



# PILBARA MINERALS

LIMITED

ASX Code: PLS



## Powering a Sustainable Energy Future

Corporate Presentation - May 2018



@PilbaraMinerals



@KenBPilbara



pilbaraminerals



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## Mineral Resources and Ore Reserves

Recipients of this presentation outside Australia should note that it is a requirement of the Australian Securities Exchange listing rules that the reporting of ore reserves and mineral resources in Australia comply with the Australasian Joint Ore Reserves Committee Code for Reporting of Mineral Resources and Ore Reserves ("JORC Code"), whereas mining companies in other countries may be required to report their ore reserves and/or mineral resources in accordance with other guidelines (for example, SEC Industry Guide 7 in the United States). Recipients should note that while Pilbara's mineral resource and ore reserve estimates comply with the JORC Code, they may not comply with the relevant guidelines in other countries, and do not comply with SEC Industry Guide 7. In particular, SEC Industry Guide 7 does not recognise classifications other than proven and probable reserves and, as a result, the SEC generally does not permit mining companies to disclose their mineral resources, including indicated and inferred resources, in SEC filings. Accordingly, if Pilbara were reporting in accordance with SEC Industry Guide 7, it would not be permitted to report any mineral resources, including indicated and inferred resources, and the amount of reserves reported by Pilbara may be lower than its estimates. You should not assume that quantities reported as "resources" will be converted to reserves under the JORC Code or any other reporting regime or that Pilbara will be able to legally and economically extract them. In addition, investors should note that under SEC Industry Guide 7, mine life may only be reported based on ore reserves. Mine life estimates in this presentation assume that a portion of non-reserve resources will be converted to ore reserves, which would not be permitted under SEC Industry Guide 7.

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## Competent Person Statement

Information relating to the mineral resource estimate at the Pilgangoora Project is extracted from the ASX announcement dated 29 May 2018 entitled "*Pilgangoora Resource Upgrade*", information relating to the current ore reserve estimate at the Pilgangoora Project is extracted from the ASX announcement dated 29 June 2017 entitled "*Pilbara More Than Doubles Pilgangoora Ore Reserves*", information relating to the maiden ore reserve estimate at the Pilgangoora Project is extracted from the ASX announcement dated 10 March 2016 entitled "*Pilgangoora Lithium-Tantalite Pre-Feasibility Study*" and information relating to the production target and forecast financial information derived from the production target is extracted from the ASX announcements dated 20 September 2016 entitled "*Pilgangoora DFS Confirms World Class/Lithium Project*" and dated 13 February 2018 "*Updated PFS Announcement*" (each of which is available at [www.pilbaraminerals.com.au](http://www.pilbaraminerals.com.au)). Pilbara confirms that it is not aware of any new information or data that materially affects the information included in these ASX announcements and that all material assumptions and technical parameters underpinning the estimates, the production target and forecast financial information derived from the production target in the announcements continue to apply and have not materially changed.



# PILBARA MINERALS LIMITED

Company Overview

Lithium Markets

Pilgangoora Stage 1 Project

Pilgangoora Stage 2 Project

Summary





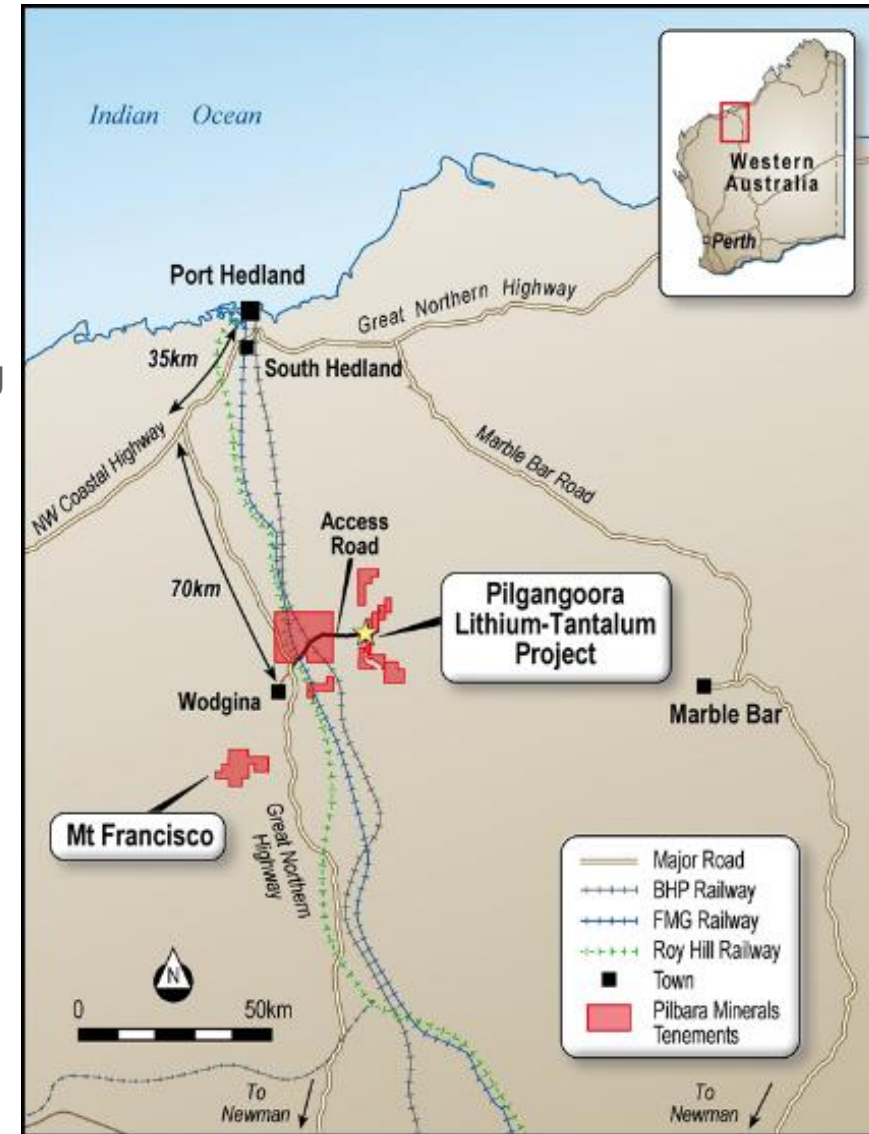


# Pilbara Minerals – Overview

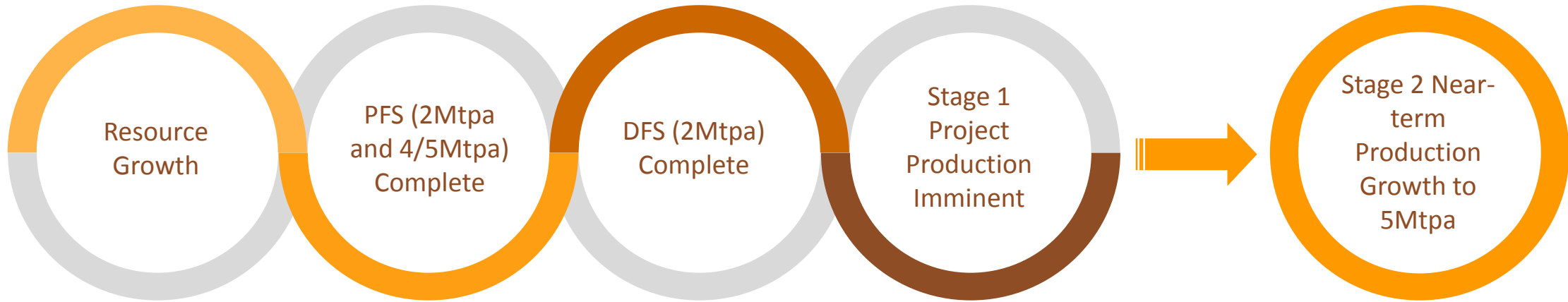
- ▶ Pilgangoora is located in the Pilbara region of Western Australia, a proven mining jurisdiction 120km south of Port Hedland with established transport and port infrastructure
- ▶ 100% ownership interest in the world-class Pilgangoora Lithium-Tantalum Project
- ▶ One of the largest spodumene-tantalite resources in the world, significant further exploration potential
- ▶ 2Mtpa Definitive Feasibility Study (“DFS”) demonstrated technical and financial viability of Pilgangoora development (completed in September 2016)
- ▶ 2Mtpa project construction and working capital is fully funded, construction is nearing completion and targeting first concentrate from June 2018
- ▶ High quality cornerstone offtake partners: General Lithium, Ganfeng Lithium, Great Wall Motors and POSCO
- ▶ 5Mtpa Pre-Feasibility Study (“PFS”) completed in February 2018 delivered exceptional results indicating compelling project economics (inclusive of both Stage 1 and Stage 2):
  - ▶ *Post-tax NPV<sup>2</sup> of A\$2.1Bn, rapid payback (3 years), and strong IRR (56%)*
  - ▶ *Low LOM cash operating costs<sup>1</sup> of US\$225/tonne CIF; globally competitive*
  - ▶ *LOM average EBITDA A\$382Mpa*
  - ▶ *Annual average production 800ktpa of 6% spodumene concentrate (over 100ktpa LCE equivalent)*
  - ▶ *Stage 2 Capital estimate of A\$207M*
- ▶ DFS on the Stage 2 expansion well underway and on track for completion by mid-2018, paving the way for a Final Investment Decision (“FID”) in Q3 2018, with start of construction by Q4 2018 and commissioning from Q4 2019

1. Cash operating costs include all mining, processing, transport, port, shipping/freight, site based general and administration costs, and corporate administration/overhead costs allocation, state and private royalties and native title costs, and are net of Ta<sub>2</sub>O<sub>5</sub> by-product credits

2. Net Present Values (NPV) are presented on a nominal after tax basis using a 10% nominal discount rate



An emerging, low-cost producer of lithium and tantalum in the Pilbara region of Western Australia, a Tier-1 mining jurisdiction



## Resource Estimation

- ▶ JORC Inferred / Indicated 130Mt Resource completed
- ▶ Massive pegmatite endowment on Pilbara's tenure presents outstanding opportunities for further resource and reserve growth
- ▶ Key global strategic resource



## Project Definition

- ▶ Maiden Ore Reserve, 29.5Mt @ 1.31% Li<sub>2</sub>O, 134ppm Ta<sub>2</sub>O<sub>5</sub> tantalite
- ▶ Outstanding project economics
- ▶ Low cost hard-rock Spodumene production
- ▶ Further ore reserve growth expected, growing mine-life



## Detailed Design and Project Planning

- ▶ Updated Ore Reserve of 80.3Mt @ 1.27% Li<sub>2</sub>O, 123ppm Ta<sub>2</sub>O<sub>5</sub>; long mine-life
- ▶ Plant process and design optimisation
- ▶ Product specification and bulk samples to customers
- ▶ Tailings design
- ▶ Opex & Capex updates
- ▶ Updated financial models



## Project Delivery / Production

- ▶ Updated Resource of 213Mt 1.32% Li<sub>2</sub>O
- ▶ Native Title Agreement
- ▶ Mining Leases granted
- ▶ Construction commenced
- ▶ Plant EPC Contract Tender/Award
- ▶ Native Vegetation Clearing Permit
- ▶ Mining Proposal Approval
- ▶ Secure offtake
- ▶ Financing / FID
- ▶ Other construction and operating contracts
- ▶ ROM ore sales commenced
- ▶ Commissioning / 1<sup>st</sup> conc on track from Q2 2018
- ▶ Conc. production imminent



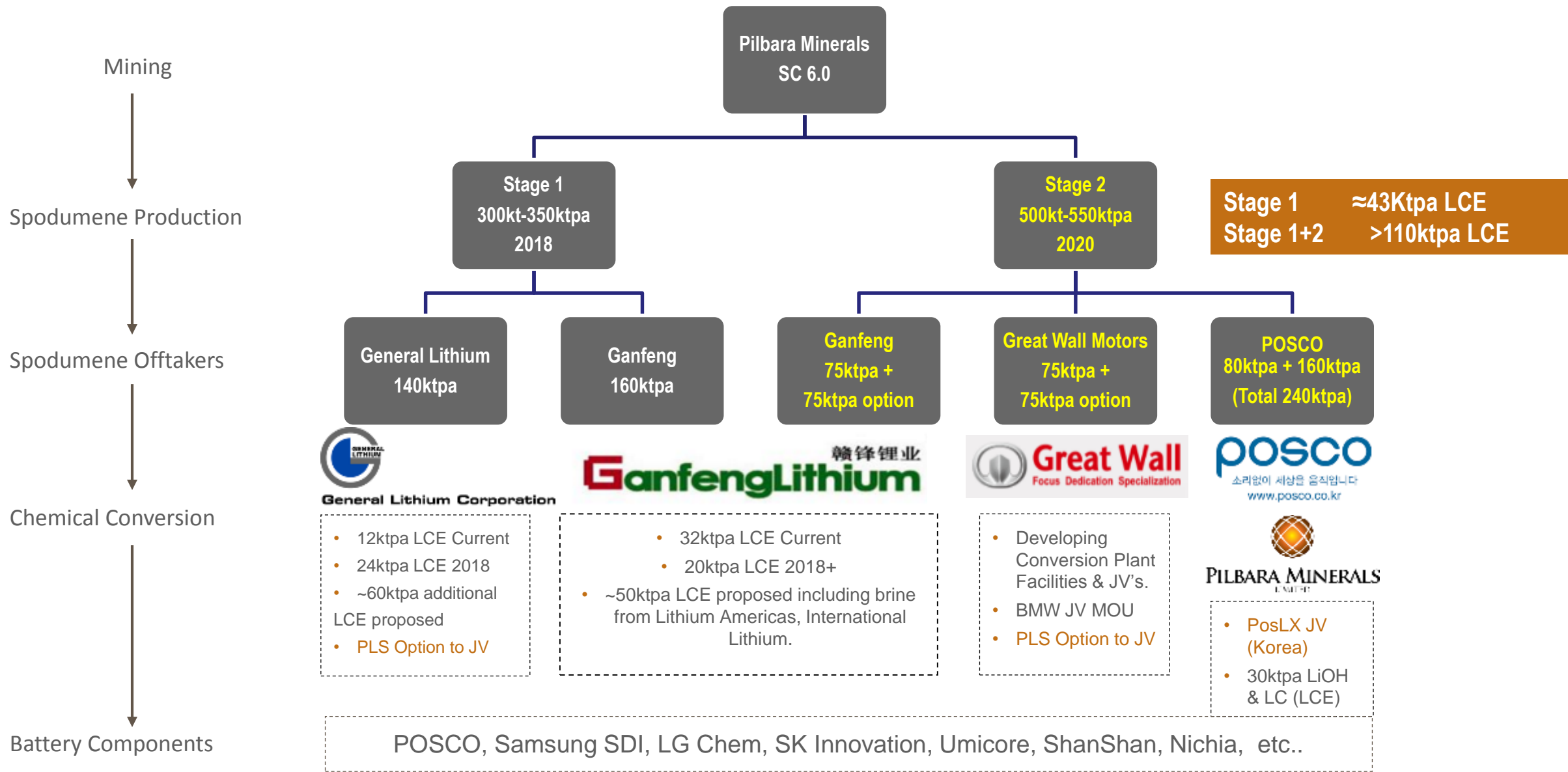


General Lithium Corporation



Over 110kt (LCE basis) of offtake sold to outstanding project partners:

- Scale
- Quality
- Excellent Technology
- Experience, Battery Grade Materials







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The way we Generate, Use, Distribute and **Store** energy is changing.

