



# GALAXY RESOURCES LIMITED

## AGM Presentation

May 2018

ASX:GXY

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## Market Review

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# Lithium-Ion Batteries – Demand Drivers

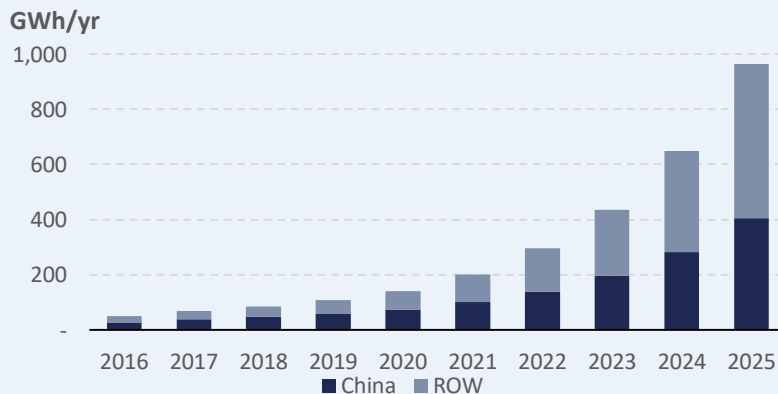


**With the emergence of electrification in the generation, storage and usage of energy, electric vehicles and energy storage are key market drivers for lithium**

## Electric Vehicles (“EV”)

- Growth in global EV volumes, particularly in China, is the most significant market driver for lithium-ion batteries
- Global EV penetration forecast to reach c.15%+ by 2025, supported by consumer demand and supportive policy
  - Further demand upside from electrification of large commercial and industrial vehicles (buses, trucks, etc.)
- 2017 was characterised by significant committed investment from global OEMs into their EV strategies

## Automotive Battery Demand (GWh/yr)

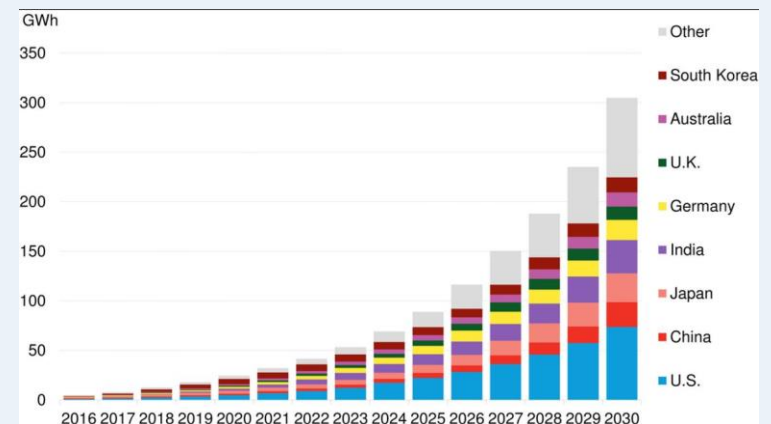


Source: UBS, Bloomberg New Energy Finance

## Energy Storage

- Battery storage becoming a key resource in managing grid stability and promoting deeper penetration of renewable energy
- Lithium-ion emerging as the dominant rechargeable battery technology
- Bloomberg New Energy Finance has projected that the energy storage market could double 12 times by 2030
  - This would underscore investment of up to US\$103bn

