

### Developing a Leading Integrated Lithium Project

8 February 2019



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#### Exploration:

The information in this presentation that relates to sampling techniques and data, exploration results, geological interpretation and exploration targets has been reviewed by Mr. Green BSC (Hons), MAusIMM. Mr Green is a employee of the Company. Mr Green is a shareholder of the Company. Mr Green is a member of the Australasian Institute of Mining and Metallurgy. He has sufficient experience with 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 "Australian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves" (The JORC Code). Mr Green consents to the inclusion in this presentation of the contained technical information in the form and context as it appears.

#### Mineral Resources:

The information in this presentation that relates to Mineral Resources is sourced from an announcement issued to ASX on 19 March 2018 titled "Substantial Increase in Earl Grey Lithium Mineral Resource Estimate" which is available to view at https://www.asx.com.au/asxpdf/20180319/pdf/43jypy0krvfyy.pdf. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

#### Ore Reserves:

The information in this presentation that relates to Ore Reserves is sourced from an announcement issued to ASX on 18 December 2018 titled "Integrated Pre-feasibility Study completed on schedule and maiden Ore Reserve declared for Mt Holland Lithum Project" which is available to view at https://www.asx.com.au/asxpdf/2018/18/2016/141927zpt)14m0.pdf. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market amouncement and, in the case of estimates of Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the original announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

#### **Production Targets:**

The information in this presentation that relates to Production Targets is sourced from an announcement issued to ASX on 18 December 2018 fitted "Integrated Pre-feasibility Study completed on schedule and maiden Ore Reserve declared for Mt Holland Lithium Project" which is available to view at

https://www.asx.com.au/asxpat/2018/218/pdf/441927zpty14m0.pdf. The Company confirms that all the material assumptions underpinning the Production Targets and the forecast financial information derived from the Production Targets in the original announcement continue to apply and have not materially changed.

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### Who We Are

Kidman Resources Limited ("Kidman") is an ASX listed lithium developer with a 50% interest in the globally significant Mt Holland Lithium Project

- Kidman acquired the Mt Holland Lithium Project in 2016
  - In September 2017 Kidman introduced a partner to the project – Sociedad Química y Minera de Chile ("SQM"), the world's largest lithium producer<sup>1</sup>
  - ▶ Now a 50:50 joint venture named Covalent Lithium
- Mt Holland Lithium Project comprises a mine & concentrator at Mt Holland and a refinery to be located at Kwinana
  - Mine site includes the globally significant Earl Grey deposit, one of the largest hard rock lithium deposits in the world
- Covalent Lithium will be an integrated producer and supplier of premium, battery-grade lithium hydroxide for the high-growth electric vehicle market
- Pre-feasibility study ("PFS") completed, definitive feasibility study ("DFS") underway
- Kidman is distinguished by its interest in this globally significant deposit, vertically integrated project, world-class partner, offtake strategy and aiming to produce a premium product



## The Kidman Story

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3

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**Globally Significant Resource** 

Strong Demand Outlook

World Class Partner

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Strategic, Integrated Producer

**Robust Project Economics** 



Significantly De-Risked Project

# Globally Significant Resource

Earl Grey is a high-quality, globally significant hard rock lithium deposit that is strategically located in the tier-1 mining jurisdiction of Western Australia

- Earl Grey is a globally significant, high quality Mineral Resource of 189Mt @ 1.5%  $\rm Li_2O$
- High confidence estimate, over 91% measured and indicated, with 7.03Mt of contained lithium
- One of the largest hard rock lithium deposits globally
- Maiden Ore Reserve of 94.2Mt @ 1.5% Li<sub>2</sub>O announced in December 2018<sup>1</sup>
- Potential for significant future upside from further exploration work
- Size and favourable ore body characteristics expected to make Kidman a long-life, low-cost producer of lithium hydroxide with a C1 cash operating cost (net of byproducts) of US\$4,507/t LiOH<sup>1</sup>



#### **Conceptual Pit with Drill Holes**



# 2 Strong Demand Outlook

Demand for lithium is supported by increasing penetration of electric vehicles, with lithium hydroxide in particular being used in the fastest-growing battery types

- Electric vehicle penetration continues to increase rapidly
- Strong commitments from major global automotive original equipment manufacturers to increase electric vehicle production
- Demand for lithium ion batteries expected to grow at ~30% per annum between 2012 and 2030, with automotive demand the key driver<sup>1</sup>
- Lithium hydroxide used for fastest growing battery cathodes in electric vehicle applications
- End-market users looking for sources of secure, stable supply of lithium hydroxide from high-quality producers in tier 1 jurisdictions



