Liontown

ASX : LTR

ASX ANNOUNCEMENT

2nd December 2019

Kathleen Valley Pre-Feasibility Study confirms potential for robust new long-life open pit lithium mine in WA

Sets strong foundation for Liontown to become a next-generation Australian lithium producer

- **Pre-Feasibility Study (PFS) confirms technical and financial viability of a standalone 2 Mtpa mining and processing operation at Liontown's 100%-owned Kathleen Valley Lithium Project, located in the Eastern Goldfields of WA.**
- **Forecast average steady state production of 295 ktpa of +6% spodumene concentrate.**
- **Maiden Ore Reserve of 50.4 Mt @ 1.2% Li_2O.**
- **Current Ore Reserve underpins a 26-year mine life with further growth expected from an ongoing 15,000-25,000 m drilling program, the results of which will be incorporated into an updated Mineral Resource Estimate and subsequent Definitive Feasibility Study (DFS).**
- **Metallurgical test work confirms the ability to produce a +6% Li_2O spodumene concentrate with an estimated recovery of 76%.**
- **The Project is located on granted Mining Leases in an established, well-serviced mining district, close to existing transport and energy infrastructure.**
- **Financial outcomes of the PFS include:**
    - **LOM free cash flow after-tax of A$1.94B (averaging ~A$84M per annum during production);**
    - **Project payback of approximately 4 years post production;**
    - **Post-tax $NPV_{8\%(real)}$ of A$507M and IRR of 25%;**
    - **Pre-production capital expenditure of A$240.5M; and**
    - **Cash costs[1] of A$564/dmt Li_2O concentrate (excluding tantalum credits).**
- **First production expected to commence in 2024, when demand for lithium is anticipated to accelerate significantly due to the strong forecast take-up of electric vehicles globally.**
- **Opportunities to improve financial metrics include:**
    - **Additional revenue from recovery of tantalum, which will be determined as part of the DFS. Preliminary testwork shows good potential to recover a saleable product;**
    - **Potential for a significantly larger Ore Reserve based on recent drilling which confirms that thick, continuous, high-grade mineralisation extends well beyond the current Mineral Resource; and**
    - **Future integration of a potential underground operation to expand annual production and bring forward higher grade material from an expanded Mineral Resource.**

[1] Cash operating costs include all mining, processing, transport, state and private royalties, freight to port, port costs and site administration and overhead costs

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Liontown Resources Limited (ASX: LTR; "Liontown" or "Company") is pleased to advise that it has taken a further important step towards its objective of becoming an Australian lithium producer following the completion of a positive Pre-Feasibility Study (PFS) and maiden Ore Reserve for its 100%-owned **Kathleen Valley Lithium Project** in Western Australia.

The robust financial outcomes of the PFS reflect the Project's scale, grade, product quality and location close to established, modern infrastructure with the Study establishing a strong foundation for further growth, optimisation and project upside.

The engagement of highly experienced, independent consultants ensured that the PFS was completed to a high standard.

The PFS includes a maiden Ore Reserve of **50.4 Mt @ 1.2% Li_2O** which will underpin a 2 Mtpa mining and processing operation over a 26-year mine life. The Reserve was based on the updated Mineral Resource Estimate published in July 2019 of 74.9 Mt @ 1.3% Li_2O and 140ppm Ta_2O_5.

There is considerable potential to extend the mine life and/or increase the annual production rate with recent results from an ongoing resource expansion drilling program extending thick, high-grade mineralisation at least 400m along strike from the Mineral Resource.

It is envisaged that the financial outcomes demonstrated in the PFS will be further enhanced with the inclusion of a tantalum circuit and an optimised mine plan including potential underground operations that would allow early access to high-grade mineralisation and the opportunity to increase production. These will be considered as part of future feasibility studies.

Liontown's Managing Director, David Richards, said: *"This high-quality Pre-Feasibility Study builds on the Scoping Study completed earlier this year. It provides investors with a snapshot of what we are confident will be the first of a new-generation of Australian hard rock lithium projects, timed to benefit from the next wave of lithium demand.*

"The PFS outlines a robust 2Mtpa project capable of delivering strong financial returns from an initial open pit mining operation. It will allow us to move into a Definitive Feasibility Study that will be based on an updated Mineral Resource and Ore Reserve that reflects the results of our ongoing drilling success and will also include other important project optimisations and enhancements.

"Kathleen Valley has all the ingredients to underpin a world-class battery metals business that we believe will deliver substantial returns and value for our shareholders for many decades to come."

Kathleen Valley PFS – Project Background

The 100%-owned Kathleen Valley Lithium Project is located on four granted Mining Licences approximately 680 km north-east of Perth and 400km north of Kalgoorlie in the Eastern Goldfields of Western Australia (***Figure 1***). The Project is readily accessible by sealed highways which connect with mineral exporting ports at Geraldton and Esperance.

Other infrastructure located close to the Project includes a power line, a natural gas pipeline and mine camps with sealed airstrips capable of taking large passenger aircraft.

Lycopodium Minerals Pty Ltd supervised the PFS testwork programme and compiled the Study which has been completed with the assistance of a highly experienced and reputable group of independent consultants, including:

- Optiro Pty Ltd – Geology and Resources
- Orelogy Consulting Pty Ltd – Optimisation and Mining
- ALS metallurgy – Process Testwork
- Lycopodium Minerals Pty Ltd – Process and Infrastructure Design, CAPEX and OPEX
- Knight Piesold – Tailings Management Facilities
- AQ2 – Hydrology and hydrogeology
- MBS– Environmental

The PFS studied the establishment of a 2 Mtpa mining and processing operation delivering 295 ktpa of spodumene concentrate in full production. Following conventional open pit mining and delivery to the Run-of-Mine pad, ore will be processed to concentrate the lithium. Concentrates will then be transported in bulk for delivery to downstream customers. ***Figure 2*** shows the proposed site layout including mining areas, processing facilities and non-process infrastructure.

Recent drilling results indicate the scale of the Resource (and therefore Reserve potential) could increase significantly possibly justifying a larger mine with higher annual production. This option will be considered as part of the DFS to be undertaken next year.

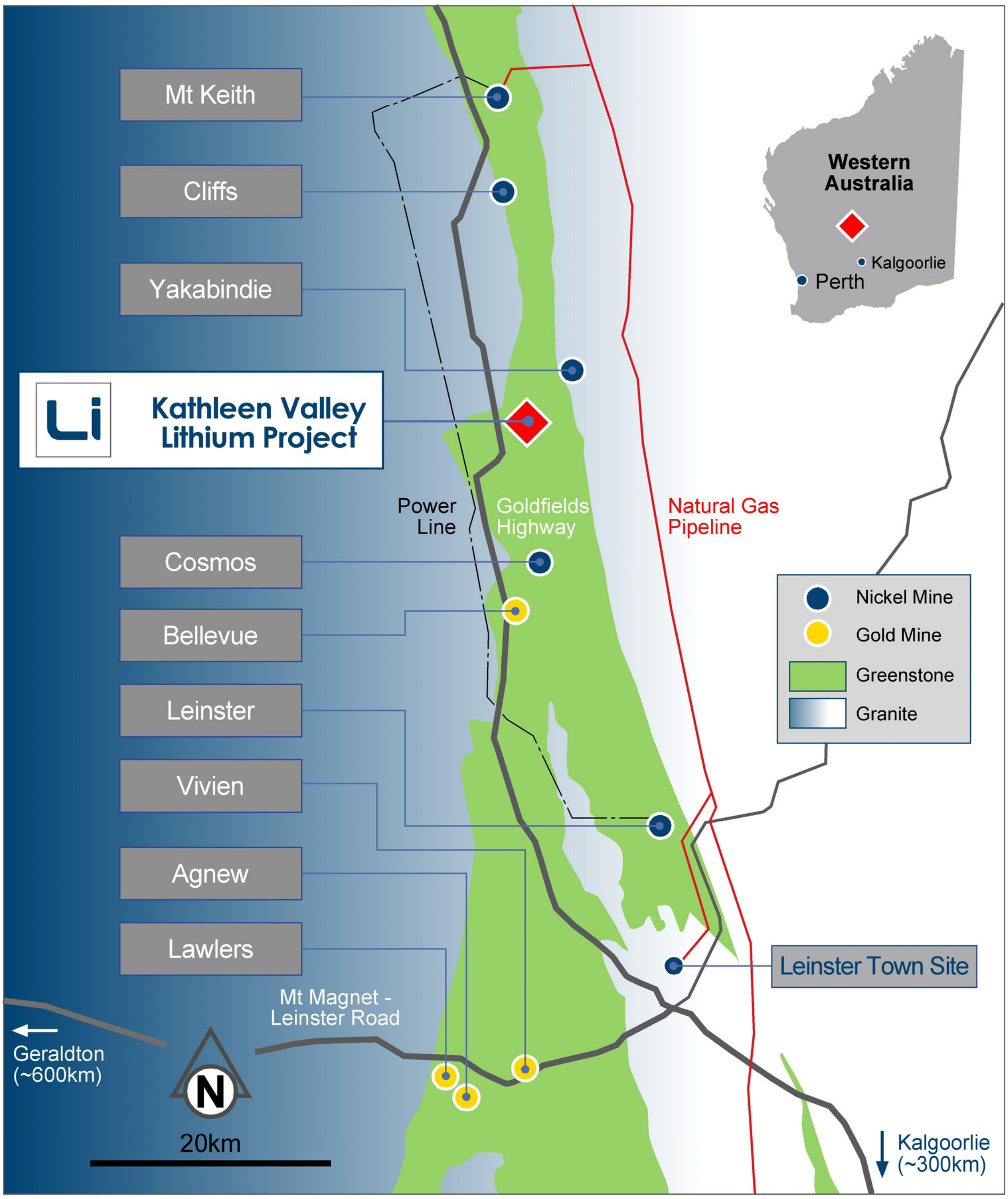

Figure 1: Kathleen Valley Project – Location, infrastructure, existing mines and regional geology

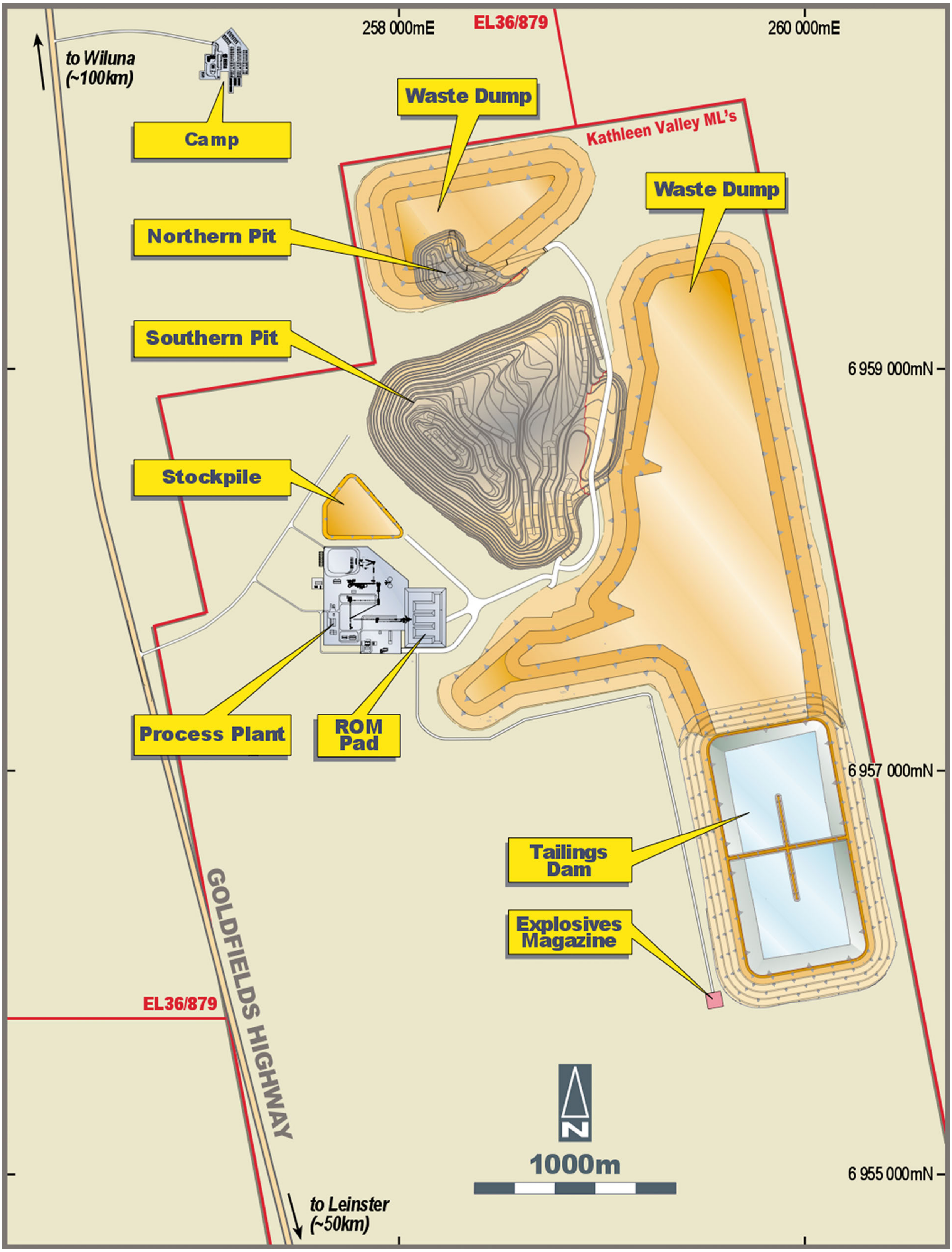

Figure 2: Kathleen Valley Project – Proposed mine site layout

Maiden Ore Reserve

Orelogy Consulting Pty Ltd was responsible for the mining component of the Kathleen Valley Lithium Project Pre-Feasibility Study. As such, Orelogy has developed a maiden Ore Reserve estimate for the Kathleen Valley open pits as at 30 November 2019 in accordance with the guidelines of the JORC Code 2012.

