



# Liontown Resources

**Resources Rising Stars**

**Presentation | October 14-15, 2021**

ASX: LTR



# Important information



## CAUTIONARY STATEMENT

The production targets and forecast financial information referred to in the PFS 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.

## 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 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 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.

## Authorisation

This Presentation has been authorised for release by the Board.

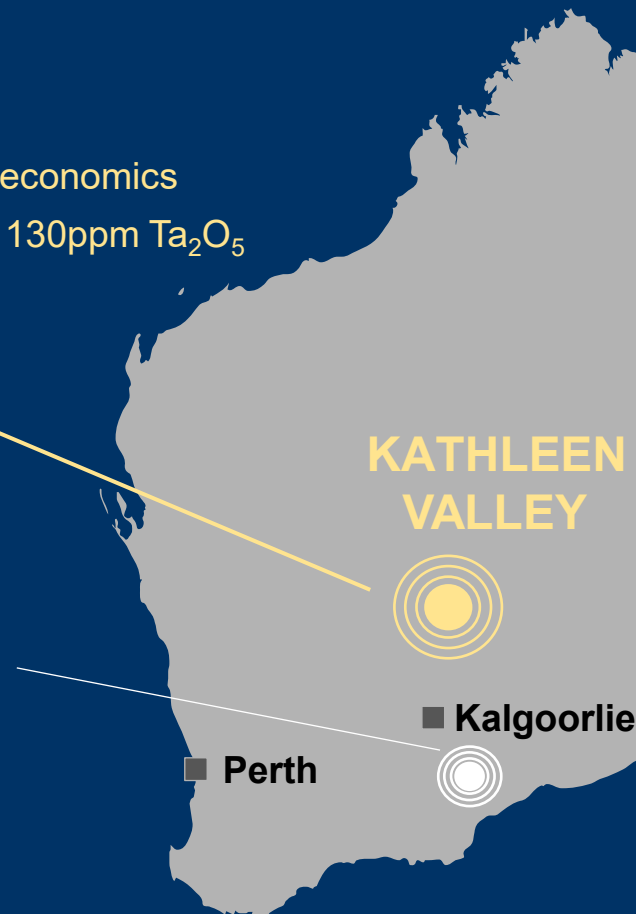
# Liontown Corporate Overview

Liontown is an ASX-listed lithium developer and explorer with a ~A\$2.8bn market capitalisation

## 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>**  
High-grade  
DFS due Q4 2021

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



## Corporate snapshot (11 Oct 2021) ASX: LTR

Market Cap.

**A\$2.8bn**

Share price (\$/s)

**A\$1.48**

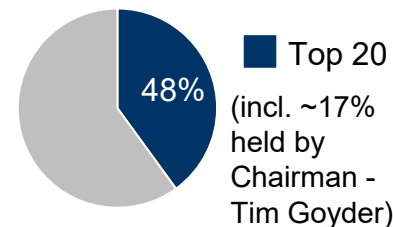
Shares on issue

**1,911m**

~21% held by Board and  
Executive Leadership  
Team

Major shareholders

as at 8 October 2021



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

**A\$27.8m**

Research coverage



1: Includes ~\$26.5M in cash as at 30 September 2021 and ~\$1.3M in Lachlan Star Limited ordinary shares; LSA share price of \$0.032 as at 30 September 2021

# Investment Proposition



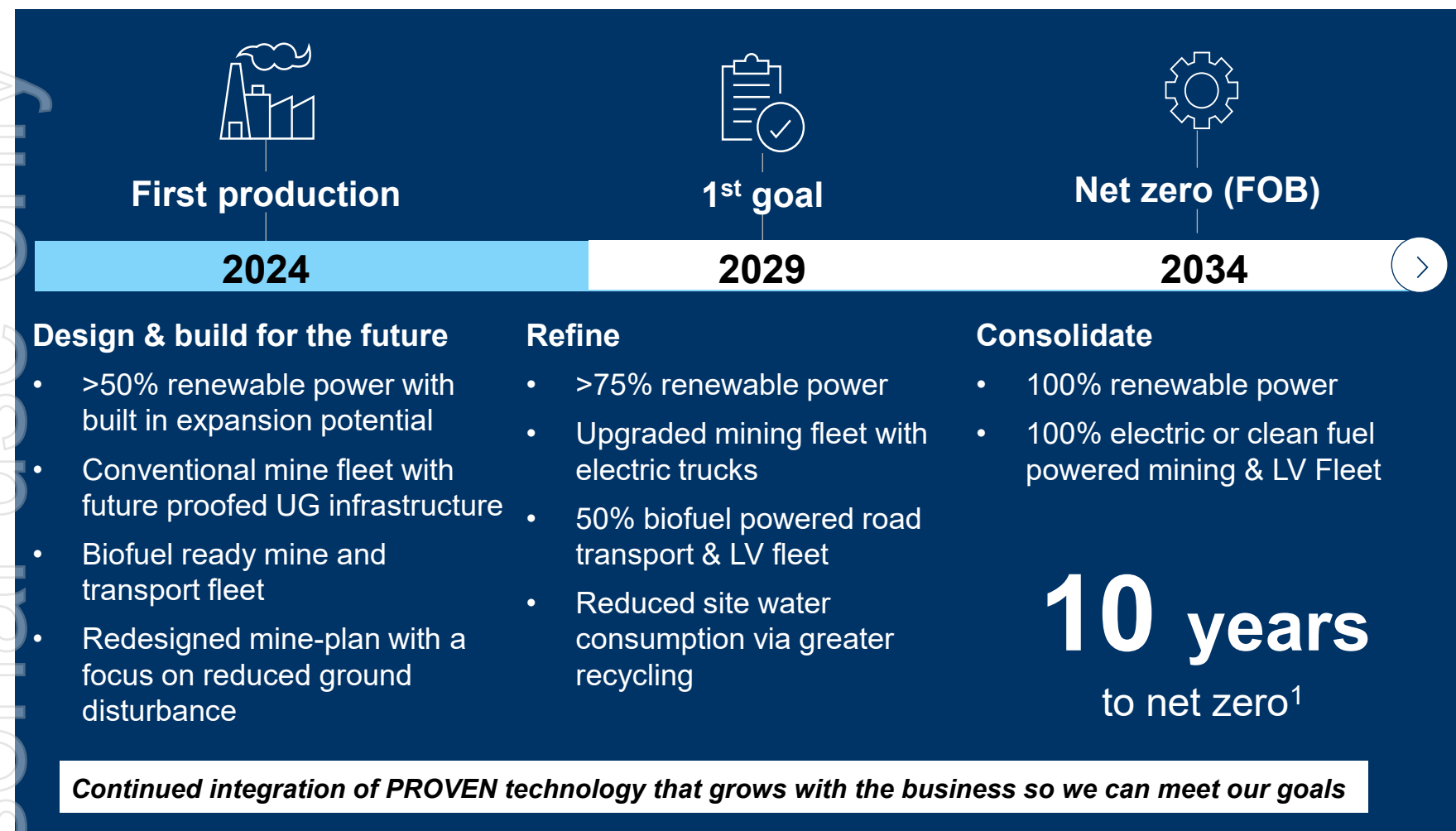
Kathleen Valley is a globally significant lithium resource, located within a stable and established mining jurisdiction with strong ESG credentials and growth optionality. The project is well positioned, with start of production expected to coincide with a significant spodumene market deficit

