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Study indicates integrated Precursor Cathode Active Material (P-CAM) production circuit improves the already attractive economic profile of the Sconi Project

Cautionary Statement

Ausenco's Scoping Study is a preliminary technical and economic study of the potential viability of the Sconi Project required to reach a decision to progress to more definitive studies. This Scoping Study is based on low level technical and economic assessments. Further evaluation work and appropriate studies, including additional test work, are therefore, required before Australian Mines will be in a position to provide any assurance of an economic development case.

The Scoping Study was based on material assumptions including assumptions about the availability of funding. Whilst Australian Mines considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the outcomes indicated by the Scoping Study will be achieved.

To achieve the outcomes indicated by the Scoping Study, additional funding will likely be required.

Investors should note that there is no certainty that Australian Mines will be able to raise funding when needed. It is possible that such funding may only be available on terms that may be dilutive to, or otherwise affect, the value of Australian Mines' existing shares.

It is also possible that Australian Mines could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the Sconi Project or P-CAM processing plant. It if does, this could materially reduce Australian Mines' proportionate ownership of the project.

Given the uncertainty involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

Highlights

- Scoping Study completed by leading engineering firm, Ausenco

- Ausenco considered a proposed production rate for the Sconi P-CAM plant of:
  - 25,708 tonnes per year of NCM 811 P-CAM plus
  - 4,778 tonnes per year of NCM 622 P-CAM

- CRU Consulting's independent pricing forecasts[1] for P-CAM products are:
  - US$16,500 per tonne for NCM 811
  - US$18,800 per tonne for NCM 622

- P-CAM facility would increase the capital cost estimates for the Sconi Project by A$104.6 million[2]

- Overall incremental operating cost for the P-CAM facility at Sconi is an increase of A$46.8 million per year[3]

- P-CAM production at the Sconi Project has the potential to deliver a significant revenue boost over the life of the project for an incremental capital and operating cost

Advanced battery materials development company, Australian Mines Limited ("Australian Mines" or "the Company") (Australia ASX: AUZ; USA OTCQB: AMSLF; Frankfurt Stock Exchange: MJH) is pleased to announce the results from a Scoping Study conducted by independent engineering firm, Ausenco, into the production of Precursor Cathode Active Material (P-CAM) products by Australian Mines at its flagship Sconi Project in North Queensland.

The Scoping Study included an economic evaluation of incorporating a P-CAM production circuit into the proposed Sconi operation and follows a year of successful test production by Australian Mines of P-CAM products[4] for the NCM (Nickel-Cobalt-Manganese) 523, NCM 622 and NCM 811 batteries chemistries used across the electric vehicle industry.

The Scoping Study was carried out by Ausenco and covered, at a concept level, incorporating a P-CAM production facility as an alternative to the nickel and cobalt sulphate crystallisation process included in the Sconi Bankable Feasibility Study (BFS)[5].

[1] CRU Consulting Report ST2239-21 titled "Nickel intermediates & NMC precursor market study" dated 4 April 2021. Ausenco used CRU Consulting's 2025 pricing as the basis for their financial evaluation in their P-CAM Scoping Study Where costs and prices are not quoted in Australian dollars, including CRU's pricing forecast, Ausenco converted them for this Scoping Study using the exchange rate A$1.00: US$0.77; A$1.00: €0.64 (taken from XE.com on 01/05/2021).
[2] from the capital cost estimates outlined in the Sconi Project Bankable Feasibility Study of 13 June 2019
[3] from the capital cost estimates outlined in the Sconi Project Bankable Feasibility Study of 13 June 2019
[4] Australian Mines Limited, Precursor cathode active material production from a single source continues to be demonstrated at Sconi Project, released 29 January 2021.
[5] Australian Mines Limited, Bankable Feasibility Study supports strong commercial case for developing Sconi Cobalt-Nickel Scandium Project, located in North Queensland, released 20 November 2018; and
Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.

Overview

Australian Mines is continuing to prioritise and progress the development of its 100%-owned Sconi Project in North Queensland.

As part of this ongoing process the Company is continually evaluating new and innovative opportunities to improve the value to shareholders of the Sconi Project, particularly in the context of a rapidly evolving global battery market driven by green energy technology and the growth and evolution of electric vehicles.