The Ore Reserve is based on the Mineral Resource Estimate update released on the 9th July 2019 of 74.9 Mt at 1.3% Li_20 and 140ppm Ta_2O_5. The Measured, Indicated and Inferred Mineral Resource was prepared by independent specialist resource and mining consulting group Optiro Pty Ltd ("Optiro") and is summarised in ***Table 1***.

Table 1: Kathleen Valley Project - Mineral Resource Estimate (July 2019)

Cut-off grade Li_2O %	Resource Category	Million tonnes	Li_2O %	Ta_2O_5 ppm
0.5	Measured	17.6	1.3	160
	Indicated	42.2	1.3	140
	Inferred	10.1	1.1	150
	Sub-total	69.9	1.3	150
0.7	Indicated	2.5	1.4	120
	Inferred	2.5	1.3	110
	Sub-total	5.0	1.4	110
Total		**74.9**	**1.3**	**140**

Notes:
- *Reported above a Li_2O cut-off grade of 0.5% for open pit potential (above 200 mRL) or 0.7% for underground potential (below 200 mRL).*
- *Tonnages and grades have been rounded to reflect the relative uncertainty of the estimate.*

The Mineral Resource estimate is reported and classified in accordance with the guidelines of the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code; 2012). The Mineral Resource is inclusive of the Ore Reserve.

The summary of the Ore Reserve prepared by Orelogy is shown in ***Table 2***.

Table 2: Kathleen Valley Project - Ore Reserve Estimate (November 2019)

Category	Tonnage (Mt)	Li_2O (%)	Li_2O (T)
Proved	17.1	1.2	204,000
Probable	33.3	1.2	399,600
TOTAL	**50.4**	**1.2**	**603,600**

Notes:
- *Tonnages and grades are diluted and reported above a Li_2O cut-off grade of 0.5%.*
- *Tonnages and grades have been rounded.*

Mineral Resources were converted to Ore Reserves in line with the material classifications which reflect the level of confidence within the resource estimate. The Ore Reserve reflects that portion of the Mineral Resource which can be economically extracted by open pit mining methods.

The Ore Reserve considers the modifying factors and other parameters detailed in the Appendices of this report, including but not limited to the mining, metallurgical, social, environmental, statutory and financial aspects of the Project.

Metallurgy

A total of 81 composited drill core samples were collected from across the three main areas (Mount Mann, Kathleen Corner and North) for the PFS metallurgical testwork programme. These samples include a range of grades and depths.

The metallurgical process proposed consisted of 3-stage comminution including high-pressure grinding rolls (HPGR), dense medium separation followed by flotation. This is a similar circuit to that used in several hard rock lithium mines currently operating in Western Australia. The process has been tested at PFS level in the laboratory and the overall metallurgical recovery estimated from the flowsheet testing was 76% into a spodumene concentrate grading 6.1% Li_2O and chemical grade specifications are achievable.

PFS Financial Outcomes

Based on a proposed 2Mtpa standalone mining and processing operation, the PFS has demonstrated strong financial metrics for the Kathleen Valley Project (***Table 3 / Figure 3***).

Table 3: Kathleen Valley Project – Base Case Key Metrics (Open Pit - Lithium Only)

Study Outcomes	PFS
Post-tax $NPV_{8\%}$ (real, post-tax)	**Base case NPV of A$507M**
Internal Rate of Return (IRR)	**Base case IRR of 25%**
Payback period	**4 years post production**
Life of mine (LOM)	**26 years (including ramp-up)**
Pre-production capital cost	**A$240.5M including** A$31.1M **in contingency**
Average LOM cash operating costs[1]	**~US$406/dmt** (A$564) of spodumene concentrate (excluding tantalum credits)
Average steady state production	**295 ktpa of spodumene concentrate**

[1] *Cash operating costs include all mining, processing, transport, state and private royalties, freight to port, port costs and site administration and overhead costs*

The production targets in this announcement are based solely off the reported Ore Reserves (33.93% Proved, 66.07% Probable) which have been prepared by a competent person in accordance with the requirements of the 2012 JORC Code.

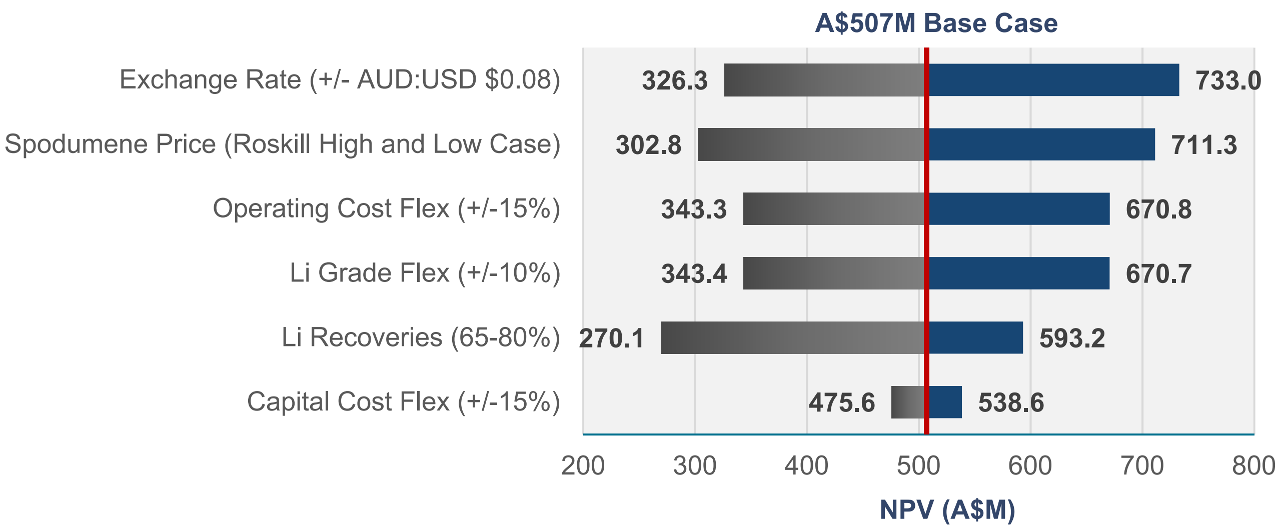

Figure 3: Kathleen Valley Project - NPV Sensitivity Analysis

The base case for the PFS assumes recovery of lithium only as the test work programme required to confirm the recovery and grade obtainable from the inclusion of a tantalum circuit is scheduled for inclusion in the DFS, set to commence during 2020. As a result, the PFS does not incorporate the potential tantalum circuit in the project capital, operating costs or revenue (as credits to operating costs). The Kathleen Valley deposit is geologically similar to operating hard rock lithium and tantalum mines in Western Australia and the production of tantalum concentrate, which is considered possible, has the potential to substantially enhance project economics.

The PFS was completed to an overall +/- 25% accuracy using the key parameters and assumptions set out in ***Table 4*** and as further outlined.

Table 4: PFS Key Parameters and Assumptions v Scoping Study (January 2019)

Parameter		
General and Economic	**PFS**	**Scoping Study**
Discount rate (real, post-tax)	8%	8%
Spodumene concentrate price (per tonne FOB Geraldton)	Roskill and Liontown Forecast (see below) resulting in a LOM average of US$690/dmt for a 6.0% Li_2O concentrate. The pro-rata 6.1% Li_2O concentrate LOM average price is US$701/dmt.	US$696/dmt for a 6.0% Li_2O concentrate. The pro-rata 5.6% Li_2O concentrate price is US$650/dmt.
Exchange rate – AUD/USD	0.72	0.72
Mining and Production		
Average Life-of-Mine strip ratio	7.7:1	8.2:1
Processing rate	2 Mtpa	2 Mtpa
Life-of-Mine Production Target	50.4 Mt ore	15.7 Mt ore
Average Li_2O grade (diluted)	1.18%	1.26%
Li_2O recoveries	76%	79%
Spodumene concentrate grade	6.1%	5.6%
Moisture content of concentrate	9%	13%
Cost Assumptions		
LOM average open pit mining costs ($/dmt ore processed)	A$35.12*	A$37.72
LOM average processing cost ($/dmt ore processed)	A$18.20	A$19.32
Logistics and transport ($/wmt concentrate)	A$77.26	A$75.65
General and admin ($/dmt ore processed)	A$4.71	A$6.01
Western Australia State royalty	5%	5%
Other royalties	3% gross sales and $0.5/t ore mined	3% gross sales and $0.5/t ore mined
Corporate tax rate	30%	30%
Estimated opening tax losses available	A$30M	A$25M

** Includes DMS tails and ROM rehandle*

6% Li_2O Spodumene Concentrate (SC6) Forecast Pricing

Spodumene concentrate is not currently sold on exchange traded markets and is largely transacted under contractual arrangements between the mining company and its customers.

Liontown has utilised the services of leading industry commodity forecasting experts Roskill for its price forecast assumptions for chemical grade spodumene concentrate (SC6 specification).

Roskill has provided annual forecast pricing through to 2040 on a real, US$/dmt CIF China basis for "Related Party" prices and "Arm's Length" prices (***Table 5 / Figure 4***). Related Party prices reflect negotiated prices between the mining company and off-take partners who, for example, may provide mine construction financing or are equity investors in the mining company. Arm's Length prices are where no related party relationship exists between the mining company and the customer.

To fund the development of the Kathleen Valley Project, there is a reasonable possibility that a proportion of the Company's production will need to be sold pursuant to one or more off-take agreements, some of which may be to Related Parties (as described above) in return for debt or equity financing. At this stage, future production from Kathleen Valley remains 100% uncommitted in order to maintain maximum flexibility over funding and development options. For the purposes of the PFS, it has been assumed that Liontown will sell 50% of its production to Related Parties and 50% on arm's length terms to unrelated parties on a yearly basis (i.e. the mid-point between the two price forecasts).

The Roskill forecast pricing for 2024 to 2040 results in an average price of US$720/dmt CIF China for the period 2024 to 2040 (noting that while the PFS extends beyond Roskill's 2040 forecasts Liontown has assumed it reasonable to use this average price as the basis from 2041 to 2050).

Liontown has further adjusted Roskill's CIF China prices to an FOB Geraldton price by deducting US$30 per tonne to reflect the estimated costs of shipping to China from Australia as the ultimate destination of spodumene concentrate produced from the Kathleen Valley Project is not known at this stage. This results in a FOB Geraldton LOM average price of US$690/dmt.