**Lithium Ion** rapidly becoming the **dominant** rechargeable battery technology.

**Electric Vehicle** uptake driving the growth in demand, followed by energy storage.

## The Lithium-ion Battery is the storage of choice



Super Energy Density



Lighter, more compact & portable



Longer life-cycle and more cost efficient



More environmentally friendly

## Batteries are the fastest growing segment of Lithium Demand



**Transportation**

Cars, buses, bikes.

**26.3%**

CAGR\*  
(Roskill)



Consumer **Electronics**

+ power tools + e-mobility

**7.5%**

CAGR  
(Roskill)



**Renewable**  
Grid Storage

**16.5% - 35%**

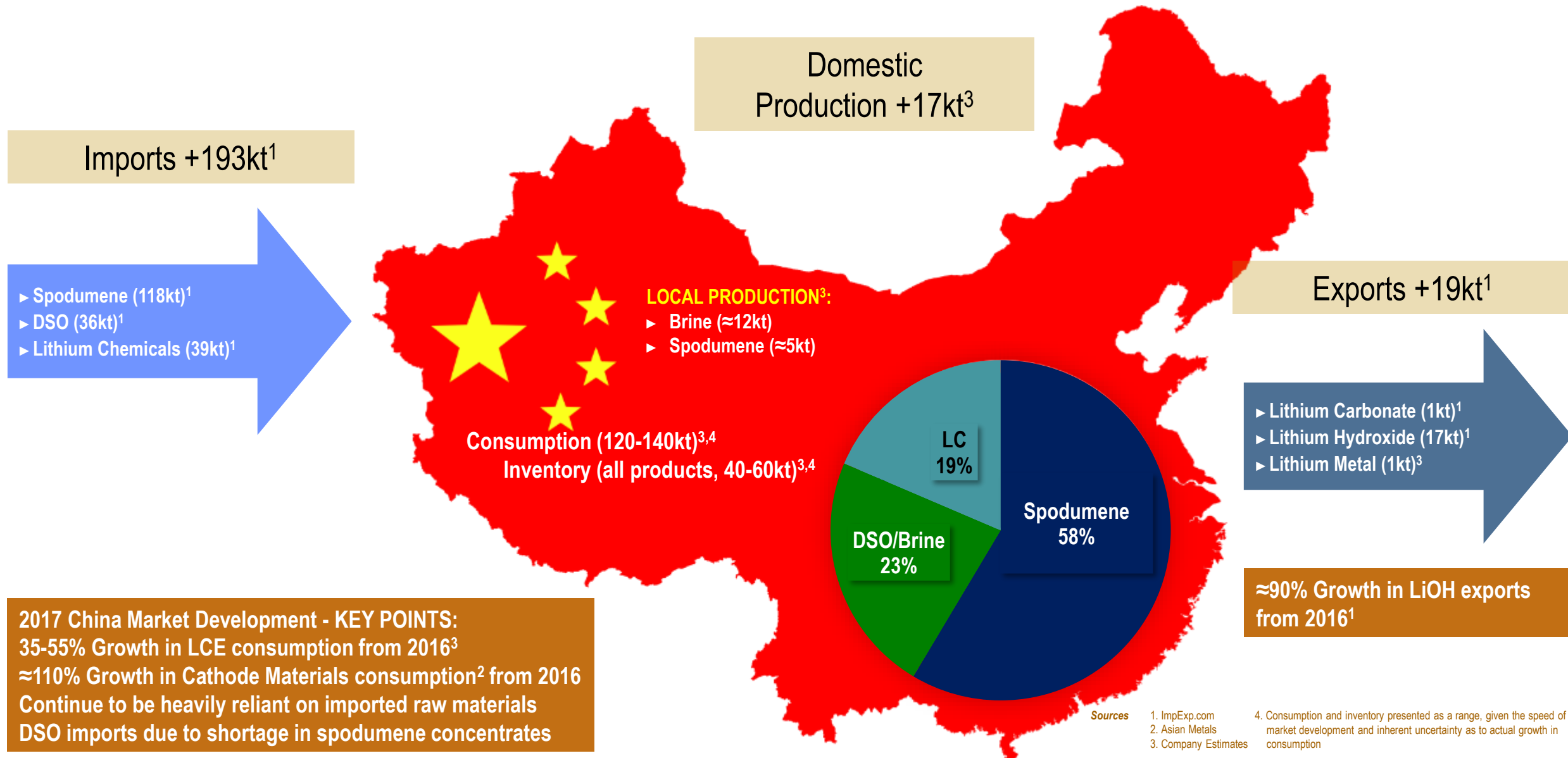
CAGR  
(Roskill)

CAGR  
(Industrial  
Minerals)

\* CAGR is 2016 to 2026



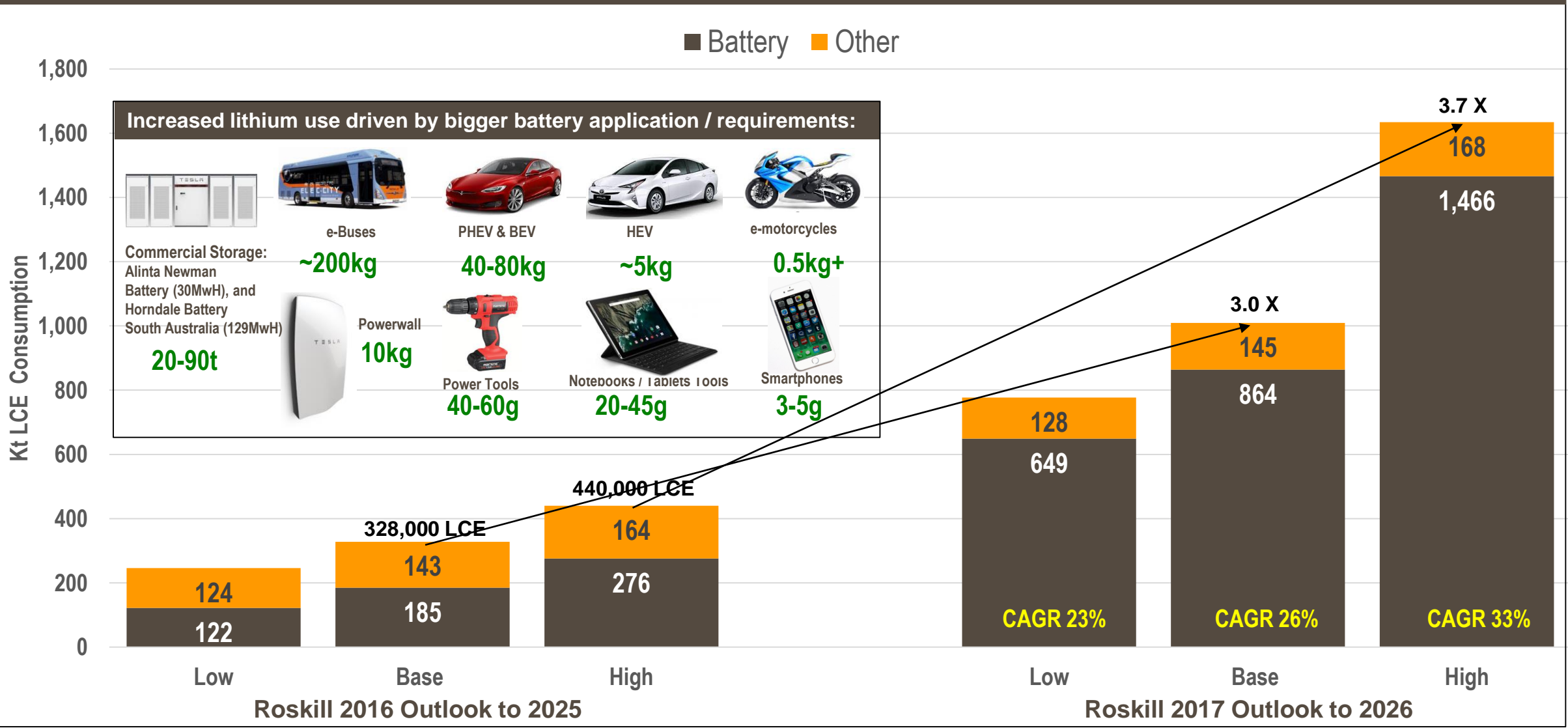
# China Market Overview - 2017 Snapshot (Lithium Carbonate Equivalent)







## Major upgrades in demand growth driven by realisation as to market scale and economics of battery application





- ▶ Lithium raw materials are the vital ingredient for lithium battery technology
- ▶ Lithium is sourced predominantly from:
  - ▶ *hard-rock mining of spodumene deposits;*
  - ▶ *extracting lithium from brine deposits*
- ▶ Australia is the world's largest producer of spodumene concentrate with three mines in production
- ▶ The Pilgangoora deposit is one of the world's largest lithium-tantalum resources
  - ▶ *Measured, Indicated and Inferred Resources of 213.3Mt @ 1.32% Li<sub>2</sub>O (lithia) and 116ppm Ta<sub>2</sub>O<sub>5</sub>*
- ▶ Spodumene ore is processed into a spodumene concentrate (6% Li<sub>2</sub>O) and then converted into a lithium carbonate or lithium hydroxide to be utilized in lithium battery components
  - ▶ *Approximately 7.5t of 6% Li<sub>2</sub>O spodumene concentrate is required to produce 1t of lithium carbonate (at 90% recovery)*
  - ▶ *Approximately 6.75t of 6% Li<sub>2</sub>O spodumene concentrate is required to produce 1t of lithium hydroxide monohydrate (at 90% recovery)*

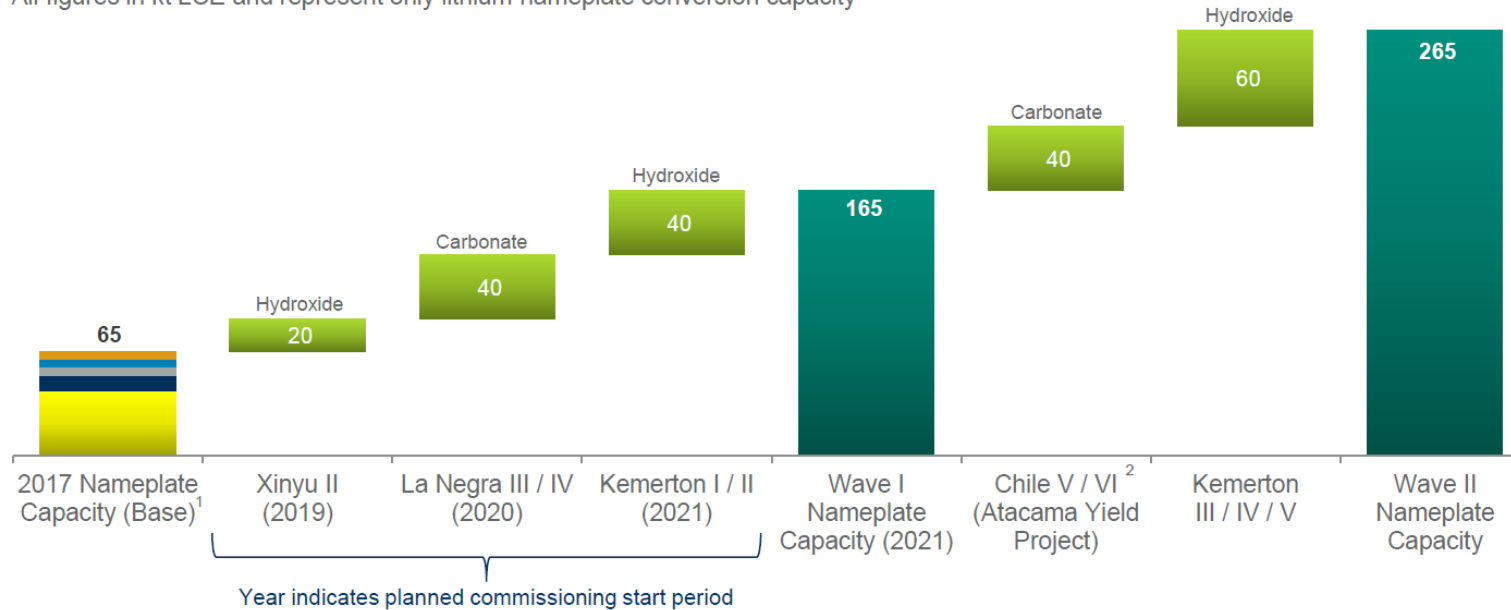


Source: Hybrid Cars, Tesla, Electric Bike



## Expanding Lithium Conversion Capacity in High Quality Resources

All figures in kt LCE and represent only lithium nameplate conversion capacity



Source: Albemarle Q1 2018 Earnings Presentation

Albemarle – 60% of the capacity expansions are in hard-rock sourced Hydroxide capacity.

