E3 METALS CORP

Independent company research and estimated fair value

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Introduction

E3 Metals Corporation ("E3") is the 100% owner of the Alberta lithium project located in south-central Alberta, Canada. The company's shares trade on the TSX Venture Exchange under the symbol "ETMC". E3 aims to commercialise the project utilising **direct lithium extraction ("DLE")** technology by incorporating its proprietary **ion exchange ("IX")** technology. This technology continues to be refined in partnership with the University of Alberta, GreenCentre Canada. The Industrial Research Assistance Program and Alberta Innovates have awarded E3 funding and grants to offset costs and assist in technology development. The Natural Sciences and Engineering Research Council of Canada has also been funding the University of Alberta's development work. **There is much appeal to DLE technologies, including low land use (3% of solar equivalent) relative to conventional brine evaporation ponds, small carbon footprint, the ability to produce a consistent, low impurity battery-grade chemical and the potential to scale production beyond existing integrated lithium projects. What sets E3 apart from its competitors and makes it unique is that it owns both the lithium extraction technology and the resource**. E3's properties are comprised currently of 74 metallic and industrial mineral ("MIM permits") totalling 552,557 hectares, these properties were specifically selected as lithium concentrations as high as 135 mg/L were found and the ability of these properties to deliver high volumes of water required for DLE of lithium from reservoir brines. **Further benefits include ease of on the ground access, existing infrastructure, permitting and well data associated with the production of oil and gas in the region.**

Figure 1: E3 project location in Alberta (E3 Company Reports)

DLE technologies, if successful, point toward lower capital and operating costs when compared to new hard rock and brine projects. **E3's prospects of achieving success were augmented recently by the introduction of Livent Corporation ("Livent") as a Joint Development Project ("JDP") partner in a newly incorporated joint development company**. Livent will contribute up to US$5.5m to advance the DLE technology and the installation of an IX pilot plant. **The essential concept to establish in the next twelve months is whether commercial-scale production of E3's patented sorbent is possible**.

Livent has extensive experience in processing brines and will make a meaningful contribution to the JDP. **The frontend process of pumping brine to the surface and backend processing of high concentration brine (5,000-6,000ppm) have limited risk; the key deliverable is the lithium extraction step using E3's technology.** E3's inferred mineral resource is the 6th largest reported resource globally according to information available. The grade, however, is currently ~75ppm. Thanks to close to 4,000 historical drill holes in the reservoir, the geology is well understood, and the inferred resource was delineated with limited costs. While the average grade can improve with further exploration, testing and well location selection (away from historical oil and gas production areas), potentially increasing that average to 100mg/L+ would still highlight the critical importance of the sorbent in extracting lithium.

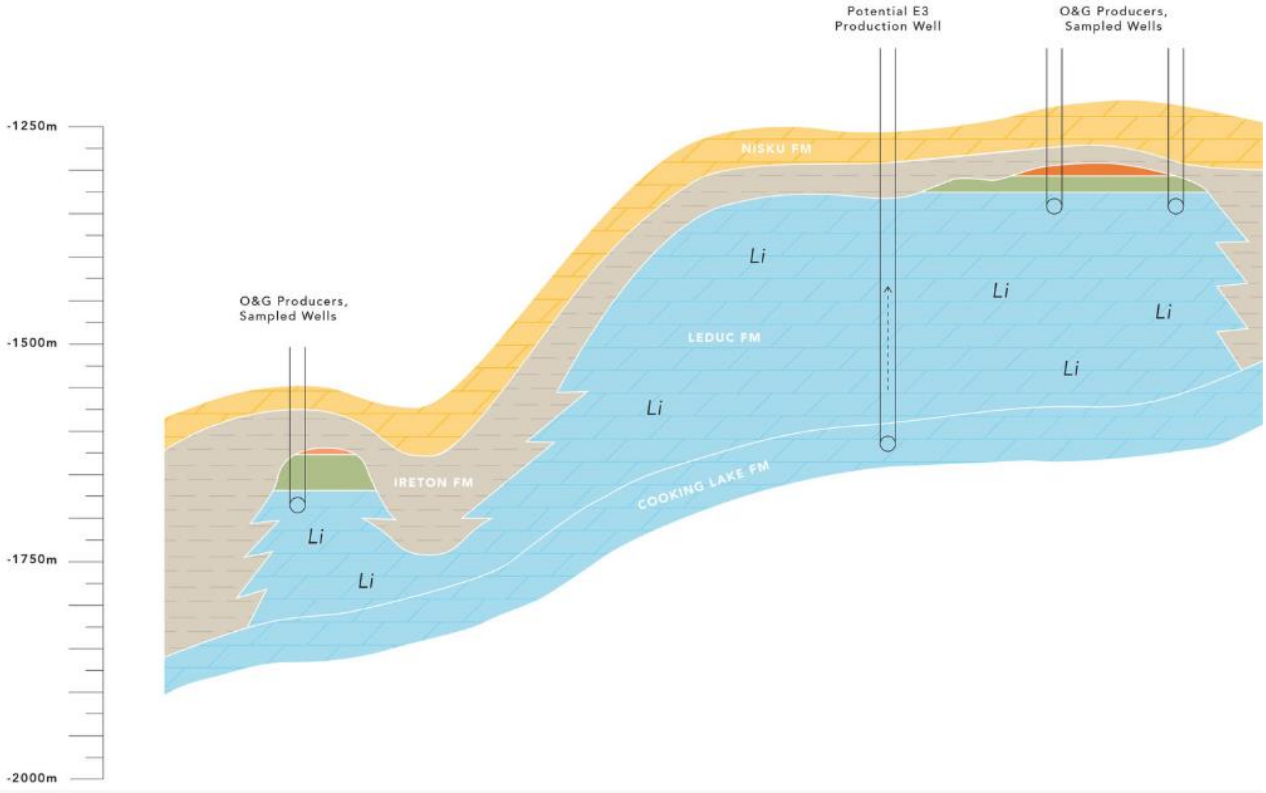

Figure 2: E3 potential well location (E3 Company Website)

To achieve the initial production target of 20ktpa of lithium hydroxide, based on 75ppm, the author assumes E3 will process ~130,000m³ of brine per day from approximately fifty-two wells pumping 2500m³. As each well costs ~$2m given a depth of 1.5-2 kilometres, reducing the number of wells through the improvement of the resource grade would be hugely beneficial to reducing the capex.

The major risk of an investment in E3 is the binary nature of the company's prospects. Conventional brine processing is not an option if the IX process cannot be scaled.

The details of the Livent joint development agreement ("JDA") are as follows:

- A total contribution of up to US$5.5m starting with an initial $1.5m already paid in October 2019
- **The investment is not a loan**; the amount is to progress development through two key stages, namely:
    - Finalising the commercial readiness of the IX sorbent
    - Construction and operation of an IX pilot plant

- If Livent makes the full $5.5m contribution and on completion of the JDP they can elect within ninety days to convert their contribution to 6,229,368 shares (**CAD$1.17 per share equivalent**), currently representing 19.9% of the company and appoint a director to the board provided a minimum 5% shareholding in E3 is maintained
- Under the agreement, should Livent not provide the entire US$5.5m, then:
    - Livent is not entitled to convert its contribution into E3 shares
    - E3 has no obligation to return the funds to Livent
    - All E3 IP and jointly developed new IP (other than improvements to Livent IP) will revert to E3

Under all circumstances, Livent does not retain the right to develop other brine resources using the jointly developed technology. It can, however, utilise the JDP IP to improve the processes at Hombre Muerto if they convert. There is scope in the future for Livent and E3 to partner on projects. While Livent's maximum future shareholding is currently capped at 19.9%, the company is best placed from a due diligence perspective to acquire E3 after the successful conclusion of the JDP. A low environmental/carbon footprint petro brine project is consistent with Livent's view on superior sustainability versus hard rock projects.

OEM battery warranties will apply globally, including their China EV sales. Based on the historical and current reality that the supply and qualification of high specification chemicals are not growing as quickly as total lithium supply, we are of the opinion that only a limited number of producers will continue to achieve OEM qualification status and that newcomers will struggle technically. **Sampling across the reservoir suggests the brine is very consistent and where variability exists, E3's technology has an effective buffering capacity with final results showing that concentrate impurities are consistent regardless of feedstock quality.**

OEMs are increasingly assessing the carbon footprint of suppliers as well as their proximity to cathode/battery plants. The chart below highlighting the IEA's findings show that coal at 900g/kWh is eleven times solar and twenty times wind. Given the energy intensity of lithium chemical production from spodumene concentrate conversion, the energy source will be a major factor to consider.

