



ASX Announcement



# Ardmore Phosphate Rock Project

## DFS Optimisation Delivers Significant Increase in Project Pre-Tax NPV to \$269 million

**28<sup>th</sup> February 2019**

**ASX Code: CXM**

**Issued Capital:**

Shares	315.7M
Options/ Rights	6.4M
Share Price	A\$ 0.105
Market Cap.	A\$ 33.1M
Cash (31 <sup>st</sup> Jan.)	A\$ 8.5M

**Board of Directors:**

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*Chairman*

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*Non-Executive Director*

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### Highlights

- ▶ Definitive Feasibility Study (DFS) optimisation completed for the Ardmore Phosphate Rock Project increasing pre-tax NPV<sub>10</sub> by 56% to A\$ 269 million
- ▶ Ungeared pre-tax IRR improved to 63% and pay back reduced to 1.8 years
- ▶ Life of mining average CFR operating costs including sea freight (2018 real terms excluding royalties) have decreased 10% to US\$ 99/t on the back of design improvements and updated supplier rates
- ▶ 13% reduction in pre-production capital costs to US\$ 49 million primarily due to design changes and revised equipment selection
- ▶ Updated phosphate rock price forecast from CRU shows positive real term growth in the global market over the life of project in line with DFS, with increasing premium for high-grade product due to limited supply in the segment
- ▶ Start-up modular process plant fabrication due for completion in coming weeks

## Ardmore Optimisation Studies

Centrex Metals Limited (“Centrex”) is pleased to announce results from its optimisation studies for its flagship Ardmore Phosphate Rock Project (“Ardmore”) in North West Queensland. Optimisation studies commenced after the completion of the DFS for the project in October 2018, whilst the Company has been awaiting completion of fabrication on its start-up operation modular process plant due for commissioning in mid-2019. The start-up operation will provide a series of trial shipments to potential customers to secure long-term offtake for the project to support project financing for full-scale operations.

Optimisation of the Ardmore DFS comprised a series of independent reviews of the study by external consultants to identify and assess cost saving design opportunities. In parallel to this, Centrex worked with suppliers and vendors to refine the project requirements and obtain pricing updates. The Ore Reserves, mine life and production rate remained unchanged for the optimisation; however, mine scheduling was further refined with revised equipment selection to smooth the material movement profile over the life of mine and reduce long-term stockpile volumes.

Key results of the DFS optimisation are provided below. The results provided a 56% increase in pre-tax NPV<sub>10</sub> for the project along with an IRR increase to 63% and a reduced pay back of 1.8 years (previously 40% and 4.0 years respectively).

**TABLE 1:** Key DFS optimisation results.

Parameter		Result	
Study accuracy		+/- 15%	
Project life		10 years	
Annual production		800,000 wet tonnes	
Pre-production capital cost (2018 real terms)		A\$ 69 million	US\$ 49 million
Average CFR operating cost ex-royalties (2018 real terms)		A\$ 138/dmt	US\$ 99/dmt
Average CFR sales price (2018 real terms) <sup>(1)</sup>		A\$ 214/t	US\$ 154/t
A\$:US\$ exchange rate assumption <sup>(2)</sup>		0.72	
Pre-tax results (nominal) <sup>(3)</sup>			
	Unleveraged NPV <sub>10</sub>	A\$ 269 million	US\$ 194 million
	Unleveraged IRR	65 %	
	Net cash flow	A\$ 561 million	US\$ 404 million
Post-tax results (nominal) <sup>(3)</sup>			
	Unleveraged NPV <sub>10</sub>	A\$ 192 million	US\$ 138 million
	Unleveraged IRR	54 %	
	Net cash flow	A\$ 405 million	US\$ 292 million
	Payback period	1.8 years	

