



Investor presentation May 2016

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# **Project highlights**



Project specification enhanced, confirmed and fully costed



Notes: 1) DFS capital funding requirement includes the nominal capital expenditure required up to the first quarter when the Project achieves break-even cash flow. Outsourced infrastructure and leased equipment is excluded. 2) Project economics NPV (after-tax) at commencement of schedule activities (Apr-16) more details on slide 29. 3) Cash cost of production over LoM at 20Mtpa on real 2016 basis.

### **Building blocks of value**

Robust proposition and value throughout the cycle





### **Market demand**

#### Macro drivers that stimulate fertilizer demand







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# The world needs large scale, sustainable multi-nutrient solutions to meet the food security challenge

Notes: 1) Population growth between 2015 and 2050; Emerging middle class growth between 2020 and 2030. 2) Food production growth required between 2010 and 2050. Protein consumption increase per capita between 2010 and 2050. Average annual spend on fruits and vegetables by income segmentation on the basis of average annual income in real US\$. Represents the lower middle class (US\$3,000) and upper middle class (US\$10,000). 3) Decrease in arable land per capita between 2010 and 2050. Sources: UN; FAO; Brookings; HSBC and national statistics offices, Sirius Minerals.

# The attractions of polyhalite

A single source of bulk nutrients as foundation for more balanced fertilization



#### Polyhalite nutrient composition<sup>1</sup>





#### POLY4 characteristics<sup>2</sup>

- Supply of four of the six macro nutrients
- Straight or as part of a fertilizer blend
- Nutrients are readily available
- No negative effect on soil conductivity
- Essentially chloride-free
- Does not change soil pH
- Valuable micro nutrients

Volume and price determined by: Substitution, Market Growth, and Performance

Notes: 1) Based on 90% polyhalite grade. Macro nutrients based on w/w % and micro nutrients based on mg/kg; micro nutrients' content: B 169, Zn 1.9, Mn 3.1, Mo 0.3, Se <0.5, Fe<0.5, Cu 1.1, Sr 1414. 2) POLY4 is the trademark name for polyhalite products from the Sirius Minerals's polyhalite project in North Yorkshire.

# **POLY4** multiple substitution opportunities

Clearly identified opportunity for 20Mtpa

Substitution market growth 2018-2025:

Primary substitute product demand POLY4 in 2018<sup>1</sup> (Mtpa of POLY4 equivalent)



Notes: 1) Global demand forecast of primary substitute fertilizer products in 2018 by CRU expressed in POLY4 equivalent. 2) SOPM demand calculated on MgO equivalent basis which represents 2.8Mtpa of Cl-free K<sub>2</sub>O on a POLY4 equivalent basis. 3) Fertecon estimates that 61% of the total K<sub>2</sub>O market ends up in blends. 4) Expansion phase capacity. Source: CRU; Sirius Minerals.

#### Sirius capacity<sup>4</sup> (Mtpa)

376





# **Further demand opportunities**

Increasing demand for key attributes of POLY4

![](_page_7_Picture_2.jpeg)

![](_page_7_Figure_3.jpeg)

# Unmet CI-free potassium demand and sulphur deficiency alone account for respectively 70Mtpa and 60Mtpa of POLY4 demand potential

Notes; 1) Forecasted K<sub>2</sub>O consumption in 2018 by crop and assessment of chloride tolerance levels. Cl-free K<sub>2</sub>O represents essentially chloride-free consumption/demand. 2) Sulphur deficiency in 2015 estimated to be 11.4Mtpa in sulphur or 60Mpta in POLY4 equivalent. Sources: TSI, FAO, CRU, Roland Berger, Sirius Minerals.

# **Multi-nutrient products command a premium**

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#### Farmers and blenders value efficiency gains and nutrient synergies

#### Market multi-nutrient premiums v sum of the parts nutrient value

POLY4<sup>11</sup> Implied value (No CI-free)

(Quoted average prices v straight nutrient value)

![](_page_8_Figure_6.jpeg)

# 60%+ average premium for substitute multi-nutrients equivalent to 80Mtpa of POLY4 demand potential

Notes: 1) Multi-nutrient premium based upon the difference between quoted prices by CRU (Annual 2015), IPI (Average Q1-Q3), K+S (Quote provided by trader Sep, 2015) and regional single nutrient value (Excl. CaO), N (Urea), P (Phosphoric Acid 100% P<sub>2</sub>O<sub>3</sub>), K<sub>2</sub>O (MOP), S (Sulphur), MgO (Kieserite (GR, CH) 2). TSP premium based upon regional prices (BR) over implied nutrient value P. 3) NPK T:15 premium based upon regional prices (CH) over nutrient content implied value N, P and K<sub>2</sub>O. 4) NPK-S T:15 premium based upon regional prices (CH) over nutrient content implied value N, P, K and S. 5) CAN premium based upon (EU) prices over nutrient content implied value N. 6) AS based upon regional prices (US, BR) over nutrient content on the value S, P and S, S) CAN premium based upon (EU) prices over nutrient content implied value N. 6) AS based upon regional prices (US, BR) over nutrient content on the value S, P and S, S) CAN premium based upon (EU) prices over nutrient content implied value N. 6) AS based upon regional prices (US, BR) over nutrient content on the value S, P and S, Value. 7) SOPM US premium (US IPI TRIO ) over nutrient content implied value K<sub>2</sub>O, S, MgO (No CI-free Value). 8) SOPM EU premium (K+S Patentkali CPT quote) over nutrient content implied value K<sub>2</sub>O, S, MgO (No CI-free Value). 9) SSP regional prices (BR) over nutrient content implied value P and S.10) SOP granular regional prices (US, EU) over K<sub>2</sub>O + S value (No CI-free value). 11) POLY4 pricing scenarios (4) over K<sub>2</sub>O + S + MgO value (EU, US, CH, BR) (No CI-free Value). 64% weighted average premium representing POLY4 primary substitute products in scope. Source: CRU; Sirius Minerals.

