



ASX ANNOUNCEMENT | ASX : LTR

17 May 2021

## Investor Presentation – Kathleen Valley Lithium Project

Liontown Resources Limited (ASX: LTR, “Liontown” or “Company”) is pleased to release its updated Investor Presentation highlighting the major opportunities presented by its Kathleen Valley Lithium Project.

As previously announced, Liontown also continues to assess the best pathway to maximise the value of its exciting growth assets, the Moora Project and the Koojan JV Project. The options being considered include a possible demerger and IPO.

This announcement has been authorised for release by the Board.

Tony Ottaviano  
CEO and Managing Director

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### Forward Looking Statement

*This announcement contains forward-looking statements which involve a number of risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.*



# A unique opportunity to invest in a globally significant lithium resource

ASX: LTR

Kathleen Valley Lithium Project

Investor Presentation | May 2021



# Important information



## CAUTIONARY STATEMENT

<sup>1</sup> The production targets and forecast financial information referred to in the PFS & DSS were based on Proven Ore Reserves (19.7%), Probable Ore Reserves (69.8%) and Inferred Mineral Resources (10.5%). The Inferred material included in the inventory was 8.28Mt @ 1.36% Li<sub>2</sub>O & 120 ppm Ta<sub>2</sub>O<sub>5</sub>. The Inferred material was scheduled such that less than 1Mt is mined in the first ten years, with 6.44Mt at the end of the underground mine life and 0.84Mt after year 25 for the open pit.

The Inferred material does not have a material effect on the technical and economic viability of the project.

There is a low level of geological confidence associated with inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of indicated Mineral Resources or that the production target itself will be realised.

Note that a Mineral Resource Estimate update released on 8 April 2021 resulted in the reclassification of 4Mt from the Inferred category to the Indicated category.

## Forward looking statements

This Presentation contains forward-looking statements which are identified by words such as 'may', 'could', 'believes', 'estimates', 'targets', 'expects', or 'intends' and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that, as at the date of this Presentation, are considered reasonable. Such forward-looking statements are not a guarantee of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the Directors and the management. The Directors cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this Presentation will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements. The Directors have no intention to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this Presentation, except where required by law or the ASX listing rules.

## Disclaimer

Whilst care has been exercised in preparing and presenting this presentation, to the maximum extent permitted by law, Liontown Resources Limited and its representatives:

- Make no representation, warranty or undertaking, express or implied, as to the adequacy, accuracy, completeness or reasonableness of this Presentation;
- Accept no responsibility or liability as to the adequacy, accuracy, completeness or reasonableness of this Presentation; and
- Accept no responsibility for any errors or omissions from this Presentation.

## Authorisation

This Presentation has been authorised for release by the Board.

## Competent person statement

The Information in this Presentation that relates to Ore Reserves, Production Target and Pre -Feasibility Study (PFS) for the Kathleen Valley Project is extracted from the ASX announcement "Updated Kathleen Valley Pre-Feasibility Study delivers substantial increase in NPV to A\$1.1 billion and mine life to ~40 years" released on 9<sup>th</sup> October 2020 which is available on [www.ltresources.com.au](http://www.ltresources.com.au)

The Information in this Presentation that relates to Mineral Resources for the Kathleen Valley Project is extracted from the ASX announcement "Strong progress with Kathleen Valley Definitive Feasibility Study as ongoing work identifies further key project enhancements " released on the 8th April 2021 which is available on [www.ltresources.com.au](http://www.ltresources.com.au)

The Information in this Presentation that relates to the Downstream Scoping Study (DSS) is extracted from the ASX announcement "Downstream Scoping Study: Kathleen Valley Lithium-Tantalum Project" released on 22 October 2020 which is available on [www.ltresources.com.au](http://www.ltresources.com.au)

The information in this Presentation that relates to Exploration Results for the Kathleen Valley Project is extracted from the ASX announcement "Kathleen Valley Lithium-Tantalum Project Advancing to the Next Level with Definitive Feasibility Study Underway" released on 11<sup>th</sup> January 2021 which is available on [www.ltresources.com.au](http://www.ltresources.com.au).

The information in this Presentation that relates to grade recovery curves for the Kathleen Valley Project is extracted from the ASX announcement "Liontown defines input criteria for updated PFS at Kathleen Valley Lithium-Tantalum Project, W.A." released on 9<sup>th</sup> June 2020 which is available on [www.ltresources.com.au](http://www.ltresources.com.au).

The Information in this Presentation that relates to Mineral Resources for the Buldania Project is extracted from the ASX announcement "Liontown announces maiden Mineral Resource Estimate for its 100%-owned Buldania Lithium Project, WA" released on the 8th November 2019 which is available on [www.ltresources.com.au](http://www.ltresources.com.au).

The Information in this Presentation that relates to Exploration Results for the Moora Project is extracted from the ASX announcement "Drilling defines multiple bedrock zones with potential for a significant discovery at the Moora Project, WA" released on the 13<sup>th</sup> April 2021 which is available on [www.ltresources.com.au](http://www.ltresources.com.au).

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates or production targets or forecast financial information derived from a production target (as applicable) in the relevant market announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

# Liontown aims to be a world-class battery materials producer

...with  
**strong ESG  
credentials  
and  
sustainable  
returns**



## By developing Kathleen Valley into a long-life Tier 1 asset

- One of the largest high-grade, hard rock lithium deposits in the world (156Mt)
- 100%-owned resource and full offtake optionality preserved
- Targeting a premium product (>6% Li<sub>2</sub>O)



## With strong market fundamentals

- Market being driven by rapidly growing EV battery demand
- Strongest growth expected to be in the lithium hydroxide segment, providing a competitive advantage for hard rock producers



## Creating long-term, sustainable value

- By seeking partnerships with industry leading battery producers + OEMs, who align with our ESG values
- Focused on pursuing profitable growth opportunities to create shareholder value



# WA-focused world-class hard rock lithium developer

## Projects

**Kathleen Valley**  
(Lithium-Tantalum) World-class scale and economics  
**156Mt @ 1.4% Li<sub>2</sub>O & 130ppm Ta<sub>2</sub>O<sub>5</sub>**  
~40 year mine life  
High-grade  
DFS due Q4 2021

**Buldanina**  
(Lithium) 15Mt @ 1.0% Li<sub>2</sub>O  
Resource upside

**Moora**  
(Gold-PGE-Nickel-Copper) Emerging mineral province  
Previously unexplored  
Exceptional early results  
43m @ 1.7g/t gold



Corporate snapshot (14 May 2021) ASX: LTR

Market Cap.

**\$782m**

Share price (A\$/s)

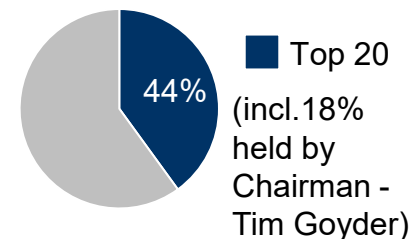
**\$0.43**

Shares on issue

**1,819m**

~22% held by Board and  
Executive Leadership  
Team

Major shareholders



Cash and liquid assets<sup>1</sup>

**\$16.1m**

Research coverage



BELL POTTER

1: Includes ~A\$15.2M in cash (31 Mar 21) and ~A\$0.9M in Lachlan Star Limited ordinary shares issued; LSA share price of \$0.023 as at 14 May 2021.

# Liontown has a highly experienced Board and Executive Leadership Team



## Board of Directors



### Tim Goyder

Chairman  
+40 years (Mining Executive)  
Chairman Chalice Mining



### Craig Williams

Non-Executive Director  
+40 years (Geologist)  
Founder and CEO of Equinox Minerals



### Anthony Cipriano

Non-Executive Director  
+30 years (Chartered Accountant)  
Former Senior Partner at Deloitte



### Steven Chadwick

Non-Executive Director  
+40 years (Metallurgist)  
Director of Lycopodium Limited



### David Richards

Technical Director  
+35 years (Geologist)  
Discovered Kathleen Valley lithium Deposit and Vera Nancy Gold Deposits



### Tony Ottaviano

Managing Director  
+30 years (Mech. Engineer)  
Former BHP, Rio Tinto, and Wesfarmers executive

## Executive Leadership Team



### Tony Ottaviano

CEO  
+30 years (Mech. Engineer)  
Former BHP, Rio Tinto, and Wesfarmers executive



### Adam Smits

COO  
+20 years (Mech. Engineer)  
Former COO Nzuri Copper



### Craig Hasson

CFO  
+15 years (Chartered Accountant)  
Commercial & Financial experience

Supported by Greenhill corporate advisors

# Underground mining enables delivery of positive ESG outcomes

## ESG commitments matter

### Customers



- Automotive OEMs increasingly demand environmentally-friendly, low-carbon batteries to achieve Scope 1-3 targets
- Carbon footprint labelling and transparency will enable end-consumer choice for ESG

### Communities



- Social licence fundamental to sustainable, long-term operation

1: Please refer to Appendix 2 for net zero definition.  
2: Global Reporting Initiative, an internationally-agreed set of sustainability reporting standards.  
3: Task force on climate related financial disclosures.  
4: Sustainability Accounting Standards Board.



## We aspire to be on a net-zero trajectory<sup>1</sup>

### Environment



- Best-in-class Scope 1 and 2 emissions and reduced impact on local surroundings due to UG approach
- Greater than 50% renewable energy target to reduce Scope 2 emissions
- Designing for electrification of UG operations
- Minimising water usage through recycling

### Social and corporate governance



- Working with Traditional Owners
- Integrated environmental and social benchmarks in our corporate governance, and best-in-class reporting aligned with GRI<sup>2</sup>, TCFD<sup>3</sup> and SASB<sup>4</sup> standards

Inaugural sustainability report to be released in Q4 2021

# Update on Lithium Market

**Strong long-term market fundamentals**





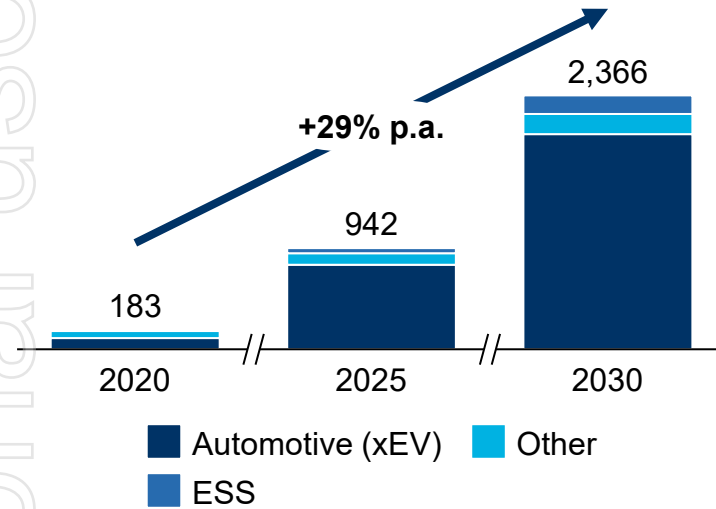
# Strong demand growth driven by global energy transformation supports new spodumene projects entering the market



## The right time...

**29%** forecast CAGR<sup>1</sup> driven by stronger GHG regulations and improving EV adoption

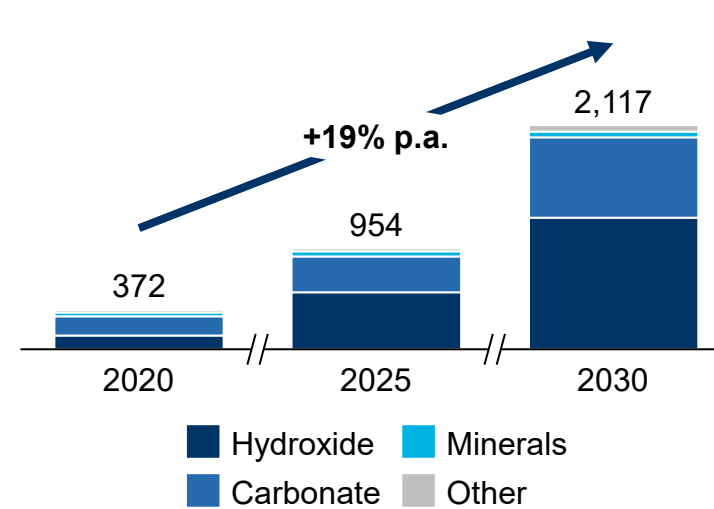
Global Li-ion battery cell demand<sup>3</sup>, GWh



## The right market...

**25%** forecast CAGR for lithium hydroxide emerging as preferred product for cathodes

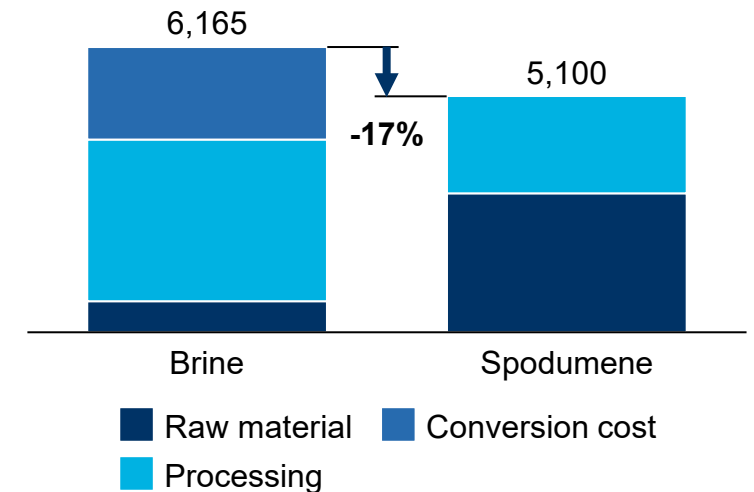
Global lithium demand<sup>3</sup>, kt LCE



## The right supply...

**17%** cost advantage when producing LiOH from hard rock sources over brine

Cost of lithium hydroxide production<sup>2</sup>, US\$ LCE



1: Base case scenario.

