



**BLACK CANYON**

# **Pilbara Focused Manganese Developer & Explorer**

Updated MRE Presentation

December 2023

**ASX:BCA**  
[BLACKCANYON.COM.AU](https://blackcanyon.com.au)



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## Competent Persons Statement

The information in this report that relates to exploration results and exploration targets and results is based upon information reviewed by Mr Brendan Cummins who is a member of the Australian Institute of Geoscientists (AIG). Mr Cummins is an Executive Director of Black Canyon Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking 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 the report of the matters based on his information in the form and context in which it appears.

## Scoping Study Cautionary Statement

The Scoping Study referred to in this presentation has been undertaken for the purpose evaluating the potential development of the Flanagan Bore Manganese Project, Pilbara region, Western Australia. It is a preliminary technical and economic study of the potential viability of the Flanagan Bore Manganese Project. The Scoping Study outcomes, Production Targets and forecast financial information referred to in the release are based on low level technical and economic assessments that are insufficient to support estimation of Ore Reserves. The Scoping Study is presented to an accuracy level of +/- 35%. While each of the modifying factors was considered and applied, there is no certainty of eventual conversion to Ore Reserves or that the Production Target itself will be realised. Further exploration and evaluation and appropriate studies are required before Black Canyon will be in a position to estimate Ore Reserves or to provide any assurance of any economic development case. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study. All (100%) of the Mineral Resources scheduled for extraction over the 20 year mine life in Scoping Study production targets are classified as Indicated. Only 40% of the Global Mineral Resource has been scheduled for mining in this Scoping Study. No Inferred Mineral Resources have been used in the Scoping Study.

The Mineral Resources underpinning the production target in the Scoping Study have been prepared by a competent person in accordance with the requirements of the JORC Code (2012). For full details on the Mineral Resource estimate, please refer to the ASX announcement of 13 April 2022. Black Canyon confirms that it is not aware of any new information or data that materially affects the information included in that release and that all material assumptions and technical parameters underpinning the estimate continue to apply and have not been changed. This Scoping Study is based on the material assumptions outlined in the announcement. These include assumptions about the availability of funding. While Black Canyon considers that all the material assumptions are based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the range of outcomes indicated in the Scoping Study, funding in the order of \$44 million will likely be required. Investors should note that there is no certainty that Black Canyon will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Black Canyon's existing shares. It is also possible that Black Canyon could pursue other strategies such as project finance, strategic partners, a sale or partial sale of its interest in the Flanagan Bore Project. The Flanagan Bore Project is part of the Carawine Joint Venture ("Carawine JV"), with Carawine Resources Ltd ("CWX" ASX:CWX). The respective interests of each party currently being Black Canyon 75% and CWX 25%. Black Canyon is the manager of the joint venture, with both parties deemed to be contributing to JV expenditure according to their interests. This announcement contains forward-looking statements. Black Canyon has concluded that it has a reasonable basis for providing these forward-looking statements and believes it has a "reasonable basis" to expect it will be able to fund development of the Flanagan Bore Manganese Project. However, a number of factors could cause actual results or expectations to differ materially from the results expressed or implied in the forward-looking statements. Given the uncertainties involved, investors should not make any investment decisions based solely of the results of this study.

# Manganese Explorer and Developer



## MANGANESE FOCUSED

Essential for alloys used in the steel industry and critical for Cathodes in Electric Vehicle Li-Ion batteries.



## BEST IN CLASS

Substantial Global MRE's totaling 314 Mt @ 10.5% Mn containing 33.1 Mt Manganese.

**Largest in Western Australia**



## DEVELOPMENT OPTIONS

Traditional manganese concentrate for the Mn alloying industry.

**Midstream HPMSM processing for EV battery precursor material.**



## PREMIER LOCATION

Tier 1 location – WA Projects located in East Pilbara, existing Mn mines of Woodie Woodie, Butcherbird and export infrastructure at Port Hedland.

# Corporate Overview

ASX Code  
**BCA**

**\$8.6m**  
Market Cap  
(as at 18/12/2023)

**\$1.9m**  
Cash  
(End of Sept Quarter)

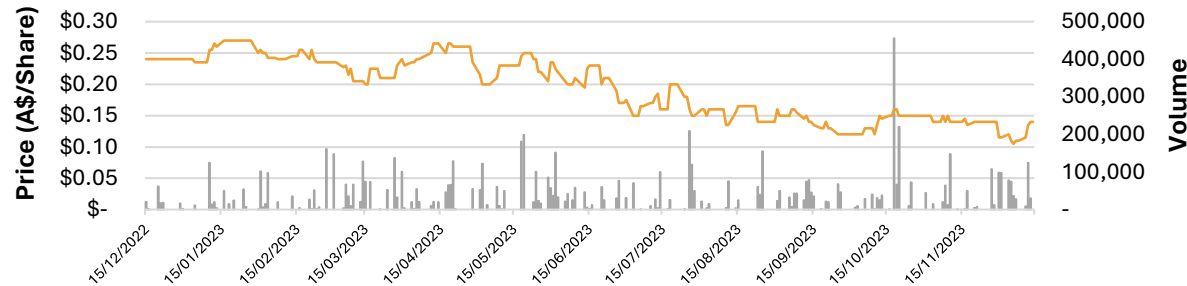
**\$6.7m**  
Enterprise Value

**69.04m** Shares  
on Issue

**1.0m**  
Unlisted Options  
(\$0.25 exercise,  
exp 5/05/2024)

**7.0m**  
Unlisted Options  
(\$0.28 exercise,  
exp 27/07/2025)

## BCA Share Price Performance



## Black Canyon Shareholders

**11%**

BCA Board &  
Management

**15%**

Small Cap Institutions  
and Funds

**74%**

Other  
Shareholders

**Top 20 shareholders – 41%**



**Graham Ascough**  
(Non-Executive Chairman)

Geophysicist

Mr Ascough is a resources executive and geophysicist with more than 30 years' experience. He is presently Non-Executive Chairman of Musgrave Minerals Ltd, Sunstone Metals Ltd and PNX Metals Ltd.



**Simon Taylor**  
(Non-Executive Director)

Geologist

Mr Taylor is a resources industry executive with over 30 years' experience in geology, finance and corporate management at CEO and Board levels. He is also a Non-Executive Director Stellar Resources Ltd and Petratherm Ltd



**Brendan Cummins**  
(Executive Director)

Geologist

Mr Cummins has over 25 years' experience across precious, base metals and bulk commodities. Extensive experience in resource development, feasibility, project development, environmental approvals and permitting.



**Adrian Hill**  
(Non-Executive Director)

Finance

Mr Hill is a senior executive with over 25 years' experience in strategic and finance roles in the resources, energy infrastructure and investment banking industries. He has an established record in strategy development, corporate structuring and capital raising.

# Manganese Fundamentals

## Essential for steel and critical for EV Li-ion batteries

Manganese (Mn) is the fourth most consumed metal by tonnage with 60Mt tonnes of ore mined annually.



Approx. 90% used in steel manufacturing as Mn alloys added to prevent corrosion, resist abrasion and increase hardenability.



Baseload demand for manganese ores continues from China with the emergence of India.



Mn ore is smeltered to make a ferro or silico manganese alloy used in steel production (15kg Mn/t rebar steel).



NMC batteries contain 10-30% Mn that equates to 10-60kg Mn depending on battery chemistry and pack size.

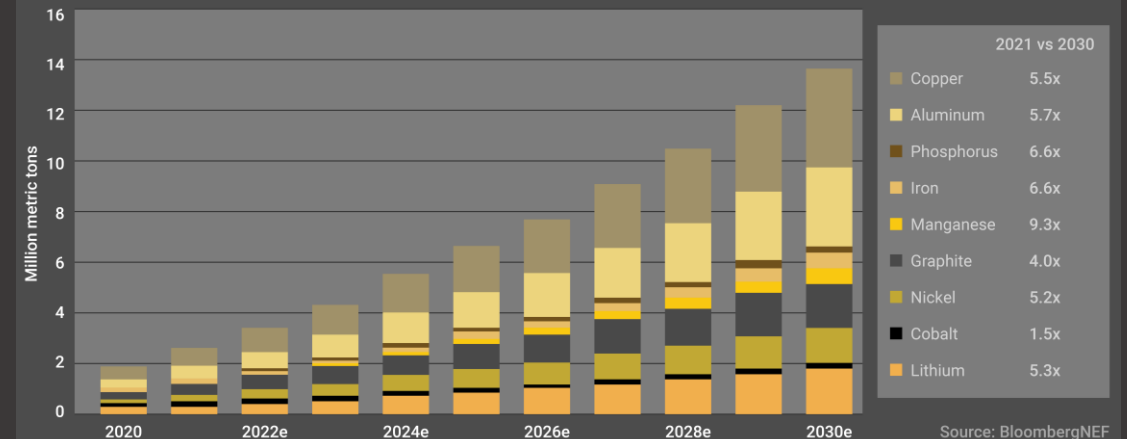


Growth of LFMP, high Li-Mn and sodium-based chemistries.



9.3x forecast demand for Mn required for Li-Ion batteries by 2030.

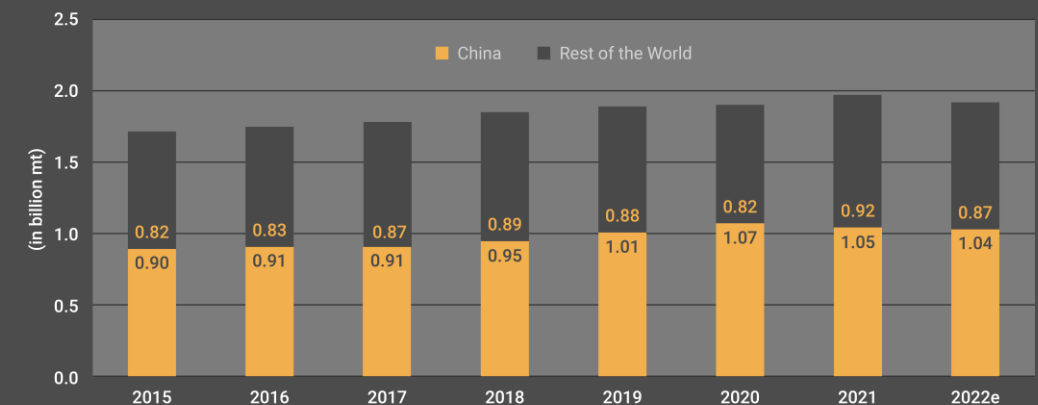
Metals demand from lithium-ion batteries



Note: Metals demand occurs at mine mouth, one-year before battery demand. All metals expressed in metric tons of contained metal, except lithium, which is in lithium carbonate equivalent (LCE).