# **POLY4 outperforms traditional products**

NPK blend tested against MOP on a wide range of broad-acre and high-value crops

![](_page_9_Figure_2.jpeg)

Notes: Detailed crop study results available on Company website. 1) Yield parameters by crop; sugarcane yield, wheat dry weight, soybean fresh weight, corn aerial fresh weight (40 days), peanuts fresh weight, cabbage head weight, tomato yield. Yield gains of POLY4 over MOP T12 NPK blends and T12 NPK synthetic POLY4 made out of SOP, Gypsum, and Kieserite. 2) Field trial. 3) Greenhouse trial. 4) Represents the 32% of total K<sub>2</sub>O consumption which is used on chloride-sensitive crops. 5) Represents the theoretical POLY4 demand by multiplying the K<sub>2</sub>O recommendation rates per crop per ha by the global amount of hectares harvested for corn, soybean, wheat and sugarcane. Source: Texas A&M, Durham University, University of Florida, Shandong Agricultural University, IFA, Sirius Minerals.

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# **POLY4** value in use

![](_page_10_Picture_1.jpeg)

#### Significant value capture opportunities using POLY4 throughout the value chain

![](_page_10_Figure_3.jpeg)

Notes: 1) FOB cost LoM Sirius Minerals at 20Mtpa (excl. royalties, sustaining Capex). 2) Based on the soybean field trial at 90kg K<sub>2</sub>O/ha against MOP (Texas A&M 2014) and a tomato field trial at 250kg K<sub>2</sub>O/ha against SOP (University of Florida 2014) and a Yield benefit pass-through ranging from 20%, 23% and 30% back to the fertilizer producer based on CRU analysis of past value capture performance of fertilizer products (23%). 3) Incremental value over K substitute (MOP for broad acre, SOP for high value crops) based on revenue performance differences per tonne of POLY4. 4) Full farm gate value based on the comparison with control (N+P). Source: USDA, Sirius Minerals

### Proven and growing market demand

3.6Mtpa of take-or-pay offtake agreements with multiple further opportunities

![](_page_11_Picture_2.jpeg)

![](_page_11_Figure_3.jpeg)

**Key findings** 

#### Initial production capacity (in Mtpa)

### Global demand for POLY4 validated by customer agreements to date

Notes: 1) 0.9Mtpa on top of the offtake agreements represents the options taken by the offtake partners. 2) Other commitments represent MOUs (Memorandum of Understanding) which are a mutual agreement between parties to form a long-term partnership with key terms that serve the basis for negotiating the clauses of a polyhalite supply contract. FSAs and LOIs are Framework Sales Agreements and Letters of Intent respectively. These set out a basis for cooperation between the parties, in relation to entering into formal sales contracts closer to the time of first production. 3) Represents the approximate weighted average price of current offtake agreements. 4) First tenyear weighted average. Long-term equivalent price represents LoM. Source: Sirius Minerals.

166

186

### High-margin business due to low cost basis

![](_page_12_Picture_1.jpeg)

Project designed infrastructure results in a very low cost basis

![](_page_12_Figure_3.jpeg)

### Lowest cost multi-nutrient potassium producer

Notes: 1) Operating cost based on LoM on a real 2016 basis and 80:20 split of granulated and coarse POLY4 production (excl. sustaining capex and royalties). 2) Includes leasing costs associated with mining equipment, port, MHF and a proportion of indirect costs. 3) Operating costs are shown on a real 2016 basis. Other costs includes fixed overheads, fixed overheads, G&A, product realisation charges and allowances. 3) Operating costs shown on a real 2016 basis. POLY4 LoM cost and supply based on 10Mtpa (US\$236/t) and LoM cost 20Mtpa case (US\$194/t). FOB weighted average cost estimated on the basis of SOP Primary production (US\$300/t of product), SOP Secondary production (US\$450/t of product) and SOPM (US\$265/t of product). MOP FOB 1<sup>st</sup> quartile cost estimate (US\$145/t of product). Cumulative Cl-free K<sub>2</sub>O production based on 2025 production. Sources: Broker reports, Sirius Minerals.

### World-class scale and margins

Asset characteristics compare strongly to fertilizer and resource leaders

![](_page_13_Picture_2.jpeg)

	IRON ORE Hammersley Iron	COAL Cerrejon Mine	POLY4 Sirius Minerals <sup>3</sup>	MOP Allan Mine	PHOSPHATE ROCK Khouribga
Location	Australia	Colombia	United Kingdom	Canada	Morocco
Asset life	~90 years	100+ years	100+ years	30+ years	100+ years
Distance to port	>300km	150km	37km	>1,000km	>200km
Production	133Mtpa	34Mtpa	20Mtpa	3Mtpa	15Mtpa
Revenue per annum	~US\$22bn	~US\$2.3bn	~US\$3.0bn	~US\$0.8bn	~US\$1.7bn
Cash margin <sup>1</sup>	63-70%	66-70% <sup>2</sup>	70-85%	47-67%	75-78%
Direct investment opportunity	× No	× No	✓ Yes	× No	× No