1. Life of mine average CFR sales price derived from CRU market analysis and target product grade quality adjustments

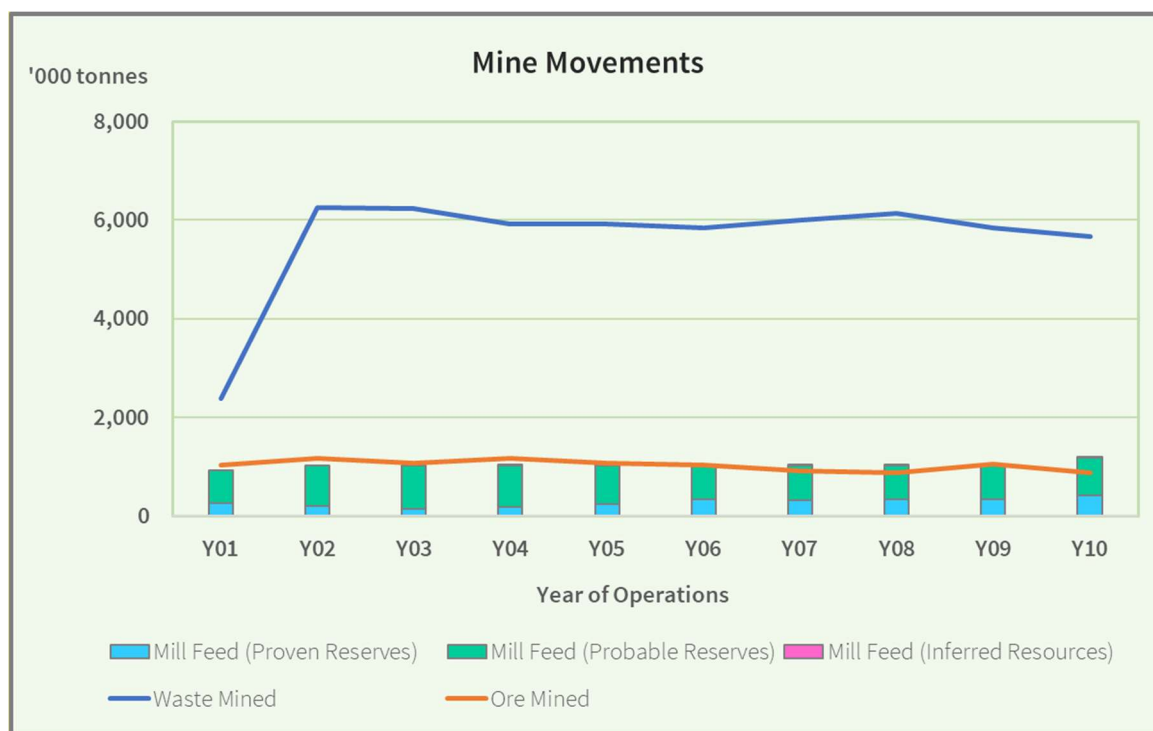
2. Flat exchange rate for life of project based on prevailing rates, forward curve and recent forecasts from market participants

3. Net Present Value is on a nominal basis with a 2.5% escalator applied to revenue and costs using a 10% discount rate

## Mining Optimisation

Optima Consulting & Contracting completed reviews of the mine design, equipment selection, operations management and mine infrastructure to identify potential costs savings. The opportunities identified were assessed resulting in the following amendments:

- Revision of the mining fleet to two 140t capacity haul trucks from three 90t trucks assumed in the DFS, better matching the selected excavator providing utilisation, fuel, labour and maintenance efficiency gains.
- Diversion of the highway currently crossing the Northern Zone pit was brought forward to the first year of mining (from year 4) to allow scheduling across the Southern and Northern Zone pits earlier in the mine life. This increases fleet utilisation in the early years, significantly reduces long-term stockpile volumes, and further smooths the material movement profile.
- Given the small project site footprint the mining and processing offices and facilities have been centralised and where possible combined into a single location (updated building designs provided by GR Engineering).



