KEFI Gold and Copper plc

("KEFI" or the "Company")

Hawiah Mineral Resource increased by 16% to 29 million tonnes

KEFI Gold and Copper (AIM: KEFI), the gold and copper exploration and development company with projects in the Federal Democratic Republic of Ethiopia and the Kingdom of Saudi Arabia, is pleased to announce an upgrade to the Mineral Resource Estimate ("MRE") at the Hawiah Copper-Gold Project ("Hawiah" or the "Project"), part of the KEFI-operated Saudi Arabian joint-venture Gold and Minerals Company Limited ("GMCO").

Highlights

- Hawiah Mineral Resource Estimate has increased by 4.1 million tonnes ("Mt") to 29.0 Mt at 0.89% copper, 0.94% zinc, 0.67 g/t gold and 10.1 g/t silver, representing a tonnage increase of 16%. Total contained metal is now:
 - 258,000 tonnes of copper (up 16% from 223,000 tonnes);
 - 272,000 tonnes of zinc (up 30% from 210,000 tonnes);
 - o 620,000 ounces of gold (up 25% from 497,000 ounces); and
 - $\circ~$ 9.4 million ounces of silver (up 20% from 7.8 million ounces).
- Indicated Resource increased to 12.4Mt (up 14% from 10.9Mt), which now includes 1.2Mt of oxide material (previously all Inferred) containing 80,000 ounces of gold.
- Total Indicated and Inferred Resources reporting to the Open-Pit Scenario have increased to 11.1Mt (up 32% from 8.4Mt), reaffirming the potential for an initial open-pit mining operation and a lower start-up capital requirement.
- Drilling commencing in Q2 2023 is aimed at extending planned mine life by further increasing the Hawiah Mineral Resource and converting more Inferred Resources to the Indicated category.

Harry Anagnostaras-Adams, Executive Chairman of KEFI, commented:

"The updated Mineral Resource Estimate for the Hawiah Copper-Gold Project achieved our key objectives: a tonnage increase of approximately 16%, plus a higher overall increase in metal content due to overall improved grades, plus the increase in the Indicated Resource category, plus the increased open pittable component.

"The Hawiah Preliminary Feasibility Study is progressing well and additional drilling during 2023 is being designed to further increase and upgrade the resource.

"KEFI now has a platform of three advanced projects for development in the next few years: the Tulu Kapi Gold Project in Ethiopia which is advancing to full project launch in light of the improvements in the Ethiopian working environment during the past twelve months and for which a formal update will be announced shortly, the now larger Hawiah Copper-Gold project in Saudi Arabia, and the Jibal Qutman Gold project, also in Saudi Arabia."

Background

Since the commencement of major exploration works at Hawiah in early 2019, KEFI announced a maiden MRE in August 2020 followed by the December 2021 updated MRE of 24.9Mt at a 0.90% copper, 0.85% zinc, 0.62 g/t gold and 9.81 g/t silver.

Diamond and reverse circulation ("RC") drilling have since continued with an additional 7,675m of diamond drilling and 4,845m of RC drilling completed over the past year, bringing the Project total to 58,194m of drilling. Recent drilling had three main objectives:

- Improve the level of geological control in the upper portion of sparsely explored Central Zone and northern portion of the Camp Lode;
- Explore the Crossroads Extension Lode and further define the deeper portion of the orebody; and
- Better define the upper oxide and transition zones and increase the known gold resource.

These objectives have been achieved and with the deposit remaining open at depth, the Hawiah orebody has additional potential for further enhancement and expansion.

GMCO appointed The MSA Group (Pty) Ltd ("MSA") as the Independent Consultants and Competent Person to prepare an updated MRE for Hawiah in accordance with the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code 2012").

Looking forward to 2023, work programmes including reverse-circulation and diamond drilling are being planned to upgrade the classification of current Inferred Resources to the Indicated category for use in the Hawiah Definitive Feasibility Study ("DFS"). These programmes are designed to run in parallel with the maiden MRE for the nearby Al Godeyer deposit which is being scheduled for Q1 2023.

Updated Hawiah MRE

The updated MRE for the Hawiah deposit is detailed in Table 1 below and now totals:

- 29.0 Mt at 0.89% copper, 0.94% zinc, 0.67 g/t gold and 10.1 g/t silver.

Resources are classified as:

- Indicated Open Pit 9.2 Mt at 0.88% copper, 0.70% zinc, 0.84 g/t gold and 9.9 g/t silver
- Indicated Underground 3.2 Mt at 0.82% copper, 1.07% zinc, 0.59 g/t gold and 9.5 g/t silver
- Inferred Open Pit 1.8 Mt at 0.99% copper, 1.02% zinc, 0.67 g/t gold and 12.4 g/t silver
- Inferred Underground 14.7 Mt at 0.90% copper, 1.05% zinc, 0.58 g/t gold and 10.1 g/t silver

Based on this MRE, the Hawiah deposit is estimated to contain a total of 258,000 tonnes or 569 million lbs of copper, 272,000 tonnes or 600 million lbs of zinc, 620,000 gold ounces and 9.4 million silver ounces.

		Material Tonn	Tonnes	Grade			Metal Content				
Class	Mining Type	Туре	(Mt)	Cu	Zn	Au	Ag	Cu	Zn	Au	Ag
				(%)	(%)	(g/t)	(g/t)	(kt)	(kt)	(koz)	(koz)
		Oxide	1.2	-	-	2.1	7.6	0	0	80	286
	Open Pit	Transition	2.2	1.29	0.76	0.72	11.7	28	17	51	828
lun di na tin d		Fresh	5.9	0.9	0.82	0.62	9.7	53	48	118	1,836
Indicated		Oxide	0	-	-	-	-	0	0	0	0
	Underground	Transition	0	-	-	-	-	0	0	0	0
		Fresh	3.2	0.82	1.07	0.59	9.5	26	34	60	969
	Open Pit	Oxide	0.01	-	-	0.96	8.4	0	0	0.2	1.8
		Transition	0.4	1.06	0.62	0.77	14.9	5	3	11	204
In fame d		Fresh	1.4	0.97	1.14	0.64	11.7	14	16	29	529
Inferred	Underground	Oxide	0	-	-	-	-	0	0	0	0
		Transition	0	-	-	-	-	0	0	0	0
		Fresh	14.7	0.9	1.05	0.58	10.1	132	155	272	4,754
Total	Open Pit	A.U.	9.2	0.88	0.7	0.84	9.9	81	65	249	2,950
Indicated	Underground	All	3.2	0.82	1.07	0.59	9.5	26	34	60	969
Total	Open Pit	A 11	1.8	0.99	1.02	0.67	12.4	18	19	40	735
Inferred	Underground	All	14.7	0.9	1.05	0.58	10.1	132	155	272	4,754
	Open Pit		11.1	0.9	0.75	0.81	10.3	100	83	288	3,685
Total Resource	Underground	All	17.9	0.88	1.06	0.58	10	158	189	332	5,723
Resource	All		29.0	0.89	0.94	0.67	10.1	258	272	620	9,408

Table 1 : MSA Minerals Resource Statement for Hawiah, Effective Date 12 December 2022 (see notes 1,2,3,4,5,6,7)

Notes on MSA Resource statement:

(1) koz = one thousand ounces, kt = one thousand metric tonnes, Mt = one million metric tonnes.

- (2) All tabulated data have been rounded and as a result minor computational errors may occur.
- (3) Mineral Resources, which are not Mineral Reserves, have no demonstrated economic viability.
- (4) The Gross Mineral Resource for the Project is reported.

(5) The Mineral Resource is reported in accordance with the guidelines of the 2012 Edition of The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code').

