

# **ASX Announcement and Media Release**

2 June 2017

# GOLD MINERAL RESOURCE UPDATED AT KALAMAZOO'S FLAGSHIP WA PROJECT

#### **HIGHLIGHTS:**

- Updated Mineral Resource estimate reported in accordance with JORC 2012 completed at A-Zone Project results in a favourable 30% increase in grade and a 15% decrease in tonnages for a total increase in contained metal of 9%.
- The Mineral Resource estimate has been upgraded with more than 73% in the Indicated category.

**TABLE 1: MINERAL RESOURCE ESTIMATE FOR A-ZONE, JUNE 2017** 

JORC Category	Cut Off Grade	Total Tonnages	Gold Grade	Metal
2012	(g/t Au)		(g/t Au)	Ounces
Indicated	0.5 g/t Au	663,000	2.15	46,000
Inferred	0.5 g/t Au	269,000	1.98	17,000
Total	0.5 g/t Au	932,000	2.10	63,000

Notes : Resource reported up to 100 metres below surface (from 170 to 270MRL)  $\,$ 

Tonnage is reported as dry tonnes

Rounding has been applied to appropriately reflect the precision of the estimate

- A recently completed drilling program confirms the general position and tenor of (historical) mineralisation for up to 11 mineralised zones at A-Zone - with mineralisation open at depth.
- The occurrence of significant base metals at A-Zone, particularly in the transition and fresh rock has the potential to value-add to the project.
- Review has commenced of the base metal potential of the A-Zone, especially in the transition and fresh (sulphide) zones and, also at the Company's nearby VHMS Base Metal Deposit called "Conquistador", and the potential correlation between these deposits.



Emerging copper-gold exploration company, Kalamazoo Resources Limited (ASX: KZR) ("Kalamazoo"), today reported an updated Mineral Resource estimate from its A-Zone Gold Project ("A-Zone") deposit, reported in accordance with the JORC Code, 2012.

This follows the completion of a maiden drilling program at the Project undertaken and fully-funded by Minjar Gold Pty Ltd ("Minjar").

Minjar completed a maiden 75 hole Reverse Circulation ("RC") and diamond drilling program for 3,375 metres at A-Zone, which forms part of Kalamazoo's wholly-owned Snake Well Gold Project (Figure 1), located about 450km north of Perth in the Mid-West region.

This drilling tested the spatial location of the gold mineralised lodes and general grade ranges previously indicated by historical drilling. These drilling results were previously announced to the ASX on 29 March, 2017 and 11 April, 2017 and have been utilised by Kalamazoo to upgrade the Mineral Resource estimate at A-Zone.

# A-Zone

The Snake Well Gold Project is located within the Murchison Province with the A-Zone gold deposit located on tenement M59/474 at the western end of the Snake Well Project (Figure 1). Shallow gold mineralisation at A-Zone was discovered in the late 1980's with further drilling completed by Giralia Resources NL ("**Giralia**") in the early 2000's.

The A-Zone prospect was discovered and defined by Roebuck Resources NL ("**Roebuck**") and Polaris Pacific NL ("**Polaris**") in Joint Venture during the late 1980's. Two diamond drill holes were drilled by Battle Mountain Australia to test depth extensions. Roebuck's 1986 to 1988 RC drilling was closely spaced (20m sections). In late 1997 Roebuck drilled seven deeper RC holes for 855m beneath the known mineralisation returning polymetallic mineralisation (best 11m at 2.01g/t Au, 1.78% Zn, 12g/t Ag) <sup>1</sup>. Subsequently Giralia completed infill RC drilling and produced the last resource estimate in 2004 which was updated to JORC 2012 standard by Kalamazoo <sup>1</sup> in 2016.

Several phases of metallurgical test work were completed by Roebuck in the 1980's showing good gold recoveries in the oxidised portions of the resource<sup>1</sup>.

Gold and elevated copper, lead, zinc and silver mineralisation is hosted within quartz veined pyritic quartz-sericite schists at A-Zone, interpreted to be of felsic origin and

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<sup>&</sup>lt;sup>1</sup> Refer to the Independent Geologists Report, in the KZR Prospectus, dated October 3<sup>rd</sup> 2016



possibly of VHMS association (Volcanic Hosted Massive Sulphide type). Mineralisation at greater than 0.5 g/t gold is present in a series of elongate lenses over a surface strike of 1.2 kilometres and the sub-parallel lenses dip at 60°-70° to the southeast (Figures 2 to 5).

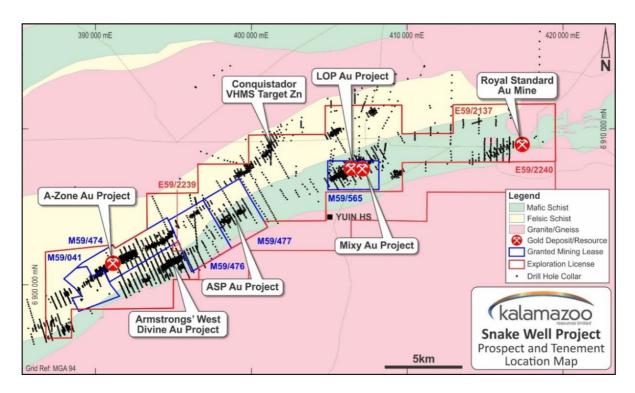


Figure 1: Location of A-Zone Project area

Note: The tenement outline has been modified to reflect two new tenement applications E59/2240 and E59/2239 and one relinquished tenement, E59/2200, since the Prospectus was issued in October 2016.

