithium carbonate refinery in Quebec, Canada. The Engineering Study is aimed to define the process and non-process infrastructure requirements for a 16,000 tpa lithium carbonate refinery, as well as the definitive estimated capital and operating costs.

Hatch stands out as a globally renowned engineering firm with an expansive network comprising over 15,000 professionals operating across more than 150 countries worldwide. Originating from Canada, Hatch brings extensive expertise to the successful execution of lithium-based projects, both in Québec and on a global scale.

With over 70 years of project delivery experience in Québec, Hatch has been at the forefront of introducing modular construction techniques to the region. Notably, the company was responsible for the engineering and delivery of the 17,000 tpa Jiangsu Lithium Carbonate Plant for Galaxy Resources Limited. Following completion and commissioning, this plant emerged as the world's largest lithium refinery of its kind, showcasing Hatch's prowess in groundbreaking project design and delivery.

LU7's management team built the world-class Jiangsu lithium carbonate refinery in China, and they are now planning to build another one in Canada using the same proven model.

LU7 is essentially planning to replicate the Jiangsu lithium carbonate refinery in China, therefore minimising the technical risks that led to the cost blowouts and delays of other attempts to build lithium refineries in Canada and Australia. Based on our communications with the management and LU7's downstream technical expert, Dr Jingyuan Liu, large and key portions of the Jiangsu Refinery design have been replicated across different operations in China, approving the model's replicability and solid design. Dr Liu has confirmed that to this day, the Jiangsu Refinery produces a premium and consistent product in the Chinese market, rivalling newer and purportedly "more advanced" processes. Dr Liu is widely regarded as an expert in this field and has provided advice to many players in the industry, including some 20 different companies.

The company announced in December 2023 that Hatch had finalised the flow sheet design of the Refinery, rated at 16,000 tpa with an assumed feed grade of spodumene at or around 5.5% Li_2O. The final lithium carbonate product should be at least 99.5% to 99.9% pure, exceeding the requirements of a battery-grade lithium carbonate product. Target plant availability is 84%, and the target overall recovery rate for lithium is 85%. Anhydrous sodium sulphate, generally used in the textile industry, will be sold as a by-product. The alumina silicate residue from the leached spodumene will be sold to the cement industry.

The design includes the use of conventional kiln conversion of spodumene, sulphuric acid sulphation and leaching, impurity removal and final purification to battery-grade quality lithium carbonate, similar to that of the Jiangsu Lithium Carbonate Plant. Lithium Universe has brought

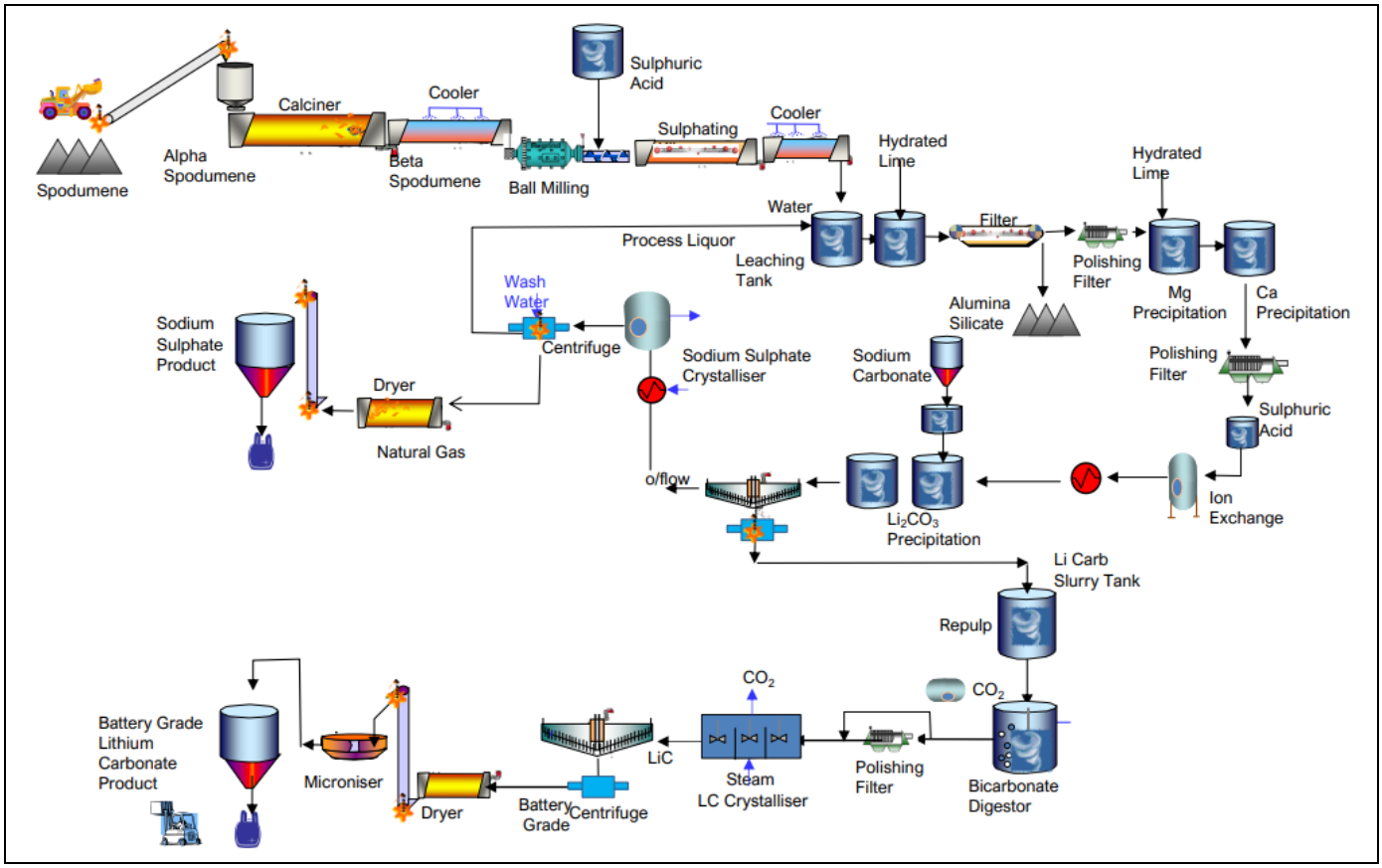
together a strong team of lithium experts to assist in the execution of this strategy, noting that Mr Iggy Tan and Dr Jingyuan Liu previously worked with Hatch on the design, construction and commissioning of the Jiangsu Lithium Carbonate Plant.

The flowsheet design

The finalised design flow sheet (Figure 9) illustrates how the front-end loader operation and belt conveyors feed spodumene concentrate from the stockpile area to the calciner. The concentrate is calcined at 1080°C in a direct-fired rotary kiln to convert the alpha spodumene to the leachable beta spodumene. The calcining kiln off-gases will pass through a cyclone and an electrostatic precipitator to comply with environmental emissions limits. The hot calcine is indirectly cooled and dry-milled to less than 300 µm. After storage in a surge bin, the beta spodumene is mixed with concentrated sulphuric acid and roasted at 250°C in an indirectly heated kiln. The sulphating kiln off-gases will be cleaned in a wet scrubber to meet site environmental emissions limits. The sulphated spodumene is cooled and fed to the leach circuit. The combined leached solids and precipitated impurities are thickened prior to being filtered in a belt filter. The filtrate is combined with the thickener overflow and passed through a polishing sand filter and an ion exchange column to remove residual calcium, magnesium and other multivalent cations before the lithium carbonate area.

The solution entering the lithium carbonate production area is heated and then reacted with a hot sodium carbonate solution in a single crystalliser operating at 95°C. The coarse crystals from the crystalliser are thickened before passing to the centrifuge circuit. Raw lithium carbonate is further purified to battery grade using the carbonation process. After slurried in demin water, soluble lithium bi-carbonate is formed from the bubbling of carbon dioxide gas. The solution is filtered, and lithium carbonate is re-crystalised when the solution is heated using injected steam. Carbon dioxide gas is re-generated which is recycled to the front end of the purification process. Battery-grade lithium carbonate is centrifuged and dried in an indirect-fired kiln at 120°C. The dry coarse lithium carbonate is air milled to less than 6 µm in a microniser and then pneumatically conveyed to the storage bins and bagging stations. Sodium sulphate is produced as a by-product from the vacuum evaporative crystallisation of the morther liquor. A bi-product, sodium sulphate, is used in the textile industry. The design closely resembles that of the Jiangsu Lithium Carbonate Plant but is more robust and capable of processing various types of concentrate from Canada and around the world.