### A world-class asset positioned for favourable macro-economic trends

Notes: 1) Actual or estimated annual revenues from selected assets; Khouribga revenue estimate based on 15Mtpa of phosphate rock at US\$110/r FY2014 FOB Morocco sales price (without considering any downstream value added). Allan revenue based on 3Mpta of MOP at US\$267/r (FY2014 ASP PCS). Hamersley 2014A revenue based on 2014A production of 133mt with average FOB price of c.US\$84/wmt as well as drawdown of stockpiled iron ore (note that 55% of sales were made on CRF basis). Cerrejon revenue based on 34Mpta of Coal at US\$67/r; Hamersley based on iron ore price ranging US\$80/r-US\$100/r. Cerrejon based on Coal price ranging US\$65/r-US\$80/wmt as well as drawdown of stockpiled iron ore (note that 55%). Based on CAF basis). Cerrejon based on Coal price ranging US\$65/r-US\$80/r.US\$

### **DFS key features**

![](_page_14_Picture_1.jpeg)

#### Project specification enhanced, confirmed and fully costed

![](_page_14_Figure_3.jpeg)

# **DFS** scope

![](_page_15_Picture_1.jpeg)

#### Defines the foundation of a global multi-nutrient fertilizer business

![](_page_15_Figure_3.jpeg)

# **Capital funding requirement**

![](_page_16_Picture_1.jpeg)

#### DFS estimate defines the foundation for production of up to 20Mtpa

### 1 Key milestones

- Site preparation and clearing of planning conditions: 22 months
- Main shaft: 36 months from start of main sink to first product
- MTS: tunnel break-through ~26 months from completion of launch caverns and portals
- Ramp up to 10Mtpa over three-year period from first product

#### 2 Capex and production volumes<sup>1,2,3</sup>

![](_page_16_Figure_9.jpeg)

### 3) Capital funding requirement – US\$m<sup>1,2,3</sup>

Area	US\$m
Mine site development	1,219
Mineral transport system	1,106
Materials handling facility and port	237
Other infrastructure and facilities	125
Project management (incl. owner's costs)	344
Escalation and contingency	445
Working capital	88
DFS capital funding requirement	3,565
Additional ramp-up capital	176
Incremental capital to 13Mtpa	367
Incremental capital to 20Mtpa	1,175

Notes:1) Capital funding requirements are shown as nominal. 95:5 split of granulated and coarse POLY4 production capacity. Costs based on DFS estimated accuracy -10% to +10%. Capital costs excludes amounts for mining equipment, port and MHF facilities which are assumed to be leased. Expansion capex based on Company estimates with reference to the DFS. 2) Working capital and capital funding requirement only are shown as nominal. 3) The capital funding requirement reflects an estimated cash flow distribution applied to CAPEX prepared by the PMSC, based on typical expenditure curves for similar projects and reflects the DFS deterministic schedule.

### **Project schedule**

#### First polyhalite three years after start of main sink

![](_page_17_Picture_2.jpeg)

![](_page_17_Figure_3.jpeg)

# **Construction implementation risk**

![](_page_18_Picture_1.jpeg)

### Critical risks have been addressed through design and strategy

### 1) Conservative estimates used in DFS compilation<sup>1</sup>

- Shafts and tunnel estimates validated by competitive tender process run in parallel
- Potential to lock-in a significant portion of the capital into lump-sum contracts
  - Detailed geotech programme and Front End Engineering and Design (FEED) required
- All equipment is catalogue items no specialist technology or bespoke designs
- US\$445m of contingency (including escalation)
- ~US\$200m of growth allowances included within the estimate
- Cost saving opportunities identified:
  - Current status of tender process
  - Competitive dynamic around equipment supply
  - Optimisation of construction methodology to reduce schedule and risk

### 2 Capital funding breakdown<sup>1</sup>

![](_page_18_Figure_15.jpeg)

Notes: 1) Capital funding requirement is based on nominal amounts. 95:5 split of granulated and coarse POLY4 production capacity. Capital costs based on DFS estimated accuracy -10% to +10%. Capital costs exclude amounts for mining equipment, port and MHF facilities which are assumed to be leased. Expansion capex based on Company estimates with reference to the DFS. The capital funding requirement reflects an estimated cash flow distribution applied to capex prepared by the PMSC, based on typical expenditure curves for similar projects and reflects the DFS deterministic schedule.

### **Project economics**

Year

### Market opportunity will drive production to 20Mtpa

2022

2016<sup>3</sup>

![](_page_19_Picture_2.jpeg)

POLY4 (Mtpa)	-	2	13	20
EBITDA (US\$m)	-	201	1,835	3,084
NPV (US\$m)	15,081	29,920	37,115	44,323

![](_page_19_Figure_4.jpeg)

### NPV (after-tax) sensitivity US\$m<sup>1,2,3</sup>

IRR (after-tax) sensitivity<sup>1,2,3</sup>

РО	LY4 price	-20%	-10%	Base	+10%	+20%	POLY4 price	-20%	-10%	Base	+10%	+20%
	-20%	11,558	13,659	15,754	17,824	19,906	-20%	25%	27%	29%	30%	31%
×	-10%	11,221	13,322	15,418	17,487	19,552	× <sup>-10%</sup>	24%	25%	27%	28%	30%
APE	Base	10,883	12,985	15,081	17,151	19,215	Ш dd Base d	23%	24%	26%	27%	28%
ပ	+10%	10,520	12,622	14,718	16,788	18,853	۵ +10%	21%	23%	24%	26%	27%
	+20%	10,156	12,259	14,355	16,426	18,491	+20%	20%	22%	23%	25%	26%

Notes: 1) Cash flows are shown as nominal (all prices and costs inflated at 2%). discount rate 10% nominal; 50-year mine life. 80:20 split of granulated and coarse production. Capital costs based on DFS estimated accuracy -10% to +10%. Capital costs exclude costs for mining equipment, port and MHF facilities which are assumed to be leased. Expansion capex based on Company estimates based on the DFS. 2) Revenues are based on the expected netback FOB sales price related to a) contracted volumes and b) uncontracted volumes which are derived from implied nutrient values using CRU regional fertilizer price forecasts and the expected geographic sales profile and price development. 3) At commencement of schedule activities (Apr-16). 4) Operating cash flow is EBITDA less tax and WC adjustments. Project free cash flow is operating cash flow less development and sustaining capex.