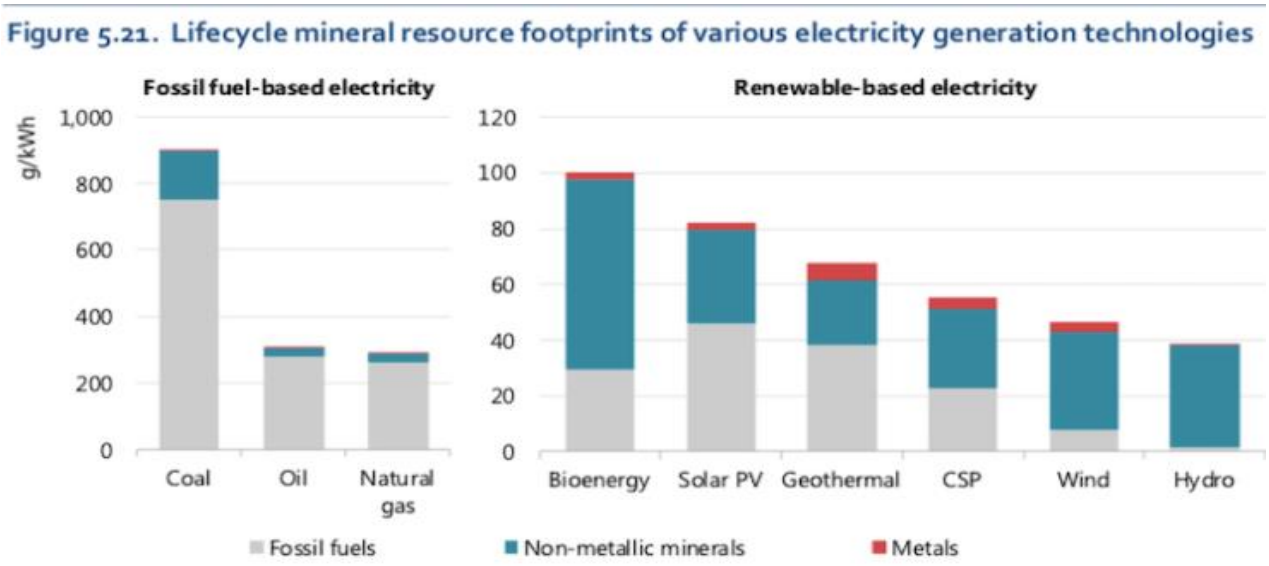

Figure 3: 2019 IEA Report on Lifecycle g/kWh Footprint

They will also consider the potential risks of Chinese export bans, counterparty credit/financial stability and whether a Chinese supplier will renege on a long-term contract if Chinese spot prices rally and trade at a substantial premium. Even if there is no reneging, it is likely delivery will be made in the absolute minimum tonnage per the contract when the material is needed most. **These factors increase the appeal of a potentially large scale, low carbon footprint Canadian based chemical producer such as E3.**

The following sections provide an analysis and discussion of both advantages, as well as risks and issues, in this regard.

Key Advantages

1. **Location**: The E3 tenement areas are located in the Leduc reservoir, Alberta. The area has a well-established oil and gas industry in a stable jurisdiction. The process of pumping brine is the same as oil and gas.

2. **Strategic value**: The scalability of E3's IX technology and the size of the resource make 100,000tpa production of lithium hydroxide theoretically possible. Additionally, the technology is such that the quality of the brine will be a consistent, low impurity product. There are a limited number of chemical producers outside of China, especially hydroxide. E3 has the potential to supply the America's NCM 811/NCA cathode market as those industries expand production.

3. **Joint development project partner**: E3's JDP partner, Livent, offers both technical skills (brine and battery-grade lithium hydroxide production) and capital up to US$5.5m to advance the project at no risk to E3. Livent did substantial due diligence before committing at-risk capital, considering their extensive history of brine processing and IX knowledge, E3's potential is clear. The terms of the JDP, discussed in more detail above, will likely ensure that an IX pilot plant is built and thoroughly tested.

4. **Infrastructure and permitting**: E3's permit area is blanketed by a vast network of wells, pipelines and roads that can be repurposed for use. Unlike conventional brines, the E3 process technology has limited freshwater requirements and will pump the lithium stripped brine back into the reservoir. As the Leduc reservoir is a confined aquifer with no connections to groundwater and the area has a history of oil/brine pumping, this is a well understood process in the area and should reduce the development risk. In the author's opinion, adjustments to existing permits or new permit requests should be routinely granted after applications are submitted through the current regulatory framework.

5. **Low operating costs:** The key to successful commodity and chemical companies is the ability to operate and make a margin throughout the entire cycle. While E3 is still in early-stage development, the company will be targeting the first quartile lithium hydroxide operating costs net of bi-product credits.

6. **Large resource and production scalability**: E3's current resource is 6.7MT LCE, the 6th largest reported resource globally according to information available. Importantly, there is potential for lithium hydroxide production to scale to over 100,000tpa. As only 34% of E3's land package has been included in the current resource, there is significant upside potential if needed. An added positive is the speed at which E3 could scale – the E3 technology is modular, allowing for a substantial increase in production beyond the initial 20,000tpa, subject to funding.

Key Risks and Issues

1. **The termination of JDP by Livent:** Under certain circumstances, Livent could terminate the JDA before completion of the JDP. Depending on the underlying reason for the withdrawal, E3 would struggle to secure funding to continue the project independently.

2. **Scaling the project beyond the pilot plant and project financing:** While proving the E3 technology at a pilot plant level should secure E3 funding and or a strategic partner, the expected capex per ton of installed capacity is likely to be of a similar quantum (US$20,000/t +) to competing integrated hard rock and brine projects. Therefore, E3's financial metrics and ability to attract financing will not only be subject to proving the commercialisation of the technology but will also be dependent on the market and expected forward price for battery-grade lithium chemicals when funding is needed.

3. **Lower long-term lithium price assumptions and longer qualification periods:** The financial models below assume a **long-term battery-grade hydroxide price (US) of $13,000/t.** A further assumption is that E3 will achieve 100% battery grade and qualify its product with OEMs, depending on the availability of early samples from E3, the qualification period could be up to 12 months.

Fair Value Estimate

For the preparation of this report, we have both reviewed E3's business development plan, technical reports and the disclosures regarding the JDP with Livent. Additionally, we have compared E3 to other early-stage DLE companies. **What separates E3 from competing companies is that E3 is the owner of both the IX technology and the lithium resource; this is key to minimising dilution and maximising shareholder value.**

Despite being an early-stage development company, **E3 has exceptional upside potential if the JDP can prove commercialisation of the technology and production of the IX sorbent at the pilot plant level**. Beyond the pilot plant, there will be engineering challenges to scale the modular IX process and ensure sufficient brine flow for a full-scale 20,000tpa plant; however, we view these challenges as low risk and manageable. The greatest challenge to E3 beyond the successful proof of commercialisation at pilot plant level is project financing in our opinion. **With a successful proof of concept pilot plant and commercial production of a sorbent at a cost-effective price, we value E3 at US$40m-US$50m or CAD$1.13-$1.42 per share based on 46.2m shares in issue (assuming Livent exercises its conversion right and maintains a 19.9% shareholding). The substantial upside on offer is unique in the lithium sector and is made possible by E3's limited share dilution to date and the terms of the JDP with Livent.**

Beyond the proof of concept and pilot plant, the upside potential for E3 will be more closely tied to its net present value ("NPV") and progress towards construction and operation. Broadly, assuming capital costs of $20,000/t, an operating cost of $5,000/t and steady-state production of 20,000-50,000tpa the NPV will be well over US$1bn.

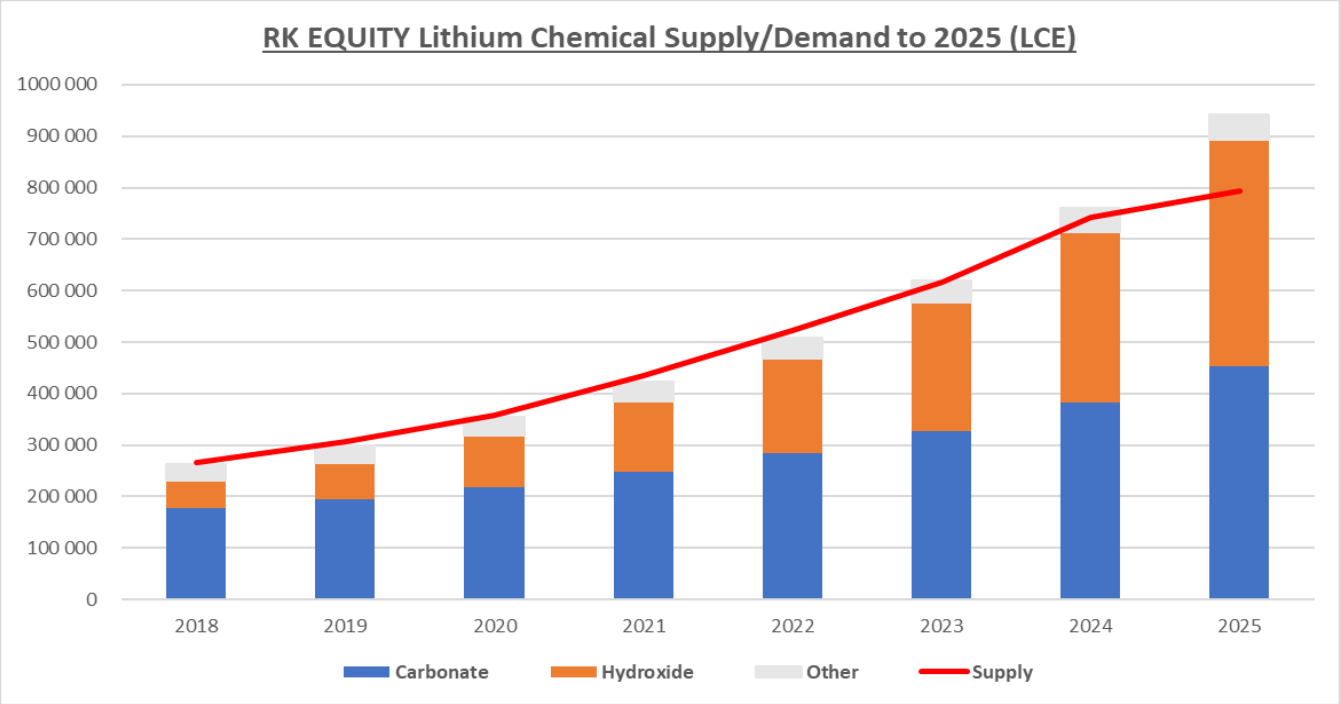

Figure 4: Lithium chemical supply/demand forecast to 2025 (LCE) – Rodney Hooper

The Case for Lithium: Chemical Supply and Demand Fundamentals

With future annual growth estimated by all the "Big 4" lithium producers at 17%-21% p.a. to 2025, the expected annual demand will be between 800KT and 1MT LCE with a potential upward bias as all forms of transport convert to lithium-ion batteries. Future growth is driven by **absolute EV sales** and the **increase in average battery size** in EVs.