1	<b>Globally significant Tier 1 lithium resource</b>	<ul style="list-style-type: none"><li>Kathleen Valley is a world-class lithium deposit with a Mineral Resource Estimate (MRE) of 156Mt @ 1.4% Li<sub>2</sub>O and 130ppm Ta<sub>2</sub>O<sub>5</sub></li><li>100% ownership means that Lontown has the 4th largest attributable hard rock lithium resource globally<sup>1</sup></li></ul>
2	<b>Low cost, long-life scalable operations</b>	<ul style="list-style-type: none"><li>Large resource base supports an initial ~40 year life of mine, with potential for further expansion</li><li>Competitive cost curve position driving attractive margins at forecast spodumene prices</li></ul>
3	<b>Stable, established mining jurisdiction</b>	<ul style="list-style-type: none"><li>Located in a well-established mining region in Western Australia, near the town of Leinster (~300km north of Kalgoorlie) in the Leonora region</li><li>Close proximity to established infrastructure including highways, natural gas, powerlines and airstrips</li></ul>
4	<b>Market outlook positive</b>	<ul style="list-style-type: none"><li>Significant supply deficits forecast to emerge from 2024, which is expected to align with start of production at Kathleen Valley</li><li>Lithium hydroxide to remain preferred source for lithium-ion batteries, with spodumene the lowest-cost conversion material</li></ul>
5	<b>Strong ESG position</b>	<ul style="list-style-type: none"><li>Lontown is on a net zero trajectory, with a climate strategy roadmap in place targeting net zero emissions by 2034</li><li>Kathleen Valley will leverage underground mining to enhance its ESG position by minimising land disturbance and waste</li></ul>
6	<b>Upside potential in future</b>	<ul style="list-style-type: none"><li>Capacity to expand built into initial PFS design – i.e. optionality to expand Kathleen Valley significantly above 2Mtpa throughput</li><li>Potential to develop downstream processing capacity at Kathleen Valley (or elsewhere) with an Updated Scoping Study currently underway</li></ul>
7	<b>Experienced Board and Executive team</b>	<ul style="list-style-type: none"><li>Lontown is led by a proven, credible and highly experienced board and management team</li><li>Significant mining, engineering and commercial experience, with a track record of successfully developing long-life mining projects</li></ul>
8	<b>Offtake optionality</b>	<ul style="list-style-type: none"><li>Offtake discussions well progressed, with interest indicated for volumes far in excess of production capacity</li><li>Customer discussions to continue in parallel with financing process, ensuring structure of offtakes is optimised for Lontown and financiers</li></ul>

1: Refer to Appendix 1 for source data for resources. Market data based on publicly available information as at 14 May 2021, sourced from stock exchange announcements and Factset. | 2: Based on 2Mtpa (October 2020 PFS)

# ESG commitments matter - Climate Strategy Roadmap

Proven technology, real time frame, no false promises and measurable



## Measurable

Inaugural sustainability report due Q4 2021

- ✓ Aligned to GRI standards

**Sustainability Report will be cross-linked to:**

- ✓ TCFD
- ✓ SASB

**... with target setting per identified SDG**

<sup>1</sup>. Target from first production. Refer to Appendix 2 for net zero definition.

GRI: Global Reporting Initiative, an internationally-agreed set of sustainability reporting standards. TCFD: Task force on climate related financial disclosures. SASB: Sustainability Accounting Standards Board. UG: Underground Mining.



# Lithium Market Overview



# Spodumene Concentrate Demand Drivers



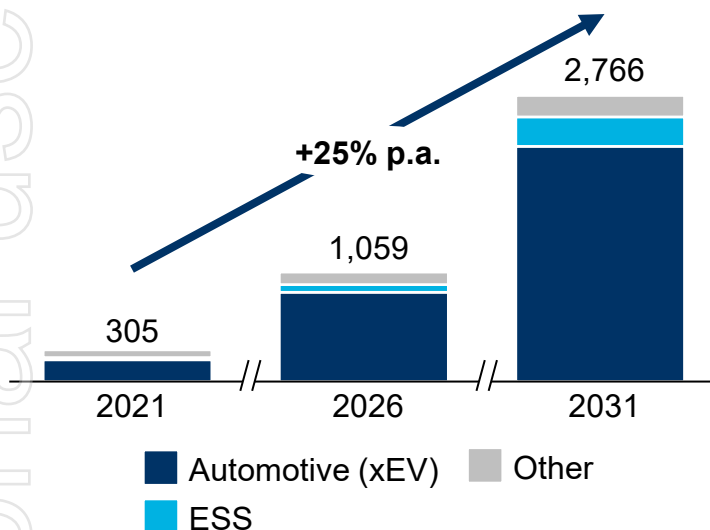
Lithium hydroxide is emerging as preferred for EV batteries due to a preference for nickel -cobalt-manganese (NCM) chemistries. Spodumene is the preferred source for refining lithium hydroxide, given direct conversion compared to brines, which reduces the processing costs for converters



## The right time...

**25%** forecast CAGR driven by stronger GHG regulations and improving EV adoption

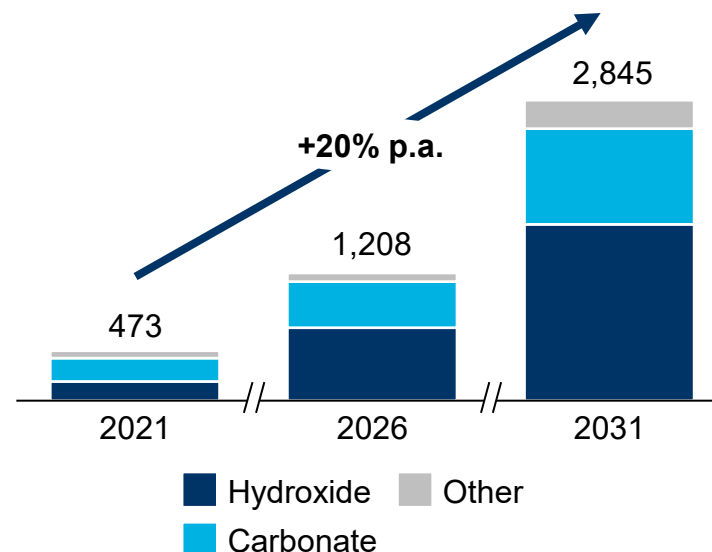
Global Li-ion battery cell demand<sup>1</sup>, GWh



## The right market...

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

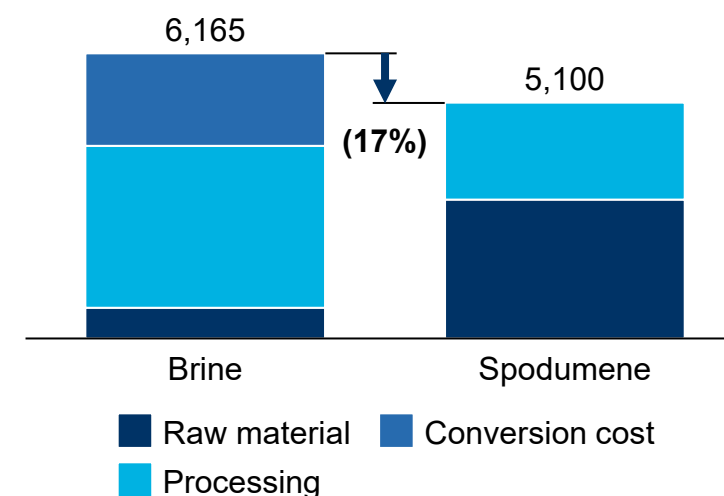
Global lithium demand<sup>1</sup>, kt LCE



