

Rapid Development of the Tier 1 Mardie Salt & Potash Project

Corporate Presentation

20 May 2019

www.bciminerals.com.au

About BCI Minerals



- Based in Perth, Australia
- ASX listed as "BCI"
- Market cap of ~A\$75M
- A\$35M¹ cash and zero debt
- Wroxby Pty Ltd largest shareholder ~29%
- Key assets:
 - Mardie Salt & Potash: 100% owned project
 - Iron Valley Mine: royalty earnings





BCI Project Development History



BCI has a track record of funding, developing and operating mining projects



- 1. Nullagine Joint Venture Iron Ore:
 - Developed from greenfields and operated from 2010-2015
 - BCI as manager with Fortescue as 25% partner
 - BCI paid A\$100M dividends to shareholders during this period



2. Iron Valley – Iron Ore:

- Developed in partnership with Mineral Resources Ltd in 2014
- BCI annual net royalty between \$6M and A\$18M
- 95Mt Reserves; 12 year mine life at current production of 8mtpa
- Significant royalty upside if BOSS light rail is developed



3. BCI is now focused on developing the 100% owned Mardie Salt & Potash Project **The Mardie Opportunity**



Mardie is a Tier 1 long life project that can supply the Salt and Potash growth markets in Asia



Rapidly developing the 100% owned Mardie Project will create substantial long-term value for all BCI stakeholders

Salt Facts



>300Mtpa of Salt produced and consumed globally

Salt production methods:

- 1. Solar evaporation of seawater or inland lakes
- 2. Hard rock mining of rock salt deposits
- 3. Solution mining of rock salt deposits

Salt applications:

- 1. Industrial / chemical / pharmaceutical: including glass, PVC, paper, textiles, medicines, oils etc.
- 2. Water treatment: increases purity and removes elements harmful to equipment
- 3. Food & Feed: preserves & flavours human food; essential element of animal nutrition
- 4. De-icing: improves road transport safety in winter





Global Salt Applications

- Salt pricing:
 - High-end chlor-alkali market requires high purity premium salt (>99.5% NaCl)
 - Most high purity salt sold into Asia is from Australia, India and Mexico
 - High purity salt has sold at prices of US\$40-75/t over last 10-years

Salt – Supply Deficit by 2027



Mardie will target the growing chemical sector in Asia which requires high purity salt



Sulphate of Potash (SOP) Facts



- Global agricultural industry depends on three primary fertilisers – Nitrogen (N), Phosphate (P) and Potassium (K)
- Potassium improves nutrient flow through plants and increases resistance to diseases
- Two main types of potassium fertilisers:
 - Muriate of Potash (MOP) KCI
 - Sulphate of Potash (SOP) K₂SO₄





- SOP (~US\$500/t) has large price premium over MOP (~US\$300/t)
- SOP has a strong long-term demand outlook



Source: Integer Research 2017, BCI analysis.

SOP is a premium fertiliser used on higher value crops (fruits, berries, vegetables)

Australian Salt & SOP Landscape

- Mardie will produce from an inexhaustible seawater resource:
 - Salt as primary product; and
 - SOP as by-product
- Five large existing evaporative Salt operations in the Pilbara region of WA
 - Ideal climatic conditions
 - Total production capacity of 14Mtpa
 - Up to 5 decades old
- No existing SOP production in Australia other planned projects:
 - Based on extraction of brines from inland salt lakes
 - 800–1,000km from port
 - Limited road, gas and support infrastructure





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Mardie Project Layout

- Vast area of mudflats with impermeable clay soils (130km² / 13,000ha)
- Site layout designed ~5km inland to limit disturbance of coastal ecosystem
- 8 large ponds and 36 crystallisers over a 20km x 5km area (100km² / 10,000ha)
- Seawater transferred into pond 1 via 6 pumps with 10,000l/s total capacity
- Salt plant and SOP plant with modern processing technology