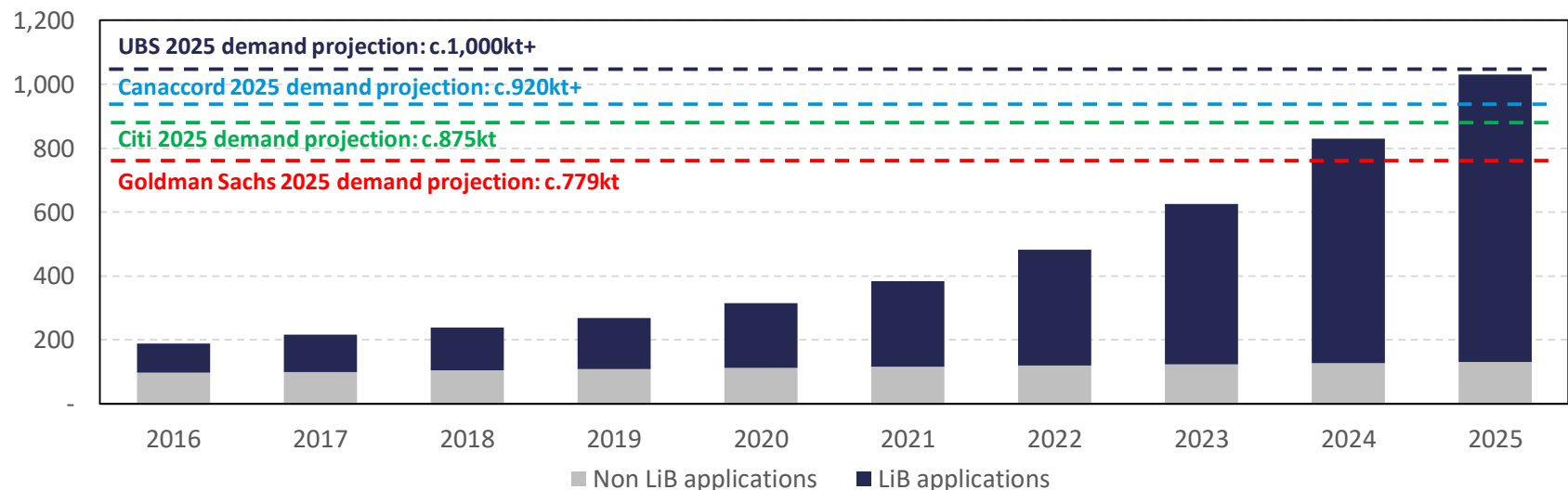
## Global Cumulative Storage Developments



## Lithium demand projected to grow up to 5x from historical c.200kt LCE per annum to over 1,000kt LCE by 2025

- Demand projected to continue to grow at a CAGR of 15%-25%+ (2017-2025), driven primarily by increased global electric vehicle penetration forecasts and an increase in global energy storage demand
- Industry needs to bring online a potential c.800kt of incremental supply (equiv. c.90kt growth pa) to meet demand balance
  - Assuming a greenfield brine capital intensity of US\$15,000/t LCE this equate to c.US\$12bn worth of investment required
  - This compares to approximately only US\$3bn+ raised via debt and equity issuances, and internally funded expansion of majors since the beginning of 2016

### Lithium Carbonate Demand (kt LCE)



Source: Global Investment Bank and Broker research, Bloomberg New Energy Finance

## Demand growth New Energy Vehicles (“NEV”) in China continues to accelerate with total unit production of NEVs up 140% in the first 4 months of 2018

- China produced 794k NEVs in 2017, representing a 2.7% market penetration of total vehicles produced (+0.9% YoY growth, absolute)
  - c.54% growth YoY and almost 100k vehicles above guidance
- China produced 228.8k vehicles in the first 4 months of 2018, representing 140% growth year-on-year YoY
- China targeting 20% NEV penetration by 2025 (c. 7 million NEVs p.a. of total projected production of 35 million vehicles)
  - At 7 million vehicles pa, implies additional demand 280kt<sup>2</sup> LCE by 2025

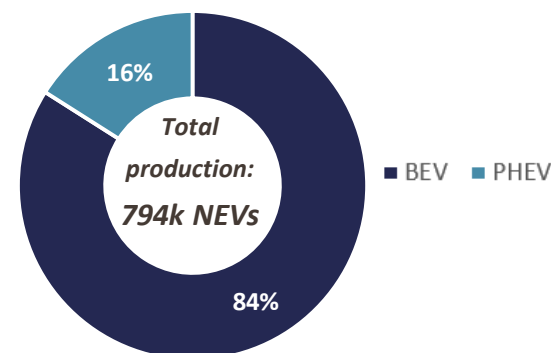
### Targeted New Energy Vehicle Sales Ramp up

*Production target of at least 1 million NEVs in China this year, representing 26% growth YoY*



### Proportion of Battery Electric and Plug-In Hybrids Produced in 2017

*New subsidy scheme provides further incentive for automakers to transition to production of long range BEVs*



### 2018 NEV Production in China

NEV Type	Q1 2018	Apr 2018	Total	YoY Change
BEV <sup>2</sup>	107.7k	64.0k	171.7k	↑ 120%
PHEV <sup>2</sup>	40.1k	17.0k	57.1k	↑ 234%
<b>Total</b>	<b>147.8k</b>	<b>81.0k</b>	<b>228.8k</b>	<b>↑ 140%</b>

Source: CAAM, CJ Securities, Bloomberg

Notes:

- Assumes an average EV battery capacity of 50kWh and an average lithium intensity of 0.8
- BEV = Battery electric vehicle; PHEV = Plug-in hybrid vehicle



