# INDEPENDENT TECHNICAL REPORT MINERAL RESOURCE ESTIMATE UPDATE KORA AND JUDD GOLD DEPOSITS, KAINANTU PROJECT, PAPUA NEW GUINEA



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# 1 SUMMARY

#### 1.1 INTRODUCTION

This report is an Independent Technical Report dated 20 January 2022 of the geology, exploration, and Mineral Resource estimates for the Kora and Judd gold-copper deposits at the Kainantu project. The Kainantu property covers a total area of 862 sq.km and is located in the Eastern Highlands Province of Papua New Guinea, approximately 180 km west-northwest of Lae.

K92 Mining Inc. (K92) requested Nolidan Mineral Consultants (Nolidan), to prepare a report in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101) incorporating the results of recently completed Mineral Resource estimates (MRE) of the Kora and Judd gold-copper deposits at the Kainantu mine.

H&SC were engaged by K92 to prepare an updated MRE for the Kora deposit previously reported by H&SC in July 2020 and an initial MRE for the newly discovered Judd deposit.

K92 intends that this report be used as an Independent Technical Report as required under Part 4 "Obligation to File a Technical Report" of NI 43-101 to support publicly disclosed information. The MRE will be used in the feasibility study for the potential of expanding the Kainantu mine to treat 1,200,000 tpa of ore by installing a new process plant, while allowing the existing processing plant to be available in the future.

The Project as described herein is 100% owned by K92 Mining Limited (K92ML); a company incorporated in Papua New Guinea, which is 100% owned by K92 Holdings (PNG) Limited (K92PNG), a 100% owned subsidiary of K92 Holdings International Limited (K92 Holdings). K92 owns 100% of the project through its wholly owned subsidiary, K92 Holdings.

K92PNG acquired K92ML from Barrick (Niugini) Limited (Barrick) pursuant to an agreement (the K92ML Purchase Agreement) dated 11 June, 2014 (which closed 06 March, 2015), for the sum of US\$2 Million. Under the terms of that agreement K92PNG was obligated to make additional payments of up to US\$60 Million. During 2019 the K92ML Purchase Agreement with Barrick was amended whereby K92PNG revised the contingent payment to a fixed payment of US\$12.5 million which was paid to Barrick Gold Corporation on 23 August, 2019.

K92 Mining Inc. (formerly Otterburn) is a company incorporated under the laws of British Columbia, Canada; the common shares of which are publicly listed on the Toronto Stock Exchange.

K92ML is the registered holder of the following tenements in PNG (MRA, 2020), as issued by the applicable government authorities in accordance with the PNG Mining Act 1992 (the "Mining Act"):

- Mining Lease 150 (ML150), effective until June 13, 2024;
- Mining Easements 80 and 81 (ME80 and ME81), each effective until June 13, 2024;
- Licence for Mining Purposes 78 (LMP78), effective until June 13, 2024;
- Exploration Licence 470 (EL470), effective until February 04, 2021; K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 693 (EL693), effective until February 04, 2019; K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 1341 (EL1341), effective until June 20, 2020. K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 2619 (EL2619); effective until January 22, 2022.
- Exploration Licence 2620 (EL2620); effective until June 02, 2023.

The renewal of ML150, ME80, ME81, and LMP78 occurred immediately prior to the acquisition of K92ML by K92PNG.



Kainantu Project Location and Tenements Source: K92ML (2022)

# 1.2 GEOLOGY AND MINERALIZATION

The Kainantu property is located within the New Guinea Thrust Belt, close to its northern contact with the Finisterre Terrane. The property area is underlain by metamorphosed sedimentary rocks of the Early Miocene Bena Bena Formation, unconformably overlain by Miocene age sedimentary and intermediate volcanic rocks of the Omaura and Yaveufa Formations. These formations were intruded in the mid-Miocene by the Akuna Intrusive Complex, which comprised multiple phases of mafic to felsic magma. Late Miocene age Elandora Porphyry dykes formed small high-level crowded feldspar porphyry dykes and diatreme breccias. A north-northeast trending transfer structure transects the area, with associated gold/copper mineralization, alteration and porphyry complexes aligned along it.

Mineralization on the property includes gold, silver and copper in epithermal Au-telluride veins (Irumafimpa) and Au-Cu-Ag sulphide veins of Intrusion Related Gold Copper ("IRGC") affinity (Kora and Judd) and also less explored porphyry Cu-Au systems; and alluvial gold. The Kora Consolidated vein systems (including Kora, Eutompi and Kora North) has been demonstrated from K92ML's drilling and surface mapping results to be a continuous mineralised structure, over 1km in strike to date. This mineralized structure occurs in the centre of a large mineralisation system approximately 5 km x 5 km in in which drilling has identified several individual zones of IRGC and porphyry style mineralization. The April 2020 MRE combined the Kora, Kora North and Eutompi deposits as a single Kora Consolidated Mineral Resource. The adjacent Irumafimpa deposit to the north of the Kora Vein, has had recent mining activity.

The current Mineral Resources for Kora Consolidated and Irumafimpa occupy a broad northwest trending mineralized zone more than 2.5 km long and approximately 60 to 80m wide with down dip continuity of over 1,000m. The Kora Vein mineralised zone comprises a series of individual veins and stringer vein systems named from west to east, as K2, Kora Link and K1. The Judd vein system, which is located 90 to 150m east of Kora Consolidated, comprises multiple veins starting with J1 as well as J2 to J4, although these latter veins are yet to be defined by drilling. The total width across the Judd vein system from J1 to J4 is between 60 to 80m. All the vein systems are composed of quartz sulphide veins that vary in width throughout the vein systems from <1m pinch

& swell structures at Irumafimpa to veins up to 10m at Kora Consolidated. Strike continuity of the individual veins is variable.

