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# RESEARCH

INDEPENDENT INVESTMENT RESEARCH

## Mount Burgess Mining N.L. (MTB)

May 2023

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**Note:** This report is based on information provided by the company as at May 24, 2023

Investment Profile	
Share Price - May 23, 2023	\$0.003
12 month L/H	\$0.003/\$0.01
Issued Capital:	
Ordinary Shares	883.2 m
Options	34.67 m
In-Money Options	0 m
Diluted for In-Money Options	883.2 m
Fully Diluted	917.8 m
Market Capitalisation - Undiluted	\$2.65 m
Cash (31 March 2023)	\$0.094 m
Borrowings (31 December, 2022)	\$1.64 m

Board and Management	
Mr Nigel Forrester - Chairman and MD	
Mr Harry Warries - Non-Executive Director	
Mr Robert Brougham - Non-Executive Director	
Mr Jacob Thamage - Non-Executive Director	
Mr Ian Barclay McGeorge - Non-Executive Director	

Major Shareholders	
1215 Capital Pty Ltd	13.00%
Nigel Forrester and related parties	8.25%
Russell McCrory	9.63%
Top 20	56.68%
Board and Management	12.51%



The investment opinion in this report is current as at the date of publication. Investors and advisers should be aware that over time the circumstances of the issuer and/or product may change which may affect our investment opinion.

### HIGHLY PROSPECTIVE DAMARA ROCKS

Mount Burgess Mining N.L. ("Mount Burgess" or "the Company") is focussed on the 100% owned Kihabe-Nxuu Zn-Pb-Ag-Cu-V-Ga-Ge Project ("the Project") in the highly productive Damara Belt of Western Botswana.

Immediate plans are to conduct 2,500 m of resource upgrade drilling at the shallow, fully oxidised and weathered Nxuu deposit, to allow Indicated and Measured JORC 2012-compliant resources to be estimated. Results will be used in a Feasibility Study, with this expected to indicate relatively low costs for an operation initially at Nxuu, and then moving to the oxide and sulphide mineralisation at the nearby Kihabe deposit. Between them the two deposits contain 27 Mt @ 2.0% ZnEq (60% Indicated, and at a 0.5% ZnEq cutoff). At a 1.5% ZnEq cutoff the MRE is 16.4 Mt @ 2.6% ZnEq. Both oxide and fresh mineralisation has generally returned very good recoveries in metallurgical test work. In addition to Zn, Pb, Ag and V<sub>2</sub>O<sub>5</sub> the deposits also contain gallium and germanium, however this has been estimated for Nxuu only, and no metallurgical test work has yet been completed.

Vanadium, gallium and germanium provide the potential for significant by-product credits in the decarbonising economy - a key use for vanadium is in flow batteries, for which the market is in its infancy, and is expected to grow strongly over coming years to fill the need for grid scale storage. Likewise, gallium and germanium are important metals in electronics, and we should see steady growth in demand for these metals. Markets for both are relatively small (720 t for gallium in 2022), with markets currently controlled by China.

The Damara Belt (and other Pan-African mobile belts, including the Zambian Belt) are globally recognised as being well mineralised, and host deposits such as those in the Otavi Mountain Land ("OML") of Namibia, including Tsumeb, and the world-class copper deposits of the Zambian and Congolese Copper Belts.

Also in Namibia and Botswana is the Ghanzi-Chobi Belt, which, in Botswana, hosts Sandfire Resources (ASX: SFR, "Sandfire") Motheo copper development project, with Ore Reserves of 49.6 Mt @ 1.0% Cu and 14 g/t Ag.

In addition to the defined deposits, the 1,000 km<sup>2</sup> tenement hosts several geochemical and geological targets that have had little or no drilling, and therefore require follow up. What drilling has been done has returned very encouraging results, and there is a good chance to significantly enlarge the current resource base (and to find higher grade zones).

### KEY POINTS

**Well Recognised Mining Destination:** Botswana has long been considered one of the more stable and attractive exploration and mining destinations in Africa, generally ranking highly in the Fraser Institute annual surveys.

**Well Understood Geology and Mineralisation:** The Project's geology and mineralisation are well understood, with the rocks interpreted as being correlatives of those that host the Otavi Mountain Land deposits in Namibia - one key difference is that the mineralisation at Kihabe is hosted in the clastic sediments rather than the underlying dolostone, which has positive ramifications for reagent consumption during any metallurgical leaching.

**Potential For a Relatively Low Unit Cost Operation:** Both deposits, and more particularly Nxuu, have the potential for low strip ratios (potentially less than 1:1 over the LoM at Nxuu, and uncommon in the mining industry), in soft, weathered, readily rippable material, and hence resulting in relatively low mining costs. Likewise, depending upon the treatment route chosen and the results of ongoing work there is the potential for relatively low treatment costs, given that work has demonstrated that the oxide zinc and vanadium mineralisation is readily leachable and gallium/germanium report to micas, which respond well to flotation.

**Ready Access:** Although being located in the Kalahari may seem remote, the Project is readily accessible via road to the regional town of Maun (as well as by a one hour flight from Maun to the Nxai Nxai airstrip within the concession), and towns in Namibia, including Grootfontein and Tsumeb - distances are similar to those experienced in the Yilgarn of Western Australia.

**Experienced and Committed Board and Management:** The Board and Management have considerable experience in the resources sector, including in Botswana. In addition insiders hold some 12.43% of the stock, aligning their interests with other shareholders.

## SWOT ANALYSIS

### Strengths

- ◆ **Proven mining destination:** Botswana is a proven exploration and mining destination, and until recently has ranked at, or near the top of the African countries in the annual Fraser Institute Survey. We note however a falloff in the 2021 survey, however there were only few responses, and actions during COVID may have affected the view of the respondents.
- ◆ **Ready access to skilled labour and services:** Given that Botswana (and neighbouring Namibia and South Africa) have, or have had active mining industries, there is ready access to required labour and services. What also needs to be considered here also are relative distances - although the location may look remote, distances are similar to (and even less than) those experienced in Western Australia.
- ◆ **Prospective stratigraphy:** The rocks are interpreted as being the same as those that host the world-class poly-metallic deposits in the Damara Orogen of the Otavi Mountain Land ("OML") in Namibia, including Berg Aukus and Tsumeb (27 Mt @ 4.3% Cu, 10% Pb, 3.5% Zn, 95 g/t Ag - historic production) - results of work to date (with defined Resources) have confirmed the prospectivity of the Aha Hills area where Mount Burgess is operating.
- ◆ **Potentially low cost:** Although numbers will be confirmed by the Feasibility Study (with no cost estimates thus far in the public domain), any operation has the potential to be low cost. On the mining front, the mineralisation at Nxuu is low strip (potentially less than 1:1), and being highly weathered in the oxide zones may only require just ripping, with possibly only limited drill and blast. Processing costs are a bit harder to comment on, however the oxide zinc is readily leachable, with metal produced on site, and vanadium is readily leachable from the host mineral desclozite with metal produced on site. Given the grade of the mineralisation low costs will be necessary if any operation is to be financially viable.
- ◆ **Future metals:** The project has the potential to produce strategic metals of the future, being vanadium, gallium and germanium - forecasters see strong future growth in demand for these products.
- ◆ **Significant metal content:** The Project hosts significant tonnages of the target metals, including 385,000 t of zinc and 186,000 t of lead amongst others (refer Table 6).
- ◆ **Potential long life operation:** In addition to the Nxuu oxide, other mineralisation, including the Kihabe oxide, and the gossan prospect oxide could be brought into play before considering mining the sulphide.

### Weaknesses

- ◆ **Mineralisation tenor:** Our main concern with the Project is the tenor, including grade and size of the Resources. With all elements included and at the 0.5% ZnEq cut, at a first glance the combined resources ZnEq grade of 2.0% appears low to sustain an economically viable operation, however grade is strongly leveraged to increasing the cutoff grade, albeit with lower tonnages - for example increasing the cutoff to 1.5% ZnEq increases the grade to 2.6% ZnEq. Grades at the higher cut are similar to those of peers, however with considerably less tonnes - refer to opportunities below.
- ◆ **Low market capitalisation:** This precludes the Company from raising the cash required to undertake major work without significantly diluting shareholders - work programmes will be dictated by the cash balance, which can be non-optimal.

### Opportunities

- ◆ **Resource expansion and exploration success:** Our view is that the key to the overall Project is to increase the resources, that should also give the opportunity to identify coherent areas of mineralisation at higher cutoff grades and potentially provide the opportunity to take advantage of economies of scale - the tenement is highly prospective with several targets not adequately tested, but which have produced very encouraging results to date.
- ◆ **Geared to success:** With an EV of just over \$4 million, Mount Burgess is highly geared to any positive newsflow.

### Threats

- ◆ **Funding:** This is the key threat facing Mount Burgess - it will need to be able to raise the funds to fund the expected A\$1 to A\$2 million to cover the drilling and Feasibility costs.
- ◆ **Equities and metals markets:** Mount Burgess is highly vulnerable to negative changes in the markets.

## OVERVIEW

### STRATEGY

- ◆ The Company's focus (100% owned and sole project) is the Kihabe-Nxuu Polymetallic Pb-Zn-Ag-Cu-V-Ga-Ge Project (the Project, or "Kihabe") in North-Western Botswana (Figure 1), on which the Company has been operating since 2003, albeit with some periods of hiatus.
- ◆ The Project includes two defined resources, Kihabe (oxide, transitional and sulphide) and Nxuu (oxide only), as well as several other prospects that have seen only limited or no drilling, and which require follow up - total Pb/Zn resources defined to date include 27 Mt @ 2.0% ZnEq; in addition there is a separate gallium/germanium domain of 2.3 Mt @ 1.4 g/t Ge and 11.3 g/t Ga at Nxuu, however with gallium and germanium not estimated at Kihabe due to being assayed in only limited holes - as shown in Table 6 the mineralisation contains appreciable contained metal.
- ◆ The overall strategy is to initially develop the Nxuu oxide deposit (with its simpler metallurgy and being shallow and flat lying), and then Kihabe, whilst undertaking exploration on other targets within the 1,000 km<sup>2</sup> Licence - the Company is now looking to commence further development studies, including 2,500 m of resource upgrade drilling at Nxuu, having initially completed a Scoping Study on the Kihabe deposit in 2009.

