



MATERIALS FOR A HIGH TECH WORLD

High Purity Alumina (HPA) for battery technologies

Critical materials for electrification and carbon reduction

January 2022

ASX: CMX

IMPORTANT INFORMATION

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CHEM^X OVERVIEW

The Chemistry X Factor



Commercialising Technology and Innovation



Decarbonisation



Critical Materials for Electrification

ChemX – A Unique Offering

1

HiPurA™ High Purity Alumina (HPA)

Innovative, in-house production technology method to produce High Purity Alumina (HPA) – a critical input for battery technology, LED & semiconductor supply chains.

2

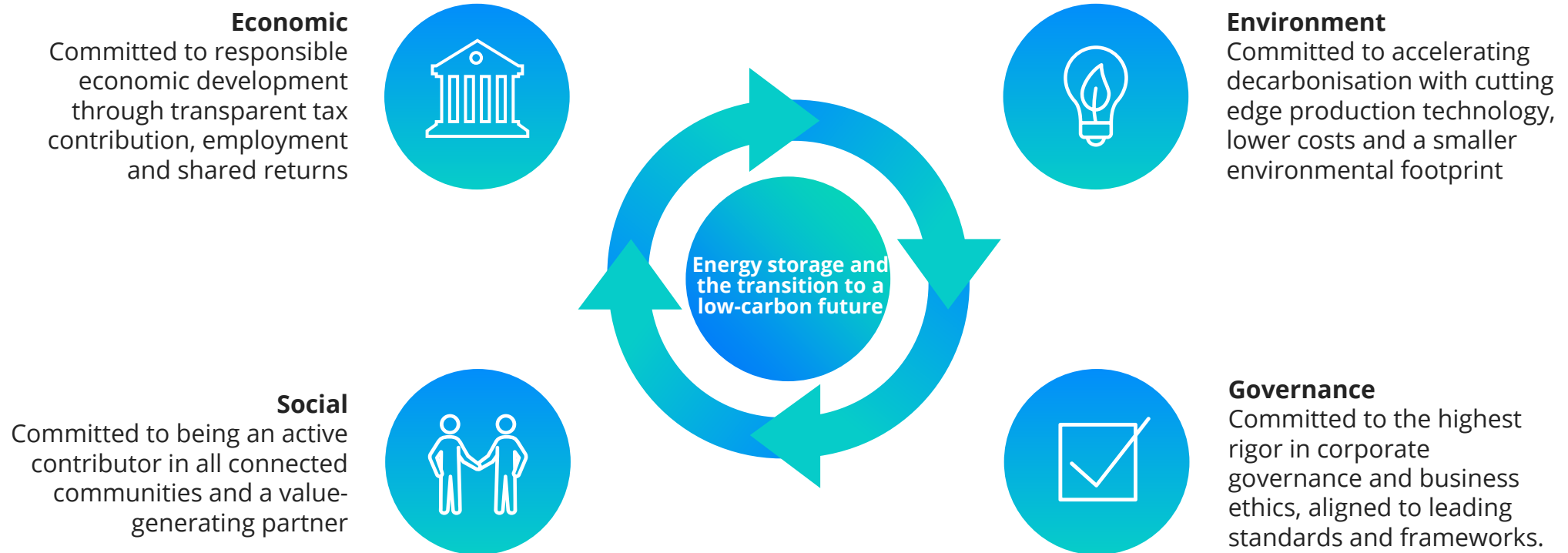
Eyre Peninsula Projects

Developing cathode precursors and materials required to de-carbonise industrial processes - kaolin, halloysite and manganese.

3

SUSTAINABLE DEVELOPMENT

ChemX recognises that its future is intertwined with the future of the economy, society and the natural environment and commits to responsible corporate citizenship. We will balance our needs with those of our stakeholders to drive positive lasting impact.



BOARD & MANAGEMENT



Kristie Young | Non-Executive Chair

Over 20 years' experience across mining, engineering, project evaluation, professional services (EY & PwC), executive search, business development & advisory, technology & other sectors. Kristie is on the boards of Lithium Australia NL (ASX:LIT), Tesoro Resources Ltd (ASX:TSO), Wesley College WA & Energy Club WA.



Warrick Hazeldine | Non-Executive Director

20+ years capital markets experience from working with a range of ASX companies as Founder of advisory firm Cannings Purple, mainly in the natural resources sector including key roles in several hydrogen and battery metal transactions. Warrick is the Chair of Global Lithium Exploration Ltd (ASX:GL1) and a director of Surfing WA.



Stephen Strubel | Executive Director

Experienced finance and corporate governance executive, 10 years in financial markets, mainly with Paterson's Securities and as a company secretary. Stephen is an Executive Director and Co Sec for Auric Mining Limited (ASX:AWJ) and Director of Star Minerals Ltd (ASX:SMS).



Tamara Barr | Company Secretary

16 years' experience as a Company Secretary and Corporate Governance Advisor to ASX listed, public and private companies and NFPs., across a variety of sectors and jurisdictions (Australia, the UK and Europe).



David Leavy | Managing Director

More than 25 years' experience in commodity markets having previously held executive roles with a number of advanced mining companies across varying commodities and jurisdictions. The last 4 years have been focused on HPA production technologies and markets.



Dr Nicholas Welham | Technical Consultant

Currently Adjunct Professor of Lithium Processing at the WA School of Mines and principal of boutique hydrometallurgical consultancy Welham Consulting. Nicholas has 50 patents granted and holds a PhD in Minerals Engineering from the Royal School of Mines, Imperial College London. Responsible for developing ChemX Materials' innovative process to produce HPA.