Figure 4, which depicts the author's supply/demand forecast graph, predicts a **step change in demand from 2023/2024**. This ties in with Bloomberg New Energy Finance's forecast of average battery pack prices falling below US $100/kWh in **2024 (US $94/kWh).** US $100/kWh is considered the inflexion point at which EV's will not only be cheaper from a running cost perspective but also from that of sale prices. Lower battery prices are possible by production volume growth at battery "megafactories". Bloomberg NEF research estimates the "learning curve" at 18% for every doubling of capacity. Following the announced implementation of EU CO2 emission standards and penalties starting 2021, OEMs have announced the release of a significant number of EV models. In Europe, by 2021, there are 214 EV models planned versus 60 existing models in 2018.

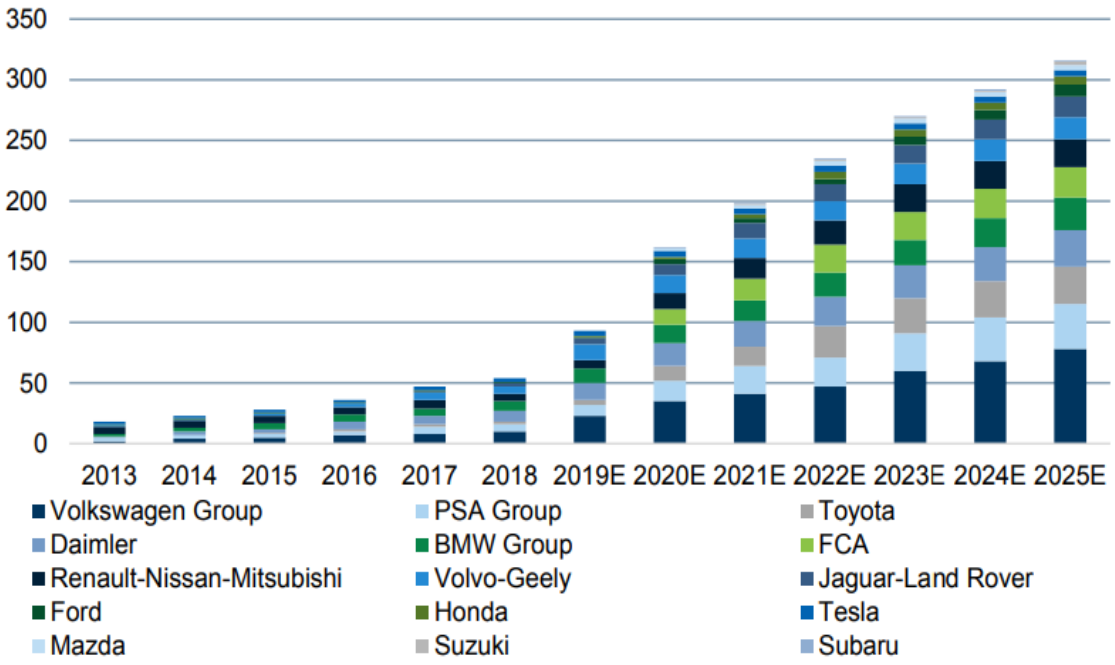

Figure 5: Target European EV model releases from major OEMs (Goldman Sachs)

The scale of the penalties payable by EU OEMs is greater than the cost of switching to EV production. If 2021 penalties were in place today, it would cost VW over US$10bn **annually**.

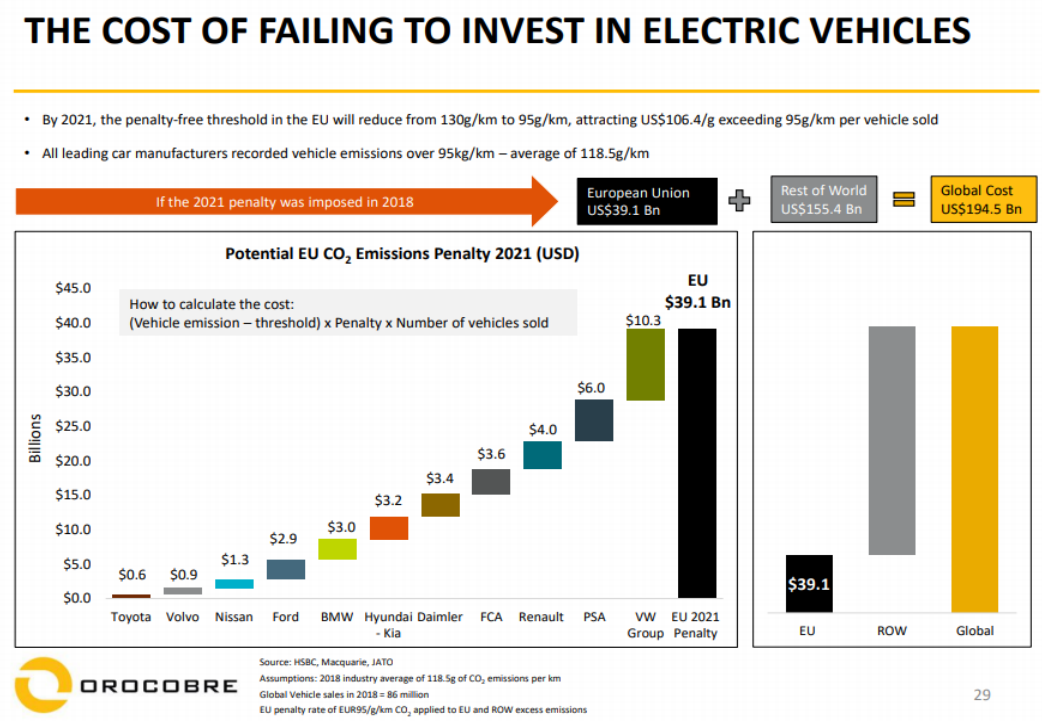

Figure 6: Potential EU OEM penalties based on 2018 CO_2 emissions (Orocobre Reports)

Given the strategic importance of auto manufacturing in Europe, there has been a coordinated drive by both governments (subsidies for EV purchases and battery plant finance, EU CO_2 emission penalties) and OEMs. Estimates are that battery cell capacity in Europe will grow ten times in the next five years to

~200 GWh. VW alone has stated that it will need 150 GWh of supply in Europe and a further 150 GWh in the rest of the world. **As the major EV markets, China and Europe, develop their battery supply chains to ensure future security, the result will be a limited remaining supply of Tier 1 batteries available for US OEMs (excluding Tesla)**. A substantially increased penetration in EV sales in the United States auto market and a commensurate increase in investments by cathode/battery cell and pack producers, such as SK Innovation's battery plant in Georgia, would enhance the value of E3, given its location and planned chemical output of battery-grade hydroxide from a sustainable brine source located in Alberta.

Lithium chemicals supply projects

Project Name	Project Type	Ore Supply Classification	Chemical Plant Classification	Chemical Type	Volume Growth Target	Note
SQM Atacama	Brine		Brownfield	Carb/Hydrox	100K MT	In progress
ALB Le Negra	Brine		Brownfield	Carbonate	40K MT	In progress
ALB Xinyu	Hard Rock	Brownfield	Brownfield	Hydroxide	20K MT	Complete
ALB Kemerton	Hard Rock	Brownfield	Greenfield	Hydroxide	80-100K MT	On hold at 50K MT
Wodgina JV	Hard Rock	Greenfield	Greenfield	Hydroxide	100K MT	On hold
Tianqi	Hard Rock	Brownfield	Greenfield	Hydroxide	48K MT	On hold at 24K MT
WFR / SQM	Hard Rock	Greenfield	Greenfield	Hydroxide	45K MT	Awaiting final FS
Livent	Brine		Brownfield	Hydroxide	40K MT	In progress
LAC / Ganfeng	Brine		Greenfield	Carbonate	25K MT	Construction
Orocobre	Brine		Brown/Green	Carb/Hydrox	25K MT	Construction

Figure 7: Planned new lithium projects (Author, Company Reports)

Recently ALB announced an indefinite "postponement" of 125 KT of annual hydroxide production (175 KT including Mineral Resources 50% share in Wodgina). Given that ALB's estimated capex is $24,000/t at Kemerton and that the Wodgina project is in a more remote location of Western Australia, there is a high likelihood that the capex for Wodgina would have matched or exceeded Kemerton. Based on the estimated all-in cost of ALB's original JV stake, the analysis suggested that a $14,000/t hydroxide price was needed for ALB to achieve an IRR of 17%. Increasing capex per ton at Wodgina to $24,000/t, up from $16,000/t previously and assuming a lower long-term hydroxide price meant ALB would likely only achieve a single-digit IRR. As many other proposed lithium projects globally have similar capex/opex assumptions, we can expect delays from these greenfield projects. **The only brownfield project expansions that make economic sense in a lower lithium price environment (<$10k/t) are SQM (Atacama) and ALB/Tianqi in China using Greenbushes SC6**. These projects alone will not be able to meet fast-growing battery-grade demand from the energy storage sector. **To adequately incentivise**

chemical production (ex-China) that meets OEM qualification standards, lithium prices will need to ensure that IRR's of 18%-20%+, using realistic capex/opex assumptions, are achievable.