### FINANCIAL POSITION

- ◆ As of March 31, 2023 the Company had A\$0.094 million in cash and ~A\$1.64 million in borrowings - the borrowings are from current and former Directors of the Company.
- ◆ Additional proceeds are expected from GST and R&D refunds.
- ◆ The most recent capital raising was a placement of A\$0.5 million through the issue of 100 million shares at A\$0.005/share in May, 2022.
- ◆ Over CY2022 Mount Burgess spent A\$0.279 million on capitalised exploration, and A\$0.263 million on administration and staff costs.
- ◆ It is expected that the upcoming drilling and Feasibility Study will cost in the order of A\$1 million to A\$2 million.

### CAPITAL STRUCTURE

- ◆ Mount Burgess currently has 883.2 million shares and 34.66 million unlisted options on issue - the options have an exercise price of A\$0.015, expiring on May 30, 2023.
- ◆ On 2 May 2023, MTB advised ASX that with MTB's current share price being lower than the option exercise price, it would not be sending an option expiry notice to option holders and that MTB does not have an underwriting agreement for the exercise of the options
- ◆ The top shareholder at ~13% is 1215 Capital, with company insiders holding 12.43% of the stock - this includes the founder and Executive Chairman, Mr Nigel Forrester, with 8.27% in direct and indirect holdings.

## KIHABE-NXUU POLYMETALLIC PROJECT, BOTSWANA (MOUNT BURGESS 100%)

### BACKGROUND, LOCATION AND TENURE

- ◆ Kihabe is located 350 km by formed road from Maun (population ~55,000), the capital of the North-West Province of Botswana, and also the stepping off point for the Okavango Delta, a major Southern African tourist destination - Maun is served by regular flights from various Southern African airports (Figure 1).
- ◆ On the Namibian side, the Project is some 400 km east by road from the mining towns in the Otavi Mountain Land of Northern Namibia, including Grootfontein and Tsumeb - the road west from Botswana into Namibia passes through the northern end of the Licence, with this crossing the border at the Dobe Border Post, which the Company got opened in 2003 to allow access to the Project from both sides of the border.
- ◆ The region experiences hot (average high temperature of ~32° C in Tsumkwe), moderately wet summers, with the majority of the ~450 mm of annual rainfall falling through the summer months, generally as storms; winters are dry and mild, with an average top temperature in the order of 25° C.



- ◆ Licence PL43/2016 was initially granted on January 25, 2016, and most lately was renewed in January 2023, for a further two year term ending on December 31, 2024.
- ◆ The Licence replaces the previously held PL69/2003, for which an application for an extension was rejected by the Ministry for Minerals, Energy and Water Resources (“MMEWR”) in May 2013, with this rejection being the subject of litigation against the MMEWR by the Company - this litigation was withdrawn on grant of the new Licence.
- ◆ PL43/2016 covers an area of 1,000 km<sup>2</sup>, extending 40 km N-S, and extending 25 km east from the Namibian border.

**Figure 1: Kihabe location**



Source: nationsonline.org, extracted February 1, 2023

## HISTORY - MOUNT BURGESS 2003 TO PRESENT

- ◆ Mount Burgess initially worked in the area (Licence P69/2003) from early 2003 to May 2013, at which stage the application for the renewal was revoked by the MMEWR, due to a Feasibility Study not being completed - the Company believed that it had a valid reason for the non-completion of the Study, that being the Government not delivering grid power to the site as had earlier been promised, with the provision of grid power a key aspect of any project, and required for the completion of a Feasibility Study.
- ◆ This resulted in a hiatus in activities for ~three years, until the grant of the current licence, and also cessation of litigation - at this time the Company had also largely relinquished the Namibian tenements, so there was little activity in this period except for desktop reviews.
- ◆ Prior to the initial 2003 application, Mount Burgess had been working on diamond and base metal properties over the border near Tsumkwe in Namibia where it discovered three kimberlites, however, they were not diamondiferous.
- ◆ It was the identification of the base metal prospective stratigraphy at Tsumkwe that led to the decision to peg the ground in Botswana that is a continuation of the same stratigraphy.
- ◆ Activities, including drilling, resumed in 2016, only to see another hiatus in FY21 and FY22 due to COVID.
- ◆ Work subsequent to COVID has included further drilling, and upgraded MREs for the Kihabe and Nxuu deposits.

- ◆ Activities prior to 2013 included:
  - Soil and auger geochemical sampling,
  - Induced polarisation (“IP”) geophysical surveying,
  - Drilling, largely at Kihabe and Nxuu, and including limited drilling at the “Gossan” prospect,
  - Estimation of MREs for Kihabe and Nxuu,
  - Metallurgical testwork on both deposits,
  - Scoping Study on the Kihabe deposit; and,
  - Preparations for commencement of a DFS, which was not furthered due to the power issues as mentioned above.
- ◆ During the period 2013 to 2016 activities were concentrated on efforts to get the Licence reinstated, including litigation.
- ◆ Following the 2016 grant of the new Licence, the Company again commenced field activities:
  - Further drilling, initially on regional targets,
  - HQ drilling at Kihabe, to enable assaying for V/Ge/Ga, not previously conducted and the upgrade of the JORC 2004-compliant MRE to JORC 2012, as well as upgrading areas of the deposit to Indicated,
  - Resource upgrade drilling at Nxuu,
  - Further metallurgical test work; and,
  - Upgraded MRE for Kihabe (August 2022) and Nxuu (November 2022).
- ◆ Following the grant of the current Licence, the Company refreshed the Board to work towards developing the Project, and also adopted a three pronged strategy of exploration, resource expansion and undertaking a Feasibility Study.
- ◆ More recent work has included assessing the vanadium, germanium and gallium tenor of the resources where not already done, and exploration prospects.

## Mineral Resource Estimates

- ◆ The latest MREs and total contained metal for the Project are presented in Tables 1 to 6 below - this sets the background for the discussions on geology and metallurgy below.
- ◆ In addition Table 6 presents the considerable metal content of the +0.5% ZnEq resource
- ◆ **The overall Resource at a cut off of 0.5% ZnEq, not including Cu/Ge/Ga for Kihabe, is 27 Mt @ 2.0% ZnEq including 1.41% Zn, 0.7% Pb, 7.5 g/t Ag and 0.2% V<sub>2</sub>O<sub>5</sub>.**
- ◆ However, the resources are reasonably well leveraged to changes in the lower cut off grades, as shown in Table 2 (Kihabe) and Table 4 (Nxuu).
- ◆ Of importance to any future mining operation is the amount of oxide/transitional material at different cutoffs - all of the Nxuu resource is oxide at all cutoffs, and at Kihabe what has been characterised as transitional material has been shown to have a metallurgical response to that of oxide, and thus could be included in the resources as such.

**Table 1: Combined Kihabe and Nxuu JORC 2012-Compliant Mineral Resource Summary at different cutoff grades**

Kihabe JORC 2012-Compliant Mineral Resource Summary at different cutoff grades						
Low cut - ZnEq	Tonnage	ZnEq*	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	%	g/t	%
0.5%	27.0	2.0	1.4	0.7	7.5	0.02
1.0%	22.6	2.2	1.6	0.8	8.4	0.02
1.5%	16.4	2.6	1.9	0.9	9.8	0.03

Source: Mount Burgess

**Table 2: Kihabe JORC 2012-Compliant Mineral Resource Summary at different cutoff grades**

Kihabe JORC 2012-Compliant Mineral Resource Summary at different cutoff grades						
Low cut - ZnEq	Tonnage	ZnEq*	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	%	g/t	%
0.5%	21.0	2.0	1.5	0.7	8.1	0.01
1.0%	18.4	2.2	1.7	0.8	8.8	0.0
1.5%	13.6	2.6	1.9	0.9	10.1	0.02

Source: Mount Burgess



**Table 3: Kihabe JORC 2012-Compliant Mineral Resource Estimate - 0.5% ZnEq cut-off grade**

Kihabe JORC 2012-Compliant Mineral Resource Estimate - 0.5% ZnEq cut-off grade						
Indicated Mineral Resource						
Type	Tonnage	ZnEq*	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	%	g/t	%
Oxide	1.1	1.6	0.9	0.8	8.8	0.04
Transitional	3.1	1.8	1.4	0.7	9	0.01
Fresh	7.5	2.1	1.6	0.8	8.9	0.01
Total	11.7	2	1.5	0.7	8.9	0.01
Inferred Mineral Resource						
Type	Tonnage	ZnEq*	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	%	g/t	%
Oxide	0.8	1.4	0.9	0.6	6	0.04
Transitional	1.9	1.7	1.3	0.6	5.4	0.02
Fresh	6.6	2.3	1.7	0.8	7.7	0.01
Total	9.3	2.1	1.6	0.7	7.1	0.02
Total Mineral Resource						
Type	Tonnage	ZnEq*	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>
	Mt	%	%	%	g/t	%
Oxide	1.9	1.5	0.9	0.7	7.7	0.04
Transitional	5.0	1.8	1.4	0.6	7.6	0.01
Fresh	14.1	2.2	1.7	0.8	8.3	0.01
Total	21.0	2	1.5	0.7	8.1	0.01

Source: Mount Burgess

**Table 4: Nxuu JORC 2012-Compliant Mineral Resource Summary at different cut-off grades**

Nxuu JORC 2012-Compliant Mineral Resource Summary at different cutoff grades								
Domain	Tonnage	ZnEq	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>	Ge	Ga
Cutoff ZnEq%	Mt	%	%	%	g/t	%	g/t	g/t
0.5%	6.0	1.8	1.1	0.5	5.4	0.04	2.7	10.2
1.0%	4.2	2.2	1.3	0.7	6.8	0.05	3.1	10.3
1.5%	2.8	2.7	1.7	0.9	8.3	0.05	3.5	10.3

**Table 5: Nxuu JORC 2012-Compliant Mineral Resource Estimate - 0.5% ZnEq cut-off grade**

Nxuu JORC 2012-Compliant Mineral Resource Estimate - 0.5% ZnEq cut-off grade								
Indicated Mineral Resource								
Domain	Tonnage	ZnEq	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>	Ge	Ga
	Mt	%	%	%	g/t	%	g/t	g/t
Base Metal	2.7	2.3	1.4	0.7	7.2	0.04	3.1	10.4
Total	2.7	2.3	1.4	0.7	7.2	0.04	3.1	10.4
Inferred Mineral Resource								
Domain	Tonnage	ZnEq	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>	Ge	Ga
	Mt	%	%	%	g/t	%	g/t	g/t
Base Metal	2.9	1.4	0.9	0.4	4	0.03	2.3	10.3
Vanadium	0.4	1.5	0.3	0.5	3.7	0.15	2.6	8.7
Total	3.2	1.4	0.8	0.4	3.9	0.04	2.3	10.1
Total Mineral Resource								
Domain	Tonnage	ZnEq	Zn	Pb	Ag	V <sub>2</sub> O <sub>5</sub>	Ge	Ga
	Mt	%	%	%	g/t	%	g/t	g/t
Base Metal	5.6	1.8	1.1	0.5	5.5	0.04	2.7	10.3
Vanadium	0.4	1.5	0.3	0.5	3.7	0.15	2.6	8.7
Total	6.0	1.8	1.1	0.5	5.4	0.04	2.7	10.2