# China NEVs – Bigger Batteries, Longer Range



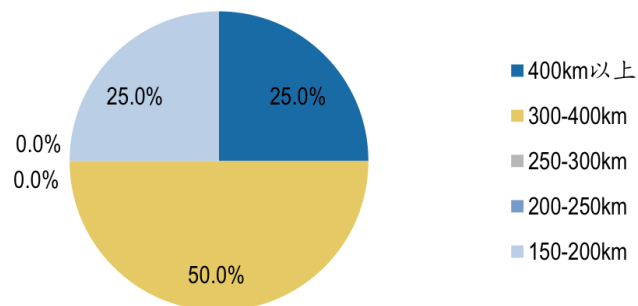
## Latest round of government policies in China incentivise Auto OEMs for longer range vehicles with higher energy densities

### China Type Approved Vehicles – Batches 1~3

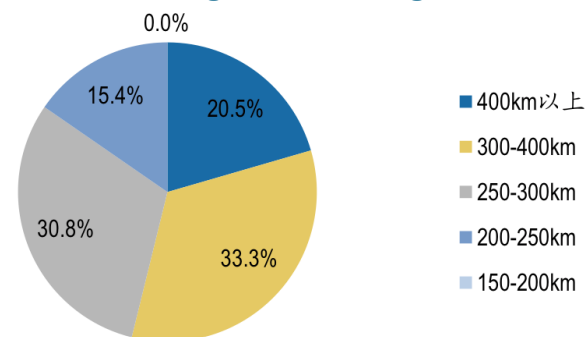
Vehicle Category	NEV Type	Batch 1 (2018.01.31)	Batch 2 (2018.03.08)	Batch 3 (2018.04.04)
Passenger Vehicles	BEV & PHEV	34	14	49
Buses & Coaches	BEV & PHEV	55	28	144
Commercial Vehicles	BEV & PHEV	29	16	111
<b>Total</b>		<b>118</b>	<b>58</b>	<b>304</b>

Source: MIIT, GFS Research

Batch 2 Passenger Vehicle Range



Batch 3 Passenger Vehicle Range



# China NEVs – Increasing Lithium Intensity



**New passenger vehicles being launched in China now with longer range and larger batteries which equates to higher lithium intensities per vehicle**

Selected List From 2018 Batch 3 Type Approved Passenger Vehicle Models

车型	产品商标	产品名称	带电量 (kWh)	续航里程 (km)	能量密度 (Wh/kg)	电池型号	电池供应商	电机电控供应商
北汽新能源 EU5	北京牌	纯电动轿车	57.82	416	151.40	三元锂	普莱德	北汽新能源
东风俊风 E11K	俊风牌	纯电动轿车	59.04	410	143.36	三元锂	德朗能	杭州伯坦
东风俊风 E11K	俊风牌	纯电动轿车	57.53	408	143.36	三元锂	德朗能	杭州伯坦
东风俊风 E17	俊风牌	纯电动轿车	57.94	408	143.17	三元锂	德朗能	杭州伯坦
长安逸动 EV	长安牌	纯电动轿车	55.89	405	150.50	三元锂	重庆长安	重庆长安
比亚迪腾势	腾势牌	纯电动轿车	60.85	403	141.61	三元锂	比亚迪	比亚迪
奇瑞艾瑞泽 5e	奇瑞牌	纯电动轿车	58.55	401	150.88	三元锂	天津捷威	上海电驱动
国金 GM3	国金汽车牌	纯电动 MPV	59.75	401	147.94	三元锂	河南锂动	苏州和鑫/ 卧龙电气
长城 EV350	长城牌	纯电动轿车	50.76	360	140.00	三元锂	孚能科技	北京博格华纳
东风俊风 E17	俊风牌	纯电动轿车	46.43	318	151.60	三元锂	河南锂动	武汉乐创世纪
长安奔奔 EV	长安牌	纯电动轿车	36.66	316	151.30	锂电池	芜湖天弋	苏州绿控
长安奔奔 EV	长安牌	纯电动轿车	36.66	316	151.30	锂电池	芜湖天弋	苏州绿控
江淮 iEV7E	江淮牌	纯电动轿车	48.05	310	144.96	三元锂	华霆动力	英搏尔
御捷 K-ONE	御捷马牌	纯电动轿车	45.26	310	141.00	锂电池	哈尔滨光宇	河北御捷










Source: MIIT, GFS Research



# EV Strategy of Major Auto Manufacturers










## Global auto manufacturers continue to expand on their EV strategies with significant levels of committed investment into building out capacity

