

Lake Resources Limited - Update

Lilac Solution Inc backs its own tech – taking equity in Kachi

Share Price
& Estimated
Future Price

Price in 12-months	\$1.05
Current Price	\$0.61
Implied Change	+72%

Lake Resources (LKE. ASX) announces that its clean technology partner Lilac Solutions Ltd (Lilac), will join the Argentinian Kachi project, earning up to 25% at the asset level, subject to performance hurdles. **Lilac brings a new-patented technology to the lithium brine industry** and its direct investment further reduces perceived funding and technology risk and increases the likelihood of project delivery. Lilac's direct participation in Kachi is testament to their belief in their patented ion-exchange technology, which although new to the lithium industry has been used extensively in the water and uranium sectors. **Lilac and its investors consider the time is right and the asset is right to deliver disruptive yet sustainable extraction technology, to some 40% of the world's lithium supply.**

Tech Funds support battery metals development Overnight in the US, Lilac raised US\$150m from Lowercarbon Capital (Lowercarbon), which is co-owned by Chris Sacca, a leading US technology portfolio manager. Sacca said, "I've been doing this a long time, but before Lilac, I've never seen a company whose product is 10,000x faster than the competition. Lilac's success means much more affordable electric cars, hundreds of millions of tons less CO2 pollution, and a big step toward enhancing US national security." The funding from Lowercarbon and other Lilac investors will flow indirectly through to Kachi. This is Lilac's and Lowercarbon's first investment in the lithium and clean technology supply chain and therefore, indicates that extensive due diligence has been conducted.

There is a sense of urgency The threat to a successful energy transition is failure to develop needed battery materials. Mining projects can take up to 10 years to production and brine developments using water intensive evaporation ponds can take up to 5 years. With demand forecasts suggesting 10x growth to 2030 and 30x growth to 2040 and lithium prices doubling over the last year, it is clear the lithium market is far from being balanced. The stage is set for disruption and Lilac's DLE technology reduces project development times to 1.5-3 years and processing times to just hours.

The outlook for securing Tier-1 offtaker improves – With the UK Government indicating substantial low cost debt financing support, Lilac's direct involvement in Kachi and Lilac's successful funding round overnight, CCR considers the prospect of securing Tier-1 offtakers has risen. An offtaker may consider that two key risks, being financing and technology, have been significantly reduced.

Valuation upside – We reduce LKE's Kachi equity to 75%. With no upfront payments, we estimate LKE's value dilution to be equal to the value Lilac & the ECA add back from an offtakers perspective. To achieve this we lift Phase-1 risking from 0.6x to 0.75x NPV8 and Phase-2 from 0.15x to 0.25xNPV8. Using a nominal NPV8, our 12-month value is \$1.40/share. Discounting this value by 25% yields a 12-month target price of \$1.05/share.

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Company Information

ASX Ticker	LKE
OTC Ticker	LLKKF
ASX Price (A\$)	0.61
52-week range (A\$)	0.04-0.68
Position relative to 52-week high	-10%
Shares on Issue (m)	1,104.8
Options (m)	163.5
Fully Diluted Shares on Issue (m)	1,268.3
Market Capitalisation (A\$m)	673.9
Average Daily Volume (m)*	8.35

Market Model - undiluted

	Unit	
Market capitalisation	A\$m	673.9
Cash	A\$m	26.0
Debt	A\$m	0.0
Enterprise value (EV)	A\$m	647.9
EV / NPV8 as in PFS refresh	%	30%
Cash % market cap	%	4%

Key Personnel

Stephen Promnitz	MD & CEO
Stuart Crow	Chairman & NED
Robert Trzebski	NED
Sra. Amalia Saenz	NED
Dr Nick Lindsay	Exec Tech Director

LKE Price Chart (Source: Factset)



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Company Summary

Investment thesis – Lithium Triangle produces 40% of worlds lithium and hosts large deposits

LKE aims to become a major global producer of high quality battery grade lithium carbonate. It holds 100% equity in four significant Argentinian brine assets situated in the Lithium Triangle, which produces around 40% of global lithium production. LKE plans to use disruptive lithium extraction technology to produce lithium for sales into Europe, US and Asia. With its clean technology partner Lilac, LKE is moving fast to bring a low carbon, low water, low waste, light footprint, and low-cost - high value project to market. The DFS is due early 2022, construction could start mid 2022 and production of high purity lithium could commence 2024. NMC622 cell samples created by NOVONIX, using LKE lithium carbonate, demonstrated Tier-1 quality and have been sent to customers for battery testing against commercial peers. Results are expected in coming months.