### **Development phases**

![](_page_20_Picture_1.jpeg)

#### Attractive return metrics across a range of production capacities<sup>1,2</sup>

Development phase	DFS	Shaft optimization	Full capacity
Installed capacity (Mtpa)	10	13	20
Capital funding requirement (US\$m) <sup>4</sup>	3,565	367	1,175
Capital intensity (US\$/t) <sup>3</sup>	356	122	168
NPV – start of construction (US\$bn)	6.7	9.6	15.1
NPV – first production (US\$bn)	14.1	18.7	27.4
Project IRR	20.7%	23.2%	25.7%

Notes: 1) Discount rate 10% nominal; 50-year mine life. 80:20 split of granulated and coarse product. Capital costs based on DFS estimated accuracy -10% to +10%. Capital costs exclude costs for mining equipment, port and MHF facilities which are expected to be leased. Expansion capex based on Company estimates with reference to the DFS. 2) Revenues are based on the expected netback FOB sales price related to a) contracted volumes and b) uncontracted volumes which are derived from implied nutrient values using CRU regional fertilizer price forecasts and the expected geographic sales profile and price development. 3) Incremental funding requirement per incremental tonne of production. 4) DFS capital funding requirement shown on nominal basis. Shaft optimization and full capacity shown on a real 2016 basis. DFS scenario excludes US\$176m ramp up capital requirement.

# **Financing strategy (1)**

### Alignment of risk with appropriate capital

- Two-stage financing strategy designed to:
  - Match project risks and rewards
  - Align capital to fund appropriate activities
  - Deliver lowest average cost of funds
- Stage 1 funding to be a mix of equity and structured project debt
  - Initial financing to fully fund excavations of all shafts and caverns and to remove variable subsurface risks
- Stage 2 financing (senior debt) to be committed once key milestones achieved:
  - Majority of remaining capital under either lump sum EPC or committed contracts
  - Offtake levels to support required debt capacity
- Debt sizing analysis suggests Stage 2 debt capacity up to US\$3bn possible
- Additional capacity could be used for:
  - Refinance of Stage 1 debt
  - Capitalisation of interest
  - Additional liquidity funding reserves

![](_page_21_Picture_16.jpeg)

### Stage 1 Capital Site preparation and geotech

Production and services shafts

MTS shafts and caverns

Stage 2 Capital MTS tunnel Mine fit-out MHF crushing and granulation plant

#### Equity

h

**US\$1.63** 

h

**US\$1.93** 

Ordinary equity or cornerstone investors 25%+ return

#### **Structured Debt**

15-18% return

#### Senior Debt

6-10% project finance bank debt and/or corporate bonds

Potential for IUK/ECA support

# **Financing strategy (2)**

![](_page_22_Picture_1.jpeg)

#### Staged financing strategy designed to complement project risk profile

![](_page_22_Figure_3.jpeg)

Notes: 1) The capital funding requirement reflects an estimated cash flow distribution applied to capex prepared by the PMSC, based on typical expenditure curves for similar projects and reflects the DFS deterministic schedule. 2) Split of capital funding requirement based on high-level scheduled activities with management allocation of indirect costs between the two stages.

### **Next steps**

![](_page_23_Picture_1.jpeg)

Commencement of construction is dependent on financing for Stage 1 being secured

Work currently underway clearing conditions and also some early roadworks

Tender process for shaft and tunnel nearing selection of preferred tenderers

**Opportunities being identified to reduce schedule and further improve returns** 

Ongoing work with customers to secure additional offtakes and channels to market

Detailed diligence process commencing with structured debt and cornerstone equity

### The investment proposition

![](_page_24_Picture_1.jpeg)

![](_page_24_Figure_2.jpeg)

![](_page_24_Figure_3.jpeg)

![](_page_25_Picture_0.jpeg)

# Appendix

# World's largest & highest grade polyhalite reserve SIRIUS

Located in UK and only 36.7km from deep-water port

![](_page_26_Figure_2.jpeg)

### Polyhalite JORC reserve of 280 million tonnes and resource of 2.66 billion tonnes

### **Development plan**

![](_page_27_Picture_1.jpeg)

#### Mining infrastructure designed to maximise throughput and long-term opportunity

![](_page_27_Picture_3.jpeg)

# **DFS delivery team**

International experts were assembled to work alongside the project owner's team

![](_page_28_Picture_2.jpeg)

Key studies	Study responsibility	
Project leadership and report compilation		BECHTEL
Resource, reserve and mining		JOYGLOBAL
Mine shafts	WorleyParsons resources & energy	
Mineral transport system	ARUP	
Processing		
Infrastructure and utilities		ARUP
Harbour facilities	Royal HaskoningDHV Enhancing Society Together	
Site preparation	ARUP	

# Early works and site preparation

![](_page_29_Picture_1.jpeg)

Certain highway works commencing soon to facilitate start of project

#### Scheme of highway works

![](_page_29_Figure_4.jpeg)

#### **Doves Nest Farm**

![](_page_29_Figure_6.jpeg)

Highway works and site preparation schemes required before shaft sinking and tunnelling can commence

# Mine site development (1)

### Long-life infrastructure to secure long-term production

![](_page_30_Picture_2.jpeg)

![](_page_30_Picture_3.jpeg)

![](_page_30_Picture_4.jpeg)