(6) A Whittle optimised pit shell was used to report open-pit Mineral Resources and a mineable shape optimisation (MSO) was completed for underground Mineral Resources outside the open-pit shell. The Whittle, MSO and cut-off grades were derived using the following assumed technical parameters:

- No Oxide and Transition mined underground.
- Pit slope angle: Fresh 53%, Transition and Oxide: 42%.
- Dilution included in regularised block model (5 mX by 5 mY by 2.5 mZ) for open-pit
- A minimum stope width of 2 m, and 10% dilution applied for underground.
- Concentrator Recovery: Cu 92%, Zn 76%, Au 74%, 83% Ag in fresh domain and Au 84%, 15% Ag in oxide.
 No recovery of zinc and copper in oxide. Metallurgical factors based on initial metallurgical test-work.
- Cost and revenue assumptions:

- Metal Price: Cu 9350 USD/t, Zn 3300 USD/t, Au 1820 USD/oz, Ag 26 USD/oz.
- Smelter recovery/payability: Cu concentrate Cu 95.5%, Au 90%, Ag 90%. Zn concentrate Zn 84.9%. Au Dore Au 99.5%, Ag 99.6%.
- Total mining cost: open pit oxide 2.2 USD/t, open pit transition and fresh 2.4 USD/t, underground 30.0 USD/t. Cost adjustment for open-pit depth USD0.004/ vertical m.
- Total Processing cost: oxide 15.4 USD/t, transition and fresh 19.5 USD/t.
- G&A: 5.6 USD/t ore.

(7) A net smelter return (NSR) calculation was carried out by G&M that was reviewed and accepted as reasonable by MSA. The cut-off grade was applied on a NSR basis: underground fresh ore 49.5 USD/t, open-pit transition and fresh ore 21.9 USD/t, open-pit oxide ore 17.6 USD/t. NSR was calculated for each block model cell using the following formulae:

Transition and Fresh = (Cu %*72.6915)+(Zn%*16.4965)+(Au g/t *41.767)+(Ag g/t*0.6579)

Mineral Resource Estimation comparison and future expansion

The updated MRE represents a significant increase in tonnage from 24.9Mt to 29.0Mt, a small decrease in copper grades from 0.90% to 0.89%, with an increase in zinc grades from 0.85% to 0.94% along with an increase in gold and silver grades from 0.62 g/t gold to 0.67 g/t gold and from 9.81 g/t silver to 10.1 g/t silver (**Error! Reference source not found.**).

	2021 MRE	Updated MRE	Difference (%)
Tonnage (Mt)	24.90	29.00	+16%
Copper (%)	0.90	0.89	-1%
Zinc (%)	0.85	0.94	+11%
Gold (g/t)	0.62	0.67	+7%
Silver (g/t)	9.81	10.10	+3%

Table 2 – 2021 MRE and Updated MRE comparison - Grade and Tonnage.

The additional resource tonnage is largely driven by:

- increased density of the Oxide Zone from 1.7g/cc to 2.32g/cc;
- expansion of Crossroads Extension Lode at depth; and
- inclusion of a greater portion of the model across all domains due to increased drill density and confidence.

The increase in the Oxide Zone resources from 0.7Mt to 1.2Mt (Inferred to Indicated classification) and contained gold from 35koz to 80koz. This has been due to the increased drilling density within this domain and improved recoveries obtained by switching the sampling method from diamond to reverse circulation drilling. This drilling, running in combination with a deep trenching programme allowed for improved understanding of density characteristics of the oxide domain. The average oxide gold grade has also increased from 1.49g/t to 2.1g/t, representing a 41% increase.

As highlighted in the 2022 MRE, while the limits of the Crossroads Extension contained lower than average copper grade, the zinc, gold and silver grades result in all additional mineralisation defined in this area of the Hawiah deposit reporting to the underground resource estimate. As predicted by the geological model, drilling this year has shown the Crossroads Extension portion of the orebody has a

higher average zinc and gold grades with the final and deepest drillhole into this area (HWD 201) intersected 8.8m (estimated true width of 6.2m) at 2.9% zinc and 0.79g/t gold, demonstrating that this high-grade area of the Hawiah deposit remains open at depth.

The early phases of exploration in 2023 will focus on resource classification upgrade drilling throughout the deposit and exploration drilling in deeper areas of the Crossroads Extension. The classification upgrade will then feed into the DFS.

Open-Pit Scenario

GMCO is also pleased to report that the resources reporting to the Open-Pit Scenario have been expanded from the previous 8.4Mt reported in 2021 to a total of 11.1Mt at 0.90% copper 0.75% zinc, 0.81 g/t gold and 10.30 g/t silver (see Figure 2 in Appendix C).

This Hawiah deposit continues to demonstrate a robust case for a lower cost open-pit development during the early years of the Project, further strengthening the economic case. This Open-Pit Scenario will be fully evaluated during the DFS which will include the upgraded oxide resource and the results of the 2023 drilling programmes.

Market Abuse Regulation (MAR) Disclosure

This announcement contains inside information for the purposes of Article 7 of the Market Abuse Regulation (EU) 596/2014 as it forms part of UK domestic law by virtue of the European Union (Withdrawal) Act 2018 ("MAR"), and is disclosed in accordance with the Company's obligations under Article 17 of MAR.

Enquiries

KEFI Gold and Copper plc

Harry Anagnostaras-Adams (Executive Chairman)	+357 99457843
John Leach (Finance Director)	+357 99208130
SP Angel Corporate Finance LLP (Nominated Adviser and Joint Broker)	+44 (0) 20 3470 0470
Jeff Keating, Adam Cowl	
Tavira Securities Limited (Joint Broker)	+44 (0) 20 7100 5100
Oliver Stansfield, Jonathan Evans	
WH Ireland Limited (Joint Broker)	+44 (0) 20 7220 1666
Katy Mitchell, Andrew de Andrade	
IFC Advisory Ltd (Financial PR and IR)	
Tim Metcalfe, Florence Chandler	+44 (0) 20 3934 6630

Competent Person Statement

The Hawiah Mineral Resource estimate was completed by Mr. Jeremy Charles Witley (BSc Hons, MSc (Eng.)) who is a geologist with 34 years' experience in base and precious metals exploration and mining as well as Mineral Resource evaluation and reporting. He is a Principal Mineral Resource Consultant for The MSA Group (an independent consulting company). He is registered with the South African Council for Natural Scientific Professions ("SACNASP"), is a Fellow of the Geological Society of South Africa ("GSSA") and a Fellow of the Professional Society of Independent Experts of the Subsurface

Resources ("PONEN"), Kazakhstan. Mr. Witley has the appropriate relevant qualifications and experience to be considered a "Competent Person" as defined by JORC (2012) for the style and type of mineralisation and activity being undertaken.

The information in this announcement that relates to exploration results is based on information compiled by Mr Tomos Bryan, Exploration Manager for G&M. Mr Bryan is a member of the AusIMM. Mr Bryan is a geologist with sufficient relevant experience for Company reporting to qualify as a Competent Person as defined in the JORC Code 2012. Mr Bryan consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

Notes to Editor

KEFI Gold and Copper plc

KEFI is focused primarily on the development of the Tulu Kapi Gold Project in Ethiopia and its pipeline of highly prospective exploration projects in the Arabian-Nubian Shield. KEFI targets that production at Tulu Kapi will generate cash flows for capital repayments, further exploration and dividends to shareholders.

APPENDIX A

Additional Background information on the Hawiah VMS deposit

The Hawiah deposit is located within the Wadi Bidah Mineral District ("WBMD") in the southwest of the Arabian Shield. The WBMD is a 120-kilometre-long belt which hosts over 20 Volcanic Massive Sulphide ("VMS") known occurrences and historic workings for copper and gold.

GMCO commenced drilling at Hawiah in September 2019 and quickly confirmed that large-scale VMS style of mineralisation underlies the gossanous ridgeline at surface.