Barren cross cutting dolerite dykes are associated with elevated copper grades in the surrounding rocks. Gossanous outcrop is noted along the strike of the mineralisation where it is not obscured by thin cover. The weathered (oxidized) profile extends to a depth of approximately 50 metres. Elevated copper grades are associated with a supergene zone and are further elevated in the proximity of dolerite dykes.



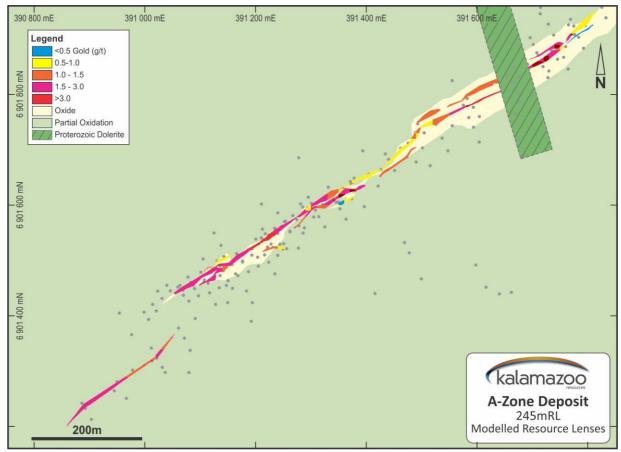


Figure 2: Plan of Modelled A-Zone Mineralisation, at 245 mRL surface, for various cut off gold grades ranges (~30m below surface)

## **A-Zone Mineral Resource Estimate**

A Mineral Resource estimate was prepared for the A-Zone deposit by Ravensgate Mining Industry Consultants for the Kalamazoo Prospectus in October 2016 and was classified as Inferred and reported in accordance with the JORC Code (2012 Edition). For details of this previous mineral resource estimation, refer to the Independent Geologist's Report by Ravensgate in Section 5 of the Company's Prospectus dated 3 October 2016.

These updated 2017 Mineral Resource estimates for the A-Zone deposit have been classified as Indicated and Inferred Mineral Resources and reported in accordance with the JORC Code (2012 Edition) as shown below in Table 2 . A grade cut-off of 0.5g/t Au has been used to report Mineral Resources. Gold is the only metal estimated. Copper, lead, zinc and silver are also present in the mineralisation, but have not been estimated. The Mineral Resource was limited to the upper 100 metres of the deposit, which is expected to be a reasonable depth limit for consideration of economic open pit mining.



TABLE 2: A-ZONE DEPOSIT MINERAL RESOURCE ESTIMATE 0.5 g/t Au CUT-OFF (2017)

	Indicated			Inferred		Total			
	Tonnes	Au	Au	Tonnes	Au	Au	Tonnes	Au	Au
	(t)	(g/t)	(oz)	(t)	(g/t)	(oz)	(t)	(g/t)	(oz)
Fresh	145,000	2.5	11,600	123,000	2.3	9,200	268,000	2.4	20,700
Transition	191,000	2.1	12,900	86,000	1.7	4,600	277,000	2.0	17,500
Oxide	327,000	2.0	21,300	59,000	1.7	3,300	386,000	2.0	24,600
TOTAL	663,000	2.1	45,800	269,000	2.0	17,100	932,000	2.1	62,900

Notes: Up to 100m below surface. Tonnage is reported as dry tonnes(t).

Rounding has been applied to appropriately reflect the precision of the estimate

TABLE 3: MINERAL RESOURCE ESTIMATE COMPARISON FOR A-ZONE, MAY 2017 & OCTOBER 2016

Min' Resource	JORC Category	Cut Off Grade	Total	Diff'	Gold Grade	Diff'	Metal	Diff'
Model	2012	(g/t Au)	Tonnages	(%)	(g/t Au)	(%)	Ounces	(%)
Oct-16	Inferred	0.5 g/t Au	1,100,000		1.60		58,000	
Difference				-15		31		9
May-17	Total	0.5 g/t Au	932,000		2.10		63,000	
	Indicated	0.5 g/t Au	663,000		2.15		46,000	
	Inferred	0.5 g/t Au	269,000		1.98		17,000	

Notes: Resource reported up to 100 metres below surface (~170 to 270mRL)

Tonnage is reported as dry tonnes

Rounding has been applied to appropriately reflect the precision of the estimate

A comparison between the previous mineral resource and this updated mineral resource is shown in Table 3 and indicates that the reported tonnages are 15% less, the gold average grade is 30% more and the contained gold ounces are increased by 9%. The tonnage reduction is mainly due to using lower density measurements from the recent drilling program.

Earlier this year, Kalamazoo entered into an agreement with Minjar to evaluate the potential development of the A-Zone deposit. As part of this agreement, Minjar completed the drilling of 75 RC drill holes for 3,146m and five diamond drill holes for 228.5m, which has enabled Kalamazoo to complete the Mineral Resource estimate upgrade. Minjar also surveyed the collar locations of the majority of the previous drill hole collars.

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Following on from this drilling program Minjar and Kalamazoo have entered into a first right, ore processing agreement for Minjar to treat oxide ore from the A-Zone Project and potentially from Kalamazoo's nearby Mixy deposit (see ASX announcement dated 5 May, 2017).

#### **Resource Data**

Details are recorded in Sections 1 and 2 of the JORC Table 1 (appended to this report).

Early exploration used extensive RAB drilling, however the RAB data was not used in the resource estimation. Drill holes used in the resource estimate comprised: 288 RC drill holes for 15,513 metres and 7 diamond drill holes for 643.5 metres. Locations of all drilling used to estimate the resource are shown in Figure 3 below. Drilling in the western part of the deposit is nominally 20m x 20m spaced and is broader to the east at 40m x 40m.