Source: BloombergNEF

Steel production in China vs the rest of the World 2015 – 2022



Source: World Steel Association, CRU, IMN; e = estimate

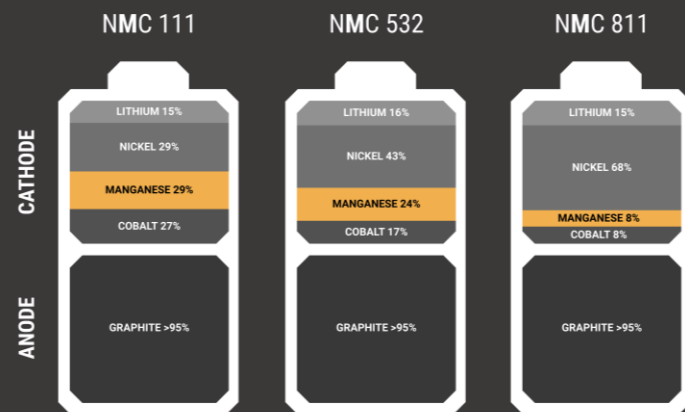


# Manganese – Critical Energy Metal

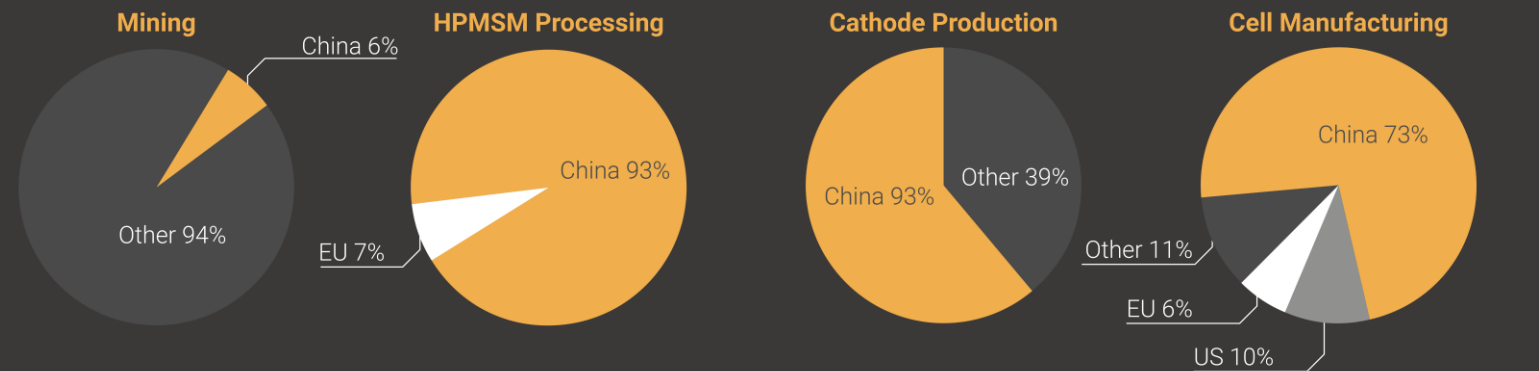
## More manganese required to feed the battery technology evolution

- ▶ Increased battery manufacturing capacity being developed in the USA and Europe with the Inflation Reduction Act and Critical Raw Materials Act respectively.
- ▶ Svolt unveiled the Dragon Armour (Dec 2022) high manganese iron-nickel cells achieve a range of greater than 900km with mass production expected in 2024.<sup>1</sup>
- ▶ Umicore (Feb 2023) starts industrialisation of its leading manganese-rich HLM (high lithium, manganese 60%) battery with production to commence in 2026.<sup>2</sup>
- ▶ Gotion High-Tech (May 2023) announces the Astroinno LFMP battery with a range up to 1000km, new battery pack design and planned mass production in 2024.<sup>3</sup>
- ▶ Samsung SDI (Sept 2023) announce its LFMP battery with the manganese infused LFP battery to increase energy density by about 15% to 20% at a similar price.<sup>4</sup>
- ▶ Sodium based batteries with up to 28% Mn content are being further investigated.

### Ternary (NMC) Li-ion batteries



Source: Pallanghust-Traxys



Source: Black Rock Limited & Benchmark Intelligence

<sup>1</sup> <https://www.autoevolution.com/news/svolt-develops-the-dragon-armor-battery-pack-and-promises-1000-km-range-206712.html>

<sup>2</sup> <https://www.umicore.com/en/newsroom/news/umicore-starts-industrialization-of-manganese-rich-battery-materials-technology-for-electric-vehicles>

<sup>3</sup> <https://thedriven.io/2023/05/24/breakthrough-ev-battery-pack-could-last-2-million-kms-or-130-years-of-average-driving/>

<sup>4</sup> <https://www.businesskorea.co.kr/news/articleView.html?idxno=200970>

# BCA Midstream HPMSM Testwork

## Stage 1 – Evaluate Ore Suitability (2022)

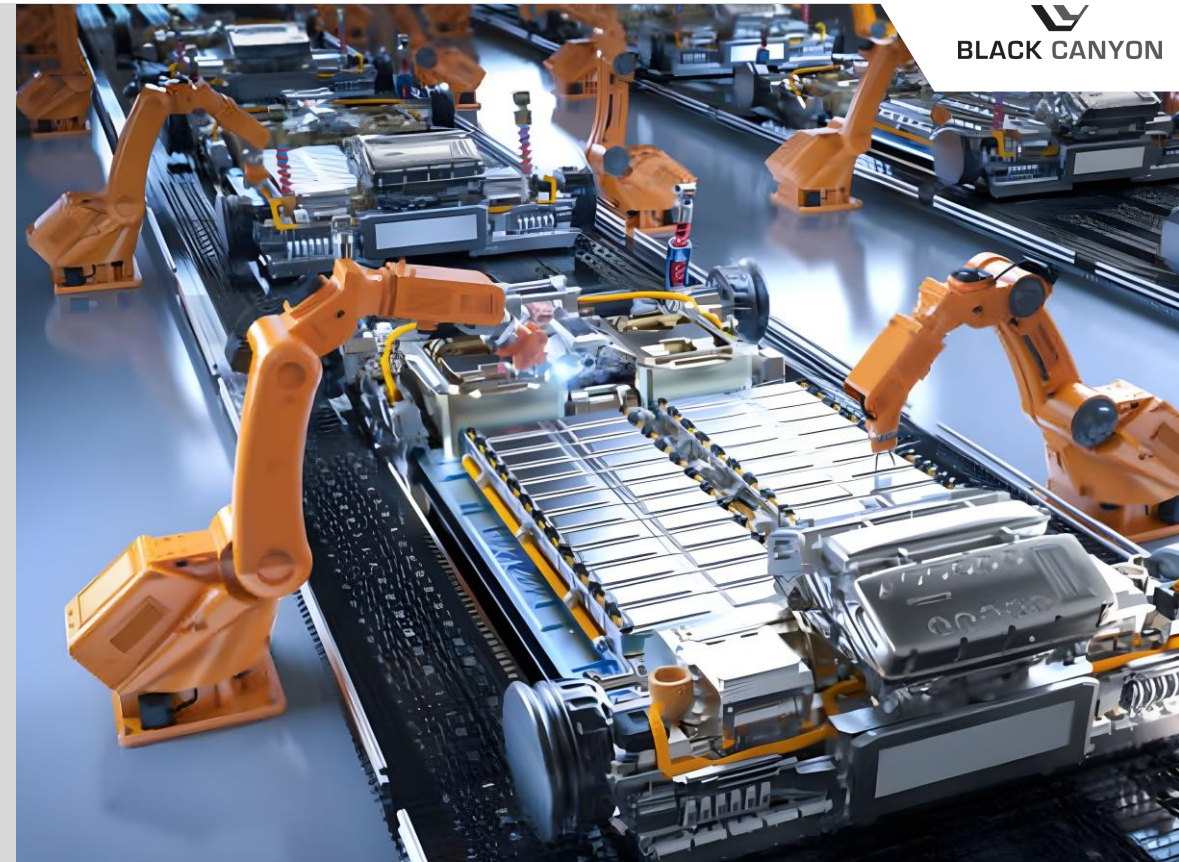
- ✓ Initial leach tests yielded a 93% extraction rate.
- ✓ Crystallised Manganese Sulphate crystals containing >32% Mn which >99% Mn Sulphate purity. Comparable to the typical 32% Mn content of battery grade HPMSM but required further purification to reduce elemental impurities.

## Stage 2 – Battery Grade HPMSM Experimental Flowsheet (2023)

- ✓ Expanded HPMSM Strategy across the Balfour Mn Field.
- ✓ Leach tests yielded up to 99% extraction rate.
- ✓ Completed multistage stage purification to remove Na, Al, and K, then Fe and Al and basemetals. Single stage solvent extraction (SX) to selectively target manganese extraction, followed by crystallisation.
- ✓ Achieved 32% Mn, >99% Mn Sulphate purity and within specification impurity levels (FastMarkets specification MB-MN-0008) from KR1 feedstock.

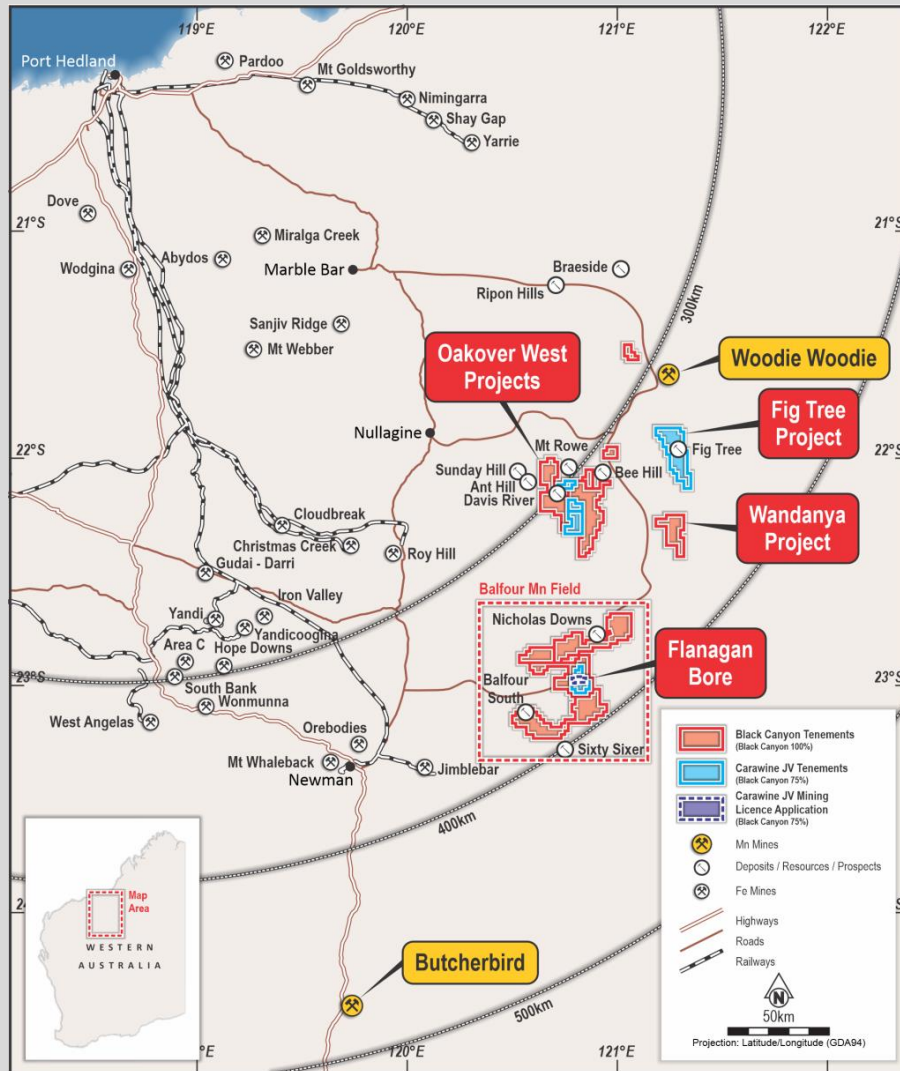
## Stage 3 – Upscale Battery Grade HPMSM Flowsheet & Pilot Plant (2024)