The global majors are undertaking major investments in hard-rock capacity expansion, driven by:

- Significant demand for lithium in hydroxide, as higher nickel cathode lithium ion battery capacity grows,
- Battery grade Hydroxide products likely lowest cost from hard-rock sources,
- Quality and quantity stability, and
- Low jurisdictional risk in key mining locations.

Hard-rock sourced lithium is ideally suited to the higher quality and product requirements arising from battery demand growth





## **Li: Rongda to sell spodumene to Ruifu Lithium**

**China's Rongda Lithium will start supplying spodumene to domestic lithium salts producer Shandong Ruifu Lithium.**

**Rongda Lithium will supply a total of 15,000t of spodumene concentrate to Shandong Ruifu on 10 May-15 June at an average price of 8,276.25 yuan/t. The deal is worth Yn124mn (\$19.6mn). The spodumene will all be sourced from Australia and will have a lithium oxide grade of at least 5pc. Rongda will deliver the material to Zhenjiang, Jiangsu province.**

Source: Argus Metals / Asian Metals, 11<sup>th</sup> May, 2018

Recent domestic sales of spodumene within China report very strong pricing.

8,276.25 yuan/t = ≈US\$1,314/t (delivered, VAT inc.).

Ganfeng settled US\$960/t (delivered, VAT exc.) for the balance of 2018 calendar year with Mineral Resources / Neometals.

Strong demand for run-of-mine ore sales supports the shortage of quality product in the market.

Spodumene pricing outcomes remain very strong, driven by the rapid growth of the Nth Asian lithium ion supply chain



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- ▶ DFS completed in September 2016; subsequent update to reflect higher ore reserve (80.3Mt) further enhances project economics
- ▶ 41 year project life based on 80.3Mt reserve
- ▶ LOM average annual production:
  - ▶ *approximately 320ktpa of 6% spodumene concentrates, and*
  - ▶ *approximately 315,000lbs of tantalite in concentrate*
- ▶ Estimated LOM cash operating cost of USD 277/t CIF<sup>1</sup>
- ▶ Total capital cost of A\$284M; \$122M spent to December 2017
- ▶ 2Mtpa project fully funded following successful debt and equity raisings in 2017
- ▶ First production targeted by June 2018 with committed offtake agreements in place for 300ktpa of spodumene production



1. Cash operating costs include all mining, processing, transport, port, shipping/freight and site based general and administration costs, allocation of corporate administration/overhead costs, State and private royalties and native title costs and are net of Ta<sub>2</sub>O<sub>5</sub> by-product credits.



# Pilgangoora Project – Overview



Site overview, as at 14 February 2018  
Plant site, as at 16 April 2018









# Pilgangoora – Quality Product Streams

Testwork and now pilot scale metallurgical programs deliver outstanding results and demonstrate the class of the Pilgangoora project as a large-scale, low cost supplier of quality lithium raw materials:

- ▶ **Chemical Grade concentrates, Genuine 6% Lithia (SC6.0)** – low iron spodumene concentrates for the battery market;
- ▶ **Technical Grade concentrates proven in pilot scale testwork;**
  - ▶ **7.22% Lithia and 0.12% Fe<sub>2</sub>O<sub>3</sub> (SC7.0) spodumene concentrates for the glass and ceramic markets**
- ▶ **Tantalite concentrates** suitable for the entire global market, with first offtake for primary concentrate (4-5% Ta<sub>2</sub>O<sub>5</sub>) established with Global Advanced Metals (GAM).

## Downstream Processing Opportunities for Battery Grade Products:

- ▶ *The Company has delivered multiple options for strategic opportunities for JV participation in downstream chemical conversion and processing, including;*
  - ▶ *Posco – South Korean Chemical Conversion plant using POSLx*
  - ▶ *Great Wall, General Lithium - China*



Flotation Pilot Plant - Milling, Conditioning, De-sliming and Reagents

Pilgangoora lithium products suit the entire lithium raw material market, including historical segments and new demand growth areas





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# Stage 2 – 5Mtpa Expansion Overview (PFS Results)

- ▶ Modest incremental capital to expand to 5Mtpa of AUD 207m
- ▶ LOM average annual production, after Stage 1 and 2 production ramp-up:
  - ▶ *approximately 800ktpa of 6% spodumene concentrates, and*
  - ▶ *approximately 780,000lbs of tantalite in concentrate*
- ▶ Mine life of 17 years; First production planned for Q4 2019; Committed offtake agreements in place for up to 840ktpa of spodumene concentrate
- ▶ Forecast Net Present Value (NPV<sup>2</sup>10%, post-tax) of AUD 2.1Bn; Project payback of approximately 3 years (on cumulative capital)
- ▶ Projected annual average EBITDA increases to AUD 383m
- ▶ Estimated LOM cash operating costs<sup>1</sup> reduced to USD 225/t CFR demonstrating economies of scale compared to the Stage 1 project
- ▶ Expansion project subject to further feasibility work, market analysis and Pilbara Board approval

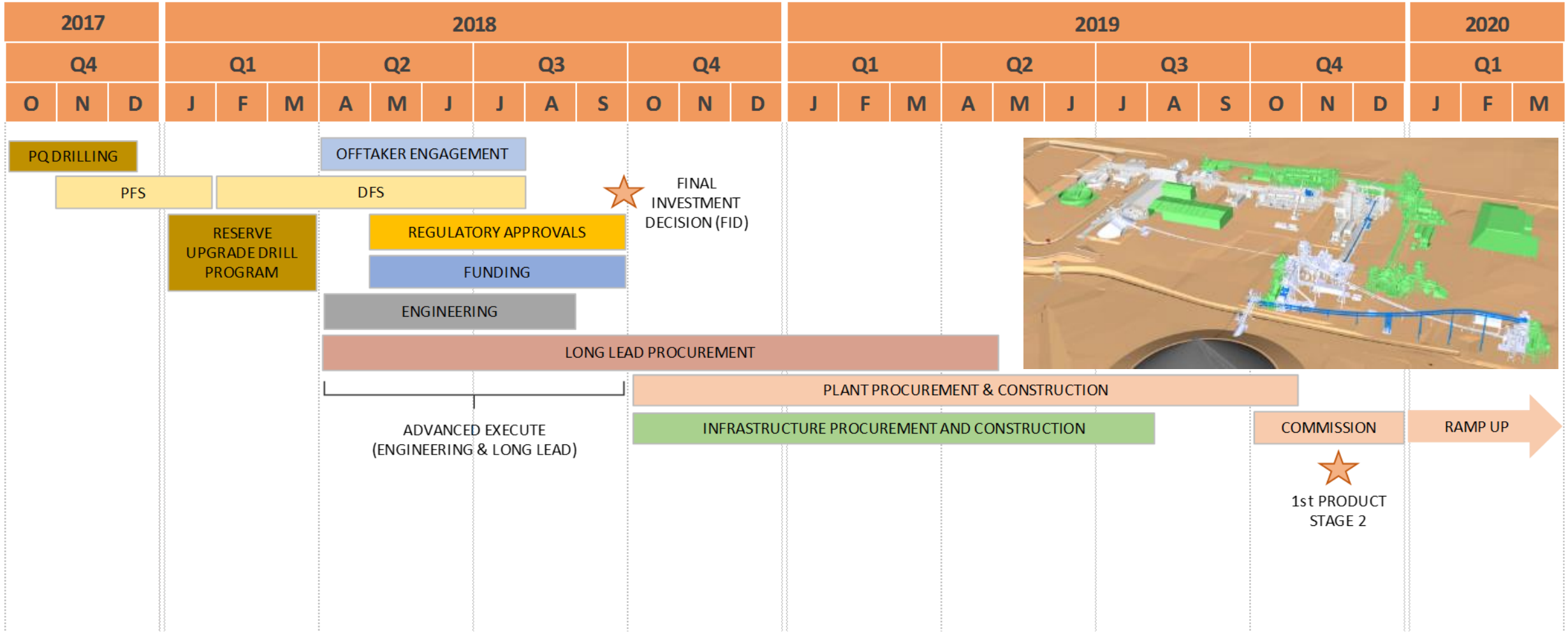


1. Cash operating costs include all mining, processing, transport, port, shipping/freight and site based general and administration costs, allocation of corporate administration/overhead costs, State and private royalties and native title costs and are net of Ta<sub>2</sub>O<sub>5</sub> by-product credits.
2. NPV is presented on a 10% nominal basis after tax basis.

# 5Mtpa Expansion - Project Delivery Schedule



## PILGANGOORA STAGE 2 - PRELIMINARY DELIVERY SCHEDULE





Low-cost and high quality lithium products

Significant resource scale and grade

Outstanding project economics and ability to substantially grow production

Offtake and full Stage 1 project funding secured

Rapid pathway through construction and production from Q2 2018

Ideally placed to capitalize on robust lithium market outlook and demand

Ideal project location, low-cost, large scale, growth to 5Mtpa processing capacity and premium product quality position Pilgangoora to be a key supply solution to the burgeoning lithium raw material market







# PILBARA MINERALS LIMITED

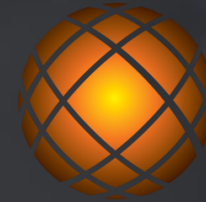


Supplementary Information



<b>Tony Kiernan</b>	<b>Non-Executive Chairman</b>	Highly experienced company director and former solicitor with over 30 years' professional experience. Currently Chairman and a non-executive director of several ASX-listed resource companies.
<b>Ken Brinsden</b>	<b>Managing Director</b>	Mining Engineer with over 2 years' experience including mine management, production and green-fields project development. Previously MD at ASX listed Atlas Iron Ltd contributing to its growth from junior explorer to significant Pilbara iron ore producer.
<b>Steve Scudamore</b>	<b>Non-Executive Director</b>	Highly experienced public company director. His career includes more than three decades with senior roles in Australia, London and Papua New Guinea.
<b>Sally-Anne Layman</b>	<b>Non-Executive Director</b>	Mining Engineer and finance professional. Ms Layman has 23 years of experience in exploration, mining and finance and over 16 years of successfully identifying and closing over \$1.8 billion in financial deals and equity investments across six continents and more than 20 countries.
<b>Nick Cernotta</b>	<b>Non-Executive Director</b>	Highly experienced mining executive with over 30 years' experience. Recently the Director of Operations with Fortescue Metals Group (FMG) and previously the Chief Operating Officer for Macmahon Holdings Limited.





