

Developing High Purity Lithium Chemicals from Lepidolite

Corporate Update

September 2019



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Developing a Sustainable Lithium Chemical Business on Lepidolite Resources

- Lepidico's (ASX: LPD) strategic objective is to develop a sustainable vertically integrated lithium business that provides above average returns from mine to battery grade lithium chemical production
- Phase 1 Plant Feasibility Study results due March 2020 for:
 - Redevelopment of two inactive mines within the 80% owned Karibib Lithium Project (KLP) and the design of a new mineral concentrator; and
 - Chemical conversion plant employing Lepidico's clean-tech process technologies, L-Max[®] and LOH-Max[™], which collectively extract lithium and recover valuable by-products from the less contested lithium-mica and lithium-phosphate minerals
- Pilot Plant: produced 99.9% Li_2CO_3 and confirmed L-Max[®] process chemistry
- Lepidico has a market capitalisation of c. A\$90 million* and is funded into mid-2020 with A\$13.7M cash at 30 June 2019

LiOH

SiO_2

Li_2CO_3

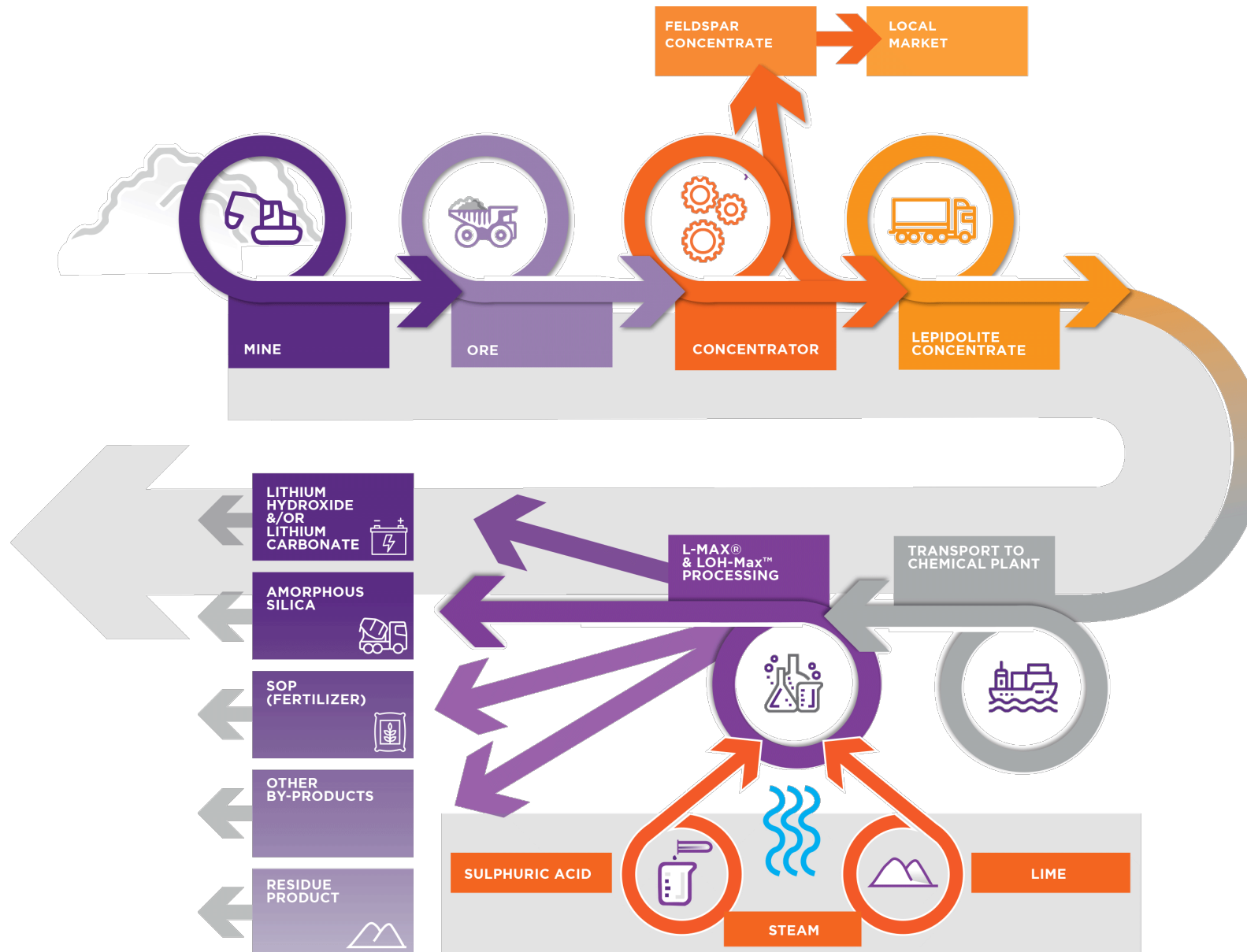
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K_2SO_4



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Sustainable, integrated lithium chemical business



Mine and concentrator

- Low impact site with co-disposal of concentrator fines with mine waste – no tailings storage required
- Feldspar concentrate is jurisdiction and volume dependent
- Other concentrator by-product potential from tantalite

Chemical plant

- Minimal emissions – steam
- Benign residue – being evaluated as a landfill remediation product with natural buffering characteristics
- Zero-waste objective