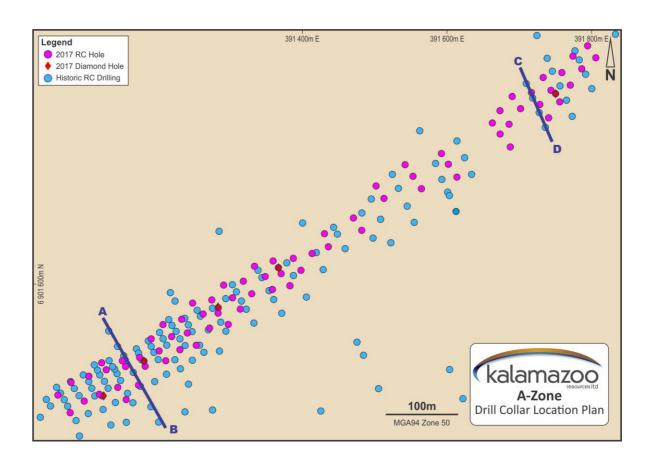


Figure 3: Drill collar location plan of both historical and recent holes.



Accurate drill collar locations for both the historic and recent drilling have been acquired using differential GPS. All holes drilled in 2017 have gyro down holes surveys. Average deviations were applied to the historical drill holes without downhole surveys to improve the accuracy of the downhole location.

Minjar's 2017 drilling program was sampled on one metre intervals. Historical RC holes were sampled on two metre intervals in the top 20 metres of the hole. Below 20 metres, most holes were sampled on one metre intervals. Minjar drill holes were assayed for gold only by fire assay with AAS finish. Historical drill holes were analysed for gold, lead and copper. The analysis method used for mineralised gold samples was fire assay with AAS finish. Note, historical aircore was not used in the mineral resource estimate.

QA/QC conducted on the recent Minjar drilling demonstrated that the sampling and assay was of high quality. Assay results of mineralised samples from 29 Minjar and 28 proximal historical drill holes were compared. The grade distribution between the two datasets were reasonably comparable with the average grade of Minjar samples (2.83 g/t Au) slightly higher than the historical drilling (2.55 g/t Au). The good comparison to the historical data provided confirmation that the historical sampling and assay was of high quality and was suitable for use in the Mineral Resource estimate.

In-situ bulk density was assigned on the basis of weathering intensity: 2.8t/m3 for fresh rock, 2.55t/m3 for moderately oxidised, 2.2t/m3 for strongly oxidised and 1.90t/m3 for transported surface material. Minjar conducted 66 dry in-situ bulk density ("**DISBD**") measurements on pieces of core 0.1-0.29 metre in length from the five recent diamond drill holes. These measurements were used to derive the DISBD applied to the model for all but fresh rock, which used an assumed value of 2.8t/m3.

Detailed geological features were logged by drill interval for each drill hole. Weathering, major and minor lithology, veining and alteration were entered into the digital database.

Sectional interpretation of the mineralised zones used a nominal grade threshold of 0.4 g/t Au to define outlines of the mineralised zones. A minimum downhole thickness of 2 metres was used to define the domains at 0.4 g/t Au cut-off grades. The sectional interpretation of the mineralised zones were joined between sections to produce solid triangulation wireframe models. Weathering intensity was interpreted on section via the logging from the recent Minjar drilling. Surface triangulation wireframes were constructed to represent the contact between the interpreted oxidation zones.

Cross sections A-B and C-D are displayed in Figures 4 and 5 respectively, illustrating a portion of results reported here and the section locations are shown in Figure 3. These



sections demonstrate the strong spatial and gold grade range correlation between the new drilling and those previously intersected in historical drilling.

The drilling on Section A-B targeted the principal mineralised lode that dips at approximately 60 degrees to the south-east. Historic drilling on Section A-B indicates the presence of deeper primary mineralisation. On Section C-D, drilling similarly indicates a primary lode position, dipping at approximately 60 degrees to the south-east.

Significantly, mineralisation is open at depth in fresh rock, as indicated in historical drilling. Most of the current drilling targeted the oxide and transitional zones together with some shallow, primary mineralisation.

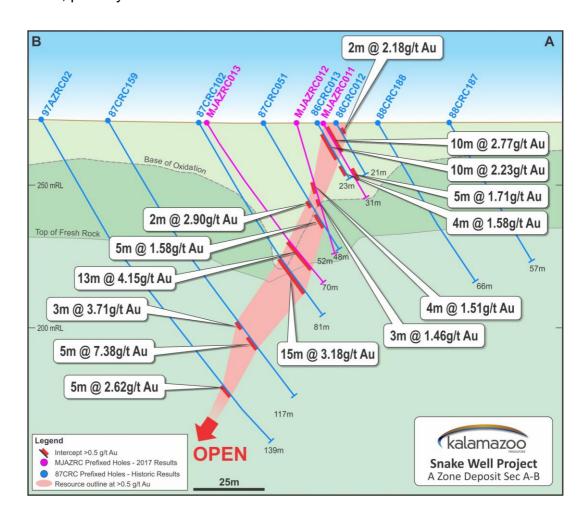


Figure 4: A-Zone Cross Section A-B looking southwest with resource outline (Intersections are down hole lengths of >0.5 g/t Au, and include a maximum of 2m at <0.5 g/t Au Note: Selective historical drill hole intercepts, 86CRC187 to 97AZRC02 were included within the Mineral Resource for A-Zone)