Table 5: Forecast Chemical Grade Spodumene Concentrate Prices

	Related Party*	Arms Length*	50% Related Party and 50% Arms Length	50% Related Party and 50% Arms Length
	US$ CIF China	US$ CIF China	US$ CIF China	US$FOB Australia
2019p	650	550	600	570
2020f	617	588	602	572
2021f	557	624	590	560
2022f	583	677	630	600
2023f	589	682	636	606
2024f	695	785	740	710
2025f	778	866	822	792
2026f	710	796	753	723
2027f	695	780	738	708
2028f	673	756	714	684
2029f	626	708	667	637
2030f	637	717	677	647
2031f	640	718	679	649
2032f	734	810	772	742
2033f	674	749	711	681
2034f	601	675	638	608
2035f	632	704	668	638
2036f	654	725	690	660
2037f	675	744	710	680
2038f	702	770	736	706

2039f	721	787	754	724
2040f	738	803	771	741
2040f - 2049f			**720**	**690**

**Source: Roskill October 2019 Base Case Related Party and Arm's Length Prices 2019 – 2040*

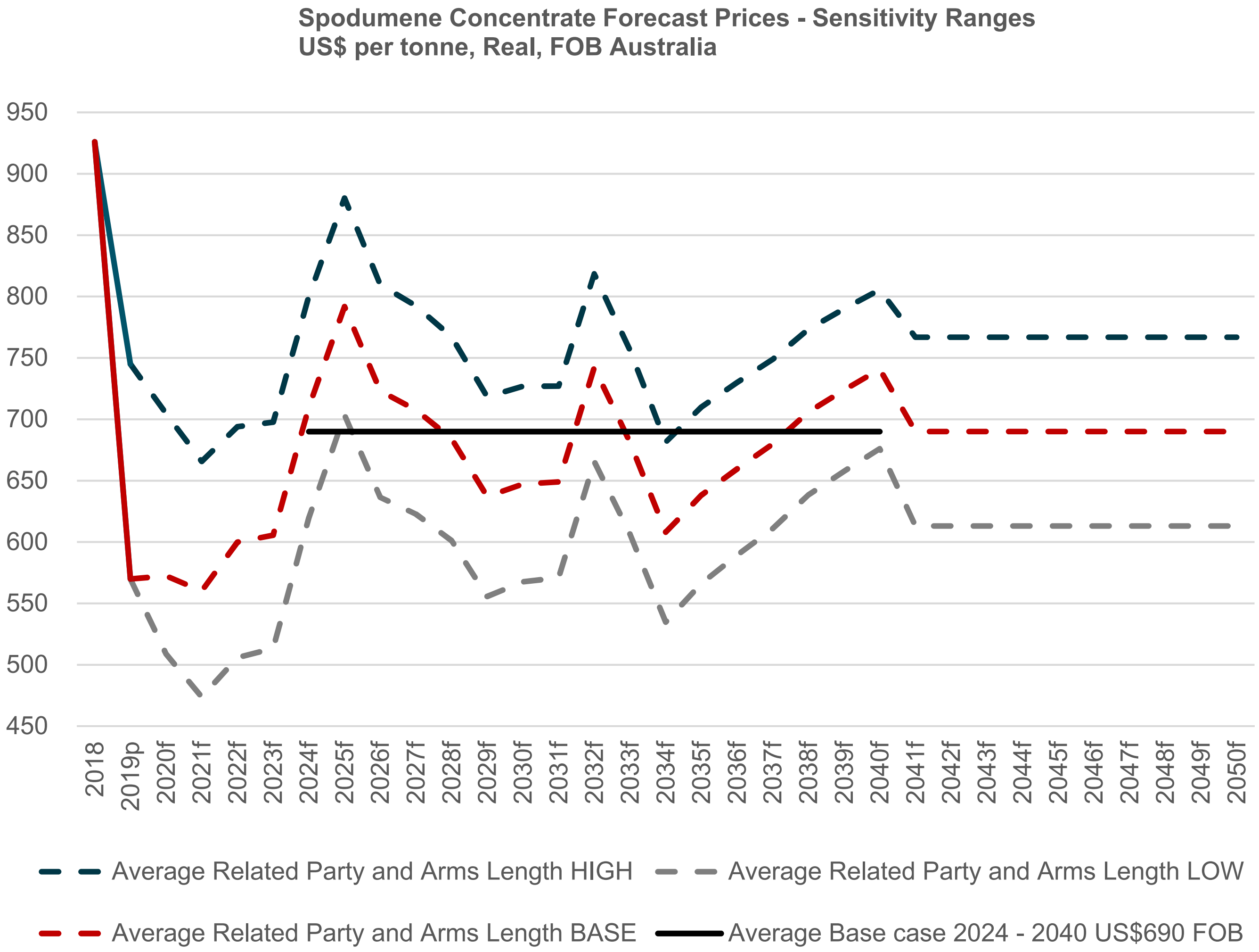

Figure 4: Chemical Grade Spodumene Concentrate Forecast Prices – High and Low case sensitivity ranges

Opportunities to Increase Project Returns

Resource Expansion

The Mineral Resource Estimate (MRE) on which the PFS is based remains open along strike and at depth and a 15,000 – 25,000 m resource expansion drilling program is in progress to test for extensions of the mineralised system.

Initial results from this drilling program (see ASX release dated 5th November 2019) have confirmed that thick, high grade mineralisation extends northward beneath shallow cover for at least 400 m beyond the current MRE, bringing the total length of the system to least 1.4 km (***Figure 5***). In addition, thick (>50 m), high grade mineralisation has been intersected down-dip of the MRE.

Prior to commencing the drilling program, Liontown defined a resource extension Exploration Target of **25 – 50 Mt @ 1.2 – 1.5% Li_2O** to test for extensions of the current MRE from the limits of previous drill data to a vertical depth of ~500m below surface (see ASX release dated 5th November 2019 for full explanation of assumptions used to estimate ranges). This Exploration Target is in addition the current

74.9 Mt MRE. *(The potential grade and tonnage of the Exploration Target is conceptual in nature and there has been insufficient exploration to estimate an expanded Mineral Resource. It is uncertain if further exploration will result in the estimation of an expanded Mineral Resource)*.

The latest drilling results indicate that the Exploration Target is achievable and that the Mineral Resource is likely to be increased significantly.

An updated MRE will be prepared in Q1/Q2 2020 and this will be incorporated into the DFS which will also consider the feasibility and economic impact of a concurrent underground mining operation. This will provide the opportunity to access the higher grade Mt Mann material through an underground operation, in the first few years of operation, reducing the size of the open pit with a commensurate reduction in strip ratio and also provides the opportunity to increase the annual mining rate.

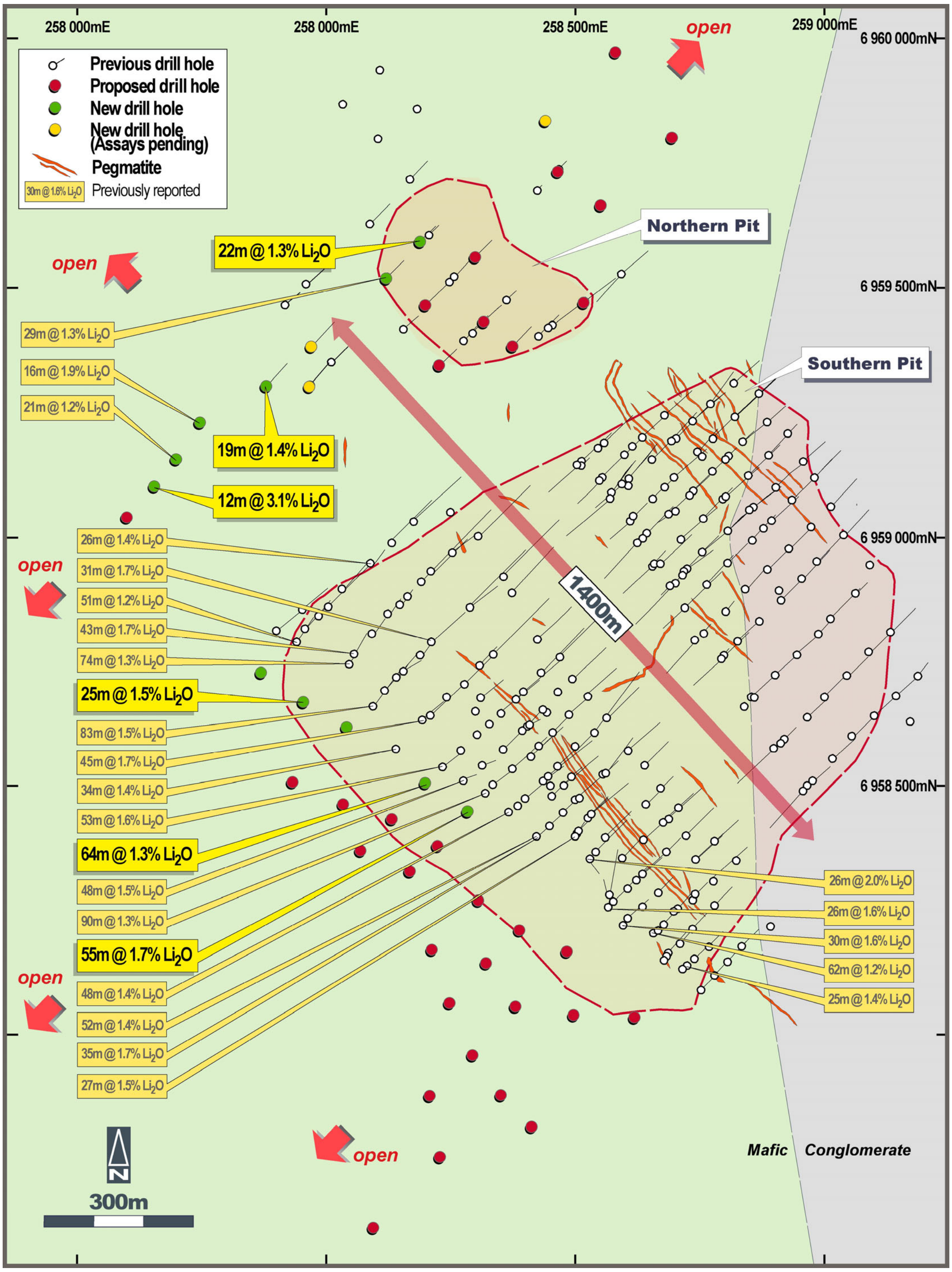

Figure 5: Kathleen Valley Project – Drill-hole plan showing better lithium intersections from current and previous drilling programs

Tantalum Production

The inclusion of wet high intensity magnetic separation (WHIMS), pre-flotation, in the PFS testwork programme successfully removed magnetic material as well as recovering and upgrading significant Ta_2O_5. A Ta_2O_5 concentrate was also produced from a flotation feed sample using a Wave Table.

Further testwork is planned to optimise the recovery of Ta_2O_5 through magnetic and gravity separation in subsequent metallurgical programmes.

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2 December 2019

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Competent person statements

The Information in this report that relates to Exploration Results and Targets is based on and fairly represents information and supporting documentation prepared by Mr David Richards, who is a Competent Person and a member of the Australasian Institute of Geoscientists (AIG). Mr Richards is a full-time employee of the company. Mr Richards has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activities being 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 Richards consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The Information in this report that relates to Mineral Resources for the Kathleen Valley Project is extracted from the ASX announcement "Kathleen Valley Lithium Resource jumps 353% to 74.9Mt @ 1.3% Li_2O" released on the 9th July 2019 which is available on 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 previous market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

The information in this report that relates to metallurgical test work for the Kathleen Valley Project has been reviewed by Mr Aidan Ryan who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Ryan is an employee of Lycopodium Minerals Pty Ltd and has sufficient experience relevant to the style of processing response and type of deposit under consideration, and to the activities 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 Ryan consents to the inclusion in the report of a summary based upon his information in the form and context in which it appears.

The information in this report that relates to Ore Reserves for the Kathleen Valley Project is based and fairly represents information compiled by Mr Jake Fitzsimons who is employed by Orelogy Group Pty Ltd. Mr Jake Fitzsimons, who is a Member of the Australasian Institute of Mining and Metallurgy has sufficient experience relevant to the style of mineralisation and type of deposit under consideration, and to the activities 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 Fitzsimons consents to the inclusion in the report of a summary based upon his information in the form and context in which it appears.

Forward-looking statements

This report 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 report, 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 report 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 report, except where required by law or the ASX listing rules.

KATHLEEN VALLEY LITHIUM AND TANTALUM PROJECT

Kathleen Valley Open Pit PFS

Material Assumptions and Additional Information

1. Geology and Mineral Resources

The Kathleen Valley Lithium Project is located on the western edge of the Norseman-Wiluna Greenstone Belt within the Archaean Yilgarn Craton of Western Australia. The belt consists of dominantly mafic and ultramafic volcanics as well as considerable volumes of clastic sediments, minor felsic volcanics, and differentiated gabbros. The greenstones in the Kathleen Valley area have been metamorphosed to upper greenschist-lower amphibolite facies metamorphic grades and include tholeiitic lavas, differentiated gabbroic sills and ultramafic chlorite schists.

Lithium mineralisation is hosted within spodumene-bearing pegmatites, which are part of a series of LCT-type rare metal pegmatites that intrude mafic and sedimentary rocks in the region.

Seventeen mineralised pegmatites have been identified at the Kathleen Valley Project hosted by two, outcropping, NW/SE trending pegmatite swarms – a shallowly-dipping, north-eastern swarm (Kathleen's Corner), which contains approximately 80% of the pegmatites, and a steeper dipping south-western swarm (Mt Mann). The two swarms are interpreted to merge at depth to form a single, thick, moderately dipping mineralised body which remains open down-dip and along strike.

The Measured, Indicated and Inferred Mineral Resource, which was prepared by independent specialist resource and mining consulting group Optiro Pty Ltd ("Optiro"), comprises 74.9 Mt @ 1.3% Li_2O and 140ppm Ta_2O_5 and is set out in ***Table 6***.

Table 6: Kathleen Valley Mineral Resource as at July 2019

Cut-off grade Li_2O %	Resource Category	Million tonnes	Li_2O %	Ta_2O_5 ppm
0.5	Measured	17.6	1.3	160
	Indicated	42.2	1.3	140
	Inferred	10.1	1.1	150
	Sub-total	69.9	1.3	150
0.7	Indicated	2.5	1.4	120
	Inferred	2.5	1.3	110
	Sub-total	5.0	1.4	110
Total		**74.9**	**1.3**	**140**

Notes:
- *Reported above a Li_2O cut-off grade of 0.5% for open pit potential (above 200 mRL) or 0.7% for underground potential (below 200 mRL).*
- *Tonnages and grades have been rounded to reflect the relative uncertainty of the estimate.*

The Mineral Resource estimate has been prepared by a Competent Person and is reported and classified in accordance with the guidelines of the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code; 2012).