Ga-Ge Domain Inferred Mineral Resource					
Domain	Tonnage	Ge	Ga	Ge	Ga
	Mt	g/t	g/t	kg	kg
Peripheral	2.3	1.4	11.3	3,200	25,500

Source: Mount Burgess

**Table 6: Total contained metal - 0.5% ZnEq Cutoff**

Total contained metal			
Metal	Kihabe	Nxuu	Total
Zinc	322,000 t	64,000 t	386,000 t
Lead	154,000 t	32,000 t	186,000 t
Silver	5,500,000 ozs	1,040,000 ozs	6,540,000 ozs
Vanadium Pentoxide	9,000 t	2,600 t	11,600 t
Germanium	Not included	19,200 kg	19,200 kg
Gallium	Not included	86,500 kg	86,500 kg

Source: Mount Burgess

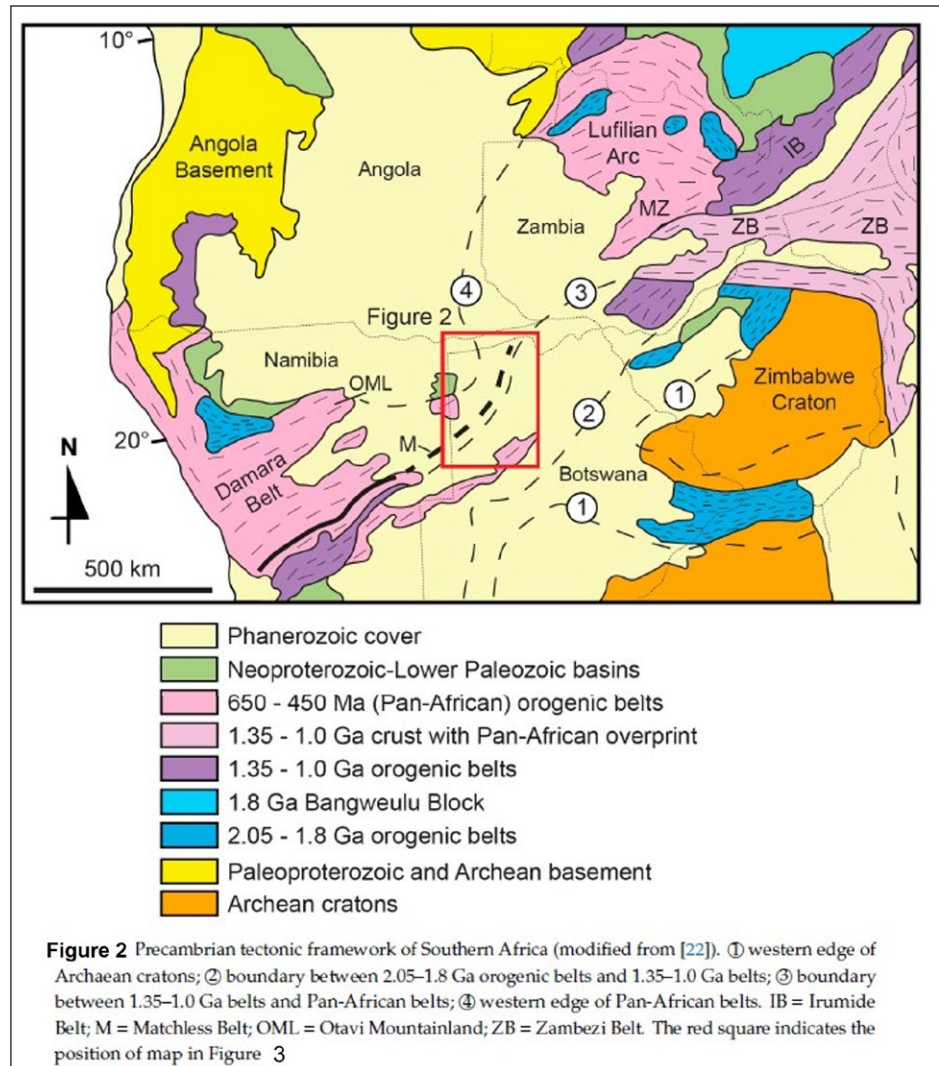
- ◆ Note that gallium and germanium have only been assayed in 18 of the 150 holes (111 RC and 39 diamond core) used in the Kihabe MRE, and thus have not been estimated; the Nxuu MRE has used gallium and germanium assays from 60 diamond and 10 RC drillholes.
- ◆ However, at Kihabe, the 18 holes assayed have averaged 12 g/t gallium in 1,368.25 m of the 2,197.35 m (62.3%) drilled in these holes, which go to the base of mineralisation.
- ◆ Also, 0.2% copper has been intersected over a total length of 318.5 m in 25 holes drilled in the NE sector of Kihabe; likewise this has not been included in the estimation.
- ◆ These provide upside in the Kihabe MRE; there is also the potential for some of the transitional resources at Kihabe to be mined and treated along with the oxide material thus effectively increasing the oxide resources.

## GEOLOGY AND MINERALISATION

### Geology

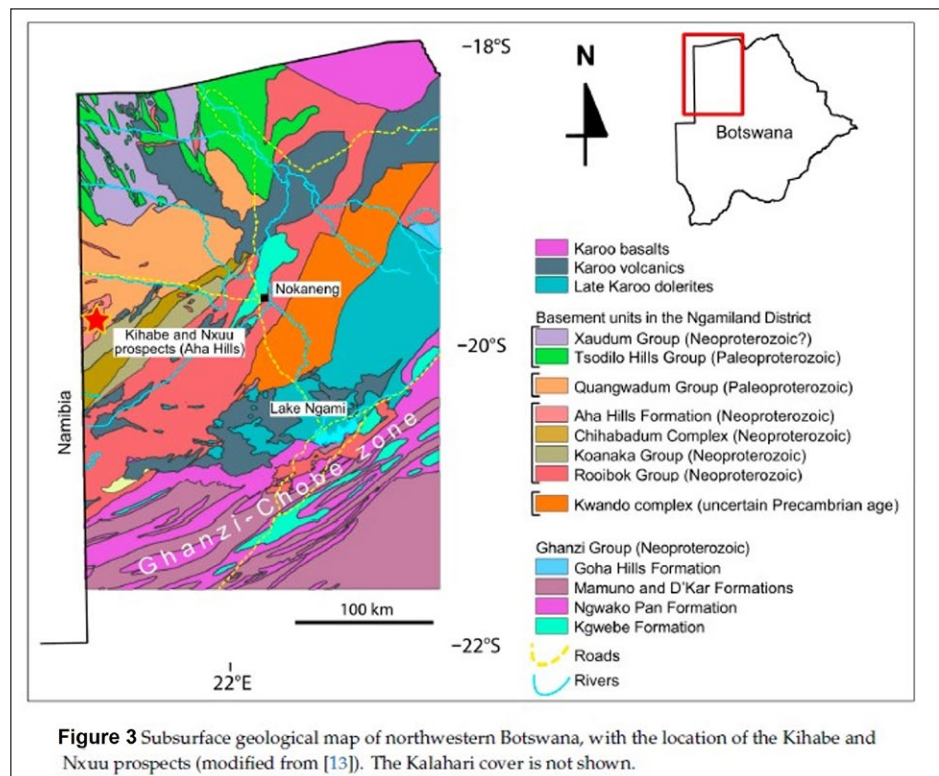
- ◆ A comprehensive description of the geology and mineralisation is presented in a paper by Mondillo et al, published in Minerals 2020, 10 (8) - this is freely available online, together with an updated version released on the Company's website on 14 April, 2023.
- ◆ This has formed the basis for this section.
- ◆ The Project is located over deformed Paleoproterozoic to Neoproterozoic rocks of the Damara Belt, one of several Pan-African orogenic belts that resulted from the break-up of the super-continent of Rodinia, and the subsequent formation of Gondwana.
- ◆ The Damara Belt extends eastward from the Namibian coast, through Namibia and Northern Botswana, and then into Zambia where it is contiguous with the Zambian Belt (Figure 2) - these Pan-African belts are well mineralised terranes.
- ◆ In Western Botswana, basement is expressed as Paleoproterozoic gneisses and granitoids of the Quangwadum Group (Figure 3), which are unconformably overlain by dolomites and clastic sediments of the Aha Hills Formation - the former is considered analogous with the Grootfontein Complex in the Otavi Mountain Land of Namibia, with the latter considered a correlative of the Otavi Group, the host of world class polymetallic deposits, including Tsumeb and Berg Aukus in Namibia.
- ◆ Both chemical (the dolostone) and clastic sediments are interpreted as forming on the northern platform margin of a rift within the ancient continent of Rodinia, with rifting initiated at ~580 - 550 Ma through the suturing of the Congo-Sao Francisco and Rio de Plata Cratons - this was followed by inversion commencing at ~530 Ma during the Damara Orogeny.
- ◆ The inversion has resulted in tight to isoclinal, ENE trending folds - this is shown in Figure 4 as well as being expressed in the soil geochemistry (Figure 7) - the Aha Hills Formation geology is also recognisable from different vegetation over the different units, which can be interpreted from Google Earth images (Figure 14).
- ◆ The Project area largely includes the Quangwadum Group and Aha Hills Formation, covered by significant areas of Kalahari Sands; the sands range between 2 m and 18 m in thickness over the Kihabe and Nxuu deposits, with an average of ~7.5 m.