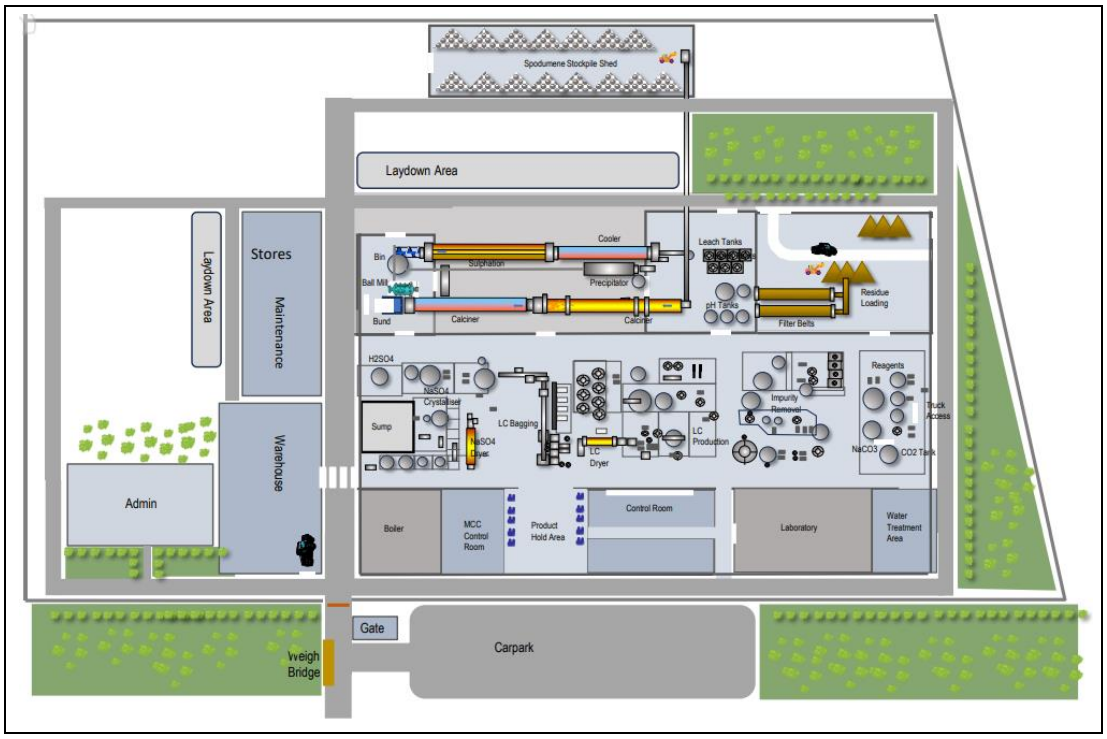
Figure 9: Process Flow Diagram, LU7's Lithium Carbonate Refinery in Quebec, Canada



Source: Company

The company has developed a draft of the overall site layout to account for Canadian climate conditions, which also defines the roads required for the delivery of raw materials and the shipment of products and co-products (Figure 10).

Figure 10: Draft layout of LU7's Lithium Carbonate Refinery in Quebec, Canada



Source: Company

Prime Quebec industrial land has been secured by Lithium Universe for its Refinery

In February 2024, LU7 announced that it had successfully executed an option agreement to acquire a commercial property strategically located within the Becabcour Waterfront Industrial Park (BWIP). The site is Lot 22 of the Parc industriel et portuaire de Becancour, Becancour, Quebec, Canada, with an area estimated to be 276,423 square metres (the Site).

The option agreement is signed with a Canadian Company and is subject to regulatory and shareholder approval. The expected purchase price is C$12.6m and is subject to increase by the cost of any infrastructure works. The option has a term of 36 months and has a monthly fee of C$63,135 for a period of 30 months from July 2024. The option fee reduces the purchase price. The final decision to acquire the land depends on securing project finance for the Lithium Refinery Project. Therefore, LU7 isn't required to raise funds specifically for buying the land. If the company fails to secure the funds required to build the Refinery, it will have the option to withdraw from the agreement.

LU7 has secured prime industrial land for its Refinery with existing infrastructure and in proximity to existing highways and rail roads, providing ready access to major ports to facilitate logistics.

The BWIP is the preferred site for the company's 16,000 tpa Lithium Carbonate Refinery, validated through a comprehensive location option study by Hatch. The Site is strategically located between Montreal and Quebec City, facilitating labour availability. Positioned near a major highway, the site seamlessly connects to the extensive North American highway network. Additionally, the facility benefits from daily service by the Canadian National Railway (CN), enabling cross-continental transportation from east to west and north to south, linking key ports on the Atlantic and Pacific coasts. The Port of Becancour, operational year-round, boasts a water depth of 10.67 metres, accommodating vessels of varying sizes. It features a pier extending 1,130 metres into the St. Lawrence River, equipped with 5 berths and a roll-on/roll-off ramp, further solidifying its strategic fit as the location for the company's proposed Lithium Carbonate Refinery due to its ability to easily access international spodumene supply whilst the Canadian internal spodumene supply develops.

The Site stands at the intersection of hydroelectrical distribution networks, making the BWIP a highly reliable centre for low-cost hydroelectrical power in Quebec. In addition, the park features a co-generation plant generating 550 MW to ensure a secure supply of power to the plants operating in the park. BWIP's robust infrastructure also includes a 2400 kPa high-pressure gas line and an underground distribution network, ensuring a seamless supply to user companies. Furthermore, the park offers access to both potable and industrial water, as well as advanced industrial waste facilities.

A number of lithium carbonate end users are developing their plants in the proximity of LU7's secured land for its Refinery, potentially creating a ready market for the Refinery's products.

The Bécancour Facility hosts the General Motors (GM) and Korea-based POSCO Chemicals' new C$500m cathode active material (CAM) factory, forecasted for first production in 2025. In addition, the C$1.2b Ford/EcoPro BM cathode factory with a proposed production of 45,000 tonnes of CAM per year and slated to start production in 2026 also is located within the BWIP. Both CAM factories commenced construction in mid-2023 and are within 1km of LU7's proposed Lithium Refinery location, potentially providing a ready market for LU7's lithium carbonate product. Only 140km south of Bécancour and more recently, Swedish battery developer and manufacturer Northvolt is set to build a wholly integrated lithium-ion battery gigafactory in Quebec, Canada. This facility will have an annual cell manufacturing capacity of 60 gigawatt hours (GWh).

The Site is large enough to cater to future expansions of LU7's Lithium Carbonate Refinery, with three trains of the designed 16,000 tpa plant being able to fit on the Site (Figure 11). The image also shows the secured land to the existing rail infrastructure to the north and highway access to the south.

Figure 11: LU7's secured land for its Refinery in Baconcour, Canada, and its capacity to accommodate three of the designed 16,000 tpa plant layout

Source: Company

A Definitive Feasibility Study (DFS) is being completed

As LU7 is planning to replicate the Jiangsu Lithium Carbonate Refinery, using the same engineering manager (Hatch) and the key executives who built the Jiangsu Refinery, the management has opted to straightly conduct a detailed DFS-level study. Given the work that has already been done with regard to the process flow sheet design and land acquisition, we expect the DFS to be completed by the end of 2024. The high confidence level of a definitive feasibility study (DFS) will then be very helpful with the company's attempts to secure the required project financing.

As part of the ongoing DFS, the company has started metallurgical testing on various international sources of spodumene utilising the flow sheet developed for its Refinery. A diverse range of commercial spodumene concentrates from around the world have been collected by the company for these tests. A successful completion of this program will demonstrate the viability of the process in generating battery-grade lithium carbonate from various spodumene concentrates available in the market, which will be another significant benefit to LU7's Lithium Carbonate Refinery Project.

Project financing – governments in Canada are highly supportive

Canadian federal and provincial governments are highly supportive of companies willing to set up their operations in Quebec, create jobs and contribute to the province's economic vitality. Projects are evaluated at the provincial and federal levels, with the funding structure ultimately determined by the project's strategic and economic benefits for Canada and Quebec, as determined by the respective ministries of economy. On the Quebec side, the financing falls under

the ESSOR program[9] which could include any or a combination of the following, depending on the project:

- A refundable contribution (debt financing) at competitive rates
- Loans in partnership with other lenders
- Loan guarantee (repayment guarantee of up to 70% of net loss, fees are applied)
- Equity investment
- Quasi-equity financing in the form of debentures or subordinated debt
- Assistance with feasibility study and management costs

A review of recent incentives provided by Canada's federal government and Quebec's provincial government to international companies trying to set up EV battery materials operations in Quebec demonstrates the large magnitude of Canadian governmental support for such operations. Examples of deals done in 2023 include:

In 2023 alone, Canadian federal and Quebec's provincial governments provided billions of dollars of support for international companies trying to set up EV battery materials operations in Quebec.

- A combined federal and provincial investment of C$2.7b for the construction of an EV battery factory by Northvolt, a Swedish battery manufacturing giant. The factory is expected to be built by the end of 2026 and will have an annual battery cell manufacturing capacity of up to 30 GWh. It will also create up to 3,000 jobs in the region as the plant reaches its full production potential. The first phase of the project is valued at C$7 billion in total investment.
- A combined federal and provincial investment of C$644m in a new battery materials production plant to be built in Becancour, Quebec, by automaker Ford Motor Co. and South Korean companies EcoProBM and SK On Co. The plant is valued at more than C$1.2 billion and is expected to create over 345 jobs.
- A combined federal and provincial investment of C$300m in a General Motors-POSCO Chemical battery materials facility that is expected to create about 200 jobs in the country. The project is valued at C$600m and is expected to be operational by 2025.