The pursuit of shareholder value accretion includes research and development into the production of higher value-add Precursor Cathode Active Material (P-CAM) for Nickel-Cobalt-Manganese (NCM) batteries, based on nickel, cobalt and manganese sourced exclusively from the Company's Sconi Project.

Australian Mines has successful concluded preliminary test work to produce P-CAM products for NCM523, NCM622 and NCM811[6] batteries whose specifications mirror those sought by major electric vehicle battery manufacturers (or OEMs) (see Figure 1 of this report).

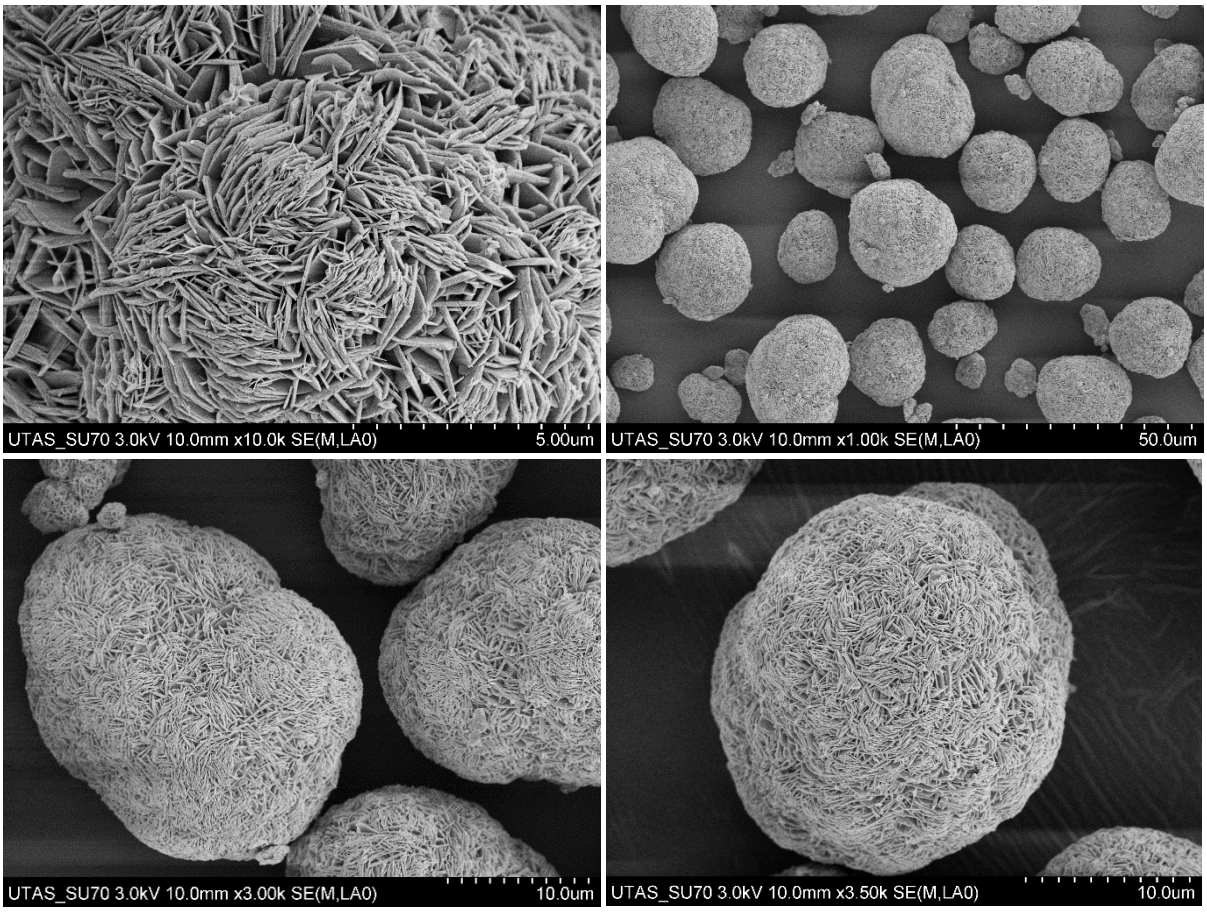

Figure 1: Electron Microscope imagery of Australian Mines' Nickel-Cobalt-Manganese (NCM) precursor cathode active material (P-CAM) produced at its Sconi demonstration plant.