- ▶ Sample selection (400kg), commenced processing
- ▶ Larger scale samples to continue flowsheet and pilot plant design
- ▶ Sample selection and Pilot Plant specifications and establishment





# Asset Overview – 2,400km<sup>2</sup> Under Tenure



High Grade (52.9% Mn) Rock Chip samples from Wandanya (BCA 100%)



Hydrothermal Style Mn Mineralisation



KR1 Target - E46/1383 (BCA 100%)



Supergene Style Mn Mineralisation

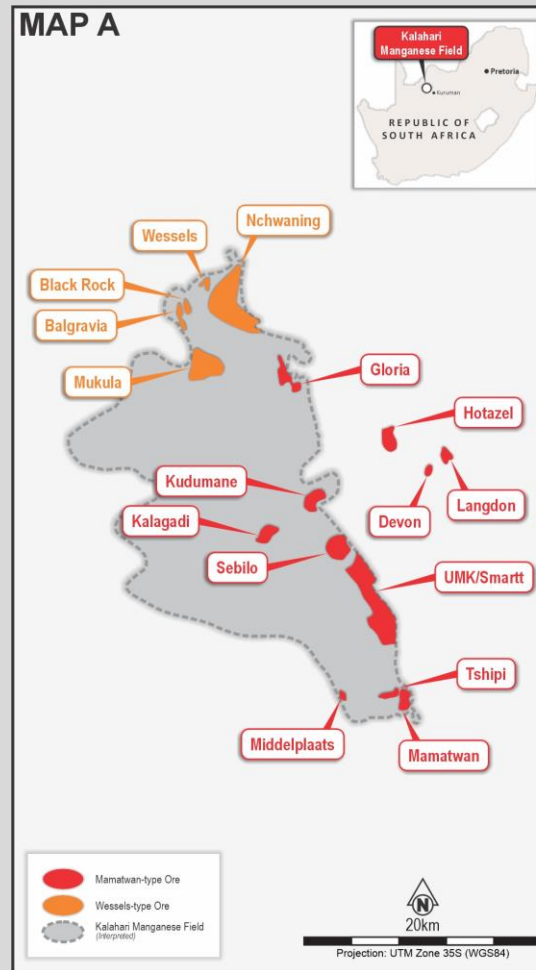




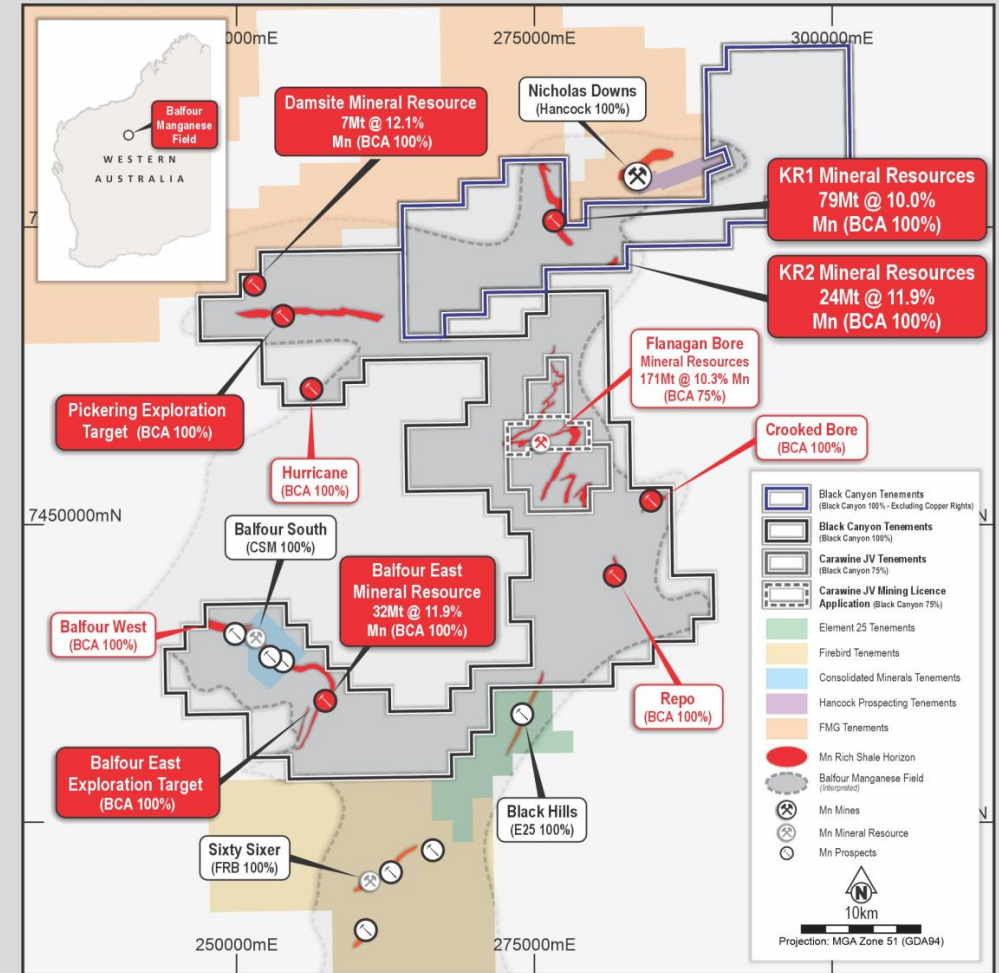
# Potential for Global Scale Discoveries

Parameter	Kalahari	Balfour
<b>Basin Scale</b>	35km x 15km	70km x 30km
<b>Manganese Ore type</b>	Carbonate & Oxide	Oxide
<b>Benchmark Price (CIF)</b> (12 months to Feb 2023 IMNL)	36-38% Mn US\$4.60 DMTU	44% Mn US\$5.80 DMTU
<b>Establishment date</b>	1960's to 2010 (> 20 mines)	2010 (1 mine)
<b>Development stage</b>	Mature	Emerging
<b>Resource Grades</b>	33-44% Mn	10-20% Mn
<b>Ore Processing</b>	Limited	DMS upgrade
<b>Concentrate Grade</b>	36-38% Mn	30-33% Mn
<b>Mine depths</b>	100 to 300m (OP & UG)	0 to 40m
<b>Distance from Port</b>	1000km	600km
<b>Transport logistics</b>	Train and Truck	Truck

**Kalahari Manganese Field & Mines**



**Balfour Manganese Field, Mineral Resources & Prospects**



# 2023 Updated Global Mineral Resource Estimates

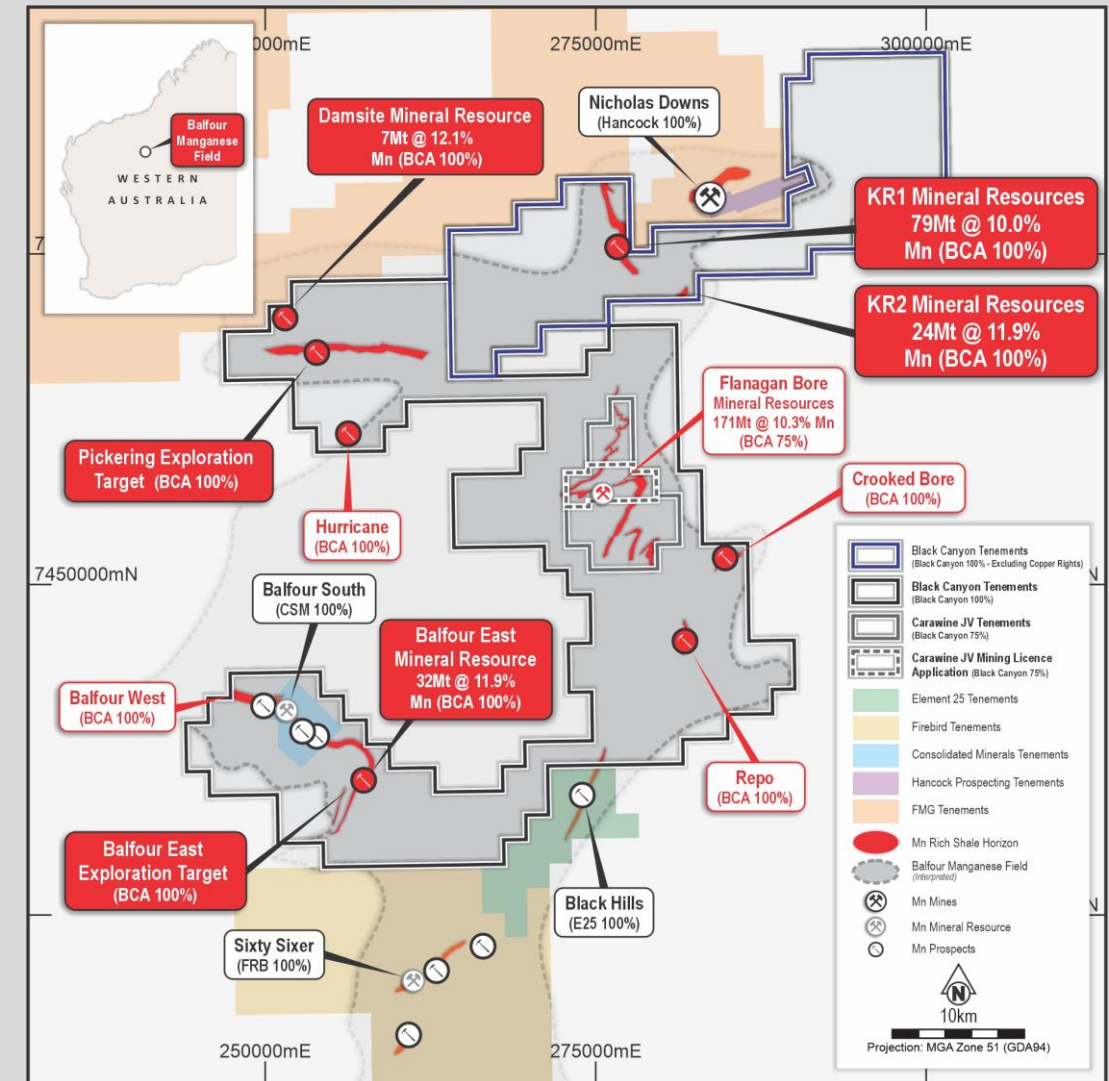
Black Canyon controls the largest contained Manganese deposits in WA – 33.1Mt of contained Mn