Figure 2: Geological framework



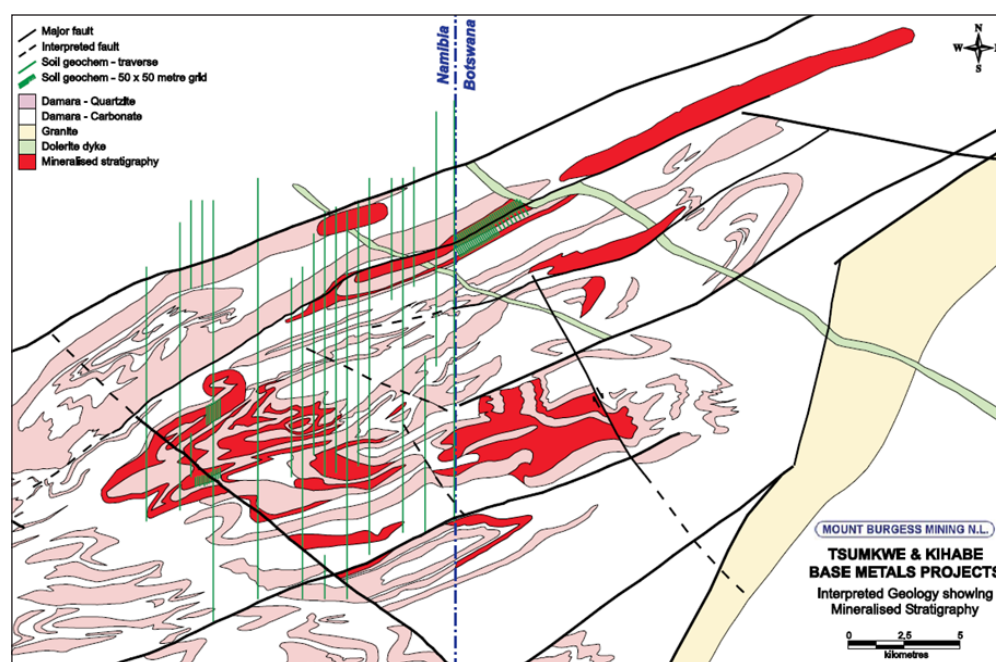
Source: Mondillo et al, 2020

Figure 3: Regional geology



Source: Mondillo et al, 2020

Figure 4: Interpreted stratigraphy and mineralised zones



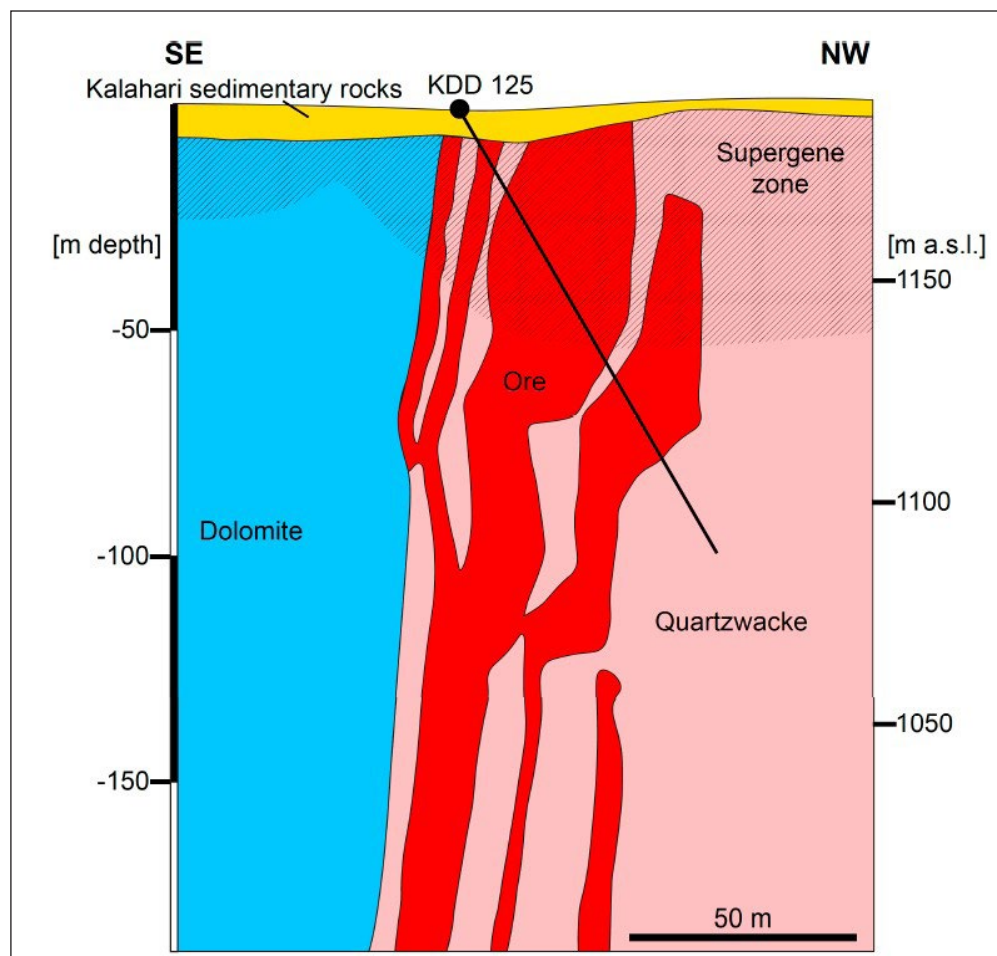
Source: Mount Burgess

## Mineralisation

- ◆ Mineralisation at Kihabe and Nxuu (and for that matter in the other defined prospects) is hosted in the coarser and more permeable basal units of the Aha Hills quartzite, stratigraphically immediately above the footwall dolomite (Figures 4 and 5).
- ◆ This is different to that for the OML deposits, which are largely hosted in the dolomites, and have been interpreted as being more akin to Mississippi Valley Type (“MVT”) deposits, however the suite of metals is similar.
- ◆ Three possible stages of mineralisation have been recognised (Figure 6):
  - Initial sulphide SEDEX mineralisation, interpreted as being due to deposition from sulphate and metal bearing basal brines during dewatering at the early stages of basin closure or basin compression during sag phase sedimentation - transport and deposition site may include both the more permeable clastic sediments, and structure,
  - Later hydrothermal remobilisation and redeposition of the primary sulphide mineralisation during later stages of the Damara Orogeny; and,
  - Weathering and supergene enrichment (which also introduced the vanadium).
- ◆ Each phase has resulted in separate groups of minerals, with a possible paragenesis presented in Figure 6 - the mineral assemblages are important with regards to metallurgy.
- ◆ Alteration styles include silicification and clay, with the primary sulphide mineralisation being largely restricted to the coarser beds within the clastic sediments, with these dominant at the base of the sedimentary pile.
- ◆ The main primary minerals include sphalerite (Zn) and galena (lead and silver), however with the Zn bearing silicates Willemite ( $Zn_2SiO_4$ ) and baileychlore (a Zn-bearing chlorite) being significant alteration minerals, and the presence being important as regards metallurgy,
- ◆ Oxide ore minerals include smithsonite ( $ZnCO_3$ ) and cerussite ( $PbCO_3$ ) amongst others, with descloizite being the dominant vanadium bearing species (Figure 6).
- ◆ More recently the Company has been assessing the gallium and germanium contents of Kihabe and the earlier stage prospects (these have been estimated for Nxuu, and are hosted in micas) - as for vanadium, these metals are also found in the Namibian OML deposits.
- ◆ The minor elements, namely Ga, Ge and V provide potential material value add to the mineralisation, however this will be dependent upon metallurgical recoveries (discussed later).
- ◆ In addition to Kihabe and Nxuu, Mount Burgess, largely through geochemical sampling, has identified several other prospects, some of which have received some drilling, but all of which required further work (Figures 7, 14 and 15).