 <b>TOYOTA</b>	<ul style="list-style-type: none"> <li>▪ <b>10 new BEVs</b> worldwide in “early 2020s” and <b>5.5 million electrified vehicles</b> by 2030</li> <li>▪ <b>US\$13.3bn of investment</b> in electric vehicles and battery R&amp;D by 2030</li> </ul>
	<ul style="list-style-type: none"> <li>▪ <b>16 global plants</b> by the end of 2022 for battery and vehicle assembly</li> <li>▪ Annual production of <b>3 million EVs by 2025</b> and battery <b>demand of 150GWh/year</b></li> <li>▪ <b>+€50bn investment into electromobility</b> by 2022</li> </ul>
 <b>TESLA</b>	<ul style="list-style-type: none"> <li>▪ <b>Q1 production of 34,494 vehicles</b></li> <li>▪ Targeted weekly production of <b>5,000 Model 3s by end of Q2</b> and delivery of 100,000 Model S and Xs in 2018</li> </ul>
	<ul style="list-style-type: none"> <li>▪ <b>25 new EVs by 2025</b>, including 12 BEVs with BEVs to offer <b>ranges of up to 700kms</b></li> <li>▪ <b>US\$8.6bn investment in 2018</b> into R&amp;D, including e-mobility and autonomous driving technology</li> </ul>
 Daimler Mercedes-Benz	<ul style="list-style-type: none"> <li>▪ Plans for an <b>50 hybrid and BEV</b> passenger car models by 2022</li> <li>▪ Daimler to <b>invest +US\$12bn in electric and hybrid technology</b> development</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Targeting <b>20 all-electric models</b> by 2023 and annual <b>sales of 1 million EVs</b> by 2026</li> </ul>
	<ul style="list-style-type: none"> <li>▪ <b>US\$11bn of investment</b> into EVs in the next 5 years, with 40 EV models to debut by 2022</li> </ul>
 <b>HONDA</b>	<ul style="list-style-type: none"> <li>▪ Targeting global sales proportions of 15% EVs and 50% hybrid by 2030</li> <li>▪ Striving to electrify <b>two-thirds of global auto range (3m EVs) by 2030</b>, with a <b>targeted 1m EVs by 2025</b></li> </ul>
	<ul style="list-style-type: none"> <li>▪ New venture capital fund that plans to <b>invest up to US\$1bn to support “next-generation mobility”</b></li> <li>▪ Targeting the launch <b>12 new BEVs</b> to by 2022 and <b>1.5 million in cumulative sales</b> of EVs by 2020</li> </ul>

## The electrification of transport systems continues to be driven by **supportive fiscal policy and associated value chain investment**

- Federal policy implementation has been supportive of increased New Energy Vehicle (“NEV”) penetration for some time now
- Provincial and local support beginning to be implemented throughout major global regions, including initiatives from various cities to ban internal combustion engine (“ICE”) vehicles prior to the federally stated production phase out
- Greater penetration rates and technological advancement continues to push NEV prices towards cost parity with ICE vehicles

### Government Policies Worldwide

	European Commission proposes to <b>reduce CO<sub>2</sub> emissions from vehicles by 30% by 2030</b>
 	<b>Norway to end sales of internal combustion vehicles (ICE) from 2025</b> ; Netherlands unofficially also pushing this timeline
	Germany to end sales of internal combustion engines (ICE) by 2030 <b>Federal court ruling that German cities now have the right to ban diesel engines</b>
 	France and the UK to <b>end sales of internal combustion engines (ICE) by 2040</b>
	Central Government is working with regulators to set a date on ending the sales of ICE vehicles <b>Subsidies increased for NEVs that have a range of &gt;400km</b> , whilst subsidies reduced on shorter range vehicles Cap and trade mechanism forcing local car manufacturers to meet NEV quotas (10% credit in 2019; 12% credit in 2020)
	Unofficial target to ban ICE vehicle sales by 2030; Targeted EV penetration rate of 40% by 2032
	“Clean Cars 2040 Act” – bill <b>seeking to ban sales of new internal combustion passenger vehicles in California by 2040.</b>
<b>Global City targets for banning ICEs</b>	Paris (2025); Madrid (2025); Athens (2025); Copenhagen (2019); Mexico City (2025)

Source: Government websites, Broker research

## Significant potential upside to demand from industrial energy storage systems (“ESS”), as well as small scale energy storage (e.g. Tesla Powerwall)

- Energy storage systems developing as a significant market driver for lithium demand, with Australia emerging as a global leader in the industrial energy storage space

### Hornsedale Wind Farm and Mega-Battery

- Currently the largest lithium-ion battery installed globally
- Provides energy storage for the Hornsedale wind farm, located in South Australia
- 100MW (129MWh) storage capacity