The Project is not sensitive to cut-off grade (***Table 7***) due to the style of mineralisation which is hosted by visually discrete pegmatites. A cut-off grade of 0.5% Li_2O has been applied based on similar operations in Western Australia.

Table 7: Mineral resource reported by Li_2O % cut-off grades

Cut-off Li_2O %	Open pit potential above 200mRL			Underground potential below 200mRL		
	Million tonnes	Li_2O %	Ta_2O_5 ppm	Million tonnes	Li_2O %	Ta_2O_5 ppm
0.3	70.2	1.3	150	5.1	1.4	110
0.4	70.1	1.3	150	5.1	1.4	110
0.5	69.9	1.3	150	5.1	1.4	110
0.6	69.3	1.3	150	5.1	1.4	110
0.7	68.1	1.3	150	5.0	1.4	110
0.8	65.6	1.3	150	4.9	1.4	110
0.9	61.8	1.3	150	4.7	1.4	110
1.0	56.4	1.4	150	4.4	1.4	110

2. Mining and Production

Orelogy completed a mining study for open pit mining of the Kathleen Valley Lithium deposit based on the July 2019 Resource model. The goal of the mining study was to generate a robust project mining strategy and produce a mineable ore reserve.

Mining Method

A conventional open pit mining method using 200-300 t excavators and 130 t rigid dump trucks was selected as the preferred mining method. Experienced mining contractors will undertake all aspects of the mining operation. Supervision, grade control and planning will be undertaken by an Owner's team. All material will be blasted. Bulk waste will be blasted on 12 m benches and the ore zones will be blasted on 6 m benches and mined in two flitches with ore delivered to blend fingers on the ROM pad.

Optimisation

To establish mineable quantities, a number of open pit optimisations were completed on the Resource model after applying ore loss and dilution to the edges of the mineralisation. The optimisations only considered Measured and Indicated materials, excluded the Jones Creek watercourse and applied pricing, recoveries and other modifying factors.

The shell selection was based on the business objectives of maximising the discounted cash flow whilst providing sufficient mine life in the PFS, to meet the market expectations of an attractive mine life to potential off take partners. As a result, the shell selected was based on a revenue factor of 0.9 providing for a mine life of 26 years. This decision was supported by the knowledge that ongoing resource drilling would result in a new resource estimate for the DFS.

Open Pit Mine Design

The open pit designs contain a total of 50.4 Mt of ore, at a diluted grade of 1.2% Li_2O. The pits contain 385 Mt of waste material for an average strip ratio of 7.7:1.

The proposed pit outline and overall site layout for the Kathleen Valley Project is illustrated in Figure 2. The mining schedule has been developed in stages to meet ore targets and the opportunity for the back-filling of the two pits, wherever possible. It is proposed that the eastern section of the southern pit is partially back-filled and the northern pit completely back-filled with the northern waste dump extended over the mined-out pit to a height of 60 m.

Mine Production Schedule

The proposed mine schedule for the Kathleen Valley Project is shown below in ***Figure 6***. The mining rate of ~ 28 Mtpa for the first 12 years reduces to ~ 14 Mtpa for 3 years and then ~ 7 Mtpa for the remaining 10 years.

Based on a 3 panel fly in/fly out roster with 14 days on, 7 days off, a 2-digger fleet with approximately 140 contract mining operations, maintenance and supervision personnel will be required for the first 12 years of the Project reducing to approximately 70 personnel for the final 10 years.

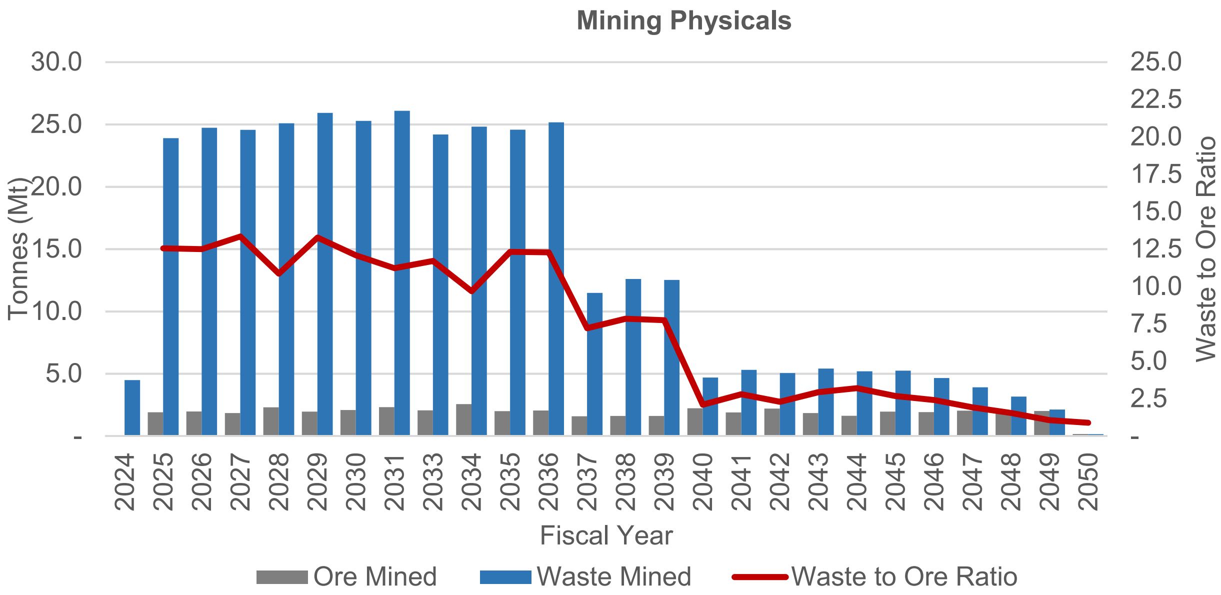

Figure 6: Mining schedule and waste to ore ratio by year

Figure 7 details the annualised processing physicals and shows the anticipated ramp-up in production in 2025 before full capacity is maintained from 2026 until 2050. The schedule utilises blending stockpiles to smooth the grade profile for lithium presented to the processing plant.

Assuming that access to the deeper, higher grade, Mt Mann mineralisation can be achieved economically through an underground operation, then the size and depth of the Southern pit will be reduced. This would result in a commensurate reduction in strip ratio in the early years of the open pit operation as the cut back requirements to access Mt Mann would be significantly reduced.

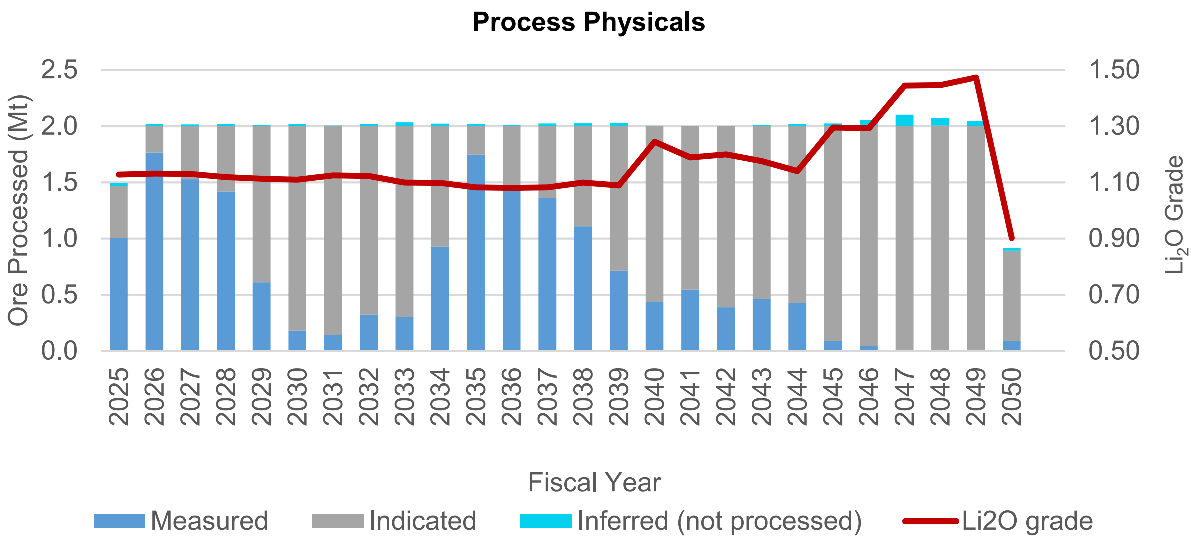

Figure 7: Annualised Mining Schedule and Li_2O Grade Profile

3. Metallurgy and Flowsheet Development

Metallurgy

A Pre-feasibility level testwork program was conducted at ALS in Perth to provide sufficient test data to develop the process design criteria for the Project.

A total of 81 samples from across the three main areas (Mount Mann, Kathleen Corner and North) were selected for the pre-feasibility study. A master composite was created for testing from these samples which are representative of the whole deposit and include a range of grades and depths and dilution. No variability testing has been undertaken at this time.

Key aspects of the metallurgical test work included the following:

- Head assay
- SMC testing on five comminution samples
- Size by size assay
- Crushing and wet screening at three sizes
- Heavy liquid separation (HLS) at three crush and screen sizes
- Dense media separation of a bulk sample
- Bond ball work index on Dense Media Separation (DMS or HMS) middlings
- Magnetic separation to remove ferrous materials
- Rougher flotation to examine collector choice, residence time, desliming and conditioning
- Cleaner flotation to examine residence time and number of stages
- Thickening of flotation and slime tailings (in progress)
- Filtration of concentrate
- Rheology of tailings

Key results indicated:

- Samples were moderately competent with comminution results similar to other pegmatites tested
- Size by size and wet screening data indicated that there was a trade off in crush size and screen size with liberation. A finer crush size increased liberation in the HLS stage but increased fines production. A crush size of 6mm was selected
- DMS testing showed a saleable concentrate with a grade of more than 6% Li_2O could be produced together with a low-grade coarse tail
- Grind optimisation of the flotation feed indicated a primary grind of 125 microns gave the best recovery and was selected for subsequent testwork
- Rougher flotation testwork indicated that a modified oleic acid collector gave the best flotation performance
- Batch cleaner flotation results indicated a saleable concentrate with a grade of more than 6% Li_2O could be produced together
- Concentrate filtration testwork, currently being finalised, has indicated that vacuum filtration will be adequate for dewatering
- Rheology testwork indicated that the tailings had low viscosity at the proposed tailings density

The overall metallurgical recovery estimated from the flowsheet testing was 76% based on a combination of dense media and batch flotation. The metallurgical process proposed is used in several Lithium projects currently operating in Western Australia. The process has been tested at pre-feasibility level in the laboratory and further work is planned at the next stage.

Test work results were used to prepare the mass balance in ***Table 8***.

Table 8: Test Work Mass Balance

	% mass	tph	Li_20%	Li_2O dist
Feed	100.00	250.00	1.26	100%
Coarse Tail	30.52	76.30	0.17	4%
Coarse concentrate	8.26	20.66	6.16	40%
Feed post DMS	61.22	153.04	1.15	56%
Slimes	8.39	20.98	0.93	6%
LIMS	0.51	1.27	1.33	1%
Float feed	52.32	130.79	1.18	49%
Float Concentrate	7.45	18.63	6.05	36%
Float Tail	44.87	112.16	0.38	13%
Total Concentrate	**15.71**	**39.28**	**6.11**	**76%**
Total Tail	84.29	210.72	0.36	24%

A bulk sample of over 4000 kg has been prepared from multiple drill core intercepts and will be used as the basis for the next phase of testing.

Flowsheet

The Kathleen Valley Project process plant consists of a mineral processing concentrator with associated services and ancillaries (***Figure 8***). The plant has been designed using robust equipment and processes. The process facilities include:

- Three-stage crushing including an HPGR
- Two-stage dense media separation to produce a primary concentrate, a coarse tail and a middling product for further treatment
- Ball milling of the middling product
- Low and high intensity magnetic separation to remove ferrous impurities
- Three-stage flotation to produce a fine concentrate and fine tails
- Thickening and filtration of the concentrate
- Coarse and fine tails disposal; and
- Reagents and Services.