Other recent activities include;

- Strong Expression of Interest to fund 70% of Kachi Project (August '21)
- Lake adds Argentina-based female director to support development (July '21)
- Kachi drilling underway to support doubling of lithium production (July '21)
- Kachi project finance advances (June '21)
- Lake accelerates exploration across broader portfolio (March '21)
- PFS refreshed – price increased to US\$15,500/t (March '21)
- Positive Initial NOVONIX battery cell testing results for Lake high purity lithium carbonate (March '21)

Kachi Project Valuation – PFS refreshed (real terms)

Kachi is one of three deposits located in Argentina. LKE plans to develop Kachi to produce 25.5kt LCE/year. The PFS suggests the 25-year project life would utilise ~20% of the total resource. The direct lithium extraction (DLE) plant is modular and scalable.

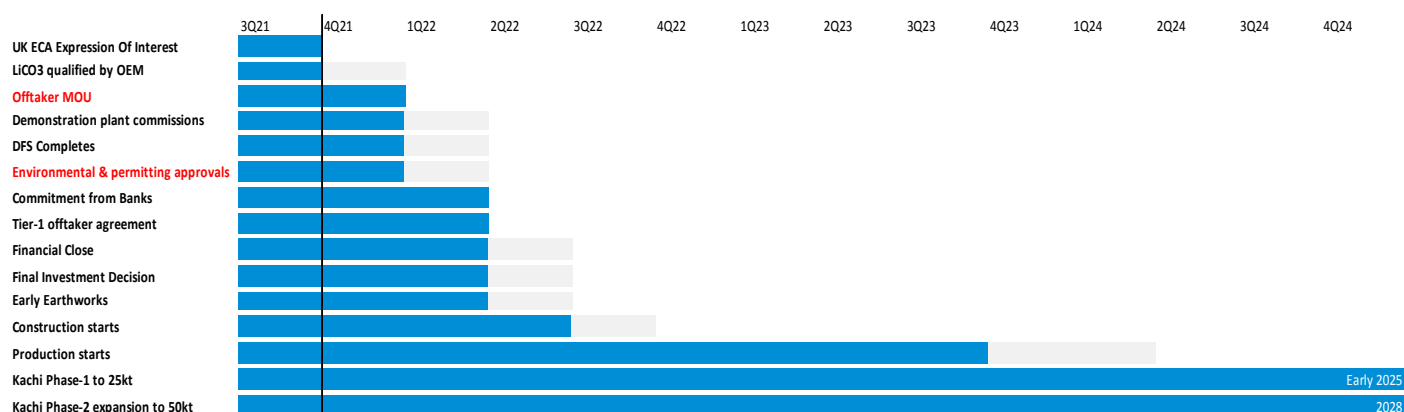
JORC RESERVES In mt LCE	Measured	Indicated	Inferred	Measured & Indicated	Measure, Indicated & Inferred
Kachi (net 100%)	-	1.01	3.40	1.01	4.41

LKE recently refreshed the PFS to include a lithium price assumption of US\$15,500 up from US\$11,000 used in the April '20 PFS. Lithium prices are presently rising strongly in China and with few projects under construction/expansion it is considered buyers could pay price premiums for the cleaner, high quality lithium for use in battery cathodes. LKE reported that no other assumptions were altered to achieve an upgrade of the NPV8 from US\$748m to US\$1.58Bn (A\$2.1Bn). The project's EBITDA/year increased from US\$155m to US\$257m. Breaking this down, the gross profit/t increased 65% from US\$6,822/t to US\$11,322/t.

Company Valuation Summary – (Nominal terms refer page 14 for details)

Our modelled Phase-1 development is based on the refreshed PFS. We model a Phase-2 expansion to 51kt. Phase-1 value is then discounted by 35% and Phase-2 by 85%. We reduce project equity to 75%. We then value LKE at \$1.23/share and \$1.40/share in 12-months.