#### Forecast Lithium-Ion Battery Demand by End-Use Market (MWh)<sup>1</sup>

# 3 World Class Partner

SQM is a high quality joint venture partner, with significant expertise and relevant experience in lithium helping to de-risk the project

- SQM is the world's largest lithium producer and accounts for more than 20% of lithium supply globally<sup>1</sup>
- Kidman and SQM formed joint venture in September 2017
- Earn-in now complete following receipt of the outstanding milestone payments in December 2018
- SQM has noted its "strong commitment" to the Mt Holland Lithium Project, with a significant investment made to date<sup>2</sup>
- Significant support from SQM, including US\$100m debt facility to be provided to Kidman (agreement substantially complete)
- Strong working relationship, with Kidman leveraging SQM's project management and operating experience to de-risk the project

- 4. As at December 2017
- 5. In industrial sodium and potassium nitrate markets

SQM Portfolio Overview						
	arphi	2	<b>(1)</b>	Ì		
2018 LTM <sup>3</sup>	Speciality Plant Nutrition	Lithium and Derivatives	lodine and Derivatives	Potassium	Industrial Chemicals	
Market Share <sup>4</sup>	54%	23%	35%	<3%	>30% <sup>5</sup>	
Sales Volumes	1,099 kMT	43.6 kMT	13.1 kMT	964 kMT	182 kMT	
Revenues	US\$793m	US\$680m	US\$304m	US\$298m	US\$149m	
Contribution to LTM Gross Profit	22%	55%	12%	5%	6%	

<sup>1.</sup> Roskill refined lithium output (2017)

<sup>2.</sup> SQM earnings announcement for the six months ended June 30, 2018

<sup>3.</sup> Twelve months ended 30 September 2018

# 4 Strategic, Integrated Producer

#### Kidman represents a rare opportunity to invest in an integrated producer of lithium hydroxide

- Lithium hydroxide expected to be a more attractive part of the value chain than selling spodumene concentrate to overseas converters
- Demand for and price of lithium hydroxide has been more robust than lithium carbonate as used in fastest growing battery cathodes
- Concentrator annual production of 411,233t spodumene concentrate @ 5.5% grade (subject to further optimisation)
- Refinery average annual production of 45,254t batterygrade lithium hydroxide (22,627t Kidman share)
- Aiming to produce a high-quality, premium product which is required by battery and automotive producers
- Future expansion potential, with the refinery expansion not constrained by the mine



#### Additional potential to expand Refinery production

# 5 Robust Project Economics

The Integrated PFS confirms the project has a compelling business case with attractive economics

- Long-life, low cost operation with robust operating margins
- Post-tax NPV<sub>10%</sub> (nominal) of US\$2.2 billion<sup>1</sup>
- IRR of 26.6%
- Total integrated capex of US\$737 million (US\$368 million Kidman share) including contingencies
- C1 cash operating cost of US\$4,507/t LiOH (excluding government royalties)<sup>2</sup>
- Integrated DFS expected to be completed in 1H 2019

Summary Outcomes of Integrated PFS (100% Basis)

Outcomes	Unit of Measure	Integrated PFS (Dec-18)	
Estimated Project Life	years	47	
Life of Project revenue (real)	US\$ billion	33.3	
Life of Project EBITDA (real)	US\$ billion	21.2	
Integrated Capital (excluding contingency)	US\$ million	609	
Integrated Capital (including contingency)	US\$ million	737	
Post-tax NPV <sub>10%</sub> nominal	US\$ billion	2.2	
Internal rate of return (IRR)	%	26.6	
C1 cash operating cost (net of intermediate products) <sup>2</sup>	US\$ / tonne LiOH	4,507	
Life of Project assumed LiOH price (real) <sup>3</sup>	US\$ per tonne	15,115	

1. 100% basis. NPV discount factors are presented on a nominal basis

 Integrated cash operating cost excludes cash cost for government royalties and is net of revenue from excess concentrate production not used for Refinery (being US\$578/t in the IPFS)

3. Based on Roskill price estimates



# 6 Significantly De-Risked Project

Kidman has made significant progress in de-risking the Mt Holland Lithium Project and is now funded for initial stages of project capital expenditure