Asset Overview

Primary Phase 1 Plant Industrial City of Abu Dhabi

Gulf Fluor LLC: MOU for Acid Supply & By-Product Marketing



Separation Rapids lithium deposit
9.6Mt @ 1.31% Li₂O
Lepidolite offtake LOI with owner
Avalon Advanced Materials

Corporate Office, Toronto

Phase 1 Plant alternative location
Sudbury, Canada
In Feasibility Study

Alvarrões Lepidolite Mine
(ore offtake agreement with MCS)

Mine expansion & concentrator
development in Feasibility Study

Indicated & Inferred Resource
5.87Mt @ 0.87% Li₂O

Karibib Lithium Project

Mine & concentrator development in
Feasibility Study

Indicated & Inferred Resources³
8.84Mt @ 0.50% Li₂O

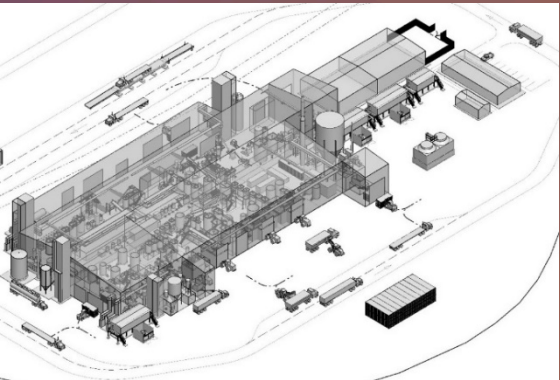


Lepidico Registered
Office & Technical
Capability, Perth

L-Max[®] Pilot Plant
operational



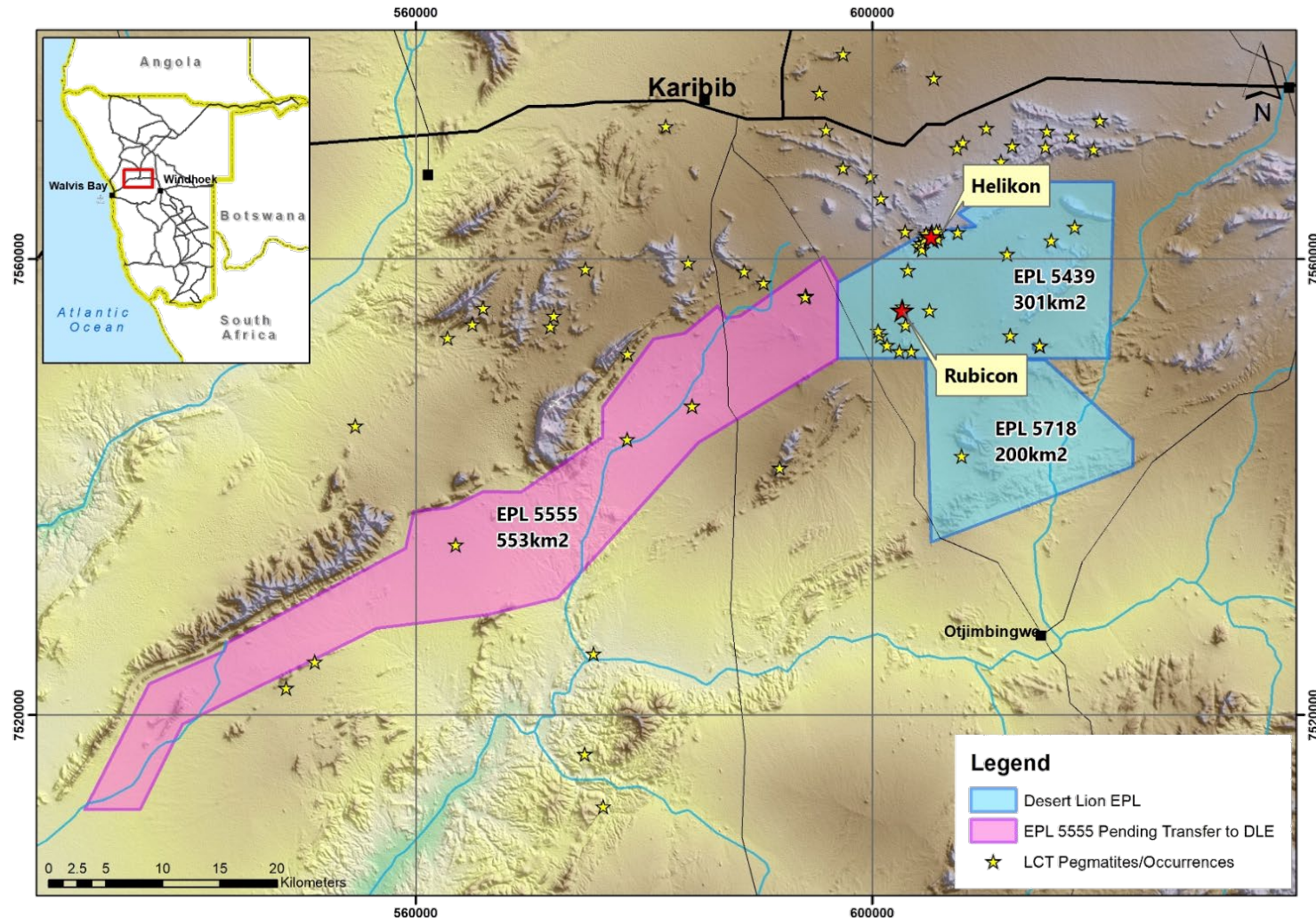
Mt Cattlin & L-Max[®]
Synergy potential



Chemical plant schematic

Karibib Lithium Project

Over 1,000km² contiguous land position with 6 lepidolite Mineral Resources and 30+ identified outcropping lithium bearing pegmatites