2: Costs represent indicative 2025 cost base for typical brine and spodumene operations; Source: MineSpans.

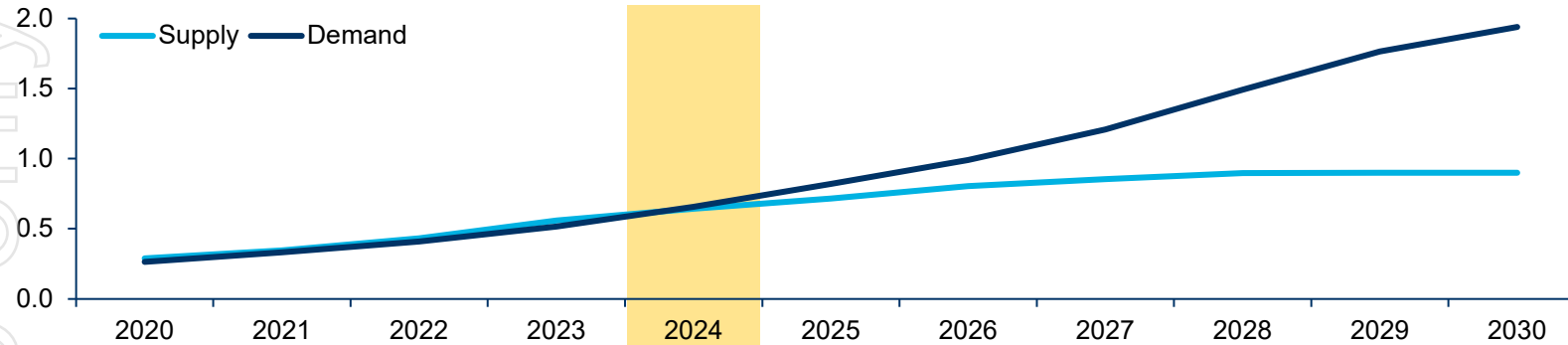
3: Source: Roskill.



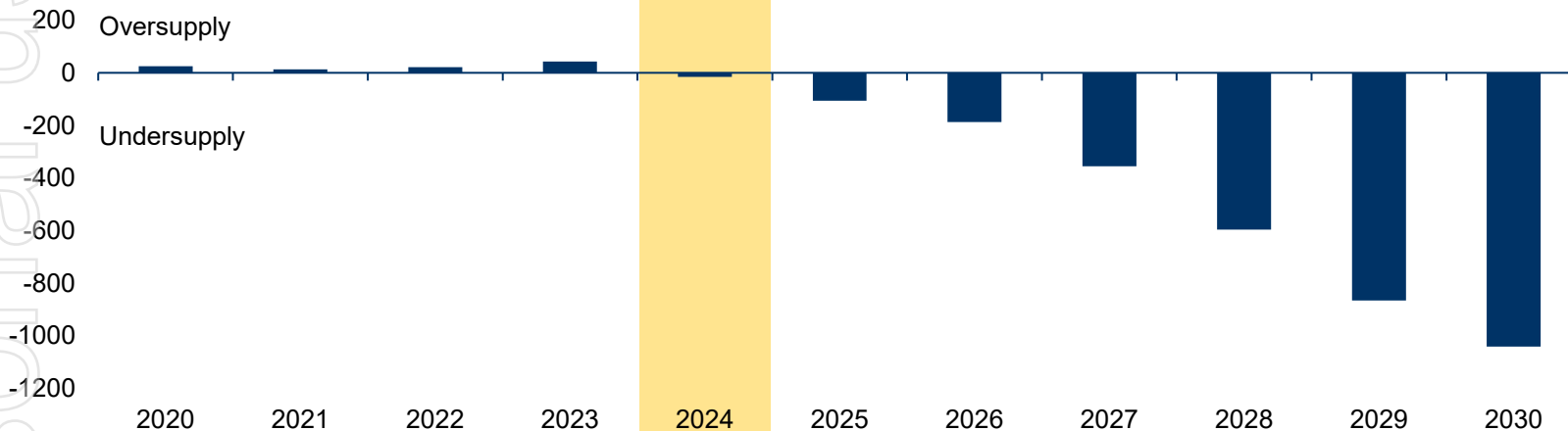
# Expected market deficit by 2024, aligning with the commencement of Kathleen Valley production

Global lithium market balance (battery grade), 2020-30, Mt LCE

Accelerated KV production commencement



Supply/demand balance, 2020-30, Mt LCE



>1 Mt

LCE shortfall in supply by 2030

~44kt<sup>1</sup>

LCE to be supplied by Kathleen Valley to meet expected market deficit

<sup>1</sup>: Based on average 350 ktpa SC6 production. LCE assumes 8t 6.0% Li<sub>2</sub>O concentrate per tonne lithium carbonate, including process losses.

# Kathleen Valley Lithium-Tantalum Project



**Tier 1 deposit in a premier mining district**



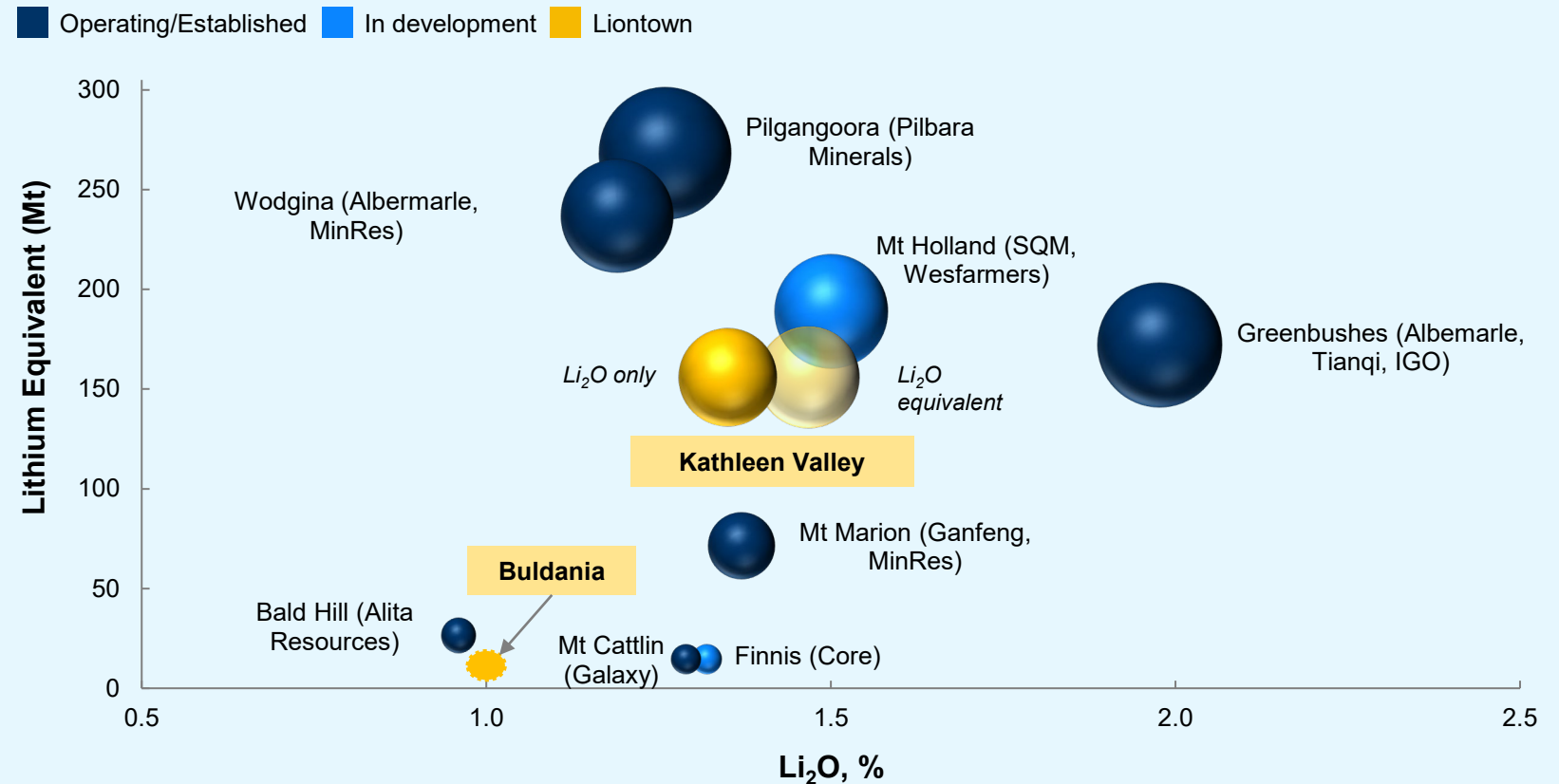
# Kathleen Valley is a uniquely positioned, globally significant Tier 1 lithium resource

- **156Mt** – one of world's largest hard rock lithium resources, with reserves already defined
- **1.4%  $\text{Li}_2\text{O}$**  – high-grade resource
- **40-year lifespan** – long-term, allowing for downstream options
- **Simple, robust resource** – potential for premium product
- **Competitive cost structure**- resilient through the lithium commodity cycle

1: Operating costs for years 1-5 = US\$261 including all mining, processing, transport, freight to port, port costs, site administration & overhead costs and includes tantalum credits + US\$62/dmt state and private royalties + US\$30/t Sea freight. Excludes sustaining capital. | 2: Roskill, Historical Spodumene Prices (SC6.0 CIF) for Q12016 to Q42020.

## Australian hard rock lithium operations and advanced projects

By project, size, and grade



First five year average production cost **US\$353/dmt** of SC6 (CIF inclusive royalties)<sup>1</sup>

Average spodumene price over the last five years **US\$588/t<sup>2</sup>**

Refer to Appendix 1 for Peer Comparison information including Resource Classifications; refer to Appendix 1 for Li<sub>2</sub>O equivalents parameters and calculations.