[6] Australian Mines Limited, Precursor cathode active material production from a single source continues to be demonstrated at Sconi Project, released 29 January 2021.

The Scoping Study covers the evaluation of the economics of incorporating a P-CAM production facility as part of the Sconi Project, including the development of capital and operating cost estimates within a ±30% accuracy. The baseline for the Sconi Project was established by utilising the existing Sconi BFS[7], which was based on the production of nickel and cobalt sulphate. In Ausenco's Scoping Study, P-CAM production replaces the nickel and cobalt sulphate crystallisation stages of the Sconi processing flow chart (see Figure 2 of this report).

The Scoping Study includes a processing flow chart for producing P-CAM for NCM 622 and NCM 811 battery chemistries using nickel, cobalt and manganese sulphates derived exclusively from Sconi ore (see Figure 3 of this report). This P-CAM processing flow chart is designed to be an extension of the proven industry standard processing technologies that underpinned the Sconi BFS[7].

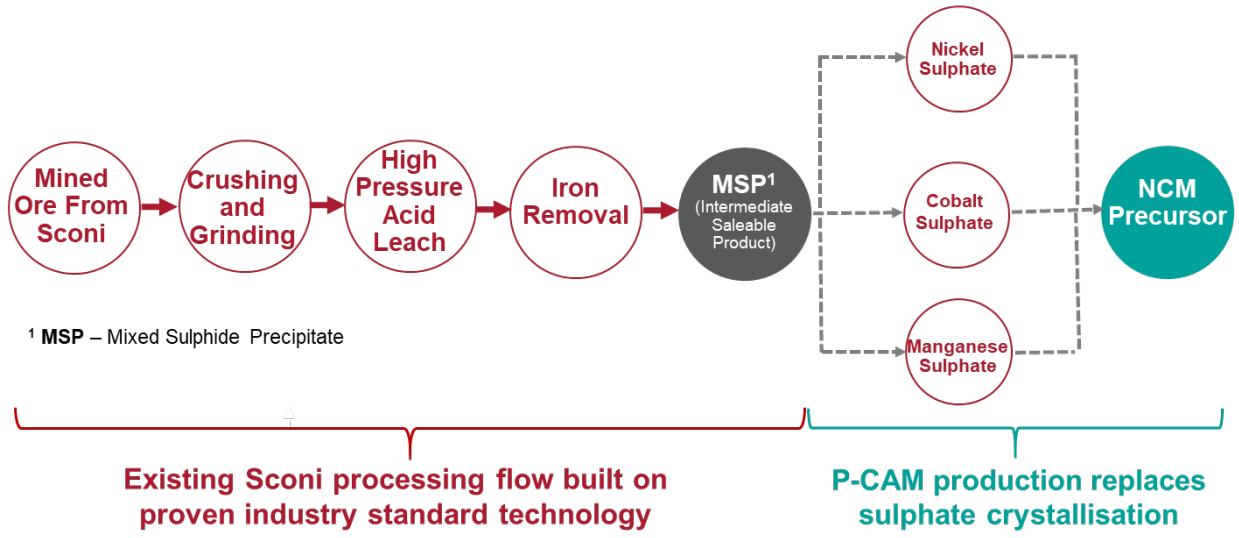

Figure 2: Australian Mine's Sconi Project processing flowsheet, substituting P-CAM production for the sulphate crystallisation stage.