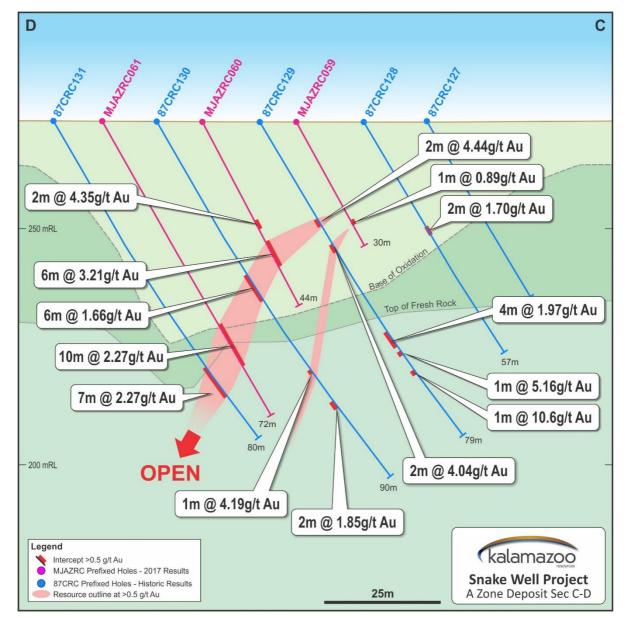


Figure 5: A-Zone Cross Section C-D looking southwest with resource outline (Intersections are down hole lengths of >0.5 g/t Au, and include a maximum of 2m at <0.5 g/t Au Note: Selective historical drill hole intercepts, 87CRC0131 to 87CRC127 were included within the Mineral Resource for A-Zone)

#### **Resource Estimation Details**

Compositing of sample data was conducted over 2 metre downhole intervals within the interpreted mineralisation lodes for use in grade estimation. The composites have mean grade of 2.18 g/t Au with a positive skewed distribution and reasonably low coefficient of variation. There were very few high grade outlier composites and a top cut of 3.0 g/t Au

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was used in the estimation of the main mineralised zone. For other zones a top cut of between 10-13 g/t Au was applied.

Variography was completed on the main mineralised zone and a reasonable nugget proportion of 30% was observed in the downhole variogram. Variogram ranges were calculated in the plane of the mineralisation with a range along strike of 46 metres, down dip of 21 metres and across strike the width of mineralisation did not allow determination of a range and a range of 10 metres was assumed. These ranges match or exceed the drill spacing in the majority of the deposit and suggest a reasonable local grade estimate should be possible.

Ordinary kriging was used to estimate the gold grade into 10mE x 10mN x 5mRI sized blocks. Separate estimations were applied to each of the interpreted lodes. Average block grade of 2.08 is reasonably close to the average grade of the composites. A swath plot comparing a moving average of block and composite grades demonstrated that the block estimate was effective in smoothing the grade but honored the grade trends observed in the composites.

A-Zone mineralisation displayed good geological continuity in the closely spaced drill holes. The recent drilling confirming the sample and assay quality has increased the confidence in the resource estimate compared to the previous estimate. The A-Zone deposit Mineral Resource estimates have been classified as Indicated and Inferred Resource and reported in accordance with the JORC Code (2012 Edition).

As part of the gold ore program of metallurgical testwork by Minjar, three composite samples from both drill core and RC chips were prepared to represent the oxide, transitional and the fresh ore. Head grades for gold averaged 3.56 g/t Au, 2.42 g/t Au and 2.65 g/t Au respectively. A full ICP scan indicated that base metals were copper to 0.27%, lead to 0.46% and zinc up to 1.9%. Metallurgical recovery on composite samples from drill core yielded 96.5% recovery of gold at minus 106 micron grainsize and low cyanide and lime consumptions for oxide material, assuming processing via, a Carbon-In-Leach plant. Tests on RC chips from the transitional and fresh zones (known to contain base metal sulphides) yielded low Au recoveries of 25.4% and 28.8% respectively, indicating an alternative extraction method is preferred over conventional cyanidation. Previous metallurgical test work is outlined in the Independent Geologists Report, in the KZR Prospectus, dated October 3rd 2016



# **Conquistador Prospect (Figure 1)**

The Conquistador zinc prospect<sup>2</sup> is located along strike and approximately 15km to the north-east of the A-Zone deposit and was discovered in 1995 by CRAE in JV with Roebuck. RAB/ aircore traverses across the Greenough River floodplain, following the felsic sequence that hosts the A-Zone resource intersected anomalous gold, silver, zinc, lead and copper in saprolite, and was followed up with RC, diamond drilling and aircore drilling. Further RC and diamond drilling was carried out during 1997-1998, intersecting massive sulphides assaying up to 4m at 8.5% Zn, 20.5g/t Ag, 0.5% Cu and 0.6% Pb<sup>2</sup>.

Given the significance of the base metals in the A-Zone transition and fresh zones and the interpreted association with VHMS deposits, Kalamazoo has commenced a review of the Conquistador deposit to determine its potential and design a program of work. Importantly, the regional base metals relationship with the A-Zone will be investigated.

# **Next steps:**

- Continue with the assessment of the base metal potential of the A-Zone Deposit, especially in the transition and fresh (sulphide) zones. This review will investigate:
  - The spatial association of the base metals and the gold mineralised zones;
  - Selectively assay for base metals (copper, lead, zinc and silver);
  - o Prepare a base metal mineral resource model, if warranted; and
  - Conduct an initial review, if warranted, to identify the likely process path for recovery of these deeper base metal enriched zones.
- Concurrently, Kalamazoo has commenced a review of the VHMS Base Metal Conquistador Deposit

Kalamazoo is encouraged by the results of the A-Zone drilling program and its regional gold and base metals potential and will provide further information as to the review shortly.