With a significant downstream lithium processing gap in North America, and given Canada's rapidly expanding EV industry and the current reliance on Chinese lithium processing capacity, we anticipate substantial support from Canadian governments as well as large industry players for LU7's Lithium Carbonate Refinery Project.

LU7 is looking at a bigger picture – building a vertically integrated lithium operation in Quebec

LU7's Dream Team, drawing on its experience and expertise across the lithium value chain, aims to establish a major vertically integrated mine to battery grade lithium carbonate processing hub in Québec. This strategy aims to benefit from the region's extensive lithium resources to provide locally sourced feedstock for the company's lithium carbonate refinery.

Spodumene Concentrator Project in Quebec

As a part of the Company Québec Lithium Processing Hub (QLPH) strategy, Lithium Universe has appointed Primero Group Limited (Primero) as lead manager in relation to the design of a multi-purpose stand-alone concentrator.

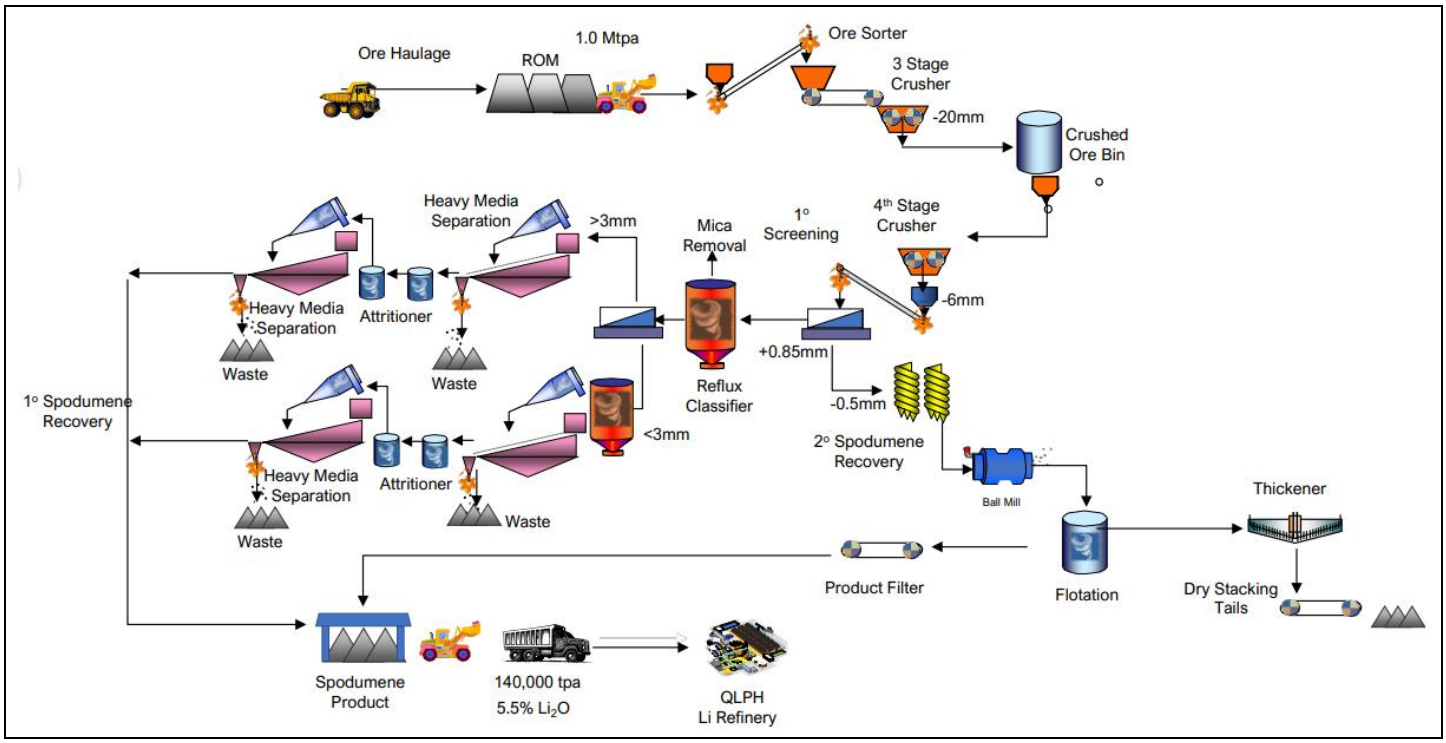
[9] The ESSOR financing program is a government tool set up within the framework of the Economic Development Fund (FDE). Its aim is to meet the financing needs of companies and support them in carrying out their investment projects. ESSOR is aimed at Quebec-based, for-profit companies operating in the province.

Founded in 2011, Primero specialises in providing design, construction, and operational services for resource projects worldwide. With extensive experience in the lithium sector, Primero's vertically integrated business model provides for Build, Own, and Operate (BOO) capabilities, enabling its clients to conserve their capital expenditures whilst expediting the transition from an exploration-based to production-based business operation.

In November 2023, LU7 announced the final design for the Concentrator, with the capacity of processing 1 Mtpa spodumene ore with an assumed grade of 1.1% Li_2O. The output is expected to be around 140,000 tpa of spodumene concentrate at a grade of around 5.5% Li_2O to maximise recoveries in the company's planned Lithium Carbonate Refinery.

The finalised design flow sheet outlines a four-stage crushing process to generate crushed ore ranging from 0.85mm to 6mm in size. Any crusher fines smaller than 0.85mm identified by the screens will undergo processing in a dedicated flotation unit. The spodumene recovered from this process will undergo drying and then be blended with the final spodumene concentrate. Additionally, any mica present in the crushed ore will undergo removal using a reflux classifier. Subsequently, the material will be split into two streams: one less than 3mm and the other greater than 3mm. Both streams will be directed through two-stage dense media separation units. The stream that is less than 3mm will undergo mica removal via a reflux classifier at the initial stage. The recovered spodumene from both streams will be combined through blending and stored in a dedicated storage shed. To ensure functionality in the Québec climate, the entire plant will be winterised. See (Figure 12) for the final flow sheet.

Figure 12: Final flow sheet design of LU7's spodumene concentrator project in Quebec, Canada



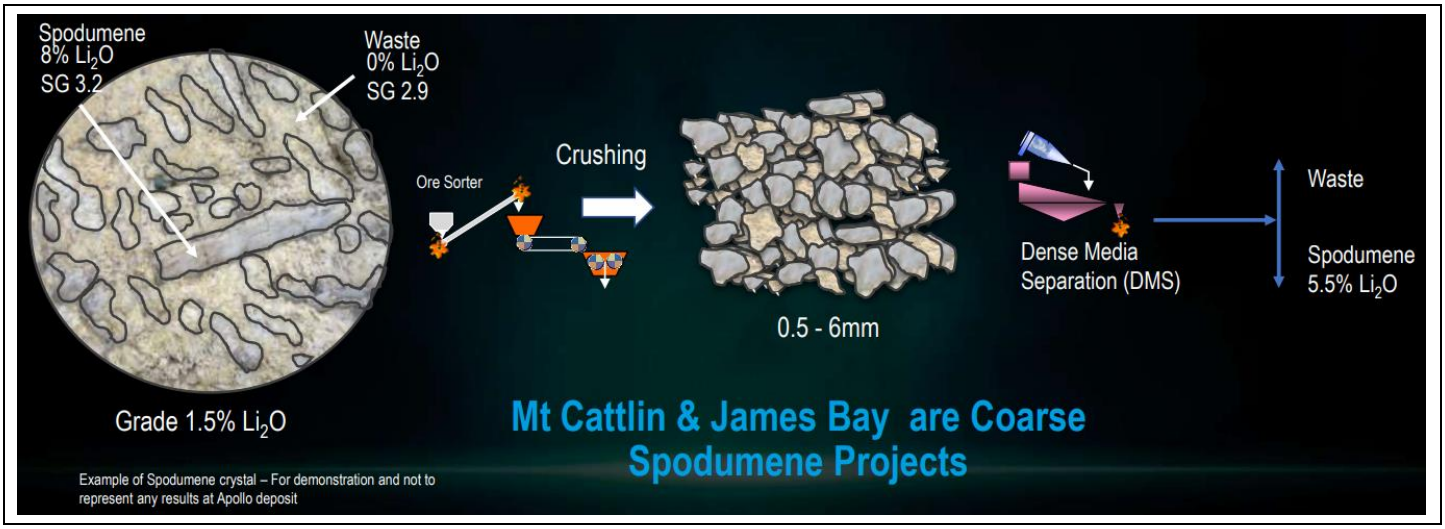
Source: Company

The flow sheet design closely resembles that of the Mt Cattlin plant, except for the inclusion of the floatation unit. This addition aims to create a more resilient plant capable of processing various

types of ore from the James Bay, Quebec region, enhancing its capacity to handle a broader range of ore types and ensuring robustness in operations.