## 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: Source: Roskill.

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

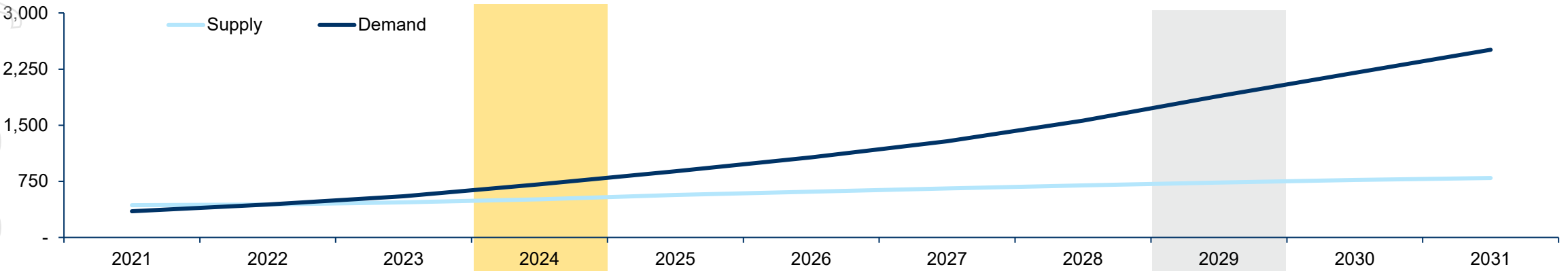
# Lithium Demand and Supply Dynamics



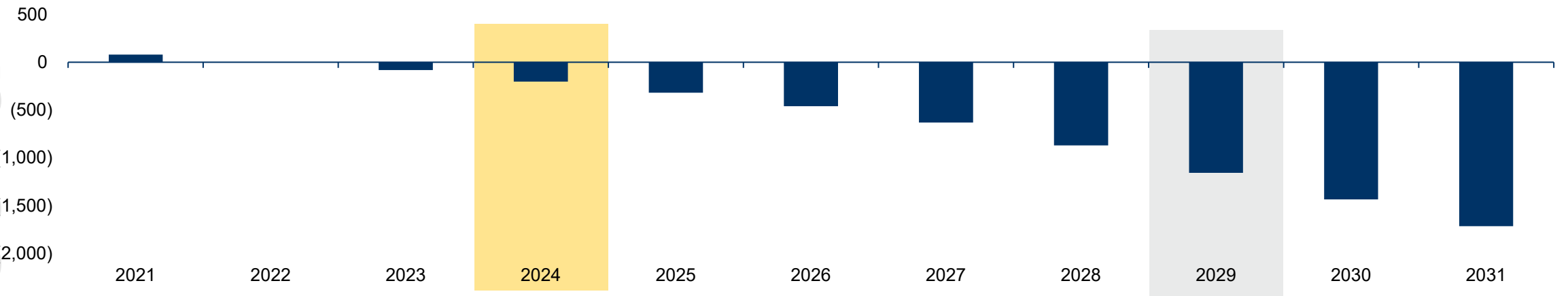
Production at Kathleen Valley is expected to commence in 2024, coinciding with a forecast market deficit that is expected to continue and grow beyond 2024. Liontown has optionality to further increase production towards the end of the decade to capitalise on the widening deficit

Global lithium market balance (battery grade), 2021-31, kt LCE

Kathleen Valley production commencement Potential expansion timing



Battery grade supply/demand balance, 2021-31, kt LCE



Source: Roskill



# Kathleen Valley Lithium Project



# Kathleen Valley Highlights

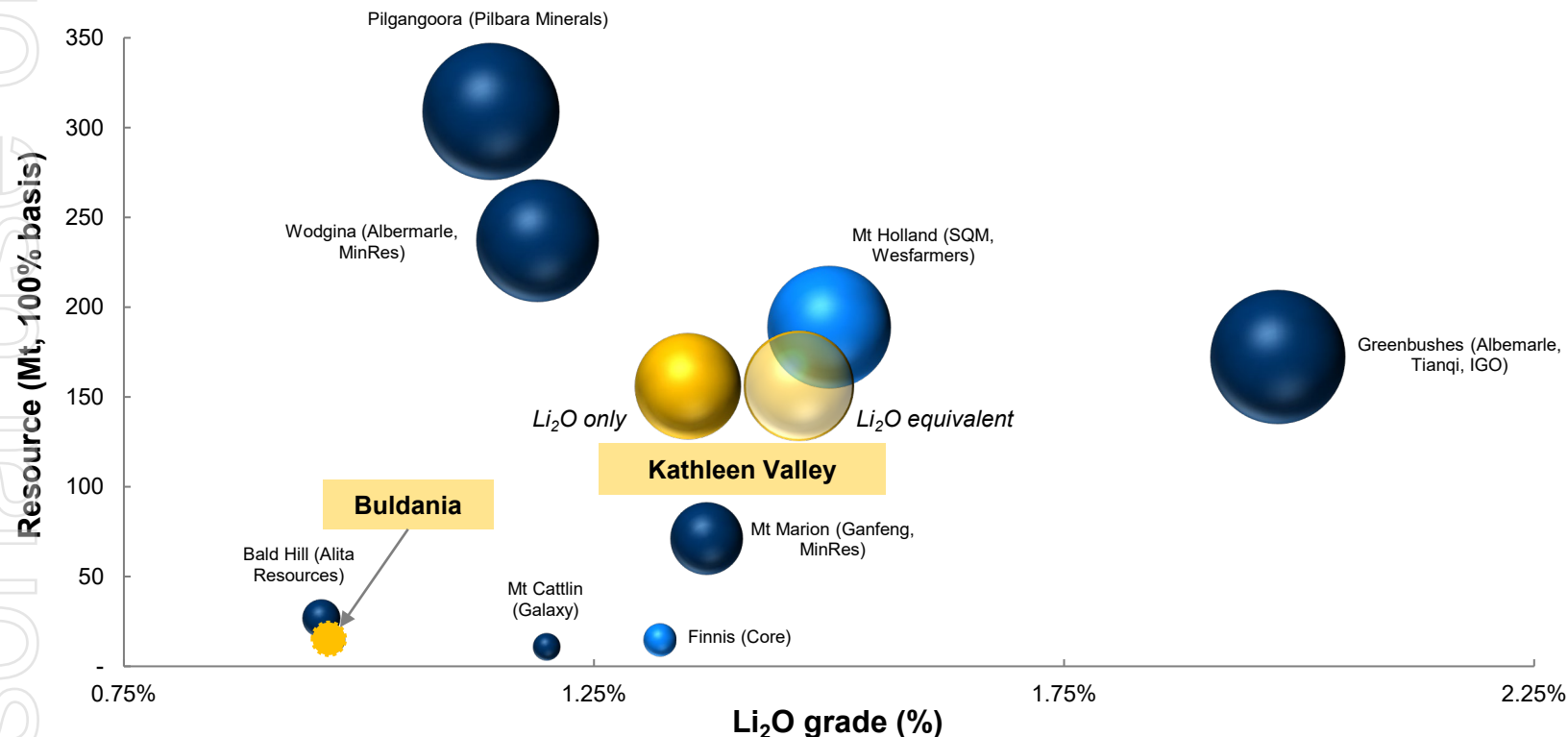
Kathleen Valley is a uniquely positioned, globally significant Tier 1 lithium resource



## Australian hard rock lithium operations and advanced projects

By project, size, and grade

■ Operating/Established ■ In development ■ Liontown



## Kathleen Valley Highlights

- 1 **156Mt** – one of the world's largest hard rock lithium resources, with reserves already defined
- 2 **1.4% Li<sub>2</sub>O** – high-grade resource
- 3 **~40-year lifespan at 2Mtpa throughput** – long-term, allowing for downstream options
- 4 **Simple, robust resource** – potential for premium product
- 5 **Competitive cost structure** – resilient through the lithium commodity cycle

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.