Karibib Lithium Project

Windhoek

Strategically Located Lithium Mines

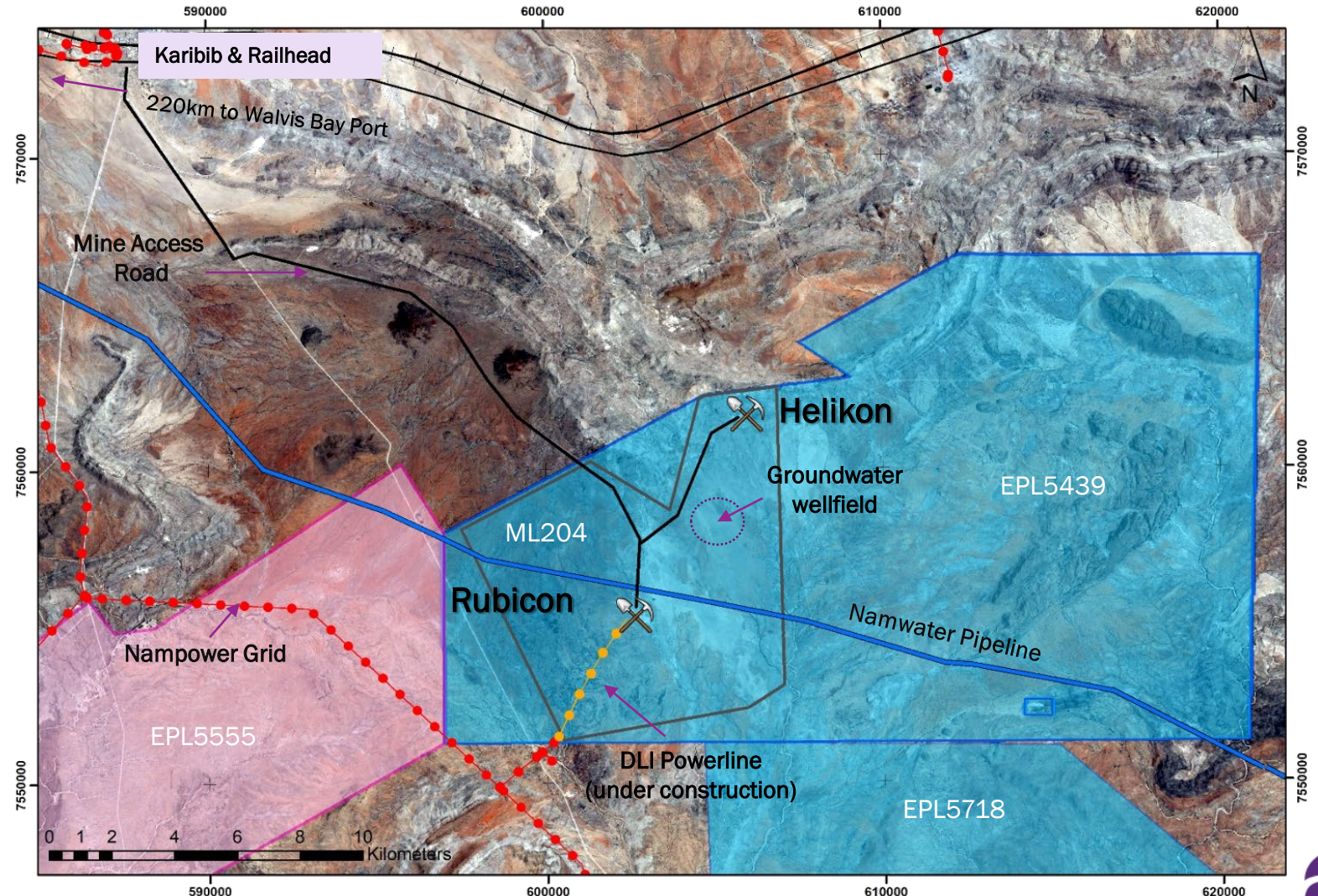
Past producing mining assets at
Rubicon & Helikon 1-5

Granted 68km² Mining Licence

Environmental Compliance
Certificate renewal, June 2020

Direct access to existing
infrastructure:

- all weather road
- water bores & pipeline
- camp
- 7km 22kV power line spur to grid connection pending
- 17km to railhead
- 220km to Walvis Bay port



