BLACK CANYON

ASX Announcement

October 11 2022 ASX:BCA

Successful manganese extraction from initial leaching tests

HIGHLIGHTS

- Early-stage leaching testwork completed on a global composite sample from the Flanagan Bore Manganese Project has achieved up to **91% manganese leach extraction**
- Initial leach tests were completed as part of commencing a **High Purity Manganese Sulphate Monohydrate (HPMSM)** Scoping Study using manganese oxide ores
- These results are considered highly encouraging at an early stage and a more comprehensive program is planned to optimise the physical and chemical test conditions to further improve leaching kinetics
- The manganese-rich solution produced from this testwork will be used to generate manganese sulphate crystals and provide detailed chemical analysis on the product, critical to understanding the purification processes required to achieve HPMSM
- The Company has commenced additional Scoping Level testwork programs as part of the overall strategy to add value through the potential production of **HPMSM as a precursor material for cathodes** used in the growing electric vehicle battery market
- Black Canyon has the mineral resource base to potentially develop a **multi-decade mining operation that could supply manganese oxide concentrates for steel production and downstream production of HPMSM**

Black Canyon Executive Director, Brendan Cummins, said: *"We are very excited to be pursuing the potential for a multi-decade mining project at Flanagan Bore that can generate substantial manganese oxide concentrates for the steel industry but also provide a reliable feedstock to produce high purity manganese sulphate over the long term. Whilst we recognise it is early days, confirming the leachability of the manganese oxide ores is strongly encouraging and we have commenced more detailed hydrometallurgical studies to support a HPMSM Scoping Study with demand for manganese in electric vehicle NMC and LFMP battery chemistries predicted to grow significantly in the coming years."*

"This parallel downstream strategy is considered highly complementary to our ongoing mine development activities and could add significant value across our manganese business over time."

Australian manganese explorer, Black Canyon Limited (**Black Canyon** or **the Company**) (ASX:**BCA**), is pleased to announce initial leaching testwork has delivered highly promising results, achieving up to 91%

Manganese (Mn) leach extraction. The success of the leaching testwork builds upon the completion of the positive Scoping Study on the Flanagan Bore development project, which examined producing manganese concentrate primarily for the steel market.

The Company has a parallel strategy to produce HPMSM, commencing with this initial leach and crystallisation testwork. This will be followed with more detailed Scoping Level leaching, purification and crystallisation of potential battery grade manganese sulphate over the coming months.

Flanagan Bore is part of the Company's Carawine JV and is subject to a farm-in and joint venture agreement with Carawine Resources Ltd (ASX:CWX). Having earned a 51% interest, Black Canyon is now earning up to 75% in the Carawine Project tenements by sole-funding an additional $2.5m of exploration expenditure. The Flanagan Bore Project is located approximately 400 km southeast of Port Hedland in the east Pilbara region of Western Australia.

Leaching Testwork Objective

The objective of the initial testwork was to establish the leaching amenability of manganese oxide ores using fairly standard chemical and physical parameters to determine extraction kinetics based on feedstock particle size, slurry density and SO_2 concentration. The manganese-rich solution will also be crystallised and analysed in order to further understand the overall Mn purity and contaminant levels.

The learnings from the initial leach and crystallisation tests can then be applied to further ongoing detailed leaching, purification and crystallisation testwork to support a HPMSM Scoping Study. The Company has commenced this second stage of a hydrometallurgical testwork program with the preparation of suitable manganese oxide materials from LR1 and FB3.

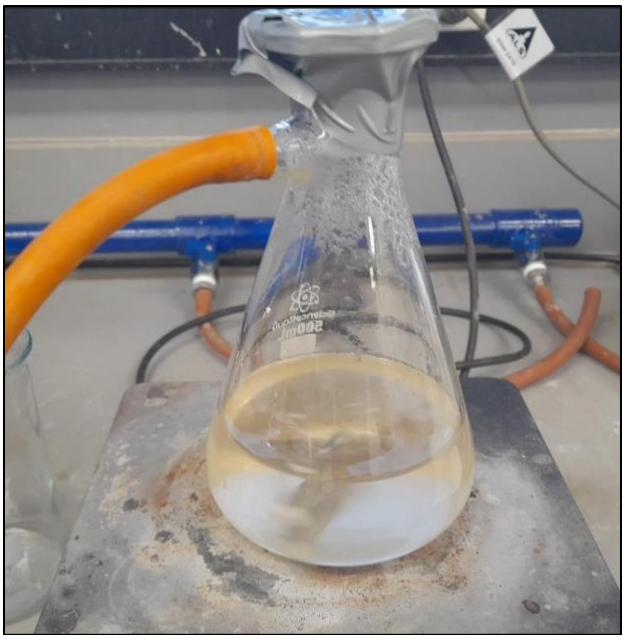

Figure 1. Mn leachate from the initial testwork completed using manganese oxide ore

Leach Extraction Testwork

A global composite was tested from across the LR1 and FB3 deposits within Flanagan Bore.