The figure below shows the main vein systems and porphyry targets identified to date at the Kainantu project with an overlay of Apparent Conductivity contours from the recent airborne MT survey.



Judd, Kora and Irumafimpa Vein Systems with MobileMT Contours

#### Source: K92ML (2021)

At Kora Consolidated and to the north along strike at Irumafimpa two stages of mineralization have been recognized. There is an early sulfide-rich copper-dominant stage overprinted by a later quartz-rich mineralisation stage with high grade gold associated with tellurides. At Kora Consolidated both the sulphide-rich copper-dominant and quartz-rich Au-dominant mineralization occur along the same NW trending sub-vertical structure, tellurides are sometimes present but are insignificant and copper mineralisation is in economic concentrations and generates revenue for the mine. The Kora Consolidated deposit currently comprises two parallel, steeply west dipping, N-S striking quartz-sulphide vein systems, K1 and K2. An additional structure, the Kora Link, has also been defined and provides a possible link between the two main vein systems. Drilling has confirmed that the overall system has a vertical extent greater than 1000m.



Kora Judd and Irumafimpa Longitudinal Section

Source: K92ML (2021)

# 1.3 2022 KORA CONSOLIDATED RESOURCE ESTIMATE

The updated Global Mineral Resource estimate (using a 1.75g/t gold cut-off) for the Kora Consolidated deposit effective 11 November 2021 is tabulated below:

Global									
Category	Mt	Au g/t	Au Moz	Ag g/t	Ag Moz	Cu %	Cu Kt	Au_Eq g/t	Au_Eq Moz
Measured	2.8	9.07	0.8	15.7	1.4	0.85	24.1	10.51	1.0
Indicated	4.4	6.68	0.9	20.2	2.8	0.97	42.4	8.35	1.2
Total M & I	7.2	7.62	1.8	18.4	4.3	0.92	66.4	9.20	2.1
Inferred	8.1	7.12	1.8	27.3	7.1	1.38	111.1	9.48	2.5

# 1.4 2022 JUDD RESOURCE ESTIMATE

The Global Mineral Resource estimate (using a 1.75g/t gold cut-off) for the Judd deposit effective 20 January 2022 is tabulated below:

Global									
Category	Mt	Au g/t	Au Moz	Ag g/t	Ag Moz	Cu %	Cu Kt	Au_Eq g/t	Au_Eq Moz
Measured	0.22	11.26	0.08	19.9	0.14	0.72	1.59	12.56	0.09
Indicated	0.15	7.46	0.04	13.9	0.07	0.77	1.20	8.76	0.04
Total M & I	0.38	9.70	0.12	17.5	0.21	0.74	2.79	11.00	0.13
Inferred	1.01	4.24	0.14	11.0	0.36	0.87	8.82	5.66	0.18

#### 1.5 2022 COMBINED KORA CONSOLIDATED AND JUDD RESOURCE

	Tonnes	Go	old	Silv	er	Co	pper	Au	_Eq
Kora and Judd	Mt	g/t	Moz	g/t	Moz	%	Kt	g/t	Moz
Measured	3.1	9.23	0.9	16.0	1.6	0.84	25.7	10.66	1.0
Indicated	4.5	6.70	1.0	20.0	2.9	0.97	43.6	8.36	1.2
Total M&I	7.6	7.72	1.9	18.3	4.5	0.91	69.2	9.29	2.3
Inferred	9.1	6.80	2.0	25.5	7.4	1.32	119.9	9.05	2.6

- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
- Resources were compiled at 1.75, 2.5, 3, 4, 5, 6, 7, 8, 9 and 10 g/t gold cut-off grades for Kora and 1.75, 2.5, 3, 4, 5 for Judd.
- Density (t/m<sup>3</sup>) is on a per zone basis, K1, K2: 2.84 t/m<sup>3</sup>; Kora Link: 2.74 t/m<sup>3</sup>; Judd: 2.71 t/m<sup>3</sup>; Waste: 2.67 t/m<sup>3</sup>
- Minimum mining width for wireframes: Kora: 5.2 m; Judd: 5.2 m.
- Reported tonnage and grade figures are rounded from raw estimates to reflect the order of accuracy of the estimate.
- Minor variations may occur during the addition of rounded numbers.
- Estimations used metric units (metres, tonnes and g/t).
- Gold equivalents are calculated as AuEq = Au g/t + Cu%\*1.607\*92.8% + Ag g/t\*0.0125\*89%. Gold price US\$1,600/oz; Silver US\$20/oz; Copper US\$3.75/lb. Metal payabilities and recoveries are incorporated into the AuEq formula. Recoveries of 92.8% for copper and 89% for silver.

The key to the confidence of the resource estimates is the apparent good reconciliation of the block model with the mill production in an area of very high gold grades. This would strongly support the methodologies used for the resource modelling, in particular the geological interpretation, the composite interval, the apparent lack of need for top cutting, the search parameters and the relatively small block size.

#### **1.6 EXPLORATION TARGETS**

The Kainantu Project is recognised as an important mineral district, owing to the presence of multiple economic vein deposits, as well as additional veins and porphyry prospects, at various stages of exploration. K92 Mining Ltd has a very substantial land package of exploration tenement totalling 862km<sup>2</sup>.