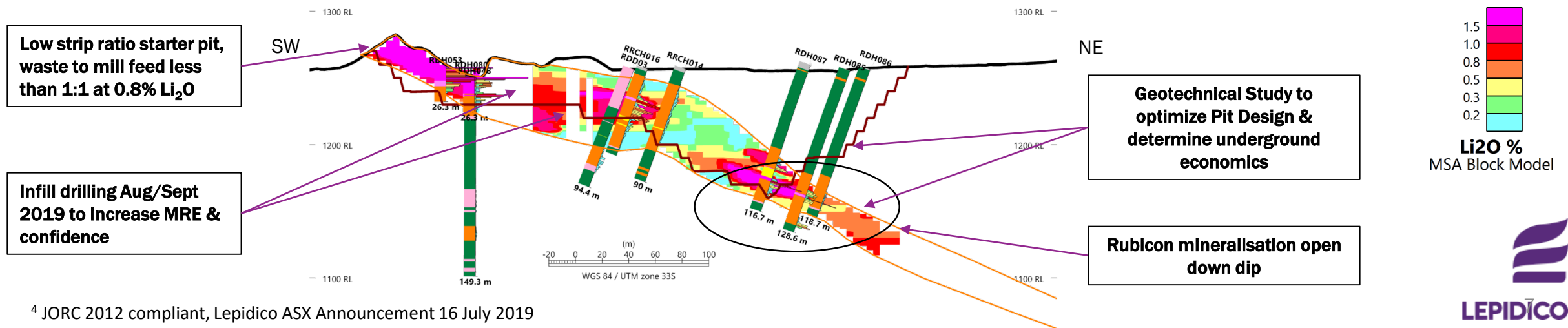
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Mineral Resource Estimate⁴

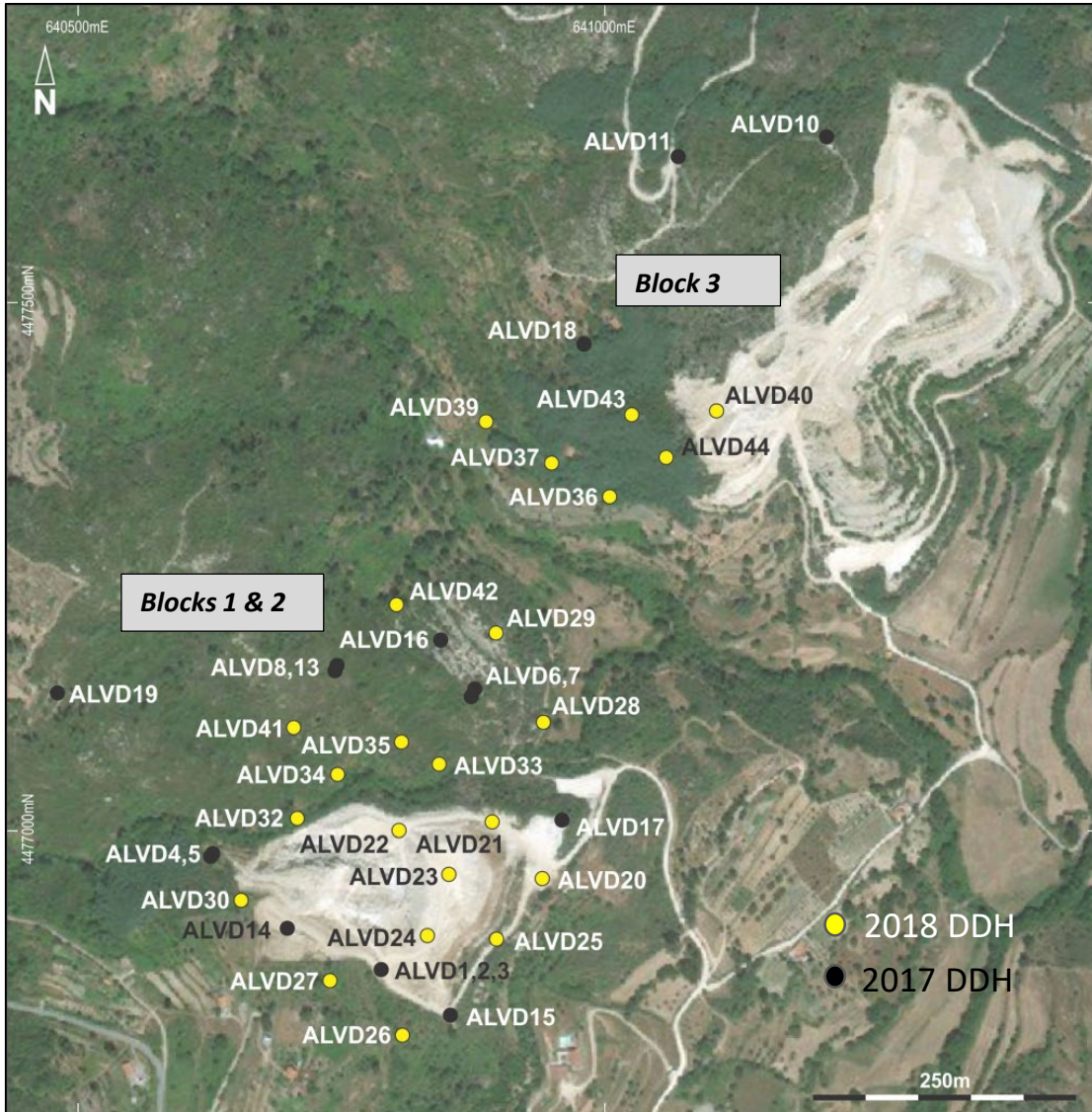
Mineral Resource Estimate

	Deposit	Resource Category	Cut-off (Li ₂ O)	Ore (Kt)	Li ₂ O (%)	Ta ₂ O ₅ (ppm)
Rubicon	Rubicon Main	Indicated	0.20	3,006.9	0.63	70
	Rubicon Main	Inferred	0.20	1,600.9	0.58	67
Helikon	Helikon 1	Inferred	0.20	2,030.0	0.62	105
	Helikon 2	Inferred	0.20	215.6	0.56	180
	Helikon 3	Inferred	0.20	294.7	0.48	75
	Helikon 4	Inferred	0.20	1,510.1	0.38	47
	Helikon 5	Inferred	0.20	179.2	0.31	44
Total	Rubicon + Helikon	Indicated	0.20	3,006.9	0.63	70
	Rubicon + Helikon	Inferred	0.20	5,830.4	0.53	53