The leach tests were undertaken on fines of manganese concentrate composites produced from previous beneficiation testwork. The samples tested are considered relatively coarse (-2mm fraction) and had a feed head grade of 29% Mn. The leach tests completed at ALS Metallurgy in Perth were based on a standard SO_2 reductive leach with varied pulp densities and SO_2 addition ratios. Manganese leach extraction of up to 91.1% was achieved at a stoichiometric SO_2 addition rate of 161%.

The initial leaching testwork is not considered optimal with the experimental conditions (pulp density and SO_2 addition) varied to assess the impact on leachability. On this basis, the manganese extraction rates ranged from 21.5%, 72.6%, 89.0% and 91.1%.It was observed that higher extractions are achieved with lower pulp densities and higher SO_2 addition. Further test work will now look to optimise the leaching conditions including grind size, reagent addition, temperature and pulp density to further improve leaching rates.

As part of the second stage testwork program to support a HPMSM Scoping Study the Company will also investigate manganese sulphate solution purification and production options.

HPMSM Strategy Rationale

Whilst manganese is primarily used in the steelmaking industry, a significant growth market is emerging in the electric vehicle (EV) sector. In an increasing number of EV battery compositions, manganese is used in the cathode and makes up a significant proportion of the volume of the battery. The introduction of the manganese into LFP batteries, which is the fastest growing segment of the EV battery market, will likely see further demand for HPMSM.

Currently, China dominates the High Purity Manganese market, with over 90% of global production. Similar to other cathode precursor materials the requirement for security and diversification of supply will become a significant factor inducing the establishment of additional supply outside of China for the American and European car manufacturing industries.

In addition HPMSM pricing is significantly higher than producing a manganese oxide concentrate product with prices up to US$1,500 (AU$2360) per tonne FOB considered to be achievable.

The Company believes that the pursuit of HPMSM production has the potential to materially improve the already positive economics of our project portfolio and be a key contributor to emissions reduction through the transition to EVs.

This announcement has been approved by the Board of Black Canyon Limited.

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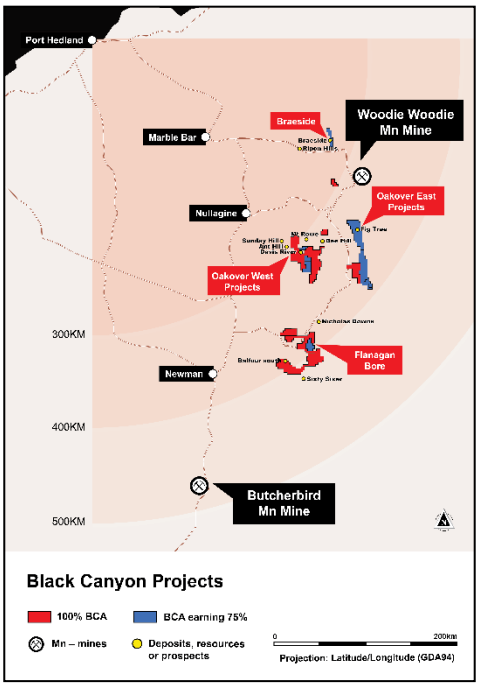
About Black Canyon

Black Canyon has entered into a farm-in and joint venture with ASX listed Carawine Resources Limited (ASX:CWX) to acquire a majority interest in the Carawine JV Project in Western Australia. The Carawine Project covers approximately 800 km^2 of tenure located south of the operating Woodie-Woodie manganese mine, providing a large footprint in a proven and producing manganese belt. Black Canyon has also applied for had granted other exploration licenses adjacent to the Carawine Project that increases the total land holdings to over 2400 km^2. In addition to manganese, the Carawine Project also hosts multiple copper occurrences including the Western Star prospect which comprises a large zone of surface copper enrichment.



Manganese and copper continue to have attractive fundamentals with growing utilisation in the battery mineral sector and challenging supply conditions.

Compliance Statements

Reporting of Exploration Results and Previously Reported Information

The information in this report that relates to Exploration Results is based on, and fairly represents, information and supporting documentation reviewed by Mr Brendan Cummins, Executive Director of Black Canyon Limited. Mr Cummins is a member of the Australian Institute of Geoscientists, and he has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity which has been undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Cummins consents to the inclusion in this release of the matters based on the information in the form and context in which they appear. Mr Cummins is a shareholder of Black Canyon Limited.

The information in this report that relates to metallurgical testwork results is based on information reviewed by Mr David Pass, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Pass is an employee of BatteryLimits and consultant to Black Canyon Limited. Mr Pass has sufficient experience relevant to the mineralogy and type of deposit under consideration and the typical beneficiation thereof to qualify as a Competent Person as defined by the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012 Edition). Mr Pass consents to the inclusion in the report of the matters based on the reviewed information in the form and context in which it appears

For further information, please refer to ASX announcements dated 17 May 2021, 10 June 2021, 7 July 2021, 5 October 2021, 4 January 2022, 8 February 2022, 21 February 2022, 2 March 2022, 23 March 2022,13 April 2022, 9 June 2022 and 7 September 2022 which are available from the ASX Announcement web page on the Company's website. The Company confirms that there is no new information or data that materially affects the information presented in this release that relate to Exploration Results and Mineral Resources in the original market announcements