# Underground Mining

Underground mining is synonymous with other materials, and is becoming more common for lithium miners given the environmental and social benefits, higher ore quality and grades and minimisation of waste



## Rationale for Underground Lithium Mining



**Reduces environmental and social impacts** associated with open-pit mining - **Best-in-class Scope 1 and 2 emissions**



**Improves ore quality** resulting in **lower impurities, improved recoveries** and **reduced operating costs**

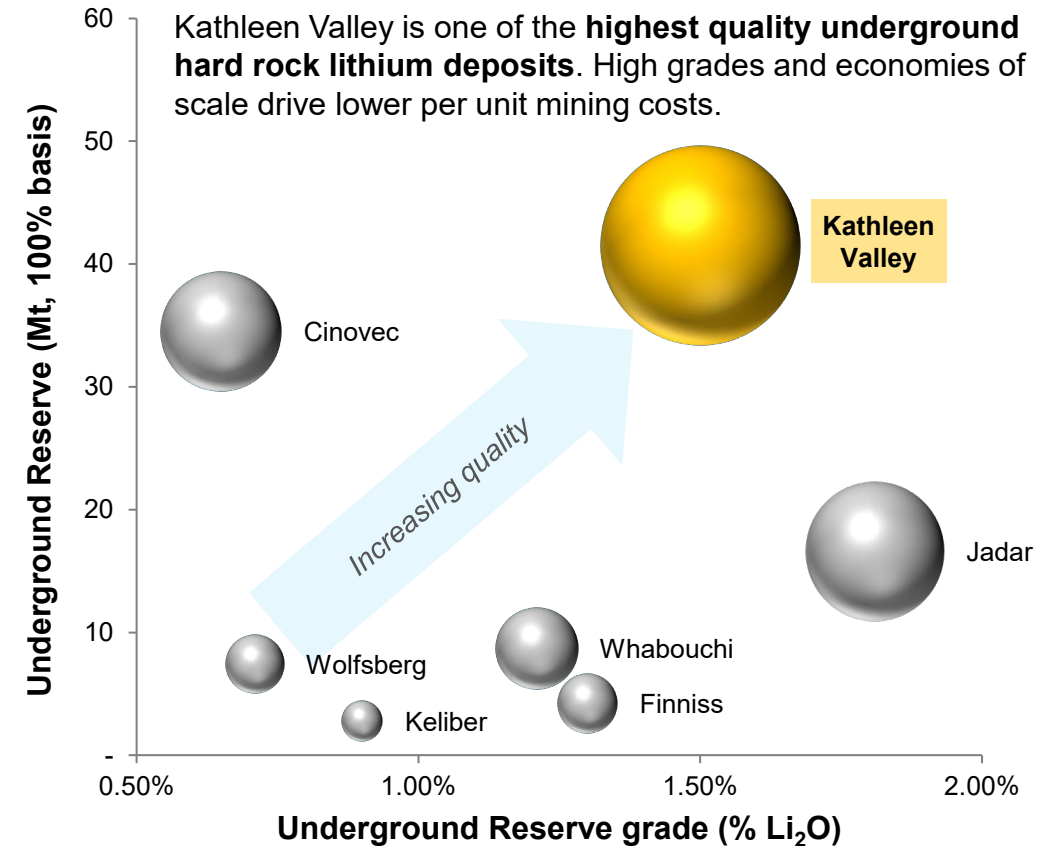


Provides early access to **higher grades**, resulting in greater blend optionality for **optimum processing**



**Minimises waste rock** managed and stockpiled on surface - including tailings disposal underground

## Underground Reserve Grade and Tonnage



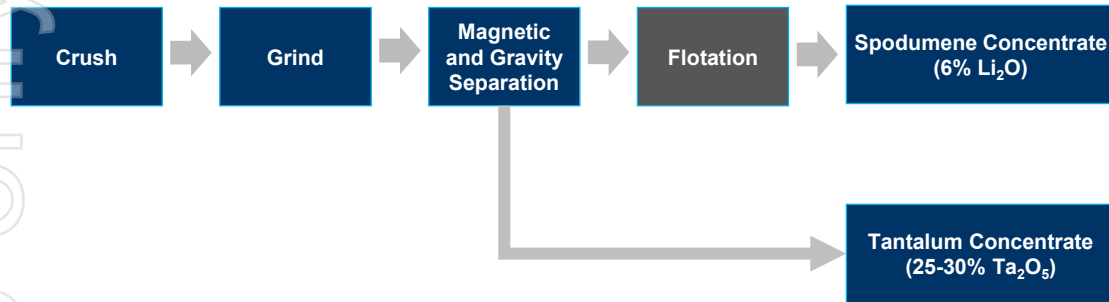
Note: Refer to Appendix 1 for Peer Comparison information.

# Proposed Whole Ore Flotation Flowsheet

Liontown proposes to undertake whole-of-ore flotation (WOF) to produce high-grade spodumene concentrate. WOF significantly improves the consistency of recoveries and reduces operational challenges associated with traditional approaches



## Proposed Whole Ore Flotation (WOF) Flowsheet

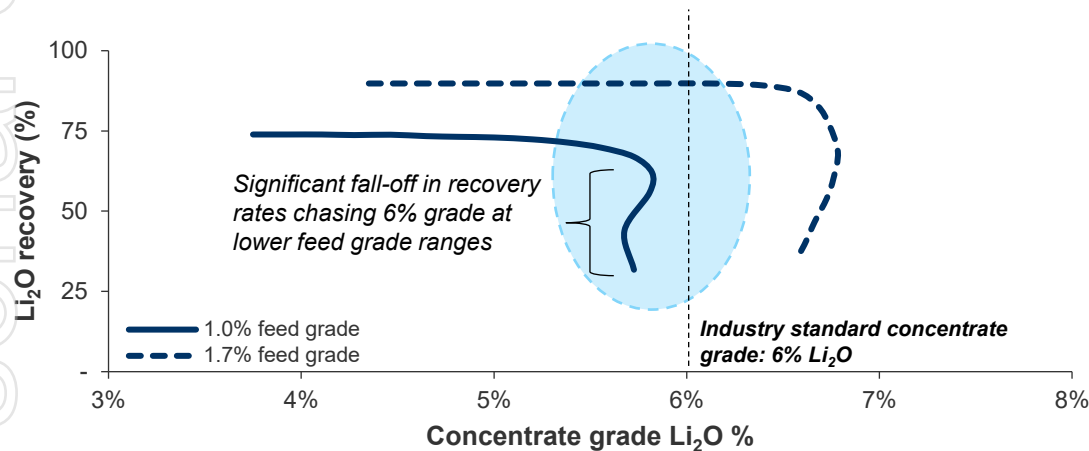


## Why whole-of-ore flotation?

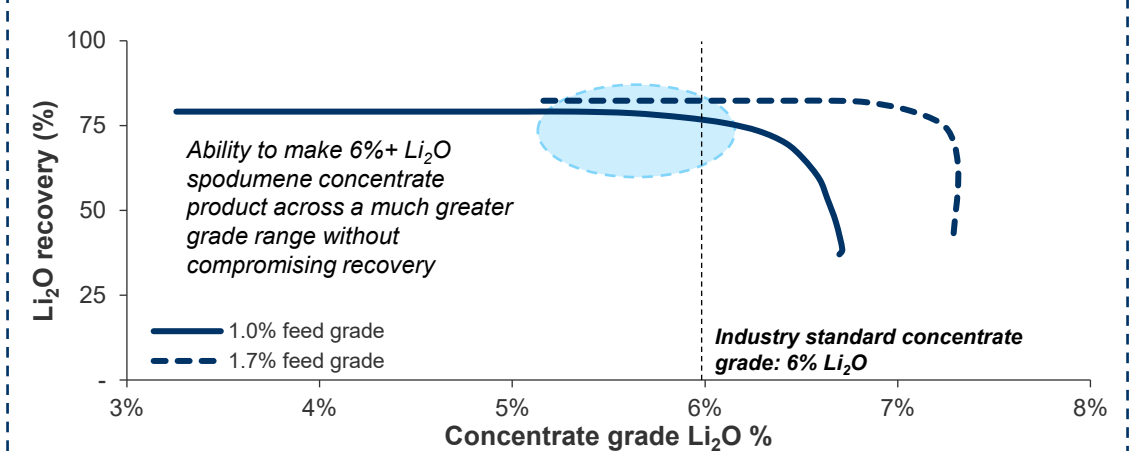
- ✓ **Reduces operational challenges** associated with DMS or DMS-flotation processing methods
- ✓ Significantly **improves consistency of recoveries**
- ✓ **Enhances flexibility** to vary head grade and produce a 6% concentrate product without compromising recovery performance