- 6 rigs completing 4,500m infill Resource programme
- Measured-Indicated Mineral Resource due November 2019
- Preliminary mine plan indicates:
 - strip ratio of less than 1 to 1 for first four years of operation;
 - Mining massive lepidolite mineralisation grading 0.8-1.0% Li₂O



Alvarrões Lepidolite Mine



- Ore access agreement with Grupo Mota over the operating Alvarrões lepidolite mine, Portugal, which currently supplies c. 1.8% Li₂O concentrate to the ceramics industry
- Mining lease covers 634 ha
- Indicated and Inferred Mineral Resource estimate: 5.87M t @ 0.87% Li₂O
- Mine re-design and expansion study has commenced – maiden Ore Reserve estimate due November-2019
- Design criteria: mining rates to increase sufficient to supply lithium mineral concentrate to a Phase 1 scale plant
- Concentrator to employ conventional flotation and consider a feldspar concentrate by-product
- Co-disposal of plant fines with mine waste; negates the requirement for a tailing storage facility

April 2019 Est	Pegmatite	Li ₂ O%	0.5 m Halo	Li ₂ O%	Total
Indicated	1.84 Mt	1.12	0.76 Mt	0.26	2.60 Mt @ 0.87% Li ₂ O
Inferred	2.06 Mt	1.20	1.21 Mt	0.31	3.27 Mt @ 0.87% Li ₂ O
Total	3.90 Mt	1.16	1.97 Mt	0.30	5.87 Mt @ 0.87% Li₂O



The L-Max[®] Advantage

- ✓ The Australian Patent Office declared L-Max[®] to be “novel, inventive, industry applicable and patentable” for production of lithium carbonate
 - ✓ US patent protection grant announced 16 September 2019
- ✓ L-Max[®] leaches lithium from non-conventional, less uncontested mineral sources; lithium micas and phosphates, and achieves high extraction rates
- ✓ L-Max[®] utilises common use, inexpensive reagents & is energy efficient
- ✓ L-Max[®] reagents and operation have straightforward occupational health, safety and environmental characteristics
- ✓ L-Max[®] utilises conventional equipment and operates at atmospheric pressure and modest temperature
- ✓ By-products include: potassium sulphate fertiliser (SOP), amorphous silica and potentially Cs, Rb & Ta
- ✓ Scalable technology: scoping study design parameters for a larger Phase 2 Plant started; to complete in 2020
- ✓ Compatible with other process technologies including LOH-Max[™] and S-Max[™]