A total of 213 diamond drillholes, 114 reverse circulation drillholes and 57 trenches have led to the definition of the following three copper-zinc-gold-silver massive sulphide lodes that remain open at depth (see Figure 3 in Appendix C):

- Camp Lode: The deepest massive sulphide intersection at the Camp Lode is at a vertical depth
 of 590m where 4.4m true width of massive sulphide was intersected, this extends the total
 plunging strike length of mineralisation to 1.2km from the surface, with mineralisation
 remaining open. The average true width of the 'Camp Lode' is 7m with the widest intersection
 of 20m found at a depth of 90m;
- Crossroads Lodes: 1.1km long, with an average width of 5m with the widest intersection being 10m true width; and
- Crossroads Extension Lode: 0.7km long at surface, with a total plunging strike length of mineralisation to 1.3km to surface. The average width of 4.2m with the widest intersection being 13m true width. This lode has been explored to a maximum vertical depth of 500m where 6.2m of massive sulphide was intersected at 2.9% zinc and 0.79g/t gold.

Drilling spans over 5km of strike length at a drill spacing on the Camp and Crossroads Lodes at approximately 40-60m within areas reporting to Indicated classification and 120-140m for areas reporting to Inferred classification.

Drilling within the Central Area has primarily been focused on near surface Oxide and Transition domains and is limited at depth.

Summary of Resource Estimate Parameters and Reporting Criteria

In accordance with the JORC Code (2012 Edition), a summary of the material information used to estimate the Mineral Resource is detailed below (for further information please refer to Table 1 in Appendix D).

Geology and Geological Interpretation

The Hawiah VMS deposit is located on the eastern limb of a regional-scale antiform in within the locally know, 'Group 2' mafic volcanics of the Wadi Bidah Mineral Belt.

The Hawiah deposit forms a prominent north-south trending ridgeline, exposed over a total length of approximately 4,500m with a thickness that varies from 1-20m. The ridge has been interpreted by GMCO as the modern-day expression of the original VMS palaeohorizon. The rock package comprises a suite of gossanous ex-massive sulphides, chert breccias, banded ironstones and intermediate volcanic breccias. The deposit has been subject to varying degrees of supergene alteration as a result of groundwater interactions.

The deposit comprises of four weathering/alteration domains; oxide, oxide/transitional, transitional, and fresh, within which different resulting facies are described. The oxide domain typically shows supergene gold enrichment, while large portions of the transitional domain shows copper enrichment. The fresh mineralised domain appears to be a dominantly pyritic stratiform massive sulphide body.

Sampling Techniques and Hole Spacing

A total of 213 diamond drillholes (49,593), 114 reverse circulation drillholes (4,845) and 54 trenches (1,649m) have been used for this Mineral Resource Estimate. Drillhole spacing in the Oxide and Transition is typically 50m (Indicated classification) and 100m (Inferred classification). Spacing within the Fresh domain is typically 40-60 (Indicated classification) and 120-140m (Inferred classification).

Drillholes were logged for a combination of geological and geotechnical attributes. The core has been photographed and measured for RQD and core recovery.

Sampling and Sub-Sampling Techniques

Diamond drilling and surface trenching was used to obtain sample intervals that typically range from 0.3-3m for drilling, 1-3m for reverse circulation drilling and trenching.

Whole diamond core was split using a core saw by GMCO personnel and then submitted for preparation at ALS Jeddah, during which material was crushed to 2mm, pulverised to \sim 75µm, with 250g split sent for analysis. The sample preparation procedures used for reverse circulation and trench samples is consistent with the drillcore samples.

The mineralised interval for all sample types was continuously sampled from hangingwall to footwall, which included samples a short distance into the hangingwall and footwall.

Sampling Analysis Method

Samples have undergone analysis at the ALS Laboratory, located in Jeddah., Saudi Arabia.

- Gold Fire assay digest with AAS instrumentation
- Copper, Zinc, Silver: Four acid digest ICP-AES

QAQC

QAQC procedures include:

- Insertion of CRM standards, certified blanks, and field duplicates at rate of 15%
- Monthly internal QAQC reporting
- Regular communication with the laboratory, including periodical lab inspections.

Estimation Methodology

In summary, for this Mineral Resource Estimate, the following approach has been utilised:

- modelling of the mineralised lode and weathering domains in 3D, in conjunction with the G&M geological team;
- composited the sample data to 2 m intervals using length and density (assigned by rock type) weighting;
- applied high grade caps per estimation domain from log histograms;
- undertaken geostatistical analyses to determine appropriate interpolation parameters;
- created a block model with parent block dimensions of 25 m (strike) x 2 m (across strike) x 10m (dip), sub-blocked to a minimum of 1 m (strike) x 0.5 m (across strike) x 1 m (dip);

- interpolated Cu, Zn, Au and Ag grade into the block model using ordinary kriging;
- assigned average density values by weathering domain; and
- visually and statistically validated the estimated block grades relative to the original sample results.

Classification Criteria

The Hawiah resource has been classified in the Inferred and Indicated Mineral Resource classification category, as defined by JORC 2012.

Mineral Resource Statement Parameters and Cut-off Grade

MSA has applied basic economic considerations based on initial metallurgical testwork results and assumptions provided by the Company, similar deposit types located within Saudi Arabia and MSA's experience to determine which portion of the block model has reasonable prospects for eventual economic extraction by underground and open-pit mining methods.

To achieve this, the Mineral Resource has been subject to an underground Mineable shape optimisation (MSO) and open-pit optimisation studies, based on long-term metal price forecasts (with appropriate uplift to reflect potential for assessing Mineral Resources) for copper, zinc, gold and silver, to assist in determining the material with potential for underground and open pit mining and reporting above a suitable Resource Net Smelter Return ("NSR") USD/t cut-off value ("Resource NSR").

The Resource NSR cut-off calculation has been determined based on metal price forecasts, initial metallurgical recovery results and assumptions, mining costs, processing costs, general and administrative (G&A) costs, and other NSR factors. The final Resource NSR value calculation is based on average assumptions for the deposit and applied to the block model using the following formulae:

Resource NSR (USD) value for oxide material = (CU_PCT*0) + (ZN_PCT*0) + (AU_PPM*48.8912) + (AG_PPM*0.1217)

*Resource NSR (USD) value for transition and fresh material = (CU_PCT*72.6915) + (ZN_PCT*16.4965) + (AU_PPM*41.767) + (AG_PPM*0.6579)*

The cut-off values determined for reporting the Mineral Resource on a Resource NSR USD/t basis, are given below and were based on the technical and economic inputs presented in Table 3 below:

- USD17.6/t for open pit material reported from within the oxide mineralisation domain;
- USD21.9/t for open pit material reported from within the transition and fresh mineralisation domains; and
- USD49.5/t for underground material reported from within the fresh mineralisation domains.

Table 3 – Summary of key assumptions for conceptual underground stope optimisation, open pit
optimisation and cut-off grade calculation

Parameters	Units	
Production Rate		
Production Rate – Ore	(mtpa)	1.8 - 2.2
Geotechnical	,	
Overall Slope Angle (Oxide)	(Deg)	42
Overall Slope Angle (Transition)	(Deg)	42
Overall Slope Angle (Fresh)	(Deg)	53
Open Pit Mining Factors		
Dilution	(%)	Included in regularised Block Model 5x5x2.5
Recovery	(%)	m
Underground Mining Factors		
Minimum stope dimension	(m)	2m width x 25 m height x 20 m length
Dilution	(%)	10%
Processing (Oxide: Cyanide Leach)	•	
Recovery – Cu	(%)	0%
Recovery – Zn	(%)	0%
Recovery – Au	(%)	84%
Recovery – Ag	(%)	15%
Processing (Transition and Fresh: Floatation and	Cyanide Leach	
Recovery – Cu	(%)	92%
Recovery – Zn	(%)	76%
Recovery – Au	(%)	74%
Recovery – Ag	(%)	83%
Commodity Prices		
Cu	(USD/t)	9,350
Zn	(USD/t)	3,300
Au	(USD/oz)	1,820
Ag	(USD/oz)	26
Operating Costs		
Open Pit Mining (Oxide)	(USD/t rock)	2.2
Open Pit Mining (Transition)	(USD/t rock)	2.4
Open Pit Mining (Fresh)	(USD/t rock)	2.4
Underground Mining (Transition and Fresh)	(USD/t ore)	30
Processing (Oxide: Cyanide Leach)	(USD/t ore)	9.8
Processing (Transition and Fresh: Floatation and Cyanide Leach)	(USD/t ore)	13.9
G&A (incl. corporate, sales/ marketing)	(USD/t ore)	5.6

Mining and Metallurgical Methods and Parameters

Initial metallurgical test work has been completed for the transitional and fresh (sulphide) and oxide mineralisation at Hawiah. This test work comprised flotation and cyanide leach methods. Further test work is ongoing including Albion amenability and resin in leach testing. Once testwork is completed, if the metallurgical recovery results change significantly from the current approximated values, this would impact the parameters used to report the Mineral Resource, which, in turn, could also impact the tonnages and grades considered to have 'reasonable prospects for eventual economic extraction' for reporting in the Mineral Resource Statement.