## Kathleen Valley Ore Processing Analysis - Supported by 100's of float tests and variability analyses

### Industry approach: Dense media separation + flotation



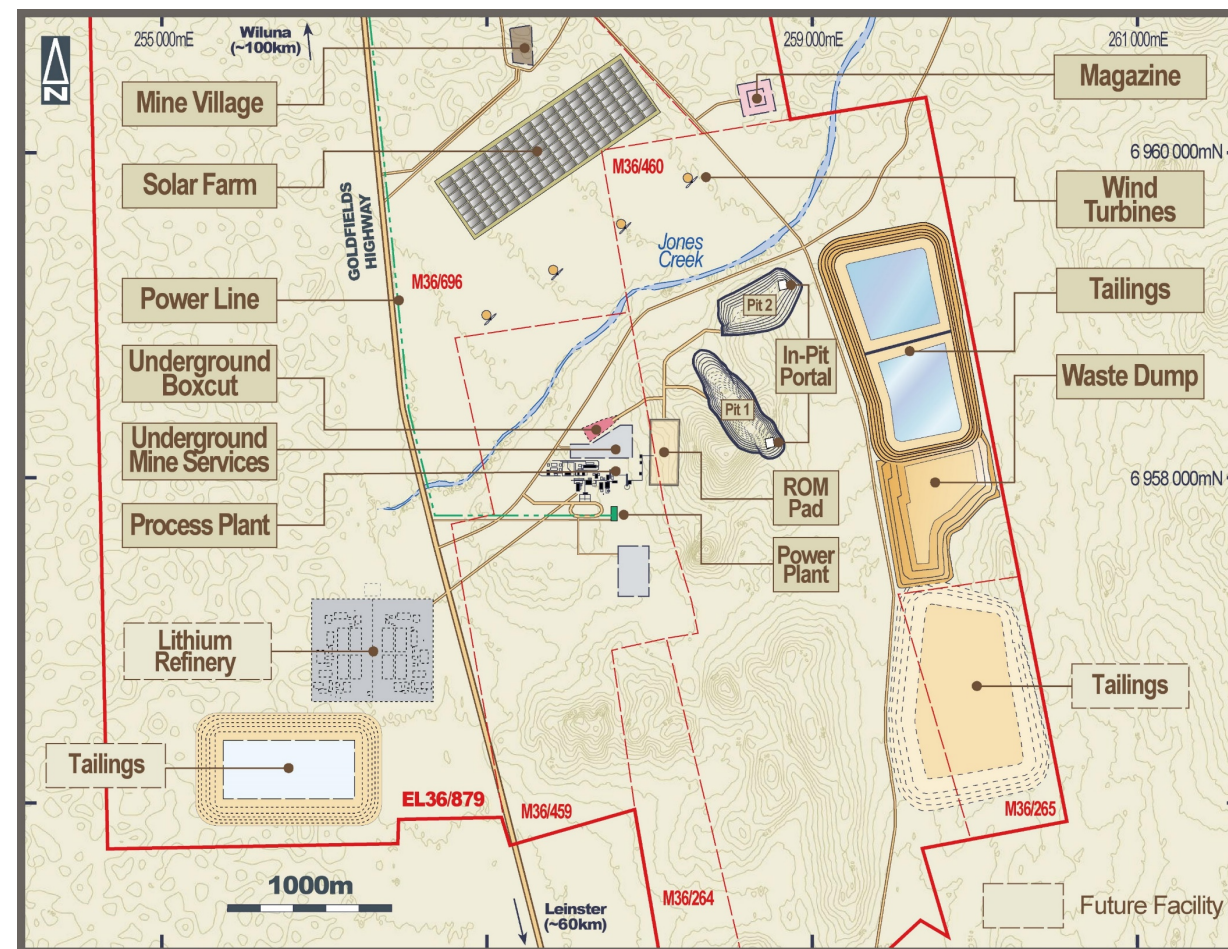
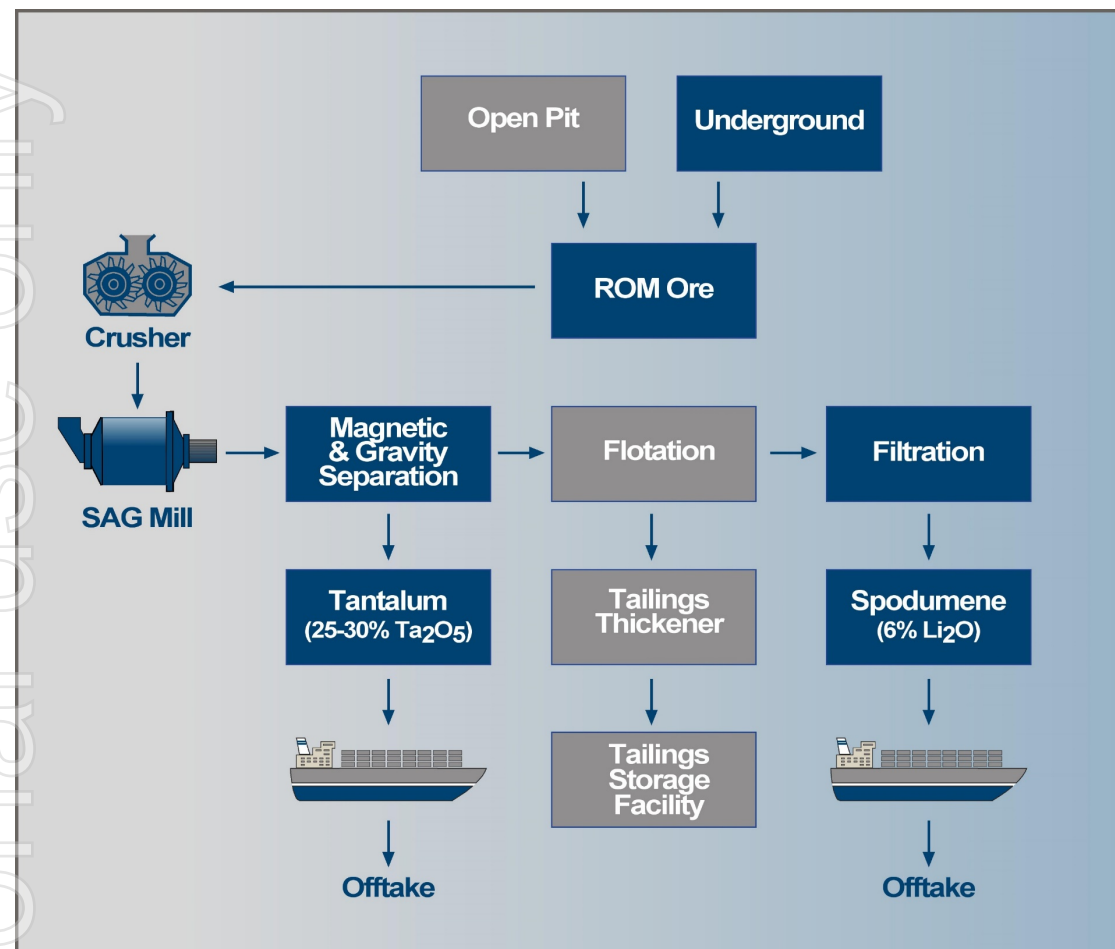
### Liontown's approach: Whole-of-ore flotation only