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<sup>&</sup>lt;sup>2</sup> Refer to the Independent Geologists Report, in the KZR Prospectus, dated October 3<sup>rd</sup> 2016



## **About Snake Well Project**

Kalamazoo's flagship gold asset is the Snake Well Project, which is located 450km north of Perth in the Mid-West region. It consists of five granted mining leases, one granted exploration licence and two exploration licence applications. The Snake Well Project covers Archaean rocks over an area of approximately 263km2 and a 45km prospective strike length of the Tallering greenstone belt, in the western portion of the Murchison Domain that hosts a number of significant mineral deposits including Golden Grove (Cu-Zn), Big Bell (Au), Cue (Au), Deflector (Cu-Au) and Mt Magnet (Au).

# For further information, please contact:

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#### **Competent Persons Statement**

The information in this release that relates to the exploration data is based on information compiled by Mr Lance Govey, a competent person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Govey is an employee of BinEx Consulting who is engaged as the Exploration Manager for the Company. Mr Govey 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 Govey consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the mineral resources of the Company is based on information compiled by Mr David Reid, a competent person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Reid is an employee of Ravensgate Mining Industry Consultants (**Ravensgate**) who is engaged as the Independent Geologist of the Company. Mr Reid 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 Reid consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.

For additional and detailed information, including the JORC 2012 Minerals Resource Estimates, please refer the Independent Geologist's Report prepared by Ravensgate in Section 5 of the Company's Prospectus dated 3 October 2016 and Supplementary Prospectus, dated 14 November 2016.

#### **Forward Looking Statements**

Statements regarding Kalamazoo's plans with respect to its mineral properties and programmes are forward-looking statements. There can be no assurance that Kalamazoo's plans for development of its mineral properties will proceed as currently expected. There can also be no assurance that Kalamazoo will be able to confirm the presence of additional mineral resources/reserves, that any mineralisation will prove to be economic or that a mine will successfully be developed on any of Kalamazoo's mineral properties. The performance of Kalamazoo may be influenced by a number of factors which are outside the control of the Company and its Directors, staff and contractors.

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# Table 1. JORC Code, 2012 Edition

# Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

#### Criteria **JORC Code explanation** Commentary Sampling Nature and quality of sampling (e.g. cut In 2017 the deposit was sampled by techniques channels, random chips, or specific reverse circulation (RC) drilling - a total specialised industry standard of 75 holes for 3,146 metres. measurement tools appropriate to the RC drilling was sampled on minerals under investigation, such as intervals. down hole gamma sondes, or handheld XRF instruments, etc.). These examples The deposit was sampled by Diamond should not be taken as limiting the broad Drilling - a total of 5 holes for 228.5 meaning of sampling. metres, for the purposes of geological observation, geotechnical assessment, Include reference to measures taken to metallurgical testing and assaying. ensure sample representivity and the appropriate calibration of any Routine QAQC samples were inserted in measurement tools or systems used. the RC sample strings at the rate of 5%, Aspects of the determination of comprising gold standards and blanks mineralisation that are Material to the (CRM's or Certified Reference Public Report. Materials) and coarse blanks (barren • In cases where 'industry standard' work chip samples). has been done this would be relatively RC field duplicate samples were taken simple (e.g. 'reverse circulation drilling at a rate of one every twenty samples. was used to obtain 1 m samples from which 3 kg was pulverised to produce a Sampling practice is appropriate to the 30 g charge for fire assay'). In other cases geology and mineralisation of the more explanation may be required, such deposit and complies with industry best as where there is coarse gold that has practice. inherent sampling problems. Unusual The deposit was also sampled by commodities or mineralisation types (e.g. historic RC drilling in the late 1980's and submarine nodules) may warrant 1990's - a total of 215 holes for 12,782 disclosure of detailed information. metres have been included in this resource estimate. Samples were taken at one metre and two metre intervals. Drilling Drill type (e.g. core, reverse circulation, RC drilling was conducted with a techniques open-hole hammer, rotary air blast, auger, modern track mounted drill rig utilising Bangka, sonic, etc.) and details (e.g. core high pressure and high volume diameter, triple or standard tube, depth of compressed air and a 140mm (5.5") diamond tails, face-sampling bit or other diameter face sampling percussion type, whether core is oriented and if so, hammer. by what method, etc.). Diamond coring was undertaken with a modern truck mounted rig and industry recognised quality contractor. Core was drilled at HQ size (63.5mm) from surface to end of hole using the triple tube

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method to improve recovery in soft ground encountered near surface.

RC drilling in the late 1980's and 1990's was undertaken by a series of different contractors using equipment in common



Criteria	JORC Code explanation	Commentary
		use at the time. Early programs (1980's) used a combination of rotary and hammer bits dependent on the hardness of the ground – during this era RC hammers were in transition from crossover-sub type hammers to face sampling hammers – details of the specific hammer types and hole diameters are not available in the original drill logs referenced. RC holes drilled in the 1990's are likely to have used face sampling hammers.
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse</li> </ul>	RC sample recovery and sample condition (dry, moist or wet) was visually logged on the original drill logs and transferred to the digital drill hole database. Out of a total of 3146 RC samples, 72 were logged as moist, 27 wet and one with no sample return.  Diamond coring was conducted using triple tube to maximise the recovery.
	material.	Diamond core recovery was measured for each run and calculated as a percentage of the drilled interval.
		There has been no assessment of core recovery and grade.
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation,	All Core and RC chips were geologically logged. Lithology, veining, oxidation and weathering are recorded in the geology table of the drill hole database.
	<ul> <li>mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean,</li> </ul>	RC logging is qualitative and descriptive in nature.
	<ul> <li>channel, etc.) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	Geotechnical logging of 2017 core is quantitative in nature and was undertaken by an external consultant.
		All core was photographed.
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet</li> </ul>	2017 Core was quarter sawn and subsampled on 1m intervals for assay to be used in selection of intervals for metallurgical test work.
	<ul> <li>or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise</li> </ul>	2017 RC samples were sub-sampled using a rig mounted cone splitter to produce original and duplicate split samples of approximately 3kg weight, a standard industry practice.
	representivity of samples.  • Measures taken to ensure that the sampling is representative of the in situ	The splitter was routinely cleaned at the end of each drill rod (6m) or as needed if damp material clung to the splitter.