Appendix B – Glossary of Technical Terms

Ag	Silver	
AAS	Atomic Absorption Spectroscopy	
AIC	All-in Costs	
Arabian-Nubian Shield	The Arabian-Nubian Shield is a large area of Precambrian rocks in various	
or ANS	countries surrounding the Red Sea	
ARTAR	Abdul Rahman Saad Al Rashid & Sons Company Limited	
Au	Gold	
Cu	Copper	
DFS	Definitive Feasibility Study	
g/t	Grams per tonne	
Gossan	An iron-bearing weathered product overlying a sulphide deposit	
ICP-AES	Inductively Coupled Plasma-Atomic Emission Spectroscopy	
IDW	Inverse Distance Weighted	
IP	Induced polarisation - a ground-based geophysical survey technique	
	measuring the intensity of an induced electric current, used to identify	
	disseminated sulphide deposits	
JORC	Joint Ore Reserves Committee	
JORC Code 2012	Australasian Code for Reporting of Exploration Results, Mineral	
	Resources and Ore Reserves	
m	Metres	
Massive sulphide	Rock comprised of more than 40% sulphide minerals	
Mt	Million tonnes	
Mtpa	Million tonnes per annum	
MRE	Mineral Resource Estimate	
NSR	Net Smelter Return	
OZ	Troy ounce of gold	
PCT	Percent	
PEA	Preliminary Economic Assessment	
PFS	Pre-Feasibility Study	
PPM	Parts per million	
Precambrian	Era of geological time before the Cambrian, from approximately 4,600 to	
	542 million years ago	
VMS deposits	Volcanogenic massive sulphides; refers to massive sulphide deposits	
	formed in a volcanic environment with varying base metals (copper, lead	
	and zinc) often with significant additional gold and silver	
Zn	Zinc	

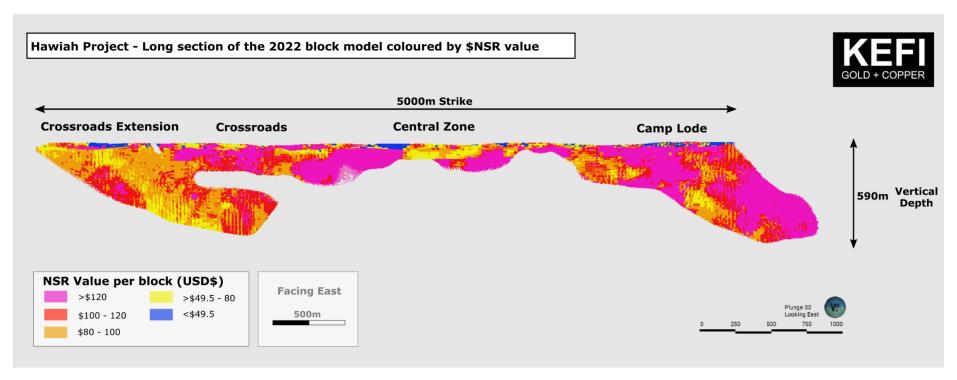


Figure 1 – Long section of the Hawiah deposit displaying NSR values within the Block Model

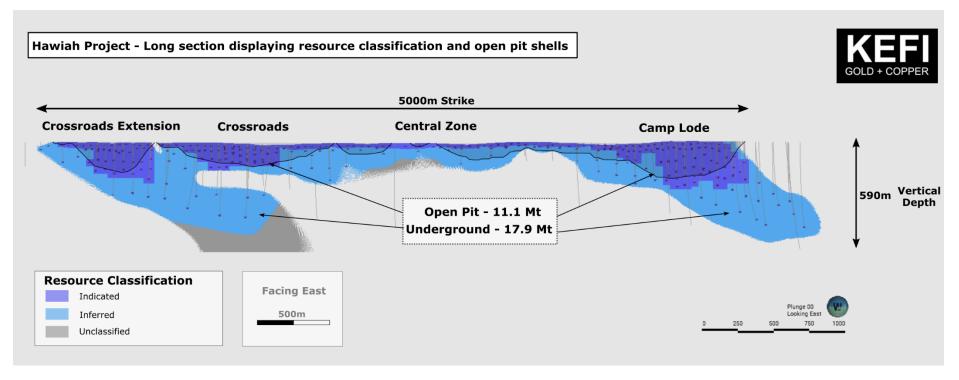


Figure 2 - Hawiah deposit in Long section displaying resource classification and the open pit locations

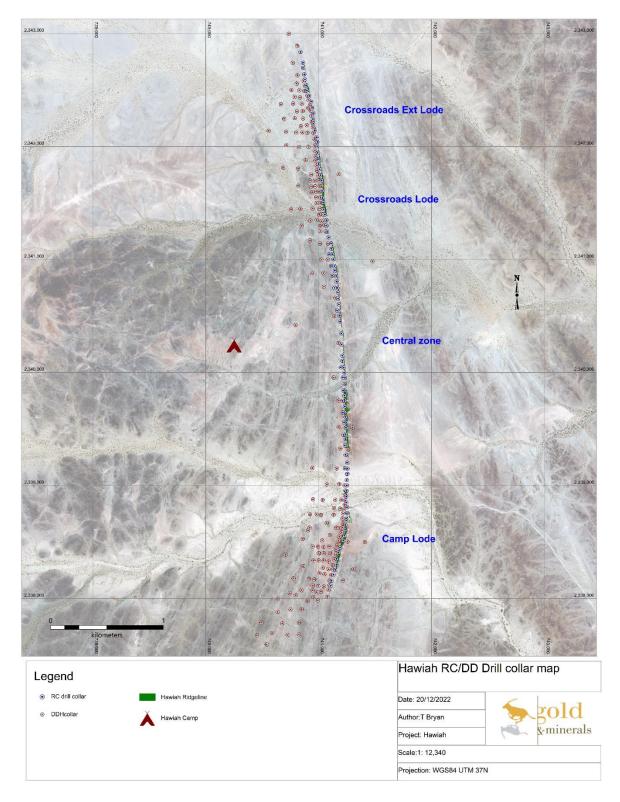


Figure 3 - Collar locations of diamond and RC drilling across the Hawiah project.

Appendix D – JORC Table 1

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).				
Criteria	JORC Code explanation	Commentary		
Sampling techniques	 Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information. 	 A total of 193 surface diamond drillholes (including 7 re-drilled holes) for 41,919 m and 53 surface trenches for 1,649 m had been completed at the Hawiah deposit, in the Project Licence area up until August 2021. In 2022, a further 20 diamond drillholes for 7,675 m were completed to test along strike and down plunge continuations. Three "mega-trenches" with a combined length of 140 m were excavated to expose the full gossan profile from hangingwall to footwall at a depth of between 4 m and 5 m below surface. 114 surface reverse circulation (RC) drillholes (including 10 re-drilled holes) for 4,845 m were completed in 2022 in order to provide representative samples from the oxide mineralisation. Sample intervals generally range from 0.3 m to 3.0 m for diamond drilling, 1.0 m to 3.0 m for trenching and 1.0 m to 3.0 m for RC drilling. Typically, 1.0 m nominal length samples were taken in mineralised zones from the trenches and RC holes, whereas longer samples were taken outside mineralised zones or in areas with poor recovery. One-metre-long samples were nominally taken from diamond drill core, however sample lengths were varied according to lithology and/or mineralisation intensity. Longer samples of two or three metre lengths were taken a distance into the hangingwall or footwall. The RC sub-samples were collected using a rig mounted ¼ riffle splitter under the cyclone. Field samples (half core, channel sample chips or RC chip sample split) were crushed to 70% passing 2 mm at the laboratory and then a 250 g split was pulverised to 85% passing 75µm, from which a charge for fire assay was prepared with AAS finish for gold. 4-acid digest with ICP-AES was used for silver, copper, and zinc. 		