Catalysts timeline (source: Lakes Resources CCR estimates)



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Lilac Solutions Inc Partner for life of Kachi Project

Who is Lilac Solutions? Lilac is a Californian based private company, LKE’s Clean Technology partner and owner of patented Direct Lithium Extraction Process that uses ion-exchange. Lilac’s Shareholders include the Breakthrough Energy Ventures, which is helmed by Bill Gates. Investors in the Venture Fund include Jeff Bezos, Jack Ma, Richard Branson and Warren Buffet amongst others. Other lead investors in Lilac include MIT’s The Engine, Prime Impact Fund, and now Lowercarbon Capital, a newly established US based US\$800m fund investing in lower carbon technologies.

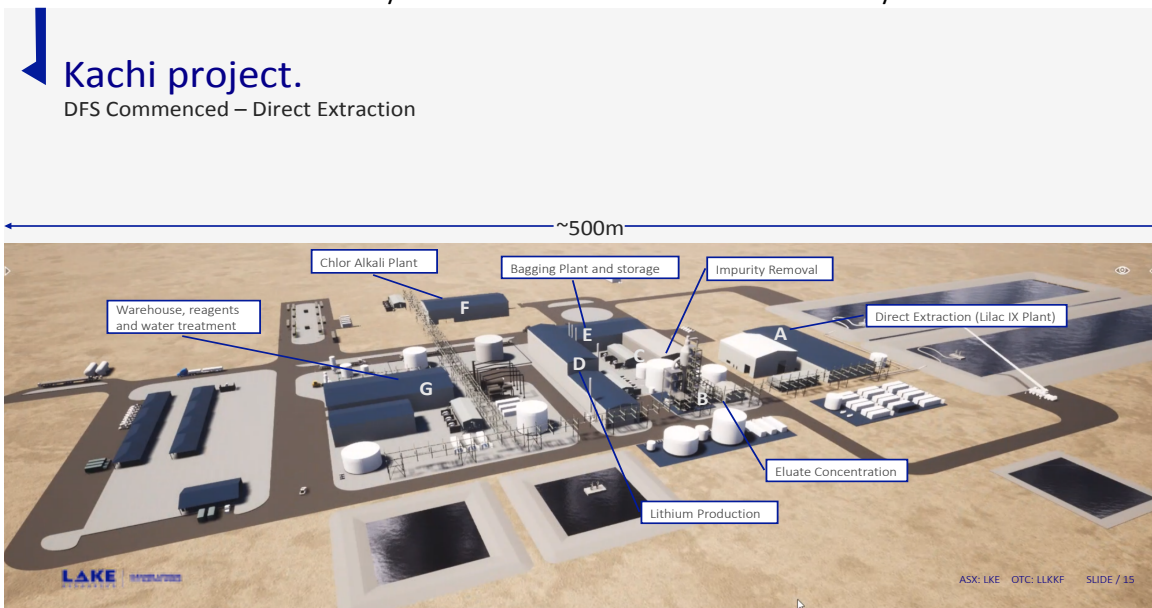
What does the Lilac technology enable? The ion-exchange technology is disruptive to the lithium industry as it enables lithium producers to accelerate brine development from years to hours and is both energy and water efficient, returning lithium rich brine stripped of its lithium back to the aquifer.

Although ion-exchange is new to the lithium brine industry, its principles are very well understood. In fact, it has been used for decades to clean water and separately half of the world’s uranium is produced via ion-exchange.

How will the new Kachi Project partnership work? Lilac has been LKE’s technology partner for some time. Now they will be stepping up to take equity at the asset level. This involvement is testament to their belief in their patented DLE technology that has recoveries between 80-90%. CCR continues to model a lithium recovery rate from the brine of 83%.