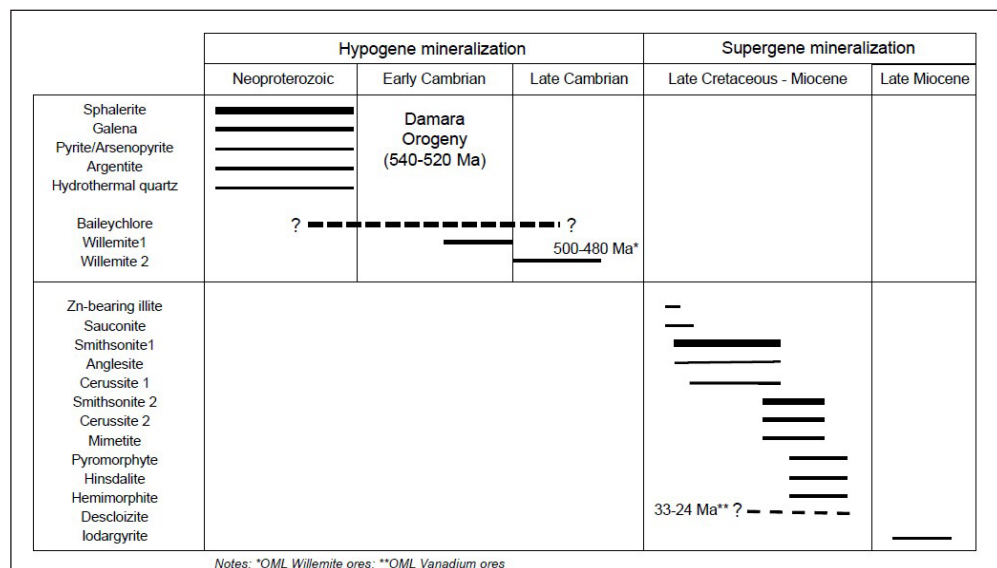


Figure 5: Indicative cross section - Kihabe



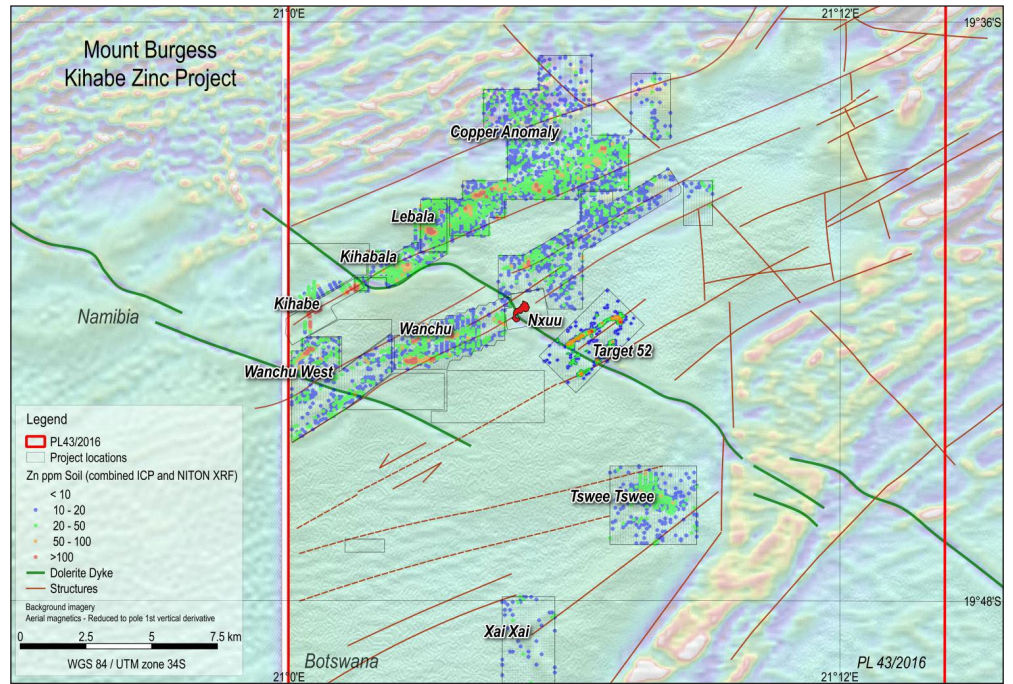
Source: Mondillo et al, 2020

Figure 6: Interpreted paragenesis



Source: Mondillo et al, 2020

Figure 7: Soil geochemistry and key prospects on magnetics image

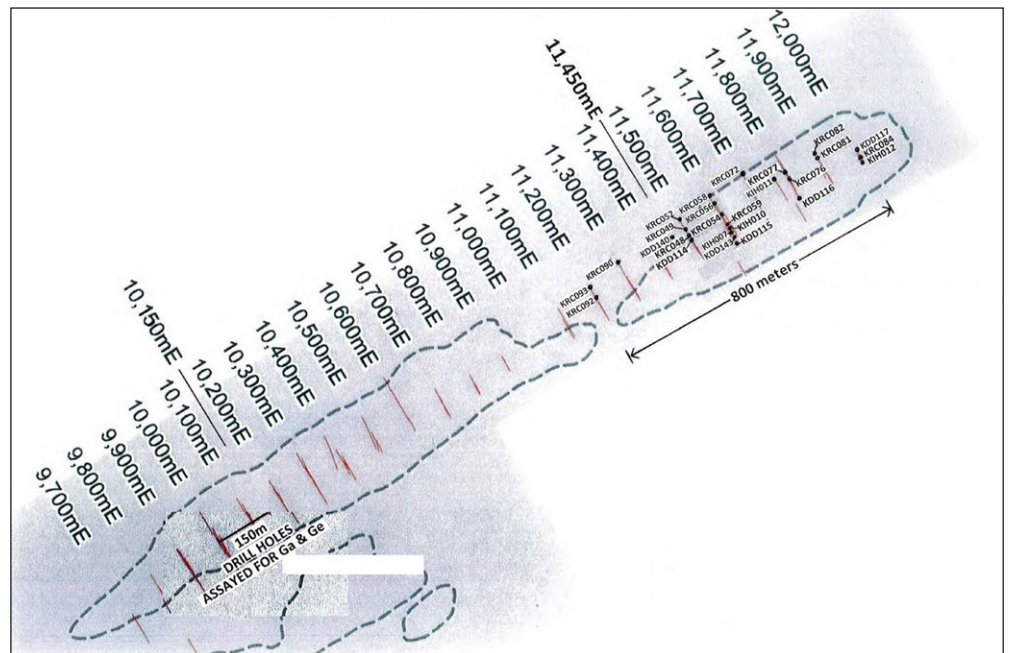


Source: Mondillo et al, 2020

**Kihabe Deposit**

- ◆ The mineralisation at Kihabe occurs along the sub-vertical limb of an ENE trending west-plunging syncline, with this extending along strike for ~2,400 m (Figure 8, and bounded on the west by the Namibian border).

Figure 8: Extent of Kihabe mineralisation



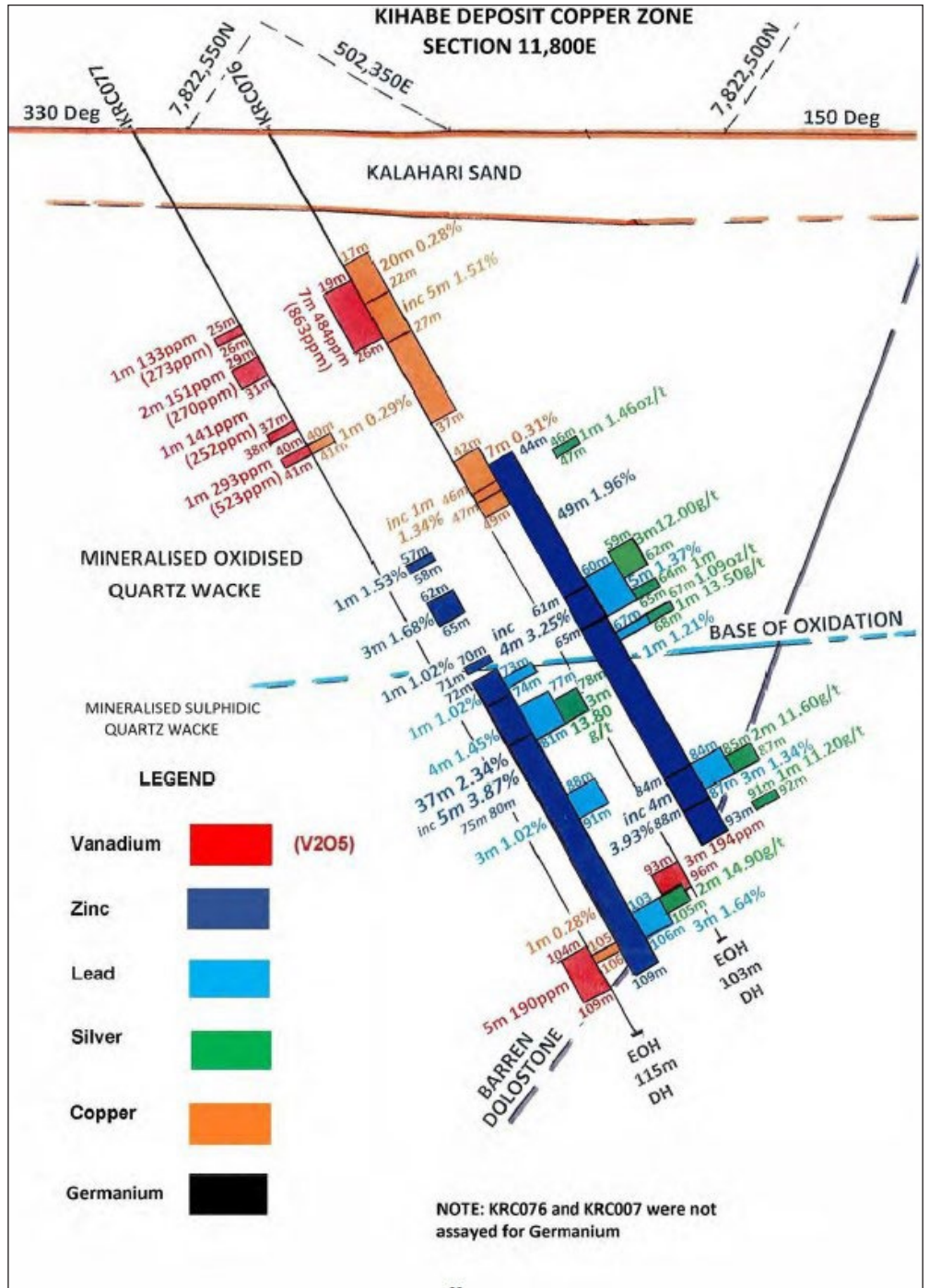
Source: Mount Burgess

- ◆ The mineralisation occurs in a series of stacked lenses within the quartz wacke (the dolostone is barren) with an average aggregate width of 27 m, however with some areas up to 60 m wide; mineralisation has been drilled down to 175 m depth, and is open below this (Figure 5).
- ◆ The deposit is covered by an average of 7.5 m of Kalahari sands, and is generally oxidised to a depth of up to 100 m, and averaging ~50 m, resulting in the oxide mineralisation.
- ◆ The deposit, in addition to primary, alteration halo, transitional and oxidised zones, also contains a more copper rich zone at the NE end (Figure 8) - the copper largely exists as a separate lens, as shown in Figure 9.



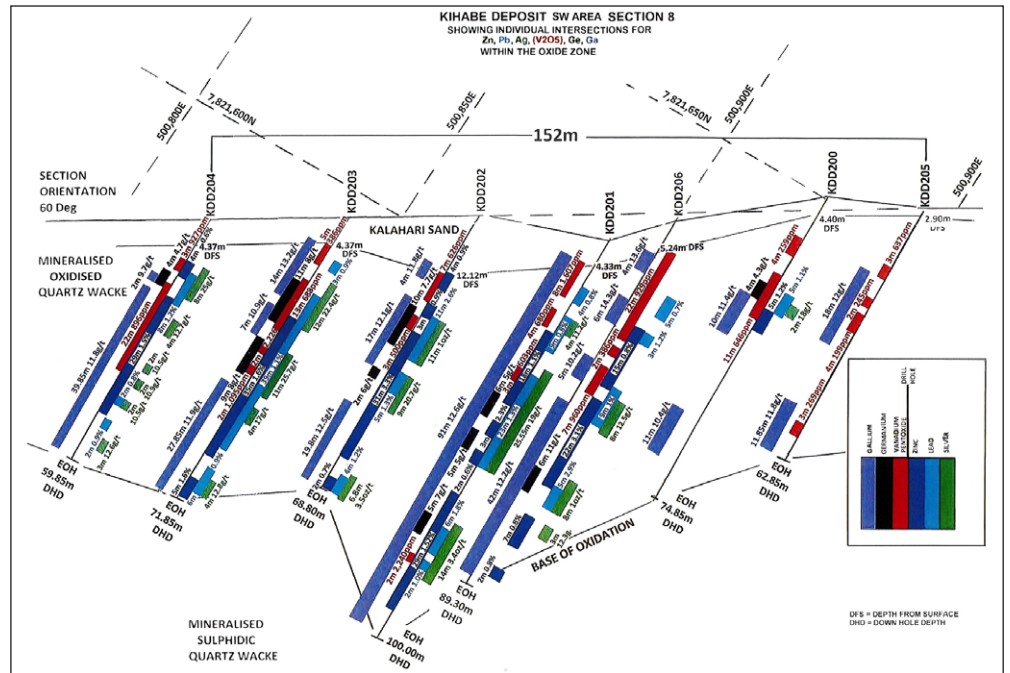
- ◆ Although on a broad scale mineralisation is fairly continuous through the deposit, Figures 9 to 11 highlight the variability within individual drillholes, and, referring to Table 2, between the various weathering zones - zinc, as expected being relatively mobile, is of a slightly lower grade in the oxide, whereas vanadium, being introduced during weathering, is enriched in the oxide mineralisation.