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).					
Criteria	JORC Code explanation	Commentary			
Drilling techniques	• Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit, or other type, whether core is oriented and if so, by what method, etc.).	 Diamond drilling techniques were mostly HQ diameter (63.4mm core diameter) using double tube core barrels. HQ3 diameter core (with triple tube core barrels) was used for early drillholes (HWD_001 to HWD_025) and in zones where poorer ground conditions were anticipated, for example in the highly weathered oxide domain. Reverse circulation drilling used a bit size of 11.43 cm or 12.7 cm. 			
Drill sample recovery	 Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material. 	 Recovered core was measured for every interval and the core recovery percentage was calculated. Core recovery for each oxide state in the mineralised zone is as follows: Fresh: 99.7% Transitional: 93.3% Oxide-Transitional: 79.2% Oxide: 29.9% Core recovery within the oxide is poor due to the combination of hard siliceous gossan, soft spongy gossan, clay-rich material and cavities. HQ3 diameter core (with triple tube core barrels) was used zones where poorer ground conditions were anticipated, for example in the highly weathered oxide domain. No discernible relationship was found between Au, Ag, Cu or Zn grade and recovery. The three highest gold grade samples (>4 g/t Au) in diamond drillhole core of 16.3 g/t, 6.5 g/t and 5.5 g/t had low recovery (~30%). These grades are not unusual in trenches and RC drillholes. The majority of oxide and oxide transitional sample data is from the 2022 RC drilling campaign and trench sampling. Calculated mass recovery in the oxide zone is in the order of 62%. The calculation is based on a number of density assumptions. 			

Section 1 Samplin	Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).				
Criteria	JORC Code explanation	Commentary			
Logging	 Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography. The total length and percentage of the relevant intersections logged. 	 All drillcore and trench samples have been geologically logged. Geotechnical (RQD and core recovery) logging has been completed for all drillholes. Both quantitative (geotechnical logging of RQD and core recovery) and qualitative (lithology) logging was carried out. All core has been photographed. 100% of diamond core and trench sampling has been logged. Chip logging of RC samples was competed for all holes. 			
Sub-sampling techniques and sample preparation	 If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry. For all sample types, the nature, quality, and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled. 	 Whole core was longitudinally cut in half using a core saw on site and then half cores were submitted for preparation at the ALS laboratory in Jeddah, during which material was crushed to 70% passing 2 mm, and a 250 g split pulverised to 85% passing 75 µm for analysis. All sample material from each 1 m trench sample was sent to the laboratory and then crushed, split and pulverised in the same manner as the core samples. The RC sub-samples collected every metre from a ¼ riffle splitter at the rig were sent to the laboratory and then crushed, split and pulverised in the same manner as the core samples. The nature, quality, and sample preparation techniques are appropriate for all sample types. Field duplicates were taken at a rate of 1 in 20. These comprised: RC chip sample duplicates taken from the remaining ½ of the sample using a riffle splitter. Wet samples (at the base of transition zone) were sun-dried, hand crushed and riffle split for duplicate sample preparation. Quarter core duplicates Trench sample coarse duplicates. Sample sizes are appropriate to the grain size of the material being sampled. The variability of gold, silver, copper and zinc grades is generally low and the gold does not appear to occur as visible 			

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).				
Criteria	JORC Code explanation	Commentary		
		coarse free gold ("nuggety" mineralisation), there being no extreme gold grades.		
Quality of assay data and laboratory tests	 The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. 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. Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established. 	 Copper, zinc and silver were analysed at ALS Jeddah by 4-acid digest read with ICP-AES (Method Code ME-ICP61). High grade analyses were completed where the initial assay returned values at the trigger-limit of 5,000 ppm for Cu, 8,000 ppm for Zn and 75 ppm for Ag using method codes Cu-OG62, Zn-OG62 and Ag-OG62 respectively. Gold was assayed using fire assay and read with AAS. The methods of analysis involve near total digest and are standard methods that are applicable to the type of mineralisation at Hawiah. The Hawiah QAQC programme reserved approximately three in every twenty samples as QC samples (usually one blank sample, one Certified Reference Material (CRM) and one field duplicate), resulting in a total of approximately 15% QC samples for all drilling and trenching campaigns since 2015. The QC samples were inserted as part of the continuous sample numbering sequence. G&M has implemented a proactive approach to QAQC, whereby each batch of results is examined immediately on receipt from the laboratory, any issues are highlighted and corrective measures are implemented where necessary. Blank samples were not submitted for the 2015 trenching. Blank sample submission averaged 6% for the drilling and recent trenching. Certified blank material was purchased from OREAS, which is igneous material with gold and silver below the method detection limit but naturally contain small quantities of copper and zinc. The results of the blank samples indicate that minimal contamination occurred with no gold assays greater than ten times detection limit and only 4 failures for silver. Most copper and zinc assays are within or slightly higher than the blank sample upper limit. 		

Section 1 Samplin	g Techniques and Data (Criteria in this section apply to all succeeding	g sections).
Criteria	JORC Code explanation	Commentary
		 Twenty different CRMs were used to monitor the accuracy of the gold assays, ten for silver and eleven for copper and zinc. These were sourced from OREAS and Geostats Pty Ltd. The results of the CRM analysis demonstrate that there was no overall assay bias for any elements. Field duplicates comprise quarter core duplicates (512), RC chip duplicates (194) and trench sample coarse duplicates (7). 87% or the gold assays were within 20% precision and >95% of the silver copper and zinc assays were within 20% precision. The results indicate minimal sampling error and precise assays. The results of the QAQC demonstrate that the assays are accurate and precise with minimal contamination and that they are or sufficient quality for use in Mineral Resource estimation with a high degree of confidence.
Verification of sampling and assaying	 The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data. 	 Jeremy Witley of MSA completed a visit to the Hawiał project from 28 October to 02 November 2022. No drilling activities were taking place at the time, howeve exploration procedures, were explained and demonstrated by the G&M personnel. The "mega trench excavations, drillhole collars and exposed gossan were examined and their positions verified by hand-held GPS A number of diamond drill core intersections that covered the range of oxidation states and intensity o mineralisation at the project were examined. The significant copper assay results of these cores were verified by visual inspection of the remaining cores o these drillholes. No verification twin drilling has been completed. RO drilling into oxide material a short distance (10 m to 20 m below the trenches obtained similar mineralisation to tha obtained in the trenches with comparable gold and silve grades.