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Criteria	JORC Code explanation	Commentary
	material collected, including for instance results for field duplicate/second-half sampling.	Duplicate samples were collected when splitting RC samples to assess the sampling precision
	<ul> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	Sample size assessment was not conducted but used sampling size typical for WA gold deposits.
		Details of the splitter types used for historic RC drilling are generally not available but 1980's − 1990's holes most likely used multi-stage riffle splitters. Reports indicate historic one metre samples split for assay weighed ≥ 2kg. In some holes, samples were composited over 2m intervals for a lab sample of 4kg weight.
Quality of assay data and laboratory	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> </ul>	RC and diamond core samples were prepared and assayed at NATA accredited ALS Minerals laboratory in Perth.
tests	<ul> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures</li> </ul>	RC samples were weighed, dried, and pulverized in total to nominal 85% passing 75 micron (Method PUL23), and a 50g sub sample assayed for gold by fire assay with an AAS finish (method Au-AA26).
	adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of	Core samples were weighed, dried, crushed and thereafter pulverized and assayed as for RC samples.
	accuracy (i.e. lack of bias) and precision have been established.	In addition to the Company QAQC samples included within the batches the laboratory includes its own CRM's, blanks and duplicates with every batch.
		Historical RC samples were assayed for Au by a mixture of aqua regia/AAS and fire assay/AAS methods, predominantly by SGS Laboratory but including Analytical Services and Genalysis. Sample preparation included disc pulverisation or mixer-mill stages. QAQC details are not reported, but reports indicate referee laboratory checks were made, and that fire assays compared with aqua-regia/AAS to an acceptable level.
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry</li> </ul>	2017 assays were documented by professional staff members of Minjar Gold Pty Ltd and independently verified by Ravensgate Mining Industry Consultants on behalf of Kalamazoo

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Criteria	JORC Code explanation	Commentary
	procedures, data verification, data storage	Resources Limited.
	<ul><li>(physical and electronic) protocols.</li><li>Discuss any adjustment to assay data.</li></ul>	All assay data were received in electronic format from ALS, checked and verified by Minjar Gold and merged into a proprietary database.
		No assay adjustment was applied.
		Historic assays were recorded on hardcopy drill logs and a digital database was compiled in the 1990's. Recent validation of 10% of the primary drill hole assays has shown that the database currently in use is accurate.
		A statistical comparison of 2017 assays and historic assays has indicated negligible difference between the two assay populations in the grade range of relevance to economic extraction (0.4-12 g/t Au. Historic mean grades were slightly conservative compared with the 2017 mean grades.
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic</li> </ul>	All drill hole collars were initially pegged using RTK differential GPS and then resurveyed post drilling, to x-y accuracy of 2cm and height (z) to +/- 10cm (relative to AHD). Down hole surveys were conducted using a north seeking gyro tool to avoid magnetic interference.
	control.	All collar location data is in UTM grid (MGA94 Zone 50).
		Collars were measured relative to two local control stations installed and verified by a licensed survey group.
		Historic collars where identifiable were surveyed as above using RTK differential GPS. 148 holes were surveyed and their locations in MGA94 compared with transformed data from the original database, showing that original database locations were within 2-3 metres of the 2017 survey locations. Coordinates and RLs for historic holes not surveyed were adopted from the database, and also verified against historic drill collar maps.
		Historic holes in general were not surveyed down hole. After comparison with 2017 gyro surveyed holes an average deviation in azimuth and dip

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Criteria	JORC Code explanation	Commentary
		was applied to the historic holes.
Data spacing and	Results.	Most holes are spaced at approximately 20m line spacing by 10-20m along lines.
distribution		The data spacing is sufficient to establish geological and grade continuity for the Indicated and Inferred Mineral Resource classifications applied.
	Whether sample compositing has been applied.	No sample compositing has been applied for 2017 drilling; historic drilling contains some 2m compositing from 1m samples.
Orientation of data in relation to	ata in achieves unbiased sampling of possible structures and the extent to which this is eological known, considering the deposit type.	Drill lines are oriented approximately at right angles to the currently interpreted strike of known mineralisation.
geological structure		No bias is considered to have been introduced by the existing sampling orientation.
Sample security	<ul> <li>The measures taken to ensure sample security.</li> </ul>	2017 samples were secured in closed polyweave sacks and bulka-bags for direct delivery via a registered transport company to the laboratory.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Data quality for 2017 drilling has been reviewed by Minjar Gold Pty Ltd, and Ravensgate Mining Industry Consultants on behalf of Kalamazoo Resources Limited. Historic data quality has been reviewed jointly by Kalamazoo Resources and Ravensgate Mining Industry Consultants and found to be adequate for use in this estimate.