Within the K92ML tenements, two prominent belts, the Bilimoia-Kesar and Arakompa-Kathnell corridors, overlap. The economic veins are focussed at this intersection. There is potential along both corridors, in particular between Kora and A1, where mineralization exists as both narrow, high grade and also bulk tonnage moderate grade mineralization.

There are numerous lodes which have only been partially drill tested, with all open in most directions including the Karempe lode, where some high grade intercepts have been returned. Maniape and Arakompa are other veins to be followed up, with both vein systems having historic inferred resources. Most of the veins are parallel to the main Kora Consolidated lode, while Maniape and Arakompa are oblique. A number of veins are, as yet, only partially explored, yet have the potential to represent significant vein lodes. These include the K3 vein and an additional vein to the east of Judd.

There are a number of porphyry systems in the Kainantu Project area, two of which, Tankaunan and Kokofimpa, were drill tested by Barrick. Drilling results to date indicate the Blue Lake Porphyry has the potential to be a large mineralised porphyry deposit. At Blue Lake a pronounced silica-clay lithocap overlies the mineralised porphyry and K92ML geologists have postulated that a similar lithocap at A1 may conceal a large porphyry at depth.

An airborne geophysical (Magnetotellurics or MobileMT) survey was completed in 2021 over the entire area of K92ML's tenements. Numerous conductive targets were identified, and, where previously drill tested, conform closely with known deposits and prospects, both vein and porphyry occurrences.



Kainantu geology and known vein and porphyry prospects.

(Source: K92ML (2021)

#### 1.7 MINING AND PROCESSING

Rehabilitation by K92ML of the Irumafimpa mine, process plant and associated infrastructure commenced in March 2016 with first batch of underground ore from Irumafimpa treated in October 2016. K92ML started the Kora mine project by completing the underground incline drive from Irumafimpa to Kora and commencing

underground drilling. Since August 2017 operations have been focused on the Kora deposit and more recently included the Judd deposit with underground drilling, development and stoping. Stoping initially utilised cut and fill techniques and in the second half of 2021 long hole stoping was successfully introduced.

The expansion of process plant from its initial capacity of 200,000 tpa to 400,000 tpa was completed in 2020. This work included modifications to the crushing circuit, including installation of a larger secondary crusher, and expansion of the flotation circuit. Installation of the gravity recovery circuit, including gold room has been completed and successfully commissioned.

# 1.8 **RECOMMENDATIONS**

The entire mineralised district held under tenement should be assessed but with priority given to certain areas.

Infill drilling should continue to upgrade both the Kora Consolidated and Judd Mineral Resources. Drilling should be undertaken to the south of both Judd and Kora, following up significant isolated drill intercepts, with a view to expanding the current Mineral Resources. Reconnoitre drilling of other potential mineral lodes/systems identified from surface mapping and sampling is recommended.

The Kora lode(s) is demonstrably richer in copper towards the south, thus potentially being closer to the original fluid source. This corresponds with an area of extensive dilation, where high grade gold/copper veins are haloed by long intervals of moderate grades. This corridor, linking Kora and Judd with the A1 porphyry target, known as Kora South and Judd South, should be priority in the ongoing exploration program.

Maniape and Arakompa both have historic resources which makes them high priority for follow up exploration programs.

The work program for each licence has been planned taking into consideration the current level of exploration on that tenement. Some programs will require detailed surface work prior to any drilling. Surface work should include assessment of lithocaps and vein expressions, as well as geophysical anomalies prior to drilling.

Tenement No.	Term End Date	Proposed Work Program Budget		Planned 2 Year Program
		Unit	Amount	
EL470	04/02/2023	PGK	4,800,000	16 km <sup>2</sup> reconnaissance mapping, 6 km <sup>2</sup> detailed geological mapping, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km <sup>2</sup> airborne EM geophysics, 24 cored drill holes. Also bulk sampling underground.
EL693	04/02/2023	PGK	1,000,000	14 wks exploration reconnaissance, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km <sup>2</sup> airborne EM geophysics, 6 cored drill holes.
EL1341	20/06/2022	PGK	1,200,000	16 wks exploration reconnaissance, 4 km <sup>2</sup> reconnaissance mapping, 12 km <sup>2</sup> detailed mapping, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km2 airborne EM geophysics, 6 cored drill holes.
EL2619	22/01/2022	PGK	300,000	10 wks exploration reconnaissance, 250 km <sup>2</sup> aerial photography and satellite imagery, 40 km <sup>2</sup> reconnaissance mapping, 12 km <sup>2</sup> detailed mapping, significant soil + rock chip sampling (including costeaning), 50 samples for petrology.
EL2620	02/06/2023	PGK	250,000	10 wks exploration reconnaissance, 400 km <sup>2</sup> aerial photography and satellite imagery, 60 km <sup>2</sup> reconnaissance mapping, significant soil + rock chip sampling (including costeaning), 50 samples for petrology.

# 2 INTRODUCTION

#### 2.1 ISSUER

This report is an Independent Technical Report dated 20 January 2022 of the geology, exploration, and mineral resource estimates for the Kora and Judd gold-copper deposits at the Kainantu project. The Kainantu property covers a total area of 860 km<sup>2</sup> and is located in the Eastern Highlands Province of Papua New Guinea, approximately 180 km west-northwest of Lae.