Figure 9: Copper Zone Section 11800 mE, looking to 030°



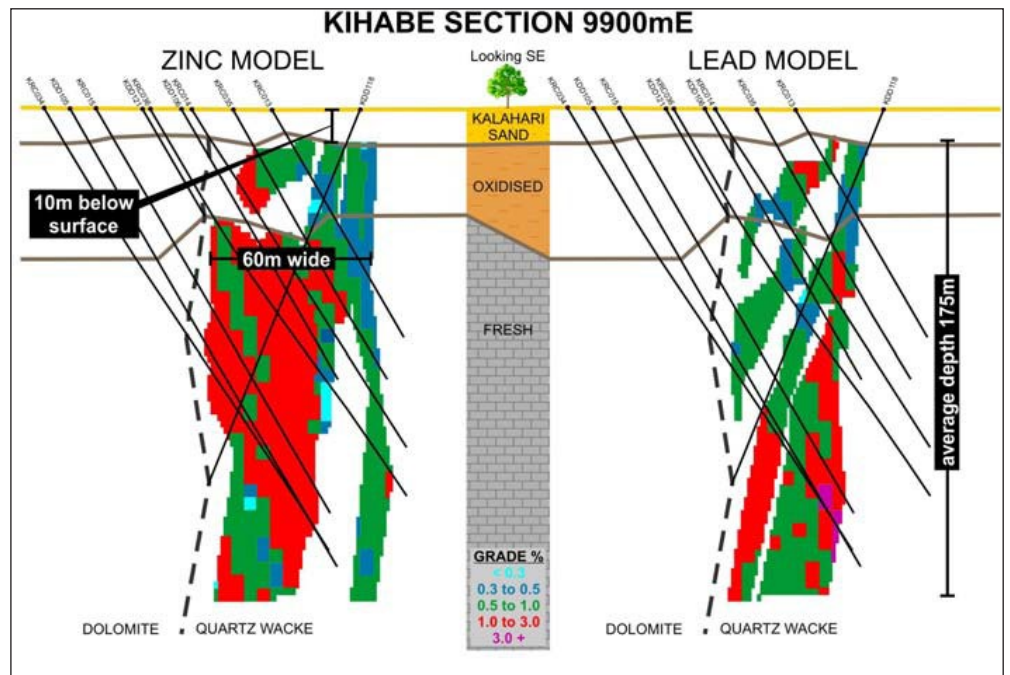
Source: Mount Burgess

Figure 10: Zone 1 Section 11200 mE, looking to 030°



Source: Mount Burgess

Figure 11: Zone 1 Section 9900 mE, looking to 030° - 2011 MRE



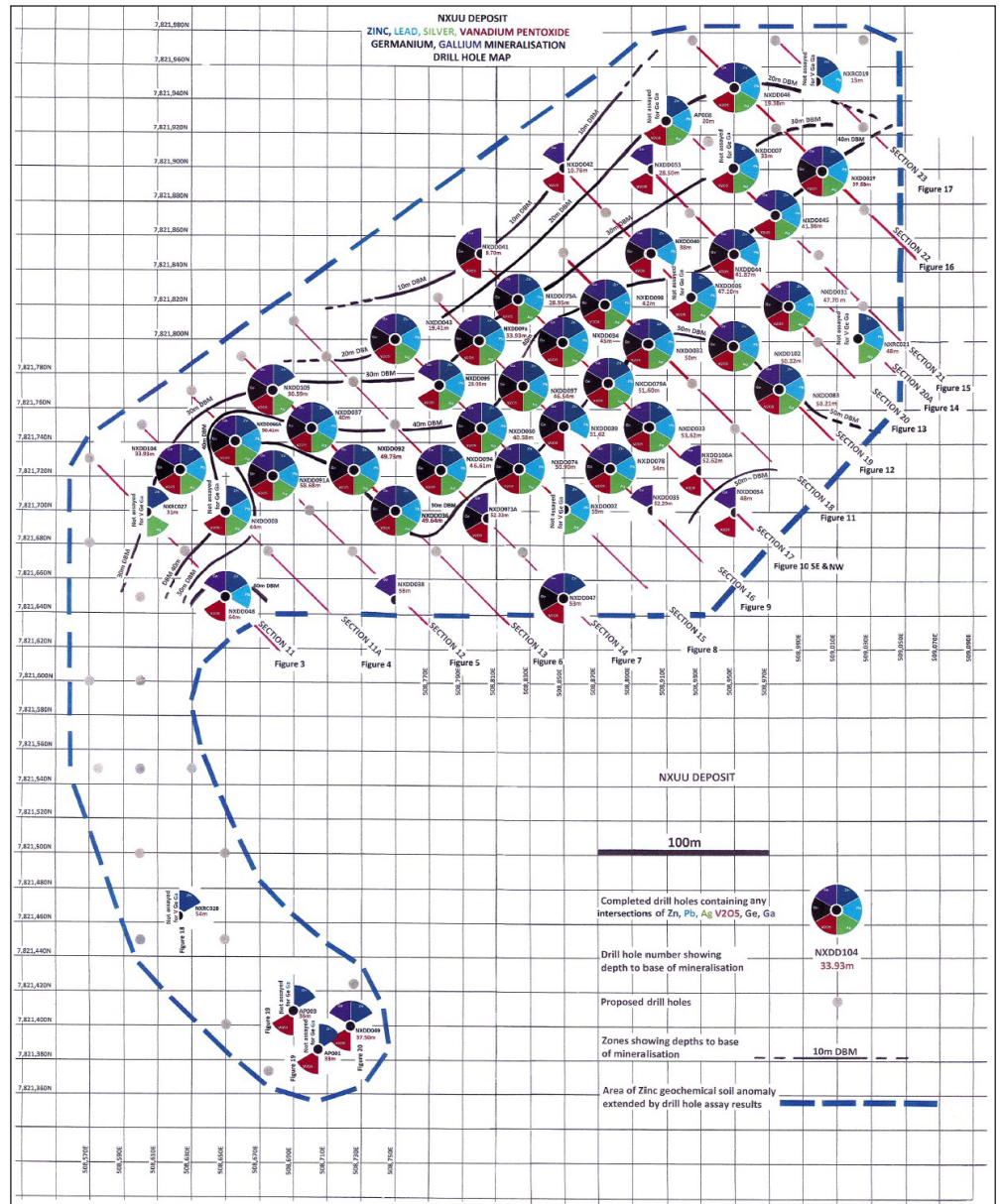
Source: Mount Burgess

**Nxuu Deposit**

- ◆ The Nxuu deposit is located some seven km east of Kihabe (Figure 7), and forms a shallow oxide blanket with the NW and NE zones extending over an area of some 550 m x 250 m, and located in a shallow basal syncline - the base of the main body of mineralisation, being the quartz wacke/dolostone contact, dips at ~10° to the SE, with the base of mineralisation ranging from ~10 m in the north to ~60 m in the south, averaging 42.44 m per hole to the base of mineralisation (Figures 12 and 13).
- ◆ All of the mineralisation is oxidised, with separate mineral domains evident, particularly in vanadium, as well as germanium/gallium.
- ◆ Mineralisation is still open down dip, however some pinching and swelling is also evident.
- ◆ The morphology of the deposit, being flat lying and shallow, makes it an ideal, very low strip ratio mining proposition; in addition the mineralisation is reasonably soft due to a high degree of weathering, and is not expected to require drill and blast for mining.