Long-Term Lithium Price Deck

Lithium Grade	Long-Term Price (US$)	Note
Non-battery grade Li_2CO_3 exw China	$8,500/t	
Battery grade Li_2CO_3 exw China	$10,500/t	Conversion cost plus margin (~$2,000/t)
Battery grade LiOH exw China	$11,000/t	Above $11,000/t excess margins (>15%-20%) for converters will incentivize additional production to come online
Battery grade Li_2CO_3 US/EU/JP/SK	$12,500/t	+$2,000/t premium for a) geographic diversity and security of supply (ex-China) b) sustainability (lower carbon footprint) c) OEM qualified (higher spec)
Battery grade LiOH US/EU/JP/SK	$13,000/t	As above plus a $500/t premium over Li2CO3 due to increased demand for LiOH and reduced supply (ALB etc.)

Source: Rodney Hooper estimates

The recent rise in Chinese chemical conversion capacity post the 2016/2017 lithium price rally suggests that **additional capacity will come online if operating margins of greater than 15%-20%+ are achievable**. Especially if SC6 feedstock is readily available from Australia. As SC6 producers are currently throttling back production (with further expansion plans available) and Chinese conversion capacity is only utilising 60%-65% of SC6 supply, we see no SC6 shortage for years to come.

Supply is SC6.0 produced and shipped

Company	Project	2018	2019	2020	2021	2022	2023	2024	2025
Tianqi / ALB	Greenbushes	616 000	720 000	760 000	900 000	1 200 000	1 300 000	1 500 000	1 500 000
Min Res / Albemarle	Wodgina	0	30 000	150 000	250 000	350 000	500 000	500 000	500 000
SQM / Kidman	Mt Holland	0	0	0	0	100 000	275 000	350 000	372 000
Galaxy	Mt Cattlin	165 000	160 000	120 000	175 000	175 000	175 000	175 000	175 000
Mineral Res / Ganfeng	Mt Marion	384 000	350 000	350 000	350 000	350 000	350 000	350 000	400 000
Pilbara Minerals	Pilgangoora	28 800	225 000	250 000	300 000	400 000	450 000	550 000	650 000
Altura	Pilgangoora	48 000	180 000	200 000	220 000	260 000	260 000	280 000	280 000
A40	Bald Hill	77 000	120 000	100 000	150 000	175 000	175 000	200 000	200 000
Nemaska	Quebec	0	0	0	0	50 000	100 000	150 000	150 000
Bikita	Bikita	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000
AMG	Mibra	20 000	75 000	75 000	75 000	75 000	100 000	120 000	120 000
Other China	Various	85 000	85 000	85 000	85 000	85 000	85 000	85 000	100 000
Hard rock (New)	Various	0	0	0	60 000	100 000	150 000	200 000	300 000
	TOTAL	1 473 800	1 995 000	2 140 000	2 615 000	3 370 000	3 970 000	4 510 000	4 797 000
	% Change		35.36%	7.27%	22.20%	28.87%	17.80%	13.60%	6.36%
	Capacity **	190 168	257 419	276 129	337 419	434 839	512 258	581 935	618 968
	Estimate	135 800	170 300	210 500	268 500	335 000	404 500	504 550	524 296
	Utilization %	**71.41%**	**66.16%**	**76.23%**	**79.57%**	**77.04%**	**78.96%**	**86.70%**	**84.70%**

** based on a 7.75 SC6.0 conversion factor per ton of chemical

Source: Rodney Hooper estimates

Considering the difficulties of achieving OEM qualification and the anticipated tightening of battery-grade/quality specifications, we have applied a **$2,000/t premium when compared to China spot prices**. As OEM qualification typically takes at least 12-24 months depending on the supplier, OEM battery-qualified lithium demand is "lagged" by supply, a fact which then further underpins the motivation for a premium price.

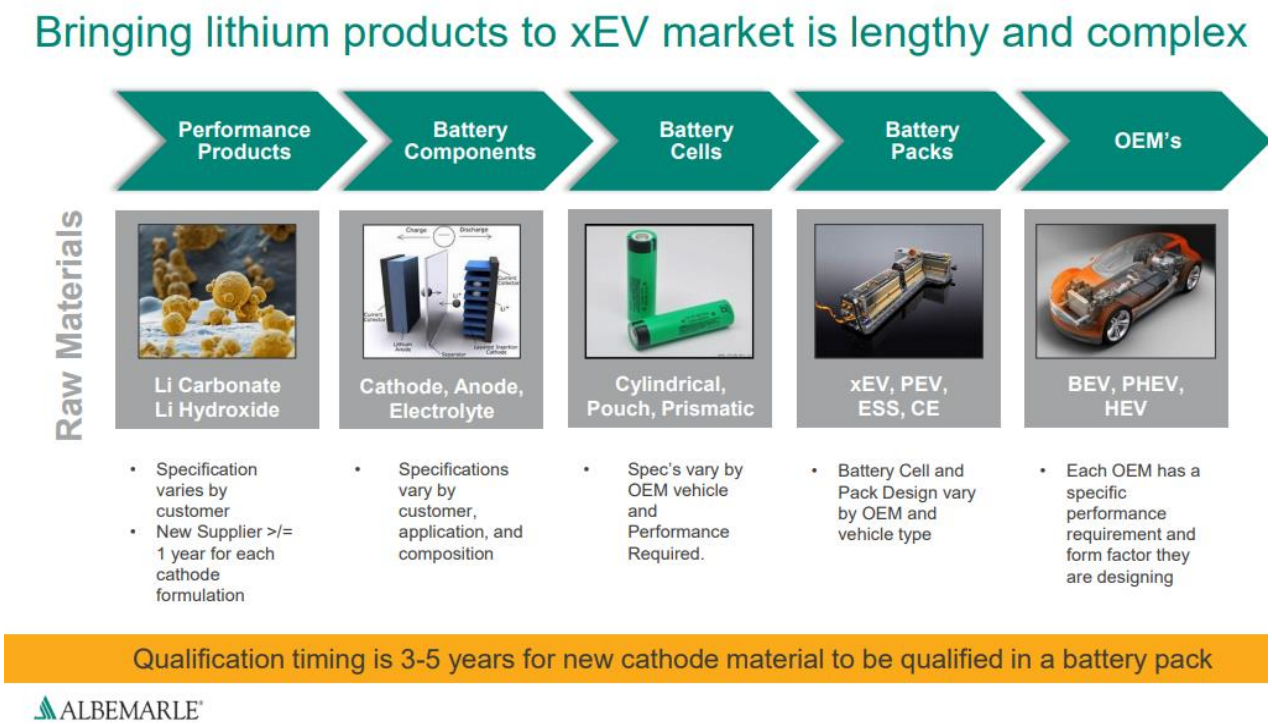

Figure 8: Qualification process and timeline (Albemarle Company Presentation)

Mineral Resource Estimate and Exploration Upside

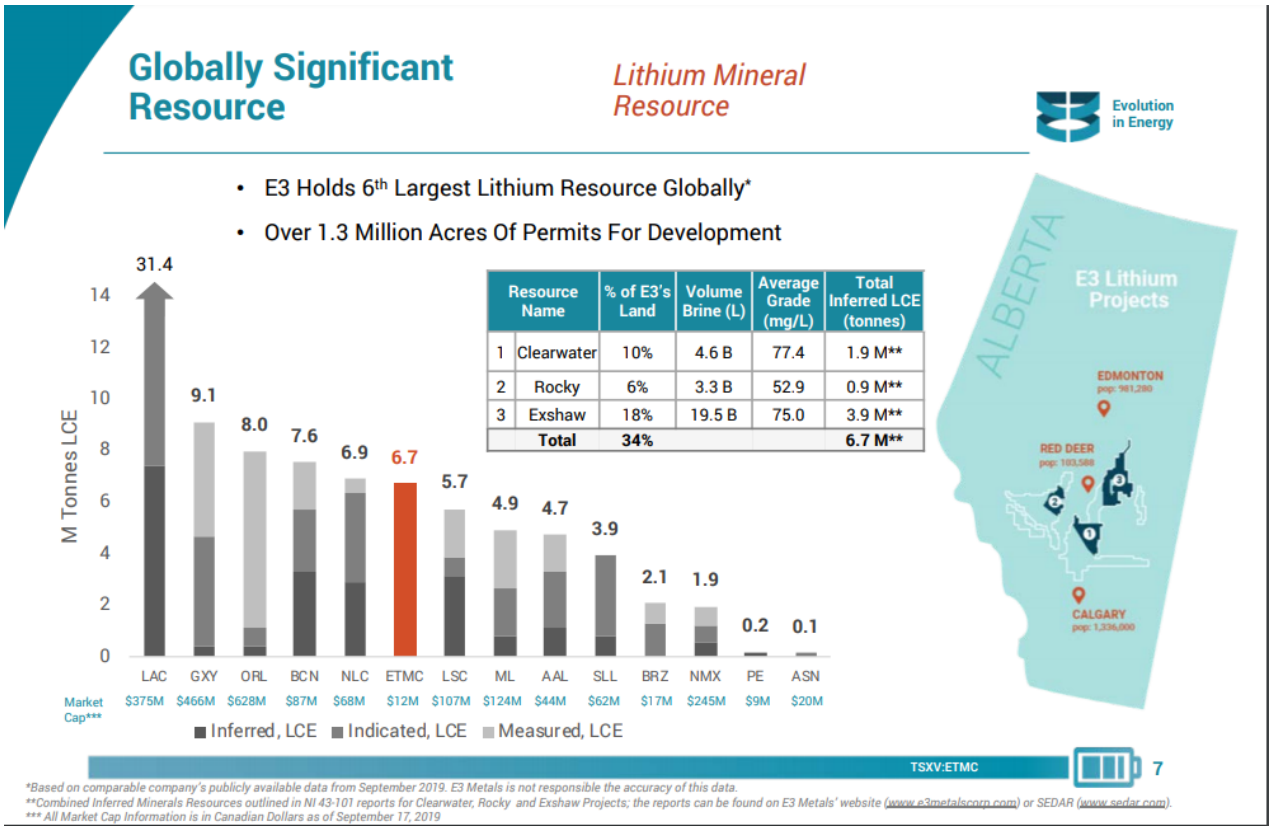

Figure 9: Lithium mineral resource (E3 Company Presentation)