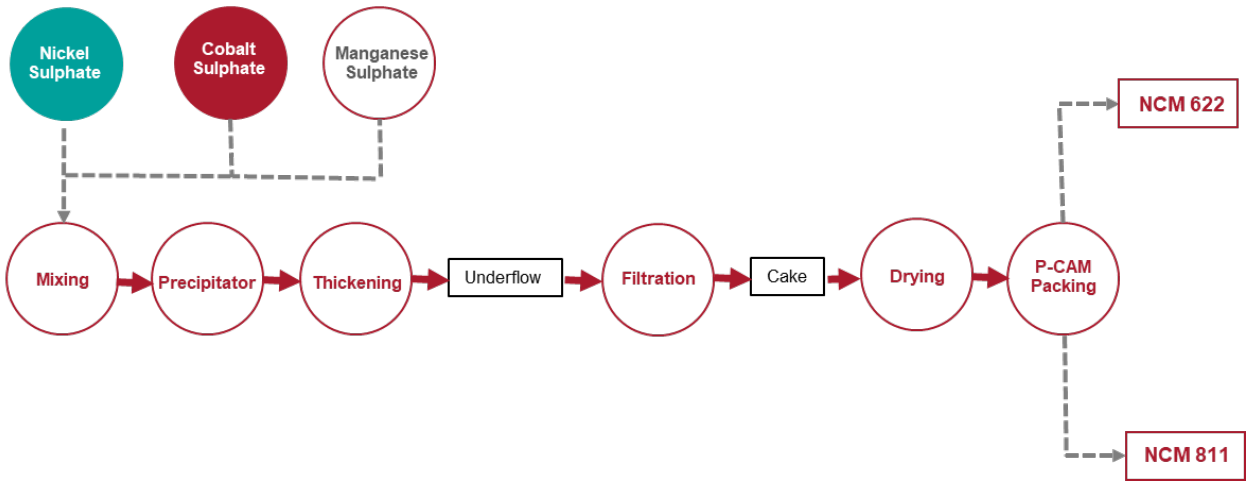

Figure 3: Australian Mines processing flow chart for P-CAM production from nickel, cobalt and manganese sulphates sourced from Sconi ore.

[7] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.

The process design utilised in the Scoping Study considered receipt of the following process streams at the P-CAM facility:

- 14,997 tonnes per year nickel (as 125 g/L nickel in a nickel sulphate solution)
- 2,279 tonnes per year cobalt (as 104 g/L cobalt in a cobalt sulphate solution)
- 2,124 tonnes per year manganese (as 104 g/L manganese in a manganese sulphate solution)

and the production of:

- NCM 811: 25,708 tonnes per year plus
- NCM 622: 4,778 tonnes per year

Capital and Operating Costs

The capital cost of the nickel and cobalt sulphate crystalliser circuit in the BFS[8] was estimated at A$49 million. The estimated capital cost of the P-CAM facility in the Scoping Study is A$153 million. Therefore, replacing the crystalliser circuit with the P-CAM facility would result in an uplift in capital cost estimates of A$104.6 million from the original BFS[10].

The overall incremental operating cost for the P-CAM facility at Sconi is an increase of A$46.8 million per year. This is a result of the operating costs for the P-CAM facility of A$52.6 million per year less the takeout operating cost from the Sconi refinery for the removal of the nickel and cobalt sulphate crystalliser areas, estimated to be A$5.8 million per year.

P-CAM Facility Economic Evaluation

The capital and operating costs in the previous section were used to conduct an economic evaluation of the P-CAM facility on a stand-alone basis. It is clear from the results below that the incorporation of a P-CAM process facility into the Sconi Project will have a positive economic impact, compared to the processing of nickel and cobalt sulphate, as outlined in the Sconi BFS[10].

The product price assumptions used in the evaluation were provided by Australian Mines via an independent pricing report undertaken by CRU Consulting[9].

The CRU pricing forecasts[10] for the sale of the P-CAM products are:

- US$16,500 per tonne for NCM 811 (25,708 average tonnes per annum Life-of-Mine Sconi)
- US$18,800 per tonne for NCM 622 (4,778 average tonnes per annum Life-of-Mine Sconi)

versus;

- US$3,684 per tonne for nickel sulphate (46,800 average tonnes per annum Life-of-Mine[11])
- US$15,540 per tonne for cobalt sulphate (7,000 average tonnes per annum Life-of-Mine[11])

[8] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.
[9] CRU Consulting Report ST2239-21 titled “Nickel intermediates & NMC precursor market study” dated 4 April 2021.
[10] Ausenco used CRU Consulting’s 2025 pricing as the basis for their financial evaluation in their P-CAM Scoping Study Where costs and prices were not quoted in Australian dollars, including CRU’s pricing forecast, Ausenco converted them for this Study using the exchange rate A$1.00: US$0.77; A$1.00: €0.64 (taken from XE.com on 01/05/2021).
[11] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019. The Scoping Study considered a “snapshot” steady state mass balance values from the June 2019 Bankable Feasibility

Operating costs outlined in the Scoping Study were A$1,717 per tonne[12] of NCM P-CAM product produced at Sconi. The economic evaluation results of the Scoping Study, incorporating the price and volume projections above, are summarised in Table 1 of this report.