Highlights of the announced project partnership include;

- Lilac will be investing at the asset level of the Kachi project. They will not be taking up equity in LKE
- Lilac will earn a direct equity in Kachi of 10% to 25%; subject to conditions precedent and quality of product produced (refer ASX release)
- If Lilac can ensure the quality of the product produced meets the highest qualification standards of the offtakers, then its equity will increase from 20% to 25%. Their earn-in is expected to complete in 2022. After that Lilac will contribute their share of the capex, which LKE has estimated to be US\$50m. We note that this is slightly in excess of the US\$41m that 25% participation might suggest. We consider Lilac is motivated to maintain quality and thus CCR reduces LKE equity in Kachi to 75%
- Lilac will build, at their cost, the Demonstration Plant that should be operational in 1H22
- Lilac will operate all DLE modules on site in Argentina, whilst LKE will manage all other activities
- Lilac has raised US\$150m to fund their new equity in Kachi. Lilac currently have 25 engineers on staff and expect this to double over the next 9-months
- The partnership is exclusive within the Kachi Basin. There are other exclusivity aspects of the deal in other areas
- Lilac announced they would commit funds effective immediately.



Kachi project.

DFS Commenced – Direct Extraction

Reduced Footprint

The DLE Plant marked (A) on the right hand side of adjacent slide, will house all modules for Phase-1 of the 25.5kt/year at Kachi. This compares with an evaporation pond footprint that is some 15km wide at the Atacama Project in Chile.

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ESG benefits ion exchange yields a high purity product, low water usage, fast to market

ESG & e-mobility megatrends collide as offtakers and investors pursue low emissions, low waste and socially aware investments. Water sustainability is important. Roskill suggests around 70% of lithium extracted from South American brines is located in areas described as having a “High” water risk.

As a result, the tracking and reporting of carbon emissions, as well as water flows and usage, will be key to establishing the true value of LKE’s ESG credentials. Recently, Vulcan released its ESG score and significant market outperformance followed. LKE announced in the Lilac webinar, that they plan to have some data around this in coming months.

In summary, LKE will not be using evaporation ponds to concentrate the lithium. LKE was concerned about project delays and lack of approvals for evaporation ponds on lithium projects in Chile and the lack of water sustainability. This caused LKE to reassess how they might develop the Kachi deposit. Early on, LKE sought to proactively seek out disruptive technology that could not only improve lithium quality and yields, but was also water efficient.

Lilac Solutions Inc, backed by the Bill Gates led *Breakthrough Energy Fund*, had developed such a patented technology.

The Lilac process is NOT water intensive The Lilac process at Kachi was designed to use the lowest amount of water of any DLE process under investigation. This was considered necessary as Kachi is located in arid to semi arid areas where available fresh water, used in processing, is scarce.

How does the Direct Lithium Extraction process work? Wells are drilled into the salt brine at around 100m-400m, which then flows to surface and in to nearby plant and fibreglass tanks. Phase-1 to 25.5kt/year will see 23-million litres of brine being continually processed each year. This would double if production were doubled to 51kt/year. The tanks on site contain special ion-exchange beads, which the lithium latches onto over a few hours. The beads collect around 83% of the lithium in solution. The brine, ex the lithium on the beads, is then returned to the aquifer. The beads are then stripped of the lithium and re-used. The purified lithium chloride concentrate, from Lilac’s process, is further concentrated, purified and fed into a conventional lithium carbonate plant.

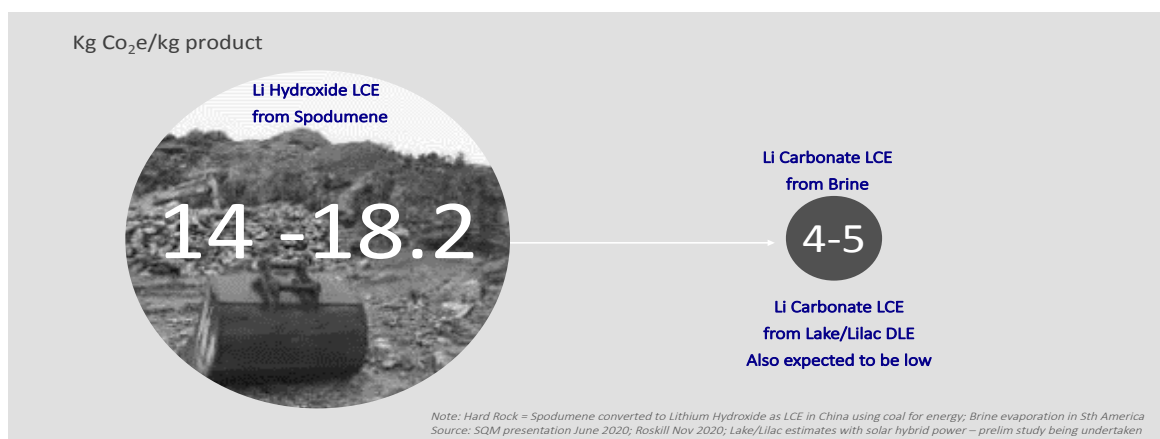
This process is a closed circular system that the EU and others are seeking as they move into a low carbon, low waste era.