Source: ABC, Reuters, Company announcements

### Whyalla Steel Works and Mega-Battery

- South Australian government will provide UK billionaire, Sanjeev Gupta, a A\$10m loan to assist in plans to build >1GW of solar energy infrastructure for the Whyalla steelworks
- Development will include a 120MW (140MWh) lithium-ion battery storage facility

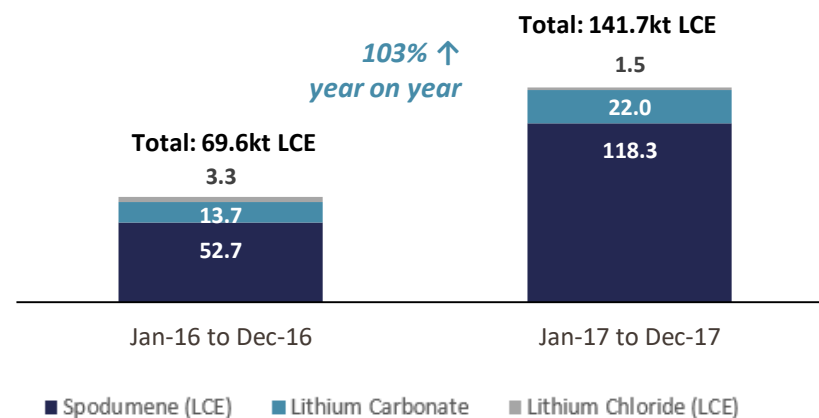


## Strong growth in lithium chemical production continued through 2017 supported by 103% YoY increase in feedstock imports for the year

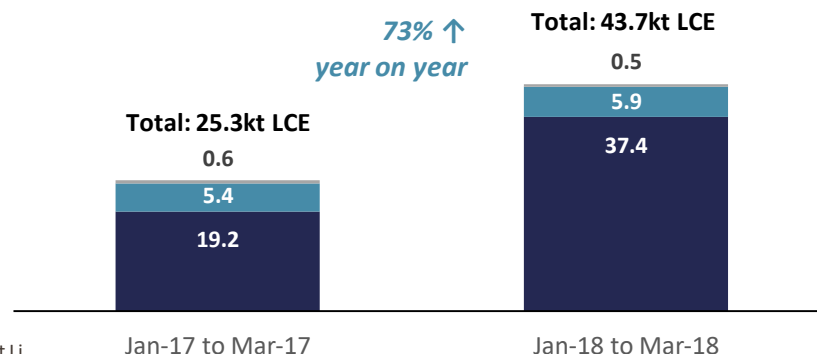
### China Customs Data

- China is now the largest single market consumer of lithium compounds, as well as the leading producer of the same
- China remains a major importer of lithium raw materials
  - 103% ↑ in LCE imported feedstock year-on-year in 2017 (lithium concentrate, carbonate and chloride)
  - Continued rapid growth in 2018 with a 73% ↑ in LCE imported feedstock in Q1 of 2018 YoY
- These figures are exclusive of an additional 2.8mt of DSO imported through June 2017-March 2018
- Lithium hydroxide exports for Jan-Mar 2018 were 6.2kt compared to 3.8kt for the same period in 2017
  - 65% growth YoY on LiOH exported in Q1 of 2018