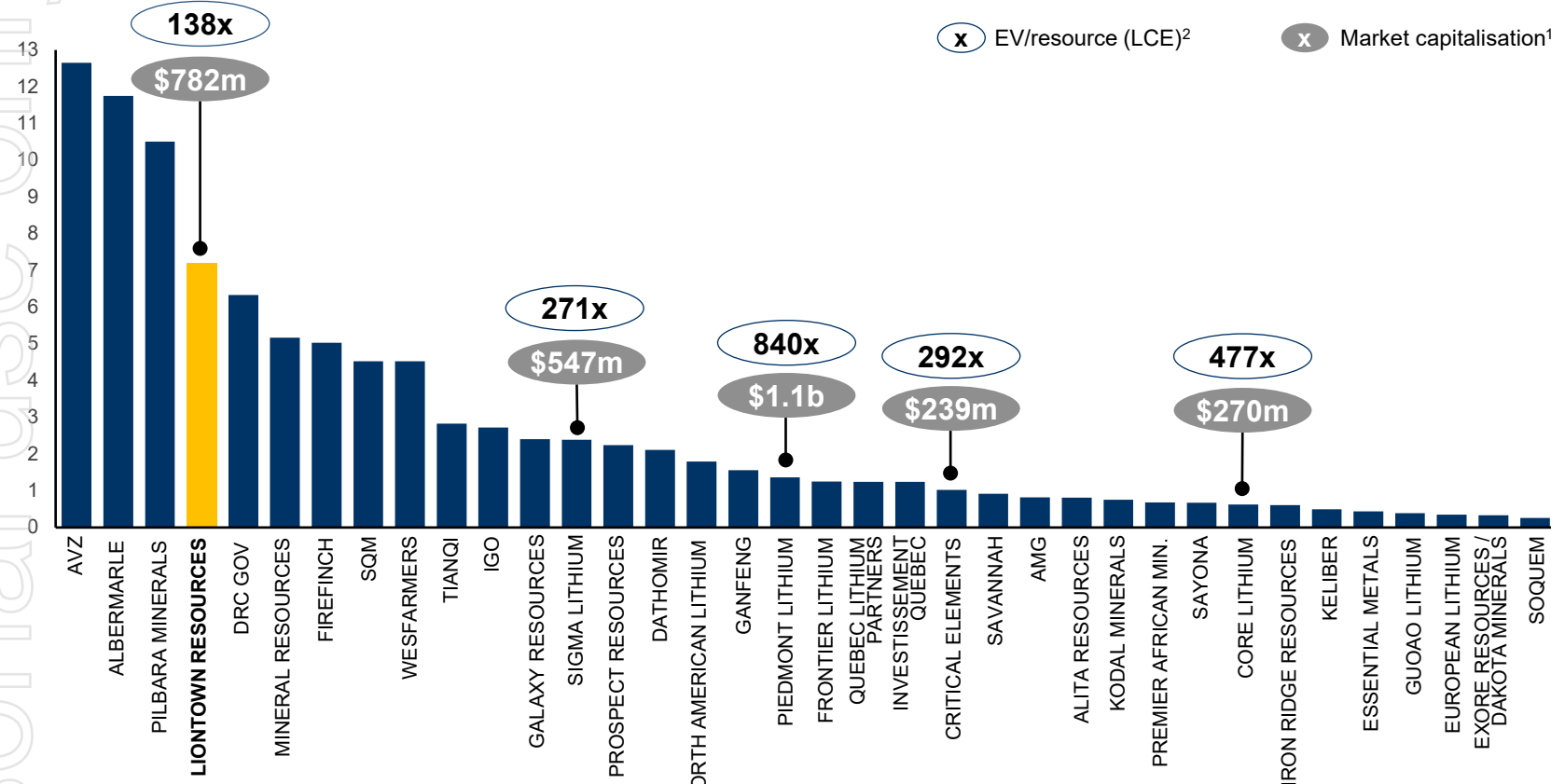


# Liontown has the 4th largest attributable hard rock lithium resource globally



## World hard rock lithium (spodumene-dominant) operations and advanced projects

By attributable resources to owner, % of global total



1. Market capitalisations based on ordinary shares on issue and share price data as at 14 May 2021, in Australian dollars.

2. Based on ordinary shares on issue, share price data as at 14 May 2021 and latest available balance sheet. Resources based on a Lithium Carbonate Equivalent (LCE)

3. Companies selected based on similar development stage.

Refer to Appendix 1 (Slides 29 and 30) for source data for resources. Market data based on publicly available information as at 14 May 2021, sourced from stock exchange announcements and Factset.

## Independent

Liontown has 100% ownership of the resource

## Full optionality

100% of production capacity is uncommitted to offtakes

## Investment opportunity

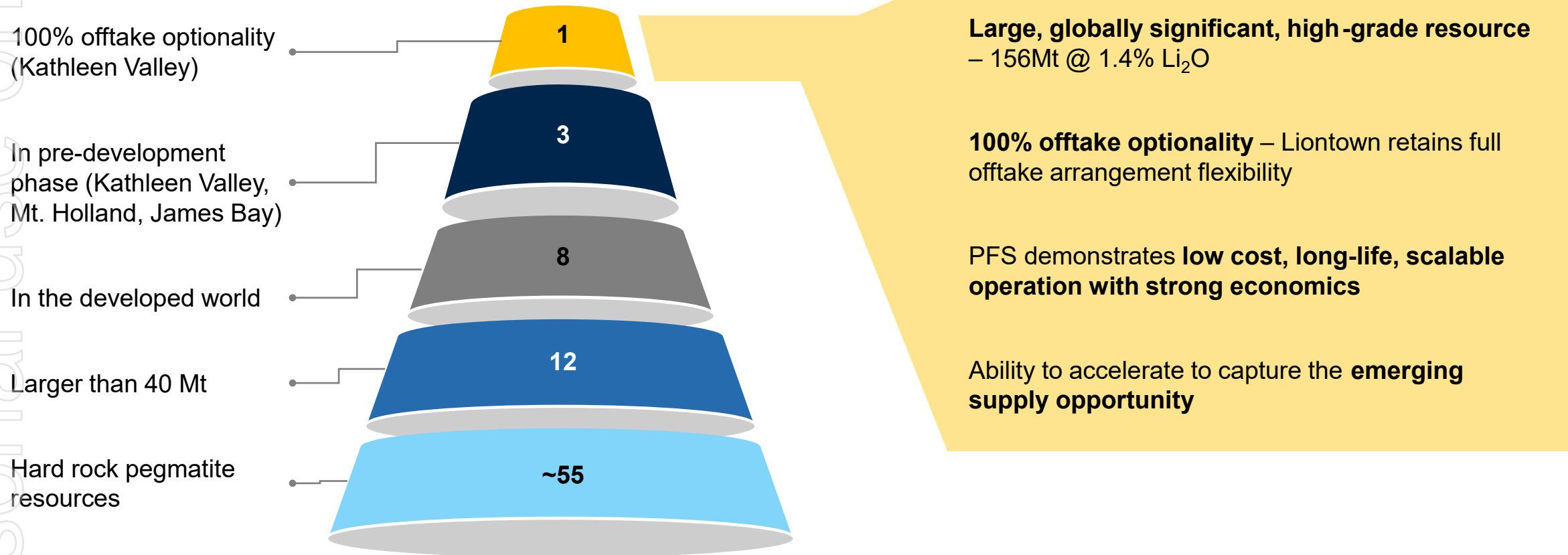
Potential value upside



# Kathleen Valley – a unique lithium opportunity

**Kathleen Valley is the only large (>40 Mt), uncommitted, pre-development phase hard rock lithium deposit in the developed world**

x Number of deposits



Source: Lithium 2019: International lithium and Battery Metals Conference 2019/ Perth, WA 3-4 July 2019 and Appendix 1 for Peer Comparison information including Resource Classifications.

# October 2020 PFS key metrics

Based on May 2020 MRE – 156Mt @ 1.4% Li<sub>2</sub>O  
and 130ppm Ta<sub>2</sub>O<sub>5</sub>

**NPV<sup>1</sup> (post-tax)**      **A\$1.12B**

**IRR**      37%

**Payback**      **3 years**

**SC6 Opex**      US\$323/dmt  
**Years 1-5<sup>3</sup> (FOB)**      US\$261/dmt (excl. royalties)

**SC6 Opex**      US\$345/dmt  
**Years 1-10<sup>3</sup> (FOB)**      US\$283/dmt (excl. royalties)

**Ave. SC6 Price**      US\$739/dmt  
**(2025-2040)<sup>4</sup>**

**Capex**      A\$325M  
(includes \$67M Pre-production)

1: 8% (real).

2: Refer Cautionary Statement on Slide 2.

3: Operating costs include all mining, processing, transport, state and private royalties, freight to port, port costs and site administration and overhead costs (includes tantalum credits). Excludes sustaining capital. Royalties total US\$62/dmt Years 1- 10 and US\$67/dmt LOM.

4: Roskill 2020 Report. Refer to Appendix on Slide 31 for full assumptions.

5: LOM Opex US\$377/dmt, US\$310/dmt (excl. royalties).



## Reserve

71Mt @ 1.4% Li<sub>2</sub>O 130ppm Ta<sub>2</sub>O<sub>5</sub>



## Total production inventory<sup>2</sup>

79Mt @ 1.4% Li<sub>2</sub>O  
130 ppm Ta<sub>2</sub>O<sub>5</sub>



**SC6:** 350Ktpa  
**Ta<sub>2</sub>O<sub>5</sub>** (30%): 430tpa



## Mining

2Mtpa



## Life of mine

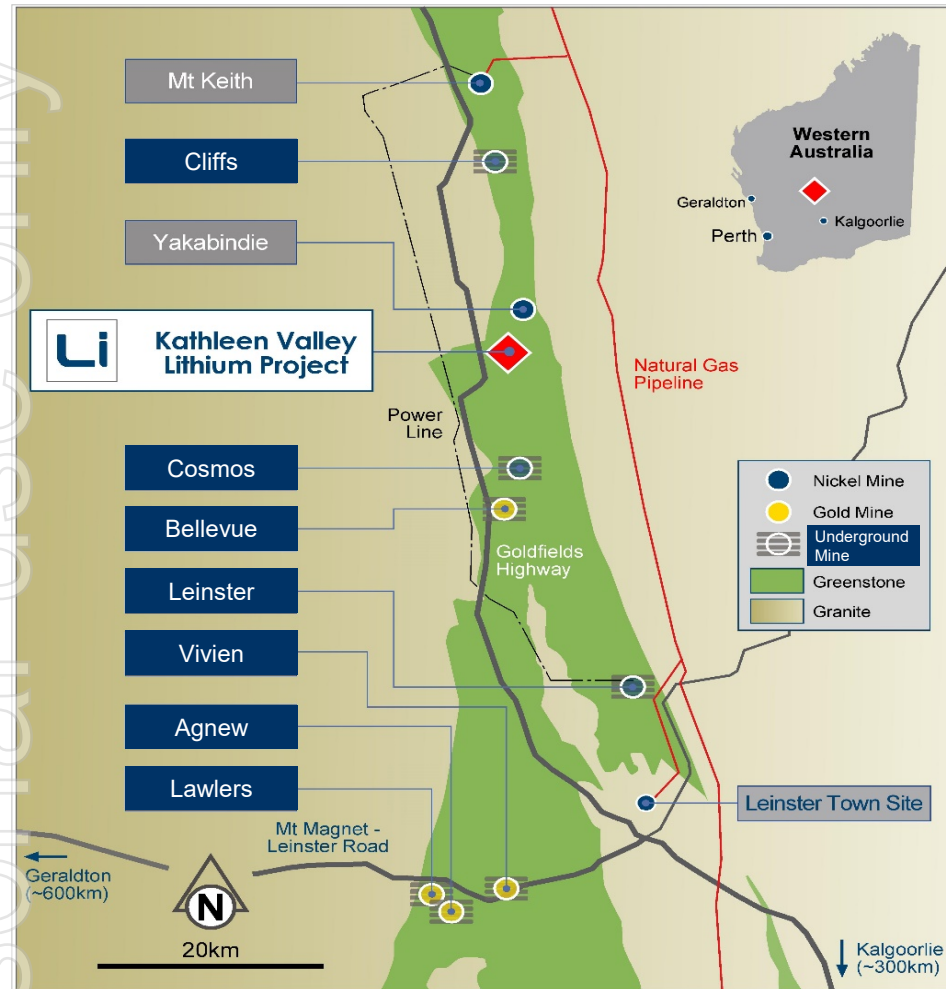
~40 years



**Total Free Cash**  
**Flow:** +\$4.8B



# Stable, established and well-governed mining jurisdiction



**Major Nickel and Gold Mines**



**Town of Leinster**



**Goldfields Highway (access to Geraldton port)**



**Natural gas pipeline**



**Powerline**



**Sealed airstrips**



# The Definitive Feasibility Study (DFS) and optimisation efforts are well advanced to maximise value

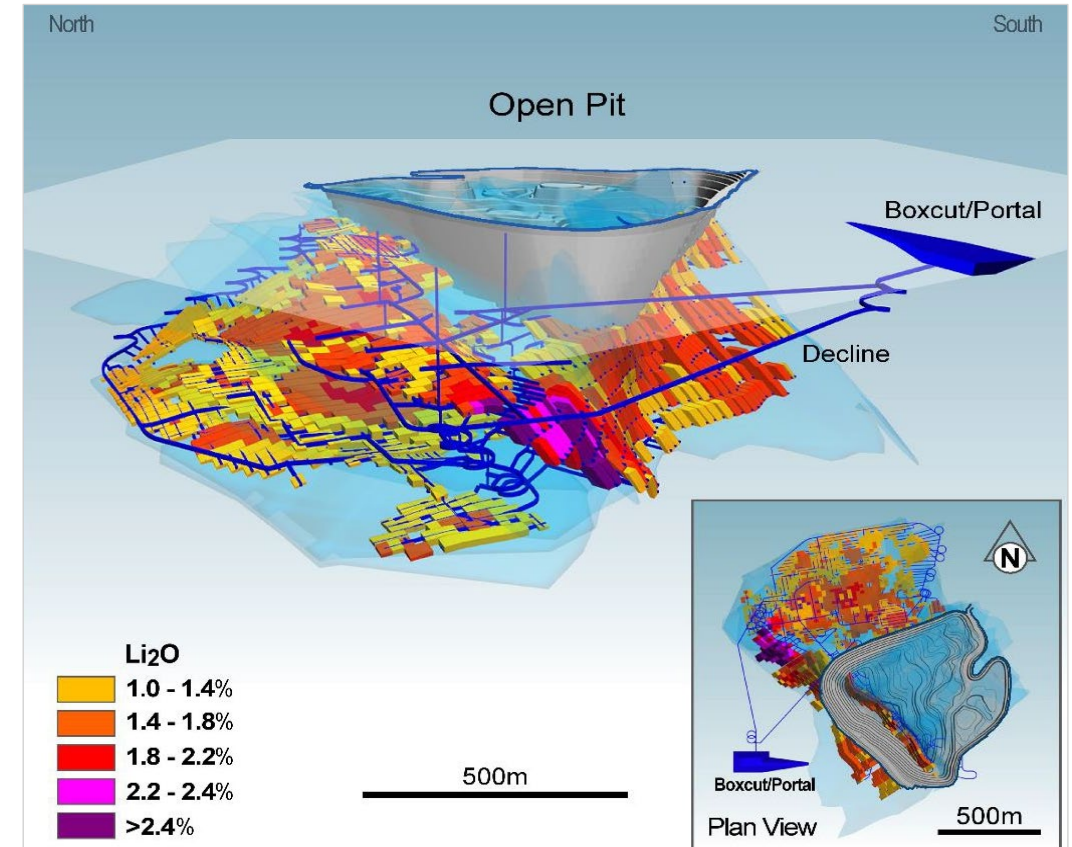


## DFS update

- On track to conclude Q4 2021
- Assessing technology adoption to minimise Scope 1 and Scope 2 emissions
- Ongoing test work including ~3 tonne pilot program
- Continuing engagement with Traditional Owners to strengthen social licence