- MREs with strong geological and grade continuity demonstrated across the deposits and upside along strike in several resources
- Large scale deposits presents multiple development options

Summary of Mineral Resources <sup>(1-3)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
FB3 <sup>4</sup>	Measured	52	5.5	10.5	10.4	16.9	4.3
LR1 <sup>4</sup>	Measured	47	4.9	10.3	8.4	16.7	4.6
<b>Total</b>	<b>Measured</b>	<b>100</b>	<b>10.4</b>	<b>10.4</b>	<b>9.4</b>	<b>16.8</b>	<b>4.4</b>
KR1 <sup>5</sup>	Indicated	79	7.8	10.0	7.9	18.0	5.4
FB3 <sup>4</sup>	Indicated	63	6.3	10.0	9.6	16.8	4.4
LR1 <sup>4</sup>	Indicated	8	0.9	11.3	9.4	6.9	1.8
<b>Total</b>	<b>Indicated</b>	<b>150</b>	<b>15.1</b>	<b>10.1</b>	<b>8.7</b>	<b>16.9</b>	<b>4.8</b>
KR2 <sup>5</sup>	Inferred	24	2.9	11.9	10.6	19.2	5.0
Balfour East <sup>5</sup>	Inferred	32	3.9	11.9	8.5	18.6	4.9
Damsite <sup>5</sup>	Inferred	7	0.9	12.1	9.6	17.2	4.2
<b>Total</b>	<b>Inferred</b>	<b>64</b>	<b>7.6</b>	<b>11.9</b>	<b>9.4</b>	<b>18.7</b>	<b>4.9</b>
<b>Grand Total</b>		<b>314</b>	<b>33.1</b>	<b>10.5</b>	<b>9.1</b>	<b>17.2</b>	<b>4.7</b>

## Notes

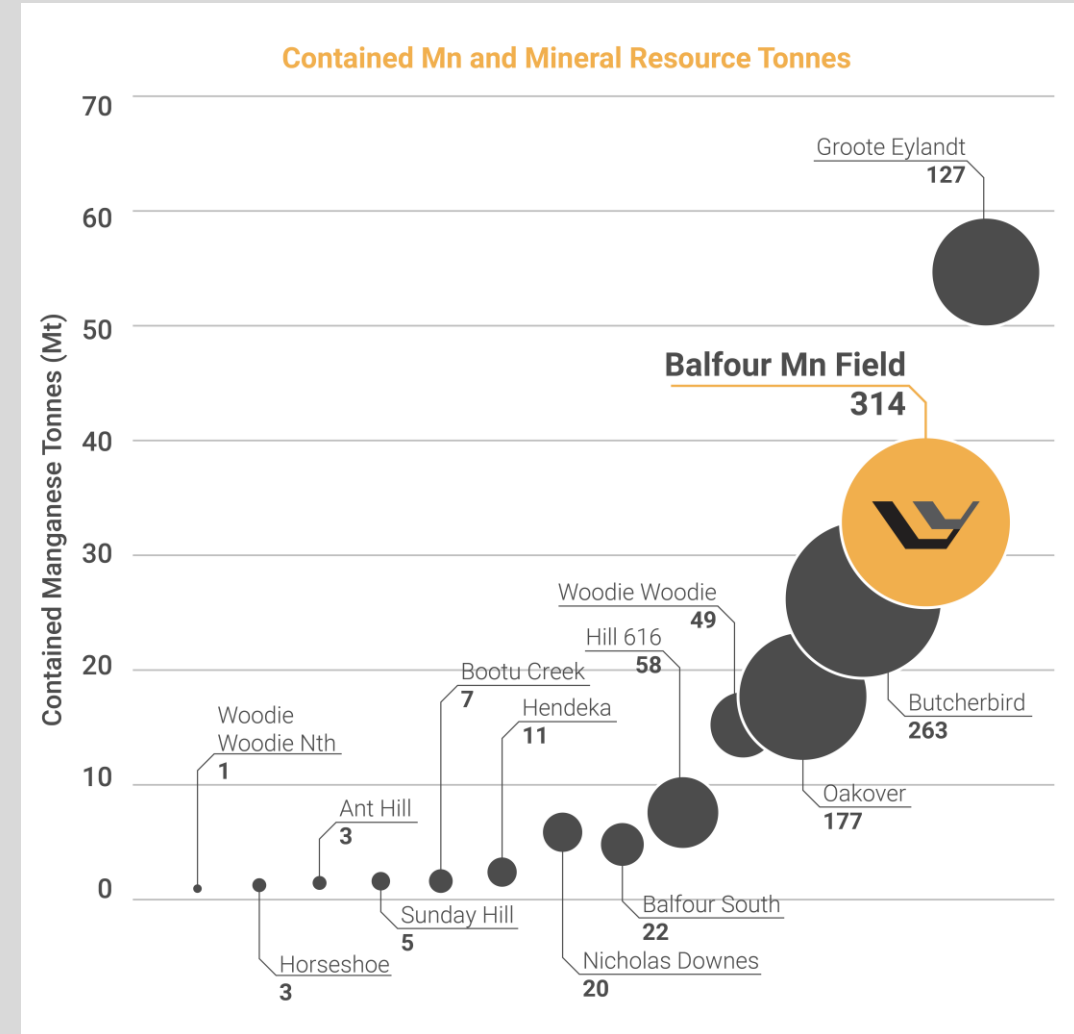
- |  |                                       |
|--|---------------------------------------|
| (1) Mineral resources reported at a cut-off grade of 7% Mn.  | (4) Deposit under which BCA owns 75%  |
| (2) Appropriate rounding has been applied.   | (5) Deposit under which BCA owns 100% |
| (3) Refer to JORC Table 1, Sections 1 to 3 and Appendix 2 for further details in ASX release 27/11/2023. |                                       |



# Black Canyon in the Australian Manganese Context

- ▶ Groote Eylandt Mine – largest manganese deposits in Australia. Approved the Eastern Lease South extension to extend the mine life to at least 2028. Current Reserve are 44Mt @ 42.6% Mn (56% yield) for 4.7yrs.
- ▶ Woodie Woodie Mine – Parent Company Tianyuan Manganese Industry (TMI) a large Chinese Company producing manganese alloys and HPMSM currently in administration. WA operations are still operating
- ▶ Butcherbird Mine – undergoing an operational review. Issues with the Ore Sorter to be resolved with an upgrade to conventional dense media separation (DMS).

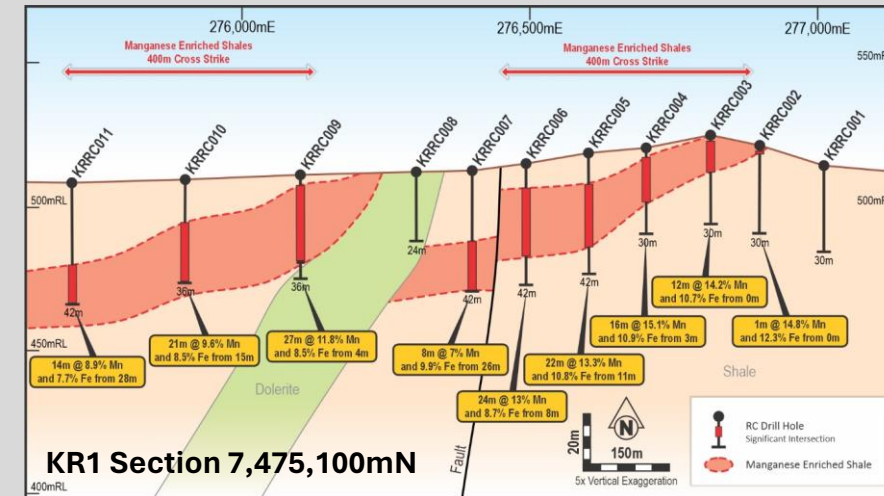
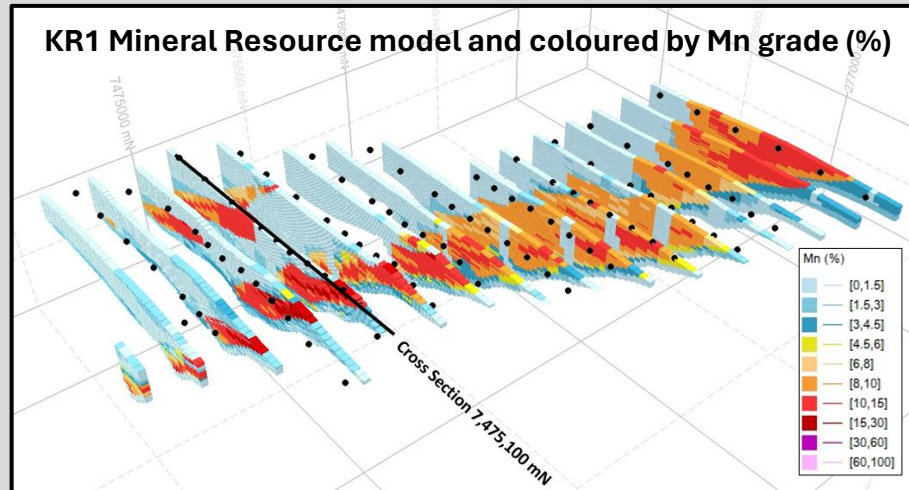
Deposit	Company	Tonnes (Mt)	Grade Mn (%)	Contained Mn (Mt)
Groote Eylandt	South 32	127	43.6	55.4
<b>Balfour Mn Field</b>	<b>Black Canyon</b>	<b>314</b>	<b>10.5</b>	<b>33.0</b>
Butcher Bird	Element 25	263	9.9	26.1
Oakover	Firebird Metals	177	9.9	17.4
Woodie Woodie	Consolidated Minerals	49	30.6	14.8
Hill 616	Firebird Metals	58	12.2	7.0
Balfour South	Consolidated Minerals	22	19.4	4.2
Nicholas Downs	Hancock Prospecting	20	27.2	5.3
Hendeka	Trek Metals	11	15.0	1.7
Bootu Creek	OM Holdings	7	13.9	1.0
Sunday Hill	Resource Development Group	5	18.0	0.9
Ant Hill	Resource Development Group	3	24.8	0.8
Horseshoe	Bryah Resources	3	20.2	0.6
Woodie Woodie Nth	Accelerate Resources	1	19.1	0.2