# PILBARA MINERALS LIMITED

Lithium Market

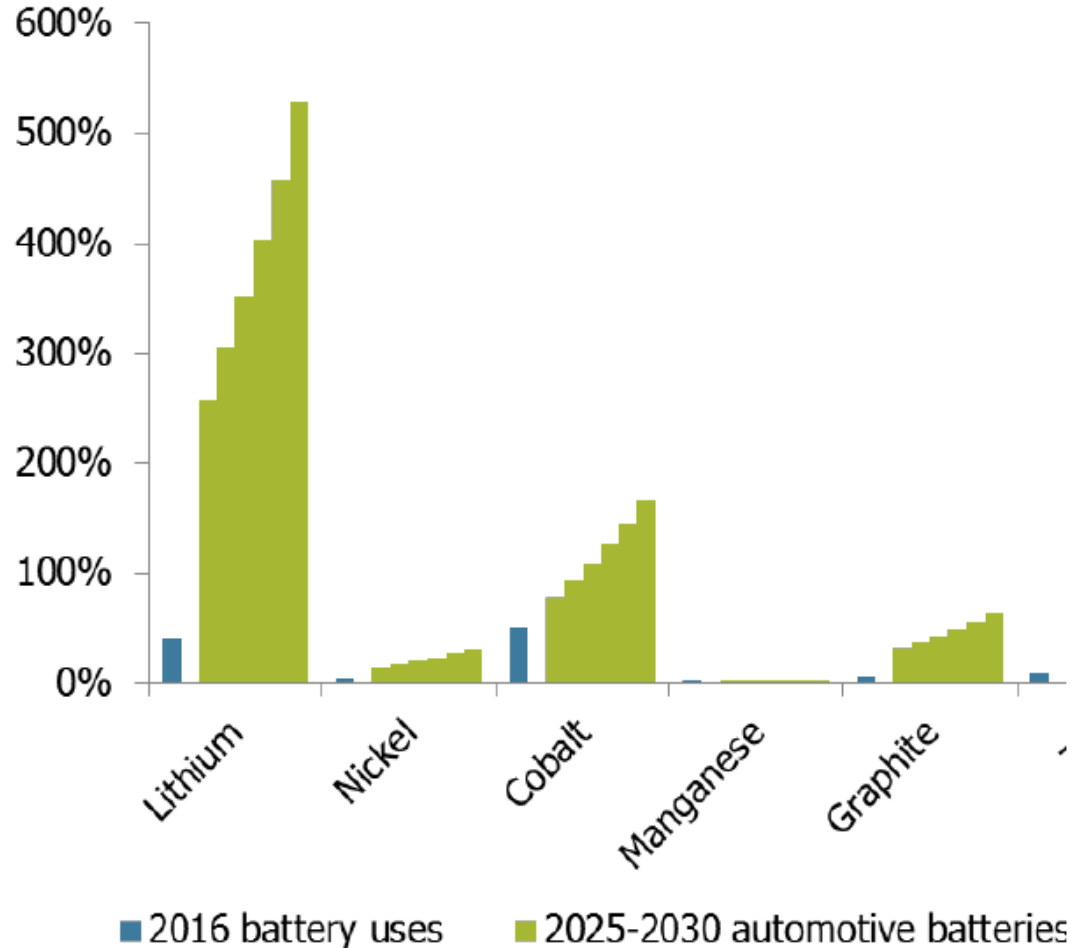
Pilgangoora Project Partners

Pilgangoora Project





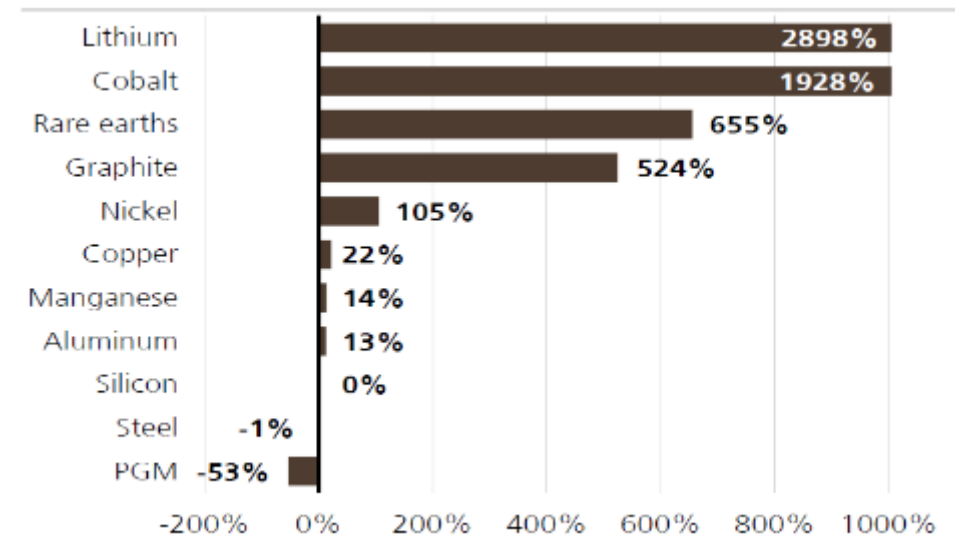
## Impact of automotive batteries on total market size (% of 2016 total market size)



Source: Roskill

- ▶ The leverage to Lithium Ion battery materials sits with Lithium
- ▶ Massive market growth required in lithium raw materials to contribute to growth in battery industry:
  - ▶ 250% supply growth to 2025
  - ▶ >500% supply growth to 2030
- ▶ It's often said that there is plenty of lithium in the ground and, while true, to meet burgeoning market demand it has to come out of the ground
  - ▶ Requires time and investment, neither of which have been activated while significant capital flows downstream in lithium ion battery manufacturing capacity

Incremental commodity demand in a 100% EVB world (% of today's global production)



Source: UBS



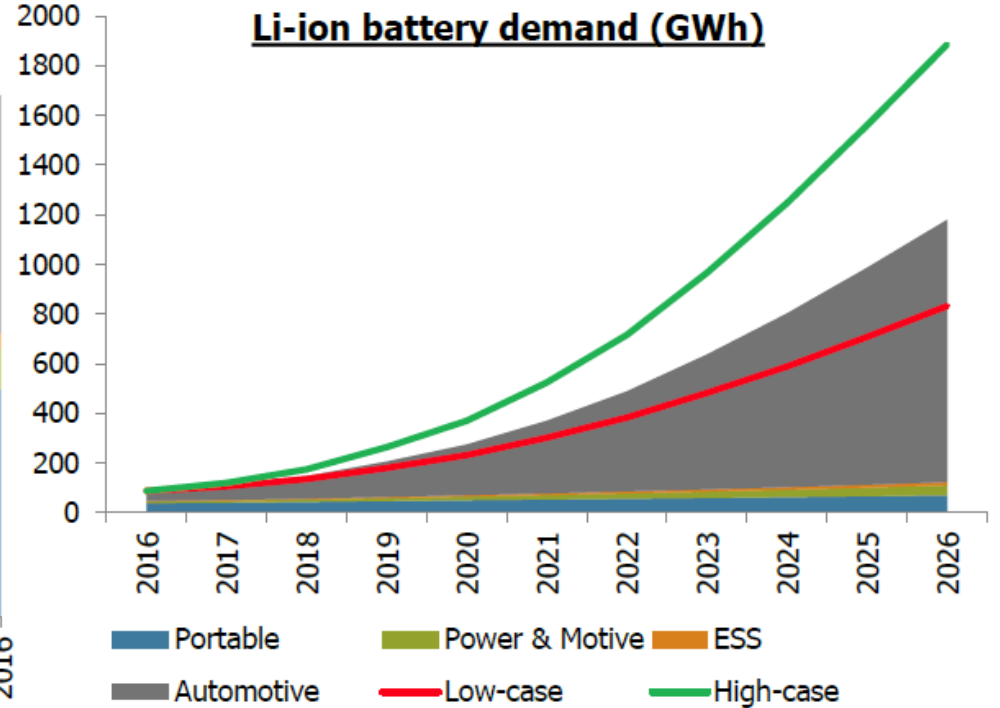
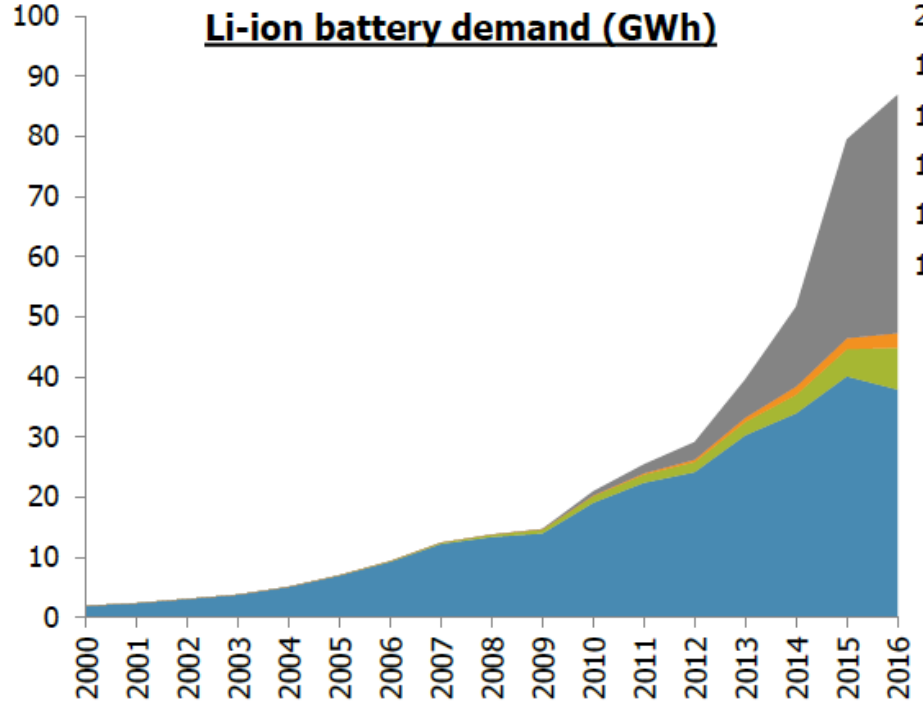
# Massive expansion of Lithium ion battery making capacity underway



The past



The future



Source: Roskill

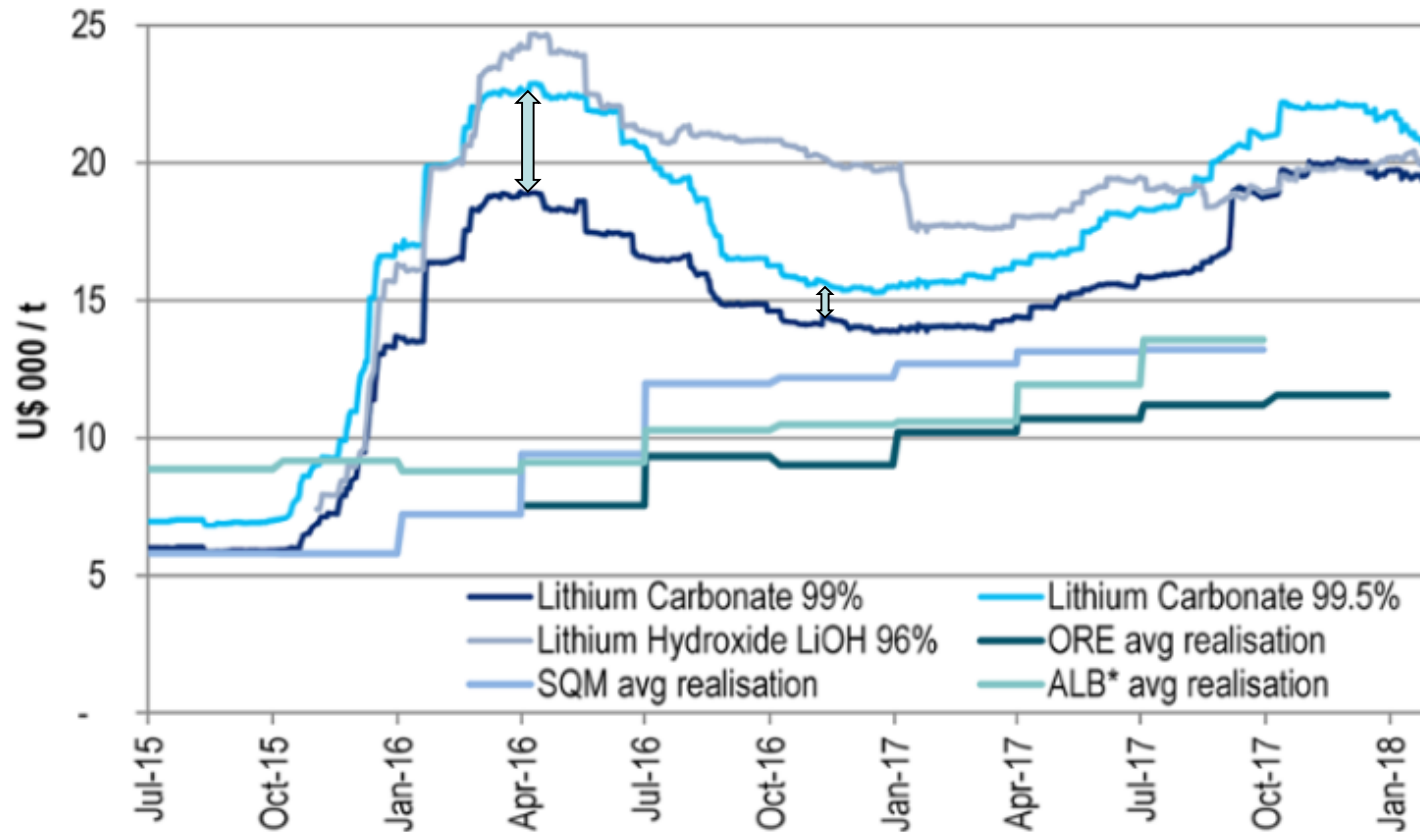


More than USD20bn of committed investment expected to result in new battery manufacturing expansions that will increase global production capacity significantly and drive production costs down

# Lithium Raw Material Prices – Grade Differential



Figure 1. Lithium Carbonate/Hydroxide Prices (US\$/t)



Source: Company reports, AsianMetal, Citi Research

**Lithium Carbonate  $\approx$ 99% Technical Grade**  
**Lithium Carbonate  $\geq$ 99.5% Battery Grade**

Price Variance – Battery Grade vs Technical Grade over recent history

Minimum  $\uparrow$  - +USD\$1,200/tonne  
 Maximum  $\downarrow$  - +USD\$3,500/tonne