## Additional optimisation effort to maximise optionality

- **Mine schedule optimisation** to improve grade/recovery of project
- **Throughput increase options** under examination (2+ Mt)
- **Final concentration/grade optimisation** (with potential for >6% Li<sub>2</sub>O premium concentrate)
- **Design schedule accelerated** to meet the market – targeting 3 year development timeline



# Underground mining strengthens our ESG position and maximises mine life



- **Conventional mining methods** (room-and-pillar and long-hole stoping) with proven technology
- **Shallow mine** - first ore at 120m, total depth 450m
- **Competent ground conditions** with ~5km dedicated geotechnical drilling to prove UG design
- **Well-established underground mining precinct**
  - Seven underground operations in area
  - Highly skilled underground workforce (including contractors)



## Environmental and social aspirations

- **Best-in-class Scope 1 and 2 emissions** enabled by UG approach
- **Designed for electrification potential** of UG operations
- **Meaningful engagement** with Traditional Owners
- **Reduced** land disturbance



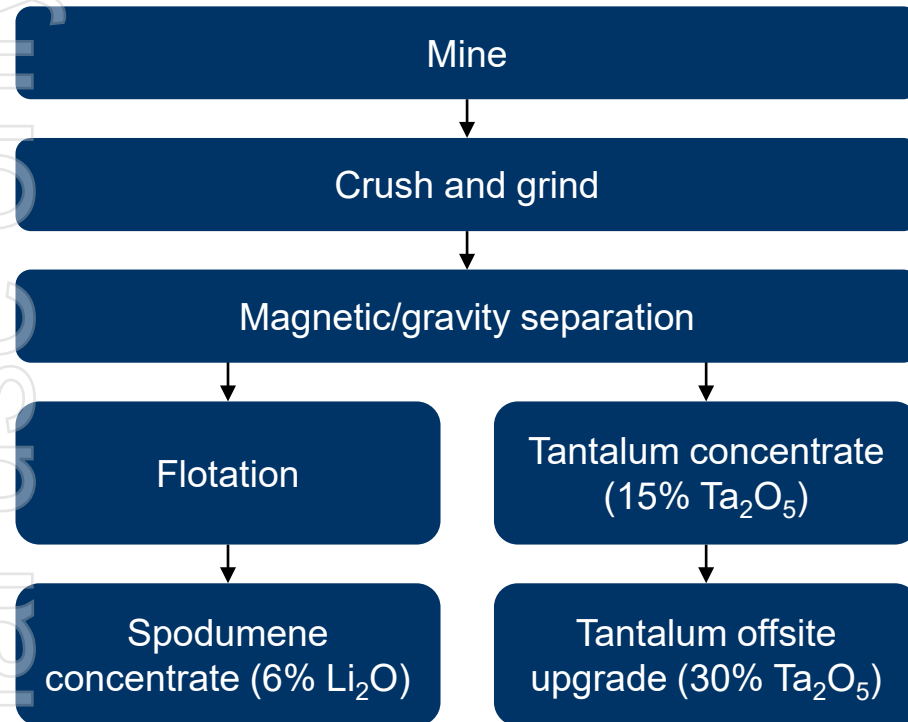
## Economic benefits

- **Early access** to higher grade parts of the deposit
- **High tonnage** per vertical metre (100 kt/m – 206 kt/m at 200 – 400 metres below surface)
- **Selective mining** avoids dilution from host rocks
- **Less waste removal**



# Second mover advantage - potential 76+% average recovery

## Flowsheet



### Our approach

#### Whole-of-ore flotation (WOF)

- Easier to operate
- Higher-grade product and higher (~76%) recoveries<sup>1</sup>
- More consistent results
- Tantalum extraction from full ore stream
- Iron introduced by host rock and comminution circuits largely removed (~55%) by magnetic separation



### Typical industry approach

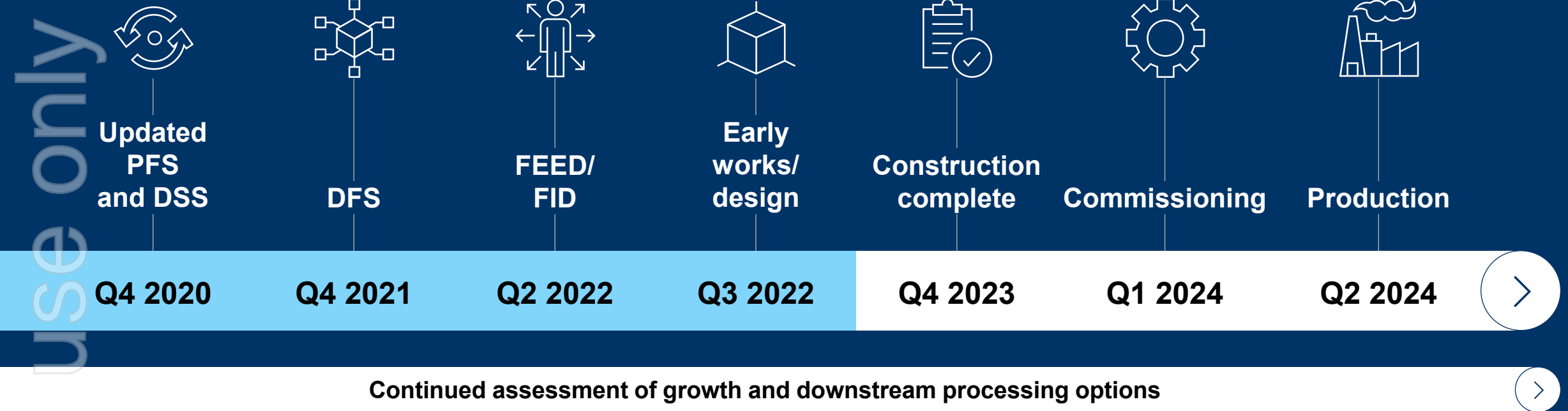
#### Dense media separation (DMS) +/- WOF

- More complex – requires two lithium streams/circuits, additional screening
- Lower recoveries particularly at lower feed grades<sup>1</sup>
- Tantalum not recovered from DMS circuit
- Less opportunity to remove introduced iron

Supported by over 350 float tests and variability analyses

<sup>1</sup>: Refer to Appendix 3 for grade/recovery curves.

# We aim to accelerate the schedule to better meet timing of expected market shortfall



## 3 years

Target to production

Opportunities to accelerate our entry to market through

- Securing near-term offtake agreements
- Accelerating project financing
- Orders placed for critical long lead items



# Kathleen Valley is just the beginning...

## Liontown has additional growth opportunities



### Liontown has optionality around future growth...

#### Growth dimension 1: organic growth with current assets

- Increase resources/reserves at Kathleen Valley
- Expand production capacity at Kathleen Valley
- Develop additional lithium assets – Buldania

#### Growth dimension 2: downstream in lithium value chain

- Precursor material processing and production

#### Growth dimension 3: new projects

- Secure additional high quality lithium mining opportunities
- Continued exploration opportunity in battery materials



### ... and is actively assessing high potential opportunities

#### Downstream Scoping Study key metrics<sup>1</sup> for processing plants

	Lithium hydroxide (LHM)	Lithium sulphate (LSM)
NPV (post tax/8% real)	A\$4.8B	A\$3.2B
IRR	41%	35%
LOM Free Cash Flow	A\$19.5B	A\$13.7B
Payback	3 years	3 years
LoM Opex <sup>(2,6)</sup>	US\$4,744/t	US\$2,649/t
Price (2025-2040) <sup>8</sup>	US\$14,079/t	US\$6,991/t
Design Production	58kpta	88kpta
Capex <sup>(3,4,5,7)</sup>	A\$1.1B	A\$0.9B

1: Refer Cautionary Statement on Slide 2 | 2: Cash operating costs include all mining, processing, downstream refining, transport, state & private royalties, freight to port, port costs and site administration and overhead costs. Excludes sustaining capital | 3: Integrated Capex for LHM production includes \$325M for the mine/ SC6.0 processing plant (PFS) and \$785M for the downstream refinery. | 4: Integrated Capex for LSM production includes \$325M for the mine/ SC6.0 processing plant (PFS) and \$625M for the downstream refinery | 5: SC6.0 plant capital to PFS level +/-25% accuracy, DSS to +/-30% accuracy. | 6: PFS included no contingency on SC6.0 operating costs, DSS included no contingency on operating costs | 7: PFS included 15% (\$27M) capital contingency, DSS included 20% (\$135M LHM & \$109M LSM ) contingency on capital costs | 8: LHM Pricing per Roskill price estimates, LSM pricing scaled based on Roskill LHM price estimate (Sept. 2020). Refer to Slide 34 for full assumptions.

# In the lithium market, downstream producers have historically had higher and more resilient margins



Integrated  
value chain

Integrated raw material convertor and downstream players

Vertically integrated OEMs & JVs

Est. margin

**21% - 26%<sup>1</sup>**

**6% - 28%<sup>1</sup>**

Example  
Market  
participants



Estimated  
total market  
size (US\$b)

**2020**  
\$3.7



**2025**  
\$15.0



**2030**  
\$27.5

**2020**  
\$25.1



**2030**  
\$137.2

1: Not exhaustive, margin percentages are averaged over time (2016 – 2020) and companies, not indicative of the individual companies listed, sourced from company filings from 2016 – 2020.

Source: Bloomberg NEF, Roskill May 2021, Department of Industry, Science, Energy and Resources, Commonwealth of Australia Resources and Energy Quarterly March 2021, Tesla Q1 update 2021, MineSpans, S&P Global.