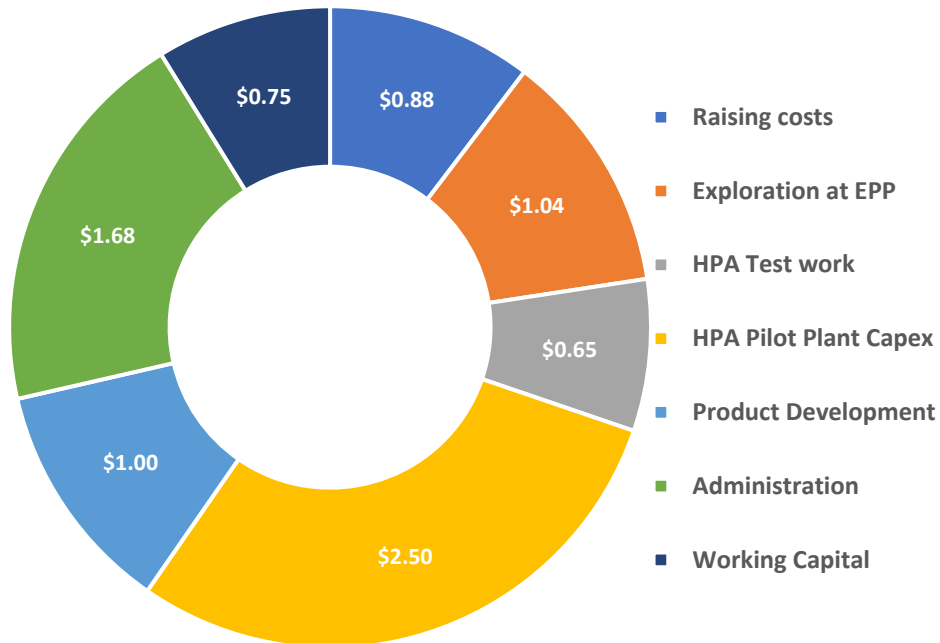


Mike Ware | Project Manager

B.Sc (Geology) from UNSW. Specialist in refractories and high tech ceramic materials, with 40 years experience across a range of commodities and geological settings.

CORPORATE SNAPSHOT

Use of Funds



Top 10 Shareholders	# of Shares	% Owned
R J & A Investments Pty Ltd	19,250,000	21.21%
Archer Materials Ltd	11,571,119	12.75%
Stephen Strubel	5,125,000	5.65%
A3 Capital	3,350,000	3.69%
David Leavy	3,112,500	3.43%
Brio Capital Master Fund	3,100,000	3.42%
Mercer Street Global Opportunity Fund LLC	3,100,000	3.42%
Neometals Investments Pty Ltd	2,000,000	2.20%
Panther Trading Pty Ltd	1,750,000	1.93%
Nicholas Welham	1,450,000	1.60%

Directors Holdings	# of Shares	# of Options
Kristie Young	1,250,000	1,000,000
Warrick Hazeldine	250,000	1,000,000
David Leavy	3,112,500	0
Stephen Strubel	5,125,000	0

HIPURA TECHNOLOGY

- High Purity Alumina
- High Purity Aluminium Precursor Salts

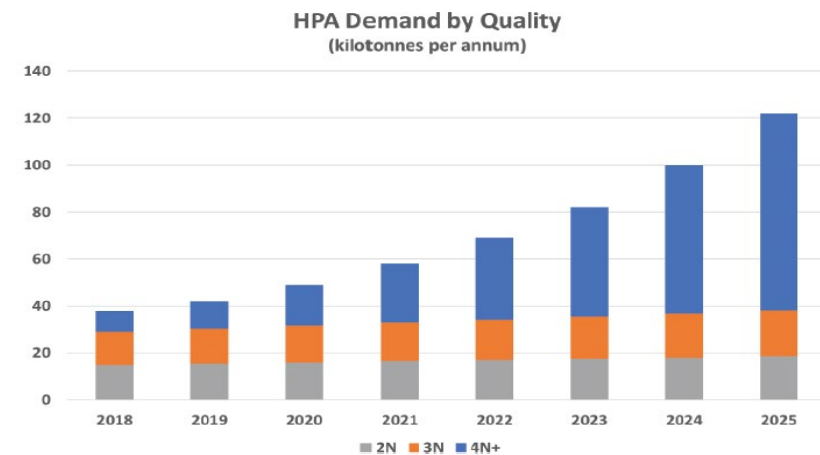
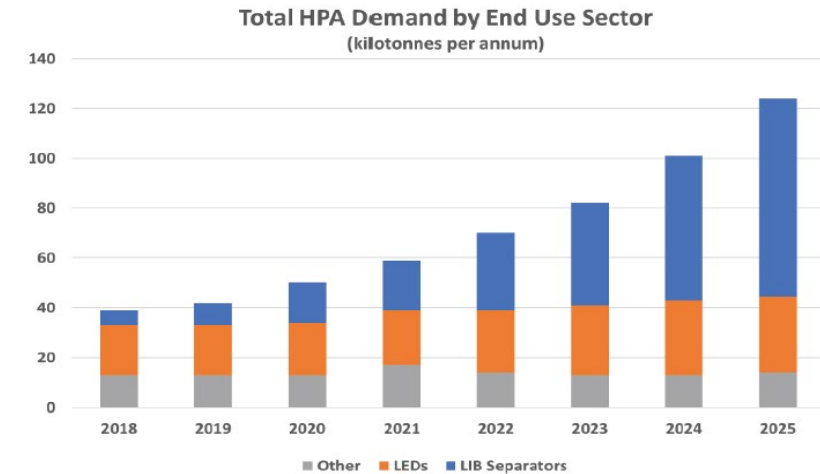
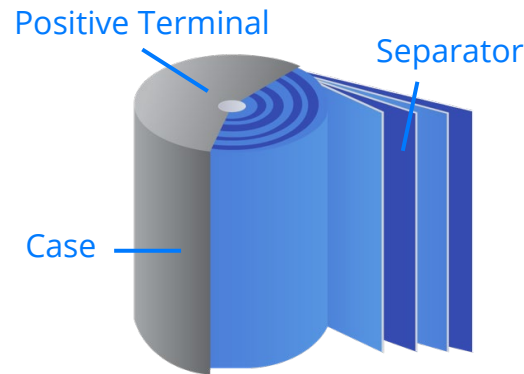