The spodumene deposits at Mt Cattlin and most of the hard rock spodumene deposits in the James Bay region of Quebec are of the coarse spodumene variety with spodumene crystals that have larger particle sizes. In mineral processing and lithium extraction, the distinction between coarse and fine spodumene can be significant, as it can affect the efficiency of extraction and subsequent processing. Coarse spodumene can be recovered and concentrated using a simple Dense Media Separation (DMS) technique. In this method, a dense suspension (heavy liquid) is used to separate minerals based on their density. In this process, spodumene, being a lithium aluminium inosilicate mineral, normally has a higher density than the waste material and will be easily separated using a simple DMS technique.

Figure 13: spodumene separation using the DMS technique



Source: Company

The Concentrator Engineering Study will also define the process and non-process infrastructure requirements for the concentrator project, as well as the definitive estimated capital and operating costs.

The study will address specific project development, delivery, and operating considerations, including permitting and approvals, beneficiation flowsheet, risk management, sustainability measures, and product logistics, setting the stage for a Definitive Feasibility Study (DFS) for the Concentrator Project.

Lithium exploration projects

In the long run, Lithium Universe aims to build its own spodumene producing mines in Quebec, Canada to supply the required feedstock to its planned spodumene concentrator. In this regard, the company has acquired a number of highly prospective lithium exploration tenements in Quebec, as well as in Western Australia. The following is a brief description of LU7's flagship exploration project.

Apollo Lithium Project (80% LU7)

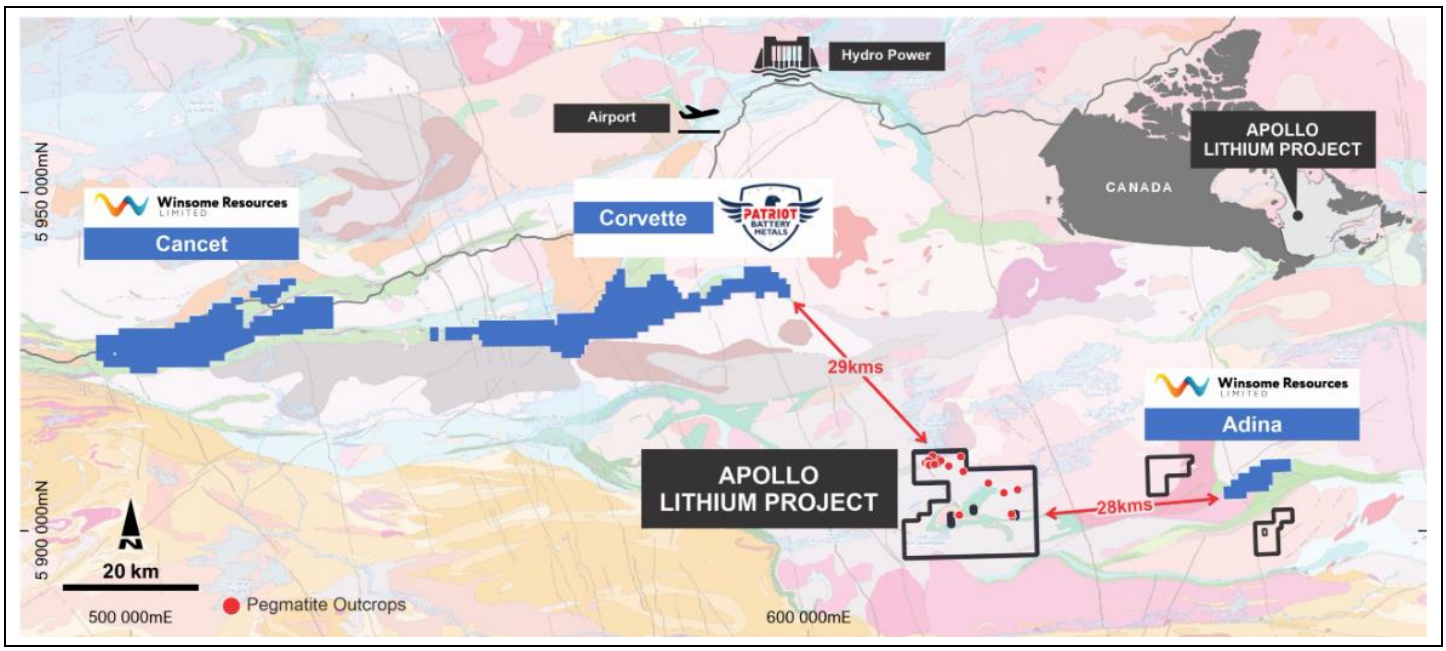
Being LU7's flagship lithium exploration project, Apollo boasts a commanding land position extending across 240 km^2. Apollo is strategically located in a geologically prosperous area for hard rock lithium discoveries. This has been demonstrated by the significant discoveries of high-

LU7 owns a portfolio of early-stage but high potential lithium exploration assets in tier 1 mining jurisdictions.

grade and large spodumene deposits in the proximity of the project's landholdings. The project is located in the same greenstone belt and approximately 29 km southeast of the Corvette Lithium Project, owned by Patriot Battery Metals Inc. (ASX: PMT, TSXV: PMET, OTCQX: PMETF) with a market capitalisation of A$570m as of 7 March 2024. Patriot has defined a very large Inferred lithium resources of 109.2 Mt at 1.42% Li2O at Corvette. Additionally, Winsome Resources Limited (ASX: WR1, FSE: 4XJM, OTCQB: WRSLF), with a market capitalisation of over A$160m, has reported an Inferred Mineral Resource Estimate of 59 Mt at 1.12% Li2O at its Adina Project, situated 28 km to the east of Apollo.

Apollo holds reports of 17 pegmatite outcrops within its tenement package (the red dots in Figure 14). Considering the exceptional outcomes achieved by these neighbouring projects and their shared geological host, the Apollo Lithium Project holds significant potential for comparable success, in our view.

Figure 14: Apollo Lithium Project and nearby discoveries overlayed on the regional magnetic dataset



Source: Company

LU7 has partnered with Laurentia Exploration Inc., a Quebec-based exploration company with successful experience in projects in the James Bay region. Their responsibilities encompass all aspects of the exploration work at Apollo.

The company has completed an Airborne Magnetic Survey at Apollo and is completing gravity surveys, soil samplings, and analysis at the project. Artificial Intelligence technology is also employed by the company to assist with the interpretation of satellite images and visual content to guide the efforts of LU7's field teams towards locations with heightened potential. The results of the geophysics and geochemical surveys are being used by the company to define future drilling targets.

Quebec – becoming the North American lithium hub

The federal and provincial governments are collaboratively working towards positioning Quebec as a prominent North American leader in the supply of metals crucial for driving the global green transition. Quebec emerges as an exceptionally appealing investment destination for lithium production, owing to its robust resource development sector, the availability of skilled labour,

and its strategic proximity to rapidly expanding electric vehicle markets in both North America and Europe.

In 2023, Canada claimed the top spot among 30 countries in BloombergNEF's (BNEF) latest global lithium-ion battery supply chain ranking. The ranking looks at each country's potential to build a secure, reliable and sustainable supply chain for lithium-ion batteries. It evaluates that potential by analysing 46 metrics across five categories: raw materials, battery manufacturing, downstream demand, environmental and social governance (ESG), and industry, infrastructure and innovation. Canada was second behind China in last year's ranking. According to BNEF, its ascent to the leading position in 2023 was due to the country's consistent manufacturing and production advances, as well as strong ESG credentials.

Canada has the potential to become an EV battery supply chain powerhouse for various reasons.

Firstly, the country has an abundance of critical minerals and a solid mining sector. Canada has all the critical minerals required to manufacture EV batteries, including lithium, nickel, graphite, copper, cobalt and manganese, amongst others. All these natural resources besides an established mining industry with a proven track record and high ESG credentials.

Secondly, Canada has a strong manufacturing industry with strong R&D capabilities and the lowest manufacturing costs among the G7. Canada's manufacturing industry also benefits from strong ESG credentials owing to the country's high and strict ESG standards and low-cost clean energy. In 2022, hydroelectricity and wind energy accounted for 67.6% of Canada's total electricity production[10]. These attributes have already attracted significant international investment into the country's manufacturing of key battery materials. These include the aforementioned investments by General Motors, POSCO, Ford and Northvolt to spend billions of dollars building EV battery and battery materials facilities in Quebec.

Thirdly, Canada has a historically strong vehicle manufacturing industry with a dedicated focus on electrification supported by government initiatives. According to Madeinca[11], Canada is one of the biggest car manufacturing countries in the world and the automotive industry is a significant contributor to the country's economy, producing around 1.9 million vehicles a year. There are five global original equipment manufacturers (OEMs) in Canada that assemble over 1.4 million light commercial vehicles every year. These companies are Ford, GM, Stellantis, Honda, and Toyota. In addition, Canadian automotive manufacturers produce around 460,000 passenger vehicles and 23,000 heavy trucks in a year. The country also has almost 700 parts suppliers, which include companies such as Linamar, Magna, and Martinrea.

Canada has certain elements that favourably position it to become a world scale EV supply chain powerhouse. It has very high ESG credentials, established mining and manufacturing industries with lowest costs amongst the G7, as well as strong government support to expand its EV industry.

Due to the Canadian government's commitment to achieving carbon neutrality in the country's vehicle fleet by 2050, it is providing subsidies to car manufacturers to promote the production of electric vehicles. As reported by the International Trade Administration, these subsidies include $2 billion to Ford, $1.5 billion to Stellantis, and $1 billion to General Motors (GM).