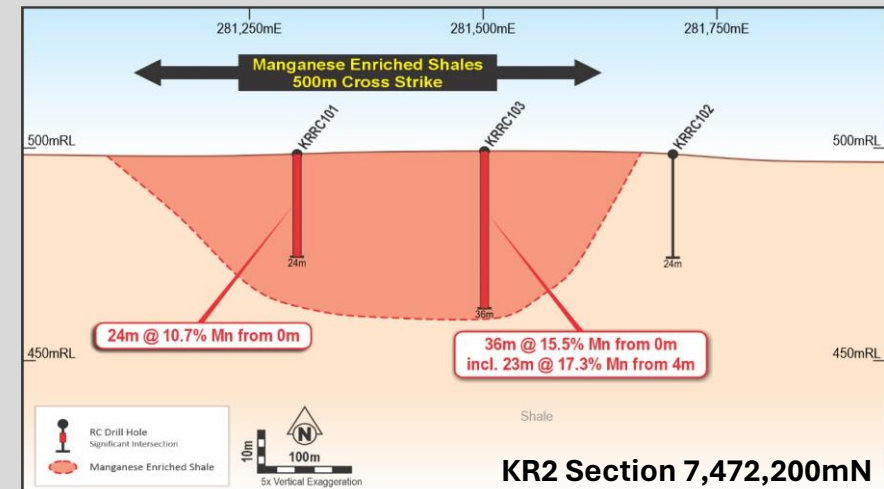
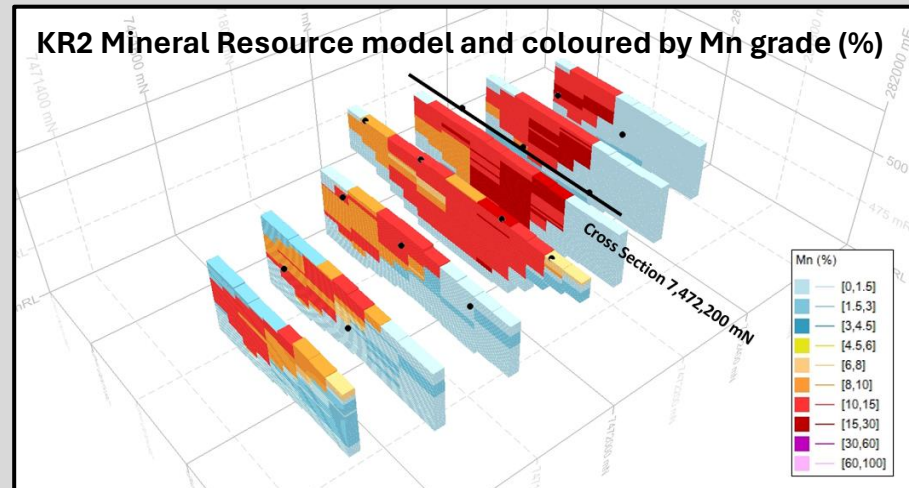


# KR1 & KR2 Deposits (BCA 100%)

79 Mt @ 10.0% Mn for 7.8 Mt of contained Mn

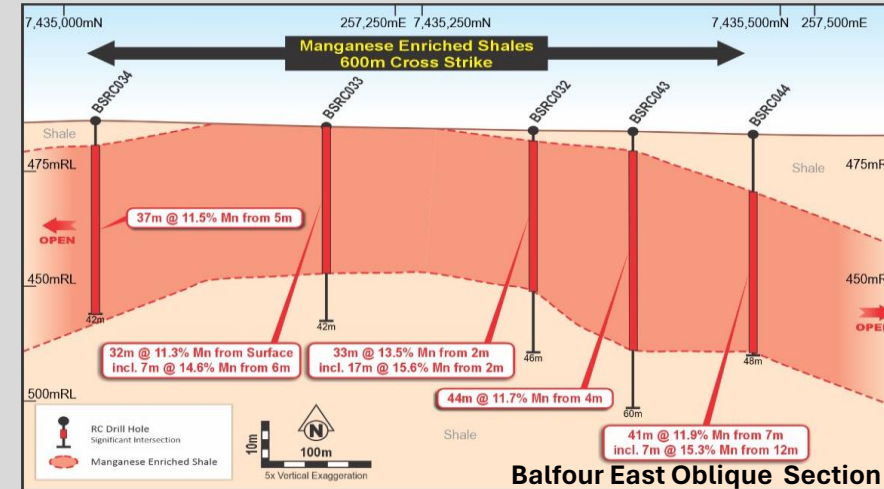
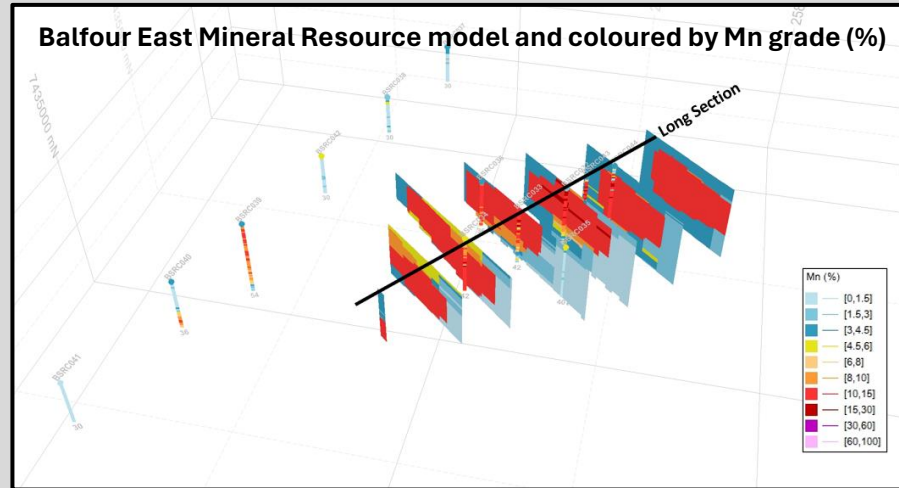


24 Mt @ 11.9% Mn for 2.9 Mt of contained Mn

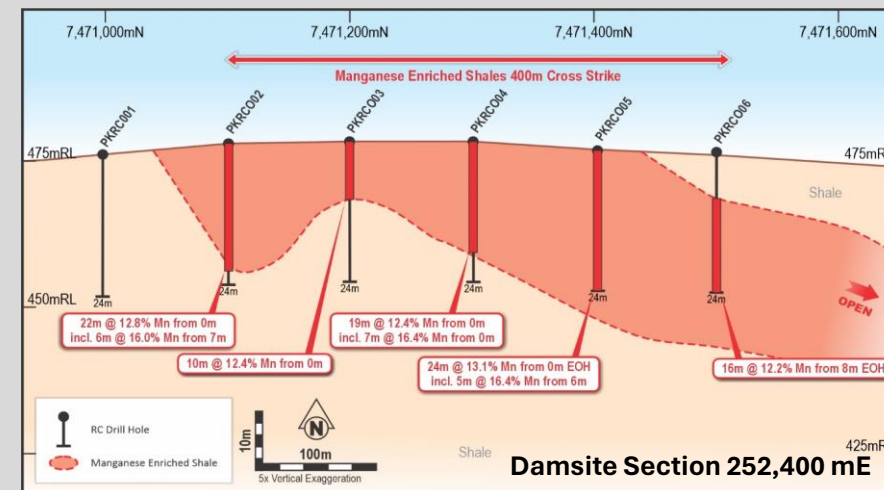
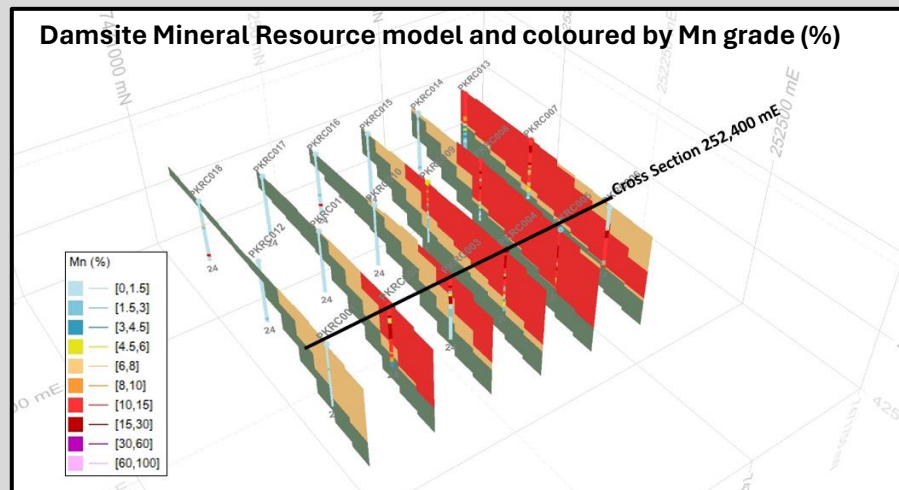


# Balfour East & Damsite Deposits (BCA 100%)

32 Mt @ 11.9% Mn for 3.9 Mt of contained Mn



7 Mt @ 12.1% Mn for 0.9 Mt of contained Mn



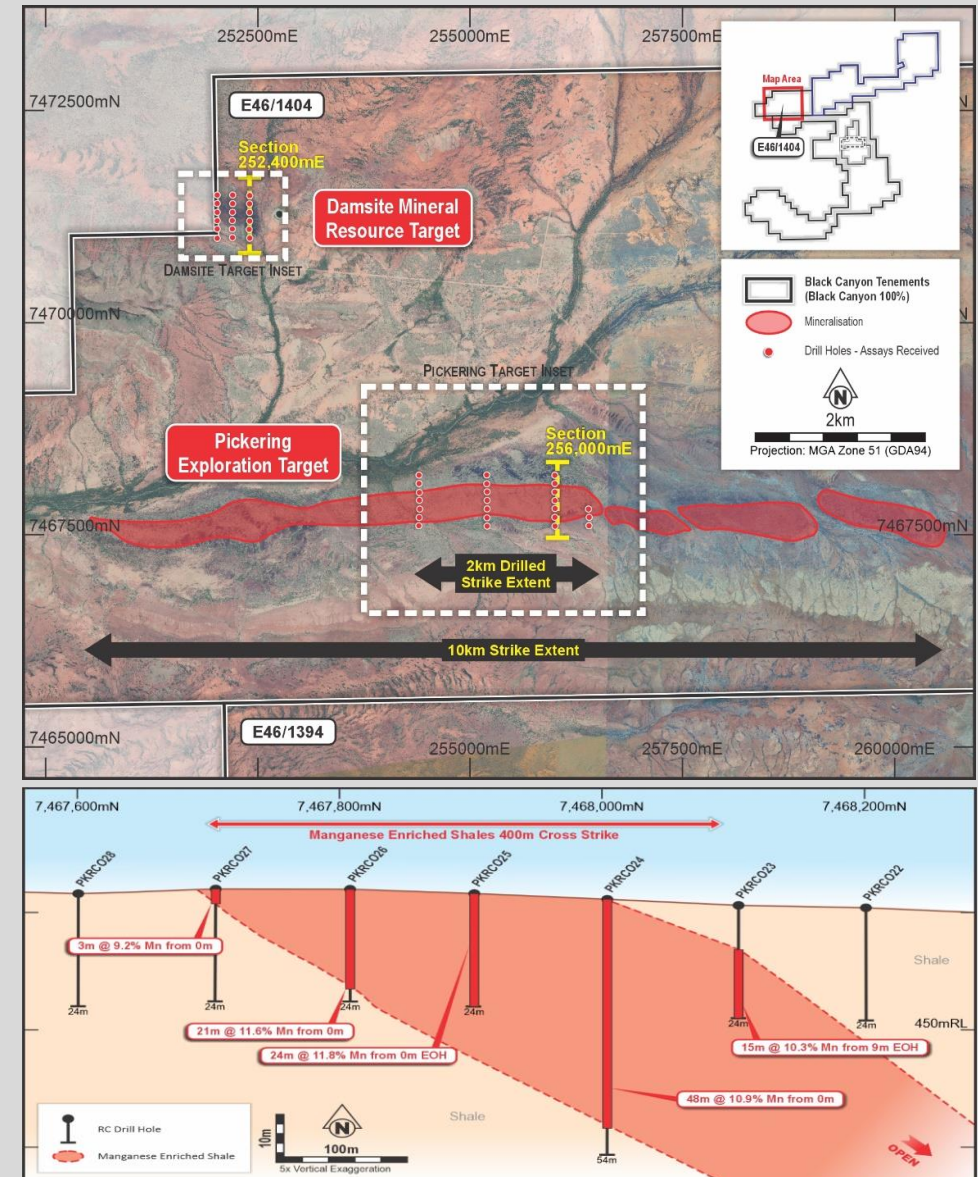


# Pickering Discovery (BCA 100%)

## Exploration Target Potential

- ▶ Drill results confirm the Pickering manganese discovery has a cross strike width of between 300 to 500m and a drilled strike extent of at least 2,000m.
- ▶ The mineralised shale extends 10m to 48m downhole with a high portion of holes ending in mineralisation.
- ▶ The overall Pickering target can be traced along strike for about 10km so there remains significant potential to estimate an Exploration Target along strike of the current drill area.