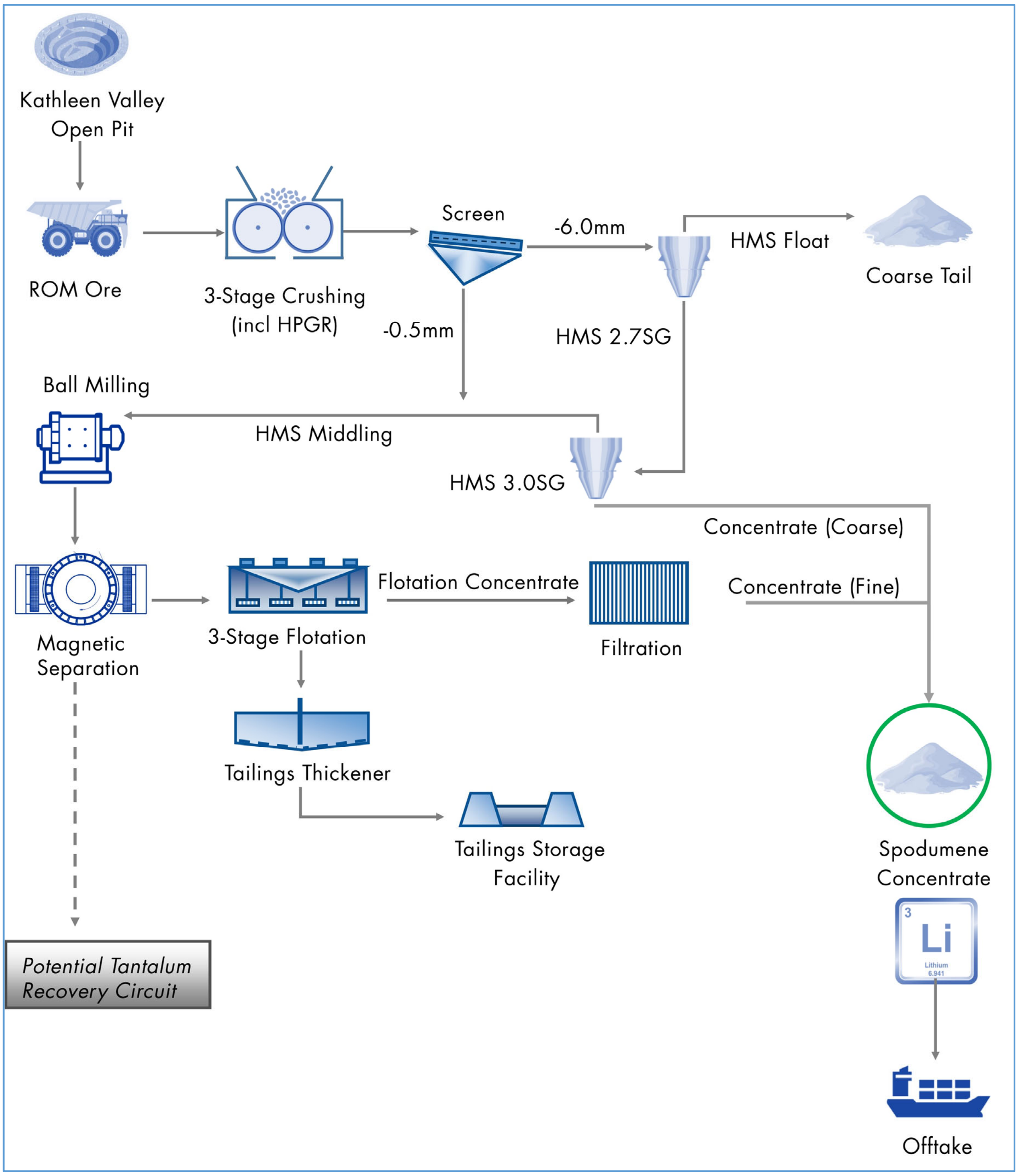

Figure 8: Kathleen Valley Project Flow Sheet

4. Site Infrastructure

Site Development and Access Roads

The sealed Goldfields Highway is ~1 km west of the proposed mine site and will provide the main access to the Project.

A new access road will connect the plant site to the Highway.

Power Supply

A 132 kV Transalta overhead power line runs adjacent to the main highway. A tee-off sub-station has been included together with a transformer to drop the voltage from 132 kV to 33 kV with an overhead powerline to an HV switch room.

Water Supply

A borefield developed adjacent to the mine has been proposed to supply the raw water demand for the process plant. This will be supplemented by water obtained from open pit dewatering and return flow from the tailings storage facility.

Accommodation

A 250-person camp complete with single rooms (with ensuite bathrooms), wet mess, dry mess and recreational facilities has been included. The camp will include sewage treatment and potable and fire water systems. It will be powered from the overhead power line.

Plant Buildings

Several plant buildings have been allowed including administration office, clinic/First Aid, plant office, ablutions, crib room, maintenance workshop, warehouse, reagent storage, laboratory and control room.

Sewage Treatment

A packaged sewage treatment plant will process wastewater on the plant site.

Mine Services

An allowance for mine services and other facilities is included on the basis of use by the selected mining contractor. A magazine with earthworks bunding has been included.

Concentrate transportation and shipping

Kathleen Valley is located adjacent to the Goldfields Highway allowing for the transport on sealed roads of lithium concentrate to the Port of Geraldton and export overseas.

5. Tailings and Water Management

Tailings Storage

The coarse tail from the DMS plant will be loaded onto trucks and placed in the waste stockpile area. The fine tail from the flotation plant will be thickened and then pumped to a separate storage facility.

Environmental testing of both waste rock and fine tails has been completed. Whilst full characterisation is still being completed, the preliminary results indicate both coarse and fine tailings are unlikely to pose a risk to the environment and as such do not require specialised storage facilities.

Water Management

Flood management

Flood modelling has shown that 1:100-year flood events do not result in the local drainage overtopping its banks in the area adjacent to the mine. Additionally, the 1 m high safety bund that is required around the open pit will add further security in reducing flooding risks.

Site surface water management

Storm water run-off around the mine area and associated infrastructure will be managed to limit the environmental impacts in the area. Flooding from adjacent streams will be controlled away from mine infrastructure (waste rock dumps, open pits, process plants, roads and mine camp infrastructure, for example). Also, run-off generated from mine infrastructure – potential “dirty water” – will be managed to make certain that any water discharged off the mine areas has no impact on the downstream environment.

Dewatering

A simple analytical groundwater model, based on data from two nearby projects indicates that pit inflows will be manageable by conventional dewatering.

Water supply

A numerical model was run to predict whether the local aquifer system was capable of supplying 32 l/s over the life of the mine while also including the open pit dewatering pumping. The predictions show the bore field will experience a drop-in supply ability from an initial 38 to 28 l/s, primarily as a result of the influence of open pit dewatering on the production bores closest to the open pits. However, the dewatering, coupled with return flow from the tailing dam and pumping of make-up water from the bore field will be able to supply the mine’s demand of 38 l/s.

6. Geotechnical

Preliminary analysis of the geotechnical drilling conducted within the proposed open pit supports the PFS pit design and the exploration drill core indicates the ground is expected to be competent and no allowance has been made to cover the risk of poor ground conditions.

Visual inspection of areas where major infrastructure is proposed to be sited supports the assumptions that no significant adverse ground conditions will be encountered during construction. Further geotechnical drilling programmes are in progress.

7. Environmental Assessment and Community

Environmental

MBS has completed the majority of the required environmental base line studies for the Project and its surrounds. At this stage the primary environmental issues would be surface water management and the potential for groundwater dependent ecosystems.

Aboriginal Heritage

The proposed mining operations overlap with registered Aboriginal Heritage sites and Liontown will need to apply for formal Section 18 (Aboriginal Heritage Act) clearance over the proposed mining area to comply with relevant government legislation.

The Company has executed a number agreements with the Tjiwarl Group, the Native Title holders at Kathleen Valley, and both parties have entered into discussions regarding future mining at the Project.

8. Financial Information

A financial evaluation was completed using the Base Case Production Target of 50.4 Mt of potential mill feed at an average mill feed grade of 1.2% Li_2O and a life of mine strip ratio of 7.7:1. ***Tables 9 – 12*** summarise the results.

Life of Mine Financials

Table 9: Life of Mine Project Cash flows

		Cash flow(A$M)
Revenues		7,185
Operating costs		(3,563)
Capital expenditure	**- pre-production**	(240)
	- sustaining	(25)
Royalties		(600)
Corporate tax		(818)
Life of Mine Project Free Cash flow (after tax)		**1,939**

Capital Expenditure

The Project capital cost estimate was compiled by Lycopodium and reflects the assumptions and parameters outlined in the PFS.

Table 10: Capital Cost Estimate Summary (A$, 4Q2019, ±25% accuracy)

Main Area	Capital (A$M)
Treatment Plant	76.174
Reagents & Plant Services	13.195
Infrastructure – general	41.235
Mining	8.512
Contractor and Construction Indirects	22.948
Subtotal	**162.064**
Management Costs	24.653
Owners Costs	22.700
Subtotal	**47.353**
Contingency	**31.080**
Project Total	**240.497**

Sustaining capital is estimated at A$24.9M over the LOM.

Operating Cost Estimate

The Project has an estimated C1 cash cost, FOB Geraldton (exclusive of royalties) of A$483/dmt (total cash operating costs of A$564/dmt) of spodumene concentrate, as detailed in ***Table 11*** below. This does not include credits for potential Tantalum concentrate produced.

Table 11: Cash Operating Cost Estimate - (+/-25% accuracy, 4Q2019)

Operating Cost	A$/dmt of Ore Processed	A$/dmt of Concentrate
Mining	35.12	239.70
Processing	18.20	124.20
Transport and logistics	12.18	83.10
General and Administration	4.71	32.10
Other	0.52	3.60
Royalties	11.91	81.30
Total Cash Operating Cost	**82.64**	**564.00**

The operating cost estimates are detailed below:

Mining Estimate

The total ore excavated for the Project is 50.4 Mt with a mining operating cost of $1,769M over the life of the mine. This equates to an average cost per tonne of ore of $35.12/dmt ore from the pit to the ROM, secondary breakage, coarse waste haulage and rehabilitation of the waste dump. These costs have been estimated assuming contractor mining.

Processing and G&A Estimate

Process plant operating cost estimates for the Project have been developed by Lycopodium based on a design treatment rate of 2 Mtpa with the plant operating 24 hours per day, 365 days per year and a 91.3% plant utilisation (nominal 8,000 hours per year). The plant operating cost estimate is summarised in ***Table 12***.

Table 12: Process and G&A Operating Cost Summary – (+/-25% accuracy, 4Q2019)

Cost Centre	A$/dmt of Ore Processed	Proportion %
Mobile Equipment	0.32	1
Labour – Processing	3.40	15
Operating Consumables	6.48	28
Power	4.28	19
Maintenance and Repairs	2.00	9
Laboratory	1.72	8
Subtotal Processing	**18.20**	**79**
Labour – Administration	1.45	6
General and Administration Cost	3.26	14
Subtotal General and Administration	**4.71**	**21**
Total	**22.91**	**100**

Transport and logistics

The PFS assumes road transport from site to Geraldton on sealed roads and highways. The indicative quotes received from transport providers covers loading and transportation from the mine site to the ship loader and includes storage and rehandling outside of the port as well as assaying and certification of product shipments. Port costs are based on the Mid West Port Authority published port fees (Geraldton).

Life of Mine Cash Flows

Figure 9 and ***Figure 10*** illustrate net cash flows after tax per annum and the revenue streams associated with the Project. This demonstrates a potential payback period of less than 4 years (from commencement of production).