K92 Mining Inc. (K92) requested Nolidan Mineral Consultants (Nolidan), to prepare a report in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects ("NI 43-101") incorporating the results of recently completed mineral resource estimates of the Kora and Judd gold-copper deposits at the Kainantu mine.

H&SC were engaged by K92 to prepare an updated mineral resource estimate for the Kora deposit previously reported by H&SC in July 2020 and an initial mineral resource estimate for the Judd deposit.

K92 intends that this report be used as an Independent Technical Report as required under Part 4 "Obligation to File a Technical Report" of NI 43-101 to support publicly disclosed information. The mineral resource estimate will be used in the proposed feasibility study for the potential of expanding the Kainantu mine, to 1,200,000 tpa of ore, by installing a new process plant, while allowing the existing processing plant to be available in the future.

#### 2.2 TERMS OF REFERENCE AND PURPOSE

At K92's request, the scope of the report includes the following:

- Production of an Independent Technical Report prepared in accordance with NI 43-101
- Preparation of a mineral resource estimate for the Kora deposit
- Preparation of a mineral resource estimate for the Judd deposit
- Description of current mining and milling infrastructure at Kainantu.

#### 2.3 INFORMATION USED

This report is based on technical data provided by K92. K92 provided open access to all the records necessary to enable a proper assessment of the project and resource estimates. K92 has warranted in writing that full disclosure has been made of all material information and that, to the best of the K92's knowledge and understanding, such information is complete, accurate and true. The report also summarises information provided in previous recent NI 43-101 reports:

Independent Technical Report and Resource Estimate, Kainantu Project, Papua New Guinea, dated 06 March 2015.

Independent Technical Report, Resource Estimate and Summary of Mining Facilities, Kainantu Project, Papua New Guinea, dated 01 May 2015.

Independent Technical Report, Resource Estimate and Summary of Mining Facilities, Kainantu Project, Papua New Guinea, dated 15 April 2016.

Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Irumafimpa and Kora Gold Deposits, Kainantu Project, Papua New Guinea, dated 02 March 2017.

Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Kora North and Kora Gold Deposits, Kainantu Project, Papua New Guinea, dated 07 January 2019.

Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020.

Additional relevant material was acquired independently from a variety of sources. This material was used to expand on the information provided by K92 and, where appropriate, confirm or provide alternative assumptions to those made by K92.

With respect to Items 6, 9, and 13 of this report, the author has relied in part on historical information including exploration reports, technical papers, sample descriptions, assay results, computer data, maps and drill logs generated by previous operators and associated third party consultants. Historical documents and data sources used during the preparation of this report are listed in Item 27: References.

# 2.4 SITE VISIT BY QUALIFIED PERSONS

Mr Andrew Kohler is a full-time employee of K92ML. He visited the Kainantu site in September 2021 and prior to that was regularly at the mine site on a roster basis that was completed in March 2021. Prior to his role change he was employed as the Underground Mine Geology and Mine Exploration Manager.

Mr. Simon Tear of H&SC visited the Kainantu minesite in October 2018.

Mr. Anthony Woodward of Nolidan visited the Kainantu minesite in November 2014, November 2016, and January 2020.

# **3 RELIANCE ON OTHER EXPERTS**

The author has relied on information provided by the issuer concerning legal, tax, political, environmental, or other issues and factors relevant to this technical report; in particular Section 20, Environmental Studies, Permitting, and Social or Community Impact.

# 4 PROPERTY DESCRIPTION AND LOCATION

The Kainantu property covers a total area of 862 sq.km and is located in the Eastern Highlands Province of Papua New Guinea, approximately 180 km west-northwest of Lae (Figure 4-1). The project is located at the approximate centre of the Property, at 6°06′25″ S Latitude and 145°53′27″ E Longitude.

# 4.1 TENURE

The property comprises five exploration licences (EL470, EL693, EL1341, EL2619 and EL2620), one mining licence (ML150), two mining easements (ME80 and ME81), and one licence for mining purposes (LMP78). Tenements are owned 100% by K92 Mining Limited (K92ML) but there is an understanding in-place for a 5% share to be divested to the local landowners. Further information on this understanding is detailed in Section **Error! Reference source not found.** Memorandum of Agreement (MOA). A tenement map is shown in Figure 4-1 and tenement details are summarised in Table 4-1.

The Project as described herein is 100% owned by K92 Mining Limited (K92ML); a company incorporated in Papua New Guinea, which is 100% owned by K92 Holdings (PNG) Limited (K92PNG), a 100% owned subsidiary of K92 Holdings International Limited (K92 Holdings).

K92 Mining Inc. (formerly Otterburn) is a company incorporated under the laws of British Columbia, Canada; the common shares of which are publicly listed on the Toronto Stock Exchange.

Nolidan has not undertaken any title search or due diligence on the tenement titles or tenement conditions. The tenement's status has not been independently verified by Nolidan other than a viewing of tenement information on the PNG Mineral Resource Authority website.

K92ML is the registered holder of the following tenements in PNG (MRA, 2020), as issued by the applicable government authorities in accordance with the PNG Mining Act 1992 (the "Mining Act"):

• Mining Lease 150 (ML150) was renewed on 23 January 2015 for a period of 10 years to 13 June 2024. All conditions of the lease renewal have been satisfied including commencement of production from the Kora deposit before 30 June 2018.