- PKRC019     **24m @ 11.1% Mn from surface until EOH**
- PKRC024     **48m @ 10.9% Mn from surface**
- PKRC032     **24m @ 11.5% Mn from surface until EOH**
- PKRC039     **24m @ 11.3% Mn from surface until EOH**





# Flanagan Bore Scoping Study Results (Aug 2022, BCA 75%)

## Key Financial and Project Metrics

NPV<sub>8</sub> (before tax, real) **A\$134 million**

IRR (before tax) **67%**

Production Targets (LOM) **36.1Mt @ 11.7% Mn**

Initial Mine Life @ 1.8Mtpa **20 Years**

Annual Mn concentrate production **500kt**

Project Capital Expenditure **A\$44 million**

Payback Period **<2 Years**

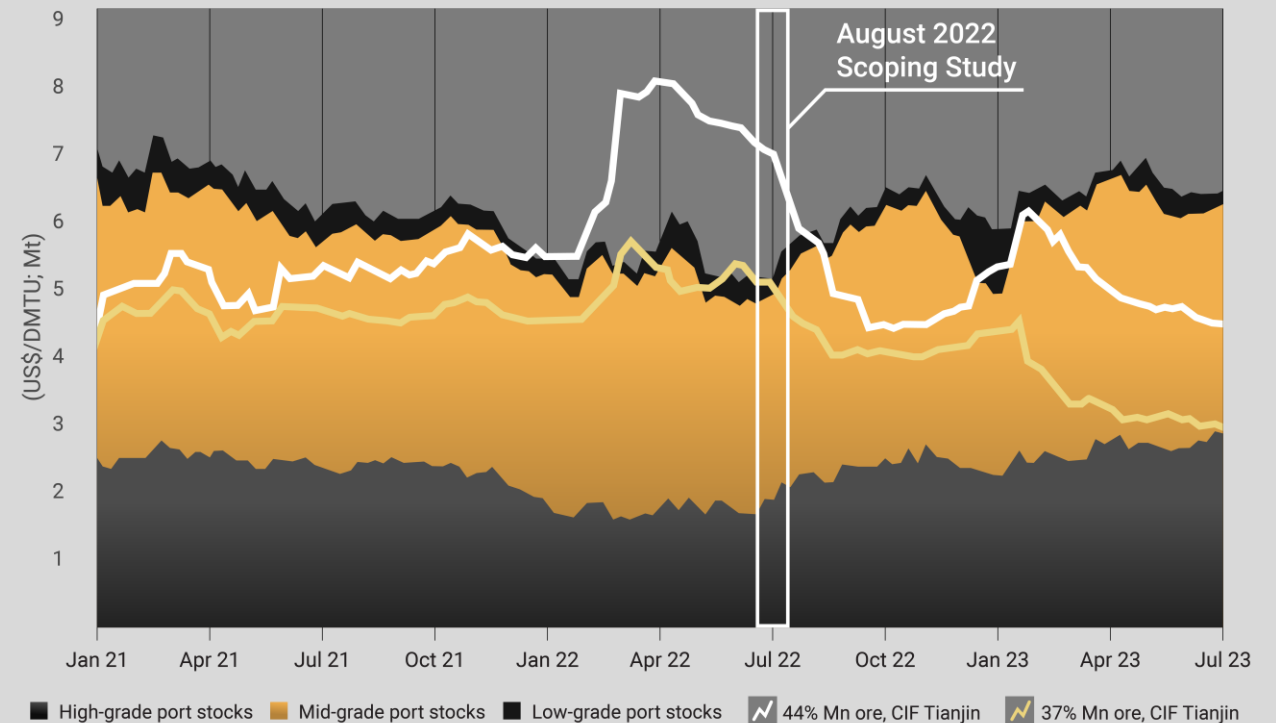
Total LOM Revenue **A\$2,282 million**

Total LOM EBITDA **A\$420 million**

Average Sales Price - CIF A\$/t Mn Conc LOM  
AU\$7.00/DMTU (CIF US\$4.90/DMTU) **A\$231**

AISC - CIF A\$/t Mn Conc A\$5.82/DMTU (CIF  
US\$4.08/DMTU) **A\$192**

## Manganese Ore Price and China Port Stocks



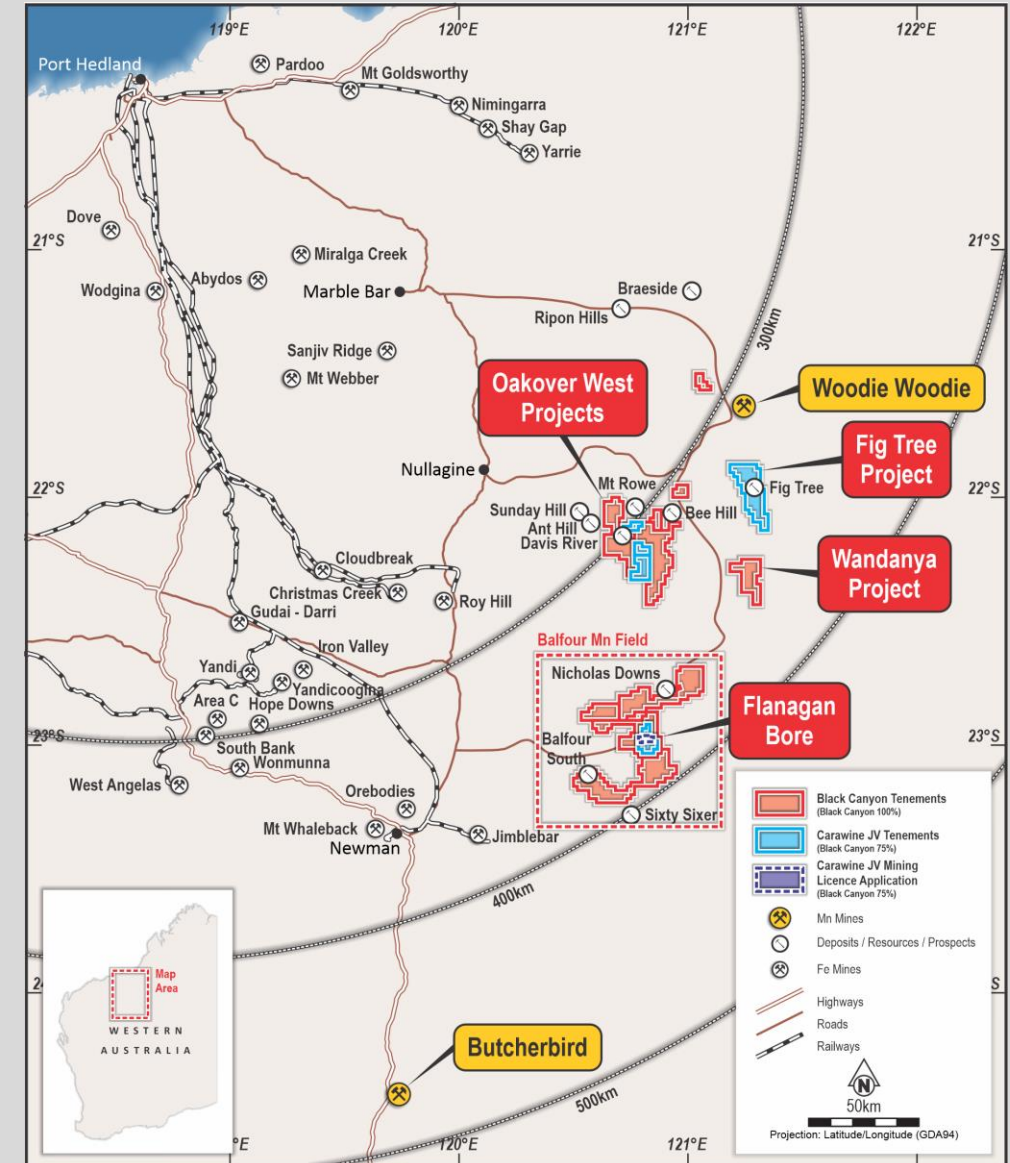
- ▶ Average price for CIF 44% Mn is US\$5.27/DMTU since 2015
- ▶ Manganese ore pricing currently at cyclical lows below the 5 year average

# Transport and Logistics

- ▶ Port Hedland Utah Point Multi-User berth – has 28Mtpa capacity with three multi-user berths potentially available for BCA.
- ▶ The projects within the Balfour Manganese Field are located approx. 600km from Port Hedland requiring 13 to 15 - 120t capacity road trains (trucks).
- ▶ Transportation of manganese concentrates represent a high portion of the OPEX. Black Canyon is investigating contractor, owner-operator and hybrid trucking transport models.

CA Operating Cost C1	\$/t LOM	\$/t Mn CONC	A\$/DMTU	US\$/DMTU
Mine to ROM Haulage	10	36.7	1.11	0.78
Milling Costs	5.5	20.1	0.61	0.43
Crusher Feed	0.7	2.6	0.08	0.06
Grade Control and rehandle	1.5	5.5	0.17	0.12
G & A	2.2	7.9	0.24	0.17
<b>Product haulage</b>	<b>20</b>	<b>73</b>	<b>2.21</b>	<b>1.55</b>
Port and shipping charges (CIF)	7.9	29	0.88	0.62
<b>Total C1 Operating cost</b>	<b>47.80</b>	<b>174.80</b>	<b>5.30</b>	<b>3.71</b>

AISC	\$/t LOM	\$/t Mn CONC	A\$/DMTU	US\$/DMTU
C1 Operating cost	47.8	174.80	5.30	3.71
Sustaining Cost	1	3.7	0.11	0.08
Royalty	3.8	13.9	0.42	0.29
<b>Total AISC</b>	<b>52.60</b>	<b>192.40</b>	<b>5.83</b>	<b>4.08</b>



# Positive Metallurgical Studies

## Crushing and Washing Testwork

- ▶ Significant manganese grade uplifts from feed grades of 11% and 15% Mn upgraded to approximately 23% and 24% Mn through scrubbing and washing - an important first step for beneficiation.