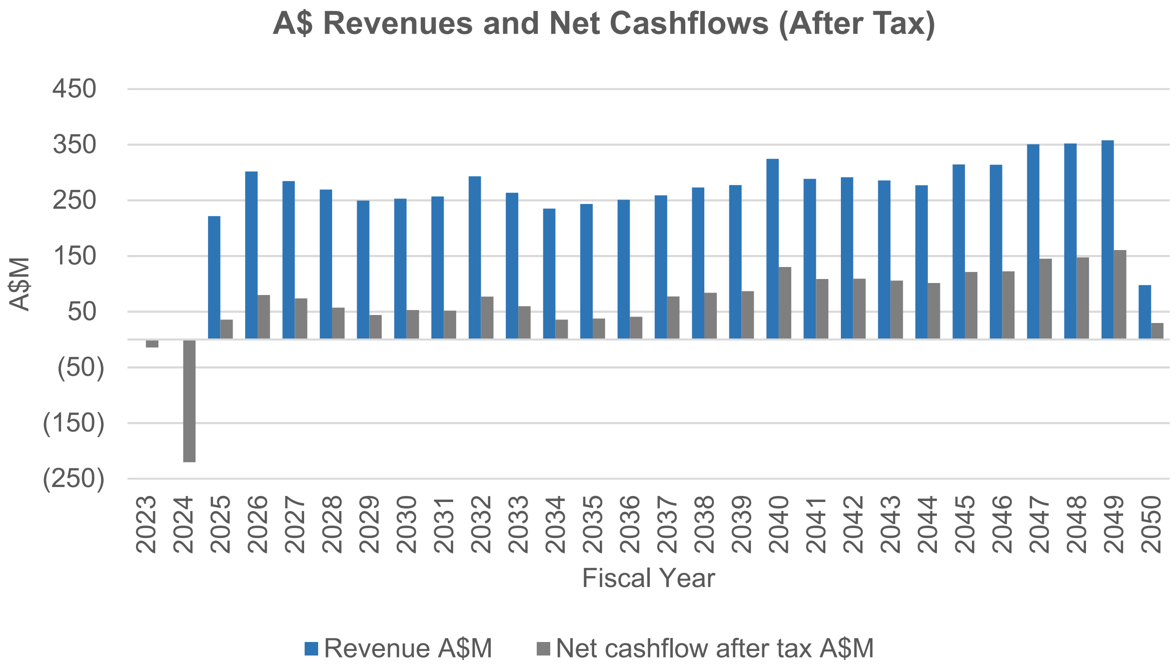

Figure 9: Net Cashflow After Tax

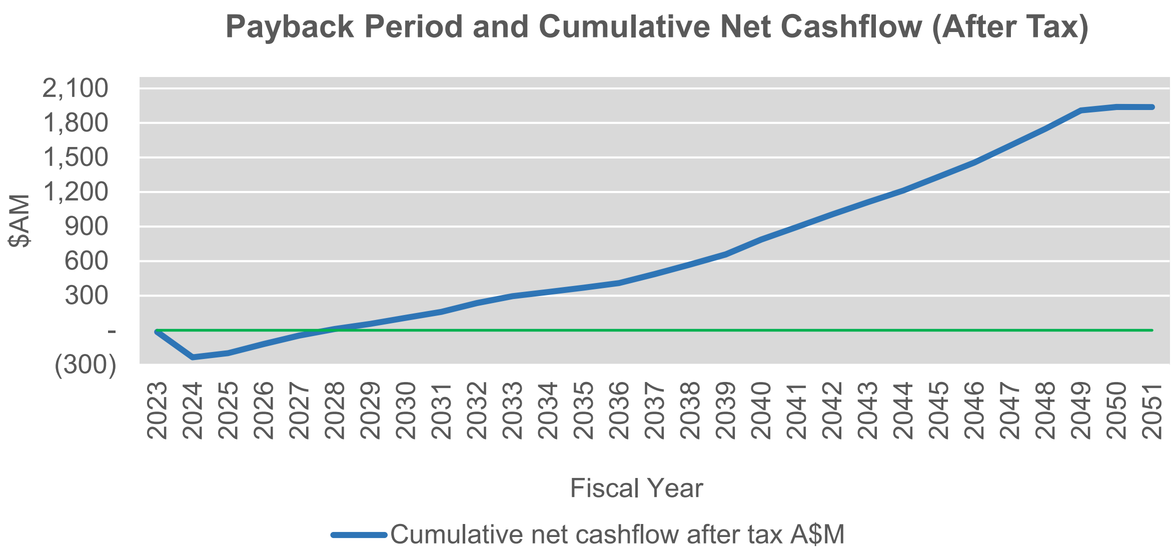

Figure 10: Cumulative Free Cash Flow and Payback Period

Foreign Exchange

All capital and operating prices are provided in Australian dollars. A long-term FX value of A$1 = US$0.72 was used in converting USD to AUD.

Commodity Pricing

See discussion in main body of report.

Funding

As disclosed in Table 10, funding in the order of A$240.5M is required to achieve the outcomes indicated by the PFS.

Based on the PFS results, there are reasonable grounds to believe that the Kathleen Valley Project can be financed in future. It is most likely that any financing would be undertaken via a combination of debt and equity, similar to a number of comparable projects in Western Australia which have been funded in the past several years.

Under current conditions, debt may be secured from several sources including Australian banks, international banks, the high yield bond market and resource credit funds. It is difficult to finance metals that cannot be easily hedged with banks and for this reason, along with the size and volatility of the lithium market, debt funding is more likely to be sourced from resource credit funds. On this basis, it is likely that the Kathleen Valley Project will require the support of a resource credit fund or alternatively it may be possible in the bond market.

There are several factors that will influence the ability of Liontown to secure funding including (but not limited to) a requirement to have "bankable" lithium offtake agreements and favourable prevailing market conditions (being both the lithium market and the wider equity and debt market). As described above, there is a reasonable possibility that the Company will have an offtake partner invest in the Company or the Project.

It is possible that funding may be dilutive to, or otherwise affect the value of the Company's existing shares.

It is also possible that the Company could pursue other strategies to provide alternative funding options including undertaking a corporate transaction, seeking a joint venture partner or asset sales.

9. Implementation and Schedule

The project execution strategy proposed for the Kathleen Valley Project is an Engineering, Procurement and Construction Management (EPCM) approach and this has formed the basis of the capital estimate and the schedule. This approach will be reviewed at the next stage of study.

An indicative schedule for the Project is listed in ***Table 13***.

Table 13: Development Schedule

Activity	Month Complete
Resource Update	Q1/Q2 2020
DFS	Q4 2020
FEED	Q1 2022
Financial Investment Decision	Q2 2022
Construction	Q2 2024
Commissioning	Q3 2024
Plant nameplate	Q2 2025

Appendix – Kathleen Valley – JORC Code 2012 Table 1 Criteria

The table below summaries the assessment and reporting criteria used for the Kathleen's Corner and Mt Mann deposits, Kathleen Valley Lithium Project Mineral Resource estimate and reflects the guidelines in Table 1 of *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves* (the JORC Code, 2012).

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	• Sub-surface samples have been collected by reverse circulation (RC) and diamond core drilling techniques (see below). • Drillholes are oriented perpendicular to the interpreted strike of the mineralised trend except in rare occasions where limited access necessitates otherwise.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. *Aspects of the determination of mineralisation that are Material to the Public Report.* *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• RC samples are collected by the metre from the drill rig cyclone as two 1 m cone split samples in calico bags and a bulk sample in plastic mining bags. • The 1 m samples from the cyclone are retained for check analysis. Only samples of pegmatite and adjacent wall rock (~4 m) are collected for assay. • Diamond core has been sampled in intervals of ~ 1 m (up to 1.18 m) where possible, otherwise intervals less than 1 m have been selected based on geological boundaries. Geological boundaries have not been crossed by sample intervals.
Drilling techniques	*Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	Drilling techniques used at Kathleen Valley comprise: • Reverse Circulation (RC/5.5") with a face sampling hammer • NQ Diamond Core, standard tube to a depth of ~450 m. • HQ Diamond Core, standard tube to a depth of ~200-250 m. • PQ Diamond Core, standard tube to a depth of ~200m. • Diamond core holes drilled directly from surface or from bottom of RC precollars. Core orientation was provided by an ACT REFLEX (ACT II RD) tool.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	• Sample recoveries are estimated for RC by correlating sample heights in the green mining bag to estimate a recovery for each metre. • For diamond core the recovery is measured and recorded for every metre.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	• RC drill collars are sealed to prevent sample loss and holes are normally drilled dry to prevent poor recoveries and contamination caused by water ingress. Wet intervals are noted in case of unusual results. • For diamond core loss, core blocks have been inserted in sections where core loss has occurred. This has then been written on the block and recorded during the logging process and with detailed photography of dry and wet core.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• It has been demonstrated that no relationship exists between sample recovery and grade. No grade bias was observed with sample size variation.
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	• All RC drillholes are logged on 1 m intervals and the following observations recorded: ○ Recovery, quality (i.e. degree of contamination), wet/dry, hardness, colour, grainsize, texture, mineralogy, lithology, structure type and intensity, pegmatite and vein type and %, lithium mineralogy and %, alteration assemblage, UV fluorescence.

Criteria	JORC Code explanation	Commentary
		• Diamond core is logged in its entirety as per detailed geological description listed above. Geotechnical logging has been completed for the entire hole.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	• Logging is quantitative, based on visual field estimates. • Diamond core is photographed post metre marking, for the entire length of the hole, two trays at a time, wet and dry.
	The total length and percentage of the relevant intersections logged.	• Holes are logged in their entirety.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	• The core has been cut in half and then quartered for sample purposes. Half core will be used for metallurgical studies with the remaining quarter stored as a library sample. • Density measurements have been taken on all quarter core samples using the Archimedes method.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	• RC samples are collected as rotary split samples. Samples are typically dry.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	• Sample preparation follows industry best practice standards and is conducted by internationally recognised laboratories; i.e. ○ Oven drying, jaw crushing and pulverising so that 80% passes -75 microns.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	• Duplicates and blanks submitted approximately every 1/20 samples. • Standards are submitted every 20 samples or at least once per hole. • Cross laboratory checks and blind checks have been used at a rate of 5%.

	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.	• Measures taken include:
		  ○ regular cleaning of cyclones and sampling equipment to prevent contamination
		  ○ industry standard insertion of standards, blanks and duplicate samples
		• Analysis of duplicates (field, laboratory and umpire) was completed and no issues identified with sampling representatively.
		• Analysis of results from blanks and standards indicates no issues with contamination (or sample mix-ups) and a high level of accuracy.

	Whether sample sizes are appropriate to the grain size of the material being sampled.	• Sample size is considered appropriate for the preparation of a Mineral Resource Estimate
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	• Initial assaying (2017) completed by ALS Perth. Subsequent assaying (2018 onwards) completed by Nagrom laboratories Perth. • Both laboratories use industry standard procedures for rare metals such as Li and Ta. Analytical techniques are total.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	• None used.
	Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	• Duplicates and blanks submitted approximately every 20 samples. • Standards are submitted every 20 samples or at least once per hole. • Cross laboratory checks and blind checks have been used at a rate of 5%. • Analysis of reference blanks, standards and duplicate samples show the data to be of acceptable accuracy and precision for the Mineral Resource estimation and classification applied.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	• Internal review by alternate company personnel.
	The use of twinned holes.	• 12 diamond holes have been drilled as twins or in close proximity to existing RC drill holes. Results compare well with the original RC drill holes.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	• Drilling and logging data is entered directly into Microsoft Excel spreadsheets onsite while drilling is ongoing. Data is then entered into Access Database and validated before being processed by industry standard software packages such as MapInfo and

Criteria	JORC Code explanation	Commentary
		Micromine. • Representative chip samples are collected for later reference.
	Discuss any adjustment to assay data.	• Li% is converted to Li_2O% by multiplying by 2.15, Ta ppm is converted to Ta_2O_5 ppm by multiplying by 1.22.
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	• All drill collars and geochemical samples are initially located using a handheld GPS. • Drill collars are subsequently surveyed accurately by a licensed surveyor using DGPS techniques. Eastings and northings are measured to within +/- 2cm while elevations are measured to within +/- 10cm. • All RC drillholes have been surveyed by a multi-shot digital downhole camera provided by the drilling contractor. • All diamond drillholes have been surveyed with a REFLEX EZI-SHOT (1001) magnetic single shot camera.
	Specification of the grid system used.	• GDA 94 Zone 51
	Quality and adequacy of topographic control.	• Initial collar elevations are based on regional topographic dataset and GPS. • Drillhole collars are surveyed post drilling with DGPS. • Further topographic data (20cm contours) has been provided for the Project by a LIDAR flown by Fugro.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	• Varies due to initial drill programmes largely designed to test the down-dip potential of mineralised outcrops. The drill section spacing is 40 m to 100 m and on-section spacing is generally 30 m to 60 m.
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	• The data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource estimation and classification applied.
	Whether sample compositing has been applied.	• None undertaken.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	• Drilling is typically oriented perpendicular to the interpreted strike of mineralisation. • KVRC0015 was oriented at 45° to strike due to access issues and the need to test the main outcrop zone.
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• Drilling orientation intersects the mineralisation at appropriate angles so as to be mostly unbiased and suitable for resource estimation of the major pegmatite bodies.
Sample security	*The measures taken to ensure sample security.*	• Sample security is not considered to be a significant risk given the location of the deposit and bulk-nature of mineralisation. • Nevertheless, the use of recognised transport providers, sample dispatch procedures directly from the field to the laboratory, and the large number of samples are considered sufficient to ensure appropriate sample security. • Company geologist supervises all sampling and subsequent storage in field. The same geologist arranges delivery of samples to Nagrom laboratories in Perth via courier.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	• Independent, expert competent person reviews have been completed by Michelle Wild of Wildfire Resources Pty Ltd and Christine Standing of Optiro Limted on the resource drilling, sampling protocols and data. • This included a laboratory visit to Nagrom by Michelle Wild. • Results have not indicated any significant discrepancies.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	• The Kathleen Valley Project is located ~680 km NE of Perth and ~45 km NNW of Leinster in Western Australia. The Project comprises four granted mining leases - MLs 36/264, 265, 459, 460 and one Exploration License - E36/879. • The mining leases (MLs) were acquired from Ramelius Resources Limited via a Sales Agreement completed in 2016. The MLs have been transferred to LRL (Aust) Pty Ltd, a wholly owned subsidiary of Liontown Resources Limited (Liontown). • Ramelius acquired 100% of the Kathleen Valley Project MLs in June 2014 from Xstrata Nickel Operations Pty Ltd (Xstrata). Xstrata retains rights to any nickel discovered over the land package via an Offtake and Clawback Agreement. • LRL (Aust) Pty Ltd has assumed the following Agreement: ◦ Bullion and Non-Bullion Royalty Agreement of a 2% Gross Production Royalty affecting M36/264-265 and 459-460. • The EL is in the name of Liontown Resources Limited with no third-party obligations apart from statutory requirements. • The tenements are covered by the Tjiwarl Determined Native Title Claim (WC11/7). Liontown has signed Access Agreements with the NT group. • LRL (Aust) Pty Ltd has received Section 18 consent to drill on certain areas within M36/459 and M36/460
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• All tenements are in good standing.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	• Multiple phases of exploration have previously been completed for gold and nickel. • There has been limited sporadic prospecting for Li, Ta and Sn, principally by Jubilee Mines (subsequently taken over by Xstrata). Work comprised geological mapping, broad spaced soil sample lines and rock chip sampling of the pegmatites. Details of the methods and procedures used have not been documented. • There has been no previous drill testing of the Li and Ta prospective pegmatites prior to Liontown acquiring the Project.
Geology	*Deposit type, geological setting and style of mineralisation.*	• The Project is located on the western edge of the Norseman- Wiluna Belt within the Archaean Yilgarn Craton. • The Kathleen Valley Project contains a series of quartz-feldspar-muscovite-spodumene pegmatites hosted in mafic rocks related to the Kathleen Valley Gabbro or the Mt Goode Basalts. • The pegmatites are LCT type lithium bearing-pegmatites.
Drillhole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:* • *easting and northing of the drillhole collar* • *elevation or RL (elevation above sea level in metres) of the drillhole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.*	• When reporting Exploration Results, see figures and appendices in accompanying report • When reporting Mineral Resource Estimate, diagrams in the announcement show the location of and distribution of drill holes in relation to the resource.
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*	• Li_2O intercepts calculated using 0.4% cut off with a maximum 2m internal dilution typically applied except where drill hole logging (e.g. continuous pegmatite) and assays indicate wider dilution is warranted as overall grade is high enough to allow mining to take entire geological unit. • Higher grade intervals calculated using 1.5% Li_2O cut off. No upper cuts applied. • Ta_2O_5 values only quoted when lithium intersections