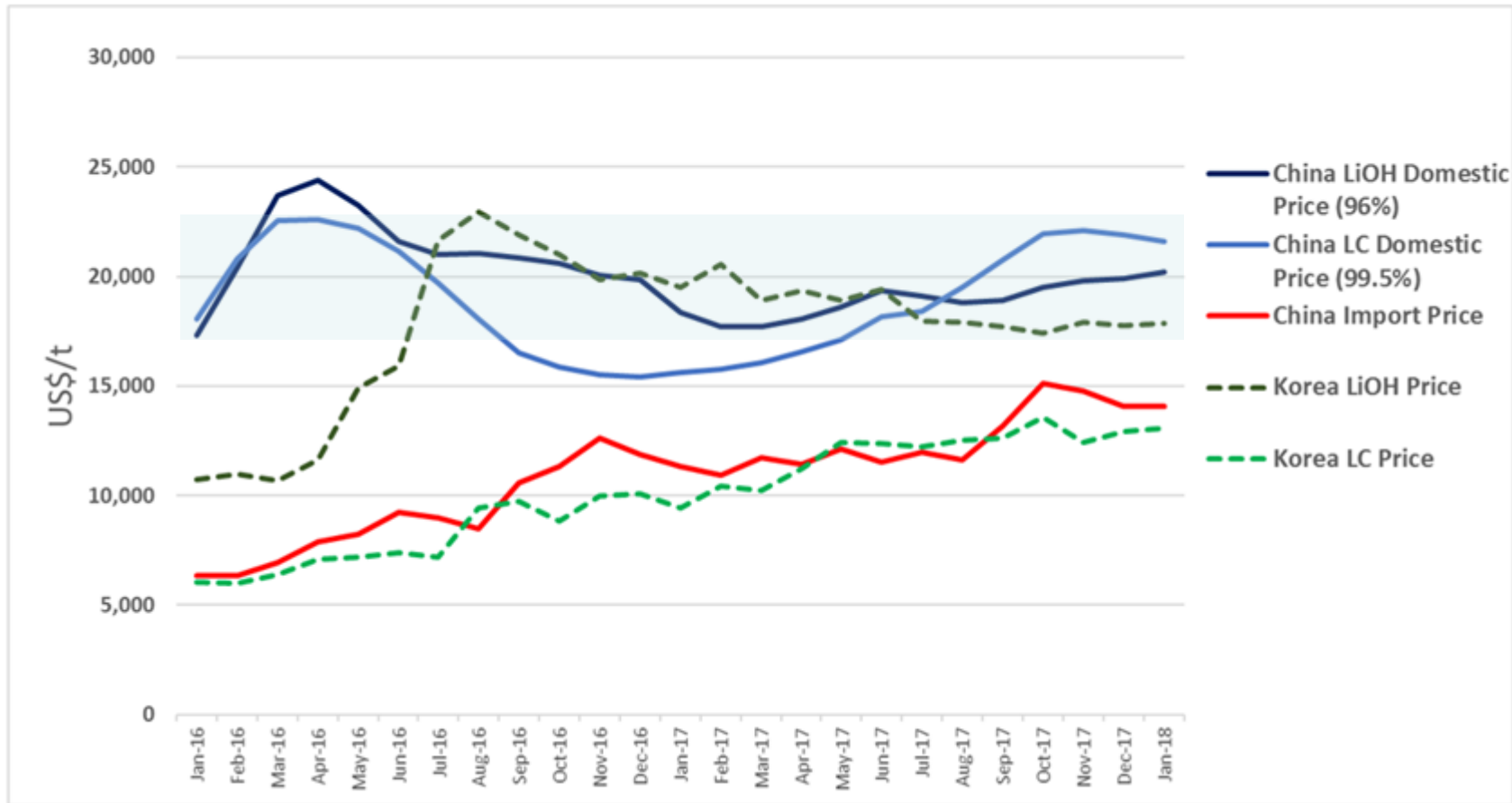
Upgrading an 'Industrial or Technical Grade' product to achieve 'Battery Grade' products costs more money as evidenced by the price traces opposite;

- Spodumene concentrates are typically 'cleaner' than brine sources of supply and therefore readily upgrade to Battery Grade product after chemical conversion, and
- They are likely cheaper than brine sources of supply for the Battery grade specification and especially for Hydroxide products.

Hard-rock lithium raw material is ideally suited to the higher quality requirements arising from battery demand growth



# Lithium Raw Material Prices – Grade Differential



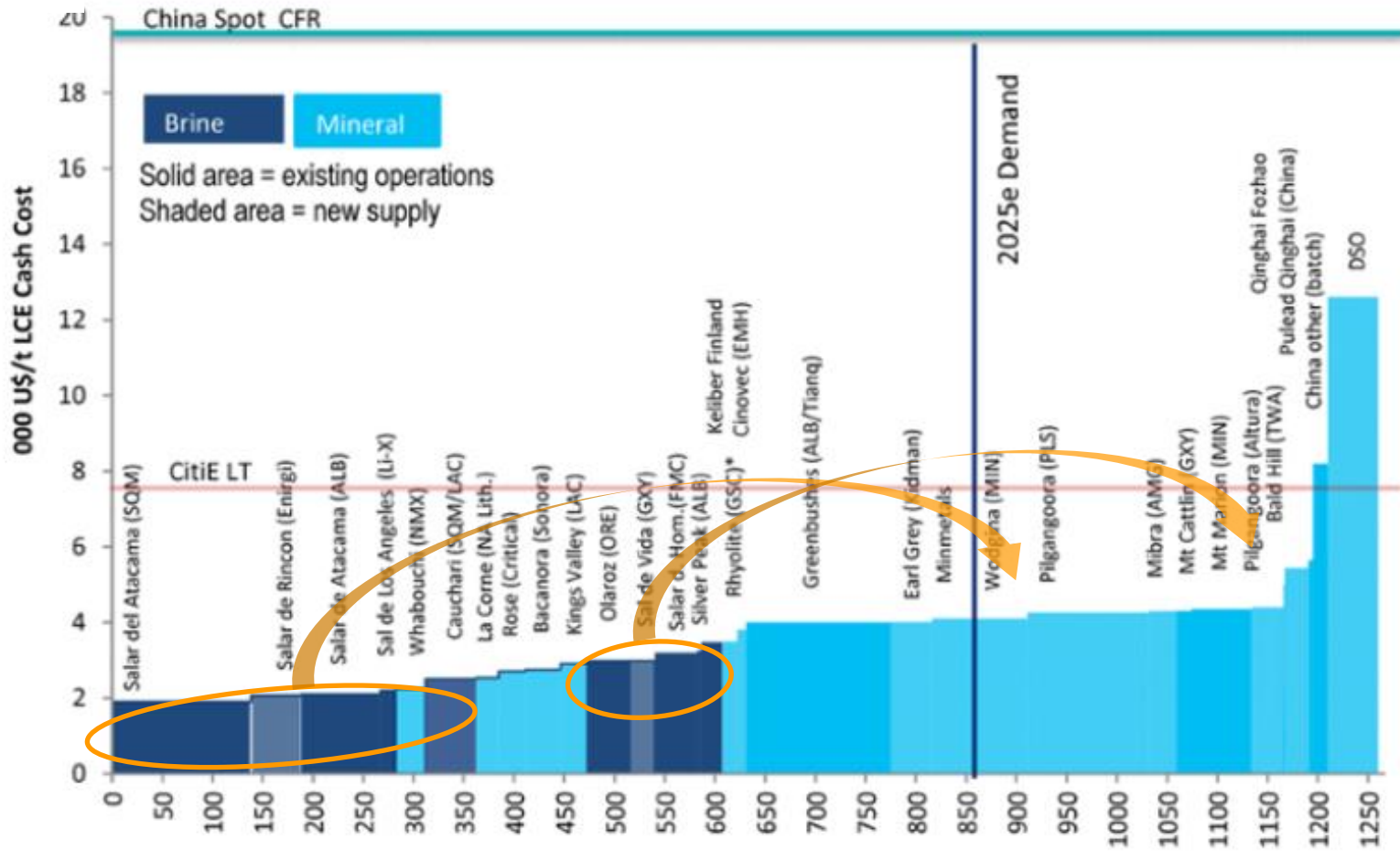
Battery grade materials trading at higher levels for the best part of 2 years, driven by:

- Significant demand
- Premium for product quality
- Includes markets ex China

Sources: China Domestic Price, Asian Metals (exc. VAT)  
 China Import Price, Impexp data (imports to major cathode materials makers exc VAT)  
 Korean Price, KITA (imports exc. VAT)



Figure 24. Lithium Producers Cash Cost Curve (US\$/t) in LCE terms



Source: Citi Research Estimates, Company reports, Roskill

Source: Citi Research, Feb 2018

Global cost curves are not ‘normalised’ for Battery Grade specifications, i.e.  $\geq 99.5\%$  purity lithium carbonate

By far, the majority of brine production does not meet Battery Grade specifications and therefore has to have more money spent on it to achieve the higher, in-demand specification for the battery world.

Several implications –

- Conventional wisdom on the relative cost of brine versus hard rock production is being broken down
- The growth in Battery Grade demand favours further hard rock supply to market because of its quality advantages/speed to market
- This could get worse for brines over time as further purity is sought to improve battery technology
- Chilean brines have the added cost of additional royalties (circa USD\$3,000/t at current carbonate pricing of US\$14,000/t) – not reflected in cost curve.

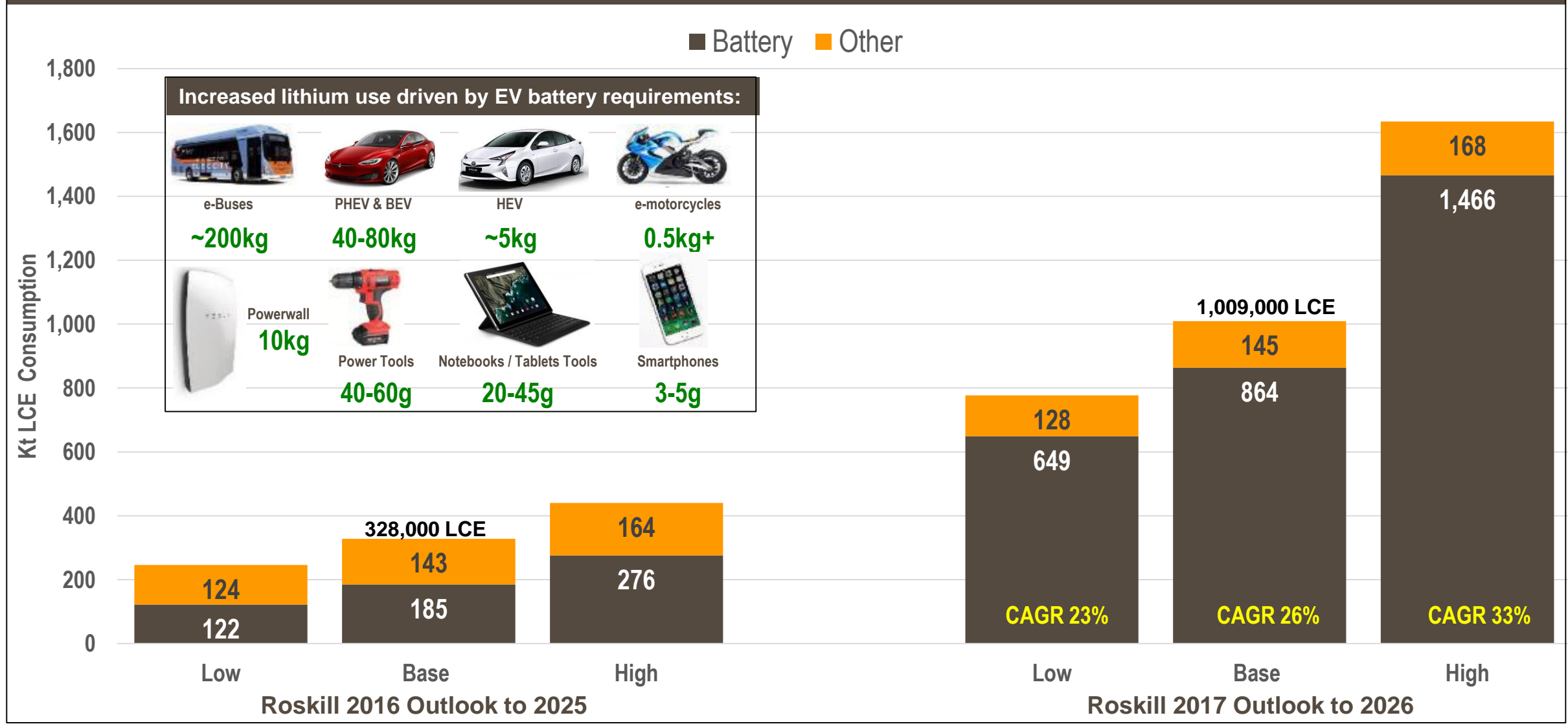
After Battery Grade quality/product adjustments, brine supply is moving well up the cost curve





# Independent research group, Roskill, significantly upgrades Lithium Outlook

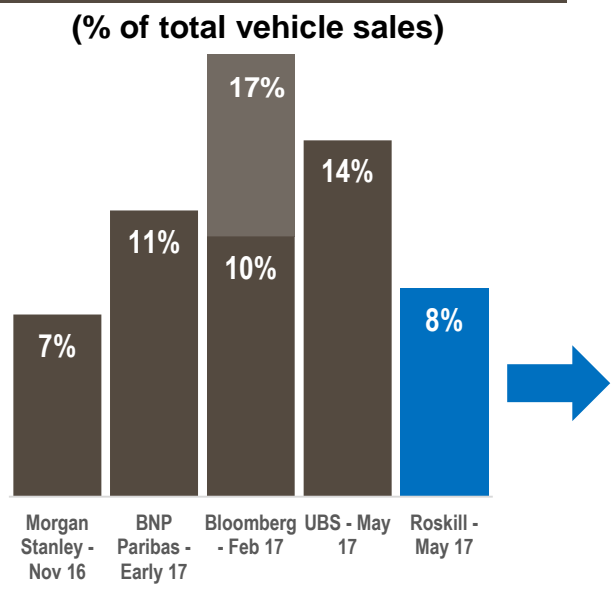
## Significantly increased outlook driven by Li-Ion Battery demand in Electric Vehicles