All the five main car manufacturers operating in Canada have also invested in electric vehicles. Stellantis contributed $3.6 billion in 2022 towards retooling plants in Windsor and Brampton, Ontario, to create the first electric vehicle testing lab in North America with a research and development centre.

GM committed $2 billion to refurbish its facilities in Oshawa and Ingersoll, Ontario and creating 2,600 jobs in the process. Ford announced a $1.95 billion investment in Ontario, Honda a $1.4 billion investment to make its Alliston, Ontario plant into a leading hybrid-electric vehicle facility, and Toyota is optimising its plants in Cambridge and Woodstock, Ontario intending to produce more electric vehicles than any other automaker in Canada.

[10] www150.statcan.gc.ca, Electricity supply and disposition, 2022

[11] madeinca.ca, Automotive Industry Statistics In Canada

Lastly, Canada's strategic geographical location uniquely positions it to serve as the epicentre of the global EV battery ecosystem. Positioned at the intersection of critical North American, Canadian-European, and Asia-Pacific free trade and supply chain zones, Canada benefits from a robust network of rail and marine transportation systems. Additionally, a series of accessible ports connect the Atlantic Ocean to the Great Lakes, serving the East and Midwest regions of the USA.

According to Dentons[12], the corridor stretching from the Saguenay region in Québec to Windsor in Ontario is emerging as the focal point of the Canadian EV battery supply chain. Encompassing major metropolitan areas such as Greater Montréal, the Greater Toronto Area, and the National Capital Region, along with key industrial regions like Saguenay, Trois-Rivières, Bécancour, Kingston, Oshawa, and Windsor, this corridor caters to all segments of the EV battery supply chain. Notably, this corridor already houses one of the world's largest automotive industries.

A valuation based on the NPV of the Quebec Lithium Carbonate Refinery Project indicates significant upside potential for LU7

Presently, LU7 is completing a DFS for its Quebec Lithium Carbonate Refinery Project. Although the company has not completed any preliminary studies on the project, the decision to straightly conduct a detailed DFS-level study was made as LU7 is planning to replicate the Jiangsu Lithium Carbonate Refinery using the same engineering manager (Hatch) and the key executives who built the Jiangsu Lithium Carbonate Refinery. Jiangsu Refinery's model is a proven concept as the refinery has been successfully operating for more than a decade while producing some of the highest quality lithium carbonate products in China, according to LU7's management. As such, we think the management's decision to skip the preliminary economic and feasibility assessments is sound and saves the company money and more importantly precious time.

With a significant downstream lithium processing gap in North America, and given Canada's rapidly expanding EV industry and the current reliance on Chinese lithium processing capacity, we anticipate a substantial support from Canadian governments as well as large industry players for LU7's Lithium Carbonate Refinery Project.

Given the significant gap in the downstream lithium processing in North America, and especially in Quebec, where the Canadian federal and provincial governments are extremely supportive of a rapidly expanding EV industry, faster planning by LU7 will provide the company with an important first-mover advantage. In our view, this should maximise the chances of LU7 to benefit from governmental incentives as well as favourable deals and support from strategic end customers.

As previously explained, substantial investment is being made by international companies and Canadian governments to build EV batteries and battery materials manufacturing facilities in the same region where LU7 is planning to build its lithium carbonate refinery facility. At the same time, lithium mine production capacity in Canada is on the rise, making it the sixth largest lithium mine producer in the world. As such, a significant gap is being left in the country's downstream lithium processing capacity.

Presently, Canada's entire lithium mine production (mainly spodumene) is shipped abroad for processing and then shipped back to Canada for use in the production of EV batteries. This materials transportation brings about significant added costs for the EV battery and cathode materials manufacturers in the region. In addition, this exposes these companies to supply risks in the face of the ever-existing geopolitical tensions as most of the lithium refining capacity lies in China currently.

Therefore, **we anticipate substantial support from the Canadian governments, as well as the EV industry players in the Quebec region, for any solid plans to build a lithium refining capacity in the region.**

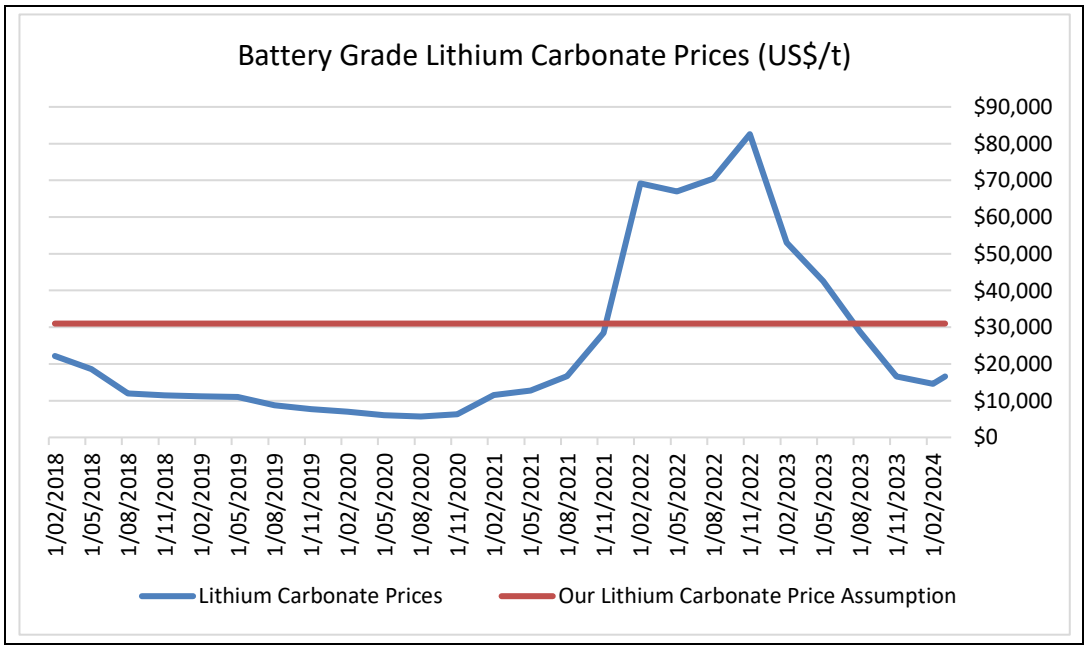
[12] www.dentons.com, Why Canada has the potential to become an EV battery supply chain powerhouse

As we explained in this report, successfully building lithium refinery facilities on time and within budget has proven to be extremely difficult by the number of failed attempts, delays and cost blowouts at projects in Australia and Canada. That is while Lithium Universe's management team, which was a key part of the Galaxy Resources' management team at the time, completed the construction of the Jiangsu Lithium Carbonate Plant in China in a period of 2 years (25 months), from groundbreaking in February 2010 to steady state commercial production in May 2012, within budget and schedule. **This proven track record in execution excellence at a similar project is a key de-risking factor for LU7, in our view**. This means we can trust in LU7's ability to deliver on its mission to build a similar lithium carbonate refinery elsewhere, in this case, Canada. Similarly, we expect to see a similar trust from future financiers and industry players in Canada to support LU7's plan to help fill the downstream lithium processing gap in the region. Who else would be more reliable with this crucial task than the experts who've successfully done it before?!

LU7 has not officially released any numbers regarding the economics of the Quebec Lithium Carbonate Refinery Project. However, we've been able to estimate a preliminary NPV for the Refinery after discussions with the company and their experience with the Jiangsu Refinery's actual numbers adjusted for the Canadian business environment.

In discussion with LU7, we have estimated a project Capex of between US$450-550m. We have assumed a long-term battery-grade lithium carbonate (LC) price forecast of around US$31,000/t. It is noteworthy that LC prices are very volatile. The battery-grade lithium carbonate prices ranged from US$50,000 to US$80,000/t during 2022 before descending to the low levels of around US$17,000/t currently (Figure 15). However, we believe the impact of these low prices will hurt the supply of LC in the long term as low LC prices curtail investments in the sector while a raft of new battery manufacturing capacity in North America is to come online in the next few years. We expect the subsequent disparity between the scheduled increase in the LC production and the scheduled demand increase for LC to push the LC prices to more sustainable levels of above US$30,000 in the long term.

Figure 15: Lithium Carbonate prices are very volatile



Source: Investing.com, East Coast Research

Based on our LC price assumption, the Refinery's annual revenue will be in the region of US$503m, estimated from the sale of 16,177 tonnes per annum of 99.5% purity lithium carbonate products after a 3-year ramp-up period. Production costs are estimated at around US$300m per

annum based on a long-term spodumene concentrate price assumption of US$1,850/t, leading to a gross profit margin estimate in the region of 40%. Spodumene prices are also highly volatile, ranging from US$3,000 to US$8,000/t during 2022 before plummeting to the current levels of less than US$1,000/t, making our long-term spodumene price assumption of US$1,850/t conservative, in our view.