- Mining Easements 80 and 81 (ME80 and ME81), each effective until June 13, 2024;
- Licence for Mining Purposes 78 (LMP78), effective until June 13, 2024;
- Exploration Licence 470 (EL470), effective until February 04, 2021; K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 693 (EL693), effective until February 04, 2019; K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 1341 (EL1341), effective until June 20, 2020. K92ML have lodged an application for renewal for a further two years;
- Exploration Licence 2619 (EL2619); effective until January 22, 2022.
- Exploration Licence 2620 (EL2620); effective until June 02, 2023.

The renewal of ML150, ME80, ME81, and LMP78 occurred immediately prior to the acquisition of K92ML by K92PNG.

K92PNG acquired K92ML from Barrick (Niugini) Limited (Barrick) pursuant to an agreement dated 11 June, 2014 (the K92ML Purchase Agreement) (which closed March 6, 2015), for the sum of US\$2 million. Under the terms of that agreement K92PNG is was obligated to make additional payments of up to US\$60 million. During 2019 the K92ML Purchase Agreement with Barrick was amended whereby K92PNG revised the contingent payment to a fixed payment of US\$12.5 million which was paid to Barrick Gold Corporation on 23 August, 2019.



Figure 4-1. Kainantu Project Location and Tenements

Source: K92ML (2022)

#### Table 4-1. Project Tenure Details

Tenement No.	Grant Date	Expiry Date	Renewal Appln. Date	Area (km²)	Owners <sup>#</sup>
EL470*	05/07/1982	04/02/2021	30/10/2020	92.65	K92ML
EL693*	29/12/1986	04/02/2019	30/10/2020	95.45	K92ML
EL1341*	21/06/2004	20/06/2020	11/03/2020	146.63	K92ML
EL2619	23/01/2020	22/01/2022	Current	320.54	K92ML
EL2620	03/06/2021	02/06/2023	Current	201.19	K92ML
ML150	14/06/2002	13/06/2024	Current	2.88	K92ML- 95% Landowners- 5%**
ME80***	14/06/2002	13/06/2024	Current	0.30	K92ML
ME81***	14/06/2002	13/06/2024	Current	0.35	K92ML
LMP78***	14/06/2002	13/06/2024	Current	2.09	K92ML

#### Source: K92ML (2022)

\*EL470, EL693 and EL1341 are pending renewal as of 21/12/2021

\*\* Ownership of ML150 currently 100% K92ML. 5% pledged under commercial terms to Landowners in the 2003 Memorandum of Understanding and ratified by the 2014 K92ML Purchase Agreement.

\*\*\* ME80, ME81 and LMP78 are linked to the current ML150.

#### 4.2 EXPENDITURE COMMITMENTS

Tenement No.	Term End Date	Commitment Year 1* (PGK)	Commitment Year 2* (PGK)	Proposed Work	Program Budget
				Unit	Amount
EL470	04/02/2023	2,400,000	2,400,000	PGK	4,800,000
EL693	04/02/2023	500,000	500,000	PGK	1,000,000
EL1341	20/06/2022	600,000	600,000	PGK	1,200,000
EL2619	22/01/2022	120,000	180,000	PGK	300,000
EL2620	02/06/2023	100,000	150,000	PGK	250,000

#### 4.3 ROYALTIES

The Mining Act 1992 (Act) provides that all minerals at or below the surface of any land (i.e. gold, silver, copper and other minerals) are the property of the State. K92ML, pursuant to the Mining Lease from the State, owns what is mined from the orebody.

The tenements are subject to royalties and interests in favour of the Government of Papua New Guinea in accordance with the Mining Act 1992 (Act). The holder of a mining lease or a special mining lease under the Act is required to pay a royalty to the State equal to 2% of either:

- the Free on Board (FOB) value of the minerals, if they are exported without smelting or refining in Papua New Guinea; or
- the Net Smelter Return from the minerals, if they are smelted or refined in Papua New Guinea.

No other royalty agreements exist over the tenement package.

While not strictly a royalty cost, the PNG government imposes a second cost on mining projects, that of the MRA Levy. This levy is 0.5% of mine revenue (there are no deductions allowed for concentrate transport, smelting and refining).

#### 4.4 OTHER SIGNIFICANT FACTORS AND RISKS

Under the laws and upon grant of a mining licence (ML) or a special mining licence (SML) the State may elect at its discretion to take, at sunk cost, up to a 30% participating interest in any major mineral development in PNG. Upon exercise of that option, the State will fund its share of capital and ongoing costs and the mine developer will be repaid its share of sunk costs. In respect of ML150, the State waived its right to acquire a 30% interest in the existing mining licence when they were first granted and has no similar rights under the ML renewal process. However, the State retains the option in respect of the Exploration Licences should any be converted into a Mining Licence.

Environmental permitting, mine closure plans, and landowner compensation agreements are discussed in Section 20: "Environmental Studies, Permitting, and Social or Community Impact" of this report.

# 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

#### 5.1 PHYSIOGRAPHY

The Property lies within an area of mostly rugged topography, with transecting rivers forming lower lying areas. Elevations range from 400m to 1600m above sea level. Vegetation is mostly primary rainforest with areas of shifting cultivation in valley floors.



Figure 5-1. Kainantu Project Topography Source: K92ML (2021)

# 5.2 ACCESS

The property area is accessed by a two-hour drive along the sealed Lae-Madang Highway from Lae. Lae is the capital city of the Morobe Province and second largest city in PNG. It is serviced by daily flights from Port Moresby and other PNG centres and also hosts the largest cargo port in PNG.