**FIGURE 1:** Optimised mining movements schedule.

Underlying mine designs and resulting Ore Reserves remained unchanged from the 10.1 million tonnes at 30.2% P<sub>2</sub>O<sub>5</sub> reported DFS. The announcement in relation to the Ore Reserve was made on 8<sup>th</sup> October 2018 and can be found at:

<https://www.asx.com.au/asxpdf/20181008/pdf/43z1q8nvm95k58.pdf>

The results were reported under JORC 2012 and Centrex is not aware of any new information or data that materially affects the information contained within the release. All material assumptions and technical parameters underpinning the estimates in the announcement continue to apply and have not materially changed.

### Processing & Logistics Optimisation

The DFS optimisation advanced a number of opportunities including assessment of design alternatives, progressed logistics contractor pricing, and submissions from alternate providers being received post completion of the DFS.

The following design alternatives were implemented:

- Utilisation of waste heat from site power plant in the product drying circuit and a change to using recycled liquid fuels;
- Reductions in site buildings requirements through aggregation of mining and processing facilities;
- Re-design of the Duchess rail siding to a dual-track short hardstand design similar to other operations in the area; and
- Substituting sub-base material for road and pad construction sourced from remote quarries with material sourced from on-lease borrow pits supported by site geotechnical investigations.

In addition, as fabrication of the start-up modular process plant is due for completion in the near term it has been brought forward into the start-up phase as a sunk cost, reducing remaining capital requirements for the full-scale construction.

Ocean freight cost assumptions for CFR delivery were updated in line with prevailing market rates and rail costs were revised in line with updated pricing estimates and alternate provider submissions.

### Optimised Capital & Operating Costs

Project and capital cost estimates have been updated to reflect the changes, maintaining estimate accuracies of +/- 15% as per the DFS.

Life of project average operating costs (2018 real terms excluding royalties) have decreased over 10% to US\$ 99/t CFR on the back of design improvements and updated supplier rates. Pre-production capital costs have been reduced by 13% from US\$ 57 to US\$ 49 million primarily due to design changes and revised equipment selection.

**TABLE 2:** Capital Costs estimate update (real 2018).

	Result	
Overall estimate accuracy	+/- 15%	
Pre-production capital costs		
Area	A\$ million	US\$ million
Mining	3.9	2.8
Process plant	16.0	11.5
Mine site infrastructure	11.9	8.6
Road haulage	2.2	1.5

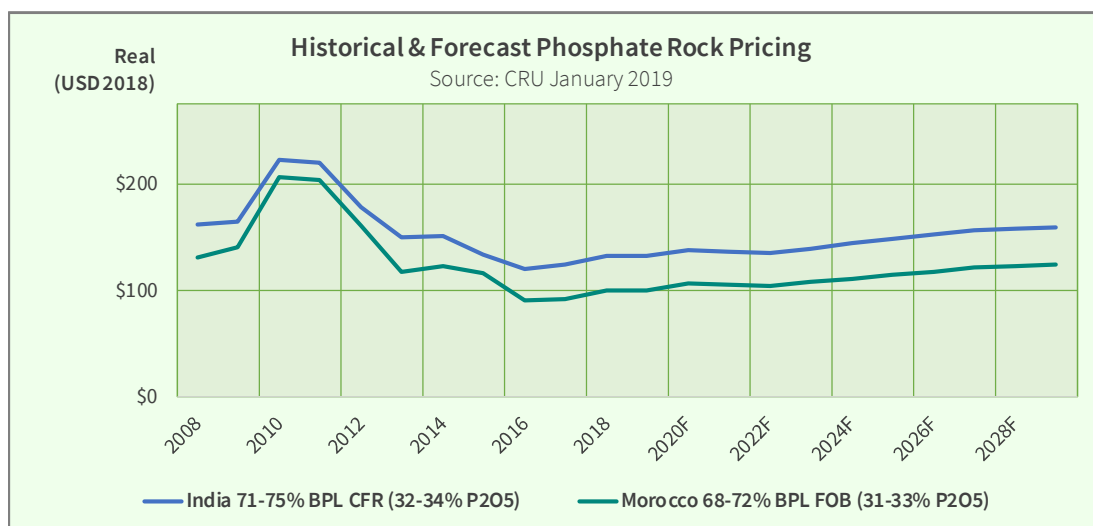
Rail siding	7.6	5.5
General (camp, borefield etc.)	6.2	4.5
<b>Sub-total directs</b>	<b>47.8</b>	<b>34.4</b>
EPCM	6.0	4.3
Other in-directs	5.8	4.2
Owners	1.6	1.2
<b>Sub-total in-directs</b>	<b>13.4</b>	<b>9.7</b>
<b>Sub-total pre-production capital</b>	<b>61.2</b>	<b>44.1</b>
Growth & contingency – 12%	7.5	5.4
<b>Total pre-production capital</b>	<b>68.7</b>	<b>49.5</b>
<b>Life of mine sustaining capital</b>	<b>11.5</b>	<b>8.3</b>