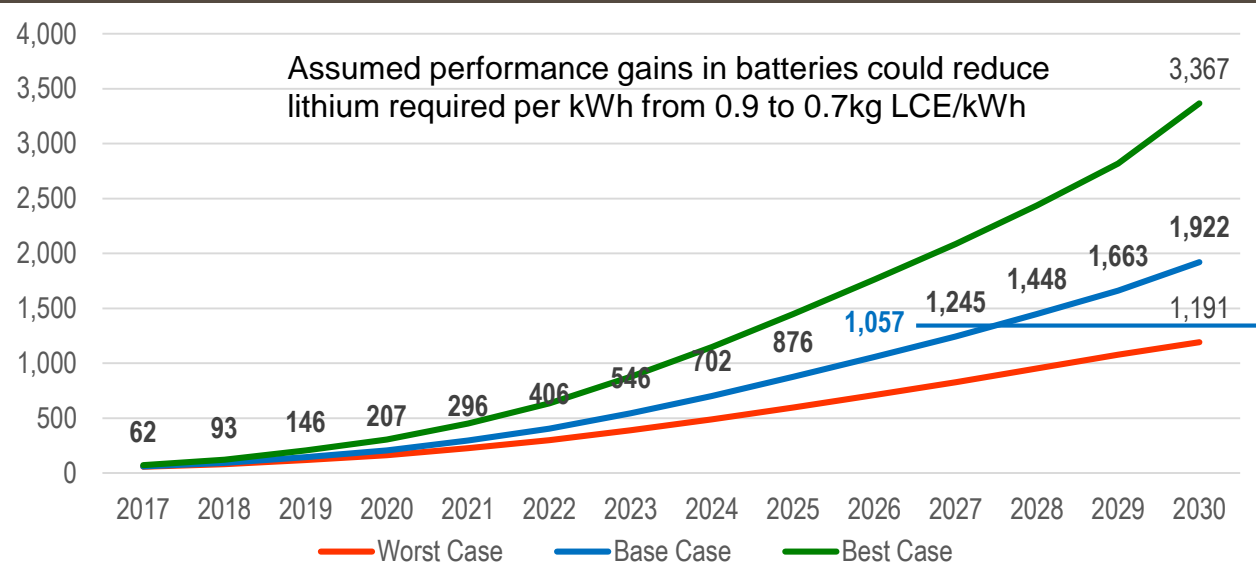


# Transition to Electric Vehicles – Exponential Adoption Curve

## 2025 Forecast EV Penetration Rates

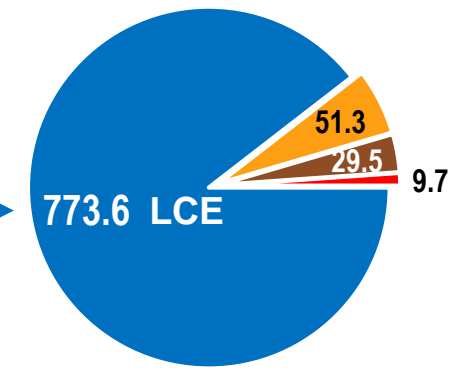


## Roskill's forecast scenarios for sales of EV's (GWh)



## LCE Demand in Li-ion batteries

10 x growth from 83kt (2016) to 864kt (2026)



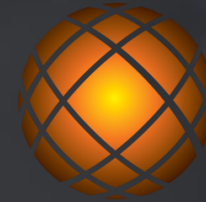
Roskill 2026 Forecast

## Vehicle Manufacturers:

**Established car makers fear being left behind in the technology battle or being shut out of car markets:**

- New pure electric vehicle manufacturers such as **Tesla, BYD, Faraday Future, Lucid Motors** competing with traditional ICE companies. Tesla mass market Model 3 now in production.
- All **Volvo** cars to be electric or hybrid from 2019. Between 2019 and 2021, the firm will introduce five 100% electric models. **Volkswagen** is targeting 25 percent of its sales to be electric by 2025
- **BMW** Group expects electrified vehicles to account for between 15–25% of sales by 2025. BMW Group already has nine electrified models on the market and has plans to convert all models to electric drive trains.





# PILBARA MINERALS LIMITED

Lithium Market

Pilgangoora Project Partners

Pilgangoora Project





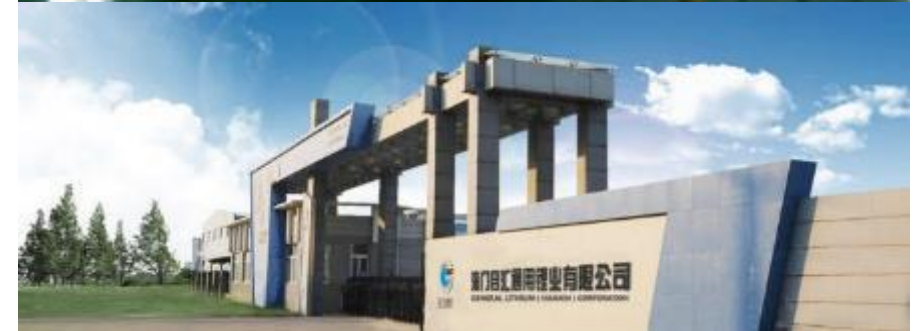
- ▶ Established in 2000 in Jiangxi Province, China, Ganfeng Lithium has a capacity of around 35,000tpa of LCE and produces lithium carbonate, lithium hydroxide, lithium metals, butyl lithium, and a number of other lithium compounds
- ▶ Ganfeng Lithium is currently commissioning an additional 20,000tpa LCE and is proposing further developments of another 45,000tpa LCE
- ▶ Ganfeng Lithium is listed on the Shenzhen Stock Exchange (SHZ:002460) with a market capitalization of RMB 45 Bn (USD ~7Bn)
- ▶ Ganfeng Lithium has interests in the Mt Marion spodumene project in Australia (43.1%), Lithium America's Caucharí- Olaroz brine project in Argentina (USD 165m in debt and equity) and International Lithium Corporation's Mariana brine project in Argentina (17.6%) & Blackstairs Project in Ireland (51%)







- ▶ Listed on NEEQ, Beijing, Code No: 837358 with a market capitalisation of RMB 2.6Bn (USD ~410m)
- ▶ Currently produces 8,000tpa of Lithium Carbonate (LC) & 2,000tpa of High Purity LC 4N (99.99%)
- ▶ Recently commissioned 5,000tpa of Lithium Iron Phosphate (LFP), Li battery cathode powder material in Qinghai Province
- ▶ Expansions continuing to add another 16,000tpa of Lithium Hydroxide (LiOH) & LC conversion capacity in Jiangxi Province to be commissioned mid 2018, with further expansions being planned
- ▶ One of the top quality producers of Battery Grade LC in China, with established sales to a broad list of major Chinese Li battery cathode powder manufacturers



**General Lithium Corporation**



- Listed on the Hong Kong & Shanghai Stock Exchanges
- Market capitalisation of RMB 120Bn ~US\$19Bn
- >60,000 employees and produces ~1 Million vehicles per year from 4 vehicle manufacturing bases.
- SUVs sold under the “Haval” brand (87% of sales) with new premium SUV brand named “Wey” released this year.
- Each vehicle platform in this brand is designed to accommodate either the standard engine, plug-in hybrid or full electric vehicle within the same body.
- Aiming to produce around 500,000 electric and hybrid cars a year by the early 2020s.







POSCO agreements announced on 28 February 2018 close out the remaining uncommitted Stage 2 production

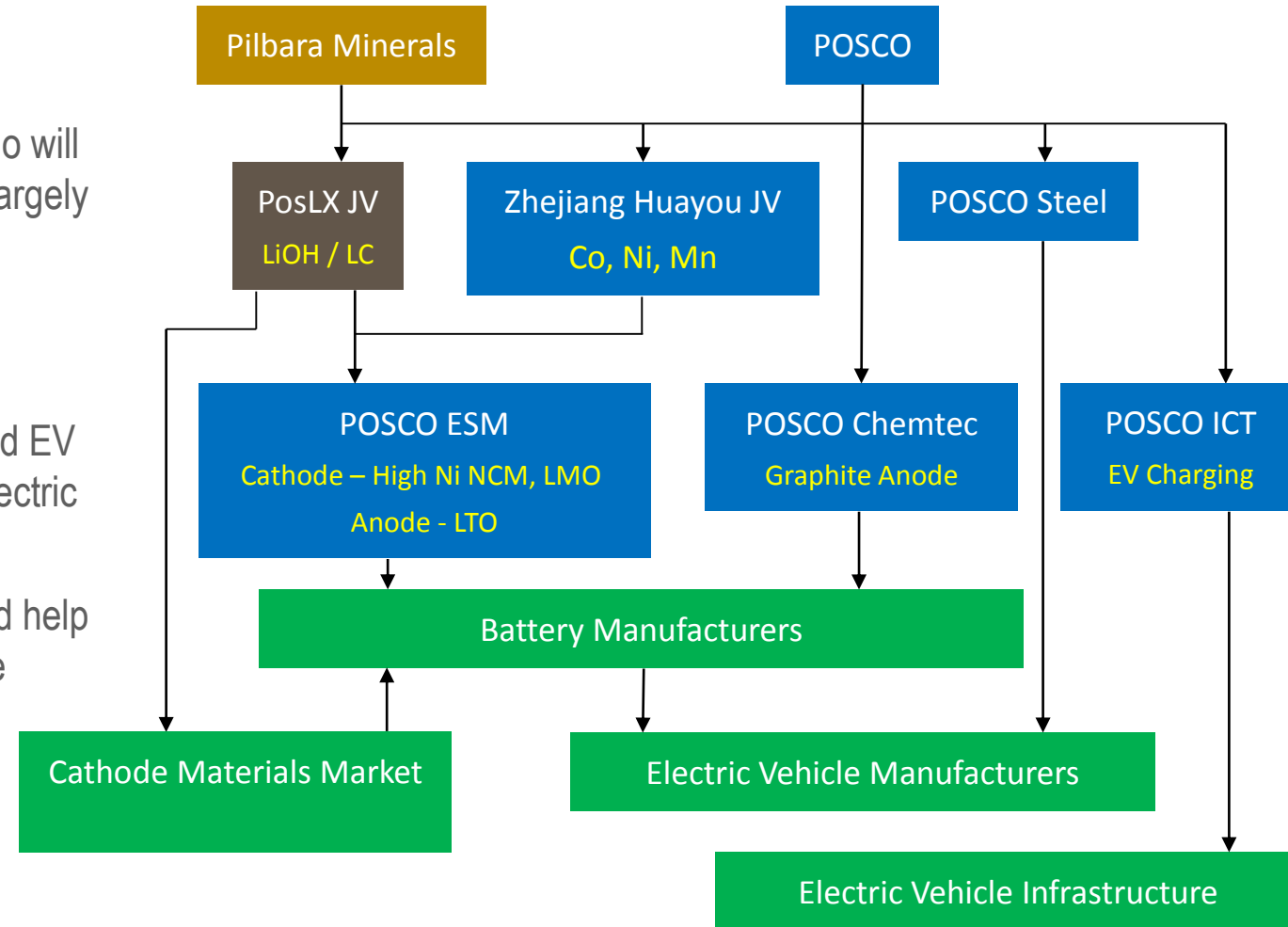
- ▶ Binding offtake agreement for an initial 80,000tpa of 6% spodumene concentrate from Stage 2 production for the Pilgangoora Life of Mine.
- ▶ Immediate upfront A\$79.6M equity investment (representing 4.75% of issued capital, at a 17.5% premium) to allow acceleration of Stage 2, including the purchase of long lead items.
- ▶ Additional 160,000tpa from Stage 2 production (for a total of 240,000tpa), subject to Stage 2 FID decision and Pilbara’s participation in a downstream conversion plant joint venture with Posco (“Downstream Joint Venture”).
- ▶ Pilbara Minerals will be a 30% participant in the Downstream Joint Venture (at Pilbara’s election), which will develop and operate a 30,000tpa lithium carbonate/lithium hydroxide conversion plant in South Korea from 2019, utilising POSCO’s proven state-of-the-art PosLX conversion technology.
- ▶ Should Pilbara elect to participate in the Downstream Joint Venture, Posco will provide a further A\$79.6M by way of a convertible bond to help fund Pilbara’s participation in the joint venture. The convertible bond will be convertible at Pilbara’s sole option at any time during the term, at the lesser of the 30-day or 5 day VWAP, less a 7.5% discount.
- ▶ The convertible note (at Pilbara’s election) will be unsecured, have a 5 year tenor, be priced at 1.5% over the RBA cash rate (indicatively 3% pa in total), with the principal and interest payable at maturity.



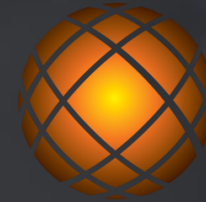


# Strategic Downstream JV with POSCO

- Pilbara Minerals to be a 30% participant in a Downstream Joint Venture (**DSJV**) with POSCO (at Pilbara's election), to develop and operate a 30,000tpa LCE lithium carbonate/ lithium hydroxide conversion plant in South Korea
- POSCO is a financially strong and technically capable partner who will provide a convertible bond (at Pilbara's election) for A\$79.6M to largely fund Pilbara's initial 30% interest in the JV conversion plant
- POSCO's PosLX patented technology is cost competitive in comparison to conventional processing facilities
- POSCO provides Pilbara with a strategic link to lithium battery and EV manufacturers, having established R&D expertise to target the electric vehicle and energy storage markets
- DSJV expands Pilbara's access to the battery industry and should help Pilbara expand its knowledge of the lithium supply chain and core competencies
- DSJV broadens Pilbara's customer base, providing geographic diversification and greater access to global cathode makers
- DSJV should allow Pilbara to capture further value through direct participation in a downstream chemical conversion facility