# Plant flowsheet and schematic

Minimising land disturbance and surface waste disposal

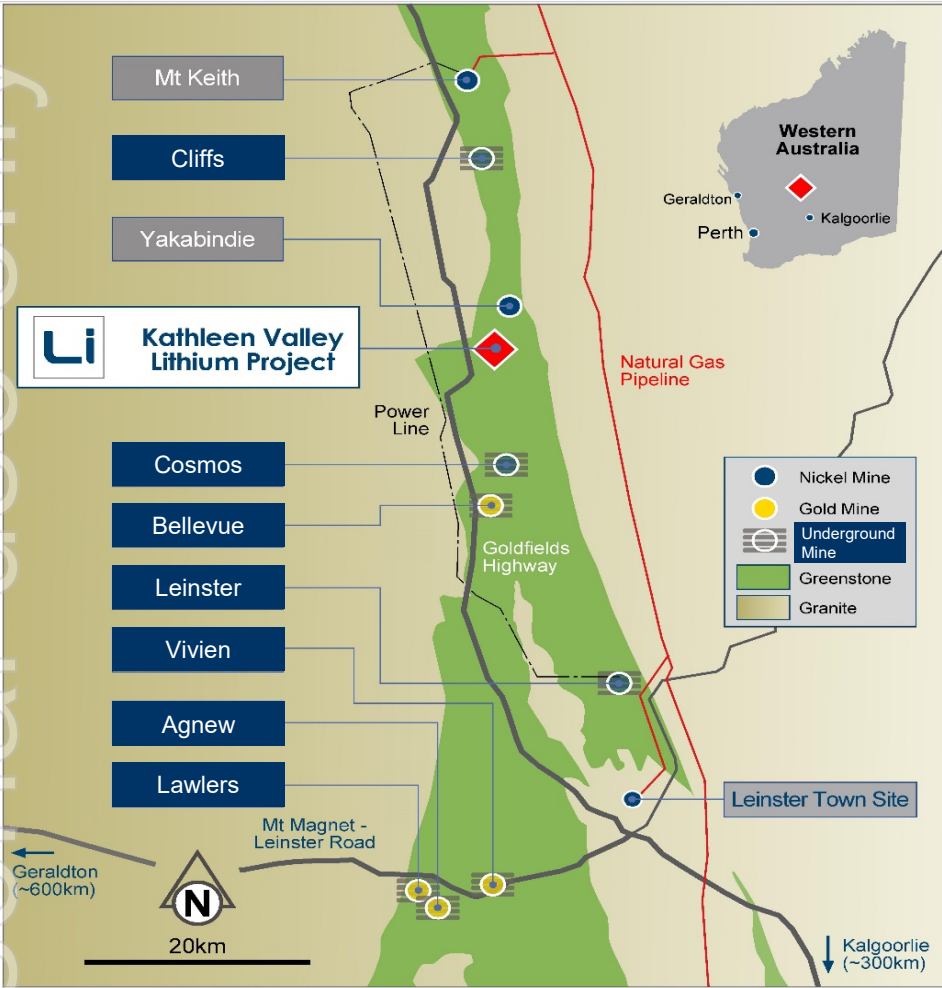






# Location and Infrastructure

Kathleen Valley is located within a well serviced and highly active mining region



Major Nickel and Gold Mines



Town of Leinster



Goldfields Highway (access to Geraldton port)



Natural gas pipeline

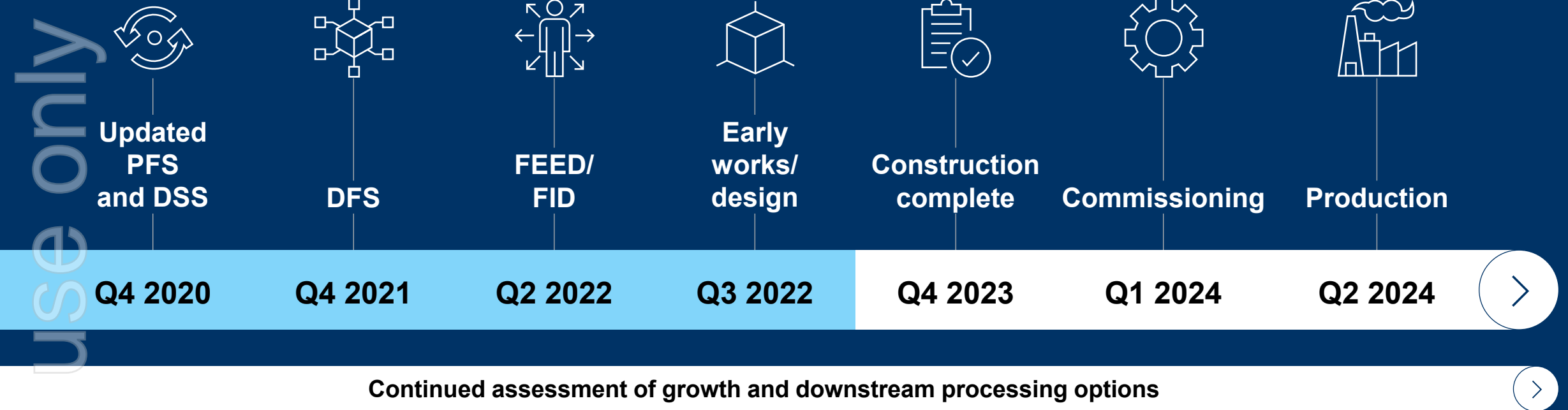


Powerline



Sealed airstrips

# We aim to accelerate the schedule to meet 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

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



## Delivering Kathleen Valley development project

- Revised mine schedule with significantly greater underground ore focus, decreasing surface footprint / waste dumps
- All key environmental site-based studies / investigations
- Large volume metallurgical test work to DFS level including locked cycle flotation
- Revised, simpler processing flowsheet, namely in the crushing and milling areas
- Optimisation work to further improve base nameplate throughput above 2Mtpa with clear strategy to expand further capacity
- Pilot plant is currently being set up to produce 1 tonne of 6%+  $\text{Li}_2\text{O}$  concentrate – to be used for customer prequalification and downstream refining test work

## 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**

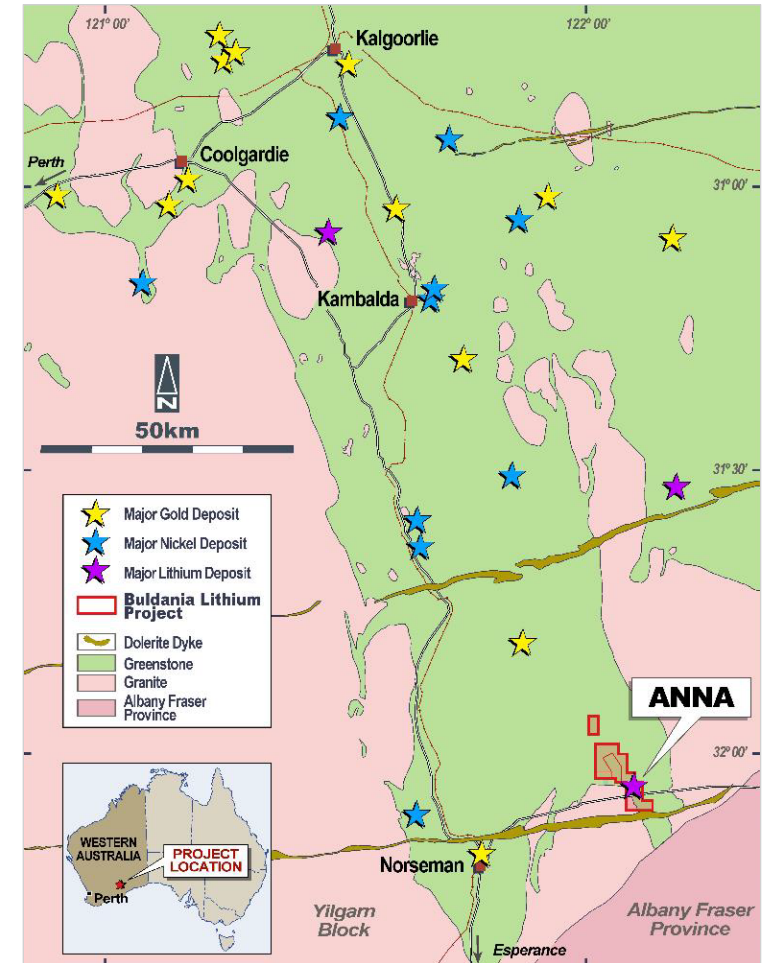
# Buldania Overview



## 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 – new drilling programme underway
- 3 Similar geology to the Mt Marion and Bald Hill lithium deposits (71Mt and 26Mt 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