## Pre-Feasibility Level Heavy Liquid Separation Testwork

- ▶ Significant manganese concentrates results from lump (8-25mm) and fines (1-8mm) testwork includes:
  - LR01 lump product – **32.2% Mn**
  - LR01 fines product – **31.4% Mn**
  - FB03 lump product – **33.2% Mn**
  - FB03 fines product – **33.4% Mn**
- ▶ Significant manganese concentrates results from fines (1-8mm) testwork includes:
  - LR01 fines only product – **32.1% Mn**
  - FB03 fines only product – **33.0% Mn**
- ▶ Overall recoveries across the fines testwork average 70% which are in line with the Scoping Study assumption
- ▶ Further upscaled DMS testwork required to further confirm the flowsheet





# Forward Execution Plan

## Exploration and Pre-Development

- ▶ Discover global scale Mineral Resources
- ▶ Assess development pathway through feasibility and testwork
- ▶ Team development and project implementation plan
- ▶ Ensure social license to operate through environmental approvals, stakeholder engagement and ESG principals
- ▶ Partnerships with Strategic Investors and/or Project Enablers for Mn concentrates and HPMSM

## Operations Manganese Concentrate

- ▶ Establish Long Mine Life Ore Reserves – single operation or hub and spoke model
- ▶ Detailed project construction and commissioning plan
- ▶ Reduce technical risk – resources, processing and transport
- ▶ Cost efficient development and operations
- ▶ Engage with top tier counter parties
- ▶ Become a reliable & sought after supplier of Manganese Concentrates

## Midstream High Purity Manganese Sulphate

- ▶ Reliable manganese feedstock from operations or dedicated fast track pits
- ▶ Reduce technical risk through hydrometallurgical flowsheet development and Feasibility Studies
- ▶ Engage with end users for Partnerships and product qualification
- ▶ Develop HPMSM pilot plant operations
- ▶ Determine plant site location factors with strategic partners
- ▶ Become a reliable, low carbon supplier of HPMSM

# BCA Investment Summary



Manganese is essential to the steel industry and a critical battery mineral, with strong growth forecast.



Clear strategy to add value & grow the Company through discovery, development & downstream processing.



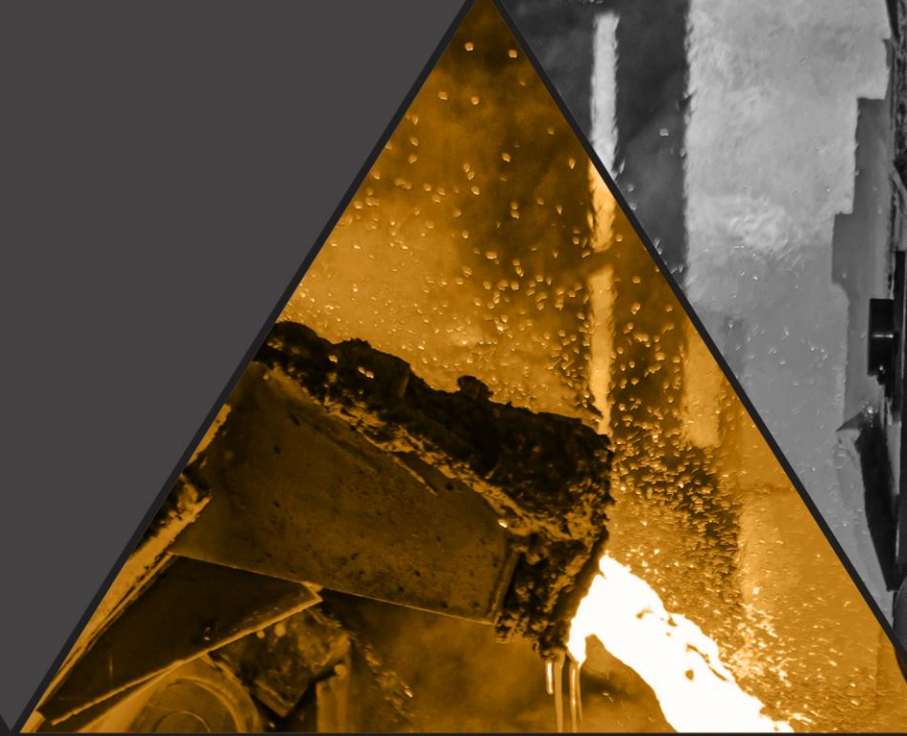
Significant exploration programs completed in 2023 across the Balfour Manganese Field.



Delivering results – Discoveries, MRE upgrades, positive Scoping Study, ML application lodged, commencement of further mine development studies and produced battery grade HPMSM.



Expanded midstream strategy, HPMSM to facilitate global feedstock supply diversification supporting a value-add strategy. Seeking Strategic partnerships for Mn concentrates and HPMSM.





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# Balfour Manganese Field Mineral Resource Estimates

Summary of Mineral Resources > 7% cut-off grade <sup>(1-3)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
Balfour East	Inferred	32	3.9	11.9	8.5	18.6	4.9
Damsite	Inferred	7	0.9	12.1	9.6	17.2	4.2
<b>Grand Total</b>		<b>40</b>	<b>4.7</b>	<b>11.9</b>	<b>8.7</b>	<b>18.4</b>	<b>4.8</b>

Summary of Mineral Resources >11% Mn cut-off grade <sup>(1-3)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
Balfour East	Inferred	25	3.1	12.4	8.8	18.8	4.9
Damsite	Inferred	5	0.7	12.8	9.8	17.0	4.0
<b>Grand Total</b>		<b>30</b>	<b>3.8</b>	<b>12.5</b>	<b>9.0</b>	<b>18.5</b>	<b>4.8</b>

Summary of Mineral Resources > 7% Mn cut-off grade <sup>(1-3)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
KR1	Indicated	79	7.8	10.0	7.9	18.0	5.4
<b>Total</b>	<b>Indicated</b>	<b>79</b>	<b>7.8</b>	<b>10.0</b>	<b>7.9</b>	<b>18.0</b>	<b>5.4</b>
KR2	Inferred	24	2.9	11.9	10.6	19.2	5.0
<b>Total</b>	<b>Inferred</b>	<b>24</b>	<b>2.9</b>	<b>11.9</b>	<b>10.6</b>	<b>19.2</b>	<b>5.0</b>
<b>Grand Total</b>		<b>103</b>	<b>10.7</b>	<b>10.4</b>	<b>8.6</b>	<b>18.3</b>	<b>5.3</b>

Summary of Mineral Resources >11% Mn cut-off grade <sup>(1-3)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
KR1	Indicated	15	2	13.1	9.8	18.0	6.2
<b>Total</b>	<b>Indicated</b>	<b>15</b>	<b>2</b>	<b>13.1</b>	<b>9.8</b>	<b>18.0</b>	<b>6.2</b>
KR2	Inferred	14	2	13.6	11.2	18.2	4.6
<b>Total</b>	<b>Inferred</b>	<b>14</b>	<b>2</b>	<b>13.6</b>	<b>11.2</b>	<b>18.2</b>	<b>4.6</b>
<b>Grand Total</b>		<b>29</b>	<b>3.8</b>	<b>13.3</b>	<b>10.5</b>	<b>18.1</b>	<b>5.5</b>

Summary of Mineral Resources <sup>(1-5)</sup>							
Deposit	Mineral Resource Category	Material (Mt)	In Situ Mn (Mt)	Mn (%)	Fe (%)	Si (%)	Al (%)
FB3 <sup>4</sup>	Measured	52	5.5	10.5	10.4	16.9	4.3
LR1 <sup>4</sup>	Measured	47	4.9	10.3	8.4	16.7	4.6
<b>Total</b>	<b>Measured</b>	<b>100</b>	<b>10.4</b>	<b>10.4</b>	<b>9.4</b>	<b>16.8</b>	<b>4.4</b>
KR1 <sup>5</sup>	Indicated	79	7.8	10.0	7.9	18.0	5.4
FB3 <sup>4</sup>	Indicated	63	6.3	10.0	9.6	16.8	4.4
LR1 <sup>4</sup>	Indicated	8	0.9	11.3	9.4	6.9	1.8
<b>Total</b>	<b>Indicated</b>	<b>150</b>	<b>15.1</b>	<b>10.1</b>	<b>8.7</b>	<b>16.9</b>	<b>4.8</b>
KR2 <sup>5</sup>	Inferred	24	2.9	11.9	10.6	19.2	5.0
Balfour East <sup>5</sup>	Inferred	32	3.9	11.9	8.5	18.6	4.9
Damsite <sup>5</sup>	Inferred	7	0.9	12.1	9.6	17.2	4.2
<b>Total</b>	<b>Inferred</b>	<b>64</b>	<b>7.6</b>	<b>11.9</b>	<b>9.4</b>	<b>18.7</b>	<b>4.9</b>
<b>Grand Total</b>		<b>314</b>	<b>33.1</b>	<b>10.5</b>	<b>9.1</b>	<b>17.2</b>	<b>4.7</b>