# PILBARA MINERALS LIMITED

Lithium Market

Pilgangoora Project Partners

Pilgangoora Project



# Resources & Reserves

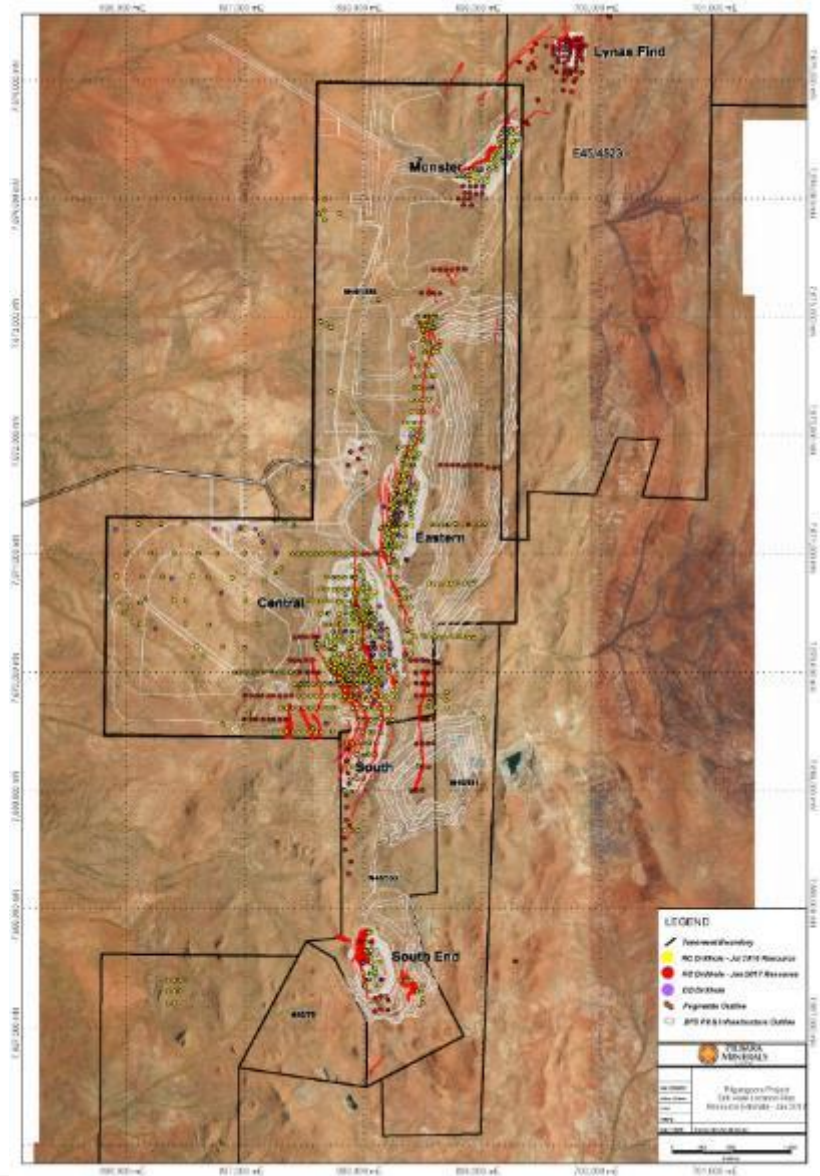


## JORC Mineral Resources: 29 May 2018

Category	Tonnage (Mt)	Li <sub>2</sub> O (%)	Ta <sub>2</sub> O <sub>5</sub> (ppm)	Fe <sub>2</sub> O <sub>3</sub> (%)	Li <sub>2</sub> O (T)	Ta <sub>2</sub> O <sub>5</sub> (Mlbs)
Measured	22.1	1.41	146	0.44	311,000	7.1
Indicated	107.0	1.31	119	0.58	1,435,000	28.0
Inferred	84.2	1.27	105	0.71	1,071,000	19.4
<b>Total</b>	<b>213.3</b>	<b>1.32</b>	<b>116</b>	<b>0.69</b>	<b>2,818,000</b>	<b>54.6</b>

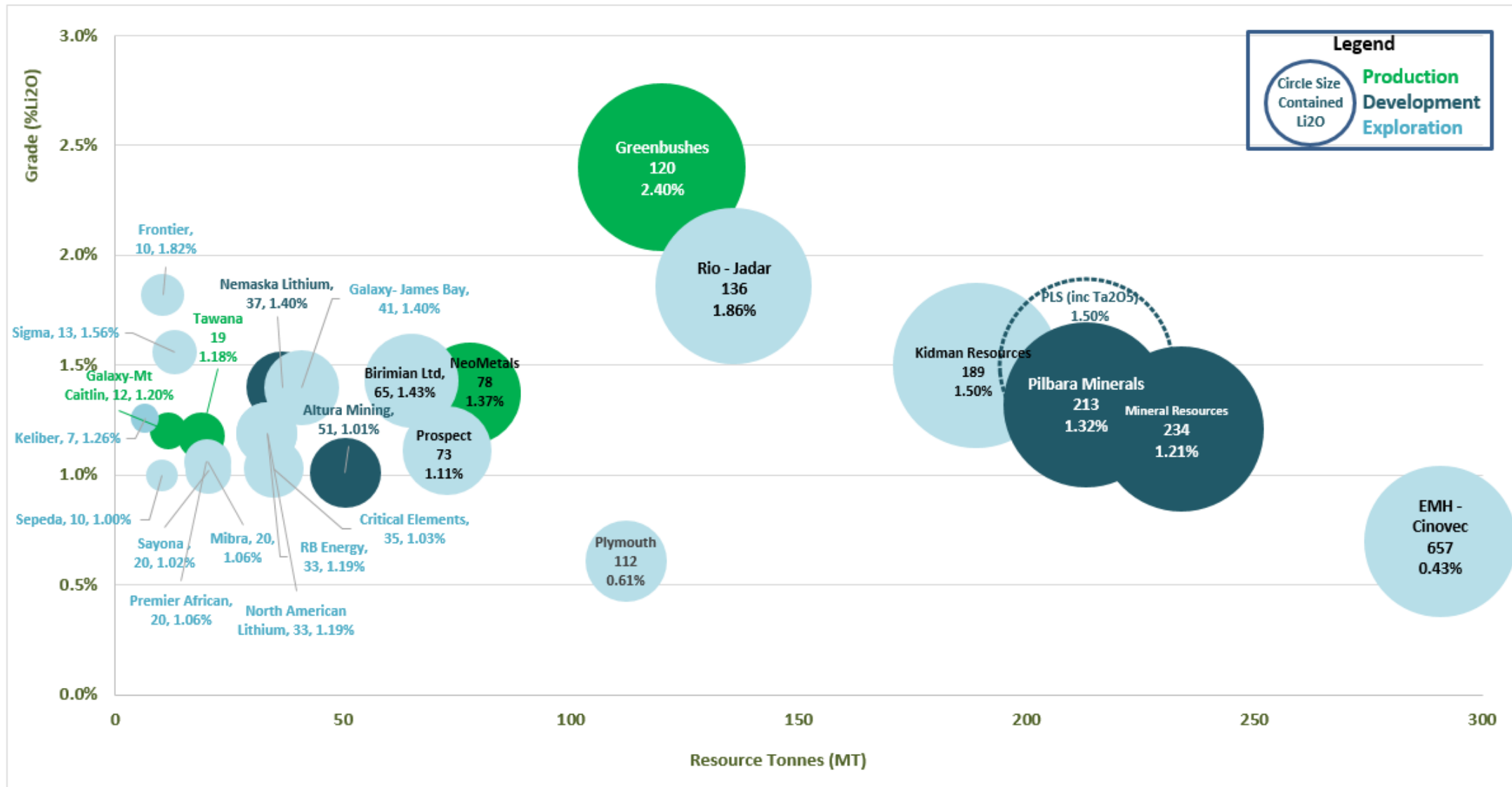
## JORC Ore Reserves: 29 June 2017

Category	Tonnage (Mt)	Li <sub>2</sub> O (%)	Ta <sub>2</sub> O <sub>5</sub> (ppm)	Fe <sub>2</sub> O <sub>3</sub> (%)	Li <sub>2</sub> O (T)	Ta <sub>2</sub> O <sub>5</sub> (Mlbs)
Proved	17.3	1.30	141	1.03	230,000	5.4
Probable	62.9	1.25	119	1.10	790,000	16.5
<b>Total</b>	<b>80.3</b>	<b>1.27</b>	<b>123</b>	<b>1.08</b>	<b>1,020,000</b>	<b>21.8</b>





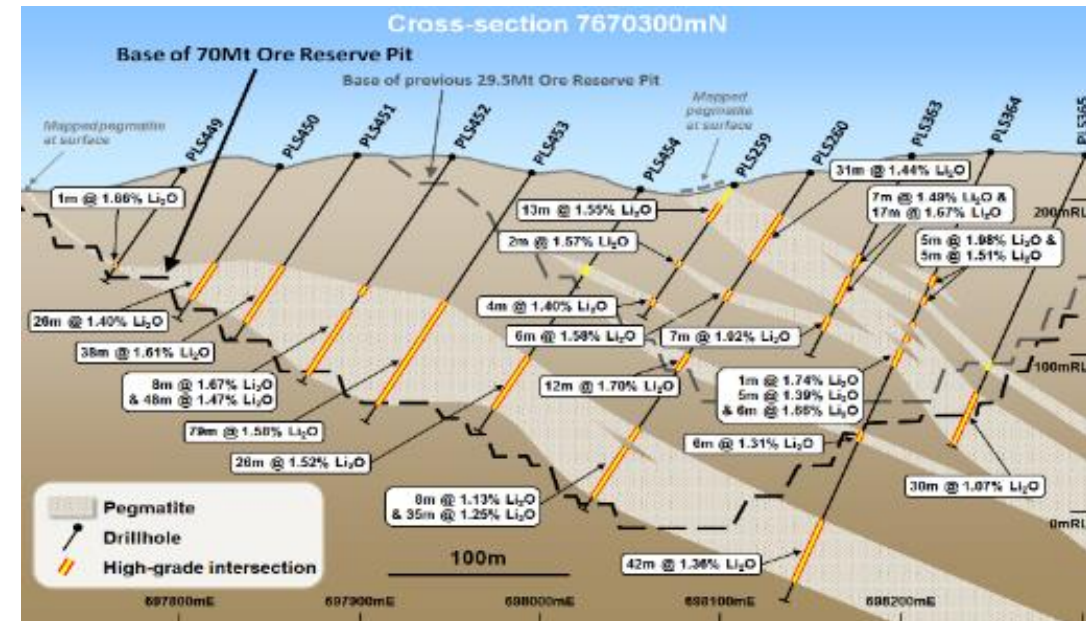
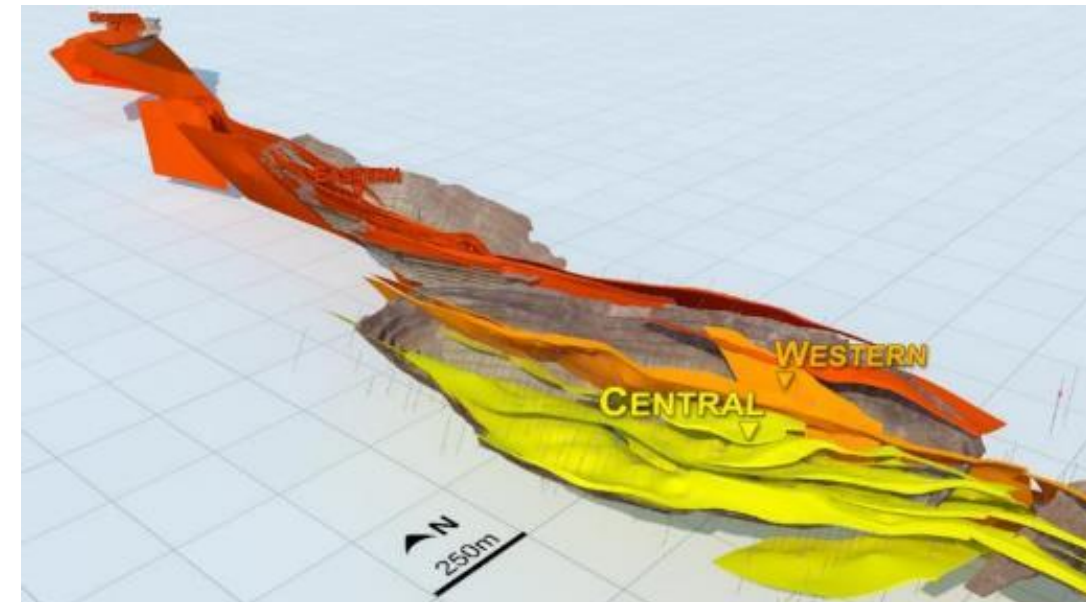
# Pilgangoora – a globally significant hard rock lithium resource



Note: Tantalum adjusted resource size at Pilgangoora includes consideration of the spodumene equivalent revenue of tantalum by-product recovered and attributable to Pilbara Minerals over the LOM. Source: Published resource estimates by project owners. Note that resources estimates for projects other than Pilgangoora may have been prepared under different estimation and reporting regimes and may not be directly comparable. Pilbara has not verified, and accepts no responsibility for, the accuracy of resources estimates other than its own. Readers should use appropriate caution in relying on this information.