### China feedstock Imports 2017 (kt of LCE basis)<sup>1,2</sup>



### China feedstock Imports Year To Date (kt of LCE basis)<sup>1,2</sup>



Source: Galaxy estimates, Chinese customs data, China Nonferrous Metals

1. Assumed the following conversion factors for 1t LCE: 1t spodumene/8; 1.148t LiCl; 1.136t LiOH; 0.188t Li

2. Aggregate LCEs do not include DSO

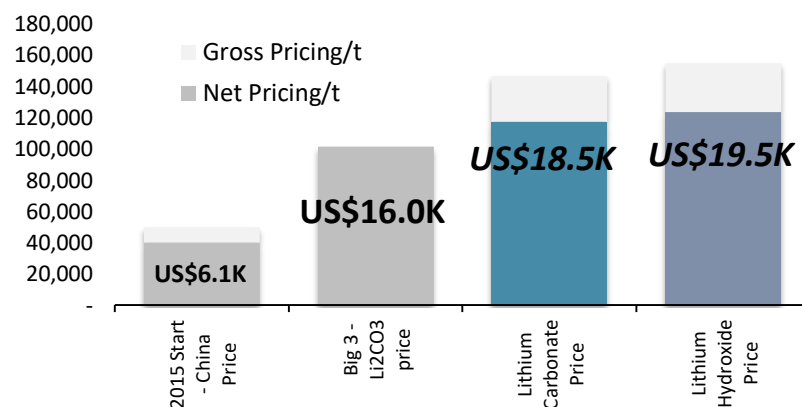
# Lithium Pricing Trends



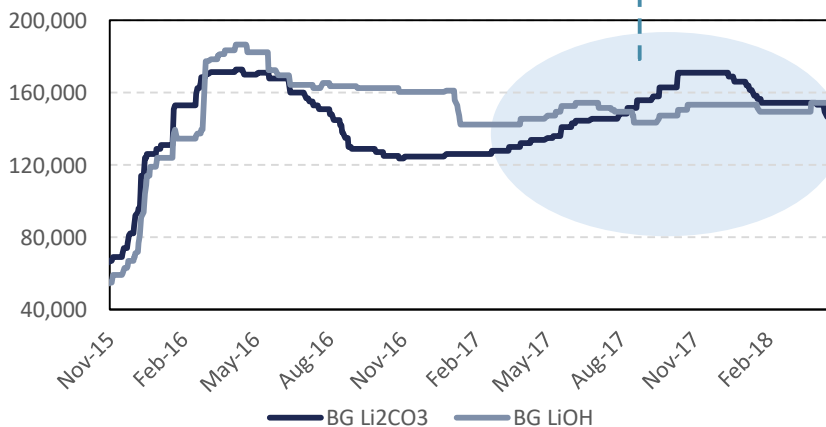
Lithium prices remain strong on a year-on-year (“YoY”) basis illustrating the fact that **demand continues to outweigh supply**

- Small retraction (-12%) in lithium carbonate prices in China through the first 4 months of 2018, whilst lithium hydroxide prices have gained slightly (+1%) and returned to trading at a premium to carbonate
- Lithium carbonate and lithium hydroxide prices up c.9% and c.6% on a YoY basis, respectively
- Expected ROW pricing in 2018 for Asia (Japan & Korea) of US\$16k/t and US\$19k/t for Li<sub>2</sub>CO<sub>3</sub> and LiOH respectively
- Lithium pricing now **maturing into annual seasonal cycles**

Lithium Carbonate Price Comparison (RMB/t) – April 2018

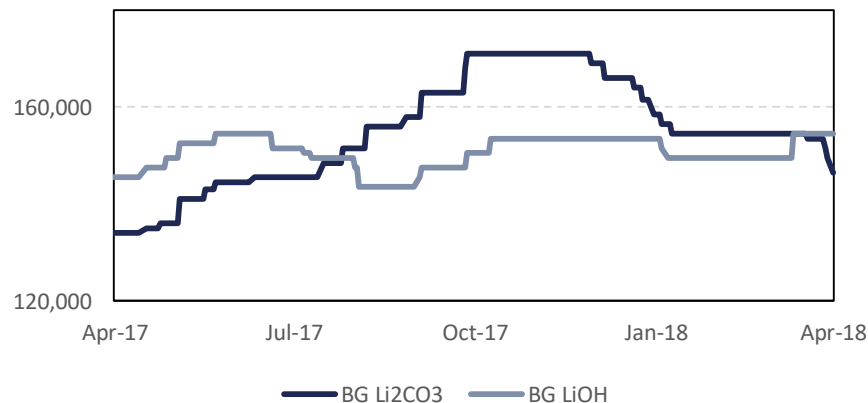


Historical Lithium Prices (RMB/t)



Source: CLA, Company Estimates, CJ Securities

Historical Lithium Prices Since Apr 2017 (RMB/t)