#### Scope of work

- Production and service shafts (6.75m diameter) to polyhalite seam (~1,500m depth)
- Shafts located in the centre of the thickest and highest grade area of reserve
- 13.4Mtpa installed hoisting capacity
- Pit bottom development roadways to facilitate mining operations (not shown on diagram)
- Additional structures included in scope:
  - TBM shaft and -360m development to facilitate interface with the MTS
  - Ventilation shaft
  - Service drift to -45m

### 100-year design life underpins long-life shaft system

# Mine site development (2)

### Shaft sinking is a well-understood process

#### **Construction process**

- Construction will be a 24/7 activity
- Average sinking rate of 1m/d across total shaft
- Shafts will be sunk using conventional drill and blast method
- The area immediately around the shafts will be grouted to prevent inrushes of water
- Many shafts have been sunk to a greater depth around the world

### Similar geology to existing Boulby shafts

- Two 1,200m deep shafts were sunk through similar stratigraphy at Boulby during 1970s, just 18km north-west of Doves Nest and is still in operation
- Project lining regime design similar to that of Boulby but superior as it will utilize significantly higher strength concrete and techniques (e.g. foam concr

Approach to lining and schedule e	estimate appropri	ately mitigates	potential risks
echniques (e.g. foam concrete)			
igher strength concrete and later proven		halite and sylvite	foamed cement
	-1200 -		

200

0

-200

-400

-600

-800

-1000

Shaft lining		
	Geology	Lining regime
	Variable strength sandstone, water table near surface	Grout drilling required; concrete liner
	Hard rock mudstone, siltstone and sandstone	Grout drilling if water intersected; concrete liner
	Contains highly saline high pressure aquifer in sandstone	Grout drilling required; cast iron tubbing and concrete
-		
	Evaporite minerals including polyhalite, halite and sylvite	Concrete and foamed cement

# Mining

### Flexible mining method to enable maximum extraction

![](_page_32_Picture_2.jpeg)

#### Mine development

- All mining including pit bottom development will be inseam
- Average reserve seam thickness of 25 metres
- Every tonne of product mined is a tonne of saleable material
- 20-year mine plan within 3km radius of mine head<sup>1</sup>

![](_page_32_Figure_8.jpeg)

#### Ramp up schedule<sup>2</sup>

![](_page_32_Figure_10.jpeg)

- Four continuous miners to be deployed with batch and/or continuous haulage
- Room and pillar methodology (6.4Mtpa) with drill and blast panel (3.6Mtpa)
- Initial mining plan 10Mtpa with scalable upside as required

### Simple, conventional mining process drives low cost operations

# **Mineral transport system**

### A high-capacity conveyor system in a 36.7km tunnel

#### Scope of work

- 4.3m diameter tunnel at an average depth of 250m below surface
- Intermediate shaft at Lockwood Beck and portal at Wilton to facilitate construction (option for two additional ventilation shafts)
- Two conventional conveyors with drives located at Doves Nest Farm, Lockwood Beck and Wilton
- Conveyer system capable of 20Mtpa throughput

#### **Tunnel construction**

- Three tunnel boring machines covering circa 12km each
- Pre cast concrete segmental lining selected to minimize construction risk and optimize tunnel space proofing
- Average progress rate of 20m/d below historical benchmarks

<complex-block><image><image>

![](_page_33_Figure_12.jpeg)

Conventional approach to tunnelling through a continuous geological strata

Wilton

![](_page_33_Picture_14.jpeg)

![](_page_33_Picture_15.jpeg)

# **Materials handling facility**

#### 10Mtpa production capacity with expansion footprint for 20Mtpa

![](_page_34_Picture_2.jpeg)

![](_page_34_Figure_3.jpeg)

Simple process to deliver nutrients in a widely available form

# **Greenfield port facilities**

### Port facility expected to be outsourced

![](_page_35_Picture_2.jpeg)

#### Port loading facility

![](_page_35_Figure_4.jpeg)

#### Construction

- Dredging requirements and environmental mitigations built into the design
- Approvals expected mid 2016
- Berth located in close proximity to open water
- Port not an critical path allowing for optionality to be further investigated

#### Shipping

- Berths capable of handling 85,000 DWT vessels
- Wide-span ship loader capable of loading ships at 5,000tph
- Single berth capable of handling up to 10Mtpa with a second berth increasing the capacity up to 20Mtpa

#### Port map

![](_page_35_Figure_15.jpeg)

#### **Overland conveyor transportation**

- Product from the MHF transported to the harbour facility on a covered conveyor system
- DFS assumes southern route which consists of an elevated single stretch conventional conveyor
- Optionality with northern route and use of existing port facilities

### **Expansion phases**

![](_page_36_Picture_1.jpeg)

Modular expansion at MHF and port to support increased underground activity

Installed capacity	Scope	Capital <sup>1</sup> (US\$m)	Planning approval
13Mtpa	<ul> <li>Mining: Incremental mining equipment for increased volumes</li> <li>Materials handling facility: Incremental granulation lines for granular production volumes</li> <li>Port: Installation of the second berth</li> </ul>	367 <sup>3,4</sup>	Granted <sup>5</sup>
20Mtpa	<ul> <li>Mining: Incremental mining equipment for increased volumes</li> <li>Mining: Extension of TBM shaft from the 360m level down to the Mine and fit out for incremental haulage capacity and ventilation</li> <li>Materials handling facility: Incremental granulation lines for granular production volumes and additional storage capacity at MHF</li> <li>Port: Installation of the second ship loader</li> </ul>	1,175 <sup>3,4</sup>	Additional approvals required prior to expansion

Notes: 1) The capital funding requirement reflects an estimated cash flow distribution applied to capex prepared by the PMSC, based on typical expenditure curves for similar projects and reflects the DFS deterministic schedule. Capital costs based on DFS estimated accuracy -10% to +10%. Capital costs exclude amounts for mining equipment, port and MHF facilities which is assumed to be leased. 2) Capital funding requirement is the period up to and including the first quarter when the Project achieves break-even cash flow. 3) Expansion capex based on Company estimates with reference to the DFS. 4) Capex estimate assumes all incremental mining equipment, storage facilities and port are provided under leasing arrangements. 5) DCO permit for port expected in July 2016.