HPA: SURGING DEMAND, SUSTAINED SUPPLY DEFICIT

The High Purity Alumina (HPA) market is valued at US\$1.8 billion* and forecast to grow at 18%** p.a. over the next seven years, driven by demand for lithium-ion batteries, semiconductors and use in new technologies.

A Key Safety Component of Lithium-ion Batteries

- Coated on the separator, HPA provides significant additional thermal capacity
- Synthetic sapphire in semiconductor and high impact LED lenses (e.g. in autonomous vehicles)



Demand growth for HPA from lithium-ion batteries market**:

26%



US\$1.8 billion HPA market forecast growth over next 7 years:

18%

Smith & Power 2021

*<https://www.gminsights.com/industry-analysis/high-purity-alumina-hpa-market>

**<https://www.spglobal.com/marketintelligence/en/news-insights/blog/top-electric-vehicle-markets-dominate-lithium-ion-battery-capacity-growth>

ADVANTAGES OF HiPurA HPA PROCESS

HiPurA™ - Revolutionises HPA processing



Scalable

Inherently scalable with capacity to rapidly expand as demand grows



Lower Cost

Initial test work suggests low capital and operating costs



Independent of Mine Production

Feedstock is a widely available chemical



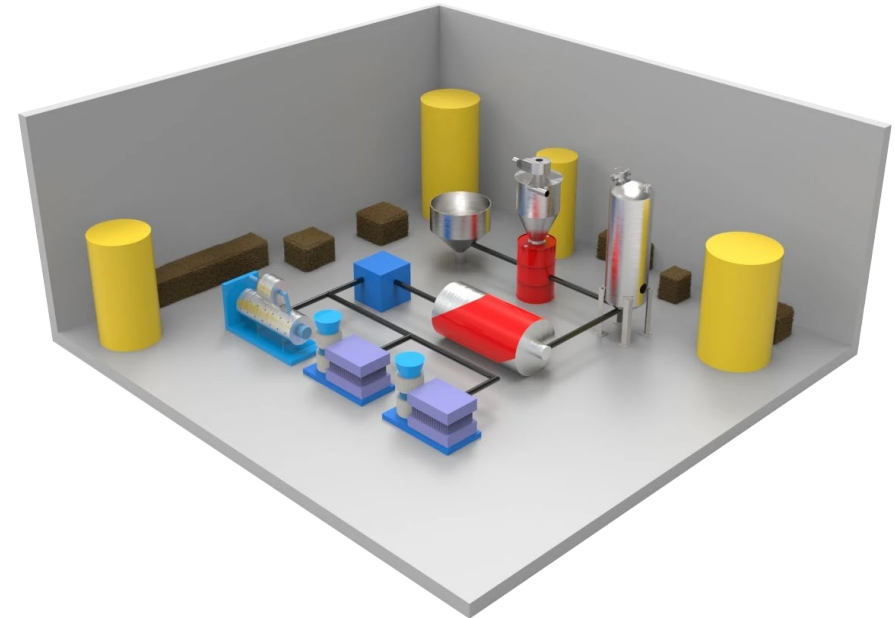
Modular

Allowing for multiple production locations close to end users



Multi-Use End Product

Able to produce various grades and products – able to meet the requirements of different end users



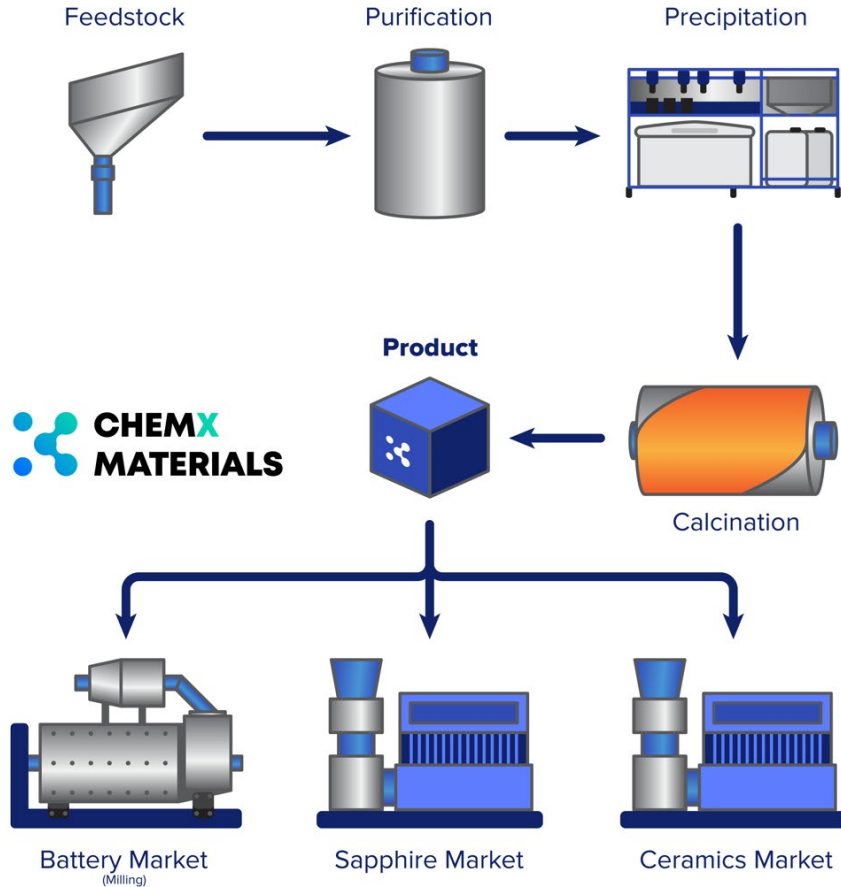
ChemX is targeting the commissioning of a pilot plant within 12-18 months and ramp-up with demand