**TABLE 3:** Updated life of mine average CFR operating costs (real 2018).

	Result	
Overall estimate accuracy	+/- 15%	
Average LOM operating costs / DMT of concentrate – Real 2018 \$		
Area	A\$/DMT	US\$/DMT
Mining	14	10
Processing	14	10
Road haulage & siding	13	9
Rail & port	63	45
Sea Freight	27	20
Owners	7	5
Total CFR	138	99
Royalties	8	6

### Phosphate Rock Price Forecast

Phosphate market research specialists CRU provided Centrex with historical and forecast pricing trends for the Morocco FOB 68-72% BPL (31-33% P<sub>2</sub>O<sub>5</sub>) and India CFR 71-75% BPL (32-34% P<sub>2</sub>O<sub>5</sub>) benchmarks over the period covering Ardmore's proposed initial mine life of 2021 through to 2030 (see Figure 2). Since completing the DFS, Centrex has contracted its first trial shipment of Ardmore phosphate rock concentrate referenced to the India CFR 71-75% BPL benchmark with adjustments for quality. Ardmore premium 35% P<sub>2</sub>O<sub>5</sub> product is higher than the upper end of the benchmark grade. The DFS optimization assumes a linear grade adjustment from the benchmark (no value in use premium assumed at present), with potential upside for the product's low carbonate and ultra-low cadmium levels to attract a premium post demonstration from the Ardmore start-up operation trial shipments.



**FIGURE 2:** Historical and forecast phosphate rock benchmark pricing.

Phosphate rock prices reached their lowest levels over the past decade in 2017 before a slight recovery in 2018. Declining prices were mainly driven by new supply coming on line from expansions in Morocco and Saudi Arabia. CRU forecast phosphate rock prices to continue rising until 2023 as supply begins to tighten and production costs increase in China due to implementation of new environmental management practices. Prices are then forecast to dip slightly as planned supply additions result in prices falling below the industry long-run marginal cost (“LRMC”). Prices are subsequently forecast to rise towards the LRMC over the remainder of the project life.