Mardie Port Facilities



- 1.5Mt salt stockpile capacity
- Export jetty to reach ~3m water depth
- Capable of exporting bulk salt and SOP as well as SOP in bulka bags
- Provision for third party users
- Transhipping to large vessels anchored 15 nautical miles offshore



Approvals & Tenure Well Defined





Attractive Project Economics¹





1. Refer to BCI's PFS Optimisation Study released on 17 May 2019. All material assumptions and technical parameters underpinning the production target and forecast financial information continue to apply and have not materially changed

2. Financials based on a 60-year operating life; pre-tax basis; salt price of US\$30/t FOB; SOP price of US\$500/t FOB; AUD exchange rate of 0.70; ocean freight cost of US\$13/t to Asia

Mardie's Competitive Positioning





- Mexican salt into Asia is setting the marginal price
- Australia has ~US\$10-15/t logistics cost advantage to Mexico
- Mardie will be cost competitive with existing Australian operations

- 3Mt of MOP converted to SOP through a costly Mannheim chemical process - this underpins SOP pricing
- Mardie SOP is a by-product, with large % of capex & opex "sunk" against salt production
- Inland brine SOP projects 800-1,000km further to port than Mardie (~US\$40-60/t additional transport cost)

Recent Events – Progressing on Schedule

Key DFS engineering appointments







Lead DFS Engineer

- Ponds & SOP Plant
- Salt Plant

WA Government support for the Mardie Project

- Department of Jobs, Tourism, Science & Innovation (DJTSI) appointed as lead agency
- Minister for Ports in-principle approval for a port facility at the Mardie site



- Environmental review document submitted to EPA
 - On track for EPA endorsement by Dec-19 and Ministerial approval early 2020





- DFS site activities progressing
 - Geotechnical drilling and test work program nearing completion



 Construction of 1:40k scale evaporation trial underway



Project Timeline – to Production





Project Timeline – Short Term





Mardie – Unique Project Opportunity



- 1. Market: Strong market outlook for salt & SOP
- 2. *Project*: Tier 1 asset ideal location, long life, large scale & low cost
- **3. Sustainability:** Inexhaustible seawater resource and 95% of energy requirements from natural solar and wind
- 4. Company: BCI has a positive development track record and is well funded and supported to accelerate Mardie's development

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Appendix A:

Additional Corporate & Project Information

Corporate Information



Capital Structure

Ordinary Shares	397.6M
Share Price (16-May-19)	\$0.195
Market Capitalisation	\$77.5M
Cash (31-Mar-19)	\$35.4M
Debt (31-Mar-19)	Nil

Shareholding and Trading

Wroxby Pty Ltd	29.1%
Top 20 Shareholders	~55%
Number of Shareholders	~6,800
Ave Daily Volume (Last 6 Months)	~400,000

Board Management Brian O'Donnell Simon Hodge (Chief Financial Officer) (Non-Exec Chairman) Alwyn Vorster **Tony Chamberlain** (Managing Director) (Project Director) Jennifer Bloom Michael Klvac (Non-Exec Director) (GM Corporate Affairs) Michael Blakiston **Stephanie Majteles** (General Counsel) (Non-Exec Director)

Share Price and Volume



BCI Board and Management

Brian O'Donnell

Non-Executive Chairman



- Director, Finance and Investments for Australian Capital Equity group
- Numerous current and previous board positions on ASX-listed and private companies

Alwyn Vorster Managing Director



- > Geology, Mining and MBA degrees
- Kumba; Rio Tinto; Iron Ore Holdings
- Geology; Mining; Marketing; Project studies; Funding; Corporate management

Tony Chamberlain

Project Director



Stephanie Maiteles

General Counsel

- Chemistry/Metallurgy degrees (PhD)
- > WMC; BHP; Vimy

 Feasibility studies, Construction, Project funding; Operations

Jennifer Bloom Non-Executive Director



- Extensive business background with experience in governance and approvals
- Senior positions in both the private and public sector