Section 1 Sampli	Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).			
Criteria	JORC Code explanation	Commentary		
		 The drillhole data are stored in a Datamine Fusion database. MSA carried out validation checks on the database outputs, with only minimal errors found that were corrected. No adjustments to assay data were made. MSA excluded the following drillholes and trenches from the grade estimate: Shallow trench, surface sample chip sample profiles (HWTR001- HWTR018), These were completed in the early stages of exploration and were not subjected to protocols that would be accepted for Mineral Resource estimation. Systematic trench sampling was completed over the same area during 2015 using methodology and QAQC processes to ensure representative sampling and assess the quality of the assays. Reconnaissance trench sampling completed on adjacent prospects within the project area (HAT054 to HAT060). Drillholes that were abandoned before drilling through the entire mineralised interval. In all cases these were redrilled to achieve a full intersection. Drillholes completed as part of the Geotechnical investigations, as no assay was completed. 		
Location of data points	 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. Specification of the grid system used. Quality and adequacy of topographic control. 	 The topographic survey for drillhole collars at Hawiah has been completed by using a Topcon ES-103 total station survey tool which provides a high degree of accuracy in terms of x, y, and z coordinates. All trenches were surveyed using differential GPS or land surveyor. All drillholes have been surveyed down-the hole by electronic multishot (Reflex EZ-Trac), at 6 m spaced readings for the diamond drillholes and 3 m spaced readings for the RC holes. The down- 		

Criteria	JORC Code explanation	Commentary
		 hole survey measurements were examined and spurious reading removed prior to de-surveying the drillholes. The grid system is WGS 84 / UTM zone 37. A topographic survey was completed by a G&M surveyor usin Topcon ES-103 total station. The resolution of topography-statio points is considered to better than 0.5 m, across the site, which adequate for the project.
Data spacing and distribution	 Data spacing for reporting of Exploration Results. Whether the data spacing, and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied. 	 Drillhole spacing in the sulphide Mineral Resource area is betwee 40 m and 60 m in the Indicated areas and approximately 120 m (less than 150 m) in the Inferred areas. The oxide and transitional areas have been intersected by trenches and drillholes spaced 5 m apart on strike and drillholes and trenches are on averag approximately 20 m apart on dip. Trenches were excavated across the deposit, 50 m apart on strike RC drilling was completed on a 50 m spacing along strike, generall intersecting the mineralisation between 10 m and 20 m direct beneath or slightly offset from the trench. Drillhole spacing of approximately 50 m is sufficient to establis grade continuity for the Mineral Resource up to an Indicated level of confidence. The Hawiah deposit is characterised by stron geological continuity over distances of several km along strike, a observed by continuous gossan outcrops, and widely space drilling of several hundred metres is sufficient to confirm this. Two metre composites using length and density (assigned weighting to create equal sample support for Mineral Resource estimation.
Orientation of data in relation to geological structure	 Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material. 	 Trenches are approximately horizontal resulting in close to truthickness for the steeply dipping mineralisation. Drillholes have been completed from surface at inclination typically between 50° and 65°, providing intersection angles with the mineralisation that typically range from approximately 70° t 30°.

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections).		
Criteria	JORC Code explanation	Commentary
		• The orientation of the drilling is not considered to have introduced any material bias to the drillhole samples or block model estimate
Sample security	• The measures taken to ensure sample security.	 Transport of core, RC chips and channel sample chips from drill/trench site to core processing was supervised by G&M personnel. Samples were driven to the analytical laboratory in Jeddah by a G&M driver. Sampled half and quarter core is kept in stacked core boxes at G&M's core storage area. Reject pulps are collected by a G&M driver and kept in G&M's storage area and stored in sealed plastic drums. The Hawiah exploration facility is fenced and access controlled by security guards at the entrance.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	 MSA carried out a review of the sampling techniques and inspected the sampled core and "mega-trenches". The CP considers that the sampling techniques are appropriate for the nature of the materia and mineralisation style at Hawiah.

Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section).			
Criteria	JORC Code explanation	•	Commentary
Mineral tenement and land tenure status	 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. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. 	•	G&M is a joint venture partnership between ARTAR and KEFI. The Exploration Licence is held by ARTAR, under the terms of the G&M Joint Venture agreement. ARTAR currently has a 70% share of the Project, with the remainder (30%) owned by KEFI. The Exploration Licence was granted by order of the Ministry of Energy, Industry and Mineral Resources and Deputy Ministry of Mineral Resources of Kingdom of Saudi Arabia. The Licence was originally awarded in 2014 and then renewed in October 2018

Section 2 Report	Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section).			
Criteria	JORC Code explanation	Commentary		
		 and again on 24 May 2022. The Licence is due to expire on 1st April 2027. There are no known impediments to obtaining a licence to continue with exploration activities. 		
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• Modern exploration at the Project commenced in 1936, with exploration activities including surface mapping, sampling and geophysics undertaken under the ownership of Saudi Arabian Mining Syndicate and, from 1956 and through to 1987, the KSA Directorate General of Mineral Resources as part of cooperative agreements. Most notably, the BRGM undertook a trench sampling program at the Hawiah prospect during 1987, which followed up on the results of earlier (1986-1987) rock chip sampling, mapping and geophysics, also undertaken by the BGRM. G&M subsequently acquired the Project in 2014. No drilling took place prior to G&M ownership.		
Geology	Deposit type, geological setting, and style of mineralisation.	 The Hawiah volcanogenic massive sulphide (VMS) deposit is located on the eastern limb of a regional-scale antiform in the Group 2 mafic volcanics of the Wadi Bidah Mineral Belt (WBMB). VMS deposits form at or slightly under the sea floor by the exhalation of metal rich plumes and subsequent settling on or replacement of the fine grained sediments. They are tabular in nature and characterised by strong geological continuity over 100s of metres to several km in their undisturbed form. The Hawiah deposit forms a prominent north-south trending ridgeline exposed over a total length of approximately 4,500 m, with a thickness that typically varies from 1 m to 15 m. The pronounced ridgeline is due to the formation of a siliceous gossan representing the oxidised, near surface portion of the original VMS mineralised horizon. The rock package comprises a suite of gossanous ex-massive sulphides, chert breccias, banded iron stones and intermediate volcanic breccias. The deposit has 		

Section 2 Report	Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section).		
Criteria	JORC Code explanation	•	Commentary
		•	been subject to varying degrees of supergene alteration as a result of groundwater interactions. The deposit comprises four oxidation domains; oxide, oxide- transition, transition and fresh. The oxide and oxide-transition domain typically shows supergene gold enrichment and copper and zinc leaching, while copper enrichment from supergene processes is evident in certain parts of the transitional domain. The fresh mineralised domain is dominantly pyritic stratiform massive sulphide containing fine grained copper sulphides (chalcopyrite) and zinc sulphide (sphalerite) and is characterised by low base and precious metal grade variability.
Drill hole Information	 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: easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length. 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. 	•	Exploration results not being reported. The exclusion of detailed information lists pertaining to the exploration results would not detract from the understanding of the Mineral Resource in this report,
Data aggregation methods	 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. Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. 	•	Exploration results not being reported.

Section 2 Report	Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section).		
Criteria	JORC Code explanation	Commentary	
	• The assumptions used for any reporting of metal equivalent values should be clearly stated.		
Relationship between mineralisation widths and intercept lengths	 These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. 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'). 	 The mineralisation is typically sub-vertically dipping. Trenches are horizontal resulting in near true thickness intersections. Drillholes were drilled perpendicular to strike and at inclinations between approximately 50° (shallower depth holes)and 65° (deeper holes). There is a tendency for the drillhole inclination to decrease with depth resulting in drillholes intersecting the mineralised layer at between 30° and 70°. 	
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.	Exploration results not being reported.	
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.	Exploration results not being reported.	
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. 	• Three "mega-trenches" were excavated into the oxide zone to expose the full gossan profile from hangingwall to footwall at a depth of between 4 m and 5 m below surface. Samples of each gossan lithology were taken for density measurements using both a volumetric method ("calliper method") and by weighing in air and water (following wax-sealing). Mapping of the sidewalls and examination of the trench sidewall to establish a cavity factor, together with the density samples allowed for an estimation of insitu bulk density for the oxide material.	

Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section).			
Criteria	JORC Code explanation	•	Commentary
Further work	 The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	•	Further work planned for the project is the advancement towards a various levels of feasibility study. This is in conjunction with ongoing metallurgical test work and geotechnical drilling. Potential exists to expand the Mineral Resource at depth with additional drilling. However, the current focus of the project is on studies to demonstrate the techno-economic feasibility of the project.