Key disruptive features of Clean Tech as outlined by Lilac and LKE;

- No mining, crushing or evaporation ponds required
- Simple project flowsheet is more efficient (lower cost and very fast...hours versus years!)
- Doubles lithium recoveries – concentrates from 45% to 85% effectively doubling reserves
- No water politics – as 99% of brine is re-injected back into the reservoir; and
- 90% smaller physical project footprint; and Delivers a constant product quality.

Cleaner environment

Smaller carbon footprint



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CCR Valuation is DCF based

We continue to model Kachi in line with the original PFS. The CCR model assumptions are noted in our [initiation report](#).

Recent changes to assumptions were detailed in our [most recent report](#) and included; raising the lithium price from US\$14,500 to US\$15,500/t, project de-risking and a reduction to the interest rate payable on debt from 7.5% to 4.5%, supported by ECA guarantees and direct lending.

Now following the Lilac announcement we have had to make some additional changes. LKE's equity in Kachi has been reduced from 100% to 75% and the project has been further de-risked. Phase-1 probability of occurring has increased from 60% to 75% and the probability of Phase-2 proceeding has increased from 15% to 25%. How did we arrive at these numbers? We iterated the risking until we arrived at the same valuation for 12-months out as we had prior to the Lilac announcement.

In effect, we consider securing Lilac as a partner has increased the probability funding will be finalised and offtakers secured. On this basis, **we calculate the value add to be equal to the dilution** for modelling purposes. We do recognise on a totally de-risked project basis that project value has been reduced by 25%. However, if the risking stayed where it was the project would never be developed. It would remain a low valued option. By reducing project risk the inherent option value has been exercised. This is called progress and really is an exercise in risk and profit sharing.

As a result of the Lilac partnership, LKE may be able to re-instate value along the chain by using a combination of the following;

- Achieving higher recoveries. Lilac controls this outcome and suggests recovery in the range of 80-90%, CCR currently models 83%
- Using cheaper/cleaner renewables. Renewables to gas ratio expected to be 25%/75%
- Achieving pre-payments from offtakers
- Premium pricing secured from offtakers due to perceptions of lower operational risk; and
- Or a mixture of the last two.

We note that a 23% increase in our lithium price assumption could remove the effects of long-term project dilution.

VALUATION UPDATE (RISKED VALUATION - Based on SCENARIO-1)

Scenario-1	Discount Rate	NOW	12-months	2-year	3-year	4-year	8-year
Kachi Phase-1	8%	0.92	1.09	1.35	1.38	1.36	1.30
Kachi Phase-2	8%	0.25	0.26	0.29	0.32	0.35	0.55
Total Kachi Project value	A\$/share	1.17	1.35	1.64	1.70	1.71	1.85
Other Argentina assets		0.04	0.04	0.05	0.05	0.06	0.09
Total Argentina	A\$/share	1.21	1.40	1.69	1.75	1.77	1.94
Corporate Costs	10%	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Working Capital		0.02	0.02	0.02	0.02	0.02	0.02
Net Cash Cash (last qtr rpt-adj)		0.02	0.02	0.02	0.02	0.02	0.02
Scenario-1 LKE value	A\$/share	1.22	1.40	1.69	1.75	1.77	1.95
Scenario-2							
Kachi Project value		1.73	1.98	2.38	2.48	2.52	2.83
Other assets		0.05	0.04	0.05	0.05	0.06	0.10
Scenario-2 LKE value	A\$/share	1.77	2.03	2.43	2.53	2.58	2.93
Scenario-3							
Kachi Project value		2.23	2.51	2.97	3.12	3.23	3.92
Other assets		0.03	2.05	2.45	2.55	2.60	2.95
Scenario-3 LKE value	A\$/share	2.28	2.56	3.02	3.17	3.29	4.02

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