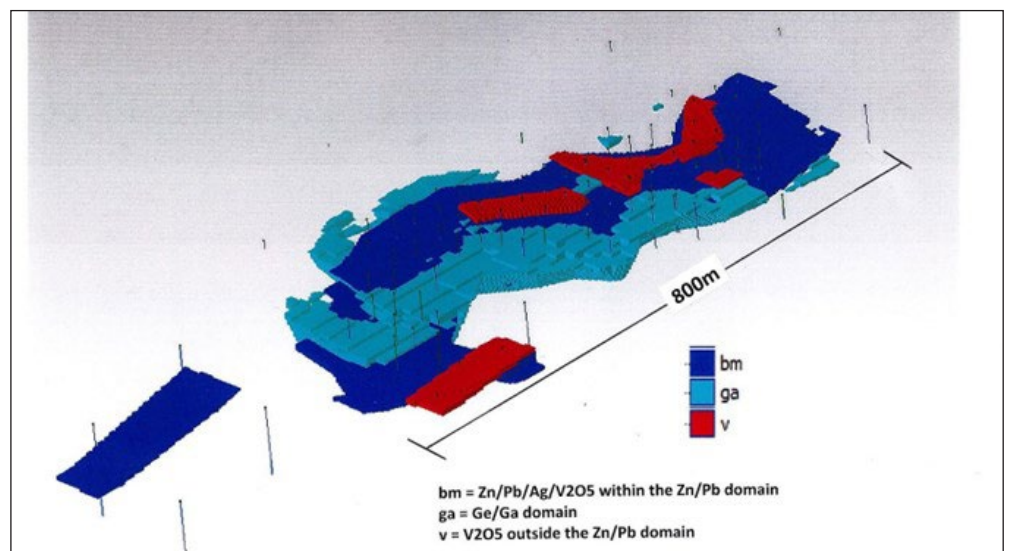


Figure 12: Nxuu drill plan and deposit extents



Source: Mount Burgess

Figure 13: Nxuu drill plan and deposit extents

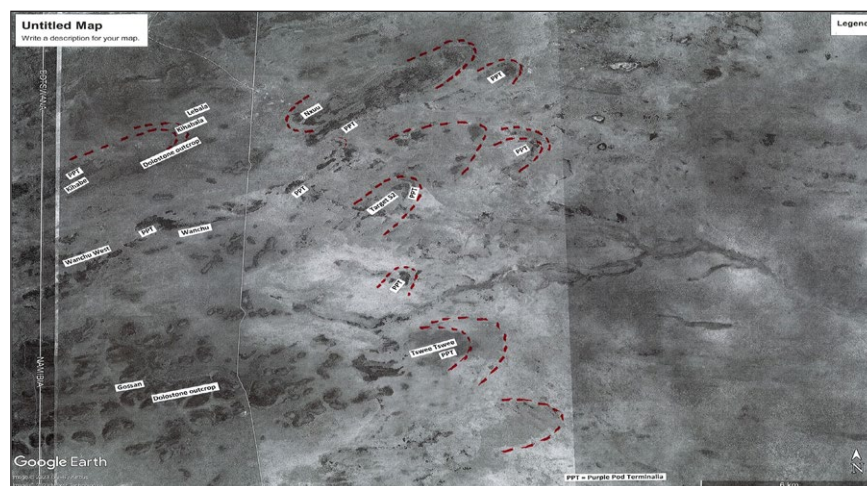


Source: Mount Burgess

## Other Prospects

- ◆ Exploration, including geochemical sampling and geological interpretations have identified several other prospects, with the most prospective areas being the quartz wacke immediately above the dolostone, but more importantly fold closures, where there is the potential for mineralisation to be thickened and upgraded during deformation.
- ◆ In addition to the geochemical targets (Figure 7), several geological targets have been identified as shown in Figure 14, with fold closures also being marked by purple-pod terminalia (or purple pod cluster leaf "Terminalia prunoides"), a geo-botanical indicator.

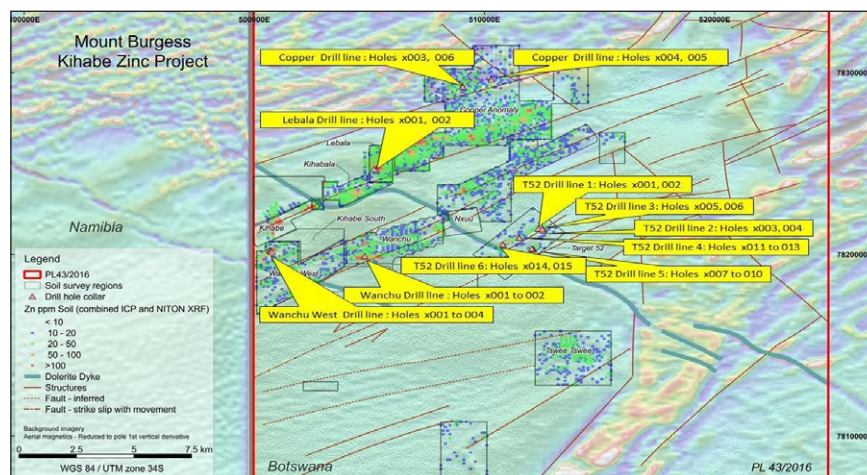
Figure 14: Regional targets on Google Earth image



Source: Mount Burgess

- ◆ Only limited drilling has been undertaken on these other prospects, with generally mixed, but encouraging results - the most recent was in FY2017, with 27 holes for 1640 m drilled over several targets (Figure 15).
- ◆ The best results came from Target 52 (Figure 15), with several intervals, up to eight metres, of up to 2% Zn + Pb being intersected.
- ◆ The drilling was widely spaced, and given that such mineralisation can rapidly pinch and swell, these drilling results, along with surface geochemistry and the interpreted geology, highlight the potential targets outside of Kihabe and Nxuu to deliver potentially economic mineralisation.
- ◆ Prior to the 2013 hiatus, some drilling (three RC and five diamond holes) was carried out at the Gossan prospect, with this intersecting narrow zones of high grade (up to ~10% Zn + Pb) vein style mineralisation.
- ◆ More recently the Company has re-assayed selected holes in these targets for gallium - this has returned up to 72 m @ 11.5 g/t Ga at Target 52.
- ◆ As mentioned earlier, the regional targets remain either untested or only lightly tested, with further drilling required - dependent upon the results these have the potential to add significantly to the overall project inventory.

Figure 15: Regional drilling



Source: Mount Burgess



## METAL TENOR AND METALLURGY

- ◆ Given what would normally be considered low grades for economic viability for the metals initially explored for when seen as a zinc, lead and silver project, the tenor of the potential co-products, namely vanadium, gallium and germanium may be required to support the economics of any development.
- ◆ Recent mineralogical test work has shown that all vanadium is hosted in the oxide mineral descloizite - metallurgical test work has shown that 82%  $V_2O_5$  can be recovered on site through gravity separation, subjecting the tail to flotation using hydroximate acid for recovery. This confirms that  $V_2O_5$  will be able to support the economics of the project.
- ◆ This includes the 5,000 tonnes of vanadium pentoxide included within the Kihabe fresh resource - this is within a narrow, sub-vertical oxidised zone at the boundary between the mineralised quartz wacke and barren dolostone, with the contact acting as an aquifer which has led to the oxidation.
- ◆ Gallium and germanium are within micas and as such can be recovered by flotation to produce a mica concentrate with a high recovery of gallium/germanium to the concentrate - test work is currently being conducted to determine if gallium and germanium can be recovered on site and what contribution they could have to the project.
- ◆ If gallium and germanium can be recovered on site, they will contribute by way of adding value and by way of significantly reducing stripping ratios, to the extent of likely being less than 1 : 1 - this will depend upon the recoveries and incremental cost of treatment.
- ◆ Our view is, these need to contribute as co-products or by-products to enhance the commerciality of the project.
- ◆ The in-ground metal content of the two deposits is shown previously in Table 6, noting that germanium and gallium are yet to be included in the Kihabe MRE, and vanadium is enriched in the oxide.
- ◆ Using current prices,  $V_2O_5$ , Ga and Ge make-up around 30% (with Ga and Ge making up 15%) of the value of the metals (before metallurgical factors are taken into account) at Nxuu.
- ◆ The inclusion of gallium and germanium at Kihabe therefore may add ~15% to the Zn equivalent grade should the tenor be similar to that at Nxuu, and importantly, it can be recovered - refer to Figure 10 to see an example of the potential contributions from gallium and germanium.
- ◆ In addition, similar grades have been assayed from some regional targets.
- ◆ Using long term pricing, we get metal values of between US\$60 - US\$75 per tonne of mineralisation for the various styles, equivalent to the in-ground value of ~1 g/t Au - this generally includes Pb-Zn-Ag- $V_2O_5$ -Ge-Ga, however does not take account of Ge, Ga or Cu for the Kihabe deposit or metallurgical factors for both the Kihabe and Nxuu deposits.
- ◆ Taking into account metallurgical recoveries (and discounting Ga and Ge for which no metallurgy has been completed), the recovered value is in the order of US\$35 - \$US65/tonne of mineralisation - the lower value is for Nxuu - this does not include lead being recovered in addition to the discounting of Ga and Ge. However lead (in the form of cerussite) will be recovered by gravity and flotation (sulphidisation) and addressed in future metallurgical test work.
- ◆ These recovered values also do not take into account transport costs and payability where concentrates, particularly from any future sulphide production at Kihabe, are produced and sold.
- ◆ Following on from the metal tenor is the metallurgy, of which the Company has done a fair amount of test work, both in comminution and extraction, with the results of the main phase of test work completed to date being presented in Table 7 - this has been done on zinc, lead and silver.
- ◆ No mineralogical or metallurgical-recovery test work has yet been reported for gallium and germanium, known to be hosted in micas which can produce high percentile concentrates through flotation.
- ◆ The test work thus far reported for vanadium has confirmed that it is hosted in the oxide mineral descloizite, in which the molecular weight of vanadium pentoxide is 1.785 times that of elemental vanadium. The descloizite can be subject to gravity separation, followed by flotation using hydroximate, yielding 82% recovery of vanadium pentoxide to a concentrate on site.

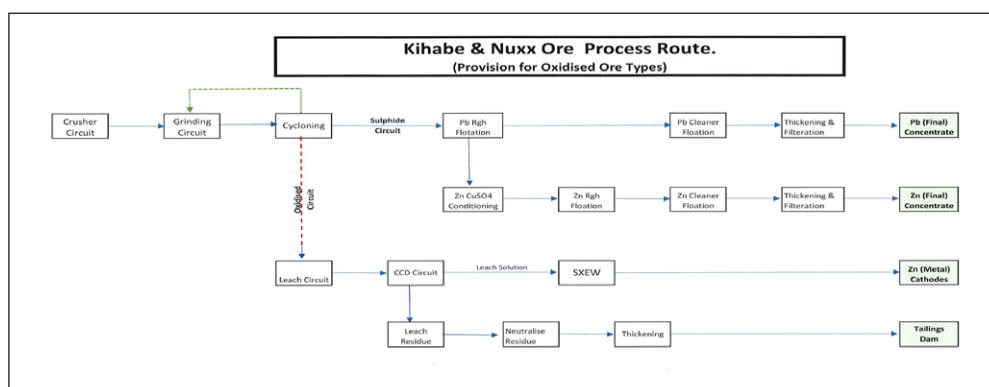
- ◆ Figure 16 shows indicative metallurgical flowsheets for a mixed sulphide/oxide Zn/Pb/Ag operation for the Kihabe and Nxuu deposits - as mentioned previously current plans are to commence production at the totally oxidised Nxuu deposit.

**Table 7 Metallurgical performance**

Metallurgical performance					
	Zone	Time	Zinc	Lead	Silver
<b>KIHABE DEPOSIT</b>					
Rougher float	Sulphide	90 seconds	91.90%	84.80%	94%
	Sulphide	15.5 mins	93.80%	88.10%	96.40%
Rougher float tails					
Acid leaching @ 25°C, 34.7 kg/t H <sub>2</sub> SO <sub>4</sub>	Tails	16 hours	67.5%	1.0%	N/A
Acid leaching @ 40°C, 32.6 kg/t H <sub>2</sub> SO <sub>4</sub>	Tails	16 hours	89.4%	1.5%	N/A
Tails feed grade			1.00%	0.10%	
<b>NXUU DEPOSIT</b>					
Acid leaching @ 25°C, 29.2 kg/t H <sub>2</sub> SO <sub>4</sub>	Oxide	12 hours	93%	0.10%	N/A
Acid leaching @ 40°C, 31.6 kg/t H <sub>2</sub> SO <sub>4</sub>	Oxide	12 hours	93%	0.10%	N/A
Head grade			2.22%	0.90%	

Source: Mount Burgess - \* Note: Zn mineralisation in the oxide zones is hosted in smithsonite (Nxuu) and baileychlore (Kihabe) - independent testwork has confirmed that both are amenable to acid leaching.