# Lowest cost multi-nutrient potassium producer

![](_page_37_Picture_1.jpeg)

#### Resource and infrastructure results in a sustainable competitive advantage

#### Operating cost assumptions

- Ramp up to 10Mtpa rate over a three-year period from first product
  - 2021 0.2Mt, 2022 2.0Mt, 2023 5.5Mt
  - Cash flow positive 17 months from first product
- Fixed cost 16% at 10Mtpa and 9% at 20Mtpa
- Port related infrastructure assumed to be provided by third party (BOO) and mining equipment assumed to be leased
- 10Mtpa US\$7.7/t included in operation cost as capital and lease charge (20Mtpa – US\$4.6/t)
- Sustaining capital expenditure<sup>1</sup>:
  - 10Mtpa circa US\$20m per annum LoM
  - 20Mtpa circa US\$30m per annum LoM

2) Operating cost by area – US\$/t of POLY4<sup>2</sup>

Area	10Mtpa	20Mtpa
Mining	11.1	8.2
Transportation	4.7	4.4
Processing	10.0	9.7
Storage and loading	6.2	4.4
General infrastructure	1.0	0.5
Total	33.1	27.2

#### 3) Operating cost breakdown – 20Mtpa<sup>2</sup>

![](_page_37_Figure_16.jpeg)

Notes: 1) Weighted average LoM sustaining capex per annum on a real 2016 basis. 2) Operating costs shown on a real 2016 basis. POLY4 LoM cost and supply based on 10Mtpa and LoM cost 20Mtpa case. 3) Includes leasing costs associated with mining equipment, port, MHF and a proportion of indirect costs. Other costs include fixed consumables, fixed overheads, G&A, product realisation charges and allowances. Sources: Sirius Minerals

#### Notes: 1) 10-year average 2008-2018 EBITDA margin and CAGR of which forward looking estimates are based on broker consensus. Average 10-year EBITDA margin peer group 31%. 2) Long-term 10-year average. Sources: Broker research, company filings, FactSet.

# **High-margin business**

### Mining infrastructure designed to generate high EBITDA margins

### Robust business model

- Operational value driven by highvolume, high-margin production, generating significant EBITDA per annum
- SXX EBITDA margins (70-85%) strongly outperform other resource and fertilizer leaders (Avg. 31%)
- High margin and growth potential supports higher multiples

### Long term Peer Multiples (EV/EBITDA)<sup>2</sup>

	K+S	PCS	URKA	СМР	Avg.
Current	5.1x	7.8x	5.8x	8.6x	6.8x
2 year	6.1x	8.4x	7.7x	9.6x	8.0x
4 year	6.1x	8.1x	8.7x	9.8x	8.2x
Long- term average	7.4x	8.7x	8.8x	8.8x	8.4x

2 EBITDA margin & CAGR<sup>1</sup>

![](_page_38_Figure_10.jpeg)

![](_page_38_Picture_11.jpeg)

39

# Project and equity return price sensitivity

#### Robust economics across a range of price and volume scenarios

![](_page_39_Picture_2.jpeg)

![](_page_39_Figure_3.jpeg)

Notes: 1) NPV (after-tax) at commencement of scheduled activities (Apr-16). 2) Project IRRs are after-tax and calculated with the following assumptions: prices and costs shown as nominal (inflated at 2% not including Bechtel capex estimates which are escalated as per Bechtel estimates); discount rate 10% nominal; 50-year mine life; 80:20 split of granulated and coarse product; capital costs based on DFS which are within +10% / -10% accuracy (capital costs exclude amounts which are leased for mining equipment, port and MHF). Expansion capex based on DFS estimates but conceptual in nature. 3) Long-term equivalent price represents LoM. 4) First 10-year weighted average. Prices represent average based on steady state regional sales profile and are held flat across the life of mine and are based on a 80:20 split of granulated and coarse product. 5) Full nutrient value FOB netback on a real 2016 basis derived from implied nutrient values using CRU regional fertilizer price forecasts and the expected geographic sales profile.

# Strong value appreciation through ramp up

![](_page_40_Picture_1.jpeg)

#### Significantly undervalued in the current market

![](_page_40_Figure_3.jpeg)

Notes: 1) Commercial operations is after completion of the initial development, dated start of 2022. Project NPVs are after-tax and calculated with the following assumptions: production of 20Mtpa, prices and costs are all inflated at 2%; discount rate 10% nominal; 50-year mine life; 80:20 split of granulated and coarse production. Capital costs based on DFS estimated accuracy -10% to +10%. Capital costs exclude mining equipment, port and MHF facilities which are assumed to be leased. Expansion capex based on DFS estimates but conceptual in nature. Revenues are based on the expected netback FOB sales price related to a) contracted volumes and b) uncontracted volumes which are derived from implied nutrient values using CRU regional fertilizer price forecasts and the expected geographic sales profile and price development.