Mineral resource: While E3's 6.7MT LCE resource places it 6th globally, it is noted this represents only 34% of E3's land package, suggesting substantial upside potential if required. Further, given the nature of the aquifer E3 can access a substantial portion of the resource and scale production to well above the top five for many years to come. The 562,557 hectares of property can be sub-divided into five separate sub-properties or groups of contiguous permits:

- Clearwater sub-property: 20 contiguous permits totalling 150,560 hectares;
- Exshaw sub-property: 19 contiguous permits totalling 115,499 hectares;
- Rocky sub-property: 29 contiguous permits totalling 225,309 hectares;
- Sunbreaker sub-property: 2 contiguous permits totalling 15,678 hectares; and
- Drumheller sub-property: 8 contiguous permits totalling 55,511 hectares.

In July 2017 E3 signed a royalty agreement according to which it has agreed to pay the royalty owner a perpetual production royalty equal to 2.25% of the gross proceeds from all products that are mined or extracted from **seven specific Clearwater MIM permits**. E3 has the option, at any time before September 30, 2020, to purchase all or a portion of the royalty at a price of:

- CAD$600,000 for the entire 2.25% royalty, or

- CAD$75,000 for each 0.25% of the royalty, provided that the maximum amount to purchase the entire 2.25% of the royalty will be CAD$600,000.

In August 2017, E3 entered into a binding term sheet to acquire three MIM permits located in the Exshaw Project Area as well as all technical data and reports from Fathom Minerals Ltd ("Fathom") for CAD$35,000 and 350,000 common shares of E3.

Exploration and evaluation asset expenditure to June 30, 2019:

The following table summarizes the Company's exploration and evaluation asset expenditures to June 30, 2019:

	Alberta Lithium Project	
Acquisition Costs:		
Balance December 31, 2018	$	1,649,009
Balance June 30, 2019	**$**	**1,649,009**
Exploration Costs:		
Balance, December 31, 2018	$	862,067
Research and development consulting		229,841
Government grants received		(61,542)
Geological Consulting		8,154
Geochemistry analysis		9,286
Capitalized expenses		25,429
Balance, June 30, 2019	**$**	**1,073,234**
Total, December 31, 2018	$	2,511,076
Total, June 30, 2019	**$**	**2,722,243**

Figure 10: Exploration and evaluation expenditure (E3 Financials)

Project Infrastructure and Layout

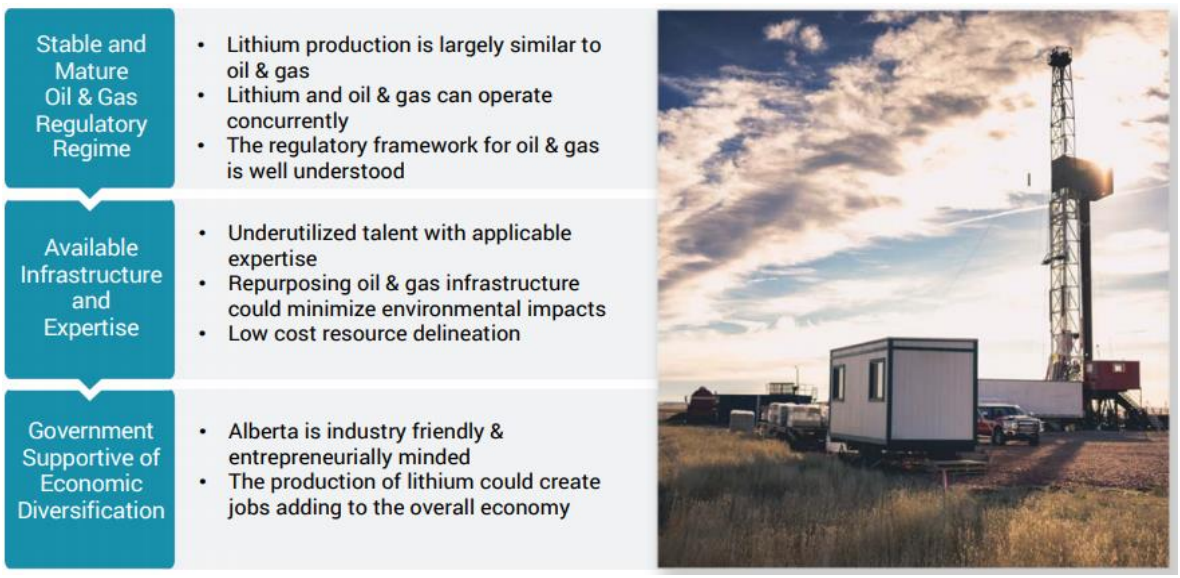

Figure 11: Project infrastructure layout (E3 Presentation)

With the slow down in oil production in the Leduc reservoir, there is potential for E3 to repurpose existing oil and gas infrastructure while minimising environmental impacts. There is a vast network of pipelines, wells and roads in E3's permit area. The IX process should be viewed as a "scale-out" rather than a "scale up" exercise, according to Alex Grant, a prominent lithium technology advisor we spoke to in connection with this report. Below is a picture of Sunresin's 10,000tpa Li_2CO_3 DLE facility in China as an example.

Figure 12: Sunresin Qinghai project (Sunresin website)

With an established well infrastructure and existing permits in place, processing times for new permits should be reduced. Alberta is supportive of industrial enterprise and looking to diversify revenue

streams away from oil and gas. For power, the main gas trunk line to the USA is within two kilometres of the site. ATCO Gas could build a gas-fired power plant requiring no upfront capital from E3. **The implied cost per kWh to E3 would be in the order of CAD$0.06-0.07 per kWh (Western Australia CAD$0.22 per kWh). A gas-fired plant would be cleaner than the Alberta grid and provide potential co-gen heat for downstream processes (crystallizers).**

Another additional advantage for E3 is high temperature (70-100C brine) and high flow rates allowing for the potential for geothermal power generation or heat recovery. Utilising this energy would both lower operating costs and GHG emissions.

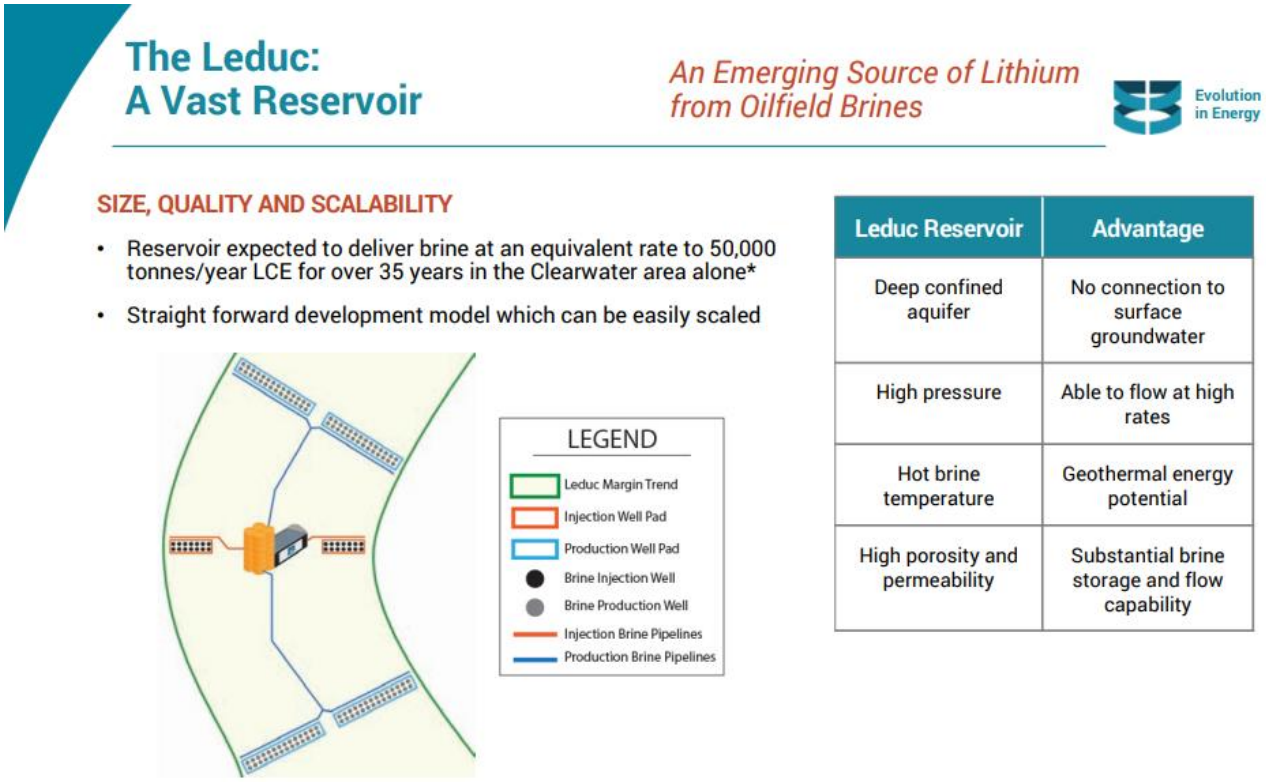

Figure 13: Project layout (E3 Company Reports)