# Near-term objectives: further de-risk and accelerate



## Delivering Kathleen Valley development project

- Complete DFS in Q4 2021
- Secure high-quality funding – Greenhill appointed as corporate advisor
- Execute offtake arrangements
- Understand key risks and opportunities, ensuring flexibility to maximise potential value

## Developing infrastructure and community support

- Conclude Native Title Agreement
- Strengthen local community engagement
- Negotiate and implement energy and infrastructure service contracts

## Building team and vision

- Recruit and build diverse management team to provide internal competence
- Establish ESG-focused, fit-for-purpose governance
- Build high-performance and delivery-focused culture



**180 micron Kathleen Valley  
spodumene concentrate**

# Liontown – key investment takeaways



## Kathleen Valley is a globally significant, high-grade resource

156Mt @ 1.4% Li<sub>2</sub>O



## Targeting best-in-class ESG credentials

Enabled by underground mining



## Full offtake optionality

Retaining full flexibility of offtake arrangement



## Low cost, long-life, scalable operation with strong economics

In a growing market with attractive fundamentals



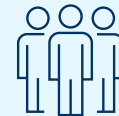
## Significant upside potential

With further studies and downstream processing



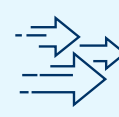
## Stable, well-established mining jurisdiction

Able to leverage local infrastructure



## Highly experienced Board and Executive Leadership Team

With a proven track record



## Accelerating to capture the emerging supply opportunity

And a clear path to meet the market



# Thank You

Visit [www.ltresources.com.au](http://www.ltresources.com.au)

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# APPENDIX 1



Kathleen Valley Project  
Additional Information





# Resources & Reserves

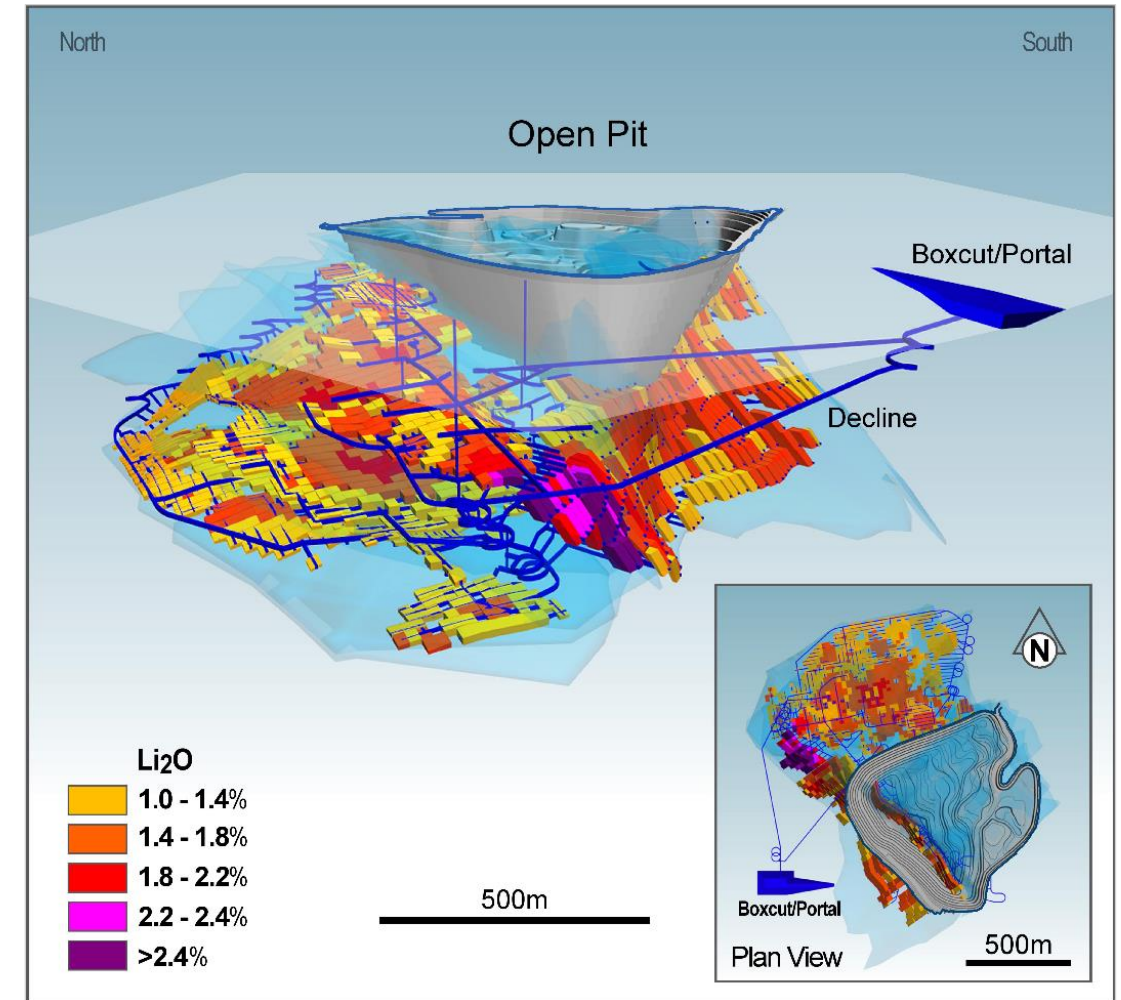
## Mineral Resource Estimate<sup>1</sup> – March 2021

Cut-off Li <sub>2</sub> O%	Resource Category	Million Tonnes	Li <sub>2</sub> O%	Ta <sub>2</sub> O <sub>5</sub> (ppm)
0.55	Measured	20	1.3	145
	Indicated	109	1.4	130
	Inferred	27	1.3	113
<b>TOTAL</b>		<b>156</b>	<b>1.4</b>	<b>129</b>

## Ore Reserve – October 2020

Category		Million Tonnes	Li <sub>2</sub> O%	Ta <sub>2</sub> O <sub>5</sub> (ppm)
Underground	Proven	3.9	1.4	130
	Probable	37.6	1.5	120
	Sub Total	41.5	1.5	120
Open Pit	Proven	11.7	1.2	140
	Probable	17.6	1.2	130
	Sub Total	29.3	1.2	130
<b>TOTAL</b>		<b>70.8</b>	<b>1.4</b>	<b>130</b>

1: Inclusive of ore reserve





# Peer Comparison Information – Mineral Resource Estimates

Company	Project	Stage	Measured Mt	Indicated Mt	Inferred Mt	Global MRE Mt	MRE Li <sub>2</sub> O Grade %	Information Source
Liontown Resources	Kathleen Valley	Development	20.0	109.0	27.0	156.0	1.35	ASX Release 8/4/2021
	Buldanía	Scoping	0.0	9.1	5.9	14.9	0.97	ASX Release 8/11/2019
Pilbara Minerals	Pilgangoora	Operating	18.3	113.8	90.4	222.5	1.26	2020 Annual Report
	Pilgangoora (Altura)	Operating	7.4	34.2	4.1	45.7	1.06	2019 Ann Rep, 9/10/2019 ASX release
SQM(50%)/Wesfarmers (50%)	Mt Holland	Development	66.0	106.0	17.0	189.0	1.50	ASX Release 19/3/2018 (Kidman Resources)
Albermarle (49%)/Tianqi (26%)/IGO (25%)	Greenbushes (excl tailings)	Operating	0.2	163.1	8.9	172.2	1.98	IGO acquisition presentation and ASX release 9/12/20
Alita Resources	Bald Hill	Operating (C+M)	0.0	14.4	12.1	26.5	1.00	ASX Release 6/6/2018 (Alliance Minerals Assets)
Ganfeng (50%)/MinRes Ltd (50%)	Mt Marion	Operating	0.0	22.7	48.7	71.3	1.37	ASX Release 31/10/2018 (Mineral Resources)
Core Lithium	Finnis	Development	3.2	4.4	7.1	14.7	1.32	2020 Ann Rep, 23/6/2020 Presentation
Albermarle (60%)/Min Res Ltd (40%)	Wodgina (excl tailings)	Operating (C+M)	0.0	177.0	59.9	236.9	1.19	ASX Release 23/10/2018 (Mineral Resources)
Galaxy Resources	Mt Cattlin (100%)	Operating	1.0	9.2	4.4	14.6	1.29	ASX Release 11/3/2020



# Kathleen Valley

## Lithium Equivalency ( $\text{Li}_2\text{O} + \text{Ta}_2\text{O}_5$ ) Parameters

Inputs				Outputs	$\text{Li}_2\text{O}\%$
Tantalite ( $\text{Ta}_2\text{O}_5$ ) \$/lb	69.9	(B2)	US\$ (Roskill 2025 – 2040 average price adjusted to FOB)		
Spodumene \$/tonne	739	(B3)	US\$ (Roskill 2025 – 2040 average price, adjusted to FOB)		
Tantalite recovery	50%	(B4)	Per LTR testwork inc off site losses ie 90% of 56%	$\text{Ta}_2\text{O}_5 =$	0.107 (F4)
Spodumene Recovery	76%	(B5)	Per LTR testwork		
$\text{Ta}_2\text{O}_5$ Grade	30%	(B6)		Equiv $\text{Li}_2\text{O}$ grade =	1.5%
$\text{Li}_2\text{O}$ Grade	6%	(B7)		( $\text{Li}_2\text{O}\% + \text{Ta}_2\text{O}_5$ )	
Grade $\text{Ta}_2\text{O}_5$ in resource	130	(B9)	ppm ( per resource)		
Grade $\text{Li}_2\text{O}$ in resource	1.35%	(B10)	(per resource)		

$$\text{F4} = \text{B9} * ((\text{B2}) / (\text{B3} / \text{B7})) * (\text{B4} / \text{B5}) * 2204 * 0.0001$$

$$\text{Equiv. } \text{Li}_2\text{O} \text{ grade } (\text{Li}_2\text{O}\% + \text{Ta}_2\text{O}_5\%) = \text{F4} / (100 + \text{B10})$$





# Peer Comparison Information

## Global Attributable Hard Rock (Spodumene) Resources

Company	Project (Ownership%)	Status	Source	Global MRE (Mt)	Li <sub>2</sub> O%	LCE <sup>1</sup> (Mt)	%Global Resources
AVZ	Manono (60%)	DFS	May 2019 Resource Update, sourced from 21/4/2020 ASX release	240.0	1.7		12.6
Albermarle	Kings Mountain (100%)	Operating (C & M)	<a href="https://en.wikipedia.org/wiki/Kings_Mountain_Mine">https://en.wikipedia.org/wiki/Kings_Mountain_Mine</a> , <a href="https://www.albemarle.com/businesses/lithium/resources--recycling/lithium-resources">https://www.albemarle.com/businesses/lithium/resources--recycling/lithium-resources</a>	45.6	0.7		11.7
	Greenbushes (49%)	Operating	IGO acquisition presentation 9/12/20	84.4	2.0		
	Wodgina (60%)	Operating (C & M)	ASX Release 23/10/2018 (Mineral Resources)	142.2	1.2		
	Pilgangoora (100%)	Operating	2020 Annual Report	222.5	1.3		
Pilbara Minerals	Pilgangoora Altura (100%)	Operating	9/10/2019 ASX release (Altura)	45.7	1.1		10.5
Liontown	Kathleen Valley (100%)	PFS	ASX Release 8/4/2021	156.0	1.4	5.2	7.2
	Buldanina (100%)	Exploration	ASX Release 8/11/2019	14.9	1.0	0.4	
DRC Government	Manono (30%)	DFS	May 2019 Resource Update, sourced from 21/4/2020 ASX release	120.0	1.7		6.3
Min Res Ltd	Mt Marion (50%)	Operating	ASX Release 31/10/2018 (Mineral Resources)	35.7	1.4		5.2
	Wodgina (40%)	Operating (C & M)	ASX Release 23/10/2018 (Mineral Resources)	94.8	1.2		
FireFinch	Goulamina (100%)	Exploration	ASX Release 8/7/2020	108.5	1.5		5.0
SQM	Mt Holland (50%)	Pre-Development	2018 Annual Report (Kidman Resources)	94.5	1.5		4.5
Wesfarmers	Mt Holland (50%)	Pre-Development	2018 Annual Report (Kidman Resources)	94.5	1.5		4.5
Tianqi	Greenbushes (26%)	Operating	IGO acquisition presentation 9/12/20	44.8	2.0		2.8
IGO	Greenbushes (25%)	Operating	IGO acquisition presentation 9/12/20	43.1	2.0		2.7
Galaxy Resources	James Bay (100%)	Exploration	ASX Release 11/3/2020	40.3	1.4		2.4
	Mt Cattlin (100%)	Operating	ASX Release 11/3/2020	14.6	1.3		
Sigma Lithium	Grota de Cirilo (100%)	Development	SEDAR Announcement Jan 10th 2019	52.4	1.4	1.8	2.4
Prospect Resources	Arcadia (87%)	Exploration	ASX Release 20/11/2019, DFS Nov 2019, Presentation Feb 2020	63.2	1.1		2.2
Dathomir	Manono (10%)	DFS	May 2019 Resource Update, sourced from 21/4/2020 ASX release	40.0	1.7		2.1

1: Lithium Carbonate Equivalent (LCE) assumes multiple of 2.473 of Li<sub>2</sub>O (British Geological Survey).