A Provisional Patent application has been lodged for the HiPurA™ HPA process

Marketing to HPA end users has commenced

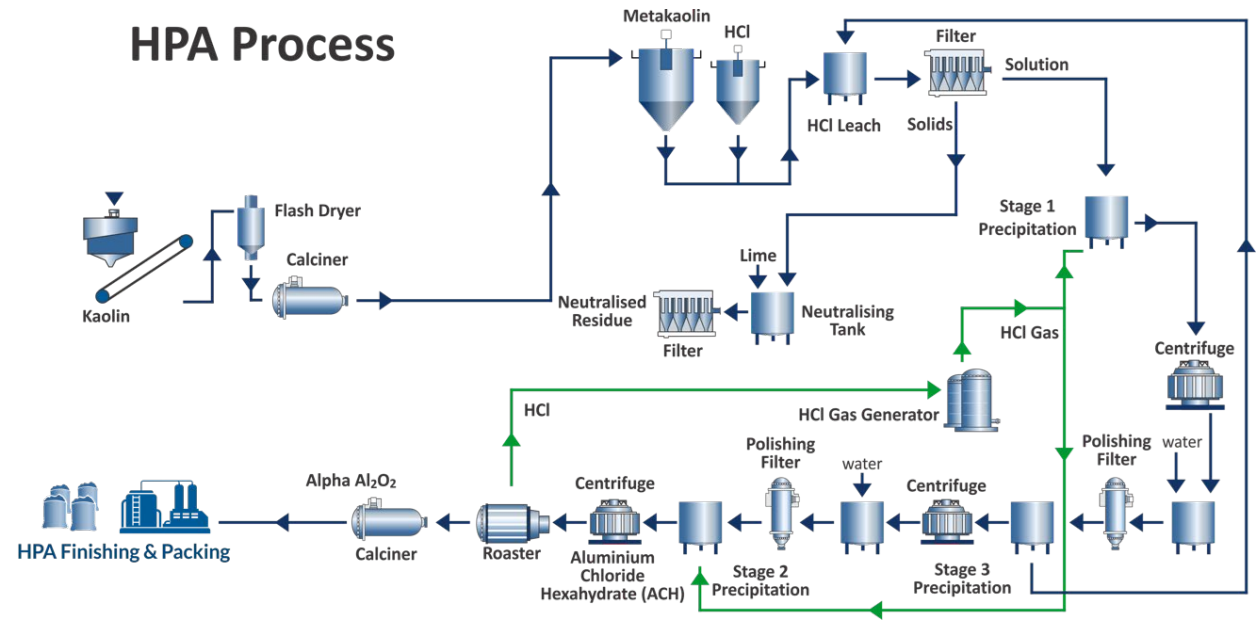
SIMPLIFIED, LOW COST, SCALABLE HPA PRODUCTION