Section 3 Estin	Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in section 1, and where relevant in section 2, also apply to this section).		
Criteria	JORC Code explanation	Commentary	
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. Data validation procedures used. 	 Data is electronically logged using "tough books". Laboratory results are delivered electronically and transferred into the Fusion database. Grades are checked by the project geologist to ensure that they are consistent with observations made on the samples. MSA performed a number of database validation checks on the G&M digital sample data and found no material issues in the final database. These include checks for completeness of data, unexpected positional data, grades outside of expected ranges, gaps and overlaps in the sampling data. 	
Site visits	 Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case. 	 Jeremy Witley of MSA completed a visit to the Hawiah project from 28 October to 02 November 2022. No drilling activities were taking place at the time, however exploration procedures, were explained and demonstrated by the G&M personnel. The "mega trench" excavations, drillhole collars and exposed gossan were examined and their positions verified by hand-held GPS. A number of diamond drill core intersections that covered the range of oxidation states and intensity of mineralisation at the project were examined. The significant copper 	

Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in section 1, and where relevant in section 2, also apply to this section).		
Criteria	JORC Code explanation	Commentary
		assay results of these cores were verified by visual inspection of the remaining cores.
Geological interpretation	 Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit. Nature of the data used and of any assumptions made. The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation. The factors affecting continuity both of grade and geology. 	 Mineralisation wireframes have been defined primarily based on lithology logging, elevated copper and gold grades (relevant to zone of anticipated grade enrichment or depletion, as described below) and visual assessments of geological and grade continuity. Selected mineralised intervals for oxide, oxide-transition, transition, and fress zones were typically based on visually distinguishable boundaries between the mineralised zones and background host rock, with lowed grade samples and interburden incorporated where necessary to honour geological continuity. For the oxide domain, mineralisation is primarily modelled based on combination of gossan, saccharoidal silica and haematitic cherel lithologies (i.e., weathering products of the massive sulphide), relative enrichment of gold and depletion in copper and zinc, and typical red orange colour observed in core photos. The oxide-transition zone occurs in certain areas between the oxid and transition zones and represents material considered to b chemically similar to the oxide (elevated gold, depleted copper however with physical characteristics similar to the transition zone This zone is narrow and not consistently developed across th property. In the transition zone, mineralisation is mainly modelled based on massive sulphide logging and core observations, where transition zone is characterised by a sudden increase in copper grade and more porou nature, while an increase in zinc grade is apparent in the more massiv lower transition zone. The boundary with the fresh rock is generall visibly distinct in core. Copper grades are elevated in the transitio zone as a result of supergene processes which carry on into the upper portion of the sulphide zone forming a gradational grade boundary.

Section 3 Estim	Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in section 1, and where relevant in section 2, also apply to this section).			
Criteria	JORC Code explanation	Commentary		
		 The base of the transition zone is predominantly defined by the observed sulphide state, where dark grey altered sulphides become yellow unoxidised massive pyrite. Within the fresh rock, mineralisation is primarily modelled based on massive sulphide logging, which correlates closely with Cu-Zn-Au-Ag mineralisation. Hangingwall and footwall contacts are generally sharp and visually distinct with some banded and semi-massive sulphide close to the contact in places. 		
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.	 Mineralisation modelled comprises a continuous subvertical tabular layer for approximately 4.5 km along north to south strike at outcrop. Localised minor pinch outs occur, which are not significant. Two major zones (lodes) of down-dip extent have been defined (the Camp lode in the south and the Crossroads lode in the north) which plunge approximately 30°to the south for 1.3 km (Camp) and 1.5 km (Crossroads) to approximately 700 m below surface. The mineralised layer normally has a thickness of between 1 m and 15 m and thins towards the edges of the lodes. The central portions of the deposit between the main lodes extends vertically to between 100 m and 200 m. The mineralised zone bifurcates in some portions of the deposit and this is clearly seen in gossan mapping and drilling in localised areas of the Central Lode and Camp Lode in the southern part of the deposit. 		
Estimation and modelling techniques	 The nature and appropriateness of 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 description of computer software and parameters used. The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. The assumptions made regarding recovery of by-products. 	 The Mineral Resource estimation followed the following process: G&M modelled the mineralisation extents and oxidation states using Leapfrog Geo software. MSA accepted the mineralisation models following an interactive review process during which slight adjustments to the original model were made. The validated drillhole data was selected from within the wireframes by mineralisation state. Basic statistical evaluation was carried out on the raw data, including scatterplots by 		

Criteria	JORC Code explanation	Commentary
	 Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation). In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. Any assumptions behind modelling of selective mining units. Any assumptions about correlation between variables Description of how the geological interpretation was used to control the resource estimates. Discussion of basis for using or not using grade cutting or capping. The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. 	 oxidation state to establish relationships between varial and trend analysis to establish stationary zones. The selected data was composited to 2 m intervals us length and density (assigned by rock type) weighting. Top caps were defined based on examination of histogra cumulative log probability plots and mean-variance pl The outliers were then examined spatially to assess whet they formed a high grade sub-domain and whether a t cap should be applied. The data for each estimation domain was selected us various soft and hard domain boundaries between oxidat states and then the defined top-caps were applied to selected domain data. Variograms were modelled with normal scores transform data for each element and oxidation state. The oxide a oxide-transition domains were combined and the transiti and fresh domains were assessed separately for the Ca lode and Crossroads lode. For gold and silver the transiti and fresh domains were combined and for copper and z the transition and fresh domains and plunging 25° (Crossroat to 30° (Camp) to the south within the steeply dipping pl of mineralisation for the transition and fresh domains. copper and zinc the horizontal primary direction or maintained in the oxide and transition domains due deeper supergene effects, whereas a plunging prim direction was applied to the fresh. The oxide domain variogram ranges were modelled betw. 70 m and 210 m in the primary (strike) direction, 16 m to m in the down-dip direction and 2.5 m to 10 m in the acristick direction, with gold displaying the shortest continu. In the fresh domain, variogram ranges are typically betw

Section 3 Estima	Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in section 1, and where relevant in section 2, also apply to this section).			
Criteria	JORC Code explanation	Commentary		
		 100 m and 250 m in the major and semi-major directions with short across strike ranges typically from 5 m to 10 m. The three dimensional solid models were filled with parent cells with dimensions of 25 mY (strike) by 2 mX (across strike) by 10 mZ (dip). Sub-cells to a minimum of 1 mY (strike) by 0.5 mX (across strike) by 1 mZ (dip) were created to closely fit the solid wireframe model along the edges. The dip and dip direction of each model cell was estimated for use in the "Dynamic Anisotropy" process that modifies the search ellipse according to local variations in dip and strike. The boundary conditions for each oxidation state were assessed for each element depending on the observed grade patterns near the contacts and the impact of the oxidation profile on each element. For gold and silver a soft boundary was used between oxide and oxide-transition and between transition (or oxide where oxide transition not developed) and transition. For zinc and copper a soft boundary was used between oxide and oxide-transition. The transition zone allowed samples from the fresh zone, and the fresh zone allowed samples from the fresh zone. Search parameters selected data within the modelled variogram range for each element, oxide domain and spatial domain (where relevant). A second search 1.5 times the variogram range selected from within the variogram range. A third search 3 times the variogram range selected samples where the minimum number was not selected in the first two passes. A further expanded fourth search was applied to blocks that were still not estimated, which define low 		

Criteria	JORC Code explanation Commentary
Criteria	JORC Code explanation Commentary confidence estimates not normally considered as a Resource. A minimum of 5 and a maximum of 16 two metre comwere used for first pass estimation, a minimum of maximum of 12 two metre composites were used for pass estimation, and a minimum of 5 and a maxim two metre composites the nearest eight composites to the block. A maximum of four composite samples were allowed single drillhole, except for the fourth pass set eight composite was not applied. Cu, Zn, Au, and Ag grade were interpolated into the model using ordinary kriging using the back transvariogram model data. Density was assigned a value of 2.32 t/m³ for oxide. other domains the mean measured density was assigned by logging interval and then composited into the mineralised envelope for each oxide state. Den assigned by logging interval and then composited into the direction horizontally on strike, and 120 mY by 5mX by for the oxide and transitional domains with the direction horizontally on strike, and 120 mY by 5mX by for the fresh domain. A minimum number of a maximum number of 8 composites was used in a the estimate and no restriction was applied to the nu composites was used in a the stimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the estimate and no restriction was applied to the nu composites was used in a the stimate and no restriction was applied to the nu composites was used in a the stimate and by to the ra