- Offtake arrangements in place that, once finalised, will cover ~75% of production in initial years of the project
- High quality offtake counterparties (Tesla, Mitsui & Co (definitive agreement pending), LG Chem (definitive agreement pending)) and terms provide strong support for debt finance
- SQM debt facility (US\$100m, agreement substantially complete) on attractive terms and provides funding for initial stages of the project
- A\$30.9 million Kidman cash balance as at Dec-18
- A\$82.6 million joint venture cash balance as at Dec-18
- Progressing discussions in relation to conventional project finance
- Strong indications of interest from multiple high quality counterparties in Stage One of debt process



### Delivering the Mt Holland Lithium Project <u>– Rec</u>ent Steps

Kidman has taken a methodical approach to de-risking the Mt Holland Lithium Project through high quality technical work, offtake agreements and a parallel commencement of a process to secure financing for its share of the project

- Mar-18: Substantial increase in Earl Grey Mineral Resource Estimate
- May-18: Refinery site location confirmed
- May-18: Offtake agreement with Tesla

2018 Key Developments

- ✓ Oct-18: Refinery PFS and updated Mine & Concentrator scoping study released
- Oct-18: Entered into funding term sheet with joint venture partner SQM
- Nov-18: Offtake binding Heads of Agreement with Mitsui
- Dec-18: Settlement of Mt Holland tenement matter
- Dec-18: Integrated (Mine & Concentrator and Refinery) PFS and maiden Ore Reserve declared
- Dec-18: Receipt of SQM milestone payments
- ✓ Dec-18: Offtake non-binding Memorandum of Understanding with LG Chem
- Dec-18: Completed Stage One of project financing process with strong interest



# Debt Financing Process Update

Kidman is actively progressing its debt financing process, with significant interest received to date

- Completed first stage of debt financing process in Q4 2018
  - Received indicative terms
  - ► Confirmation of significant interest
  - ► Core group of banks selected
- Support Kidman's strategy to maximise debt funding and minimise equity funding
  - ► Quality of offtake arrangements represent a key differentiator
- Process includes multiple leading domestic and international lenders
- Next phase of process to commence in Q1 2019



## Key Takeaways

Kidman is well progressed on its strategy of becoming a low-cost, integrated producer of lithium hydroxide for the growing electric vehicle market

- ✓ High-quality, globally significant resource located in the tier 1 mining jurisdiction of Western Australia
- Supportive longer-term underlying demand thematics
- SQM is a high-quality joint venture partner and provides significant support to project delivery
- Kidman will be one of few integrated producers of lithium hydroxide
- Integrated PFS has demonstrated strong economics of the project, Integrated DFS expected in 1H 2019
- Kidman is now funded for initial stages of project capital expenditure, with offtake arrangements providing support for Kidman's ongoing bank financing discussions



### Appendix

**Additional Information** 



## Indicative Project Timetable



## Lithium Consumption by Product



### Board of Directors



#### John Pizzey – Non-Executive Chairman

- Has been involved in the resources industry for more than 40 years, with Alumina, Iluka Resources, Amcor, WMC and Alcoa
- Has held Chairman and Non-Executive Director roles at a number of ASX listed companies, Life Member and former Chairman of the International Aluminium Institute and former Chairman of the London Metal Exchange



#### Martin Donohue - Chief Executive Officer & Managing Director

- Founder of Kidman Resources, Diggers and Dealers 'Dealer of the Year' 2018
- Over 15 years' experience in equity capital markets and the natural resources sector, directly involved in evaluating mineral Projects at various stages of development and raising capital



#### Brad Evans - Non-Executive Director

- Mining engineer with nearly 20 years' experience in the mining industry, currently the General Manager of Mining Plus
- Bachelor of Engineering (Mining) at the University of Ballarat
- Experience includes production, planning and management on mine sites and as a service provider in the consulting industry



#### David Southam – Non-Executive Director

- Extensive industry experience including significant capital markets expertise, familiarity with the set-up and operation of joint ventures, negotiation of substantial international commodity offtake agreements and has a background covering base and precious metals, bulk materials, contracting and industrial logistics
- Executive Director at Western Areas from 2010 to 2018 and previously Non-Executive Director of a number of ASX-listed companies
- Currently Managing Director at Mincor Resources



#### Aaron Colleran – Non-Executive Director

- Founding member of the Evolution Mining leadership team, having managed their business development program until 2018
- Originally an exploration geologist with commercial tertiary qualifications
- Extensive career in the resources-related finance industry