We expect the Quebec Refinery to see relatively stable margins throughout its operating years. The end customers will likely ensure their supply by entering into offtake agreements with LU7 that leave a stable margin between the feedstock prices (spodumene) and the lithium carbonate price from the Refinery. LU7 plans to team up with major OEMs (Original Equipment Manufacturers) in North America that need lithium carbonate (LC) for their battery plants. These OEMs, like Ford and Tesla, prefer not to rely solely on China for their supply chain. Therefore, LU7 is hopeful that it can work out a deal where it buys spodumene concentrate at benchmark prices and sells refined battery-grade LC to those OEMs at pre-agreed rates. This setup ensures the OEMs' security of LC supply for their battery plants while ensuring the economic viability of LU7's Refinery. The additional benefit of securing such contracts with renowned OEMs would be the improved financing prospects for the Refinery. Project financiers will be a lot more comfortable to lend for the development of projects that are backed by big names.

The above estimates for the Refinery's Capex, revenue, operating costs, and sustaining Capex per annum of US$6m over an assumed project life of 20 years have led to a pre-tax project NPV of US$1,057m (A$1,626m) using a 10% discount rate. (Figure 16) shows the project's NPV variations and financial performance based on different price assumptions for Spodumene and Lithium Carbonate. It can be seen that even under very conservative price assumptions, the Quebec Lithium Carbonate Refinery Project is still expected to make full economic sense.

Figure 16: Sensitivity of Quebec Refinery's NPV to different spodumene and LC price assumptions

	Spodumene Price (US$/t)	Li Carb Price (US$/t)	Pre-tax NPV (US$m)	Margin	EBITDA (US$m)	IRR	Payback (Years)
	800	16,532	307	40%	107	18%	5.9
	1,000	19,303	450	40%	125	21%	5.0
	1,200	22,084	595	40%	143	24%	4.3
	1,400	24,827	734	40%	160	27%	3.8
	1,600	27,679	887	40%	179	30%	3.4
LU7 Forecast	**1,850**	**31,071**	**1,057**	**40%**	**200**	**34%**	**3**
	2,000	33,177	1,168	40%	215	36%	2.8
	2,200	35,956	1,312	40%	233	38%	2.6
	2,400	38,735	1,456	40%	251	41%	2.4
	2,600	41,513	1,600	40%	269	44%	2.2
	2,800	44,291	1,744	40%	287	47%	2.1
	3,000	47,069	1,888	40%	304	49%	2.0

Source: Company, East Coast Research

Given that the DFS is not complete yet, we have relied on a percentage of the NPV approach in our valuation of LU7. Due to the current magnitude of the uncertainty regarding the capital structure of the company after a Final Investment Decision (FID) is made after the release of the Refinery's DFS, as well as the rapidly evolving spodumene and lithium carbonate prices currently, it is advisable to utilise a multiple-driven Net Present Value (NPV) based valuation methodology for the valuation of LU7's Quebec Lithium Carbonate Refinery Project. After the company releases a successful DFS outcome, we can conduct a more accurate DCF valuation methodology to calculate the fair value of LU7's Refinery Project.

(Figure 17) shows our basis for using NAV-based valuation methodology. The numbers in the table are our estimate of the fair valuation of projects based on the results of the feasibility studies conducted and their accuracy. These ranges are estimated using historical averages observed in the stock market and our understanding of the remaining risks after each level of study is completed.

Figure 17: Basis for using NAV-based valuation

Stage of Development	EV as % of NAV
Scoping Study	**0-5%**
Pre-Feasibility Study (PFS)	5-10%
Definitive Feasibility Study (DFS)	10-30%
Fully Funded DFS	30-50%

Source: East Coast Research

LU7's Refinery's DFS is not complete yet. As such, we have opted to use a very conservative 4% of the post-tax NPV as the target Enterprise Value for our base case scenario and 5% for our more optimistic projection. This methodology yields a valuation range of A$0.047 to A$0.058 per share (Figure 18). Our mid-point target price of A$0.053 represents a Price/NAV of 0.40x, indicating a valuation headroom of more than 150% to the current share price of A$0.021.

Figure 18: NPV-based valuation calculation for Lithium Universe (Fully diluted)

LU7 Valuation (A$ m)	Base Case	Bull Case
Lithium Carbonate Refinery Project - NPV (post-tax)	1,018	1,018
Average EV as a % of NAV	4.0%	5.0%
Firm Value	**40.70**	**50.88**
Cash*	4.37	4.37
Provisions and Liabilities^	-0.38	-0.4
Total Equity Value	**44.69**	**54.87**
Fully diluted number of shares (m)^^	941.76	941.76
Implied price (A$)	**0.047**	**0.058**
Current price (A$)	0.021	0.021
Upside (%)	*126.0%*	*177.4%*
Mid-point Target Price (A$ cents)	**0.053**	
Price / NAV (X)	**0.40x**	

*Notes: * As of 31 Dec 2023 and assuming a full uptake of the recently closed $3m Share Purchase Plan at A$0.02 per share;*
^ As of 30 June 2023;
^^ Includes 388.5m of paid-up shares, 225m of restricted fully paid shares, 108.5m restricted options, 9m unlisted options, 60.7m performance rights and 150m from assuming a full uptake of the currently ongoing SPP at A$0.02 per share
Source: Company, East Coast Research

It is imperative to note that our current valuation of LU7 does not include the value of the company's multiple prospective lithium and REE exploration assets in tier 1 jurisdictions. Our valuation also has not assigned any value to LU7's Spodumene Concentrator Project in Quebec. All these assets have the potential to greatly impact the valuation of LU7 should the company yield significant exploration results at its tenements or make significant developments at its Spodumene Concentrator Project.

Additional shares on issue

It is important to note that we have assumed a considerably higher number of shares than are currently on issue. The company currently has 388.5m issued shares, but it has another 225m restricted shares in escrow, which together with 60.7m performance rights and 117.5m restricted and unrestricted options can have a significant dilutionary impact on the per share valuation of LU7. However, we have included all of these in our calculation of the fully diluted shares, and therefore in the per share valuation of LU7. We have also added an extra 150m to the fully diluted shares count from assuming a full uptake of the currently ongoing Share Purchase Plan to raise A$3.0m at A$0.02 per share.

Re-rating of LU7

LU7's stock is currently trading significantly below our mid-point target valuation. This is our view that achieving the following milestones will enable a re-rating on the stock, thereby narrowing the gap to our target price and increasing the shareholder value:

- **A successful completion of the Quebec Lithium Carbonate Refinery DFS** can potentially demonstrate the technical feasibility of the Project and its lucrative prospects given the significant gap in North America's downstream lithium processing capacity. Given the work that has already been done with regard to the process flow sheet design and land acquisition, we expect the DFS to be completed by the end of 2024. The high confidence level of a definitive feasibility study (DFS) will then be very helpful with the company's attempts to secure the required project financing. Therefore, a successful DFS outcome will be a big catalyst for the share price and value uplift, in our view.
- **Favourable metallurgical test work results** will be an important step towards de-risking the project by validating the process flow sheet engineered by Hatch. A diverse range of commercial spodumene concentrates from around the world have been collected by the company for these tests. Successful completion of this program will demonstrate the viability of the process in generating battery-grade lithium carbonate from various spodumene concentrates available in the market. This will be another significant benefit to LU7's Lithium Carbonate Refinery Project and will enhance its lucrativeness.
- **Announcements of favourable offtake agreements for the Quebec Refinery Project's lithium carbonate products**: We expect to see substantial support from the EV battery and battery material producers in the Quebec region for LU7's Refinery project. As previously mentioned, Canada exports its entire spodumene abroad for processing and imports its entire need for refined lithium. This exposes the country's EV industry to significant supply risks as the majority of the world's lithium refining capacity lies in China. Therefore, we see considerable chances for these companies to sign favourable offtake agreements with LU7 to ensure the economic viability of LU7's refinery project and their own supply of refined lithium products.
- **An announcement of financing support and incentives from Canada's federal government and Quebec's provincial government** would decrease the funding risks for LU7's Quebec Lithium Carbonate Refinery Project and would assist the company with the much-needed funds to develop the Project. The Canadian governments have assigned billions of dollars in the budget to assist with the expansion of the country's EV industry. They have already provided billions of dollars in financing packages to support the construction of EV battery and battery materials manufacturing facilities in the country, specifically in the Quebec region. Given the significant gap in the region's downstream lithium processing capacity, we anticipate that the Canadian governments will be very supportive of LU7's Lithium Carbonate Refinery Project
- **Significant exploration results at the company's lithium and REE exploration assets.** LU7 is currently exploring for lithium and REE deposits at its multiple prospective exploration projects in tier 1 mining jurisdictions in Canada and Australia. The possible discovery of large lithium or REE deposits with high grades at any of the company's exploration projects would catapult the share price.

- **Successful progress at the Spodumene Concentrator Project in Quebec.** LU7's management is also drawing on its expertise and experience in developing successful Spodumene concentrator projects to build a Spodumene Concentrator in Quebec by largely resembling the work they did at the Mt Cattlin plant in Western Australia. LU7 has appointed Primero to undertake the Concentrator Engineering Study. Primero has finalised the flowsheet design and is now defining the process and non-process infrastructure requirements for the concentrator project as well as the definitive estimated capital and operating costs. The likely favourable outcomes of the study would demonstrate the project's feasibility and economic viability and, therefore, add to LU7's valuation.