Project Flow Sheet

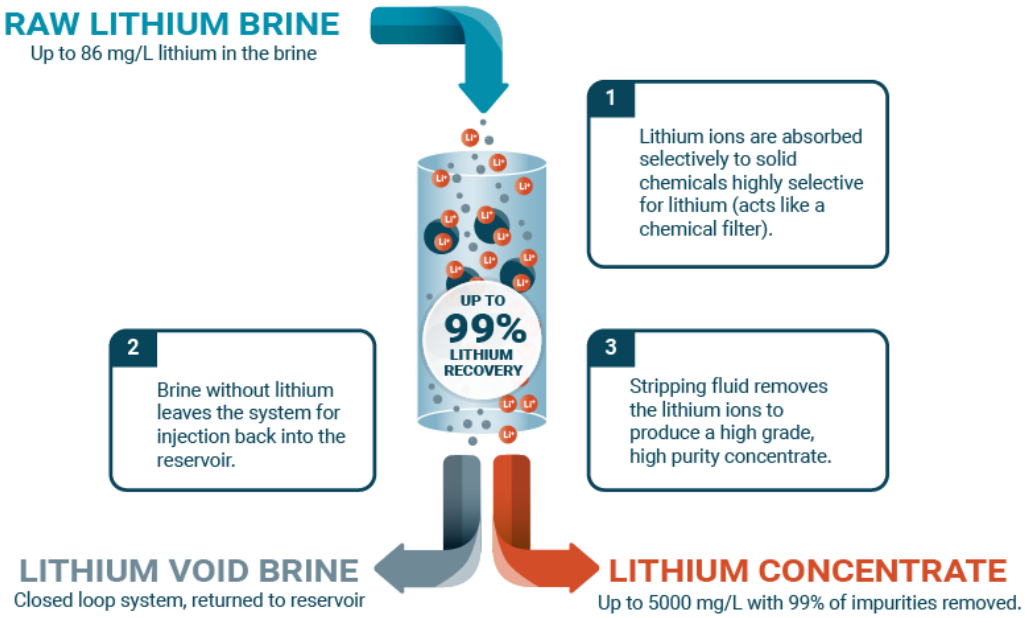

Figure 14: E3's Ion Exchange Process (E3 Company Reports)

IX technology overview:

An everyday example of a conventional IX is a water softener, the sorbent attracts the calcium and replaces it with sodium. For E3, the objective is for the sorbent to attract the lithium ions. Lithium is a Li+ cation when in an aqueous solution. IX selectively replaces ionic substances based on their electrical charges. As lithium ions flow through the IX, they replace the more loosely held ions on the surface of the resin as they have a higher affinity to the resin material. The resilience of the sorbent, commonly porous resin microbeads, is important. When the resin becomes saturated with lithium ions, it must be regenerated and recharged. The lithium-rich brine solution is flushed with a desorbent fluid. E3 needs very little desorbent, roughly 10l per 1,000l of brine.

E3 IX technology:

The key strength of the E3 flow sheet during the lithium extraction process is that it achieves two things simultaneously – it increases the lithium grade (up to 100x) and secondly, removes 99% of the impurities in a single step. E3 has confirmed the lithium extraction process in laboratory testing and produced concentrated brine at over 5000mg/L with 99% of impurities removed and lithium recoveries averaging 90%. Importantly, E3 has designed the process to be proficient at processing raw brines at a

high brine flow rate that the Leduc reservoir is capable of delivering. The pre-treatment step involves the removal of oil and gas from the brine before flowing through the IX.

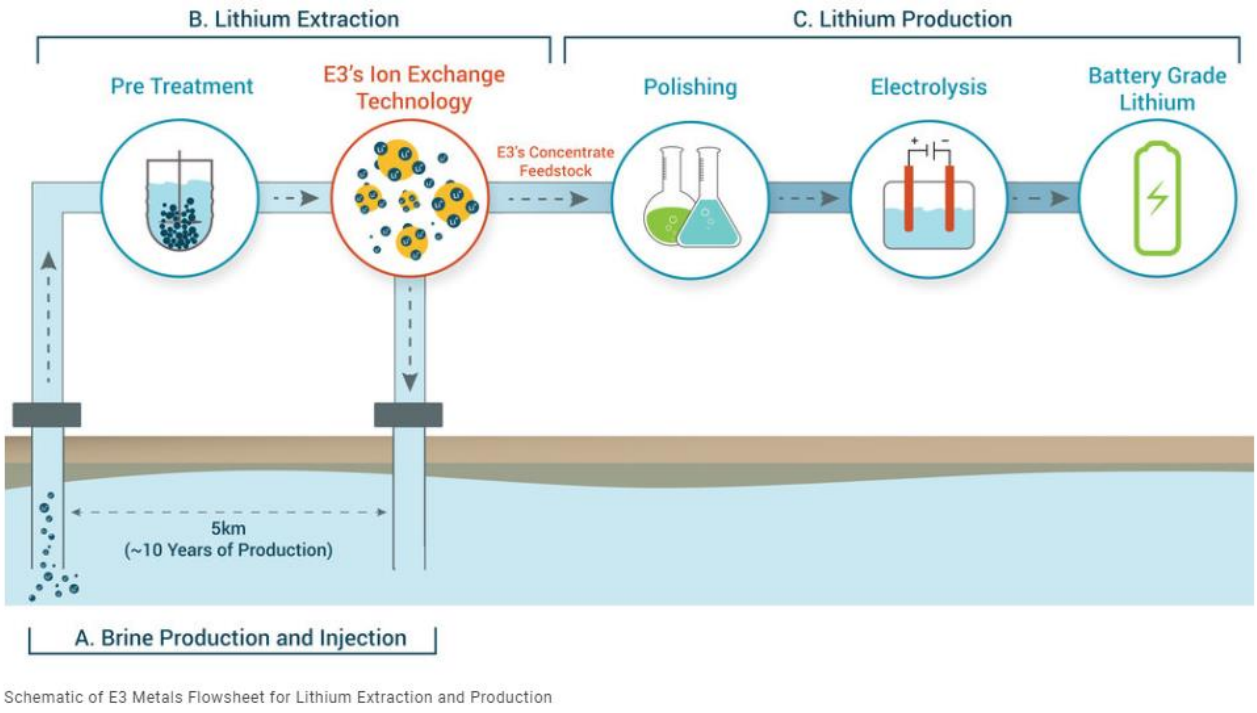

Figure 15: Project flow sheet (E3 Company Reports)

Conventional lithium processing technology can then be used to process the concentrate into battery-grade hydroxide directly. Historically there have been several projects that have processed 5000-6000mg/L concentrated brine into battery-grade lithium products. Included in this group is Livent, which perhaps is behind their reasoning not to build a full demonstration plant rather than an IX pilot plant.

E3 has successfully produced lithium hydroxide from the concentrated strip solution at laboratory scale. The low level of impurities in the concentrated brine greatly assists the battery-grade production process. Salt impurity removal is a major challenge for conventional brine operations. **The other key differentiating factor for E3's process is the short production cycle; traditional brine evaporation typically takes 12-24 months. E3 will achieve chemical production within hours.**

Project Timeline Analysis

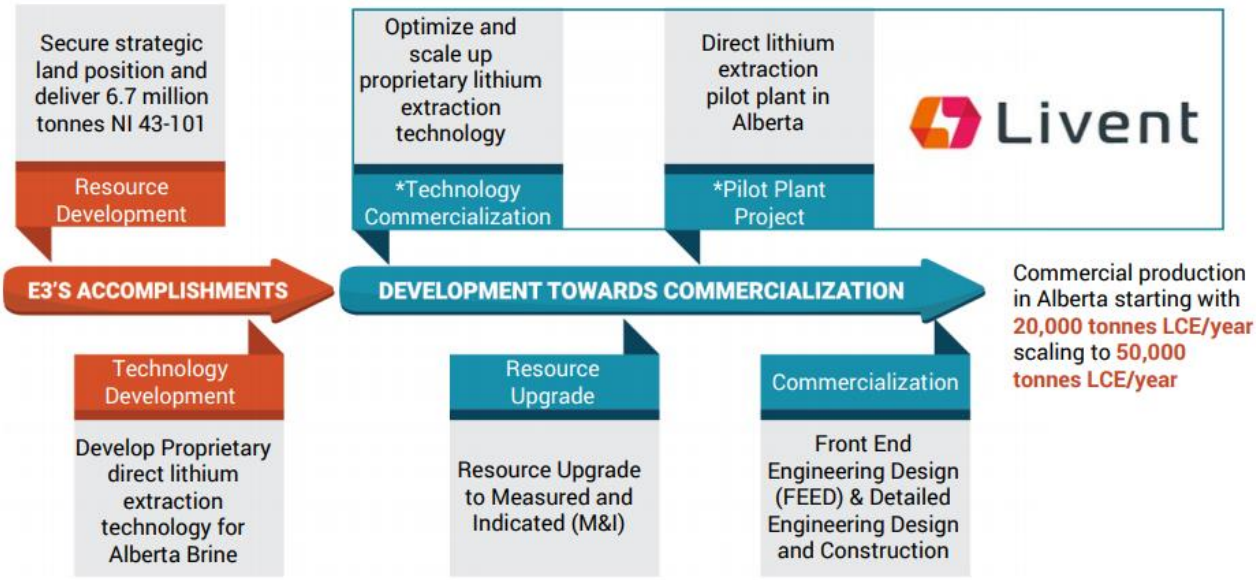

Figure 16: Project Timeline (E3 Presentation)

Following the introduction of Livent as a partner in the JDP, the author's estimated timeline for E3 now looks as follows:

- **Q4 2019 – Q1 2021** – JDP - optimisation of the extraction technology, commercial production of E3's proprietary sorbent, construction and completion of an IX pilot plant. E3 will simultaneously delineate the reservoir and upgrade the resource to measured and indicated.
- **Q2 2021** – Front end engineering design ("FEED") and detailed engineering design and construction. Well, and pump design.
- **Q2 – Q4 2021** – Pre-feasibility study ("PFS") completion. Initiation of the permitting and EPC process.
- **Q2 2022** – Completion of the definitive feasibility study ("DFS"). We envisage that the DFS will make limited adjustments to the PFS. Initiation of project financing and capital raise.
- **2023** – 20,000tpa production facility launch.
- **2026** – Production expanded towards 50,000tpa.