# Peer Comparison Information

## Global Attributable Hard Rock (Spodumene) Resources (continued)

Company	Project (Ownership%)	Status	Source	Global MRE (Mt)	Li <sub>2</sub> O%	LCE <sup>1</sup> (Mt)	%Global Resources
North American Lithium (CATL)	La Corne (100%)	Development	NAL website - <a href="http://na-lithium.com/projects/">http://na-lithium.com/projects/</a> , from Oct 12 2012 report	47.0	1.2		1.8
Ganfeng	Mt Marion (50%)	Operating	ASX Release 31/10/2018 (Mineral Resources)	35.7	1.4		1.6
Piedmont Lithium	Core & Central (100%)	SS	ASX Release 07/04/2021	39.2	1.1	1.1	1.4
Frontier Lithium	PAK & SPARK (100%)	Exploration	NI43-101 March 19 2020 (Frontier Lithium)	25.8	1.5		1.3
Quebec Lithium Partners	Whabouchi (50%)	Development	Nemaska May 31 2019 NI43-101	27.8	1.4		1.2
Investissement Quebec	Whabouchi (50%)	Development	Nemaska May 31 2019 NI43-101	27.8	1.4		1.2
Critical Elements	Rose (100%)	DFS	Critical Elements Nov 29, 2017 NI43-101, 2020 Management Discussion and Analysis (31/08/2020)	34.7	0.9	0.8	1.0
Savannah	Mina Do Barosso et al (100%)	Exploration	May 2019 Resource Announcement	27.0	1.1		0.9
AMG	Mibra (100%)	Operating	3rd April 2017 AMG release	24.5	1.1		0.8
Alita Resources	Bald Hill (100%)	Operating (C & M)	ASX Release 6/6/2018 (Alliance Minerals Assets)	26.5	1.0		0.8
Kodal Minerals	Bougouni (100%)	Exploration	August 27 2020 Corp Presentation	21.3	1.1		0.8
Premier African Minerals	Zulu (100%)	Exploration	13/11/2017 Scoping Study by Bara Resources	20.1	1.1		0.7
Sayona	Authier (100%)	DFS	ASX Release 24 /9/2018	20.9	1.0		0.7
Core Lithium	Bynoe (100%)	DFS	2020 Ann Rep, 23/6/2020 Presentation	14.7	1.3	0.5	0.6
Iron Ridge Resources	Ewoyaa-Abonko-Kaampakrom (100%)	Exploration	AIM Release 28/1/2020	14.5	1.3		0.6
Keliber	Ostrobothnia (100%)	DFS	Company releases 30/9/2019 and 5/12/2019	14.2	1.1		0.5
Essential Metals	Cade (100%)	Exploration	ASX Release 29/9/2020	11.2	1.2		0.4
GuoAo Lithium	Moblan (60%)	Exploration	ASX Release 31/5/2011 (Perilya)	8.6	1.4		0.4
European Lithium	Wolfsberg (100%)	Exploration	ASX Release 3/7/2017	11.0	1.0		0.4
Exore Resources / Dakota Minerals	Sepeda (100%)	Exploration	Dakota Minerals ASX Release 20/2/2017	10.3	1.0		0.3
SOQUEM	Moblan (40%)	Exploration	ASX Release 31/5/2011 (Perilya)	5.7	1.4		0.3

1: Lithium Carbonate Equivalent (LCE) assumes multiple of 2.473 of Li<sub>2</sub>O (British Geological Survey).



# PFS Key Parameters And Assumptions

## General and Economic

	PFS <sup>1</sup>
Discount rate (real, post-tax)	8%
SC6.0 (US\$ per tonne FOB Geraldton)	US\$739/t <sup>4</sup>
Tantalum 30% conc. (US\$ per lb FOB Fremantle)	US\$69.9/lb <sup>5</sup>
Exchange rate – AUD/USD	0.72

## Mining and Production

Average LOM strip ratio (Open Pit)	8.4:1
Processing rate	2Mtpa
Life-of-Mine Production Target (49Mt UG & 30Mt OP)	79 Mt ore
Li <sub>2</sub> O & Ta <sub>2</sub> O <sub>5</sub> grades (diluted) years 1-10	1.5%/120 ppm
LOM average Li <sub>2</sub> O & Ta <sub>2</sub> O <sub>5</sub> grades (diluted)	1.4%/130ppm
LOM average Li <sub>2</sub> O recovery <sup>2</sup>	76%
Overall Ta <sub>2</sub> O <sub>5</sub> recovery (% including offsite upgrade losses of ~6%)	50%
SC6.0 grade	6%
Ta <sub>2</sub> O <sub>5</sub> Concentrate final grade	30%
Moisture content of SC6.0	9%
Avg annual Tonnes of SC6.0	350ktpa
Avg annual Tonnes of 30% Ta <sub>2</sub> O <sub>5</sub> concentrate	430tpa

## Cost Assumptions

	PFS <sup>1</sup>
LOM avg open pit mining costs <sup>3</sup> (\$/dmt ore processed)	A\$43
LOM avg U/G mining costs (\$/dmt ore processed)	A\$55
LOM average processing cost (\$/dmt ore processed)	A\$20
Logistics and transport (\$/wmt conc. incl. Port Charges)	A\$65/wmt
General and admin (\$/dmt ore processed incl. mining)	A\$6.0
Western Australia State royalty	5%
Private royalties (does not apply to MLA M36/696)	3% gross sales & A\$0.5/t ore mined
Corporate tax rate	30%
Estimated opening tax losses	A\$35M

<sup>1</sup>: Refer Cautionary Statement on Slide 2 | <sup>2</sup>: Based on testwork derived grade recovery relationship for PFS mine plan grades of Li<sub>2</sub>O (inclusive Ta<sub>2</sub>O<sub>5</sub> extraction Li<sub>2</sub>O losses) | <sup>3</sup>: Includes ROM rehandle | <sup>4</sup>: Per Roskill September 2020 Report for average arms length prices (2025-2040), adjusted to FOB. \$US795/t FOB for 2041-2064 | <sup>5</sup>: Per Roskill September 2020 Report for avg arms length prices (2025-2040), adjusted to FOB. \$US65/lb FOB for 2041-2064



# PFS – Operating & Capital Summary<sup>1</sup>

## Life of Mine Financials

	(A\$B)
Revenues (lithium)	14.7
Operating costs <sup>2</sup>	5.9
Capital expenditure	
• pre-production	0.3
• sustaining	0.4
Royalties	1.3
Corporate tax	2.0
Life of Mine Free Cash flow	4.8

## Capital Costs Summary

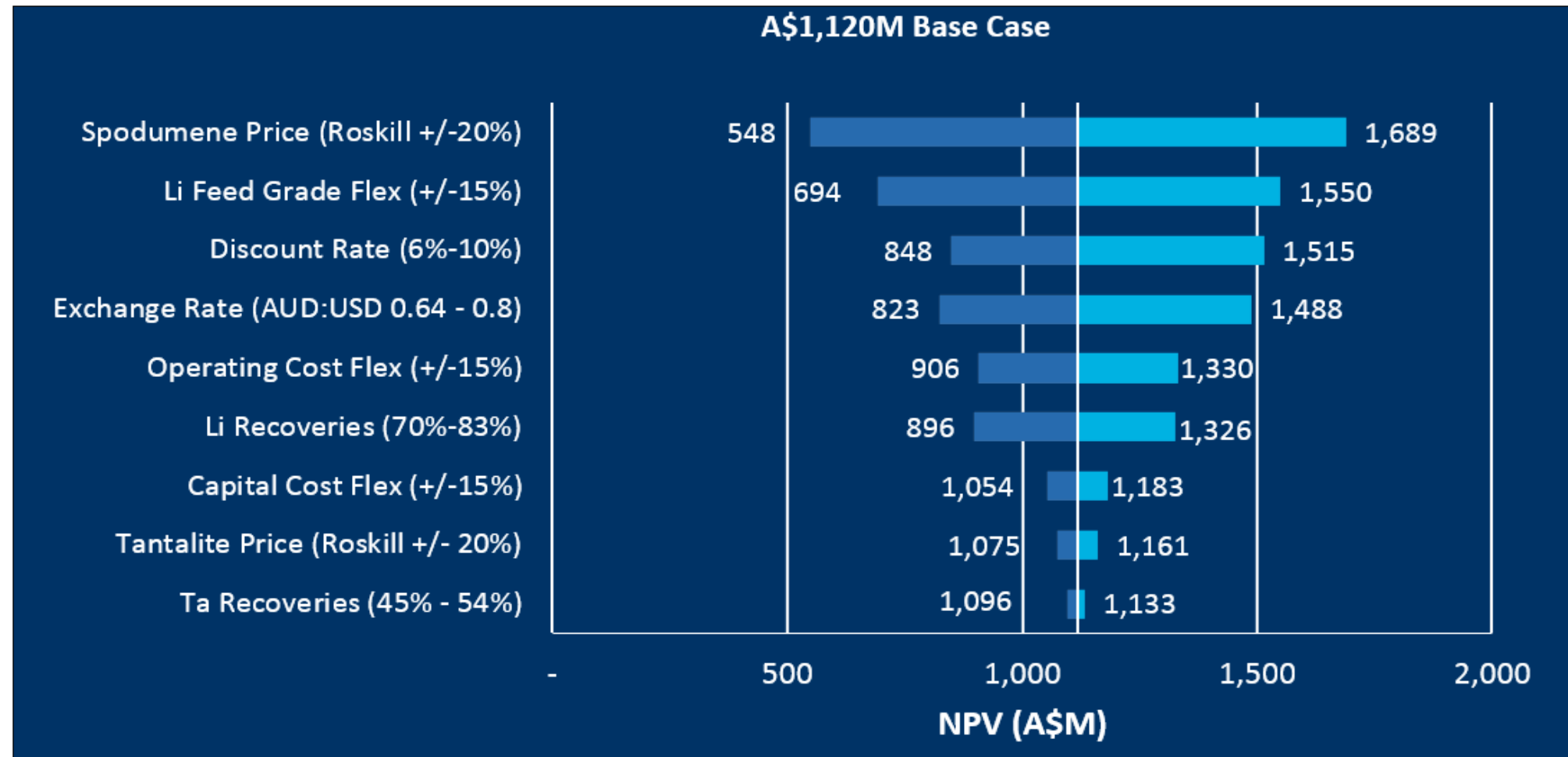
Main Area	Capital (A\$M)
Treatment Plant	84.8
Reagents & Plant Services	16.0
Infrastructure – general	53.3
Mining Infrastructure	2.0
Construction Indirects	23.8
<b>Subtotal</b>	<b>179.9</b>
Management Costs	23.0
Owners Project Costs	19.8
Mining Pre-production (U/G & open pit)	67.1
Owners Pre-production	8.5
<b>Subtotal</b>	<b>298.3</b>
Contingency	26.8
<b>Project Total</b>	<b>325.1</b>

1: Refer Cautionary Statement on Slide 2.

2: Net of tantalum credits.



# NPV Sensitivity Analysis (PFS)







# 2020 Downstream Scoping Study (DSS)

## Key Parameters And Assumptions<sup>1</sup>

General and Economic	LHM	LSM
Discount rate (real, post-tax)	8%	8%
Ave. Price (US\$/t FOB Fremantle 2025-2040)	US\$14,079/t <sup>5</sup>	US\$6,991/t <sup>6</sup>
Tantalum 30% conc. (US\$/lb FOB Fremantle)	US\$69.9/lb <sup>7</sup>	US\$69.9/lb <sup>7</sup>
Exchange rate – AUD/USD	0.72	0.72
<b>Downstream Integrated Refinery</b>		
Number of processing trains	2	2
Recovery Li (%)	90	90
Calcination temperature (oC)	1,100	1,100
Sulphuric Acid Addition (mol/mol)	1.25 (H <sub>2</sub> SO <sub>4</sub> :Li <sub>2</sub> O)	1.25 (H <sub>2</sub> SO <sub>4</sub> :Li <sub>2</sub> O)
Acid Roast Temperature (oC)	250	250
Acid Leaching Residence Time (minutes)	120	120
Lithium Sulphate Crystalliser Stages (per train)	2	2
Design Production	58ktpa	88ktpa

Cost Assumptions	LHM	LSM
LOM avg operating cost (US\$/dmt SC6) <sup>2</sup>	US\$310	US\$310
LOM avg operating costs inc. SC6 costs <sup>3</sup>	US\$4,744	US\$2,649
LOM average processing upgrade cost LSM to LHM	NA	US\$1,509/t LHM
Transport costs (A\$/t to Fremantle)	A\$86	A\$86
Western Australia State royalty <sup>4</sup>	5%	5%
Private royalties <sup>4</sup> (does not apply to MLA M36/696)	3% gross sales & A\$0.5/t ore mined	3% gross sales & A\$0.5/t ore mined
Corporate tax rate	30%	30%
Estimated opening tax losses	A\$35M	\$35m

1. Refer Cautionary Statement on Slide 2.
2. Excludes royalties.
3. Includes royalties.
4. Based on spodumene feedstock market value for gross sales.
5. Per Roskill September 2020 Report for avg China Spot Prices (2025-2040), adjusted to FOB. \$US15,512/t FOB for 2041-2064.
6. LTR assumed prices based on 50% factored Roskill LHM prices (2025-2040), adjusted to FOB. \$US7,707/t FOB for 2041-2064.
7. Per Roskill September 2020 Report for avg arms length prices (2025-2040), adjusted to FOB. \$US65/lb FOB for 2041-2064.