## Management Team

#### Frederick Kotzee - Chief Financial Officer

- Previously CFO of Kumba Iron Ore Limited, a leading supplier of high quality iron ore to the global steel industry that is listed on the Johannesburg Stock Exchange and part of Anglo American Plc. Prior to that, was Group Financial Director of African Oxygen Limited, a member of the Linde AG group
- Extensive experience in Investment Banking, Corporate Finance and Business Development
- Chartered Accountant and holds a Bachelor of Laws from the University of South Africa

#### Chris Williams – General Manager – Operations

- Mining engineer with over 30 years experience in underground and open pit mining operations and management roles throughout Australia
- Previously in various senior roles with Panoramic Resources including General Manager Operations (Savannah and Lanfranchi nickel mines) and General Manager Projects and Technical Services

#### Michael Green – Exploration Manager

- Previously with Newmont Mining and gained broad experience with varied mineralised systems working in both the Regional Exploration Team in QLD, NSW and the NT before moving to the Tanami Operations in the Northern Territory
- Part of the Newmont team that made the Oberon Regional discovery and the near mine Auron Ore body discovery

#### Thomas Wilcox - General Counsel and Company Secretary

- Previously worked for CSG as General Counsel and Company Secretary and prior to that spent eight years with Rio Tinto in a number of legal and commercial roles in London, Melbourne and Darwin
- Prior to joining Rio Tinto was employed in private legal practice in Melbourne and London from 2003



### **Resource and Reserves**

#### Mineral Resource Estimate for the Earl Grey Lithium Deposit – March 2018

Classification	Mt	Li <sub>2</sub> O %	Fe <sub>2</sub> O <sub>3</sub> %	Li <sub>2</sub> O (Mt)	Li <sub>2</sub> O cut-off
Measured	66.0	1.58	1.18	1.0	0.5%
Indicated	106.0	1.52	1.09	1.6	0.5%
Inferred	17.0	1.11	1.20	0.2	0.5%
Total	189.0	1.50	1.13	2.8	0.5%

#### Ore Reserves for the Earl Grey Deposit – December 2018

Classification	Feed (Mt)	Grade Li <sub>2</sub> O %	Grade Fe <sub>2</sub> O <sub>3</sub> %	Grade Ta₂O₅ (ppm)	Waste (Mt)	Total (Mt)
Proved	54.4	1.5	1.3	45	199	253
Probable	39.8	1.5	1.4	54	222	261
Total	94.2	1.5	1.4	50	422	515



8 February 2019

Mt Holland Project Investor Presentation - General Overview

Western Australian Mining and Refining



# **General Overview**

**Presenter: Mark Fones** 

Covalent Lithium |

## **General Description • Overview**

- Objective is to produce 45,254t battery-grade lithium hydroxide by 2021
- Ore Reserves: 94.2Mt @1.5%  $Li_2O$  out of previous Mineral Resource estimation of 189Mt @1.5%  $Li_2O$
- Location and logistics allows for efficient transport of concentrate and end product
- Project Context:
  - Level 2 Lead Agency Service, by the Western Australian Government

2021

- Process technology & partners
- Industry & Business Environment
- Commissioning Timeframes:
  - Mine & Concentrator 2H-2020
  - Refinery



## General Description • Mine & Concentrator

- The Mine & Concentrator are located approximately 120 km south of Southern Cross, and approximately 450 kilometers east of Perth
- Mt Holland site is a previously disturbed brownfield area: Bounty gold operations largely unrehabilitated
- Currently being assessed by the Western Australian Environmental Protection Authority under Part IV of the Environmental Protection Act 1986 at the level of assessment of Public Environmental Review. The Australian Government Department of Environment and Energy assessed the project as a "controlled action" under the Environment Protection and Biodiversity Conservation Act 1999 and authorised it to be assessed under the Western Australian assessment process.

#### Operation

- Expected Li<sub>2</sub>O recovery of 75% for concentrator
- Concentrator expected to produce approximately 411kt per year of spodumene concentrate at 5.5% Li<sub>2</sub>O (Life of Mine of at least 47 years)
- Further optimization and value engineering analysis are being performed at the concentrator throughput levels

Reserves	Ore (Mt)	Grade Li2O (%)	Grade Fe2O3 (%)	Grade Ta <sub>2</sub> O <sub>5</sub> (ppm)	LCE (Mt)
Proved	54.4	1.5	1.3	45	2.02
Probable	39.8	1.5	1.4	54	1.47
Total	94.2	1.5	1.4	50	3.49