Project Operating Cost Analysis

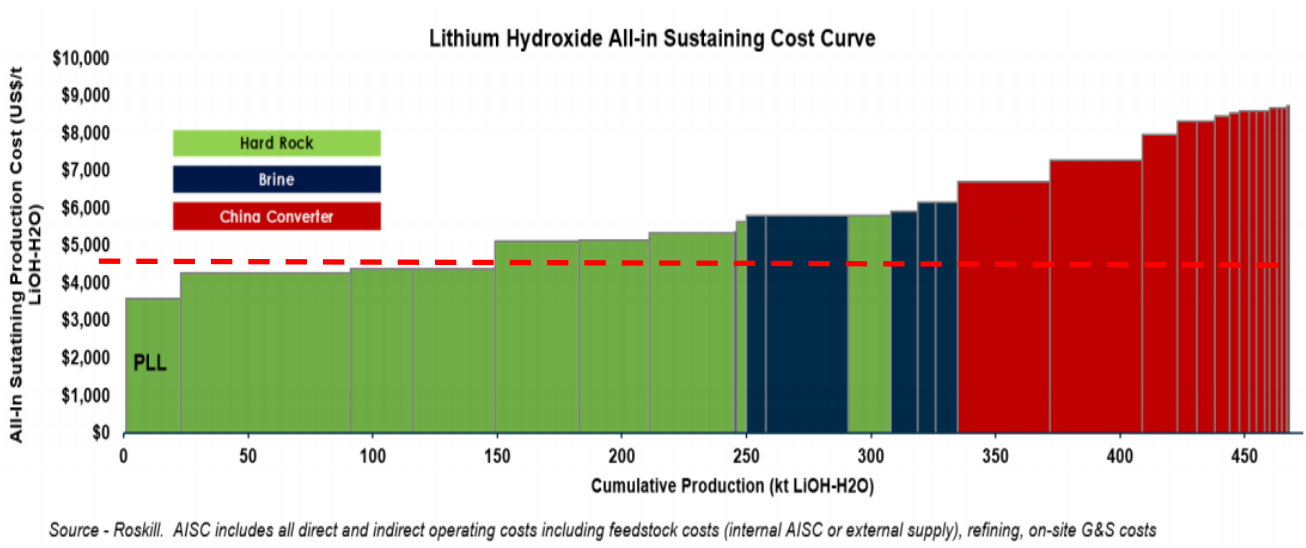

Figure 17: Projected operating costs (Piedmont Company Reports)

While E3 has yet to publish a feasibility study, when comparing the lithium grades to other DLE projects and reviewing the flowsheet design and infrastructure layout, we anticipate a **targeted $4,000-$5,000/t operating cost** per ton of hydroxide. At ~$ 4,500/t, E3 would place in the first quartile versus competitors. Importantly, from a profitability perspective, should E3 achieve battery grade for all of its production as opposed to 80% or less for competitors, the company will generate a higher total operating margin. There is also the possibility of earning a premium price for producing a consistent, low impurity, high specification product and further, the ability to deliver increased volumes as demand grows.

While we view lithium as a specialty chemical and not a pure commodity, where a project sits on the cost curve is important. However, the road to an established and balanced market will be volatile. It's key for projects to be able to withstand periods of oversupply to ensure they benefit from high prices during undersupply. **Tier 1 battery demand from western OEMs will be substantial by 2023, and beyond, cathode producers are currently engaging with all credible projects to meet their future precursor requirements. Low opex projects located outside China in a safe jurisdiction are in short supply**. E3's planned production date of 2023 is perfectly timed to meet steeply rising demand.

E3 Management and Fully Diluted Shares

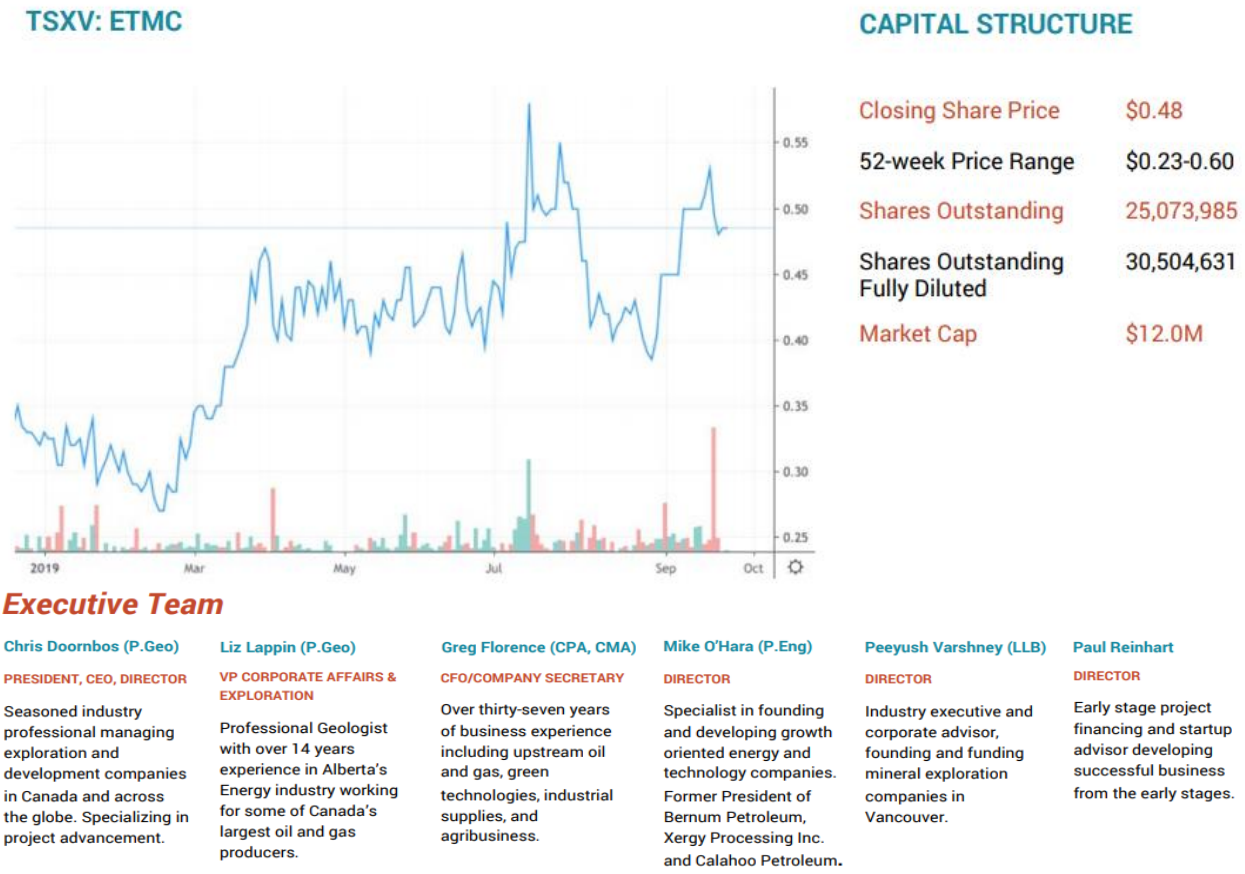

Figure 18: Corporate snapshot (E3 Company Reports)

Through a combination of share issuances for asset acquisitions and limited issuances for working capital expenses, E3 has managed to secure 100% ownership of its projects and a large indicated mineral resource. The share is tightly held, making share issuances a preferred route for potential investors to secure a holding.