Risks

We foresee the following key risks to our investment thesis for LU7:

- **Commodity price risk**: LU7's Quebec Lithium Carbonate Refinery Project's economic viability is highly sensitive to global lithium carbonate prices, which depend on macroeconomic factors, i.e. demand for EVs and refined lithium supply from China. This necessitates the regional EV industry participants' and governments' support to ensure the economic viability of LU7's Quebec Refinery Project if they wish to wean off the Chinese lithium. China's current steadfast control of the lithium supply chain is owed to consistent Chinese government support for the industry that secured it from ever-existing commodity fluctuations for years until its EV and lithium industry supply chain established itself.
- **Market risk**: There's a risk of lithium hydroxide being preferred to lithium carbonate for use in EV batteries. Lithium hydroxide is the lithium salt used in the manufacturing of higher energy density NMC batteries commonly used in high-end EVs. On the other hand, lithium carbonate is predominantly used in the manufacturing of lower energy-density LFP batteries. These batteries are commonly used in smaller EVs and batteries for home electronics and IT devices that require relatively lower energy density.
- **Exchange rate risk:** LU7's earnings will be in Canada's local currency, where it is expected to produce and sell its lithium carbonate products. Therefore, currency fluctuations can impact the company's earnings in AUD. That being said, AUD/CAD historical exchange rates in the long term have shown small variations as both currencies are heavily commodity-based and tend to largely move together in line with commodity cycles.
- **Funding risk**: LU7 will need to raise substantial sums from both equity and debt markets to fund the Quebec Lithium Carbonate Refinery as well as its own operating activities until the large-scale production commences and it becomes cash flow positive. Raising these funds on favourable terms and in a timely manner is set to be a big challenge for the company.
- **Execution risk**: Lithium refineries are notoriously challenging to build, with high chances of delays and cost blowouts. Although the biggest advantage of LU7 is its management team's extensive experience and proven track record in successfully constructing such projects on time and on budget, this is a risk worth noting as it was the main reason behind a number of failed attempts to commission similar projects in Australia and Canada.

Appendix I: LU7 SWOT analysis

Figure 19: SWOT analysis

Strengths	Weakness
(1) LU7 has a large team of executives with proven experience and track record in the construction and commissioning of upstream and downstream lithium production. (2) There's a big market opportunity for LU7's Quebec Refinery project due to the massive gap in the downstream lithium processing in the region and reliance on China. (3) Prime industrial land has been secured for the Quebec Lithium Carbonate Refinery Project. (4) LU7 has finalised the flow sheet design for its Lithium carbonate Refinery Project using the same engineering manager and executives who built the world-class Jiangsu Lithium Carbonate Refinery. (5) The long-term demand outlook for refined lithium products is very bullish. (6) LU7 has multiple prosperous lithium exploration projects in Tier 1 mining jurisdictions in Australia and Canada.	(1) The Quebec Lithium Carbonate Refinery Project's Definitive Feasibility Study (DFS) results are several months to a year away from completion. (2) Large funds will need to be raised to fund the Quebec Lithium Carbonate Refinery and LU7's other projects, which will be challenging for the company. (3) Lithium refineries are notoriously challenging to build, with high chances of delays and cost blowouts.
Opportunities	**Threats**
(1) Possible discovery of large and high grade lithium or REE deposits at the company's multiple exploration projects. (2) Significant governmental and industry support for pioneer Canadian-based downstream lithium projects. (3) Potential offtake agreements with large and strategic customers for lithium carbonate products. (4) Potential for a favourable Quebec Lithium Carbonate Refinery Project DFS. (5) Potential for favourable study outcomes for the construction of a spodumene concentrator in Quebec.	(1) Lithium hydroxide might be preferred over lithium carbonate for use in EV batteries. (2) China flooding the market with refined lithium products to take out the competition and discourage investments in downstream lithium processing in other countries. (3) Inflationary pressures increasing the cost of the Quebec Lithium Carbonate Refinery Project.

Source: East Coast Research

Appendix II: Management team

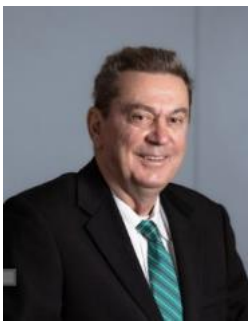
Under the leadership of lithium industry pioneer Iggy Tan, Lithium Universe (ASX: LU7) has curated a 'Dream Team' equipped with demonstrated expertise in the establishment and management of a substantial lithium concentrator and refinery projects.

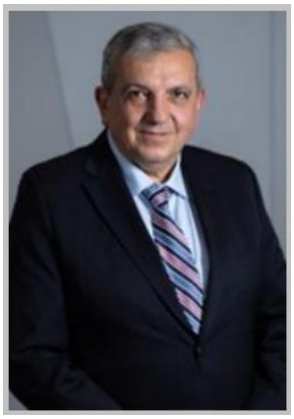
Figure 20: Lithium Universe's management and board members

	Name and Designation	Profile
	Mr. Iggy Tan **Non-Executive Chair**	Mr Iggy Tan, a trailblazer of the modern Lithium industry was one of the first Australian mining executives to identify the significant opportunity within the emerging lithium-ion battery sector when **he spearheaded Galaxy Resources Limited (Galaxy). Mr Tan is looking to replicate the success with Lithium Universe, having built Galaxy's Mt Catlin Spodumene Project and the downstream Jiangsu Lithium Carbonate project.** He also acquired the James Bay Spodumene Project in Canada and the Sal de Vida Brine Project in Argentina for Galaxy. When he started at Galaxy the company's market capitalisation was less than A$10 million and rose to A$2.5 billion when the Company merged with Orocobre Limited in August 2021. Iggy's previous experience working with Lithium dates back to the early 1990s when he briefly managed the Greenbushes Lithium Mine and commissioned the first Lithium Carbonate plant for Gwalia Consolidated. Mr Tan has over 30 years' chemical and mining experience and been an executive director of a number of ASX-listed companies. He holds a Master of Business Administration from the University of Southern Cross, a Bachelor of Science from the University of Western Australia and is a Graduate of the Australian Institute of Company Directors. He is currently CEO and Managing Director of Altech Batteries Limited.
	Mr. Alex Hanly **Chief Executive Officer**	Mr Hanly has over 10 years of experience in capital delivery and operational management for publicly listed companies within the mining, oil, gas and manufacturing industries within Australia and Africa. Over the last 3 years, Mr Hanly held the role of Chief Executive Officer of ASX-listed gold company Polymetals Resources Ltd (ASX:POL). Mr Hanly was responsible for the successful IPO of the Company, the operational management and the efficient execution of the fast-track exploration strategy. A project management specialist, Mr Hanly has extensive experience leading large project teams within complex chemical processing facilities. Mr Hanly has a Bachelor of Mechanical Engineering and Masters of Business Administration specialising in Global Project Management.

	Mr. Patrick Scallan **Non-Executive Director**	Mr Scallan's extensive experience in the lithium industry is a valuable addition to the LGX Board. **With over 25 years of management experience at the world-class Greenbushes Mine, he is a seasoned veteran. Greenbushes is the largest lithium hard rock mine globally**, also hosts the highest-grade orebody in the world. This makes Greenbushes a unique anomaly, and no other lithium deposit worldwide compares to it. Mr Scallon oversaw the mine's many expansions, increasing annual output from 200,000 in 1997 to 1,400,000 tpa today, and navigated numerous ownership changes during his tenure. He is a specialist in hard rock mining and spodumene concentrating, with downstream relationships with major spodumene converters worldwide. Pat is also highly skilled in managing local community relationships, having acted as shire councillor for nearly 20 years during his time at Greenbushes receiving his Order of Australia Medal (OAM) for his community and Local Government contribution. His previous roles include management positions at Capel and Eneabba Mineral Sands in Western Australia and Western Deep Levels Gold Mine in South Africa.
	Dr Jingyuan Liu **Non-Executive Director**	Dr Jingyuan Liu is widely regarded as a leading technical expert in the lithium industry. **He previously held the position of General Manager of Development and Technologies at Galaxy Resources Limited, where he was responsible for overseeing the construction and commissioning of the Mt Cattlin Spodumene Project and the world-renowned Jiangsu Lithium Carbonate plant.** Jingyuan also played a key role in designing the flow sheet for the Sal de Vida brine project. Following his work with Galaxy, he has acted as a special adviser to various lithium carbonate and lithium hydroxide projects globally, including the Lithium Hydroxide Plant operated by Tianqi in Kwinana, Western Australia. Dr Liu has over 30 years' experience in project management, process and equipment design for minerals processing and in the chemicals, non-ferrous metals, iron & steel and energy industries, both in Australian and internationally. He was awarded a PhD in chemical engineering from the University of Newcastle, Australia. He has worked in senior chemical engineering roles with leading companies such as Hatch Engineering and Metso Minerals in Australia and Malaysia. Dr Liu is currently Chief Technology Officer (CTO) for Altech Batteries Limited (ASX: ATC) developing high capacity silicon anode lithium ion batteries.
	Mr Gernot Abl **Executive Director**	Mr Abl was previously a strategic Managing Director with a vast experience in business management, operations and investment for some of the fastest growing industries in the world. After gaining over 15 years of corporate experience, Mr Abl lead the only pure esports play listed on the ASX, Esports Mogul Limited. Mr Abl has a proven background in business management and commercial intuition, initially from working as a management consultant for both Deloitte Consulting and Deloitte Corporate Finance in Perth and Melbourne. As well as this, he led the restructure and turnaround of a financially distressed ASX listed media company and currently holds directorships for a range of start-up companies, offering corporate advisory, project management and commercial negotiation advice to multiple businesses. Mr Abl has a degree in Law and Commerce with Hons in Finance and Accounting from the University of Western Australia.