Criteria	JORC Code explanation	Commentary
		reported. • Not relevant when only reporting definition of Mineral Resource Estimation.
Relationship between mineralisation widths and intercept lengths	*If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.* *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• Estimates of true widths provided at end of Appendices attached to ASX announcements which list drill hole statistics • Not relevant when only reporting definition of Mineral Resource Estimation.
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• When reporting Exploration Results, see figures and appendices in accompanying report • Not relevant if only reporting definition of a Mineral Resource estimate.
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All recent exploration results reported and tabulated. • Not relevant if only reporting definition of a Mineral Resource estimate.
Other substantive exploration data	*Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Where relevant, this information has been included or referred to elsewhere in this Table.
Further work	*The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*	• Further RC and diamond core drilling (15,000-25,000m) to expand current MRE • Option studies to define parameters for DFS. • DFS.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	• Drillhole data was extracted directly from the Company's drillhole database, which includes internal data validation protocols. • Data was further validated by Optiro upon receipt, and prior to use in the estimation.
	Data validation procedures used.	• Validation of the data was confirmed using mining software (Datamine) validation protocols, and visually in plan and section views.
Site visits	*Comment on any site visits undertaken by the Competent Persons and the outcome of those visits.*	• Senior Liontown personnel Mr Richards and Mr Day have visited the site on numerous occasions to supervise the drilling programmes. • Ms Wild (Principal Geologist and Director of Wildfire Resources Pty Ltd) and Mrs Standing (Optiro Limited) have visited the site on separate occasions during resource definition drilling programmes to review sampling procedures. • Ms Wild (Principal Geologist and Director of Wildfire Resources Pty Ltd) visited the site during the resource definition drilling programme to review sampling procedures. Ms Wild reported that, in general, site practices were quite good, core quality was excellent and RC sample quality was moderate. • Mrs Standing has confirmed site practices are appropriate and satisfactory for the preparation of a Mineral Resource Estimate.
Geological interpretation	*Confidence in (or conversely, the uncertainty of the geological interpretation of the mineral deposit.*	• The confidence in the geological interpretation is reflected by the assigned resource classification.
	Nature of the data used and of any assumptions made.	• Both assay and geological data were used for the mineralisation interpretation. • The lithium mineralisation is defined by a nominal 0.4% Li_2O cut-off grade. • Continuity between drillholes and sections is good.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	• No alternative interpretations were considered. • Any alternative interpretations are unlikely to significantly affect the Mineral Resource estimate.

Criteria	JORC Code explanation	Commentary
	The use of geology in guiding and controlling Mineral Resource estimation.	• Geological logging (including spodumene crystal orientation from the diamond core) has been used for interpretation of the pegmatites.
	The factors affecting continuity both of grade and geology.	• The mineralisation is contained within pegmatite veins that are readily distinguished from the surrounding rocks. • Sectional interpretation and wireframing indicates good continuity of the interpreted pegmatite veins both on-section and between sections. • The confidence in the grade and geological continuity is reflected by the assigned resource classification.
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• Seventeen mineralised pegmatites have been identified at the Kathleen Valley Project which extend from surface to a depth of 400 m. • Eleven sub-horizontal pegmatites (dip of 0° to -10° to west) have been drilled over an area of 1,100 m by 600 m at Kathleen's Corner. These pegmatites outcrop at Kathleen's Corner, extend down dip to Mt Mann and have an average thickness of 5 m. • In addition, there are four moderately dipping (-15° to -45^0 to the west) pegmatites at Kathleen's Corner with an average thickness of 3 m. • An additional sub-horizontal pegmatite, which is obscured by shallow cover, has been drilled within the north-western area of Kathleen's Corner with a strike length of 400 m and an average thickness of 7 m. • At Mt Mann two steeply dipping (-70° west) pegmatites have been drilled over a strike length of 900 m and to a vertical depth of 260 m. The pegmatites have an average thickness of 8 m and 10 m. • The pegmatites merge at depth to form a single, up to 75m thick feeder zone.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	• Lithium oxide (Li_2O) % and tantalum pentoxide (Ta_2O_5) ppm block grades were estimated using ordinary kriging (OK). Optiro considers OK to be an appropriate estimation technique for this type of mineralisation. • The nominal spacing of the drillholes is 50 m by 50 m. The along section spacing ranges from 40 m to 100 m and on-section spacing ranges from generally 30 m to 60 m. • A maximum extrapolation distance of 50 m was applied along and across strike and the steeply dipping pegmatites at Mt Mann were extrapolated to a maximum of 100 m down-dip. • Data analysis and estimation was undertaken using Snowden Supervisor and Datamine software. • Over 93% of the assay data is from samples of 1 m intervals, 0.3% is from sample of >1 m (to a maximum of 1.18 m) and 6% is from intervals of less than 1 m. The data was composited to 1 m intervals for analysis and grade estimation. • Variogram analysis was undertaken to determine the kriging estimation parameters used for OK estimation of Li_2O and Ta_2O_5. • Li_2O mineralisation continuity was interpreted from variogram analyses to have an along strike range of 110 m to 140 m and a down-dip (or across strike) range of 32 m to 112 m. • Ta_2O_5 mineralisation continuity was interpreted from variogram analyses to have an along strike range of 110 m to 130 m and a down-dip (or across strike) range of 35 m to 93 m. • Kriging neighbourhood analysis was performed in order to determine the block size, sample numbers and discretisation levels. • Three estimation passes were used for Li_2O and Ta_2O_5; the first search was based upon the variogram ranges; the second search was two times the initial search and the third search was up to seven times the second search and second and third searches had reduced sample numbers

Criteria	JORC Code explanation	Commentary
		required for estimation. The majority of Li_2O block grades (almost 63%) were estimated in the first pass, 22% in the second pass and the remaining 5% in the third pass. • The Li_2O and Ta_2O_5 estimated block model grades were visually validated against the input drillhole data and comparisons were carried out against the declustered drillhole data and by northing, easting and elevation slice.
	Description of how the geological interpretation was used to control the resource estimates.	• Geological interpretations were completed on sections which were wireframed to create a 3D interpretation of the mineralised pegmatites. • The interpretation of mineralisation was by Liontown based on geological logging and Li_2O content. A nominal grade of 0.4% Li_2O was used to define the mineralisation within the interpreted pegmatites. • The mineralised domain is considered geologically robust in the context of the resource classification applied to the estimate.
	Discussion of basis for using or not using grade cutting or capping.	• Li_2O and Ta_2O_5 have low coefficients of variation (CV). Some higher-grade outliers were noted and both the Li_2O and Ta_2O_5 grades were capped (top-cut). The top-cut levels were determined using a combination of top-cut analysis tools, including grade histograms, log probability plots and the CV.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	• Mineral Resources have not previously been reported for this deposit area and no production has occurred.
	The assumptions made regarding recovery of by-products.	• No assumptions have been applied for the recovery of by-products. • Metallurgical test work is ongoing to determine the recoveries that could be expected.
	Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	• Deleterious elements were not considered for the Mineral Resource estimate. • Further test work is planned. Early results indicate low levels of Fe within the mineralised pegmatites. • Sulphur assays have been determined for more than 27,000 host rock samples – results indicate that acid mine drainage will not be a significant environmental factor.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	• Grade estimation was into parent blocks of 10 mE by 15 mN by 1.0 mRL. • Block dimensions were selected from kriging neighbourhood analysis and reflect the variability of the deposit as defined by the current drill spacing. • Sub-cells to a minimum dimension of 2 mE by 2.5 mN by 0.5 mRL were used to represent volume.
	Any assumptions behind modelling of selective mining units.	Selective mining units were not modelled.
	Any assumptions about correlation between variables.	• Li_2O and Ta_2O_5 are not correlated. Both Li_2O and Ta_2O_5 were estimated independently.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	• No production has taken place and thus no reconciliation data is available.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages have been estimated on a dry basis.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The Mineral Resource estimate for the Kathleen Valley Deposit has been reported above a cut-off grade of 0.5 % Li_2O to represent the portion of the resource that may be considered for eventual economic extraction. • This cut-off grade has been selected by Liontown Resources in consultation with Optiro based on current experience and in-line with cut-off grades applied for reporting of Mineral Resources of lithium hosted in spodumene bearing pegmatites elsewhere in Australia.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider*	• The mineralisation at Kathleen's Corner and Mt Mann extends from surface and would be suitable for open pit mining. • The Kathleen Valley Lithium Project is located in a well-established mining region and in close proximity to existing close to existing transport, energy and

Criteria	JORC Code explanation	Commentary
	potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous.	camp infrastructure. • On the basis of these assumptions, it is considered that there are no mining factors which are likely to affect the assumption that the deposit has reasonable prospects for eventual economic extraction.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous.*	A Pre-feasibility level testwork program was conducted at ALS in Perth to provide sufficient test data to develop the process design criteria for the project. A total of 81 intercepts from across the three main areas (Mount Mann, Kathleen Corner and North) were selected for the pre-feasibility study. A master composite was created for testing from these samples which are representative of the whole deposit and include a range of grades and depths. No variability testing has been undertaken at this time. Key aspects of the metallurgical test work included the following: • Head assay. • SMC testing on five comminution samples • Size by size assay. • Crushing and wet screening at three sizes • Heavy liquid separation (HLS) at three crush and screen sizes • Dense media separation of a bulk sample • Bond ball work index on DMS middlings • Magnetic separation to remove ferrous materials • Rougher flotation to examine collector choice, residence time, desliming and conditioning • Cleaner flotation to examine residence time and number of stages • Thickening of flotation and slime tailings (in progress) • Filtration of concentrate • Rheology of tailings Key results indicated: • Samples were moderately competent with comminution results similar to other pegmatites • Size by size and wet screening data indicated that there was a trade off in crush size and screen size with liberation. A finer crush size increased liberation in the HLS stage but increased fines production. A crush size of 6mm was selected. • DMS testing showed a saleable concentrate with a grade of more than 6% Li_2O could be produced together with a low-grade coarse tail. • Grind optimisation of the flotation feed indicated a primary grind of 125 microns gave the best recovery and was selected for subsequent testwork • Rougher flotation testwork indicated that a modified oleic acid collector gave the best flotation performance • Batch cleaner flotation results indicated a concentrate with a grade of more than 6% Li_2O could be produced together. • Concentrate filtration testwork, currently being finalised, has indicated that vacuum filtration will be adequate for dewatering. • Rheology testwork indicated the tailings had low viscosity at the proposed tailings density The overall metallurgical recovery estimated from the flowsheet testing was 76% based on a combination of dense media testing and batch flotation. The metallurgical process proposed is used in several Lithium projects currently operating in Western Australia. The process has been tested at pre-feasibility level in the laboratory and further work is planned at the next stage.
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic*	• Baseline flora and fauna studies have been completed and it is considered unlikely given current knowledge that impacts on conservation significant flora, fauna and ecological communities will result from development of the project.