Lepidolite

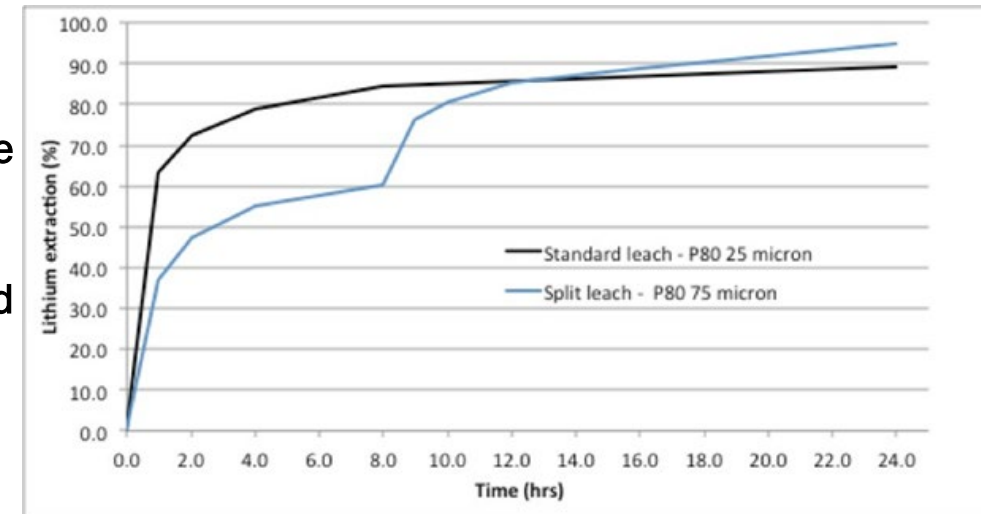


Zinnwaldite



Amblygonite

Improved leach kinetics



Lithium Hydroxide (LiOH) – introducing LOH-Max™

Lithium chemical demand growth has shifted strongly to LiOH

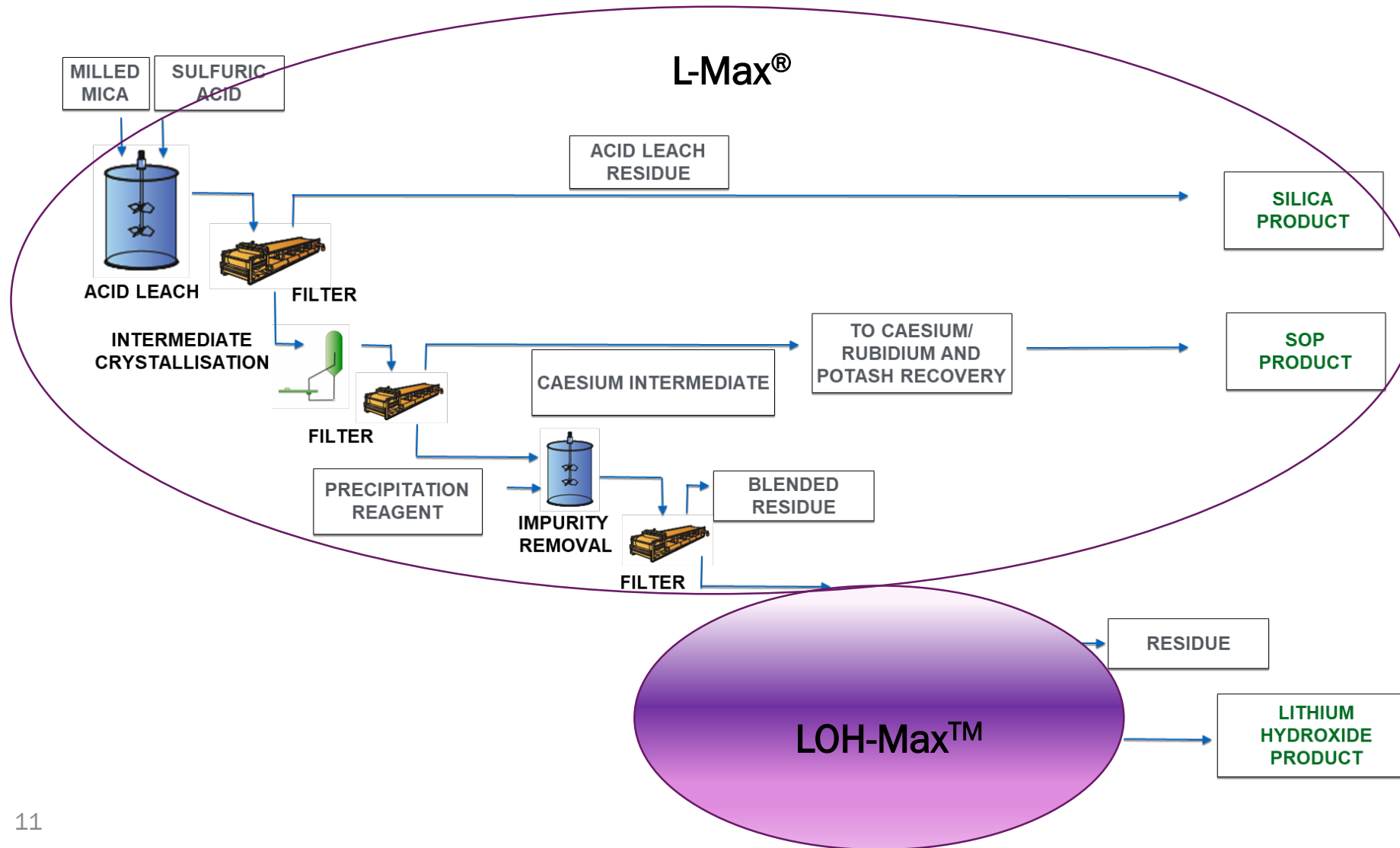
LOH-Max™ delivers an industry solution to lithium hydroxide production without by-product sodium sulphate



- Strategic Metallurgy Pty Ltd, in collaboration with Lepidico, has developed a hydrometallurgical process that produces high purity LiOH from a lithium sulphate intermediate without the production of sodium sulphate.
- LOH-Max™ is compatible with the highly efficient L-Max® impurity removal stages and can replace the subsequent standard industry sodium sulphate and lithium carbonate recovery circuits
- Capital intensity and operating costs are more competitive than for production of lithium carbonate:
 - Elimination of sodium sulphate circuit; significant capital equipment and by-product sales risks removed
 - Potential for lithium hydroxide and/or carbonate producers to retro-fit existing plants or redesign planned plants
- Funding and offtake agreements for new lithium chemical plants in 2018 were heavily skewed towards LiOH operations
- Process residue is benign and alkaline, and is being evaluated as an environmental remediation product