# DSS – Cash Flows

## Integrated Life of Mine Financials<sup>1</sup>

	LHM (A\$B)	LSM (A\$B)
Revenues (lithium)	43.2	32.6
Operating costs <sup>2, 4</sup>	(12.5)	(10.4)
Capital expenditure		
• pre-production	(1.1)	(0.9)
• sustaining	(0.4)	(0.4)
Royalties (All)	(1.3)	(1.3)
Corporate tax	(8.4)	(5.9)
Life of Mine Free Cash flow	19.5	13.7

## Capital Costs Summary<sup>3</sup>

Main Area	LHM (A\$M)	LSM (A\$M)
WOF Plant & Mine Dev.	298	298
<b>DSS Refinery and Infrastructure</b>		
Plant site/Earthworks	7.1	7.1
Treatment Plant	377.2	292.3
Reagents/Plant Services	37.2	30.5
Plant Buildings	6.5	6.5
Camp Expansion	12.6	11.8
Distributable	69.6	55.1
Preproduction Costs and Spares	39.8	32.5
Mobile Equipment	5.0	5.0
<b>Subtotal</b>	<b>853.0</b>	<b>738.8</b>
EPCM Management Costs (DSS)	76.5	60.5
Owners Costs (DSS)	19.1	15.1
<b>Subtotal</b>	<b>948.6</b>	<b>814.4</b>
Contingency (DSS+PFS) <sup>5</sup>	161.5	135.6
<b>Project Total</b>	<b>1,110.1</b>	<b>950.0</b>

1. Refer Cautionary Statement on Slide 2

2. Net of tantalum credits

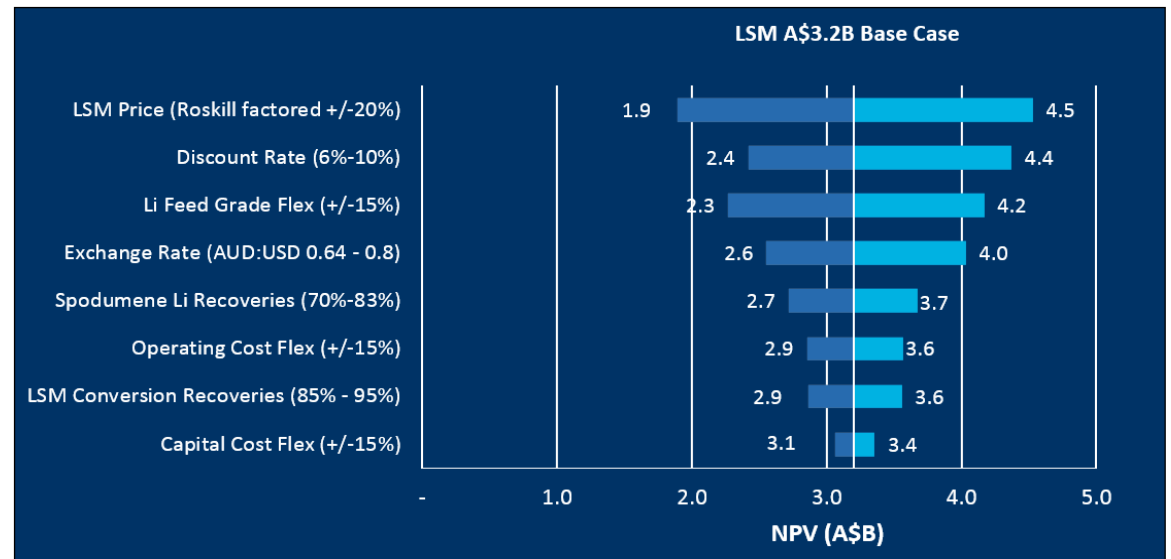
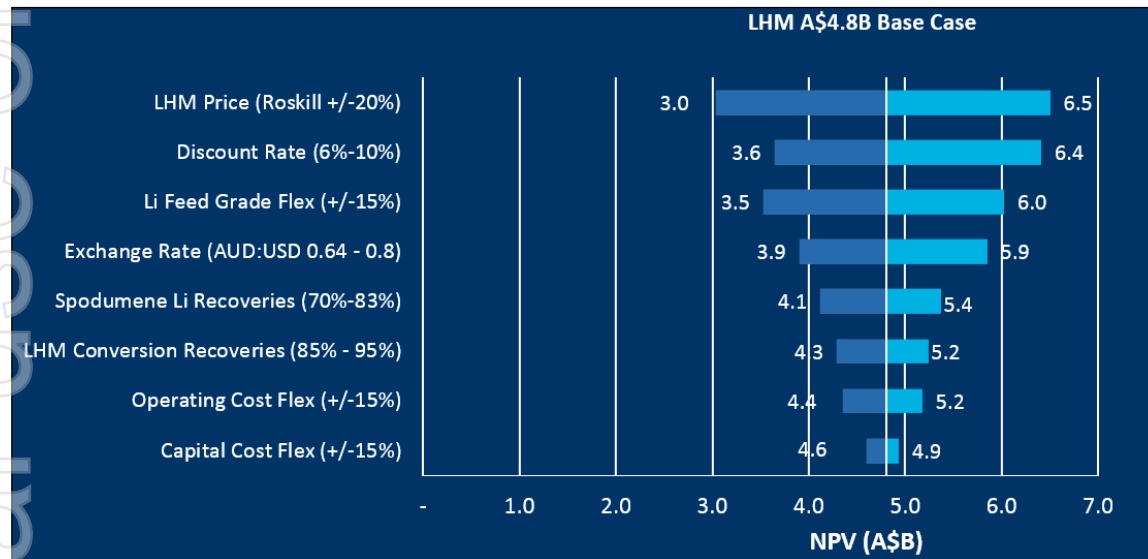
3. SC6.0 plant capital to PFS level +/-25% accuracy, DSS to +/-30% accuracy

4. PFS included no contingency on SC6.0 operating costs, DSS included no contingency on operating costs

5. PFS included 15% (\$27M) capital contingency, DSS included 20% (\$135M LHM & \$109M LSM ) contingency on capital costs

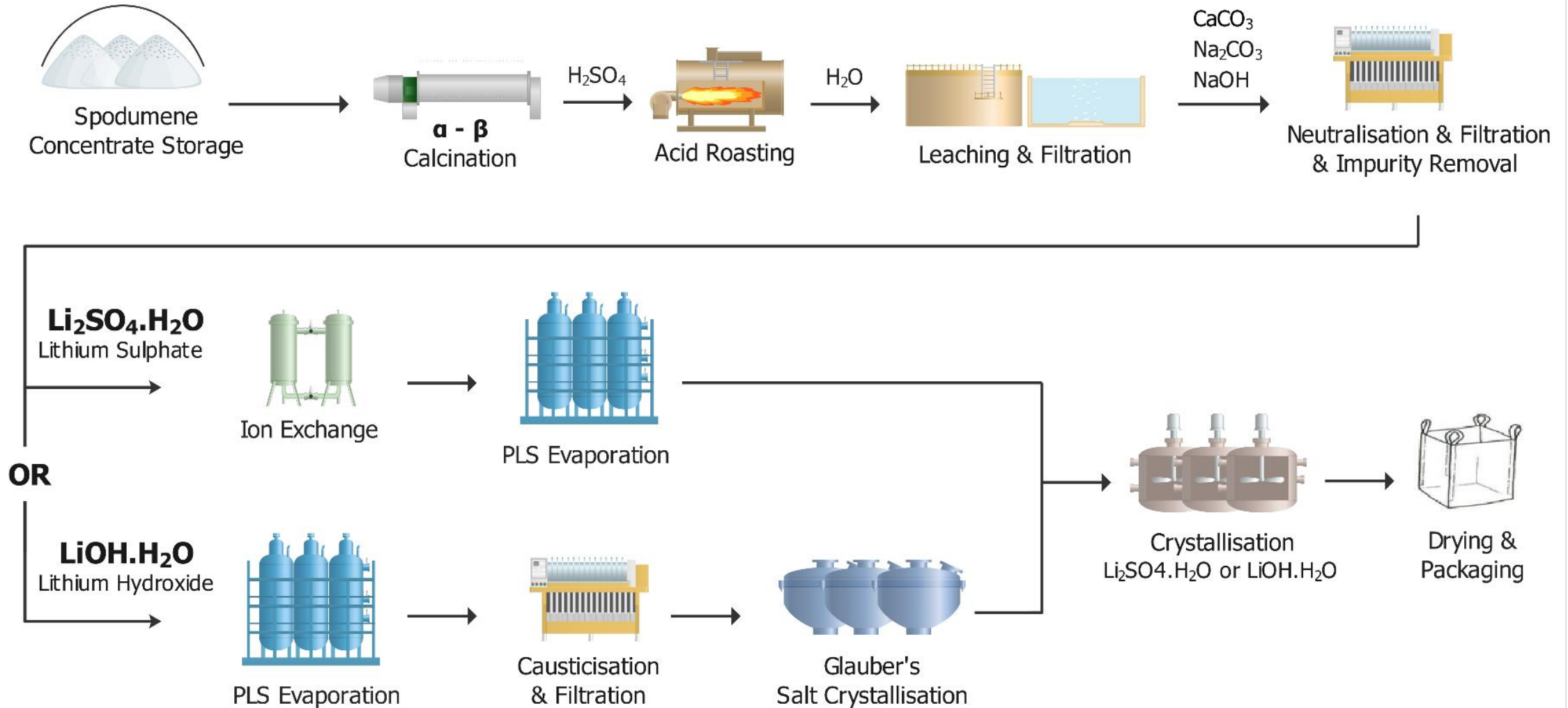


# NPV Sensitivity Analysis (DSS)





# DSS | Refinery Flow Sheet



## APPENDIX 2



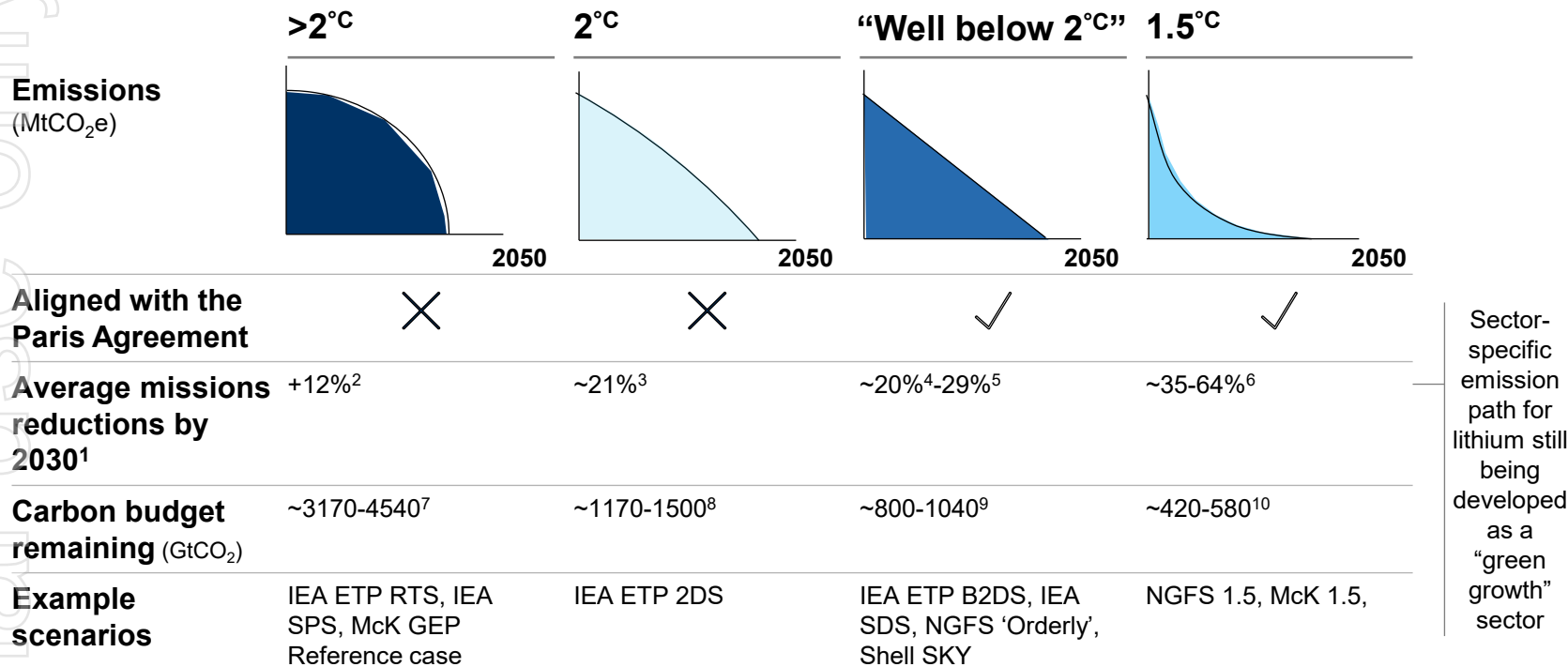
Net-Zero definition





# Liontown will firm up its net-zero trajectory aspiration before FID

Selected examples of different “net zero” pathways



There are many different ways to meet “net zero” by 2050

1: Approximations, compared to 2020, based on published scenarios | 2: IEA ETP 2017 RTS (assuming 33.5 GtCO<sub>2</sub>direct emissions from energy in 2020) | 3: IEA ETP 2017 2DS (assuming 33.5 GtCO<sub>2</sub>direct emissions from energy in 2020) | 4: Based on IEA 2020 WEO SDS scenario, direct CO<sub>2</sub> emissions from energy, global | 5: NGFS 2020 ‘Orderly’ (CO<sub>2</sub>) | 6: NGFS 2020 1.5 with CDR and with limited CDR respectively | 7: IPCC AR5, RCP6.0, 720-1000ppm CO<sub>2</sub>e, cumulative emissions 2011-2100: 3620-4990, minus 9 years emissions of ~50GtCO<sub>2</sub>e/year since 2011 = 3170-4540, approximation of 50GtCO<sub>2</sub>e/yr based on Climatewatch data | 8: IPCC SR15 report, budget starting from 2018, for 2°C, at 67<sup>th</sup> and 50<sup>th</sup> percentile | 9: IPCC SR15 report, budget starting from 2018, for 1.75°C, at 67<sup>th</sup> and 50<sup>th</sup> percentile | 10: IPCC SR15 report, budget starting from 2018, for 1.5°C, at 67<sup>th</sup> and 50<sup>th</sup> percentile