The property is serviced by a 10 km long formed access road from the Lae-Madang Highway, commencing at Gusap Airstrip to the Kumian Process Plant and Office facility. The access road crosses one single lane bridge at the Ramu River. From the process plant site, a formed haul road travels 6.5 km to the 800 Lower Portal of the mine. The haul road crosses three major single lane bridges.

Access and haul roads span 6m width and are constructed within two Mining Easements (ME's 80 and 81) commencing at the Ramu Bridge. The haul road rises 391m in elevation over its total length. These roads are graded and reformed on a continual basis and have subsequently not deteriorated significantly in high rainfall seasons.

# 5.3 CLIMATE

The climate at Kainantu has the Köppen classification of Af (tropical rainforest) with hot temperatures and wet conditions. Daytime temperatures reach 30°C dropping to night-time lows of 20°C. A pronounced wet season occurs between November and April, although rainfall is common throughout the year. Rainfall averages 235 mm/month during the November to April wet season, and 137 mm/month during the dry season. Annual rainfall averages approximately 2000 mm. Project operation/exploration is subject to the weather; reduced visibility when cloudy prevents operation of helicopters and heavy rainfall or earthquakes can trigger landslides.

#### 5.4 LOCAL RESOURCES

The Property site offices are located 180 km from Lae, 21 km from Kainantu township and 56 km from Goroka. Goroka is the Capital of Eastern Highlands Province and contains Local and Provincial Level Government Offices.

# 5.5 POWER

Yonki Dam provides water for the Ramu Hydro Power Station and the Yonki Toe of Dam Power Station operated by PNG Power Ltd. Currently the Ramu 1 Hydro Power station is supplying 54 MW from three generators on to the Ramu Grid while the Yonki Toe of Dam supplies 14MW. They are supplemented by 4MW from the Pauanda Hydro Power station, 10MW from the Baiune Hydro Power station at Bulolo in Morobe Province and a combined thermal generation capacity of 20MW from the diesel power stations in Lae, Madang and the Highlands centres, giving a total generation capacity of 102MW into the Ramu Grid (PNG Power website, 2014).

The primary source of power to the property is the PNG Power national grid (PPL) from the Ramu sub-station, located 20 km from the processing plant site. Power from the national grid is reticulated to site via 22kV overhead line and services the plant, mine and camp area. The property also has standby diesel generators capable of supplying the total requirements of the operation.

#### 5.6 GUSAP AIRSTRIP

The Gusap Airstrip is a fully licenced, international grass strip located in the Ramu Valley and maintained jointly by the project and Ramu Agricultural Industries mainly for use in emergencies and for charter flights.

#### 5.7 INFRASTRUCTURE

The Kainantu mine is located within ML150 and the main Kainantu mine camp and processing plant are located within LMP78 which is located within EL693. The Property includes all mine infrastructure, exploration camps, exploration data and diamond drill core storage.

The property is well supported by regional infrastructure, and contains all the necessary site infrastructure for mining operations

Underground mining at Kainantu initially operated from 2004 to 2008. Following resumption of mining operations in 2016 underground mining infrastructure has been rehabilitated and refurbished. Since March 2019 the mining fleet has undergone significant expansion and modernization with an increase in the quantity of equipment and also a significant increase in size of equipment. The underground mine infrastructure was considerably upgraded and expanded during 2019 and this process is ongoing.

The Kainantu processing plant is located approximately 7 km from the opening of the 800 portal which accesses the Irumafimpa and Kora deposits. The plant was on care and maintenance between December 2008 and September 2016. Refurbishment of processing plant was completed in September 2016 and the first batch of underground ore from Irumafimpa was treated by K92 in October 2016. In February 2018 K92 declared commercial production at the Kainantu mine and mine production focused on the Kora North area. Upgrades of site infrastructure continued in 2019 and 2020. The treatment plant was expanded to a capacity of 400,000tpa in 2020.

Further details of site infrastructure can be found in Section 18 Project Infrastructure.

# 6 HISTORY

Modern exploration did not commence until the early 1980s. After the discovery of the Irumafimpa deposit, Highlands Pacific Limited (HPL) focused on high grade Au-telluride mineralization with little to minor work conducted on the porphyry Cu Au targets. HPL commenced mining operations on the Irumafimpa deposit in 2004.

Barrick purchased the tenement package from HPL in late 2007 and concentrated on increasing Mineral Resources at Irumafimpa-Kora and discovering economic porphyry Cu-Au mineralization. There has been a significant amount of exploration on the property by various owners. The operation was on care and maintenance between January 2009 and August 2016 when K92ML commenced rehabilitation of the mine and processing plant.

#### 6.1 **PREVIOUS OWNERSHIP**

EL470 was granted to Renison Goldfield Consolidated (PNG) (RGC) in July 1982 as PA470 and the area of EL693 was granted to RGC as PA462 in December 1986. RGC entered a Joint Venture over the EL's 470 and 693 with Highlands Gold Resources Limited (HGL) in 1989, with HGL as the Operator. In 1994 RGC withdrew from the joint

venture. When HGL was restructured in 1996, the new company Highlands Pacific Resources Limited (HPL) inherited the properties.

In the following years, HPL systematically increased the size of its tenement package. Barrick purchased the Kainantu tenement package from HPL in December 2007 through its 100% owned subsidiary Placer Dome Oceania Limited. This entity's name was subsequently changed to Barrick Kainantu Limited (now K92 Mining Limited) which was the most recent holder of the Kainantu tenement package.