Simon Hodge

Chief Financial Officer



- ➢ Finance degree
- JP Morgan; Poynton; Quickflix
- Corporate finance; Investment banking

Michael Klvac General Manager – Corporate Affairs



- Science and Economics degrees
- ➢ Rio Tinto; BHP; Iron Ore Holdings
- Environmental approvals; Native Title and Stakeholder management

Resources lawyer

- ➢ Freehills; Rio Tinto
- Mining law, State Agreements, Approvals, Procurement

Michael Blakiston

Non-Executive Director



- Partner in Gilbert + Tobin's
 Energy + Resources group
- Has served on numerous ASX and not-for-profit boards

Mardie Projects Team



External Support		Internal Mardie Team		
Lead DFS Engineer CCC CCC CCC CCC CCC CCC CCC		 Tony Chamberlain Project Director Chemistry / Metallurgy degrees (PhD) WMC; BHP; Vimy Feasibility studies; Construction; Operations 		
WorleyParsons	Andrew Wydler Eng Manager Plants	Laurie Huck Eng Manager Port	Warwick Jones Manager Operations	
Salt Plant Salt Partners Turning salt into gold	 B Eng Chem WMC, Sherritt, BHP, Worley Plant design; Studies; Construction; Operations 	 B Eng Elec SKM, PDC, HBH Feasbility studies; Design; Construction 	 B Eng Mining Barrick, BC Iron Mine operations; Construction; Projects 	
SOP Plant WorleyParsons resources & energy	 Michael Klvac GM Corporate Affairs B Sc & B Comm Rio Tinto, BHP, IOH Approval; Heritage; Tenure 	 Matt Gurr Marketing Manager B Eng Chem Rio Tinto 20-years Asia marketing; Rio Tinto Korea Country Manager 	 Tony Cattalini Superintendent Ops B Sc Chem Rio Tinto Salt Salt operations; Construction; Gas pipeline certification 	
Port Cardno Multiple others: market, shipping, approvals, tenure and engineering	 Brad Milne Commercial Manager B Comm Azure Capital Project financing; Financial modelling 	 Kevin Yu China Representative B Eng Rio Tinto China sales & marketing 	 Other Functions: Site operation staff Project controls Corporate support 	
			22	

Simplified Process Flow



Applying latest processing technology to produce high purity products



Proposed Development Strategy





Iron Valley Mine – Royalty Earnings



- Quarterly earnings for BCI via royalty agreement with Mineral Resources Ltd (MIN)
 - BCI EBITDA of A\$6M in first 9 months of FY19, A\$6M in FY18 and A\$18M in FY17
- 95Mt Reserves; 6-8Mtpa iron ore operation; 50% lump production; potential mine life of ~13 years
- Average ore grade: Lump 60% Fe; Fines 58% Fe
- Upside for BCI from MIN's Bulk Ore Shuttle System (BOSS)¹
 - Lightweight, narrow gauge rail system with fully autonomous operation
 - Lower opex improves financial viability
 - 4.2km trial track to be operational by Q3 CY19
 - Potential to double production rates to 16Mtpa (higher royalty payment to BCI)







Appendix B:

Salt Information

Salt and SOP Project Locations



What is Salt?

- Salt (NaCl) is 40% sodium (Na) and 60% chlorine (Cl)
- Essential for many aspects of modern living
- >300Mtpa of Salt produced and consumed globally
- Salt is extracted via two main methods:
 - 1. Solar evaporation of seawater or inland lakes
 - 2. Mining of rock salt deposits via hard rock or solution mining methods
- High purity salt of >99.5% NaCl has attracted prices of US\$40-75/t CIF in the high-end chemical market during the last 10 years



Source: Roskill 2017 Salt Market Report.