HiPurA™ HPA Flowsheet



Flexible feedstock - not tied to mining operation

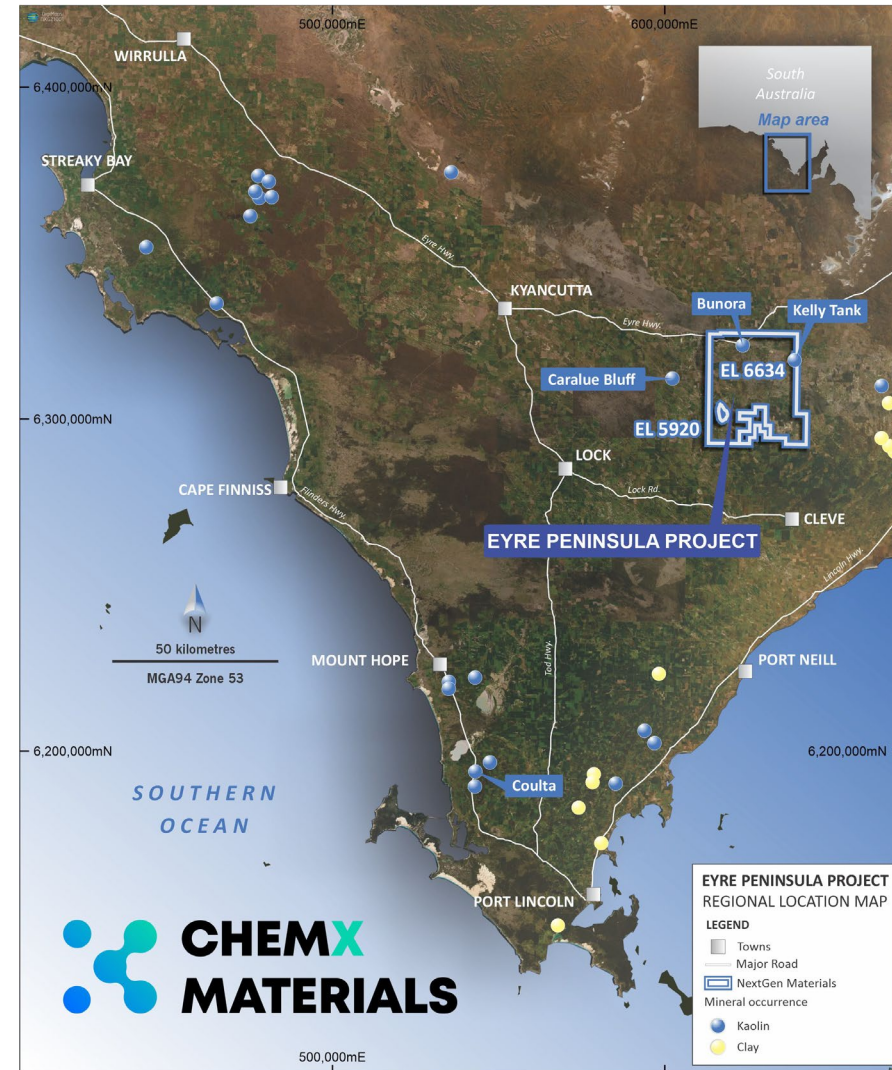
USBM Kaolin to HPA Flowsheet



Limited to using only kaolin as a feedstock

EYRE PENINSULA EXPLORATION TENEMENTS

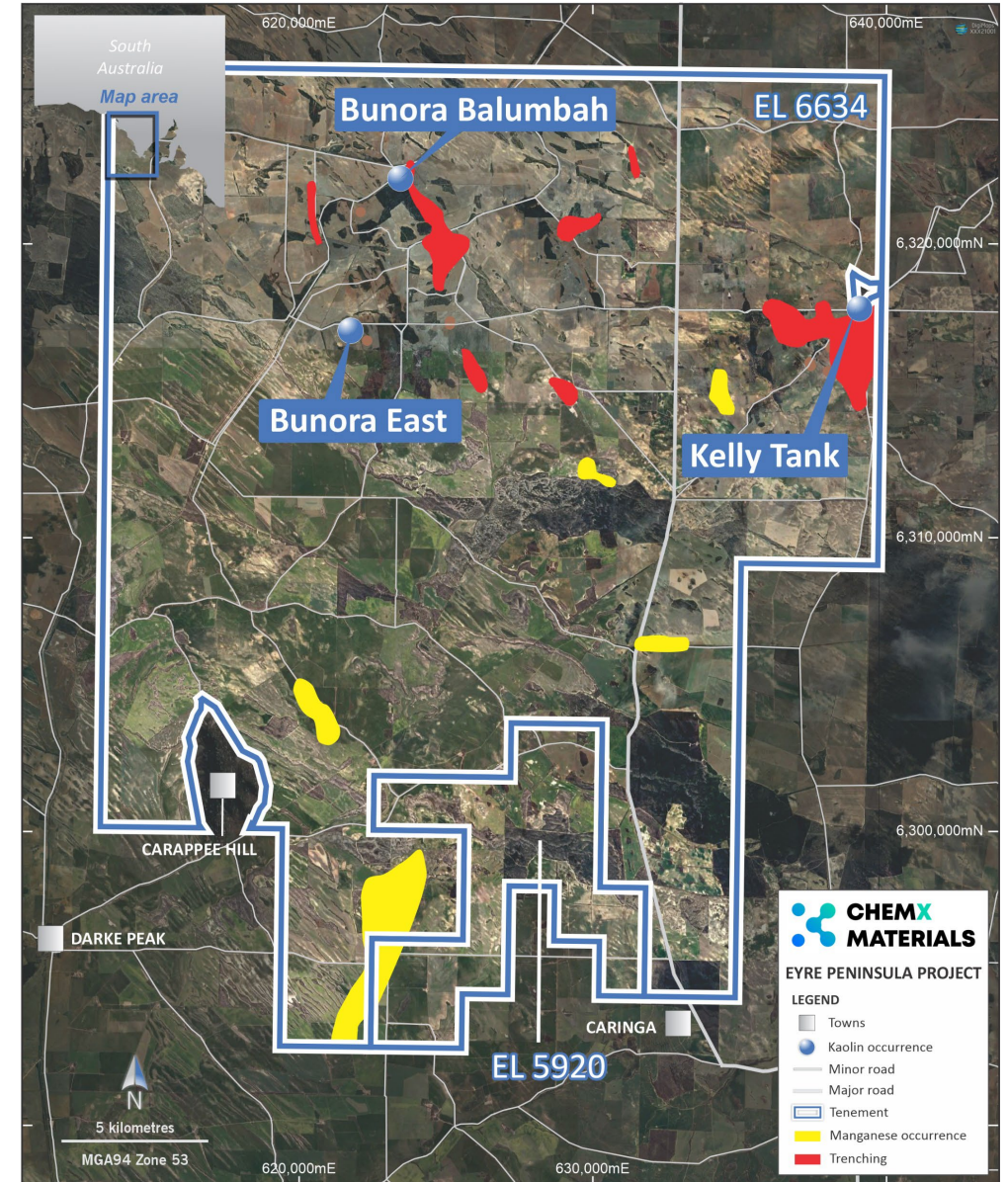
- Kimba Kaolin / Halloysite
- Jamieson Tank Manganese



EYRE PENINSULA PROJECTS

Kimba Kaolin-Halloysite & Jamieson Tank Manganese

- 100% owned EL6634 and EL5920 covering a total of 718 km²
- Confirmed Halloysite identified ([ASX:AXE 20 July 2020](#))
- Testing underway to develop a Manganese Sulphate for a cathode precursor product.
- Located 115km west of Whyalla, close to workforce and infrastructure
- Deposits are located on freehold title, with excellent access to infrastructure.