At the time of the purchase by Barrick, the package included seven exploration licences (EL470, EL693, EL1049, EL1277, EL1341, EL1399 and EL1400), one mining licence (ML150), two mining easements (ME80 and ME81) and one licence for mining purposes (LMP78). During its term of operations Barrick surrendered EL's 1049, 1399, and 1400. EL1277 expired on May 20, 2009.

The current total area of the tenement package is approximately 862 km<sup>2</sup>.

# 6.2 HISTORICAL EXPLORATION 1928-2012

Gold was discovered in the Kainantu area in 1928 on a small creek draining into Abinakenu Creek. Between 1948 and 1952 copper was discovered at Yonki Creek. The southern end of the Irumafimpa lodes was discovered some time prior to 1967. The workings on Prospect Claim 6, known as the Kora mine, produced about 1,000 tonnes of gold and copper ore averaging three ounces recovered gold to the tonne between 1967 and 1970.

Highlands Gold actively explored the Kainantu properties from 1989 to 1994. Their initial work delineated several high-grade gold targets including Irumafimpa, Maniape and Arakompa. Exploration was focused on Irumafimpa where diamond drilling was conducted in 1992 and 1993. HPL commenced underground development of the Irumafimpa deposit in 2004, but the mine struggled to achieve planned mined grades, through a combination of geological complexity and unplanned dilution. Continued shortfalls in metal production resulted in Highlands Pacific selling the Kainantu assets to Barrick Gold in December 2007.



Figure 6-1. Kainantu Project Vein Systems Source: K92ML (2020)

Barrick conducted exploration from 2008 to August 2012. In addition to resource evaluation of the Kora deposit, (the Kora deposit has been included into K92ML's Kora Consolidated), their priority was discovery of a large porphyry system. Land access issues were the main challenge to implementing exploration activities prior to Barrick halting exploration and making a decision to divest the Kainantu project.

Further information on the past ownership and historic exploration activity at Kainantu is contained in the "Independent Technical Report, Resource Estimate and Summary of Mining Facilities, Kainantu Project, Papua New Guinea, dated 01 May 2015" which is filed on SEDAR.

#### 6.3 EXPLORATION ON ML150 (IRUMAFIMPA, KORA, JUDD VEINS)

Exploration by Highlands Pacific was focused on the Irumafimpa deposit where diamond drilling was conducted in 1992 and 1993 and was followed by underground development in 2004.

A total of 24 diamond holes were drilled by Barrick from surface into the Kora deposit (which later became a part of the up dip extension to the near surface of K92ML's Kora Consolidated), including a single hole at the nearby Karempe vein system. Drilling confirmed the continuity of the mineralization however, left it open at depth and along strike to south.

Judd, a narrow intermediate sulphidation vein system located approximately 90 to 150m east of and parallel to Kora Consolidated and Irumafimpa, was partially tested by Barrick surface holes designed to test the Kora deposit at depth. Several encouraging intersections of the Judd lode were made including 3m @ 278 g/t Au.

#### 6.4 HISTORICAL RESOURCE ESTIMATES

Several historical estimates for the Irumafimpa, Kora and Eutompi deposits, were previously prepared before K92ML entered into an agreement to acquire an interest in the property that contains the deposit. Under K92ML, Kora and Eutompi deposits became a part of the up dip extension to the near surface of Kora Consolidated.

HPL Mineral Resources, reported in accordance with the 2004 JORC Code and Guidelines, were prepared by independent consultants Hackchester Pty Ltd (2005) and Mining Associates Pty Ltd (2006). Numerous historical estimates and financial models were prepared by Barrick for the Irumafimpa and Kora deposits. K92 is not treating the historical estimates as current mineral resources or mineral reserves. These historic resources are not reported here as they were superseded by the MRE for the Kora Consolidated deposit which was reported in detail in "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020".

#### 6.4.1 Kora Consolidated April 2020 Resource Estimate

In 2020 a Mineral Resource was estimated by H & S Consultants Pty. Ltd., for the Kora Consolidated deposit (Table 6-1**Error! Reference source not found.**). The Global Mineral Resource estimate (using a 1g/t gold cut-off) for the Kora Consolidated deposit effective 02 April 2020 is tabulated below:

The Measured, Indicated and Inferred Resources cover an area of approximately 800 to 1200 metres on strike by 800 to 1200 metres vertically. The mineral resource estimate reported in April 2020 incorporated the Kora, Kora North and Eutompi mineralization into one deposit, the Kora Consolidated.

Category	Mt	Au g/t	Au Moz	Ag g/t	Ag Moz	Cu %	Cu Kt	Au_Eq g/t	Au_Eq Moz
Measured	0.66	13.34	0.28	11.6	0.25	0.51	3.4	14.14	0.3
Indicated	2.47	8.44	0.67	16.3	1.29	0.63	15.6	9.46	0.8
Total M & I	3.13	9.47	0.95	15.3	1.54	0.61	19.0	10.45	1.1
Inferred	12.67	7.32	2.98	19.9	8.11	1.10	139.4	9.01	3.7

Table 6-1. Ap	ril 2020 Kora	Consolidated	Resource	estimate

Mineral Resources were estimated and verified by Simon Tear (PGEO), a director of independent consultancy H & S Consultants Pty. Ltd., Sydney, Australia (April 2020). The Mineral Resources have been classified under the 2014 CIM Definition Standards for Mineral Resources and Mineral Reserves.

Further details are reported in Section 14 of the "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020, which is filed on SEDAR.