L-Max[®] - 100% Owned by Lepidico

New LiOH process, LOH-Max[™], compatible with L-Max[®] flowsheet



**Lepidico has acquired
the exclusive rights to
LOH-Max[™]**

**Confidentiality
Agreement required
to view the technology**

Pilot Plant

- 15kg per hour L-Max® pilot plant completed on schedule and within A\$3M budget, April 2019
 - Campaign 1 completed August 2019
 - LOH-Max™ capability being retrofitted for Campaign 2
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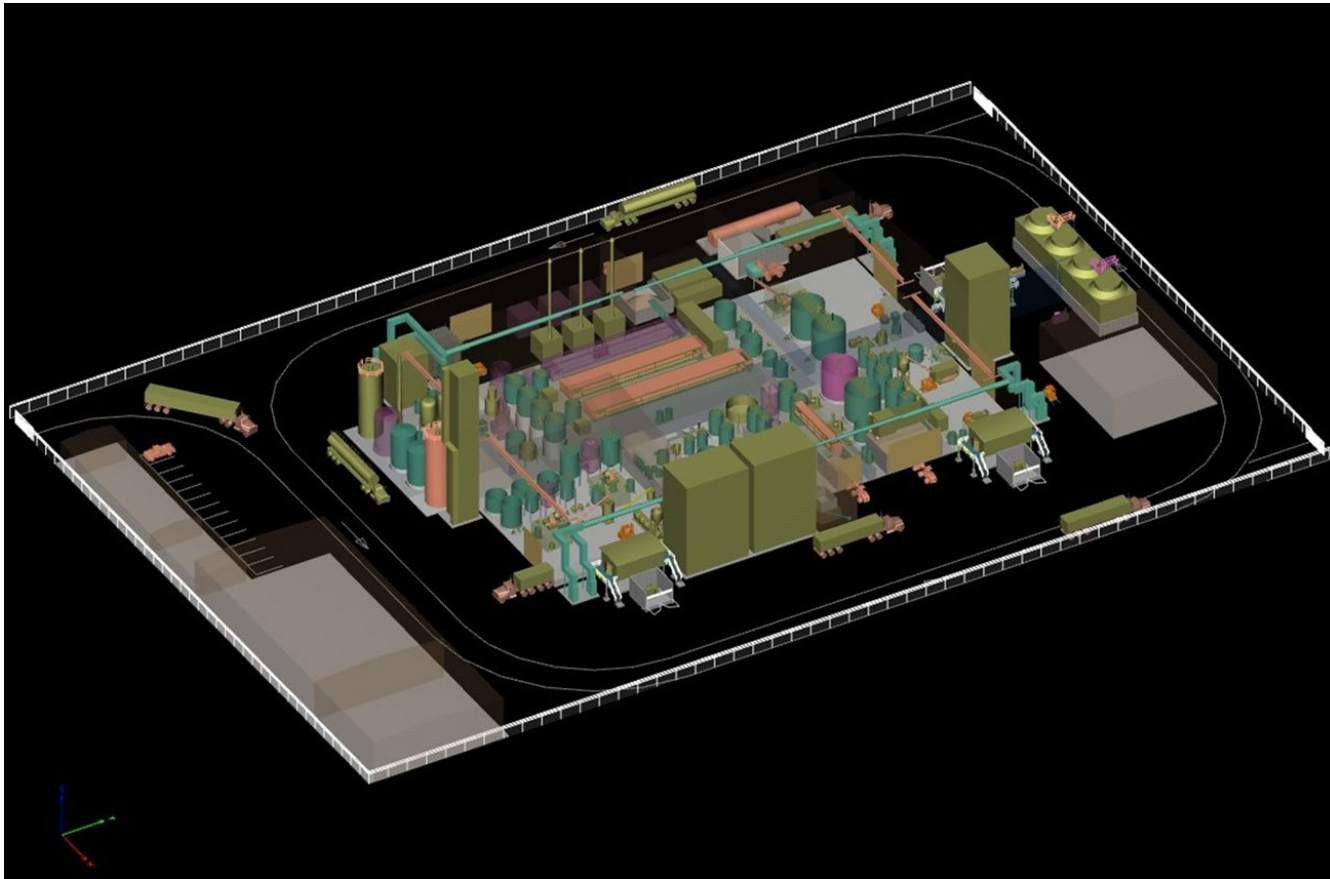


- Pilot plant has:
 - demonstrated L-Max® technical viability using small scale industrial equipment, similar to that employed in the Phase 1 Plant design; expenditure eligible for R&D tax refund (43%);
 - produced 99.9% Li_2CO_3 with very low impurities (ASX 16 September 2019);
 - generated material for further product development of: SOP fertiliser +52% K_2O , amorphous silica (S-Max™), caesium/rubidium brine and environmental remediation residue;
 - reduced scale-up at nominal throughput of 6.9tph for Phase 1 Plant to 460 times; and
 - provided data for optimisation of Phase 1 Plant operating parameters

Pilot Plant – April/May 2019



Phase 1 L-Max[®] chemical conversion plant



14

- Final engineering due December 2019, to include:
 - 6.9tph concentrate feed for c. 5,500t pa lithium hydroxide output;
 - LOH-Max[™] process design; and
 - pilot plant optimisation plan
- Primary location: the Industrial City of Abu Dhabi (ICAD), United Arab Emirates close to excellent established infrastructure:
 - Local abundance of key reagents, sulphuric acid, limestone and lime;
 - Competitive labour, gas and power costs
 - Close to markets for bulk by-products: silica products and SOP fertiliser
- Non-binding off-take MOU with BASF for LioH
- MOU with Gulf Fluor for marketing by-products
- Feasibility Study results due March 2020