Salt Uses



Salt is an essential feedstock for thousands of products



Australian Salt Projects



- Ideal climatic conditions for solar evaporation salt production
- Currently ~15Mtpa production capacity – 95% solar salt
- Key production region is the Pilbara/Mid-West coastline
 - Five major operations with a capacity of ~14Mtpa
 - Key players are Dampier Salt (Rio Tinto, Marubeni & Sojitz) and Shark Bay Salt (Mitsui)
- <1Mtpa producers including Cheetham Salt and WA Salt
- BCI's Mardie Salt Project located in the centre of this region



Mardie Salt Product



Mardie's salt will be a high-purity product ideal for use in the Asian chemical industry

Target Salt Product Specs	
NaCl	99.7%
Са	<0.04%
Mg	<0.02%
SO ₄	<0.12%
Insolubles	<0.01%

- Chlor-alkali industry requires high purity salt
- High purity salt demand in the Asian chemical industry forecast to increase from **70Mtpa to 110Mtpa** over the next decade
- Mardie's location, climate and evaporation & processing flowsheet ideal for producing high purity salt



Salt – Supply Deficit by 2027



Mardie will target the growing chemical sector in Asia which requires high purity salt



Positive Dynamics in Asian High Purity Salt Market **BCI** MINERALS

Supply deficit of ~20Mtpa forecast in next decade (~5 Mardie sized projects)





Source: Roskill 2017 Salt Market Report, BCI analysis.

- Price range of US\$33/t to US\$70/t (CIF) over last decade
- Current market segment value: **US\$2.8 billion per year**
- 2027 market segment value: US\$4.5 billion per year

Positive Price Outlook for Asian Salt Market

- Opaque market with no index price
- Downward pricing pressure over last decade – average CIF price of US\$43/t
 - Primarily driven by increase in low cost and lower purity Indian production
- Pricing recovery commenced in late 2018
 - Numerous long term contracts renegotiated at higher prices
 - Asian salt market starting to price differentiate between high and low purity salt
- Favourable long term outlook
 - Strong demand forecast in Asia
 - Long lead time for new supply and ongoing rationalisation of Chinese coastal supply
- Roskill forecasting average price of ~US\$45/t CIF by 2027

Average Import Values of Australian Salt (US\$/t CIF)







Appendix C:

SOP Information

Key Plant Nutrients





- Nitrogen (N) from Urea fertilisers
- Phosphorus (P) from Phosphate fertilisers
- Potassium (K) from MOP and SOP
- Magnesium (Mg) and Sulphur (S) from Magnesium Sulphate fertiliser

What is Sulphate of Potash (SOP)?

 Global agricultural industry depends on three primary fertilisers – Nitrogen (N) Phosphate (P), and Potassium (K)



- Potassium improves crop yield & quality, and increases resistance to diseases
- Two main types of potassium fertilisers:
 - Muriate of Potash (MOP) KCI
 - Sulphate of Potash (SOP) –
 K₂SO₄

Global Potash Market (Product Tonnes)



Source: Integer Research 2017, BCI analysis.





- SOP is a premium fertiliser used on higher value crops (fruits, berries, vegetables)
- SOP (US\$500-600/t) has large price premium over MOP (US\$200-300/t)





For high value crops, a small yield increase from using quality fertiliser (i.e. SOP) delivers high financial benefits



Global Harvested Area

Positive SOP Market Dynamics



More food needed from less land..... increases need for premium quality fertilisers





Source: BCI analysis.

- Price range of US\$450/t to US\$1,000/t over last decade
- Current SOP market value: **US\$4 billion per year**
- Future SOP market value: **US\$5 billion per year**

SOP Price Forecast



SOP Price (US\$/t FOB Taiwan)



	FOB US\$/t
5-yr Historical Average	544
5-yr Forecast Average 2018-22	526
5-yr Forecast Average 2023-27	541
BCI Price Assumption (PFS)	500

BCI targeting SOP specs of >51% K₂O and <1.5% CI



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