# **Section 2 Reporting of Exploration Results**

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time</li> </ul>	Results reported are from the A-Zone Prospect, located within M59/474, a granted mining lease within the Snake Well Project area, owned 100% by Kalamazoo Resources Limited.  Kalamazoo has reached agreement with Minjar that provides Minjar with a first right to

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Criteria	JORC Code explanation	Commentary
	of reporting along with any known impediments to obtaining a licence to operate in the area.	treat any further ore from the Mixy Lode and/or the A-Zone deposit, at the Minjar plant, on terms to be agreed. This new Ore Purchase Agreement replaces the Ore Sales and Purchase Agreement dated 31 January 2017. <sup>3</sup> M59/474 is in good standing and subject to completion of all normal pre-mining permitting requirements no impediment is foreseen to obtaining a licence to operate.
Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	Historical exploration of the A-Zone was undertaken by Roebuck Resources, CRA Exploration and Giralia Resources.
		Giralia published a Mineral Resource estimate in 2004 for A-Zone.
Geology	Deposit type, geological setting and style of mineralisation.	A-Zone is a shear hosted Archean gold deposit located within the Tallering Greenstone Belt of the western Murchison Province.
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:         <ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	All requisite drill hole information for 2017 drilling has been tabulated in previous ASX releases dated 29th March 2017 and 11th April 2017.  Validation of historic drill hole data used in this report has been described in the preceding section. Collar locations have been shown in the accompanying figures and the location down hole and gold tenor of a number of historic intersections are shown in the accompanying cross sections.
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the</li> </ul>	Drill hole intersections for 2017 drilling have been previously reported in ASX releases dated 29th March 2017 and 11th April 2017.  Data aggregation used in the Mineral resource estimate is described in the succeeding section.

 $^{3}\,\mathrm{See}\,\,\mathrm{ASX}$  Release dated 31 January 2017

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Criteria	JORC Code explanation	Commentary	
	<ul> <li>procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	No metal equivalent reporting has been applied.	
Relationship between mineralisatio n widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul>	Mineralisation has been interpreted and modelled in 3D using Vulcan software prior to block modelling and Mineral Resource estimation.	
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Included elsewhere in this release.	
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	Not relevant to this section of the report.	
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Metallurgical testing of Oxide material from composite samples of drill core yielded 96.5% recovery of gold at minus 106 micron grainsize and low cyanide and lime consumptions (<1 kg/tonne).  Tests on RC chips from the transitional and fresh zones (known to contain base metal sulphides) yielded low Au recoveries of 25.4% and 28.8% respectively, indicating an alternative extraction method is preferred over conventional cyanidation.	
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Future work may include core drilling and metallurgical testwork on the transitional and fresh zones, and deeper drilling below the currently known resource.	

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## JORC Table One

# **Section 3 Estimation and Reporting of Mineral Resources**

(Criteria listed in Section 1, and where relevant in Section 2, also apply to this section.)

Part	Criteria	Explanation	Comment
3-1	Database Integrity	Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.	As part of the initial resource model estimation drilling data was reviewed and corrected where needed based on original drilling logs.  As part of the resource update documentation digital data for three drill recent holes were compared to the original assay certificates and no errors were noted. A similar check of 20 drill logs for historic drilling showed no errors.
		Data validation procedures used.	Database validation was conducted as part of loading and viewing data in Vulcan. Checks were made:  Overlapping intervals Duplicate samples Gaps in sampling
3-2	Site Visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	The Competent Person for data and geology interpretations visited the A-Zone deposit on several occasions in 2017 and most recently on 30 <sup>th</sup> May 2017. Drill hole locations were found to be accurately located compared with the digital data and geological interpretation of weathering zones were consistent with the digital logs.
		If no site visits have been undertaken indicate why this is the case.	Site visits were conducted by one of the competent persons.
3-3	Geological Interpretation	Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.	Surface outcrop and close spaced drilling has confirmed that the geological features and continuity of the mineralisation are well defined to a high level of confidence.
		Nature of the data used and of any assumptions made.	Recent drilling and logging was used to produce an interpretation of the weathering intensity.
			Mineralisation was interpreted from drill sample assay results. A steep dip to the south south east and stacked multiple lodes in places were assumed when connecting the interpretation between drill holes
		The effect, if any, of alternative estimation interpretations on Mineral Resource estimation	Continuity and orientation of the mineralisation is well established from close spaced drilling and surface mapping.  Alternative connection of the closely spaced

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Part	Criteria	Explanation	Comment
Part	Criteria	Explanation	lodes could lead to local changes in the
			interpretation but would have little impact on the global resource estimate sections of the deposit.
			Weathering intensity is highly variable and most likely to be more complicated than the interpretation suggests.
		The use of geology in guiding and controlling Mineral Resource estimation.	Estimation of the resource tonnage and grade was restricted to the interpreted zone of gold mineralisation. Only samples which were located within the interpreted mineralisation zone were used for grade estimation of the mineralisation.
			Surface mapping and drill hole logs were used to interpret dolerite dykes which truncate mineralisation
			Supergene processes and the presence of cross cutting dolerite dykes have had a strong influence on the base metal mineralisation
		The factors affecting continuity both of grade and geology.	Gold distribution is variable. Not all samples were analysed for copper. Mineralisation is sub-continuous on two main zones.
3-4	Dimensions	The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	The mineralisation extends over a strike length of 1000m and is 5-10m in width. It is open at depth but has been constrained to a depth of 100m below surface for resource reporting.
3-5	Estimation and Modelling Techniques	ing the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a	Ordinary kriging was used to estimate gold grade into a block model using Vulcan software. Estimations were constrained to mineralised domains interpreted on gold grade.
			Mineralised domains are extrapolated half way between drill holes on or between sections or to a maximum distance of 30-40m from drill holes.
		description of computer software and parameters used.	An inclined search ellipse 120m x 100m x 20m was used to select samples for estimation. A minimum of 6 samples and maximum of 18 samples were used for an estimate
			Some domains contained high grade outlier composite values. These were cut to 30g/t Au for the main domain and 10-13g/t Au for other domains.
		The availability of check estimates, previous estimates and/or mine production records and whether the	No mine production has been conducted on the deposit.  Minjar Gold Pty Ltd conducted a separate
		Mineral Resource estimate takes appropriate account of such data.	estimate using an interpretation and grade estimate using only the 2017 drilling data.