1: Mt Marion – Refer to Peer Comparison table in Appendix 1.  
2: Bald Hill source: <http://www.allianceminerals.com.au/projects/>





# Marketing

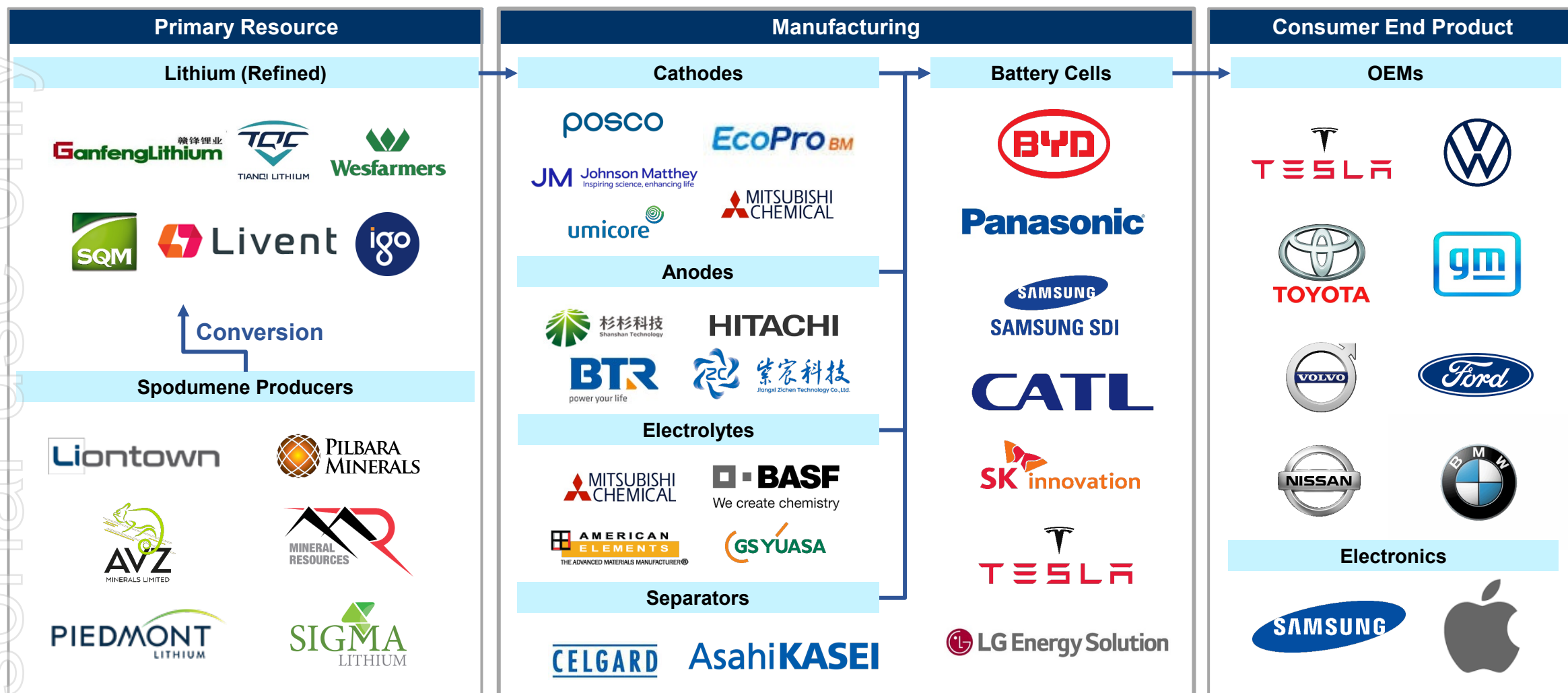




# Li-ion Battery Value Chain Overview



Spodumene producers such as Lontown form an integral part of the global li-ion battery value chain, with ultimate end users including major global automotive original equipment manufacturers (“OEMs”, ~85% of 2025 forecast li-ion demand) and consumer electronics producers (~5% of 2025 forecast demand)



**Note:** Parties listed in each step of supply chain are non-exhaustive

# Offtake Strategy

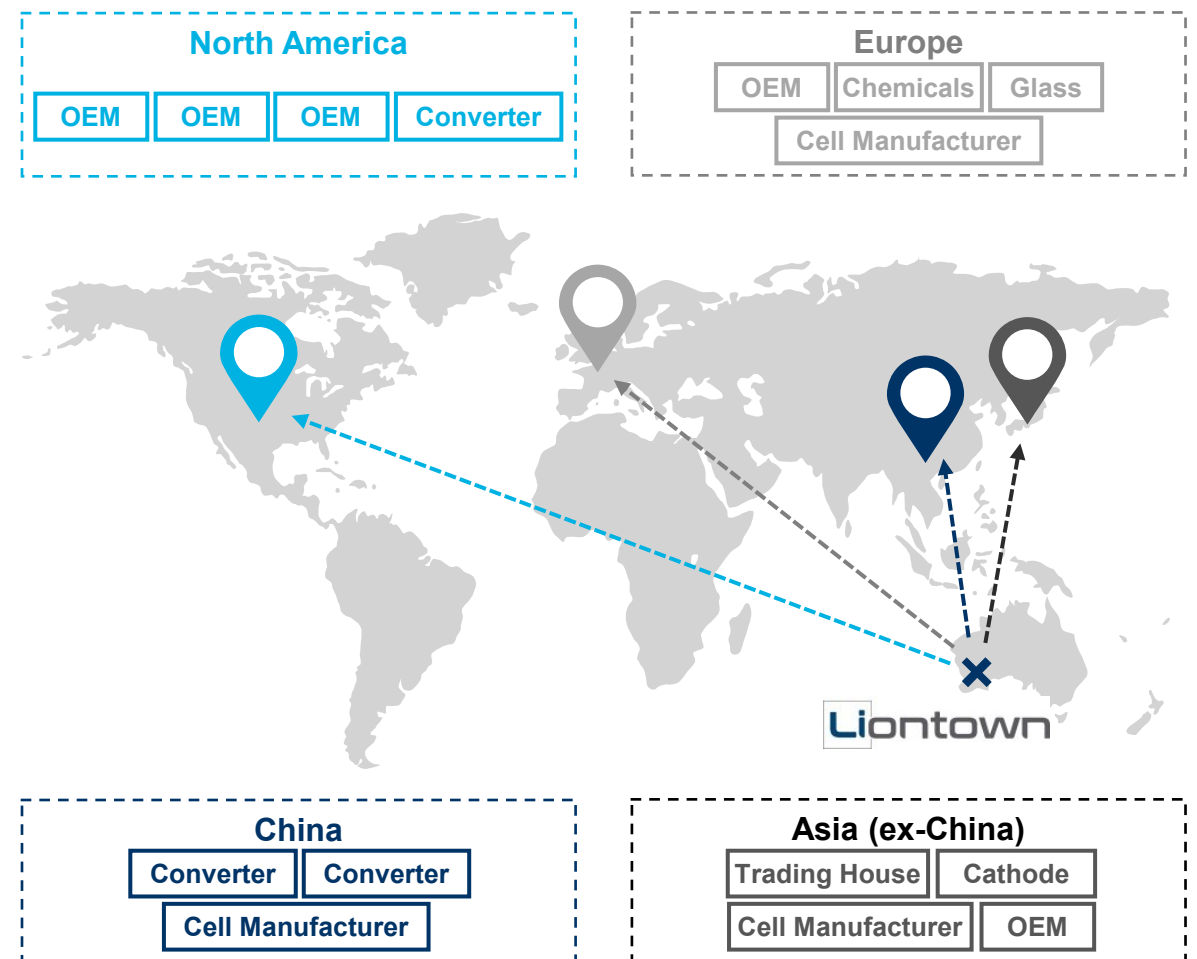
Liontown intends to put in place large foundation offtake agreements, aiming to deliver diversification by geography and stage in value chain.