#### Covalent Lithium | General Description







## General Description • Kwinana Refinery

- Covalent Lithium has entered into an option to lease Lot 15, Mason Road in Kwinana to construct the refinery:
  - Located in the Kwinana Strategic Industrial Area approximately 35km south of Perth CBD
  - 76 hectares 2 year option to lease
  - Relevant business network and services in Kwinana

#### Operation

- The refinery is expected to have a recovery of 85% from the lithium contained in the spodumene concentrate
- Designed with a capacity to produce 45,254tpa of batterygrade lithium hydroxide (40,000tpa of LCE)







### JV Structure •

#### JV Ownership

- Kidman and SQM each own 50% of the joint venture tenements and the future project assets
- Kidman and SQM each own 50% of Covalent Lithium

#### **Covalent Lithium**

• Covalent Lithium has the responsibility to manage, design, construct and operate the Mt Holland Lithium Project

#### **Corporate Governance**

• Joint venture technical committee and management committee periodically review and approve relevant technical and management decisions





**Corporate Governance** 



# **Project** • Organization & Strategy

- Project organization and reach is far bigger than Covalent Lithium's employees
- In addition to receiving constant support and guidance from shareholders, Covalent Lithium has engaged first tier consultants to deliver/develop the best project delivery possible
- Integrated Project Team (IPT) with Project Management Consultant (PMC), providing:
  - 1. Project Controls & Governance
  - 2. Alignment of Incentives & Performance
  - 3. Clear command & control
- Partner selection:
  - 1. Relevant experience in Western Australia
  - 2. Major league PMC provider
  - 3. Efficient performance
  - 4. Outstanding Team
- Covalent Lithium IPT currently developing engineering, commercial framework, contract template and delivery strategies, processes and procedures
- IPT currently defining best construction strategies for both Mine & Concentrator and Refinery
  - Assessment includes a combination of Engineering Procurement and Construction (EPC), Turn-Key, Design and Construct (D&C), Novated Contracts, Service Contract (SC), among others

#### **Studies**

- IPT delivered Integrated PFS in December 2018
- IPT currently developing Integrated DFS for delivery in 1H 2019





### The geology, mineralogy, and resource modelling of the Earl Grey lithium deposit, Mt Holland pegmatite field, Western Australia

8 February 2019







### Presenter: Ben Cerlienco



Western Australian Mining & Refining

### Western Australian Lithium Pegmatites



- One long-term Australian lithium producer: Greenbushes (1983-). Demand for lithium led to the assessment of many known spodumene pegmatites discovered during historic tin-tantalum mineralisation
- Earl Grey the only major deposit in development based on brand new discovery





DEPOSIT	COMPANY	RESOURCE
Greenbushes	Albemarle / Tianqi	157 Mt @ 2.25% Li <sub>2</sub> O
Earl Grey	Kidman / SQM	189 Mt @ 1.5% Li <sub>2</sub> O
Wodgina	Mineral Resources	234 Mt @ 1.21% Li <sub>2</sub> O
Pilgangoora	Pilbara Minerals	226 Mt @ 1.27% Li <sub>2</sub> O
Mt. Marion	Neometals / Lithium Australia	77.8 Mt @ 1.37% Li <sub>2</sub> O
Pilgangoora	Altura Mining	44 Mt @ 1.00% Li <sub>2</sub> O
Bald Hill	Tawana Resources	18.9 @ 1.18% Li <sub>2</sub> O
Mt. Cattlin	Galaxy Resources	16.7 @ 1.28% Li <sub>2</sub> O

Source: Publicly available data

### Discovery Timeline



- Mt Holland tenement package acquired in December 2015 for +1 Moz gold endowment within Bounty goldfield
- Earl Grey pegmatite discovered by Kidman in April 2016 following re-examination and interpretation of historic drilling in pegmatite petrogenetic context
- First drilling campaign from June 2016-November 2016 defined maiden resource (Indicated + Inferred) of 128 Mt @ 1.44% Li<sub>2</sub>O at a 0.5% Li<sub>2</sub>O cut-off
- Second resource drilling campaign over summer 2017-2018 increased resource to 189 Mt @ 1.5% Li<sub>2</sub>O at a 0.5% Li<sub>2</sub>O cut-off, including 66Mt in Measured
- Technical drilling programmes for metallurgical, geotechnical, and hydrogeological work undertaken