KAOLIN – GROWING DEMAND – INCREASING USES



The kaolin market is a well-established market totalling US\$4.1 billion and forecast to grow at 5.1% p.a*. ChemX estimates this requires an approximately an additional 1 mtpa to supply forecast growth.

Kaolin existing markets

- Paper coating
- Ceramics – china, porcelain, etc
- Paints and coatings
- Refractories, fibreglass, plastics, rubber

Kaolin is starting be used in industrial processes to replace high carbon emitting industrial process inputs

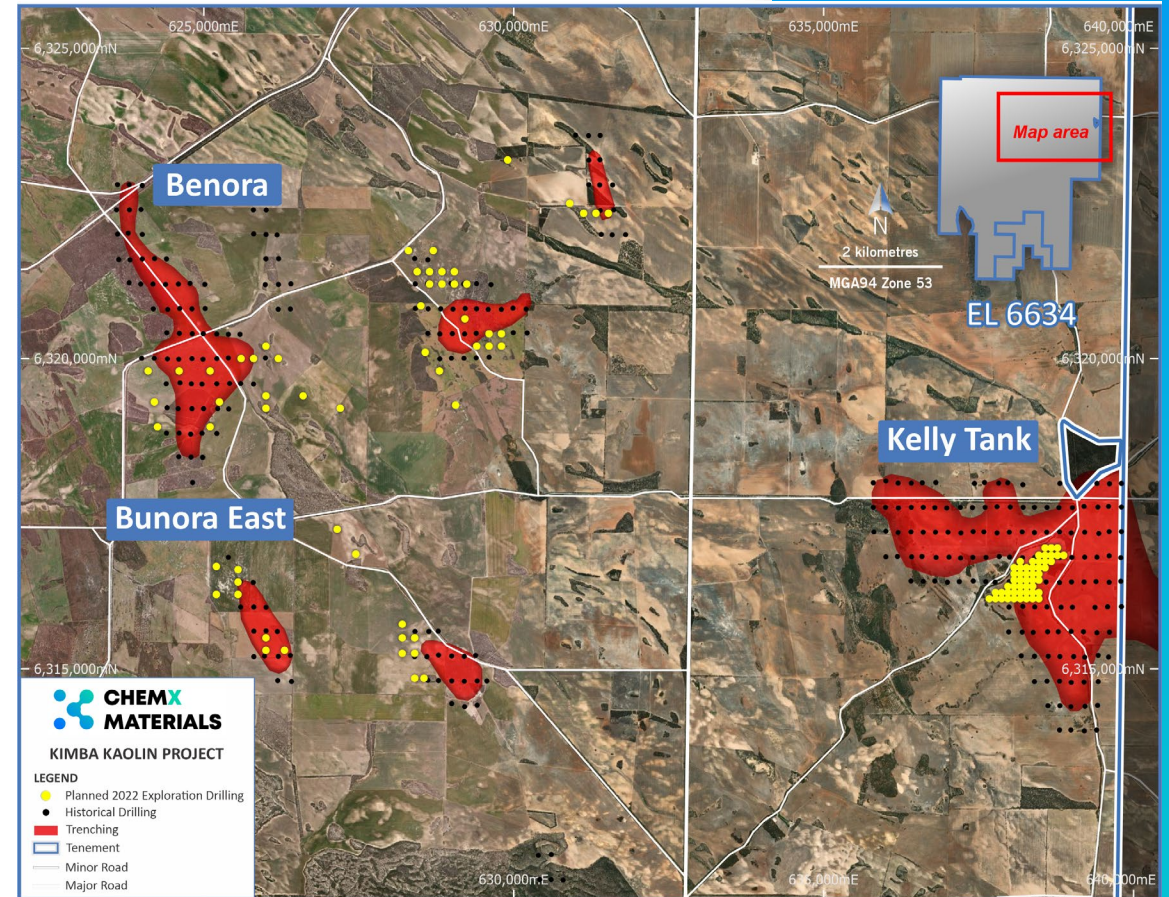
- ChemX has commenced investigations into several potential uses

* <https://www.fortunebusinessinsights.com/kaolin-market-102352>

KIMBA KAOLIN – HALLOYSITE PROJECT

Development Plan

- Initial drilling program to commence in Q1 2022 over the 3 project areas to confirm extent of kaolin mineralization and halloysite distribution
- Kaolin / Halloysite analysis to identify areas of high halloysite content and quality of kaolin
- Research into new markets for kaolin to replace high CO₂ materials in industrial process currently underway
- Identification of applicable kaolin / halloysite markets to commence Q1 2022
- Research into the many potential uses for halloysite to identify high value and high impact markets