## APPENDIX 3

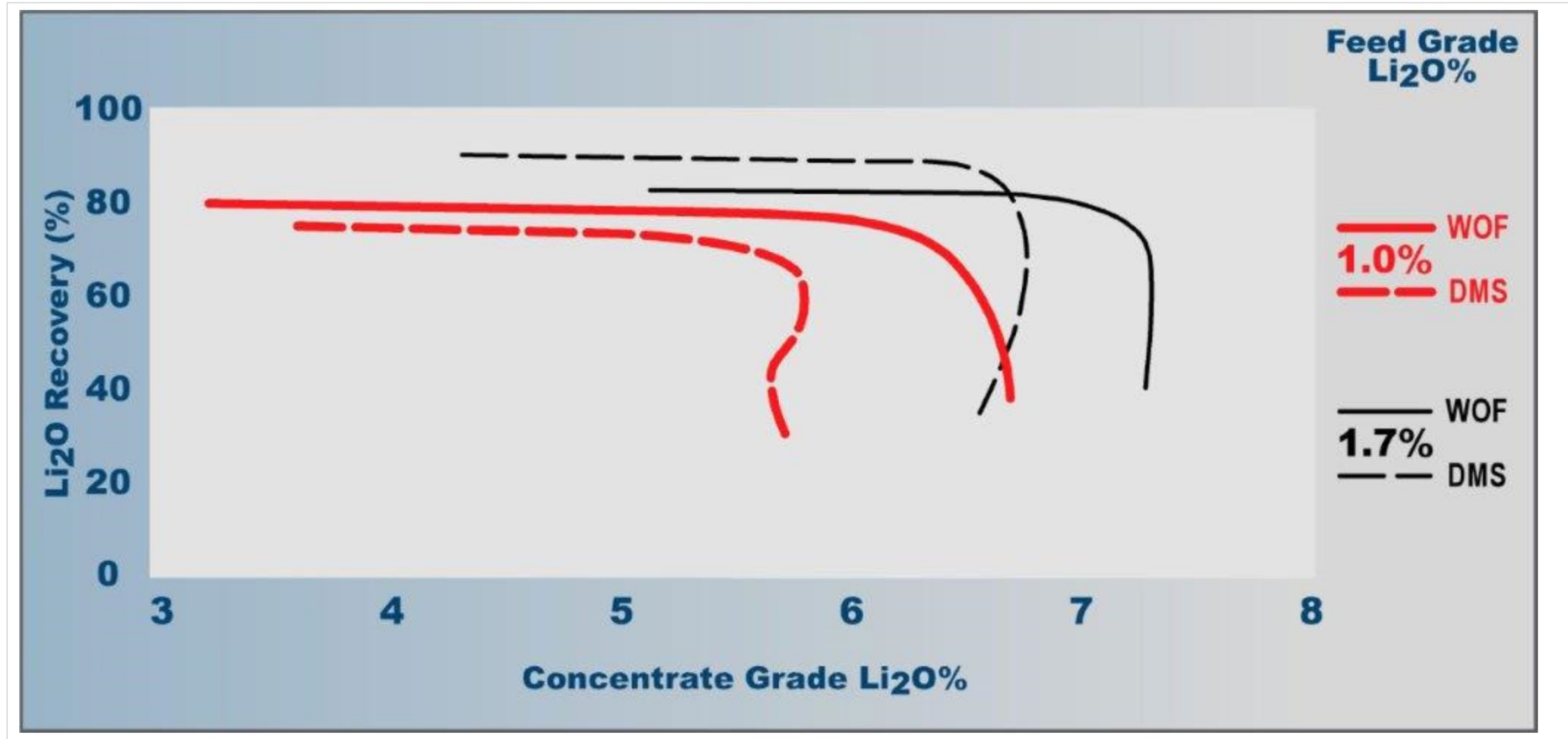


### Grade/Recovery Curves





## Grade/Recovery Curves (DMS vs WOF)



## APPENDIX 4



Buldania





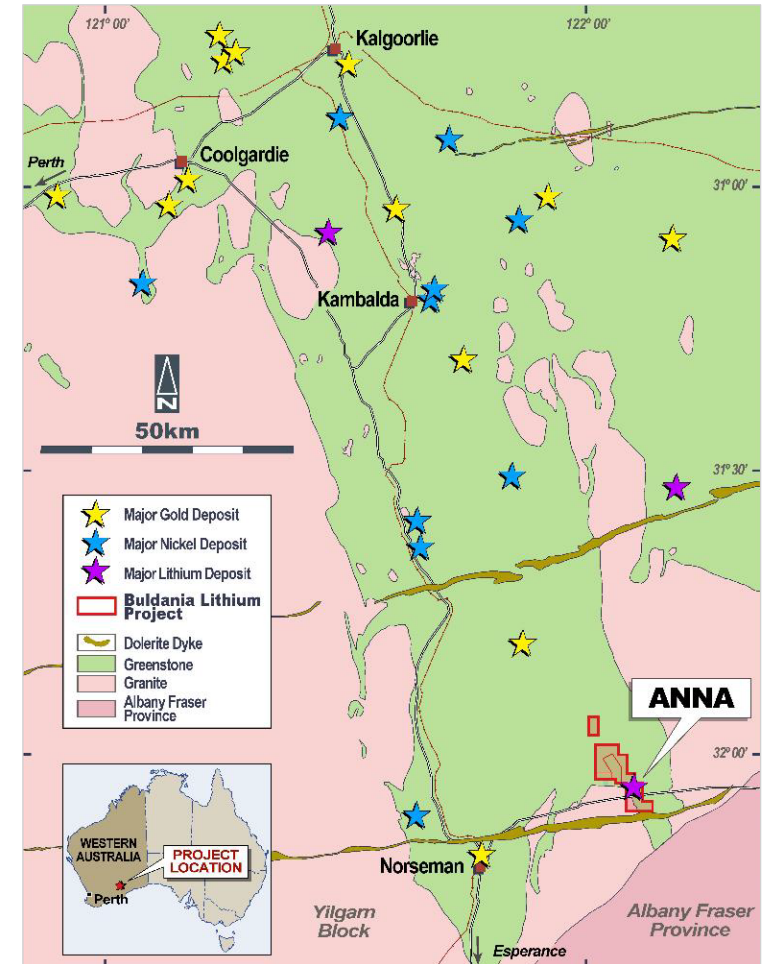
# Project Overview

## Buldania is in a lithium-rich mineral province

- 1 Outcropping, fresh, spodumene-related mineralization
- 2 Mineralisation at Anna extends to the SE under shallow cover – strike length >1.4km and open
- 3 Similar geology to the Mt Marion and Bald Hill lithium deposits (71Mt<sup>1</sup> and 26Mt<sup>2</sup> respectively)
- 4 Good infrastructure – located on Eyre Highway ~30km east of Kalgoorlie-Esperance railway
- 5 Lione town has 100% of the lithium and related metal rights
- 6 Mining Lease Application lodged over Anna deposit <sup>1</sup>

1: Mt Marion – Refer to Peer Comparison table – slide 29.

2: Bald Hill source: <http://www.allianceminerals.com.au/projects/>





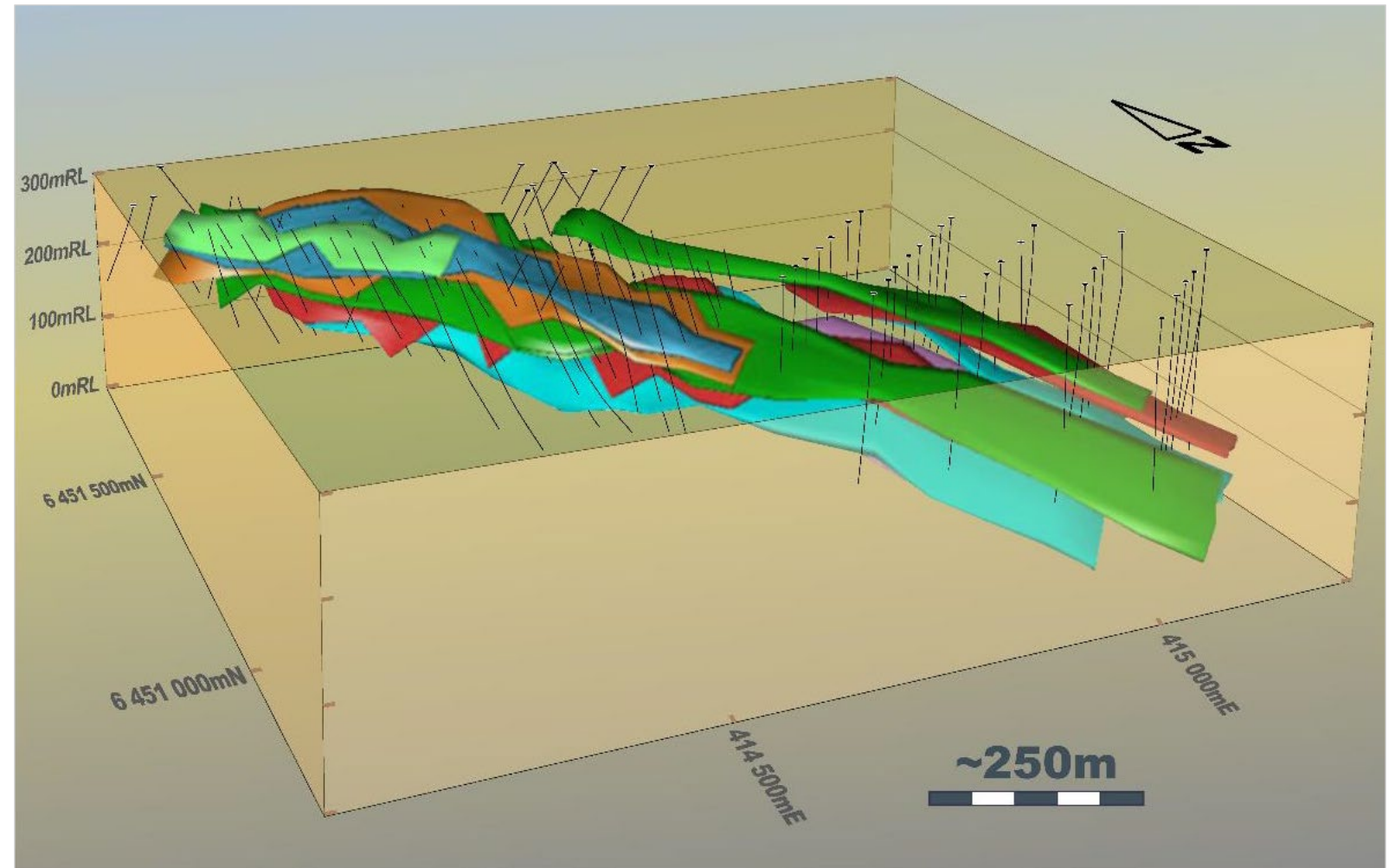


# Resource

Maiden Mineral Resource  
Estimate

14.9Mt @ 1.0% Li<sub>2</sub>O

The MRE complements  
Liontown's flagship Kathleen  
Valley Lithium Project





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