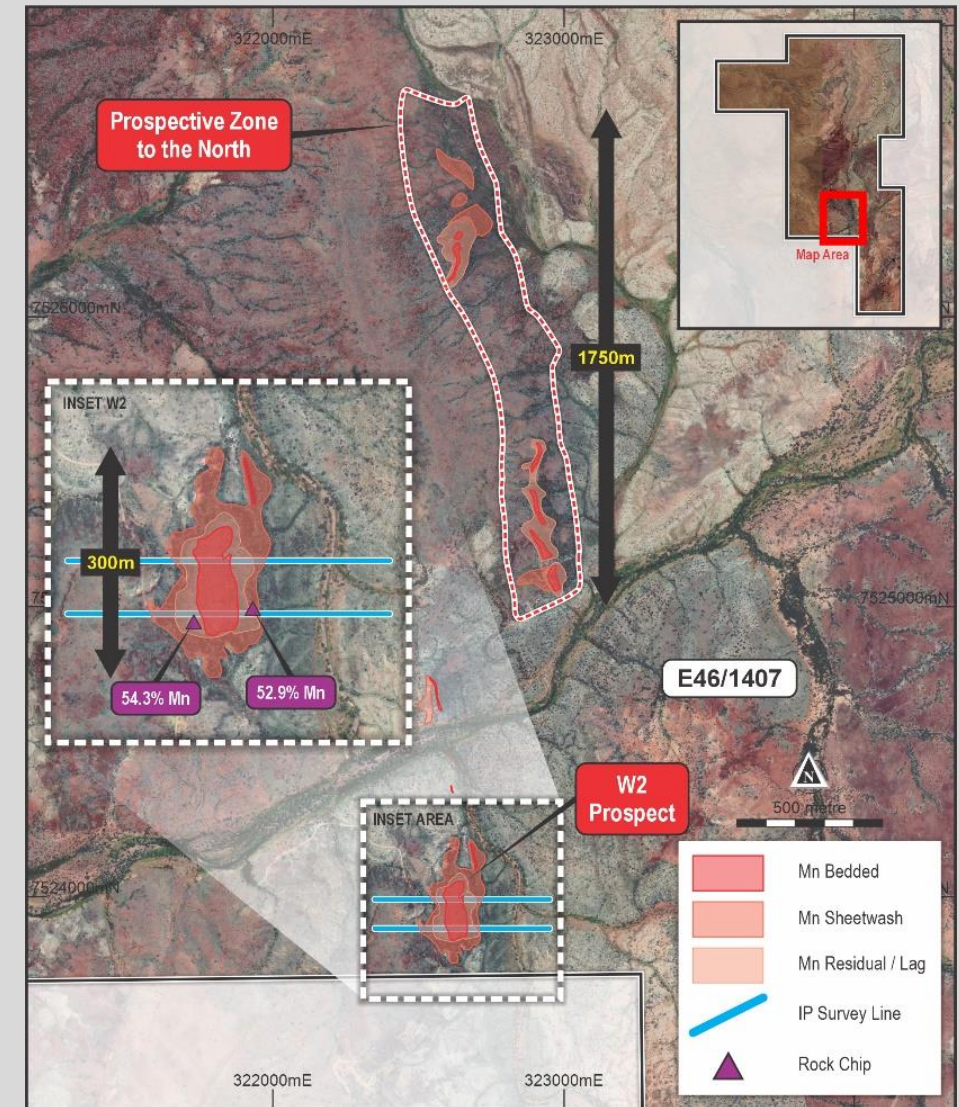
## Notes

- (1) Mineral resources reported at a cut-off grade of 7% Mn. (4) Deposit under which BCA owns 75%  
 (2) Appropriate rounding has been applied. (5) Deposit under which BCA owns 100%  
 (3) Refer to JORC Table 1, Sections 1 to 3 and Appendix 2 for further details in ASX release 12/12/2023.

# Wandanya (BCA 100%)

## High-grade potential Discovery

- ▶ Reconnaissance sampling over the Wandanya (E46/1407) tenement (BCA 100%) delivered high-grade surface rock chip samples up to 54% manganese.
- ▶ Two samples taken 100m apart (across strike) returned 52.9% and 54.3% Mn from an outcrop that is approximately 300m long and 150m wide at the W2 prospect.
- ▶ Other samples targeting manganese across the tenement ranged between 12.2% and 33.5% Mn.
- ▶ No previous surface sampling or historic drilling has been completed over the outcropping mineralisation.
- ▶ Completed additional mapping, sampling and IP to generate potential drill targets subject to Heritage Surveys



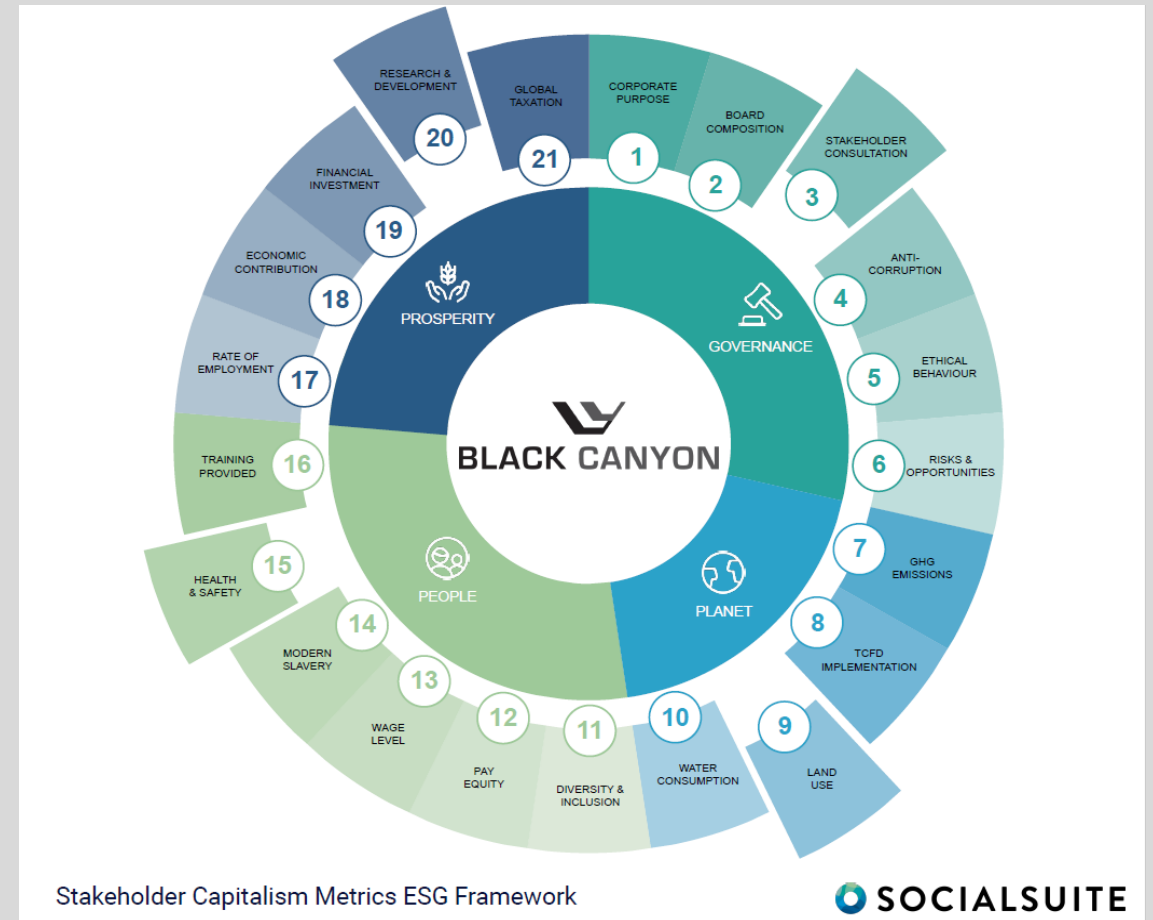
# ESG – Partnered With SocialSuite

## Highlights and achievements

- ▶ Partnered with Socialsuite to commence ESG reporting against the World Economic Forum (WEF) Stakeholder Capitalism Framework
- ▶ Commenced wider community engagement - Heritage surveys conducted on site prior to drilling, involving Traditional Owners. Cultural Monitors on site for drill line clearing activities
- ▶ Engagement with wider community including pastoralists and local prospectors
- ▶ Ensuring Environmental Compliance

## Focus areas for 2023/2024

- ▶ Baseline studies to understand the current environment including land, water, flora, fauna and social surroundings
- ▶ Wider community stakeholder engagement (ongoing)
- ▶ Health & Safety policies/procedures to ensure compliance and a safe work environment for employees and contractors
- ▶ Strong management and effective deployment of capital
- ▶ LifeCycle Assessments (LCA) to establish carbon footprint as the project develops





# Australian Manganese Resources and Status

Deposit (status)	Company	Tonnes (Mt)	Grade Mn (%)	Contained Mn (Mt)
Groote Eylandt (operation)	South 32	127	43.6	55.4
Balfour Mn Field (development)	Black Canyon	314	10.5	33.0
Butcher Bird (operation)	Element 25	263	9.9	26.1
Oakover (development)	Firebird Metals	176.6	9.9	17.4
Woodie Woodie (operation)	Consolidated Minerals	48.5	30.6	14.8
Hill 616 (exploration)	Firebird Metals	57.5	12.2	7.0
Balfour South (exploration)	Consolidated Minerals	21.6	19.4	4.2
Nicholas Downs (care and maintenance)	Hancock Prospecting	19.5	27.2	5.3
Hendeka (development)	Trek Metals	11.3	15.0	1.7
Bootu Creek (care and maintenance)	OM Holdings	6.86	13.9	1.0
Sunday Hill (development)	Resource Development Group	5	18.0	0.9
Ant Hill (development)	Resource Development Group	3.1	24.8	0.8
Horseshoe (development)	Bryah Resources	3.1	20.2	0.6
Woodie Woodie Nth (development)	Accelerate Resources	1.2	19.1	0.2

Company	Deposit	Status	Contained Mn	Measured		Indicated		Inferred		Total		Cutoff	Source
				tonnes	grade	tonnes	grade	tonnes	grade	tonnes	grade		
			Mt	Mt	Mn %	Mt	Mn %	Mt	Mn %	Mt	Mn %	Mn %	
South 32	Groote Eyland	Operation	55,372,000	66.0	44.7	35	41.0	26	4402.0	127.0	43.6	-	2023 Annual Report (filed)
Black Canyon	Balfour Mn Field	Development	32,970,000	100	10.4	150	10.1	64.0	11.9	314.0	10.5	7.0	BCA Release 12/12/23
Element 25	Butcher Bird	Operating	26,144,000	15.3	11.5	41	10	206	9.8	263.0	9.9	-	2023 Annual Report (filed)
Firebird Metals	Oakover	Development	17,434,920	-	-	105.8	10.1	70.9	9.6	176.6	9.9	-	Firebird website 5/12/23 (& ASX release 10/3/22 - filed)
Consolidated Minerals	Woodie Woodie	Operation	14,841,000	-	-	-	-	-	-	48.5	30.6	-	GSWA Manganese invetsment flyer 2022
Firebird Metals	Hill 616	Exploration	7,015,000	-	-	-	-	57.5	12.2	57.5	12.2	-	Firebird website 5/12/23 (& ASX release 10/3/22 - filed)
Consolidated Minerals	Balfour South	Development	4,190,400	-	-	-	-	-	-	21.6	19.4	-	GSWA Manganese invetsment flyer 2022
Hancock Prospecting	Nicholas Downs	Care and Maint.	5,304,000	-	-	-	-	-	-	19.5	27.2	-	GSWA Manganese invetsment flyer 2022
Trek Metals	Hendeka	Development	1,695,000	-	-	-	-	11.3	15.0	11.3	15.0	10.1	2023 Annual Report (filed)
OM Holdings	Bootu Creek	Care and Maint.	953,540	-	-	6.9	13.9	-	-	6.9	13.9	-	Fosters stock Coverage report 02/11/2022
Resource Development Group	Sunday Hill	Exploration	899,000	-	-	4	17.7	1	19.1	5.0	18.0	-	RDG Sunday Hill MRE 1/6/2021 (filed)
Resource Development Group	Ant Hill	Exploration	769,300	-	-	2.8	24.4	0.3	28.7	3.1	24.8	-	MRL Sunday Hill MRE 31/12/2019 (filed)
Bryah Resources	Horseshoe	Exploration	626,200			2.1	20.9	1	18.6	3.1	20.2	15.0	Bryah Release 24/08/2023 filed
AX8	Woodie Woodie North	Exploration	230,400					1.2	19.1	1.2	19.2	10-15%	AX8 release 30/11/2023 filed