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Part	Criteria	Explanation	Comment
			This was almost identical to the Ravensgate estimate within the area covered by the 2017 drilling.
		The assumptions made regarding recovery of by-products.	Gold recovery is assumed to be high in the oxidised part of the deposit. Further metallurgical test work will be required to establish a reasonable process for recovery of gold and base metals from the fresh sulfide mineralisation.
			Further work is required before the base metals can be included in the Mineral Resource estimate.
		Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).	Only gold and copper and lead grades were modelled
		In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Estimation block size 10mE x 10mN x5mRL is approximately half the drill spacing over the majority of the deposit and about a quarter of the on section spacing. This size is appropriate in the closer spaced drilling but is too small in the limited areas of wider drill spacing but is not expected to be material at the confidence range for inferred classification in these areas.
			The large search size is to ensure enough samples are selected in areas of wide spaced drilling. The effective search will be far smaller in areas with close spaced drilling due to the maximum of 18 samples selection limit.
		Any assumptions behind modelling of selective mining units.	Estimation block sizes are based on drill density but are likely to be similar to the expected SMU size.
		Any assumptions about correlation between variables.	Only Au grade is currently reported. Further work is required on correlation and estimation of base metals.
		Description of how the geological interpretation was used to control the resource estimates.	The interpretation of the mineralised zones was aligned to the orientation of shear zones. Interpretation of post mineralisation dolerite dykes were excluded from the mineralisation domains.
		Discussion of basis for using or not using grade cutting or capping.	A small number of high grade outliers were identified on histograms and log-probability plots. The top cut of 20g/t Au resulted in only two samples being cut.
		The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation	Global comparisons of the estimated grades to composite grades for each of the estimated lodes. For most of the lodes there was reasonable correspondence and overall the block estimates are less than 5% lower

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Part	Criteria	Explanation	Comment
		data if available.	than the mean of the composite grades.  A swath plot comparison was conducted for the largest lode (comprising 55% of the deposit) which displayed a good spatial relationship between the block estimates and composite grades  No production reconciliation was possible.
3-6	Moisture	Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	Tonnages are estimated on a dry basis.  Moisture content was not measured.
3-7	Cut-off Parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	It was assumed that open pit mining would be used in the top 100m of the deposit and a low 0.5g/t Au cut-off was used.
3-8	Mining Factors or Assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution.	Open pit mining with selective grade control is the assumed mine extraction method.  Kalamazoo conducted pit optimisations to test the potential open pit depth. Using a very optimistic gold price of A\$17,000/oz and a 98% gold recovery in oxide and 50% in transition the optimum pit reaches a depth of 80m from surface. Using a 90% recovery in the transition/fresh this extends to 100m depth
3-9	Metallurgical Factors or Assumptions	The basis for assumptions or predictions regarding metallurgical amenability.	High gold recovery was predicted by metallurgical test work for the near surface oxide material. Fresh sulfide mineralisation and oxide mineralisation with supergene copper mineralisation showed poor gold recovery.
3-10	Environmental Factors or Assumptions	Assumptions made regarding possible waste and process residue disposal options.	An environmental and social impact assessment on the Snake Well Project area was completed as part of the trial open pit mining of the Mixy Deposit. The proposal noted that there were no endangered species in the project area and that there was negligible negative impact and marginal positive impact of the trial pit mine. No potential archaeological or ethnographic sites were identified within the project area and that there were native title agreements in place with all three of the claimant groups (Fourie, 2015). In particular, heritage clearance was obtained in January 2017 for any proposed mining and haulage roads for the A-Zone area.
3-11	Bulk Density	Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and	66 Dry in-situ bulk density (DISBD) values were on pieces of core 0.1-0.29m in length from the five recent diamond drill holes.  Recent diamond drilling was shallow and did not intersect fresh rock and an assumed

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Part	Criteria	Explanation	Comment
		representativeness of the samples.	value of 2.8 was selected for this material.  The following average values were determined for assignment to the block model:  Transported cover 1.9 Oxide 2.2 Transitional 2.55 Fresh 2.8.
		The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.	DISBD measurements used vacuum plastic wrap to ensure that porosity and core voids were included in the bulk density measurements. Significant void space is not expected.
		Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	DISBD are assigned based on the weathering classification. Weathering variability is highly localised and local variability from these global assigned values is expected but should not affect the global estimate
3-12	Classification	The basis for the classification of the Mineral Resources into varying confidence categories.	Good geological continuity observed in the close spaced drilling gives a high confidence in these portions of the resource.  Overall the deposit has been classified as an Indicated and Inferred Resource.
		Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	Consideration of the following factors was used to conclude that an Indicated Resource classification is reasonable  • Geological continuity • Survey location of drill holes • Sample and assay quality • Grade distribution and estimation quality • Physical bulk density Drill spacing was used to define the higher confidence parts of the deposit. Area with blocks that were consistently less than 20m to the closest drill hole were assigned Indicated Resource classification.
		Whether the result appropriately reflects the Competent Person's view of the deposit.	This mineral resource estimate was completed by the competent person and reflects their view of the deposit.
3-13	Audits or Reviews.	The results of any audits or reviews of Mineral Resource estimates.	Ravensgate conducted an internal peer review of the resource update.
3-14	Discussion of Relative Accuracy / Confidence	Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an	No quantitative assessment of accuracy of the resource estimate has been conducted.

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Part	Criteria	Explanation	Comment
		approach or procedure deemed appropriate by the Competent Person.	
		The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation.	This statement relates to both global and local estimates of tonnes and grade. The resource is expected to have reasonable local accuracy for use in pre-feasibility level studies.
		These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	No production data was available for evaluation of the relative accuracy of the estimate.