MAJOR SHARE ISSUANCE

Date	Shares	Amount $	Avg per share	Note
Year to December 2017	5 620 000	1 315 000	0.23	Private placements
	6 000 000	1 200 000	0.20	Acq of mineral assets
Year to December 2018	3 540 000	1 416 000	0.40	Private placements
	350 000	140 000	0.40	Acq of mineral assets
Current Year to Dec 2019	3 971 983	1 390 914	0.35	Private placements
TOTAL	19 481 983			

Figure 19: Major share issuances by E3 (E3 Company Reports)

Convertible security	Exercise Price	Expiry Date	No. of securities	Value
Stock options	$ 0.40	14-Jun-20	75,000	$ 30,000
Stock options	$ 0.40	7-Nov-19	595,000	$ 238,000
Stock options	$ 0.40	18-Aug-21	540,000	$ 216,000
Stock options	$ 0.40	26-Dec-21	175,000	$ 70,000
Stock options	$ 0.43	31-May-21	475,000	$ 204,250
Stock options	$ 0.43	10-Jul-21	300,000	$ 129,000
Stock options	$ 0.40	22-Jun-24	150,000	$ 60,000
Stock options	$ 0.50	11-Sep-22	100,000	$ 50,000
		Total Stock Options	**2,410,000**	$ 997,250

Convertible security	Exercise Price	Expiry Date	No. of securities	Value
Warrants	$ 0.30	19-Apr-20	575,000	$ 172,500
Dec 18 PP	$ 0.60	27-Jun-20	317,500	$ 190,500
Apr 19 PP	$ 0.45	4-Apr-21	2,110,396	$ 949,678
Livent transaction	$ 1.17	10-Oct-21	109,935	$ 128,624
		Total Warrants	**3,112,831**	$ 1,441,302

Escrow Shares

Under escrow agreements dated May 30, 2017, 6,000,000 shares issued to the former shareholders of the Alberta Co. were placed in escrow. 10% of the escrowed common shares were released from escrow on the date of the closing of the Transaction (the "Initial Release") and an additional 15% will be released every six months following the Initial Release over a period of thirty-six months. As at June 30, 2019, a total of 1,800,000 (December 31, 2018 – 2,700,000) common shares were held in escrow.

Figure 20: Stock options and escrow shares (E3 Company Reports)

Several stock options and warrants are outstanding; our model assumes the exercise of these and the resultant premium inflow to be used as working capital by the company.

Estimated Fair Value Analysis

Short-term (2H 2020-1H 2021)

On successful construction and completion of an IX pilot plant and the commercial production of E3's IP sorbent, we value the company at US$40-$50m, similar to where other DLE companies who have reached the pilot stage and early feasibility are valued. On an enterprise value to NPV basis, US$40-$50m would represent less than 0.05x as we see the NPV at a minimum of US$1bn given the long-term production potential of more than 20,000tpa and long mine life (large resource).

To calculate the future number of shares in issue, we assume the exercising of all warrants, stock options, escrow shares up to and including June 2021. Additionally, we assume Livent will exercise its right to maintain a 19.9% shareholding. To be conservative, we assume the warrant/option premium and Livent "top-up" payment will be used as additional working capital. Also, we assume that 7.5m shares will be issued at CAD$0.40 (according to recent share prices) to raise CAD$3.0m to cover E3's direct costs outside of the JDP over the next eighteen months. **Using this methodology, we arrive at a CAD$1.13 - $1.42 per share valuation**.

Item	Amount
Shares in issue	25 073 895
Capital raise ($3m)	7 500 000
Warrants	3 002 896
Stock options	1 145 000
Escrow shares	1 800 000
Livent (19.9%)	7 665 836
TOTAL June 30, 2021	46 187 627

US$40m valuation	
US$ per share	0.87
CAD/US$	1.31
CAD$ per share	1.13

US$50m valuation	
US$ per share	1.08
CAD/US$	1.31
CAD$ per share	1.42

Figure 21: Author estimates

What is E3's long-term potential assuming production from 2023 onwards?

The market **average** for the all-in cost of acquiring (equity) and constructing an integrated project is **~$40,000 per ton of installed capacity**. E3's **estimated capex per ton** is likely to be approximately **$20,000-$25,000/t**, leaving substantial upside to its equity valuation to reach the $40,000/t average.

Albemarle – Wodgina: Albemarle originally paid US1.15bn for 50% of the project, and there was an estimated $850m capex share (50%) to reach 100ktpa steady-state production. Based on an all-in investment estimate of US$2bn, Albemarle was looking at $40,000 per ton of installed capacity. In reality, Albemarle's other WA project, Kemerton, has an updated estimated capex of $24,000/t. If Wodgina, located in a more remote part of WA, were to have the same capex cost per ton, then Albemarle's **final all-in cost would be US$47,000/t**.

Wesfarmers-Kidman: Wesfarmers made an A$776m (US$528m) offer for Kidman. Kidman owns 50% of the 45,400/t hydroxide project at Mt Holland. The estimated capex of the project has increased recently, and the total all-in cost for Wesfarmers is now **~US$1bn for 22,700tpa of installed capacity**. It is pointing towards an effective **final all-in cost of US$44,000/t** with Wesfarmers having 50% marketing rights.

Ganfeng-Bacanora: Bacanora's capex is US$420m for 17,500tpa (carbonate) of installed capacity or $24,000/t. Final pricing or deal confirmation is yet to be determined; however, the likely all-in cost for Ganfeng to acquire a 50% stake in the project will be approximately **$30,000-$32,000/t** for stage 1.

Ganfeng-LAC: The look-through valuation for this transaction is complicated by the change in ownership and input costs from SQM to Ganfeng for 37.5% project ownership and then a further 12.5% stake purchase by Ganfeng for US$160m. If we use the Blair Franklin fair valuation of US$600m-US$725m and a capex of US$500m for 25,000/t, then the phase 1 all-in cost (fair value) is $44000-$49,000/t. Assuming a **phase 2** increase of 15,000tpa to 40,000tpa at a capex cost of $17,000/t then the all-in cost (fair value) falls to **$33,875 - $37,000/t**.

Company	Valuation method	All-in cost per ton	Location	Type
Albemarle-Wodgina	Transaction	$47,000	Australia	Hard Rock
Westfarmers-Kidman	Transaction	$44,000	Australia	Hard Rock
Ganfeng-Bacanora	Est Transaction	$30,000-$32,000	Mexico	Clay
Ganfeng-LAC	Fairness opinion	$33,875-$37,000	Argentina	Brine

Figure 22: Author estimates and company reports

Conclusion

E3, through the creation of the JDP, is perfectly positioned to advance its IX technology with an experienced partner in Livent. That Livent is investing up to US$5.5m on an at-risk basis is a testament to the upside potential of E3. Several DLE technologies are being tested in the market; IX is the preferred method when comparing global projects.

While E3 is in the early stages of development, the company is positioned to complete a pilot plant and further its progress towards feasibility with a limited capital outlay of approximately CAD$3m. The issue of further shares (estimated 7.5m at CAD$0.40) will result in the outstanding shares rising to 30m-33m. Should Livent contribute the full US$5.5m, meet the completion clause and exercise its right to convert the amount into E3 shares, outstanding shares will rise to 36.2m-39.2m shares. E3 has done exceptionally well at limiting share dilution to date. With a successful **proof of concept pilot plant and commercial production of a sorbent at a cost-effective price, we value E3 at US$40m-US$50m or CAD$1.15-$1.44 per share based on 46.2m shares in issue**. Beyond the pilot plant, E3 has substantial further upside potential as it completes pre-feasibility and definitive feasibility studies. On achievement of the above initial milestones, we will update E3's estimated fair value.

Importantly, E3 will retain 100% ownership of the project at the asset level. Any dilution through the issue of shares to Livent is at the company level. The nature of the partnership with Livent beyond the construction of the pilot plant is unknown. While feasibility capex estimates are two years away, broad initial estimates suggest ~$20,000/t+ of installed capacity. As such, E3 will need to raise ~US$400m funding to reach 20,000tpa of initial production. We anticipate substantial lithium hydroxide demand from 2023 onwards; this coincides with E3's estimated production timeline. Given E3's favourable location, low impurity and scaleable product, we see substantial demand for an offtake agreement or strategic partnership.

Potential investors should be aware of the risks of investing in E3, namely, the low lithium grade of the resource, which eliminates the possibility of processing the petro brines using conventional brine methods. Further, several competitors are developing alternative IX technologies; if E3 fails to commercialise its project using its in-house IX technology, there may be scope to utilise a competitors technology.

Considering Albemarle has indefinitely postponed the construction of the Wodgina hydroxide plant, Kemerton stages 3-5 and the Atacama yield enhancement strategy, chemical plants (and supply) outside China have become scarcer and more valuable. Capital cost overruns at Kwinana and Kemerton are likely to put a dampener on other planned WA projects; SQM, with no hard rock experience, can grow production in the Atacama at $5,000/t capex versus Mt. Holland at $20,000/t+. We believe a delay in the construction of Mt Holland with SQM's new partner Wesfarmers, is probable. Cathode/battery cell manufacturers have purposefully tried to diversify geographic supply risk and limit their exposure to any one particular company. This task is becoming increasingly harder as WA and other projects get shelved.

We do not subscribe to the view that lithium chemicals are a commodity. However, we do recognise the importance of being a low-cost producer in a specialty chemical market that will have future volatility. E3, depending on the outcome of the feasibility study, could be in the first quartile for lithium hydroxide production costs.

E3 finalises several **milestones between now and June 2021.** These follow below.

- Commercial-scale production of E3's IP sorbent within the JDP
- Construction and testing of an IX pilot plant within the JDP
- Upgrade the inferred mineral resource to measured and indicated
- Identify higher-grade lithium zones within the reservoir
- Front end engineering and design of a commercial facility aiming for 20,000tpa initial production
- Pre-feasibility study

Given that the current availability of high specification chemicals is limited to select suppliers and geographic locations, buyers haven't stressed sustainability to date. In time OEMs (VW and Mercedes have publicly stated this) will strive to be carbon neutral. The entire lithium-ion battery supply chain will face scrutiny, and we believe there is a high probability that either CO_2 incentives or penalties will be levied across the entire supply chain from mine to EV showroom floor. **Looking at the possible battery supply chain alternatives outside China, E3 is well placed to benefit greatly from future incentive and penalty schemes.**

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