## Offtake Strategy

- Liontown has engaged with in excess of 50 parties who have expressed interest in offtake
- Liontown's key considerations for offtake agreements are:
  - 1 Committing a large proportion of production to key foundational customers, but retain spare capacity to sell into spot markets and/or use as feedstock for any downstream operations
  - 2 Having some diversity of end customers, both across the supply chain as well as geography
  - 3 Duration of spodumene offtakes to provide customers with guaranteed security of supply from a Tier 1 jurisdiction
- It is anticipated that offtake agreements would commence as spodumene only, with the potential to shift to lithium hydroxide in the future if downstream processing capability is developed
- Offtake for tantalum by-product is also being explored with customers
- Any uncontracted production (expected c. 10 – 15%) will be sold into the spot market – various options are being explored, including auction platforms (such as the Battery Mineral Exchange, where other spodumene producers have recently achieved outstanding results)

## Geographic Breakdown and Indicative Target Customers



# Liontown Investment Proposition - Recap



## **Strong Lithium market fundamentals – supply gap from 2024**

### **Some of the best undeveloped spodumene deposits located in a reliable mining jurisdiction**

- Kathleen Valley – large, high grade and competitive cost structure
- Buldania – further potential to build on current resources

### **Well defined plan for development of the deposits**

- Strong ESG credentials - small environmental footprint
- Releasing DFS in Q4 2021

### **Developing and preserving valuable options**

- Full optionality tonnes
- Studying further value add opportunities - Refining

# Thank You

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

For More Information:

Tony Ottaviano

Managing Director

T: +61 8 6186 4600

[info@ltresources.com.au](mailto:info@ltresources.com.au)

Investor Relations:

Nicholas Read

Read Corporate

T: +61 8 9388 1474

[nicholas@readcorporate.com.au](mailto:nicholas@readcorporate.com.au)

[@LiontownRes](https://twitter.com/LiontownRes)



[liontown-resources-limited](https://www.linkedin.com/company/liontown-resources-limited)



# APPENDIX 1



Kathleen Valley Project  
Additional Information







# 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
	Buldania	Scoping	0.0	9.1	5.9	14.9	0.97	ASX Release 8/11/2019
Pilbara Minerals	Pilgangoora	Operating	21.5	188.7	98.8	308.9	1.14	ASX Release 6/10/2021
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	ASX Release 26/07/2021
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)
Orocobre	Mt Cattlin (100%)	Operating	0.3	7.8	2.9	11.0	1.20	ASX Release 3/06/2021 (Galaxy)



# Peer Comparison Information

## Global hard rock (spodumene) underground Reserves

Company	Code	Project name	Announcement title	Announcement date	UG Reserve (Mt)	UG Li <sub>2</sub> O%	UG LCE (Mt) <sup>1</sup>
Core Lithium	CXO	Finniss	Stage 1 DFS and Updated Ore Reserves	26 July 2021	4.2	1.30%	0.1
EMH	EMH	Cinovec	Quarterly Activities Report – March 2021	30 April 2021	34.5	0.65%	0.6
European Lithium	EUR	Wolfsberg	European Lithium Completes Positive PFS	5 April 2018	7.4	0.71%	0.1
Keliber Oy / Sibanye	Private	Keliber	Company Website	28 July 2021	2.8	0.90%	0.1
Liontown	LTR	Kathleen Valley	Updated Kathleen Valley PFS	9 October 2020	41.5	1.50%	1.5
Nemaska Lithium	Private	Whabouchi	N 43-101 Technical Report for Whabouchi Lithium Mine	31 May 2019	8.7	1.21%	0.3
Rio Tinto	RIO	Jadar	Jadar Project Ore Reserves and Mineral Resources	10 December 2020	16.6	1.81%	0.7

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



# 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)		

$$F4 = B9 * ((B2) / (B3 / B7)) * (B4 / B5) * 2204 * 0.0001$$

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

## APPENDIX 2



Net-Zero definition

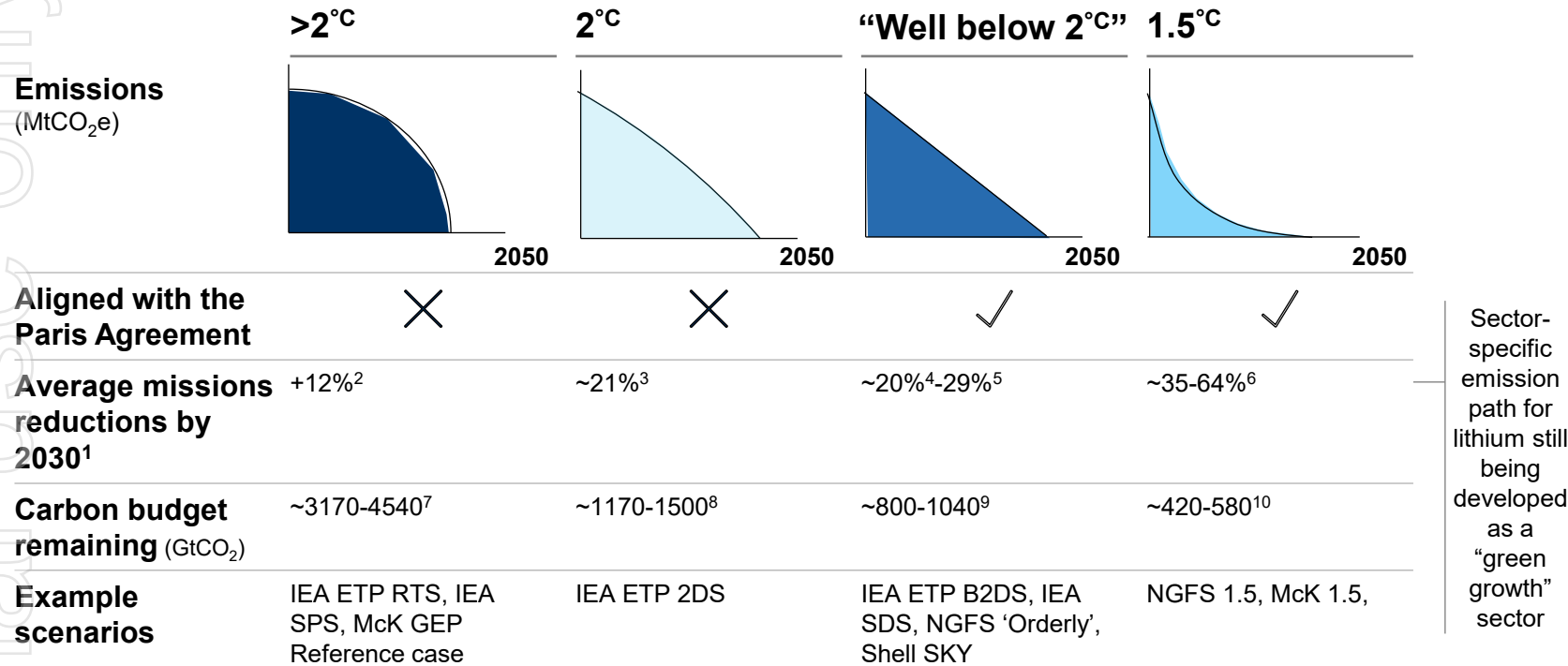


# Liontown will firm up its net-zero trajectory aspiration before FID

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 2C, at 67<sup>th</sup> and 50<sup>th</sup> percentile | 9: IPCC SR15 report, budget starting from 2018, for 1.75C, at 67<sup>th</sup> and 50<sup>th</sup> percentile | 10: IPCC SR15 report, budget starting from 2018, for 1.5C, at 67<sup>th</sup> and 50<sup>th</sup> percentile