	Mr Fadi Diab **Non-Executive Director**	Mr Diab was the former Head of Global Payroll at Commonwealth bank of Australia where he managed the global payroll team who are responsible for 55,000 employees across 15 countries. Mr Diab is an accomplished Senior Executive recognised for leveraging strong team leadership and development to drive forward progress. Mr Diab has a background in Human Resources having held the role of Executive Human Resource Manager at the Commonwealth Bank. Mr Diab currently runs an Investor Relations company. Mr Diab has Bachelor of Business, Human Resource Management, Industrial Relations from the University of Western Sydney and a Masters of Business Management from University of Technology Sydney.
	Ms Victoria Vargas **Director - Canada**	Ms. Vargas brings to Lithium Universe Ltd over 25 years of experience in the North American capital markets, with a significant focus on the Canadian mineral sector. She began her career at Kinross Gold Corporation and joined Alamos Gold Inc. in 2004. During her tenure, she played a pivotal role in enhancing investor exposure and facilitating the Company's transition from the TSX Venture to the TSX. Prior to joining Alamos Gold, Ms Vargas worked for H2O Innovation, a Quebec-based company focused on providing best-in-class technologies and services for the water and wastewater treatment industry. Ms. Vargas is highly skilled in sustainability and community engagement from both an operational and governance standpoint and has served on the health, safety, and corporate social responsibility committees at both the Chamber of Mines of Mexico and the Canadian Mining Task Force. Her extensive expertise extends across international projects in multiple jurisdictions, with a focus on mineral projects in Québec and Ontario. Ms. Vargas currently acts as the CFO of VMS Mining, a privately held company; VP of Investor Relations of Minera Alamos and a Capital Markets advisor to Wallbridge Mining. Victoria Vargas earned an MBA in Finance and a B.Sc. in Economics with Honors.
	Mr John Sobolewski **Chief Financial Officer**	Mr Sobolewski's experience in the lithium industry offers another valuable addition to the "LU7 Dream Team". **At Galaxy Resources, John played a pivotal role during the feasibility, funding, construction and operation phases of the Mt Cattlin Spodumene Mine and Jiangsu Lithium Carbonate Refinery.** John was also crucial in establishing finance teams and systems in Australia and Internationally. His experience in financial and debt modelling for both projects will be critical in LU7's completion of the Definitive Feasibility Studies of the Quebec Lithium Processing Hub Concentrator and Lithium Carbonate Refinery Projects. Mr Sobolewski is a chartered accountant and a graduate of the Australian Institute of Company Directors. His previous roles include Managing Director and CEO with Mintrex, CFO and Company Secretary with Mintrex, Galaxy Resources Limited and Vital Metals Limited, Financial Controller and Company Secretary with Croesus Mining NL and Group Accountant and Company Secretary with Titan Resources NL.

	Mr Terry Stark **Head of Mining**	Mr Terry Stark, a veteran mining engineer is spearheading the mining strategy for the Apollo First to Market program. **Terry was previously Managing Director of the Resources Division for Galaxy Resources Limited. Terry was responsible for all of Galaxy Resources' mineral resources assets including exploration and mine operations. Terry oversaw the Mt Cattlin construction and subsequent successful start-up.** During his time at Galaxy, he established strong relationships with the Cree First Nation people for the James Bay project. The Cree is also the same First Nation group at the Apollo Lithium Project.
	Mr Roger Pover **Head of Processing**	Mr Roger Pover is leading the processing and concentrating strategy for the Apollo First to Market program. **Roger was previously Mt Cattlin Plant Manager who operated the Mt Cattlin operation for Galaxy Resources Limited. Roger was not only part of the commissioning and start-up team, but also operated the plant for many years.** Roger also directed many of the optimisation modifications that were made at Mt Cattlin. Roger is also a veteran in the lithium industry, having commenced his career at Greenbushes Lithium Mine in the early 1990's.
	Mr Huy Nguyen **Engineering Manager**	Mr Huy Nguyen has been seconded from Mintrex to act as Lithium Universe's engineering client representative. Mintrex was the lead engineering company that designed and constructed (together with DRA Global) the Mt Cattlin Spodumene Plant. **Huy was part of the construction supervision when Mt Cattlin was built so he is experienced with not only the design but also the construction process that delivered a project that was on time and on budget.** Huy is a qualified Mechanical Engineer with over 15 years' of engineering and project experience in mining, mineral processing and construction. Huy also holds an MBA from RMIT University and is a member of Engineers Australia.
	Mr John Loxton **Head of Lithium Carbonate Refinery**	**Mr John Loxton's lithium experience commenced in 2010 with work on the Jiangsu Lithium Carbonate Plant EPCM for Galaxy Resources in China where his responsibilities initially were at a Sponsor level, and further into the project he was Project Manager, managing the final stages of construction and commissioning.** In 2019, John was engaged by Tianqi Lithium as Head of Projects for the execution of their investment in a lithium hydroxide processing plant in Kwinana, Western Australia. John managed the commissioning of the first train achieving first product in 2021 and undertook execution planning and establishing a project team for an identical second train in 2022. Mr John Loxton is a project manager with over 45 years of experience across a diverse range of energy, industrial, process, civil, and major infrastructure projects.

	Mr Vincent John Fayad **Joint Company Secretary**	Mr Fayad is a Chartered Accountant and has more than 40 years' experience in corporate finance, international M&A, accounting and advisory-related services primarily undertaken by mid-tier accounting firm PKF. In 2016, Mr Fayad established his own firm Vince Fayad & Associates, providing accounting and advisory services within Australia and overseas. Over the last 25 years, Mr Fayad has spent a significant amount of time advising on various transactions, predominately related to the mining and exploration industries and providing accounting and corporate secretarial experience to mining exploration companies. Mr Fayad is currently an Executive Director and joint Company Secretary of Astute Metals NL (ASX:ASE) and he is also a joint Company Secretary of Greenvale Energy Ltd (ASX:GRV). He is also a Non-Executive Director of Nexon Asia Pacific Pty Ltd, a telecommunications company, controlled by private equity group EQT. Mr Fayad's previous public company experience includes being the Executive Director of Greenvale Energy Limited (ASX: GRV), Executive Director and Company Secretary of European Lithium Limited (ASX: EUR).
	Mr Kurt Laney **Joint Company Secretary**	Mr Laney is an experienced Chartered Accountant specialising in the provision of advisory, consultancy, taxation, and corporate secretarial services. Mr Laney is currently an Associate Director of Vince Fayad and Associates Pty Ltd, where he provides accounting and taxation services to high-net-worth individuals, family offices, large family-owned businesses, and multinational entities. Mr Laney is currently the joint Company Secretary and CFO of Greenvale Energy Ltd (ASX:GRV) and Astute Metals NL (ASX:ASE), along with several unlisted public companies, who are primarily focused within the tech and mining industries. He has previously served as the Company Secretary of Polymetals Resources Ltd (ASX:POL).
	Mr Justin Rivers **Head of Geology**	Mr Rivers possesses more than 20 years of senior executive, technical and commercial experience in Africa, Australia, Asia, the Arctic, the Middle East, and North & South America in the major and junior space, with a particular focus on Iron Ore and Gold. Mr Rivers has a well-tenured strategic and tactical approach to the mining industry with intimate commercial, business development and M&A experience in Tier-1, publicly listed and private equity environments. Prior to joining Lithium Universe Limited, Justin held the position of Executive Director and CEO of Convertible Resources Ltd, a Mauritian-domiciled private equity company that drove the strategic development of its Gold projects in the Siguiri region of northeast Guinea. Mr Rivers has a Bachelor of Science (First Class Honours) majoring in Geology and Environmental Science from the University of Tasmania.

Source: Company

Appendix III: Analyst's Qualifications

Behzad Golmohammadi, the lead analyst on this report, is an equity research analyst at Shares in Value (East Coast Research).

- Behzad has a bachelor's degree in Engineering (Industrial) and a master's degree in Applied Finance (Investing) from Sydney Business School, where he was the top performer in his cohort. He has also passed the first two levels of the CFA Program.
- Behzad has several years of experience working as an Equity Research Analyst and Technical Analyst in Australia and overseas and has a broad knowledge of ASX-listed companies. Combining his technical background in engineering with his financial analysis skills has allowed him to establish himself as a resources analyst, also capable of analysing companies in a variety of other industries.

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