MANGANESE IN LITHIUM ION BATTERIES

Manganese is a critical part of the Lithium Ion Battery chemistry

Manganese use in lithium cathode chemistry is becoming increasingly important

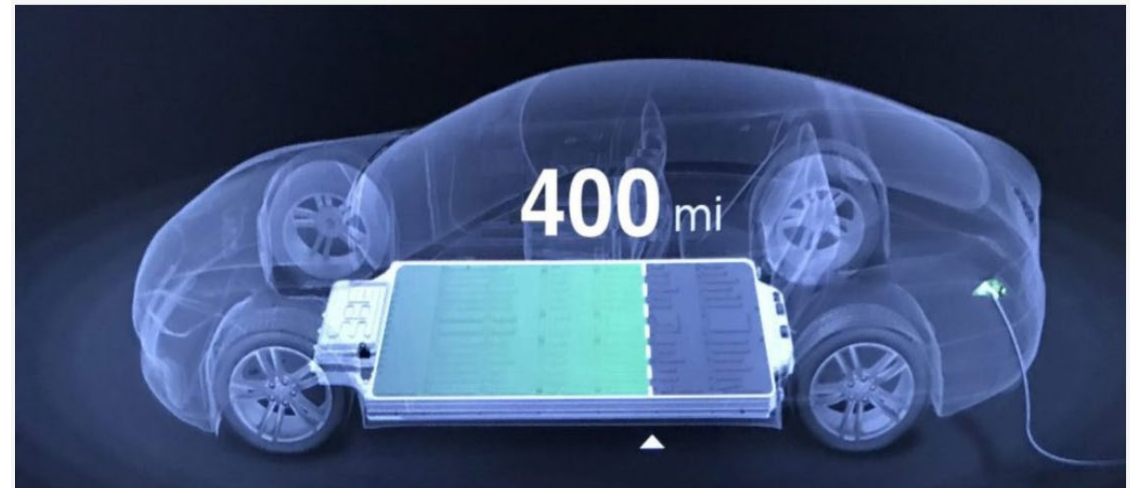
- Lithium Nickel Cobalt Manganese (NCM) batteries are becoming the preferred chemistry for EV's
- Trend to reduce cobalt use in lithium batteries requires more manganese
- Concerns over the sustainability of cobalt supply (70% of global supply comes from DRC*). The risk of supply disruptions and having sufficient supply to meet EV growth forecasts is driving the use of more manganese

ChemX has commenced test work to produce lithium battery cathode grade manganese precursor material

(*USGS Cobalt Summary 2020)