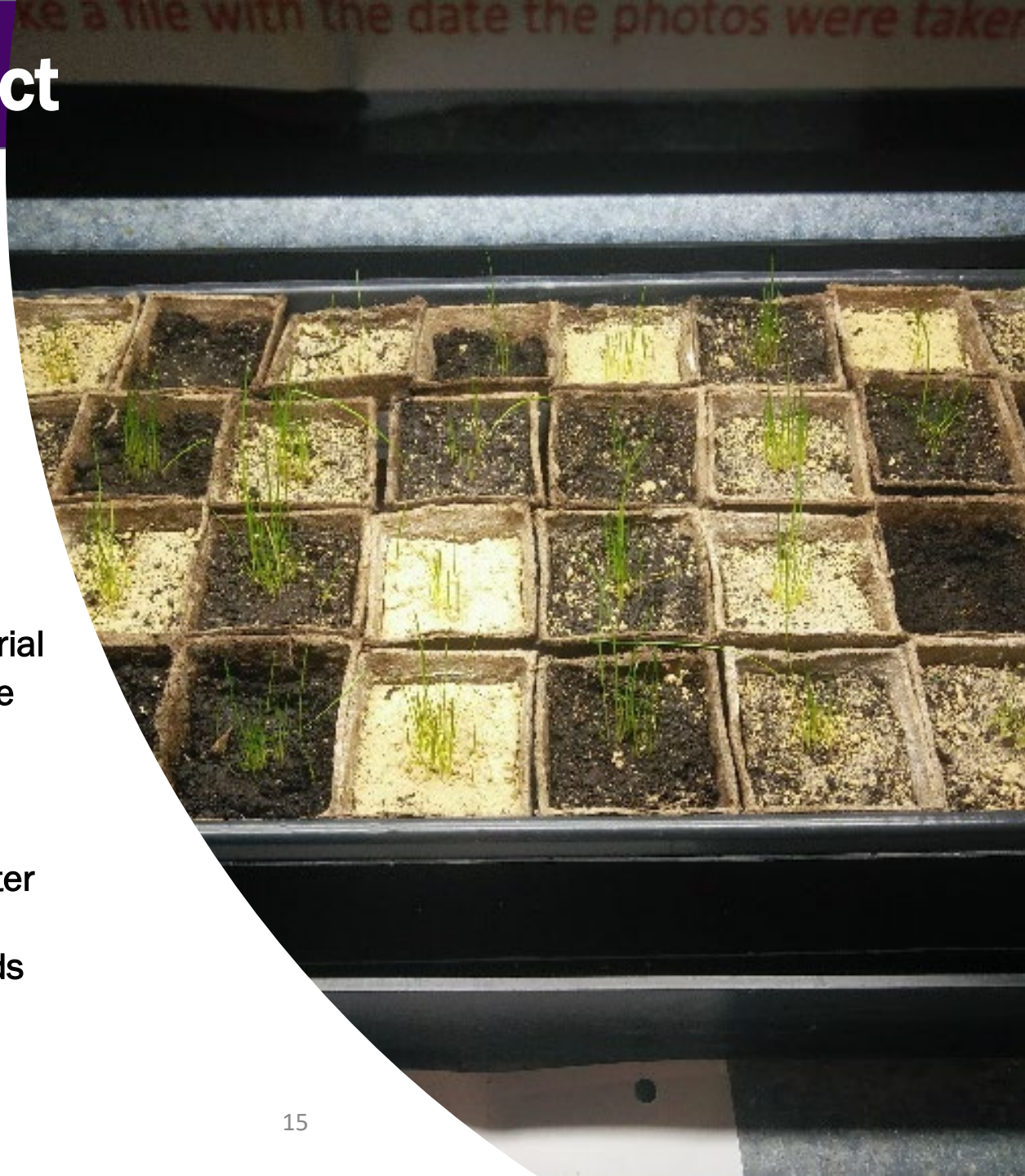


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Phase 1 Plant Residue Product

University of Waterloo completed an assessment of L-Max[®] residue for land reclamation purposes

- Chemical analysis using USEPA land fill testing requirements have determined that the residue is benign and alkaline: 74% moisture, gypsum 60% of solids, pH 8.5
- When blended with soil or clay (50/50) amendments the material has the potential for use as a cover in city land fill sites or in the remediation of tailings dams and mine waste facilities
- Laboratory testwork indicates the blended soil or clay residue meets Ontario standards for industrial, non-potable ground water
- Growth trials (photo) with positive results for soil and clay blends
- A residue product would make L-Max[®] a zero-waste process



Strategy summary...

...to fast track the business to free cash flow generation, demonstrate the commercial viability of L-Max[®] and LOH-Max[™], and become a globally significant vertically integrated lithium chemical producer.



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Competent Person Statement

The information in this report that relates to Exploration Results is based on information compiled by Mr Tom Dukovcic, who is an employee of the Company and a member of the Australian Institute of Geoscientists and who has sufficient experience relevant to the styles of mineralisation and the types of deposit under consideration, and to the activity that has been undertaken, to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves." Mr Dukovcic consents to the inclusion in this report of information compiled by him in the form and context in which it appears.

The information in this report that relates to the Alvarrões Mineral Resource estimate is based on information compiled by John Graindorge who is a Chartered Professional (Geology) and a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity to which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". John Graindorge is a full-time employee of Snowden Mining Industry Consultants Pty Ltd and consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to Mineral Resources at the Karibib Lithium Project is based on information compiled by Mr Jeremy Witley, who is a fellow of The Geological Society of South Africa (GSSA) and is registered professional with the South African Council for Natural Scientific Professions (SACNSAP). Mr Witley is the Head of Mineral Resources at The MSA Group (Pty) Ltd (an independent consulting company). Mr Witley has sufficient experience relevant to the style of mineralisation and the types of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves." Mr Witley consents to the inclusion in this report of information compiled by him in the form and context in which it appears.



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