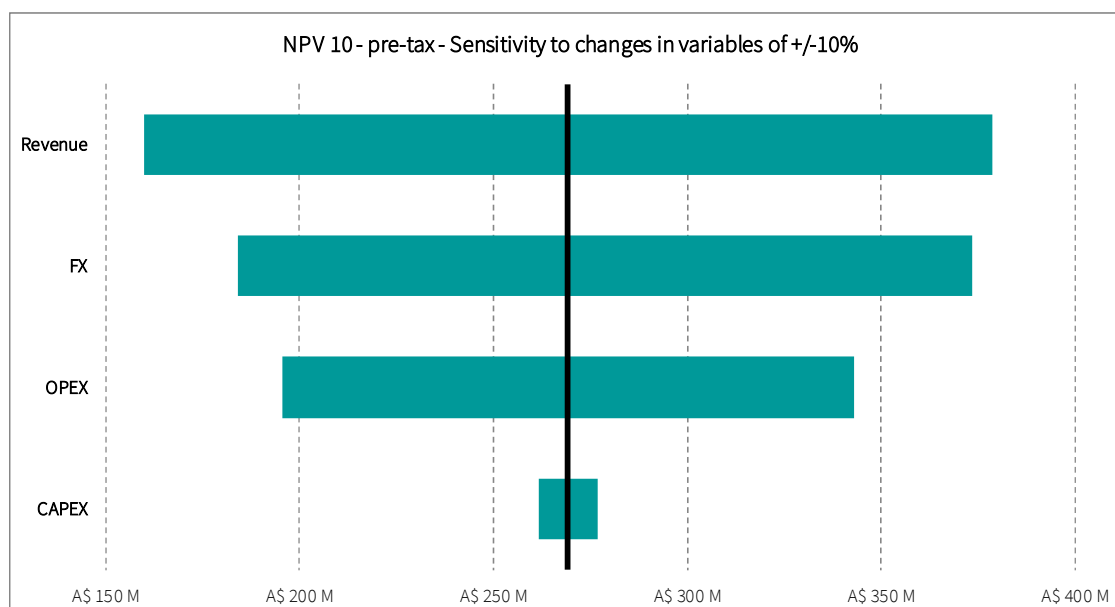
CRU’s forecast of the India CFR benchmark is derived from the underlying Morocco FOB forecast. The India benchmark is at a higher grade than the Morocco FOB and includes ocean freight (on a delivered or CFR basis). The premium for higher grade phosphate rock is expected to increase due to the limited supply capacity for higher grade product such as Ardmore. Centrex believes the upside in premium grade phosphate rock supply is supported, with the rapid increase in major customers ceasing to purchase Morocco’s premium grade rock from its mines in the disputed Western Sahara region. Supply from this region is currently the dominant source of premium grade rock to the local Australian and New Zealand market. Cadmium is also becoming an increasing focus for the industry with the proposed tightening of allowable import limits in Europe. Ardmore has ultra-low cadmium levels unlike competing premium grade rocks currently being imported by the local markets.

## Financial Analysis

Updated financial analysis of the project was completed incorporating the optimised DFS results and revised CRU price forecasts. An exchange rate assumption of 0.72 A\$:US\$ has been applied based on prevailing market rates, forward curves and financial institution forecasts. Estimates of tax payable have been updated to incorporate accelerated depreciation of capital items and the utilisation of forecast available tax losses.

Project returns have been calculated on a nominal (2.5% annual escalation) unleveraged basis with the key financial results and assumptions provided in Table 1. Figure 3 shows the sensitivity to the four variables that have the most impact on the nominal pre-tax NPV<sub>10</sub> of the project in descending order of most sensitive to least

sensitive. The financial outcomes of the project are most sensitive to changes in revenue and therefore future phosphate prices. Changes in foreign exchange and operating costs have approximately equal sensitivity whilst changes in capital expenditure have the least impact on the financial metrics given the relatively low project capital intensity.



**FIGURE 3:** Sensitivity of changes to the pre-tax NPV of +/- 10% in major variables.

### Next Steps

With its modular process plant due for commissioning in mid-2019 Centrex is on track to deliver its first shipments to customers this year. The Company is targeting an initial 30,000 tonnes of production from the plant to provide its potential customers with 5,000 tonne trial shipments in order to secure offtake to support full-scale project financing.

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## Competent Persons Statement

*The information in this report that relates to Ore Reserves is based on information compiled by Ben Brown, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Ben Brown is employed by Optima Consulting and Contracting Pty Ltd, an external independent consultancy. Ben Brown has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Ben Brown consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

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