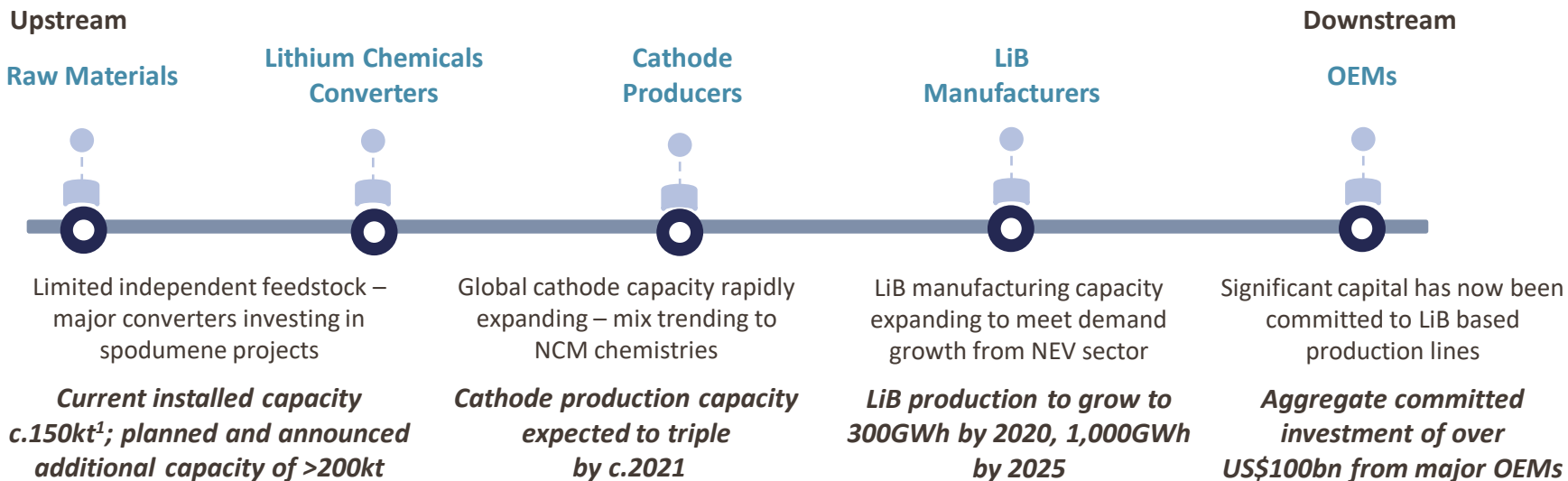


# Capacity Expansion Along The Value Chain



## Capacity expansion along the value chain is playing catch-up to swift demand growth for lithium-ion battery applications