Criteria	JORC Code explanation	Commentary
	extraction to consider the potential environmental impacts of the mining and processing operation.	• Further baseline studies are scheduled during the PFS and DFS
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• Bulk density was measured for 575 core samples from diamond holes using Archimedes measurements. • The density data has a range of 2.08 to 3.34 t/m^3. • A bulk density of 2.69 t/m^3 was assigned to the oxide and transitional material and 2.74 t/m^3 was assigned to the fresh material.
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	• Mineral Resources have been classified as Measured, Indicated or Inferred. • In general, the pegmatites at Kathleen's Corner that have been tested by the 50 m by 50 m spaced drill holes, have high confidence in the geological interpretation and have higher estimation quality have been classified as Measured. Areas tested by the 50 m by 50 m spaced drill and with poorer estimation quality were classified as Indicated, and areas where the drill spacing is up to 60 m by 100 m have been classified as Inferred.
	Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	• The Mineral Resource has been classified on the basis of confidence in geological and grade continuity and taking into account the quality of the sampling and assay data, data density and confidence in estimation of Li_2O and Ta_2O_5 content (from the kriging metrics).
	Whether the result appropriately reflects the Competent Person's view of the deposit	• The assigned classification of Measured, Indicated and Inferred reflects the Competent Persons' assessment of the accuracy and confidence levels in the Mineral Resource estimate.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	• The Mineral Resource has been reviewed internally as part of normal validation processes by Optiro. • No external audit or review of the current Mineral Resource has been conducted.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person.*	• The assigned classification of Measured, Indicated and Inferred reflects the Competent Persons' assessment of the accuracy and confidence levels in the Mineral Resource estimate.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	• The confidence levels reflect potential production tonnages on a quarterly basis, assuming open pit mining.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	• No production has occurred from the deposit.

Section 4 -Estimation and Reporting of Ore Reserves

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The mineral Resource Estimate used as a basis for the conversion to the Ore Reserve was provided on the 19th July with Christine Standing, employee of Optiro, as the Competent Person. The total Mineral Resource of 74.9Mt at 1.3% Li_2O includes 17.6Mt of Measured at 1.3% Li_2O, 44.7Mt of Indicated at 1.3% Li_2O and 12.7Mt of Inferred at 1.2% Li_2O. The Mineral Resources are reported inclusive of the Ore Reserve.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	The competent person, Mr Jake Fitzsimons, visited the proposed project site on 28th September 2019. The following observations were made: • The site is accessed directly from the Goldfields Highway. • The site is dominated by Mt Mann which rises approximately 50m above the surrounding terrain, and Jones Creek dry watercourse which passes through the northern half of the mining area flowing from east to west.

Criteria	JORC Code explanation	Commentary
		• Existing access between the North and South deposits is across Jones Creek via a 10m wide concrete ford with opportunity to widen to 12-15m without disturbing any trees. • Pegmatite outcrop exists across the site • Drilling core examined on site was hard and very competent in both the gabbro hanging wall rock and pegmatite ore zones.
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	A pre-feasibility study was completed in 2019 and forms the basis of the majority of the assumptions for reporting an Ore Reserve. The 2019 PFS report was compiled by Lycopodium on behalf of Liontown with input from: • Optiro (geology) • Orelogy Consulting (mine planning) • Lycopodium (metallurgical testwork, process design and non-process infrastructure) • AQ2 (hydrology and hydrogeology) • MBS Environmental (environmental) • Knight Peisold (tailings storage) • Liontown (financial analysis) Modifying factors considered in the mine planning process included mining dilution and oreloss, slope design criteria and practical mining considerations. The activities and findings of all other disciplines are summarised in the 2019 PFS document, including details of other modifying factors such as processing recoveries, costs, revenue factors, environmental and heritage considerations, etc. Overall the result of the mine plan demonstrates that the Kathleen Valley Lithium Project is technically achievable and economically viable at the forecast spodumene price.
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	The Ore Reserves are reported at a 0.5% Li_2O cut-off grade, in line with the reporting of the Mineral Resources. This cut-off is above the theoretical economic cut-off of 0.34% Li_2O and has been adopted as the grade tonnage curve shows very little material below this grade.
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*	The Ore Reserve is underpinned by a mine plan that delivers pegmatites for processing on site to produce spodumene concentrate for export via the Geraldton port. The mine planning activities included open pit optimisation, final and interim stage designs, mine scheduling and cost estimation. The mine plan indicated that the Ore Reserve derived from the Mineral Resource Estimate can easily meet the processing feed requirements for the 2.0Mtpa production target with a mine life of approximately 26 years. A conventional open pit mining method using 200-300t excavators and 130t rigid dump trucks was selected as the preferred mining method. This method is common in the area and well suited to selectively mining the flat lying pegmatite mineralisation which is relatively close to surface requiring minimal pre-strip. All material will be blasted. Bulk waste will be blasted on 12m benches and the ore zones will be blasted on 6m benches and mined in two flitches with ore delivered to blend fingers on the ROM pad. Geotechnical guidance was provided by Peter O'Bryan and Assoc. with an allowance for ramps on the footwall and geotechnical berms on the hanging walls. Oxidation is shallow from 5-20m in depth with slope angles of ~50° on the hanging wall and ~37 ° on the footwall. Overall slope angles in fresh material were ~57 ° on the hanging wall and ~45 ° on the footwall. As the Kathleen Valley orebody dips at substantially less than wall angle constraints, the pit shells are optimally shallower than these angles to the south-west.

Criteria	JORC Code explanation	Commentary
		An allowance for Grade Control drilling was made based on a dedicated RC drilling program at 24m vertical intervals. The July 2019 Datamine Mineral Resource model (kv_or_190702.dm) was used as a basis for the conversion to an Ore Reserve. No value was applied to Tantalum. Material beneath the Jones Creek watercourse was excluded from optimisation including a 30m buffer plus the application of high mining costs to blocks below a slope angle of 45° extrapolated from the exclusion zone for the potentially unstable zone adjacent to the mining excavation. The model was diluted in a two-step process: • Regularisation to a SMU size of 5m x 5m x 3m was used to account for the flat lying mineralisation. • Secondary edge dilution was applied to the edges of the ore zones to account for the steeply dipping Mt Mann mineralisation. The resulting mining model reported 12% dilution and 8% oreloss at 0.5% cut-off grade of Li_2O%. No additional mining recovery factors were applied. The final pit and stages were designed with 40m minimum mining width between cutbacks and 25m at the base of the pit. Only Measured and Indicated material were used in reporting of Ore Reserves. Inferred material was treated as waste. Inclusion of Inferred has the potential to increase the final pit size by 9% but adds little value to the project. The inferred material would be more suited to underground mining methods. Mining infrastructure was limited to a ROM pad, haul roads, workshop and other buildings for a Contractor mining strategy.
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?* *Environmental* • *The status of studies of potential environmental impacts*	The metallurgical process proposed is used in several existing Lithium projects. The process has been tested at pre-feasibility level in the laboratory and further work is planned. A total of 81 intercepts from across the three main areas (Mount Mann, Kathleen Corner and North) were selected for the pre-feasibility study. These samples include a spatial spread, grade range and depth. A master composite was created for testing. No variability testing has been undertaken at this time. The overall metallurgical recovery estimated from the flowsheet testing was 76% based on a combination of dense media testing and batch flotation. Preliminary work on iron, MgO and MnO has been undertaken. Further work will be done in the next phase. A bulk sample of over 4000kg has been prepared from multiple drill core intercepts and will be used as the basis for the next phase of testing. Geochemical characterisation of waste rock has been completed with representative samples (70 fresh rock, 24 oxide and transitional waste and 4 low grade ore samples) assessed for potential for saline, neutral or acid and metalliferous drainage (AMD) as well as other general geochemical properties. Several minor pockets of potentially acid forming (PAF) material was identified to be present in the dolerite gabbro and contact zone waste rock materials of the Mt Mann mine area. Provided parcels of PAF material originating from the dolerite gabbro and contact zone mine wastes are managed appropriately, there is a low risk of fresh waste rock adversely impacting groundwater and surface water quality via seepage or run-off from rainfall. Preliminary characterisation of coarse and fine tailings generated by metallurgical test work has been

Criteria	JORC Code explanation	Commentary
		completed. Samples were assessed for potential of saline, neutral or acid and metalliferous drainage (AMD) as well as other general geochemical and some physical properties. Full characterisation is still being completed. Preliminary results indicate both course and fine tailings are unlikely to pose risk to the environment and as such do not require specialised storage facilities
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	The project is well served by existing infrastructure with the Goldfields Highway which runs adjacent to the project. There is a 132kV powerline (5km to the West) and the goldfields gas pipeline (11km to the East) to provide mains power or a site-based power station. The process plant and waste stockpiles can be constructed on existing mining licences. Preliminary modelling provides confidence that sufficient available bore water of good quality is available from within the Liontown tenements. A desktop study confirms that the concentrate can be trucked on sealed roads from site to the port of Geraldton where an environmental license would be required to export the Spodumene concentrate – due to the benign nature of the product, approval is unlikely to be withheld. The study assumes a camp will be constructed within the current tenements and labour supply is not considered a problem due to its location within driving distance of Kalgoorlie and the region is serviced by regular charter flights to Mt Keith and Leinster from Perth
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private*	The capital cost estimate has been based on a mechanical equipment list with budget pricing for major equipment together with recent database rates for bulks such as concrete and steel. Electrical and earthworks were estimated separately. Operating cost estimates were based on budget quotes for consumables and a benchmarked salary schedule. Other costs have been supplied by Liontown and from Lycopodium database. No specific allowances for deleterious elements have been made. Forecast exchange rates for USD: AUD were sourced from a limited number of banks providing long term forecasts with a range of 0.68 to 0.82 (excluding outliers). Liontown has assumed 0.72 as its life of mine exchange rate. Haulage and ship loading costs were provided by an established haulage company that currently provides stevedoring services at the port of Geraldton. Port costs were obtained from the Port of Geraldton. Estimated shipping costs were used to determine CIF costs to potential off-takers. The following government royalties and private royalties have been included in the financial analysis as detailed below: • WA state Royalty - 5% gross sales • Private royalties - 3% gross sales and A$0.50/t ore mined and milled
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	Spodumene pricing was based on average forecast estimates provided by Roskill as discussed in the main body of this announcement. Spodumene revenue factors were: • An average spodumene price of US$720/t CIF China for 6% Li_2O content using an exchange rate of 0.72 USD/AUD • Transport and port charges of $76.26/wt conc. • Shipping costs of $43.17/wt conc • State royalty of 5% and private royalties of 3% gross sales and a A$0.50 per tonne mined and milled No value or credit was applied to Tantalum and no penalties for contaminants were assumed.
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption*	Demand for lithium is expected to increase significantly over the next decade driven by the use of lithium ion

Criteria	JORC Code explanation	Commentary
	trends and factors likely to affect supply and demand into the future. • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	batteries in automotive applications. Whilst there is a current oversupply of spodumene concentrate largely because of new mine capacity in Australia, it is expected that reduction in mine output from mines in Australia in 2019 may start a phase of rebalancing. With continued strong demand and consumption growth, a supply deficit is expected to occur in the mid-2020's. A customer and competitor analysis was not undertaken however market windows for the product have been considered with pricing forecasts provided by Roskill.
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs*	An 8% real discount rate (using industry standard assumptions in calculating a WACC) has been utilised to determine the NPV for the Kathleen Valley Project. A range of sensitivities to significant assumptions and inputs has been provided in the body of this announcement including spodumene prices, exchange rates, metallurgical recoveries, lithium grade, capex and opex.
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	The Tjiwarl People are Traditional Owners of the area that actively overlays the Project. The project area is located on granted mining leases and Liontown has signed a Heritage Agreement with the Tijwarl People relating to exploration activities. Liontown has signed a Negotiation Protocol with the Tijwarl People in respect to completing a mining agreement for the project.
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	There are no obvious or likely naturally occurring risks that have been identified or which may negatively impact the Project or Project area. Liontown is a 100% owner of the deposit and has not entered into any arrangements regarding future off take arrangements. All statutory government agreements, permits and approvals commensurate to the status of the project are current and in good order. Timeframes for Agreements relevant to the 2019 PFS were handled appropriately and have not put the project at risk. Agreement timeframes in respect to the project will be handled with similar accord so as not to put the future studies and project development at risk also.
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	Proved Ore Reserves were determined from Measured Resource material and Probable Ore Reserves were determined from Indicated Resource material as per the guidelines. These results reflect the Competent Persons view of the deposit. Probable Ore was derived from Indicated material only.
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	The Ore Reserve estimate has been peer reviewed internally by Orelogy Consulting Pty Ltd.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if*	The Mineral Resource, and hence the associated Ore Reserve, relate to global estimates. The Ore Reserve estimate is an outcome of the 2019 Mining Pre-Feasibility Study with geological, mining, metallurgical, processing, engineering, marketing and financial considerations to allow for the cost of finance and tax. Engineering and cost estimations have been done to a ±25% level of accuracy, consistent with a study of this nature. Liontown's financial model estimated a post-tax $NPV_{8\%}$ of approx. A$507M, and IRR of 25%, which demonstrates that the project is economic.

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	local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	Sensitivity analysis undertaken during the pit optimisations shows that: • Overall pit size is insensitive to either costs, slope changes and only mildly sensitive to price and recovery. • Ore tonnes recoverable are moderately sensitive to dilution, ore loss and recovery and slightly sensitive to costs or slope angles. • Discounted cash flow for the project is highly sensitive to parameters that directly affect revenue (i.e. commodity prices, recovery and exchange rate) and far less so to changes in other parameters. The low sensitivity to cost variations provide reasonable confidence in the Ore Reserve estimate. However, there is no guarantee that the price assumption, while reasonable, will be achieved.