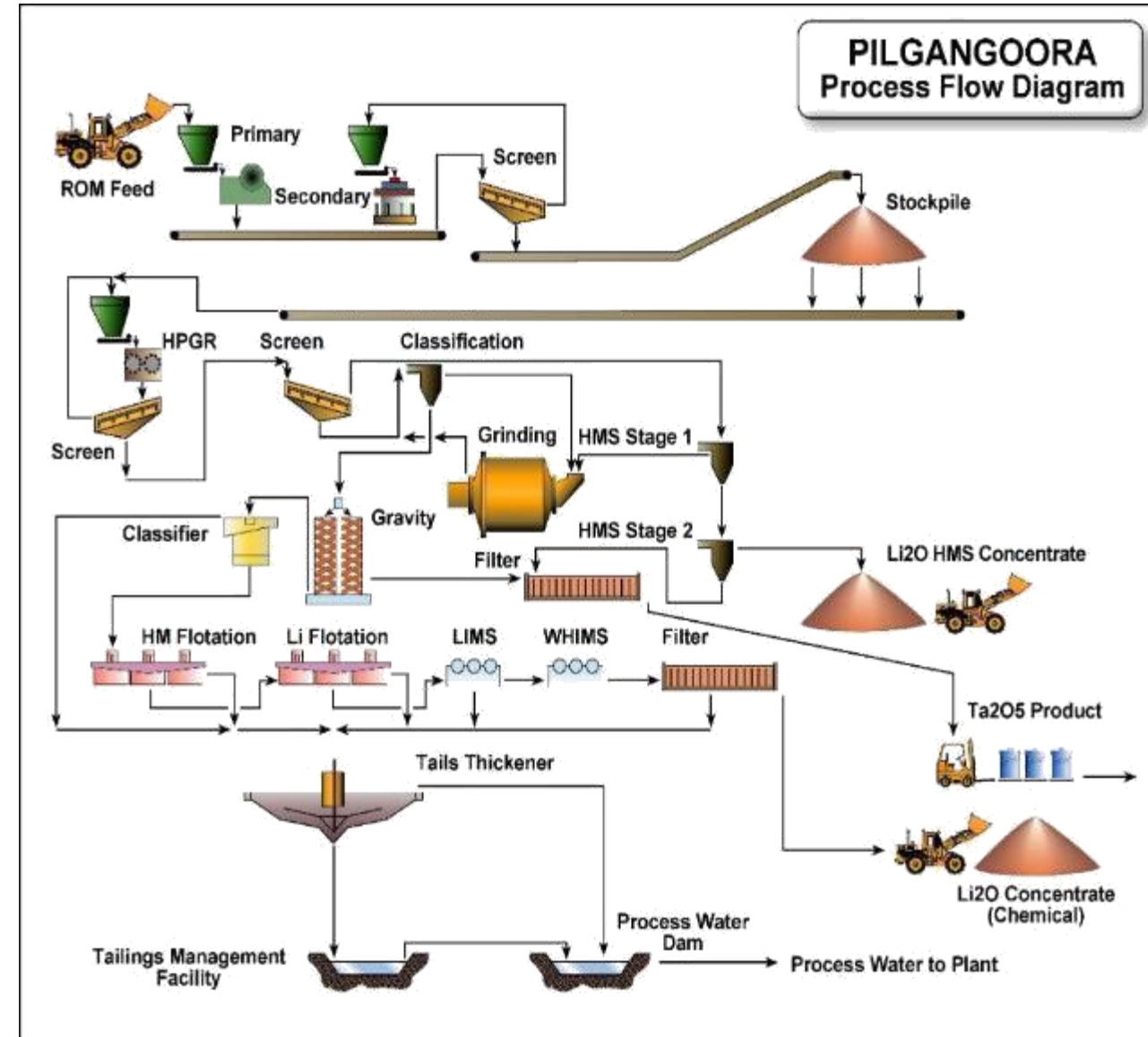
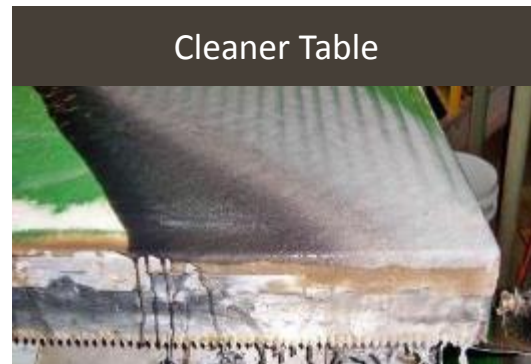
- ▶ Measured, Indicated and Inferred Resources of 213.3Mt @ 1.32% Li<sub>2</sub>O and 116ppm Ta<sub>2</sub>O<sub>5</sub> containing 1,952,000 tonnes Li<sub>2</sub>O, and including 44Mlbs Ta<sub>2</sub>O<sub>5</sub> (*Mineral Resource Update ASX release dated 25 January 2017*)
- ▶ Ore Reserve of 80.3Mt @ 1.27% Li<sub>2</sub>O and 123ppm Ta<sub>2</sub>O<sub>5</sub> (*Ore Reserve Update ASX release dated 29 June 2017*)
- ▶ Conventional drill and blast and open pit mining proposed, 100 tonne mining fleet
- ▶ 5Mtpa ore feed – 17 year mine life.
- ▶ LOM strip ratio of 3.85:1:1 (waste: ore tonnes)
- ▶ MACA Mining commenced mining from central pit in January 2018.







- ▶ Industry standard processing flowsheet
  - ▶ *Spodumene concentrate produced at three mines in Western Australia*
- ▶ 2-stage heavy media separation
- ▶ Gravity separation, tantalite recovery
- ▶ Grinding leading to oxide flotation
- ▶ Low/High intensity magnetic separation
  - ▶ *High grade chemical spodumene concentrate (SC6.0 specification)*
  - ▶ *High grade tantalite concentrate (up to 30% Ta<sub>2</sub>O<sub>5</sub>)*
- ▶ Processing targeted to commence Q2 2018





- ▶ Road transport from mine site to Wedgefield Storage Facility
  - ▶ *127km via Great Northern Highway utilising double road trains*
- ▶ Product storage at Wedgefield and loaded into shipping containers
- ▶ Transport from Wedgefield (~16km) to Port Hedland Berth 2
- ▶ Ship Loading with mobile harbour crane via Rotabox
- ▶ Shipment via handysize vessels (30kt)
  - ▶ *~11 shipments pa in full production*

Trucking



Storage



Loading – Rotabox



Port





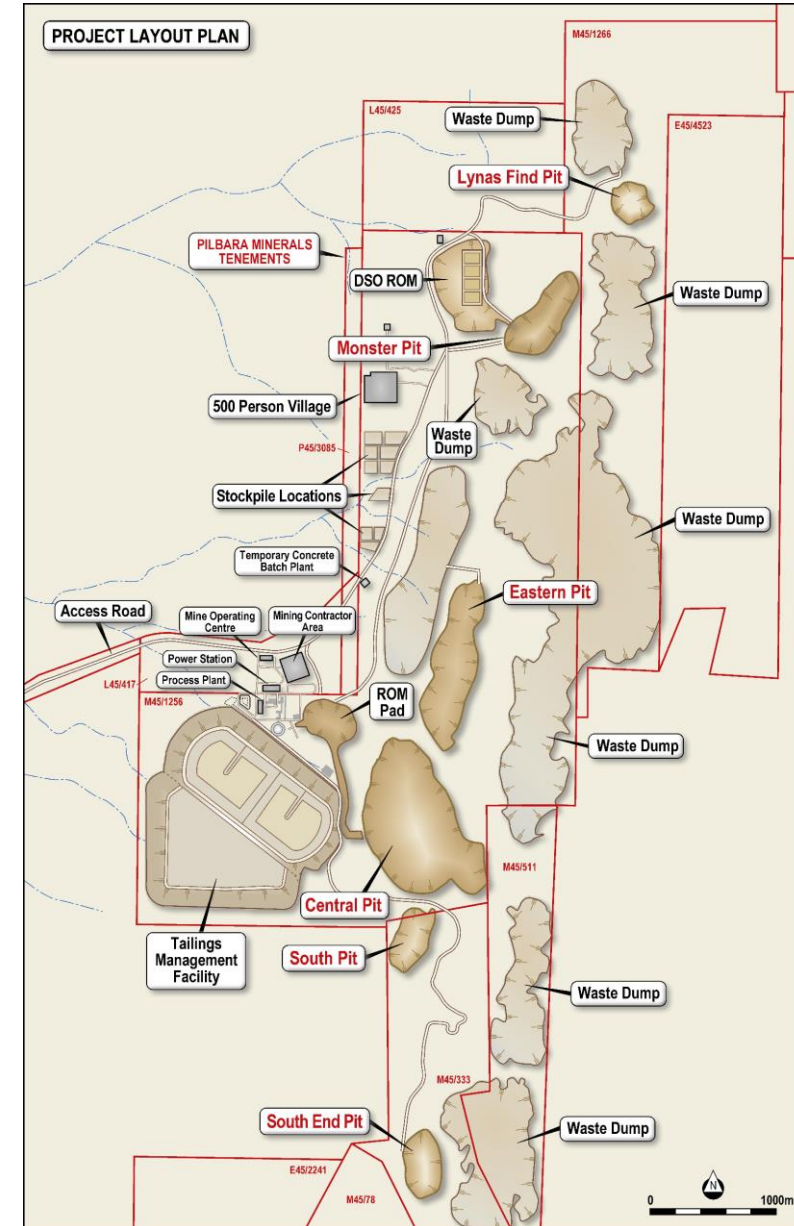
# Project Highlights – 5Mtpa (inclusive of Stage 1 and Stage 2)



Metric	Unit	PFS 5Mtpa
Life of Mine (LOM)	Years	17
LOM Ore Mined	Mt	80.4
LOM Waste Mined	Mt	310.1
LOM Strip Ratio	(waste:ore)	3.85
Plant Feed Rate	Mtpa	4.67
Average Lithium Head Grade	%	1.26
Average Lithium Recovery	%	75.0
Average Tantalum Head Grade	%	121
Average Tantalum Recovery	%	56.9
Average Spodumene Concentrate Production (LOM)	ktpa	800
Average Tantalite Production (LOM)	k lbs pa	780
Average Lithium Price	US\$/t CIF Real	594
Tantalite Forecast Price	US\$/lb FOB Real	89
Forecast FX Rate	AUD:USD	0.75
Stage 1 Remaining Capital Cost (from 1 Jan 18)	A\$M	162
Stage 2 Capital Cost	A\$M	207
Average LOM Total Operating Costs <sup>1</sup> (Real\$)	A\$/t product	416
Ave LOM Operating Costs <sup>1</sup> (after Tantalite Credit)	A\$/t product	300
Ave LOM Operating Costs <sup>1</sup> (after Tantalite Credit)	US\$/t product	225
Average Annual EBITDA (Real \$)	A\$M	383
NPV <sup>2</sup> (10% Discount Rate)	A\$M	2,099

1. Cash operating costs include all mining, processing, transport, port, shipping/freight and site based general and administration costs, allocation of corporate administration/overhead costs, State and private royalties and native title costs and are net of Ta<sub>2</sub>O<sub>5</sub> by-product credits.

2. NPV is presented on a 10% nominal basis after tax basis.





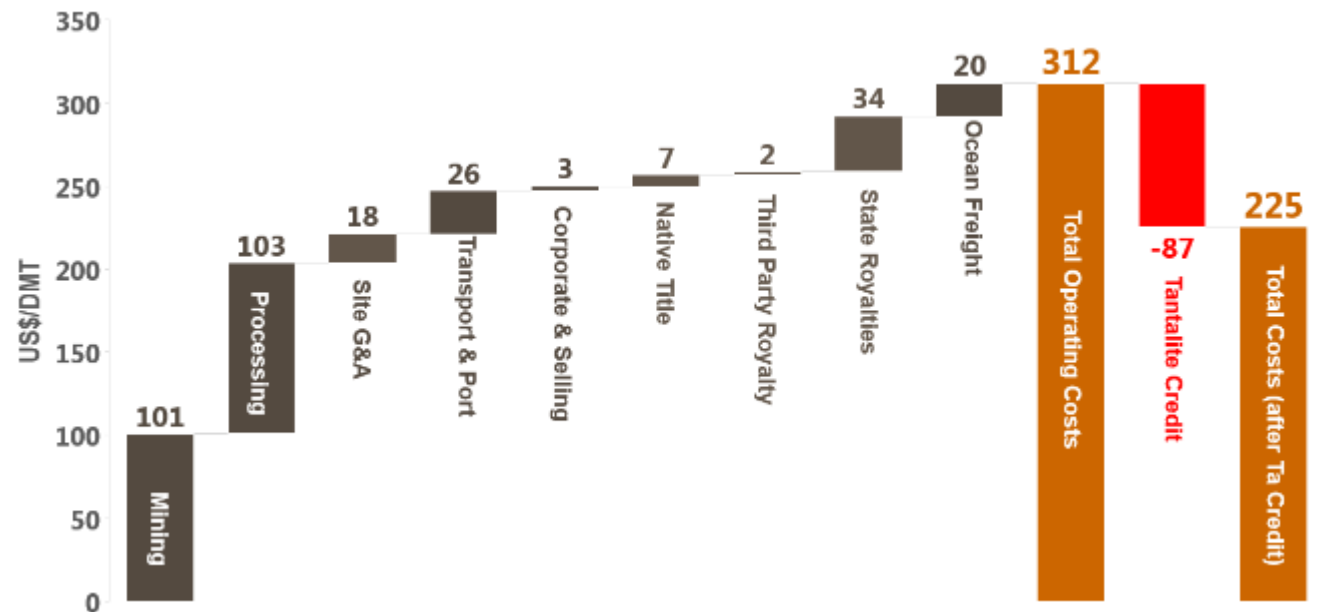
# Stage 2 – 5Mtpa Expansion

- ▶ DFS now in progress and on track for completion by mid-2018, paving the way for a Final Investment Decision (FID) in Q3 2018, start of construction by Q4 2018 and commissioning from Q4 2019.
- ▶ The 5Mtpa expansion of Pilgangoora will position Pilbara Minerals to meet the surging demand for lithium raw materials globally, with its expansion plans strongly supported by its cornerstone customers and strategic partners including its previously announced strategic offtake and financing arrangements with Ganfeng and Great Wall Motor Company.
- ▶ The balance of the currently uncommitted production from the Stage 2 expansion currently the subject of discussions with a number of interested parties.

## Stage 2 capital estimate of A\$207M

CAPITAL ITEM	VALUE (M)
Process Plant and Infrastructure	\$145.3
Owners Costs	\$35.2
Other Costs	\$10.5
Contingency	\$15.9
<b>TOTAL</b>	<b>\$206.9</b>

## LOM Ave Operating Costs US\$ (real)







# PILBARA MINERALS ASX Code: PLS

LIMITED



Powering a Sustainable Energy Future

Corporate Presentation - May 2018



@PilbaraMinerals



@KenBPilbara



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