### **Evolution of value through life cycle**

Precedents indicate significant value creation as projects are de-risked

![](_page_41_Picture_2.jpeg)

![](_page_41_Figure_3.jpeg)

### Sirius Minerals is significantly undervalued against benchmark developments

# Stage 1 financing

Alignment of risk with appropriate capital

![](_page_42_Picture_2.jpeg)

#### **Structured debt**

#### Indicative terms

- 10 to 15% coupon (PIK)
- Warrants to provide incremental upside
- 8 year term (2 year non-call period)
- Initial funding to be a mix of equity and structured project debt
- First lien prior to Stage 2 senior debt subordinated to second lien upon Stage 2 commitment

### Equity

- Project equity process to be run in parallel to structured debt process
- Approaching various pools of equity: strategic partners, financial cornerstone, traditional institutions and alternative asset managers
- Investments may be at the project level or at the parent level
- Company focused on balancing returns to both existing and new capital providers

#### Structured debt used to access debt capacity earlier in the Project's schedule

- Likely to be sourced from large global private debt funds
- Company to secure commitments for structured debt that will be conditional on the equity being raised
- Equity funding to be secured following structured debt commitments

#### Equity return considerations

- Potential equity returns through the construction period investment are significant
- Return potential driven by:
  - Steady state EBITDA range of US\$1bn to US\$3bn
  - NPV once in operations in excess of US\$30bn

# **Stage 2 financing**

![](_page_43_Picture_1.jpeg)

#### Senior secured project debt underpins base case financing plan

#### Senior debt assumptions – project finance

- Financing plan assumes 14 year US\$2.3bn amortising project finance facility to fund project to completion
- Conditions for draw down expected to include:
  - All permits and licenses in place
  - Offtake agreements in place in order to satisfy debt sizing requirements
  - Outsourced infrastructure and lease facilities committed
  - Balance of construction performed on a substantially lump sum basis

#### Debt capital markets alternative

- Strong credit metrics in operations would support a corporate bond
- US\$2.3bn repaid in under four years under full cash sweep
- Similar structure, terms and conditions
- Potential to increase debt capacity to ~US\$3bn
- Subject to market conditions at the time of execution

#### Senior debt profile (10Mtpa, US\$2.3bn)<sup>1,2</sup>

Key metrics	
Loan repayment period	8 years
Gearing	58%
Avg. DSCR <sup>3</sup>	3.05
Avg. LLCR <sup>3</sup>	4.03
Min. ICR <sup>4</sup>	1.3
Debt/EBITDA at steady state	<2x

#### Indicative credit profile (10Mtpa, constant US\$2.3bn)<sup>1,2</sup>

Year	2022	2024	2026	2028	2030
EBITDA (US\$bn)	0.2	1.4	1.4	1.5	1.9
ICR <sup>5,6</sup>	1.3	8.9	8.9	9.8	15.7
Debt/Capital <sup>5,7</sup>	58%	56%	39%	29%	21%
Debt/EBITDA <sup>5,8</sup>	11.3	1.7	1.6	1.5	1.2

Notes: 1) Indicative senior debt profile; assumes US\$2.3bn 8 year amortising project finance available Q2-2019 with financing completion at 30-Jun- 2022 (expenditure beyond this date financed by operating cash flows). 2) Debt principal and interest payments exclude leases. 3) Loan repayment period average 6-month backward looking DSCR and LLCR; LLCR excludes cash. 4) Minimum ICR based on repayment period only. 5) Credit metrics based on a constant US\$2.3bn outstanding debt balance. 6) Calculated as EBITDA for the period, divided by the interest expense for the period based on \$2.3bn outstanding debt. 7) Calculated as US\$2.3bn of debt divided by total shareholders equity carried forward at the end of the period plus US\$2.3bn outstanding debt. 8) Calculated as US\$2.3bn outstanding debt divided by EBITDA in the period.

### Salt resource

### Massive high-grade salt deposit situated ~150m above polyhalite seam

![](_page_44_Picture_2.jpeg)

![](_page_44_Figure_3.jpeg)

Category	Volume	NaCI levels
JORC compliant inferred resource <sup>1</sup>	550 million tonnes	>93% NaCl
	210 million tonnes	>95% NaCl
High-grade halite present AOI <sup>2</sup>	>1.0 billion tonnes	>93% NaCl

### Resource grade sufficient to meet requirements for major de-icing salt markets

### Mine integration of salt opportunity

Installed infrastructure allows for on-bolt mine addition to polyhalite mine plan

![](_page_45_Picture_2.jpeg)

- Access ramp: constructed within 12 months using a roadheader<sup>1</sup>
- Mining method: one continuous miner machine capable of mining up to 2.2Mtpa of halite
- Ventilation: quantity required equivalent of one polyhalite production area
- **Transportation:** using polyhalite infrastructure
- Sub-surface activity: ability to crush, screen and store majority of salt subsurface
- Approvals: planning permission from NYMNPA required to mine halite in addition to polyhalite<sup>2,3</sup>

Notes: 1) Halite situated approximately 150 metres above the polyhalite seam. Twin ramps will be approximately 1,500m in length each and driven 8m x 4m with 56 m separation pillar. 2) North York Moors National Park Authority. 3) Mining halite/salt is covered under the current mineral rights agreement between the Company and land owners. Sources: Sirius Minerals.

![](_page_45_Picture_11.jpeg)

# Salt capital expenditure and operating expenditure SIRIUS

Twelve-month expansion programme to establish flexible, low-cost operation

![](_page_46_Figure_2.jpeg)

### Polyhalite mine infrastructure provides for bolt-on low cost production

Notes: 1) Operating cost based on LOM and real 2016 basis at infrastructure capacity at 20Mtpa and 2Mtpa of de-icing salt (excl. sustaining capex and royalties). Primarily based on DFS estimates and adjusted for salt production if required. 2) Includes leasing costs associated with storage and loading and a proportion of indirect costs but excludes mining equipment leasing due to the swing capacity operating nature between polyhalite and halite mining. 3) Operating costs are shown on a real 2016 basis. General infrastructure costs include fixed consumables, fixed overheads, G&A, product realisation charges and allowances. 3) Capex and opex accuracy of +/-25%. Capex and opex estimates reviewed and validated by SRK Consulting which confirmed Scoping Study level basis. Exchange rate GBP to US\$1.42 (in line with DFS guidance). Sources: Roskill Consulting Group; Sirius Minerals.