Economic evaluation of P-CAM production circuit at Sconi Project		
Total P-CAM Project Cost	A$ million	104.6
Initial Operating Period	Years	12
Financials	**Units**	**Initial 12-Year Period**
Incremental EBITDA	A$ million	1050
Total Project Opex[13]	A$ million	632
Project NPV @ 8%	A$ million	352

Table 1: The economic evaluation results of replacing the nickel and cobalt crystalliser areas of the Sconi facility with a P-CAM process facility.

The estimated annual cash flow over the initial 12 years of operating a P-CAM processing facility at Sconi indicates a simple payback period of 1.6 years and a discounted payback of 1.8 years.

In addition, the Scoping Study assumes an 85% operating uptime for the Sconi facility which provides more than adequate time for routine maintenance and repairs.

The Scoping Study also leverages Australian Mines' existing access agreement to the approved export port at Townsville. Australian Mines will ship Sconi P-CAM products, packed in 25-kilogram bags, stacked onto pallets and shrink wrapped with plastic to secure the load.

The cost structure of the existing Sconi BFS[14] was reviewed as part of the Scoping Study, which concluded costs for the front end of the plant may be escalated by 6.25% per annum since the release date of the BFS[15]. This increase in the cost base is reflected in the project's economics tabled above. However, it should be noted that the increased cost is still well within the contingency allocated to the Sconi Project in the BFS[16], and it does not necessarily translate to any increase in the overall Sconi capital expenditure.

Next Steps

Following the positive results returned from the initial Scoping Study, Australian Mines is seeking to move quickly to commence a more detailed Pre-Feasibility Study (PFS) in relation to the integration of a P-CAM production facility into the proposed Sconi refinery.

The Company will provide further details, including the anticipated timeline of the PFS, during the September 2021 quarter.

Study for the Sconi Project. Based on the BFS mass balance, Ausenco determined an annual production by the Sconi Project of 67,174 dry metric tonnes of NiSO4 and 10,857 dry metric tonnes of CoSO4 for comparison with P-CAM production over the 12-year evaluation period.

[12] Being; Fixed = A$268 per tonne and Variable = A$1,449 per tonne

[13] *Total Project Opex* is the accumulative total covering the first 10 years of the plant's operation. This figure includes savings achieved in the Sconi refinery due to the removal of the nickel and cobalt crystallizer.

[14] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.

[15] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.

[16] Australian Mines Limited, Sconi to generate $5 billion in free cashflow over 30-year mine life, released 13 June 2019.

The decision to investigate the economic benefits of pursuing a P-CAM PFS does not alter Australian Mines' commitment and activity in continuing our ongoing negotiations in respect to securing an offtake agreement for Sconi. Rather, the Company's increased focus on P-CAM products simply reflects the nature of those discussions with potential offtake partners.

ENDS

If you have any queries specific to this announcement, please contact the Australian Mines' Investor Relations Manager, David Loch, on +61 456 799 967 or dloch@australianmines.com.au

This ASX announcement has been authorised for release by Benjamin Bell, Chief Executive and Managing Director of Australian Mines Limited.

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Australian Mines Limited is a member of IRMA, the Initiative for Responsible Mining Assurance. This means we are participating in, and supporting, credible independent third-party verification and certification against a comprehensive best-practice standard that addresses the range of environmental and social issues related to industrial-scale mines.

Additionally, Australian Mines Limited supports the vision of a world where the mining industry respects the human rights and aspirations of affected communities, provides safe, healthy and supportive workplaces, minimizes harm to the environment, and leaves positive legacies.

Appendix 1: Forward Looking Statements

This announcement contains forward looking statements. Forward looking statements can generally be identified by the use of forward looking words such as, ‘expect’, ‘anticipate’, ‘likely’, ‘intend’, ‘should’, ‘could’, ‘may’, ‘predict’, ‘plan’, ‘propose’, ‘will’, ‘believe’, ‘forecast’, ‘estimate’, ‘target’ ‘outlook’, ‘guidance’, ‘potential’ and other similar expressions within the meaning of securities laws of applicable jurisdictions.

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