**Figure 16: Indicative flowsheets - oxide and sulphide**



Source: Mount Burgess

- ◆ Test work to date has shown that at Nxuu, on-site metal recoveries include 93% zinc through solvent extraction and electro-winning (SX/EW), 82% vanadium pentoxide through gravity separation, subjecting the tail to flotation using hydroximate acid for recovery, 84% silver has shown to be recoverable in similar deposits.
- ◆ As mentioned earlier, upcoming work will look at the potential to extract lead from a cerussite concentrate.
- ◆ This work to date has demonstrated good recoveries to date, and which will be required for the success of any commercially viable operation.
- ◆ Test work is currently being conducted to determine on-site recovery of gallium and germanium hosted in micas which normally generate high percentage float concentrates.
- ◆ The main oxide minerals include cerussite (lead) in the Nxuu Deposit, smithsonite (zinc) in the Nxuu Deposit, baileychlore (zinc) in the Kihabe Deposit and descloizite (vanadium/vanadium pentoxide) in both the Nxuu and Kihabe Deposits.
- ◆ Metallurgical and comminution test work has included:
  - Flotation test work on the fresh sulphide material to extract zinc, lead and silver concentrates from the Kihabe deposit,



- Acid leaching then SX/EW on oxide material to produce zinc cathode on site from both the Kihabe and Nxuu Deposits - this is proven technology that has been applied in industry, for example at the Skorpion Zinc operation in Namibia; and,
- Vertical milling test work on oxide material from the Nxuu Deposit, which showed that the capital cost, operating power costs and milling time can be reduced by in excess of 50%, compared to using conventional Ball/SAG/ROD mills - this has been undertaken in conjunction with South African company EDS.
- ◆ It needs to be noted that acid leaching of oxide zinc minerals is a proven technology and being applied in operations, including at the Skorpion mine in SW Namibia.
- ◆ Work on the Kihabe sulphide mineralisation has shown that at a grind size of 74 microns, rougher float lead concentrate recoveries amount to 88.1% over 15.5 minutes. Zinc recoveries amount to 93.8%. Subsequent leaching of the oxide portions within the sulphide ore takes the overall zinc recoveries to 97.01%.
- ◆ Metallurgical test-work is ongoing, and will be a key part of the upcoming Feasibility Study.

## DEVELOPMENT PLANS/STUDIES

- ◆ Whereas the Company initially completed a Scoping Study on the Kihabe deposit prior to the 2013 hiatus, it now intends to conduct a Feasibility Study to commence production at the totally oxidised Nxuu deposit, which has several mining and processing advantages.
- ◆ These advantages, that could result in a relatively low operating cost operation if viable, include:
  - Shallow, and amenable to low strip ratio open cut mining and amenable to ripping only,
  - Low carbonate content (other than the ore minerals) in the quartz wackes, which results in relatively low acid consumption, and hence lower operating costs - reagents are a one of the major operating cost centres in metallurgy; and,
  - Ambient temperature leaching is possible, which again could help in lowering operating costs though not requiring power to heat the reagents.
- ◆ One of the key infrastructure elements is power - in addition to looking at grid power, the Company is considering a solar/hybrid facility.

## UPCOMING ACTIVITIES

- ◆ Ongoing activities will now concentrate on conducting a further estimated 2,500 m of HQ diamond core drilling at the Nxuu Deposit, to then be able to quote a Measured/Indicated Mineral Resource Estimate compliant with the 2012 JORC Code.
- ◆ From thereon the Company will conduct a Pre- Feasibility Study, leading to a Definitive Feasibility Study, with the intention of commencing production at the Nxuu Deposit.

## PEER GROUP ANALYSIS

- ◆ Table 8 presents a selection of ASX-listed companies exploring for generally large, low grade stratabound (including Sedex, MVT and Copper Belt) base metals deposits - what is evident here is the low market capitalisation of Mount Burgess when compared to the others.
- ◆ The Resource grade at a 1.5% ZnEq cutoff grade for Kihabe (2.8% Zn+Pb, 9.8 g/t Ag) is similar to that of the Initial MRE of Rumble and Exploration Target grade mid-point of Apollo, however with significantly less tonnes (16.4 Mt, refer to Table 1) - note that the Resource in Table 8 is presented at a 0.5% CuEq cutoff.
- ◆ We have also included Cobre Limited, which is exploring for copper mineralisation in the Ghanzi-Chobe Belt, on the southern edge of the Damara Belt, and to the south of Mount Burgess.
- ◆ Cobre has been getting some interesting copper intersections from the stratabound mineralisation, which is along strike from the Sandfire's (ASX: SFR) Motheo development, which has Ore Reserves totalling 49.6 Mt @ 1.0% Cu and 14 g/t Ag, and Mineral Resources of 63.1 Mt @ 1% Cu and 14.5 g/t Ag - at current prices the Resources and Reserves have a value of ~US\$100/tonne of ore, (or ~4% ZnEq) not taking recoveries into account.

**Table 8: Mount Burgess peer group comparison**

Mount Burgess Peer Group Comparison							
Company	On Issue (m)	Market Cap (m)	Cash (m)	Debt (m)	EV (m)	Project	Resources and Notes
Rumble Resources Limited	626.7	\$125.35	\$6.98	\$-	\$118.37	Eeraheedy, MVT, WA	Initial Inferred MRE of 94 Mt @ 3.1% Pb+Zn and 4.1 g/t Ag (2% Pb+Zn cutoff)
Cobre Limited	284.4	\$29.9	\$7.94	\$-	\$21.93	Kitlanya East and West, Sedex, Copper Belt style	Botswana Copper Belt, no resource, recent intersections in chalcocite of up to 5.1 m @ 5.1% Cu and 32 g/t Ag, and 12.2 m @ 2.7% Cu and 24 g/t Ag, but average intersections in fresh material in the order of 0.5% to 1% Cu
Apollo Minerals Limited	526.6	\$18.96	\$2.30	\$-	\$16.66	Kroussou, Gabon - MVT	Exploration Target of 140-300 Mt @ 2% to 3.4% Zn + Pb
Mount Burgess Mining N.L.	883.2	\$2.65	\$0.09	\$1.6	\$4.20	Kihabe-Nxuu, Botswana - SEDEX	27 Mt @ 1.96% ZnEq, 1.41% Zn, 0.66% Pb, 7.50 g/t Ag and 0.02% V <sub>2</sub> O <sub>5</sub> (excluding separate Ga, Ge) - 0.5% ZnEq cutoff
Golden Deeps Limited	1,155.2	\$8.09	\$6.27		\$1.81	Abenab et al, OML, Namibia	Abenab - 2.80 Mt @ 0.66% V <sub>2</sub> O <sub>5</sub> , 2.35% Pb, 0.94% Zn, and other OML prospects

Source: Excel Stock Data, Company reports, IIR analysis

## BOARD AND MANAGEMENT

- ◆ **Mr Nigel Forrester, F.C.A – Chairman and Managing Director:** Mr Forrester is a Fellow of the Institute of Chartered Accountants in England and Wales. He has been involved in the exploration and mining industry over the past forty years. Mr Forrester is one of the original shareholders of the Company which he floated in 1985.
- ◆ **Harry Warriess, MS Mine Eng., FAusIMM - Non-Executive Director:** Mr Harry Warriess, a mining engineer was appointed to the Board on 1 August 2016. Mr Warriess is a Fellow of the AusIMM and prior to setting up his own mining consultancy business he worked on a wide range of projects, both in Australia and overseas, including a number of major feasibility studies. He has provided mining engineering services relative to copper, nickel, cobalt, gold, lead, zinc and graphite projects, as well as conducting numerous due diligence studies and technical audit.
- ◆ **Mr Robert Brougham, FAusIMM, BSc – Non-Executive Director:** Mr Robert Brougham, a metallurgist was appointed to the Board on 7 July 2021. Mr Brougham is a Fellow of the AusIMM and has vast experience in commissioning, plant operations and maintenance of many base metal projects in Australia, Zambia, Eritrea and Indonesia. He has in-depth knowledge of the Company project in Kihabe-Nxuu, having been the principal metallurgist involved in all the metallurgical test work conducted on the project by ProMet Engineering. This confirmed the recoverability of Zinc metal on site from the Zinc oxide minerals Baileychlorite (Kihabe Deposit) and Smithsonite (Nxuu Deposit).
- ◆ **Jacob Thamaga – Non-Executive Director:** Jacob Thamaga was appointed to the Board of the Company's wholly owned subsidiary, Mount Burgess (Botswana) (Pty) Ltd, in July 2021.

Jacob, Mining Engineer, a Motswana national, was reappointed as CEO of Botswana's Diamond Hub in July 2021 and appointed as the International Chairman of the Kimberley Process, in 2022

Previously engaged as the Deputy Permanent Secretary to the Ministry of Minerals, Energy and Water Resources in May 2010, he was appointed Coordinator of Botswana's Diamond Hub to coordinate the relocation of DeBeers diamond sales functions from London to Gaborone, Botswana. This involved:

- Establishing the Okavango Diamond Company and as founding Chairman, recruiting the Executive Team.

- Overseeing Botswana's delegation in the Kimberley Process certification scheme from 2003 to 2016
- Leading the first Kimberley Process review commission to Israel in 2004, which set the standards for future Kimberley Process review missions

From June 2016 to December 2017, Jacob held the position of Chief Mining Officer for the African Development Bank in Abidjan, Cote d'Ivoire

- ◆ **Mr Ian Barclay McGeorge – Non-Executive Director:** Ian Barclay McGeorge is a Fellow of the Geological Society of London and a chartered geologist. Ian is a British national resident in Botswana. He is Principal Consultant and co- owner of iQuest Geology, a geological consultancy based in Gaborone, Botswana.

Ian has many years of experience of prospecting in Botswana, having been involved in exploration for diamonds, gold, copper, nickel, iron ore, lithium, and industrial minerals, as well as supervising exploration and resource development on the Company's Kihabe-Nxuu project. Ian has also held senior positions in Government funded groundwater and mapping contracts.

In addition to Botswana, Ian has significant experience of exploring for copper in Zambia and the DRC, gold in Zimbabwe and diamonds in West Africa.

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