### Salt industry benchmarks

SIRIUS MINERALS PLO

![](_page_47_Figure_2.jpeg)

![](_page_47_Figure_3.jpeg)

### Highly competitive on an opex and capital intensity basis

Notes: 1) Operating cost estimate by Roskill Consultancy Group by geography. 2) LA market represents weighted average cost structure of de-icing salt producers in the Caribbean and South America. Majority of salt consumed in North America which would mean that a weighted average shipping cost of US\$10/t should be added. 3) Sirius Ex-works costs represents FOB costs with a deduction of the loading charges in port. 4) Simplified capital intensity per 1Mtpa of salt capacity. No distinguishment made between salt type and/or other (in)tangible assets. 5) K+S Chile acquisition 2006 (US\$477m for 8.6Mtpa). Compass Minerals Goderich expansion between 2010 and 2012 (US\$70m for 1.1Mtpa). K+S Morton Salt acquisition in 2009 (US\$1675m for 14Mtpa) Source: Roskill Consultancy Group; Company fillings; Sirius Minerals.

### **Opportunistic salt production**

![](_page_48_Figure_2.jpeg)

![](_page_48_Figure_3.jpeg)

### Swing production leverages latent mine capacity to capture attractive margins

Notes: 1) Geographical map is scale-adjusted to present the de-icing salt market accordingly. 2) De-icing salt demand per region based upon Roskill Consultancy Group data. 3) De-icing salt prices based upon market prices (DAL forecasted in 2025) in mild and severe winter conditions. Source: Roskill Consultancy Group; Sirius Minerals.

### **Sirius Board**

### Significant experience in realising major infrastructure and resource projects

![](_page_49_Picture_2.jpeg)

![](_page_49_Picture_3.jpeg)

Russell Scrimshaw Chairman

- Former Executive Director and Deputy CEO of Fortescue Metals Group Ltd and member of the Board 2003-2011.
- Former Chairman of ASX-listed Cleveland Mining Company, Non-Exec Director of Genome One Pty Ltd, Non-Exec Director of the Garvan Institute, Executive Chairman of Torrus Capital Pty Ltd.
- Held senior executive positions within the Commonwealth Bank of Australia, Optus Communications Pty Ltd, Alcatel, IBM and Amdahl USA.

![](_page_49_Picture_8.jpeg)

Louise Hardy Non-executive Director

- Non-executive director at Ebbsfleet Development Corporation, DCLG and Defence Infrastructure Organisation, MoD.
- With 25-years' experience in the engineering sector, Louise currently holds a part-time executive role at Skanska, Civil Engineering UK.
   Previously she was a director at Laing O'Rourke, working as infrastructure director within CLM, which was the consortium delivery partner for the Olympic Delivery Authority for the London 2012 Olympics.

![](_page_49_Picture_12.jpeg)

Lord Hutton of Furness Non-executive Director

- A distinguished member of the Government for 13 years, including 11 years as a Minister and four years serving on the Cabinet.
- Was a legal adviser to the Confederation of Business Industry in the late 1970s.

![](_page_49_Picture_16.jpeg)

#### Keith Clarke CBE Non-executive Director

- Previously held CEO roles with WS Atkins plc, the UK's largest design and engineering consultancy 1997-2010, Skanska UK and Kvaerner Construction Group.
- Adviser to both Infrastructure UK and the Government of Qatar.

![](_page_49_Picture_20.jpeg)

#### Jane Lodge Non-executive Director

- 35 year career in audit at Deloitte where she advised multinational businesses in construction, manufacturing, property and house building sectors.
- Jane has served as a non-executive director on a number of publicly listed companies, including construction based companies, and she brings with her a wealth of experience, particularly in relation to financial governance and audit oversight.

![](_page_49_Picture_24.jpeg)

Noel Harwerth Non-executive Director

- Formerly COO and Chief Tax Officer of Citibank International with extensive international banking expertise.
- · Has sat on a number of boards in the mining and finance industries.

# **Sirius Minerals Plc capital structure**

AIM	SXX
OTCQX	SRUXY
Market Cap	£433M (18.75p)
Ordinary shares	2,307M
12 month price range	10.75p – 24.00p
Avg daily volume (12M)	~11M shares
Free float	~ 87%
Equity/ Invested to date	~ \$0.2 billion

#### Directors' Beneficial Interests (as at 16 May 2016)

	No. of Shares	% Capital
Chris Fraser	123,737,368	5.36%
Russell Scrimshaw	40,966,837	1.78%
Keith Clarke	624,999	0.03%
Jane Lodge	200,000	0.01%
Noel Harwerth	69,465	0.00%
Lord Hutton	28,571	0.00%
Total Director Holdings	165,637,240	7.18%
Total Shares on Issue	2,307,394,115	

#### Options on Issue (as at 16 May 2016)

	No. of Options	Strike	Expiry
Directors	23,600,000	30.0p - 45.0p	Various
Various Mgmt and Consultants	42,516,234	4.0p - 45.0p	Various
Total Options on Issue	66,116,234	4.0p - 45.0p	Various

![](_page_50_Figure_6.jpeg)

Notes: Source: Bloomberg. Potash Index includes Arab Potash, Intrepid Potash, ICL, K+S, Potash Corp, Uralkali and Mosaic. Developer Index includes Allana Potash, Elemental Minerals, Encanto Potash, IC Potash, Karnalyte, Prospect Global, Verde Potash, Western Potash and South Boulder. Indices weighted by market capitalisation.

![](_page_50_Picture_8.jpeg)