Classification	Tonnes	Li <sub>2</sub> O %	Fe <sub>2</sub> O <sub>3</sub> %	Li <sub>2</sub> O Tonnes	Li <sub>2</sub> O cut-off
Measured	66,000,000	1.58	1.18	1,040,000	0.5%
Indicated	106,000,000	1.52	1.09	1,610,000	0.5%
Inferred	17,000,000	1.11	1.20	190,000	0.5%
TOTAL	189,000,000	1.50	1.13	2,840,000	0.5%

The preceding statements of Mineral Resources conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2012 Edition. All tonnages reported are dry metric tonnes. Minor discrepancies may occur due to rounding to appropriate significant figures. **Refer Kidman ASX Announcement 19**<sup>th</sup> March 2018

### Local Geology



- Steeply dipping amphibolite-facies Archaean stratigraphy
- Basal high-Mg basalt, komatiitic basalt and andesite transition to komatiite flow units within lower succession
- Upper and alusite-staurolite bearing sedimentary schists
- Belt-scale shear zones localised on lithological contacts, significant folding and faulted repetitions likely within stratigraphy
- Pegmatite cross-cuts stratigraphy, intruding late-stage structures
- Two cross-cutting Proterozoic dolerite dykes
- Twinings gold trend occurs in hanging wall to pegmatite, where NW trending shears intersect sulphidic sedimentary horizons



### Geometry and Structural Setting



- Strike extent of main body ~1.6 km, dip extent of >2.2 km, up to 100 m thick
- Multiple hanging wall and footwall apophyses, horsetails at southern margin; terminates against dolerite dyke
- Dip to NW at 5-15 degrees, intersected and offset by regional shears
- Switch in interpreted minimum principal stress orientation (S3) from horizontal to vertical is coincident with the development of low-angle structures and emplacement of pegmatite



### Earl Grey Drilling



- 324 holes for 63,965 m drilled for exploration and resource development since June 2016
- Includes >90 diamond drill holes, representing around 25% of all drilling. Significant benefit in mineralogical logging and metallurgical testwork
- Additional hydrogeological drilling (8 holes) and wider sterilisation drilling undertaken
- Routine assaying for suite of major and trace elements at ALS Perth by fusion and 4-acid digest with ICP-MS and ICP-AES
- Standard QAQC procedures including standard and duplicate insertion and umpire laboratory testing, all performing within expected tolerances
- >1200 X-ray diffraction samples completed, >60 thin sections, and 10 SQI Qemscan samples



### Earl Grey Geological Modelling



- 3D geological model completed by Kidman in Leapfrog as complex vein model utilising geochemical criteria to avoid RC drilling boundary smearing
- Four structural domains separated by N-S shear zones
- Resulting pegmatite model geologically realistic and includes minimal wall rock dilution (98% logged pegmatite) in fresh rock
- Continued drill testing has progressively validated model while refining position of narrower foot wall and hanging wall dykes

- Li-aluminosilicate mineralogy modelled utilising XRD and logged downhole mineralogy. Data density much lower for mineralogy than geochemistry, and as such mineral zones are broader in nature
- Spodumene, mixed spodumene-petalite, petalite and cookeite-dominated alteration zones modelled
- Local geology and weathering surfaces also modelled



### Earl Grey Resource Modelling



- Undertaken by Mining Plus in February 2018
- Variography for Li<sub>2</sub>O, Fe<sub>2</sub>O<sub>3</sub> and Ta undertaken on each individual mineralogical domain within pegmatite body/splay in each fault block and weathering domain
- Global parent model block size of 50mE x 50mN x 5mRL, with infill area (Measured) at 25mE x 25mN x 2.5mRL. Sub-blocked to 5mE x 5mN x 0.5mRL
- Grade estimation with OK, except for barren feldspar zone using ID2 due to low sample population
- Classification based on drilling density, first pass estimation and Li<sub>2</sub>O% slopes of regression





8 February 2019

Mt Holland Project Investor Presentation - Process Description

Western Australian Mining and Refining



# **Process Description**

**Presenter: Juan Canales** 

Covalent Lithium | Process Team

## **General Description • Overview**



Covalent Lithium | Process Team

### **Concentrator** • Overview



## Refinery • Overview



Covalent Lithium | Process Team

# Refinery • Overview

- Concentrate will be treated through calcination, acid roast, purification, Glauber's salt and twostage lithium crystallization to produce battery grade lithium hydroxide.
- Trace impurities are removed from purified solutions using ion exchange columns, mainly Calcium and Magnesium
- Metallurgical process recovery is estimated at 85%.