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		 No check estimates were carried out. SRK completed a Minera Resource with an effective date of 15 November 2021. This estimate did not include the shallow reverse circulation drilling or the deep resource extension drilling as this was carried after the effective date Similar grades were estimated, although the step-out drilling increased the tonnage in this 2022 estimate by approximately 15% and a larger portion of Indicated Resources were declared due to additional near surface drilling. No by-products have been estimated as part of this MRE. No deleterious elements have been estimated as part of this MRE. Block dimensions are of 25 mY (strike) by 2 mX (across strike) by 10 mZ (dip). These dimensions were chosen to reflect half the average drillhole spacing near surface and to appropriately reflect the grade variability within the modelled mineralised domains. Selective mining units have not been modelled as part of this MRE. For Whittle open-pit optimisation, the block model was regularised to 5 mX by 5 mY by 2.5 mZ. No correlation was found between the estimated variables during raw statistical analysis, therefore they were estimated independently of one another. No reconciliation data are available.
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.
Cut-off parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	 A Whittle optimised pit shell was used to report open-pit Minera Resources and a mineable shape optimisation (MSO) was completed for underground Mineral Resources outside the open-pit shell. The Whittle, MSO and cut-off grades were derived using the following cost and revenue assumptions: Metal Price: Cu 9350 USD/t, Zn 3300 USD/t, Au 1820 USD/oz, Ag 26 USD/oz. Dilution included in regularised block model for open-pit and 10% applied for underground.

Criteria	JORC Code explanation	Commentary
		 Concentrator Recovery: Cu 92%, Zn 76%, Au 84% in oxide and 74% in fresh, Ag 15% in oxide and 83% in fresh. No recovery of zinc and copper in oxide. Smelter recovery/payability: Cu concentrate - Cu 95.5%, Au 90%, Ag 90%. Zn concentrate - Zn 84.9%. Au Dore - Au 99.5%, Ag 99.6%. Pit slope angle: Fresh 53%, Transition and Oxide: 42% Open pit dilution. Included in 5 mX by 5mY by 2.5 mZ regularised block. Underground stope size 20 m strike, 25 m dip, minimum 2 m stope width. Total mining cost: open pit oxide 2.2 USD/t, open pit transition and fresh 2.4 USD/t, underground 30.0 USD/t. Cost adjustment for open-pit depth USD0.004/ vertical m. Total Processing cost: oxide 15.4 USD/t, transition and fresh 19.5 USD/t. G&A: 5.6 USD/t ore. A net smelter return (NSR) calculation was carried out by G&M that was reviewed and accepted as reasonable by MSA. The cut-off grade was applied on a NSR basis: underground fresh ore 49.5 USD/t, open-pit transition and fresh ore 21.9 USD/t, open-pit oxide ore 17.6 USD/t. NSR was calculated for each block model cell: Oxide = (Cu %*0)+(Zn%*0)+(Au g/t 48.8912)+(Ag g/t*0.1217) Transition and Fresh = (Cu %*72.6915)+(Zn%*16.4965)+(Au g/t *41.767)+(Ag g/t*0.6579)
Mining factors or assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this	 Mineral Resource. The remainder of the Mineral Resource will be extracted using underground mining methods such as long-hole open stoping with panels of 20 m strike, 25 m dip, minimum 2 m stope width and

Section 3 Estimation	ation and Reporting of Mineral Resources (Criteria listed in section 1	I, and where relevant in section 2, also apply to this section).	
Criteria	JORC Code explanation	Commentary	
	should be reported with an explanation of the basis of the mining assumptions made.		
Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	 Copper and zinc sulphides are expected to be recovered by flotation to produce a concentrate containing copper, gold and silver. A separate concentrate for zinc is expected to be produced. The gold and silver will be recovered from the oxide zone using leaching to produce Dore. No copper or zinc will be recovered from the oxide zone. 	
Environmental factors or assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• MSA is unaware of any environmental factors which would preclude the reporting of Mineral Resources.	
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 representativeness of the samples. 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. 	 For oxide density: three "mega-trenches" were excavated into the oxide zone to expose the full gossan profile from hangingwall to footwall at a depth of between 4 m and 5 m below surface. Samples of each gossan lithology were taken for density measurements, using both a volumetric method ("calliper method") and by weighing in air and water (following wax-sealing). The two methods gave similar results and the average of the two was used for each lithology. Mapping of the sidewalls and examination of the trench sidewall to establish a cavity factor, together with the density samples allowed for an estimation of in-situ bulk density for the oxide material. The cavity 	

Section 3 Estir	Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in section 1, and where relevant in section 2, also apply to this section).		
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	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	 factor varied between 5% and 15% depending on the nature of the exposure. Small sinkholes containing sand were included in the estimation. The average estimate value for the three "mega trenches" was applied to all oxide material. It is likely that the oxide density will vary across the Mineral Resource, with lower in-situ bulk density expected in the wadi areas and potentially higher density at depth where sink holes may be less frequent. Density was assigned a value of 2.32 t/m³ for oxide. Density measurements were made on drill core during the 2019-2022 diamond drilling programmes. The Archimedes principle of weight in air versus weight in water was used on pieces of core typically measuring 10 cm to15 cm in length. The cores were waxed when visibly porous. For oxide-transition, transition and fresh domains: the mean measured core density was assigned to the massive sulphide for each oxide state and a mean density for the remaining group of lithologies (interburden) within the mineralised envelope for each oxide state. Density was assigned by logging interval and then composited to 2 m intervals and estimated using inverse distance to the power of 3 (ID3). A 10% void factor was then applied to the oxide-transition and 5% to the transition domains. 	
Classification	 The basis for the classification of the Mineral Resources into varying confidence categories. 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). Whether the result appropriately reflects the Competent Person's view of the deposit. 	 The Mineral Resource was classified into Indicated and Inferred categories. In classifying the Mineral Resource, MSA considered, confidence in the data, geological continuity, geological model confidence and grade continuity. The data are generally of high quality: Core recovery in the fresh domain is excellent and good in the transition domain with zones of poorer recovery in the upper transition. Poor core recovery was noted in the oxide domain, however this only affects six diamond drillholes as the remainder of the drillholes in this domain are by reverse circulation drilling which is less impacted by recovery. 	

JORC Code explanation

Criteria	JORC Code explanation	Commentary
		 The oxide variography demonstrates continuity of 70 m strike b 20 m dip for gold, which is longer or similar to the drillhole and trench spacing. Variogram model ranges are in excess of the dat spacing for silver in the oxide. Modelled variogram ranges of between 100 m and 250 m in the transition and fresh domains are well in excess of the genera drillhole spacing of 40 m to 60 m over much of the area. Well defined grade trends occur that are aligned with expected near horizontal orientations and strike direction in the oxide and transition domains where oxidation is a major control. We defined grade trends align with the plunge of the lodes in the fresh mineralisation. Considering the aforementioned factors, the classification was applied as follows: oxide mineralisation was classified as Indicated where data spacing is approximately 50 m along strike by 25 m down-dip or closer. Transition mineralisation was classified as Indicated where the estimate are informed by a grid of closer than approximately 60 m apar while considering the directions of strongest continuity. The remainder of the deposit was classifies as Inferred where withit the sparse drillhole grid of up to approximately 150 m witt maximum extrapolation of between 100 m and 120 m depending on the geological continuity of the area. Blocks estimated withit the fourth search pass were generally not classified as Minera Resources.
udits or reviews	• The results of any audits or reviews of Mineral Resource estimates.	 Members of the G&M Hawiah geological team have reviewed and accepted this estimate.

Criteria	JORC Code explanation	Commentary
Discussion of relative accuracy/ confidence	 Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. 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. Documentation should include assumptions made and the procedures used. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. 	 The Hawiah Mineral Resource has reached a level of confidence consistent with that of a pre-feasibility study. Targeted infill drillin and additional oxide density data will be required to bring portions of the Mineral Resource to Measured confidence. Despite block model estimation having been carried out, Inferre Mineral Resources should be considered global in nature and no suitable for mine planning to derive Ore Reserves. No production data are available.