Manganese, nickel remain key to Tesla battery plans

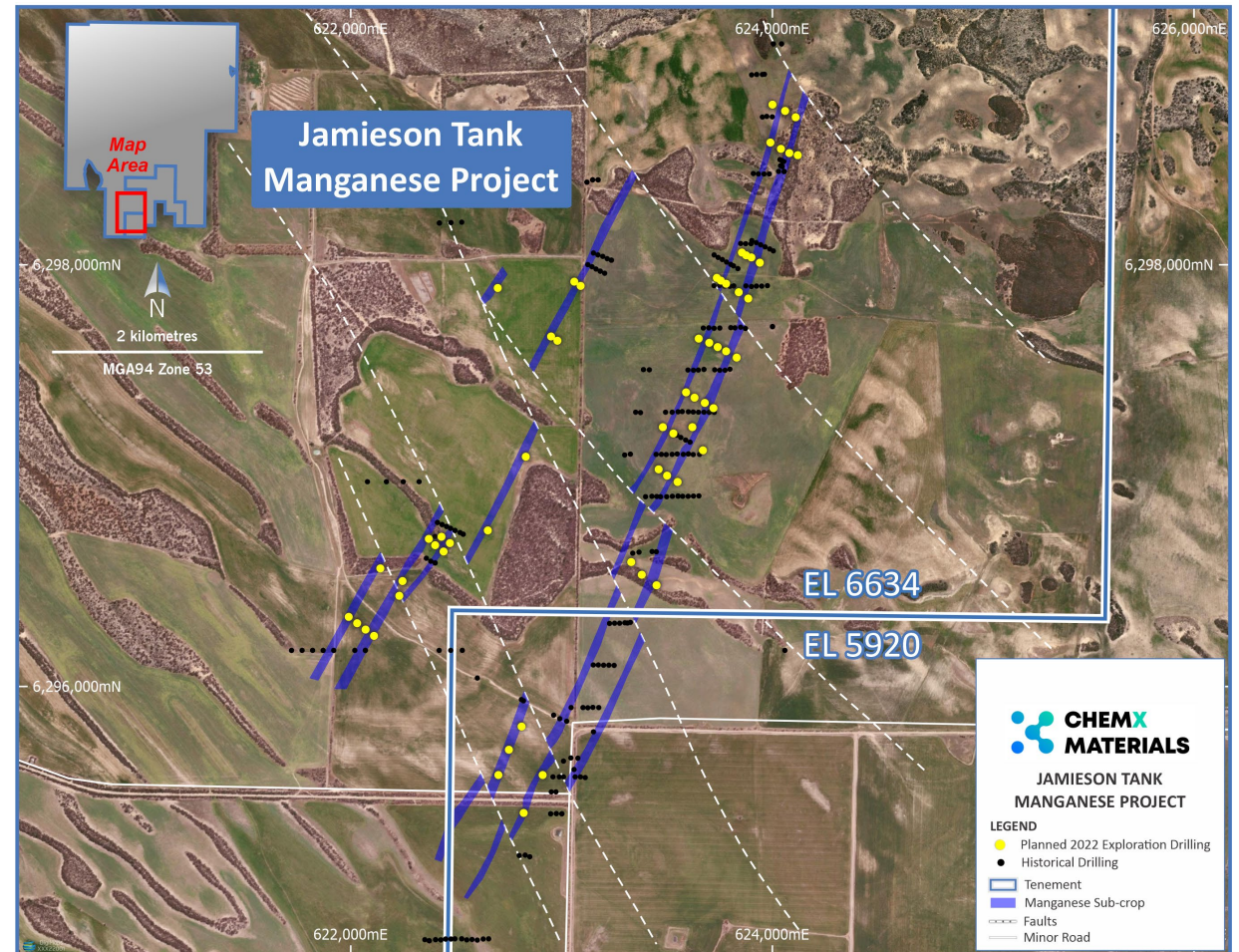
🕒 1 year ago Resource World



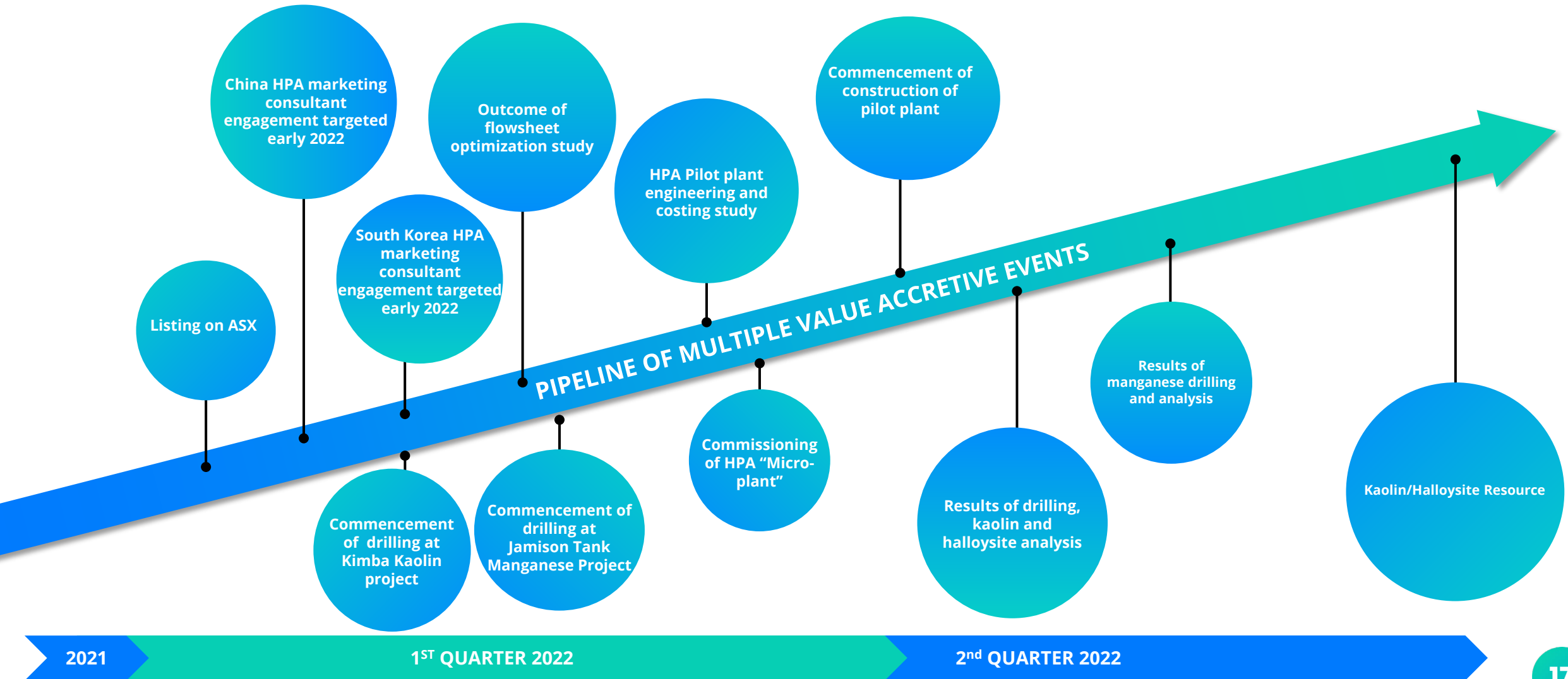
<https://resourceworld.com/manganese-nickel-remain-key-to-tesla-battery-plans/>

JAMIESON TANK MANGANESE PROJECT

- Exploration results from 208 historic drill holes show the deposit extends over a strike length of 6.6km to a depth of 100m.
- Metallurgical test work has produced a 92% manganese dioxide (EMD) material
- The EMD testing process provides high confidence for the production of a manganese cathode precursor material for lithium batteries
 - Test work to produce manganese cathode precursor material underway
- Drilling program to commence Q1 2022



NEWSFLOW CATALYSTS



INVESTMENT SUMMARY

ChemX is focused on the production of materials essential for energy transition and de-carbonisation technologies

HiPurA™ High Purity Alumina (HPA)

Innovative, in-house processing method to supply the lithium-ion battery, LED & semiconductor industries



Prefeasibility study, plant engineering and construction



HPA Pilot Plant commissioned within 12-18 months



Cathode precursor materials study produce aluminium sulphate and aluminium nitrate

Eyre Peninsula Project

Halloysite, Kaolin and Manganese (Mn), to de-carbonise industrial processes and supply cathode precursor material for lithium-ion batteries



Testing of kaolin currently underway to de-carbonise an industrial process



Test work program to produce battery grade manganese sulphate



Drilling program to commence in Q1 '22 on Kimba Kaolin project and Jamieson Tank Manganese project

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