### Lithium-Ion Battery Value Chain



Source: BMW, Tesla



## Group Performance & Outlook

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# FY2017 Highlights



## Cash Balance

**A\$59.7M**

2016: A\$9.3M    ↑ A\$50.4M

## Debt

**Nil**

2016: A\$40.2M    ↓ A\$40.2M

## Net Operating Cash Flow

**A\$57.1M**

2016: A\$2.6M    ↑ A\$54.5M

## Spodumene Produced

**155.7k tonnes** (19.5tLCE)

2016: Nil    ↑ 155.7k tonnes

## Production Run Rate

**209ktpa (Q4 2017)**

Q3 2017: 190ktpa    ↑ 10%

## Revenue

**A\$125.6M**

2016: Nil    ↑ A\$125.6M

## Gross Profit

**A\$33.5M**

2016: Nil    ↑ A\$33.5M

## EBITDA (Adjusted)

**A\$52.0M<sup>1</sup>**

2016: (A\$8.3M)    ↑ A\$60.3M

## EBITDA Margin

**32%**

2016: na    ↑ 32 points

### Notes:

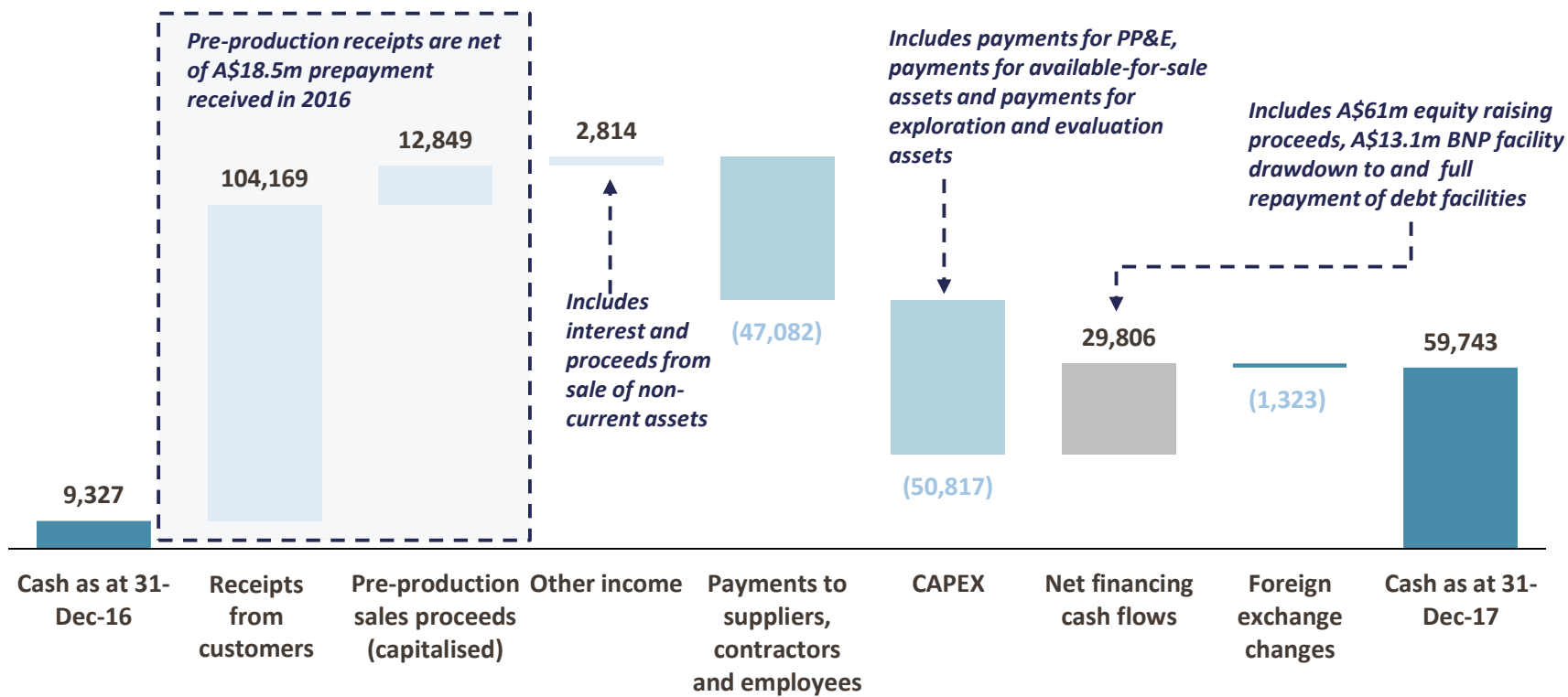
1. Adjusted EBITDA is underlying EBITDA excluding share based payment expense and non-IFRS financial information that has not been subject to audit by Galaxy's external auditor

# Strong Cashflow To Support Future Growth



## Significant net cash balance of A\$59.7M after investment into operational and development activities and complete paydown of debt

For the period 31 December 2016 to 31 December 2017 (A\$'000)



## Growth initiatives across all divisions, including further production at Mt Cattlin, advancing Sal de Vida through development and progressing James Bay feasibility

### MT CATTLIN

*Production & ramp up*

- Target production of 200kt of lithium concentrate (25kt LCE)
- Yield optimisation works to target future recoveries of 70% - 75%
- Exploration work to facilitate further resource definition

### SAL DE VIDA

*Field work, offtake & project financing*

- Formal completion of revised DFS
- JP Morgan advising on strategic partnership options
- Progressing to construction of test ponds and integrated pilot program

### JAMES BAY

*Project development*

- Feasibility study work for integrated upstream and downstream operation
- Continuing resource development work from resource upgrade delivered in Q4 of 2017
- Comprehensive test work program with JB material, leveraging Mt Cattlin experience

### MACRO

*Robust lithium demand*

- Demand continues to be robust from NEV sales in China and increasing penetration in ROW
- Mass energy storage systems emerging as an important new growth sector
- Continued expansion of further cathode and battery manufacturing capacities

# Competent & Qualified Persons' Statement



## Competent Person Statement

### Sal de Vida

Any information in this report that relates to the estimation and reporting of the Sal de Vida Project Mineral Resources and Mineral Reserves is extracted from the report entitled "Sal De Vida: Revised Definitive Feasibility Study Confirms Low Cost, Long Life and Economically Robust Operation" created on 22 August 2016 which is available to view on [www.galaxylithium.com](http://www.galaxylithium.com) and [www.asx.com.au](http://www.asx.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Mineral Resources and Mineral Reserves estimates in the relevant market 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.

### James Bay

The information in this report that relates to the estimation and reporting of the James Bay Mineral Resources is extracted from the ASX announcement dated 4 December 2017 which is available to view on [www.galaxylithium.com](http://www.galaxylithium.com) and [www.asx.com.au](http://www.asx.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Mineral Resources in the relevant market 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.

### Mt Cattlin

Any information in this report that relates to the estimation and reporting of the Mt Cattlin Mineral Resources and Ore Reserves is extracted from the report entitled "Mt Cattlin Mineral Resource & Ore Reserve and Exploration Update" created on 22 March 2018 which is available to view on [www.galaxylithium.com](http://www.galaxylithium.com) and [www.asx.com.au](http://www.asx.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the Mineral Resources and Ore Reserves estimates in the relevant market 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.

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