#### 6.5 SCOPING STUDIES

A preliminary economic assessment for Kora which was preliminary in nature was completed in 2020. It incorporated a mine plan based on the April 2020 Kora Consolidated Resource estimate which included Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves. Mineral resources that are not mineral reserves do not have demonstrated economic viability. There is no certainty that the preliminary economic assessment will be realized. Additionally, further geotechnical assessment was required to confirm the feasibility of stope designs.

Key points and estimates from the Kora Mining Study were:

- Resource drilling had linked mineralization that was previously three separate areas, Kora, Eutompi and Kora North, into a single continuous zone. The April 2020 Mineral Resource Estimate and the updated PEA mine plan now refer to the combined deposit Kora Consolidated.
- The mine plan had been updated with the latest resource to target a 1Mtpa production rate. It was
  based primarily on longhole stoping with an optimised Mineable Shape Optimiser (MSO) shape cutoff
  grade of 5.5g/t gold equivalent.
- Some "incremental" stope material was also included at the end of the mine life. This was material that was below the optimal cut-off grade of 5.5 g/t gold equivalent but above the marginal economic cut-off grade of 3.04 g/t gold equivalent.
- The mine plan and PEA estimates were for mining operations from 1 January 2021 onwards, modelling the project expansion from 400ktpa to 1Mtpa. The production estimates excluded those parts of the Mineral Resources that were, or are planned to be, extracted between 1 April 2020 and 31 December 2020.
- The updated Kora mine design included 118,485m of lateral development and 6,951m of vertical development.
- Planned treatment totalled 9.8Mt tonnes at 8.8 g/t gold, 1.0% copper, 18 g/t silver (10.4g/t gold equivalent) over the 12-year LOM plan. This comprised 2,240kt from development and 7,547kt from stoping.
- This production would generate an estimated positive pre-tax cash flow of US\$2,856 million using the following metal prices: gold US\$1500/oz, copper US\$3.0/lb, silver US\$18/oz. This pre-tax cashflow included allowances for capital.
- Production was estimated at 2.64M oz gold, 88kt copper and 4.25M oz silver (3.10M oz gold equivalent) over the life of mine (LOM). The LOM production cost, including capex and sustaining capex, was estimated at US\$447/oz gold equivalent.
- The PEA production estimates would generate a simple pre-tax discounted cashflow of US\$2,061 million; using the PEA metal prices stated above, and a 5% discount rate.
- The LOM Capital Cost breakdown is summarised below.

Table 6-2	Capital	Cost	Breakdown
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Capital Type	US\$M
Up-front Capital	125
Sustaining Capital	341
Total	466

Operating Cost was estimated to be US\$94/tonne of ore for the LOM.

- The estimated pre-tax cashflow for 2021 onwards was always positive indicating that the new 1Mtpa mill and mine capital would be self-funding.
- The sensitivity of pre-tax DCF5% to gold price is summarised below.

	1 0 1
Gold Price, US\$/oz	Pre-Tax DCF <sub>5%</sub> , US\$M
1,400	1,875
1,500	2,061
1,600	2,247
1,700	2,433
1,800	2,619

Table 6-3. Pre-tax DCF	5% sensitivity	to gold price
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Further information on the scoping studies are detailed in the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020, which is filed on SEDAR.

#### 6.6 HISTORIC PRODUCTION 2006 TO 2008

During the mining operation at Irumafimpa between 2006 and 2008, mining was predominantly shrink stoping with some longhole stoping. The method applied was based on the geological structure and varying vein widths. Multiple independent reviews have shown that previous operators had considerable difficulty with dilution issues during mining which has been mainly attributed to the geological complexity of the veins and a poor understanding of grade distribution within the veins.

Table 6-4 shows mill production for the life of the mine from 2006 to its closure in 2008. On a qualitative basis a negative reconciliation on grade from grade control to mill production is evident. The grade control grades were of the order of 8 to 9 g/t Au whereas the back calculated mill head grade for 2008 was 5 g/t Au.

Table 6-4. Kainantu Mill Production 2006 to 2008

Year	Mill tonnes	Head grade Au g/t	Contained Oz Au		
2006*	104,272	8.00	26,819		
2007*	141,452	7.00	31,835		
2008**(6 months)	61,532	5.02	9,939		
LOM Total	307,256	6.94	68,593		
* From Highlands Pacific annual reports					
** Barrick Ownership (mining and processing ceased in December 2008)					

# 6.7 CARE AND MAINTENANCE 2009 TO 2016

In January 2008, Barrick sought to place the mine into care and maintenance. Barrick received approval to have the mine in care and maintenance via the Variation to the Approved Purposes for Mining Lease No. 150 dated 13 February 2009 which was subsequently extended until February 2013, when the Mining Advisory Council determined that extension of care and maintenance was appropriate provided a Mine Closure Plan was submitted.

K92 Mining Ltd (K92ML) commenced the refurbishment and rehabilitation of the mine, process plant and related infrastructure in February 2016. The Company received approval from the Mineral Resources Authority (MRA) to recommence mining operations in October 2016.

Remedial work on the 800 Portal and Incline, the main mine access for the Irumafimpa mine, was completed in June 2016 with the upper working levels of the mine accessible and ventilation re-established. Refurbishment of the Kainantu Processing Plant was completed in September 2016 and the first batch of underground ore from Irumafimpa treated in October 2016. In early 2017 the mine shipped the first concentrates containing gold and copper to the Port of Lae for shipment overseas for smelting and refining. K92ML announced the declaration of commercial production effective February 1, 2018.

# 6.8 PRODUCTION 2016 TO 2020

K92ML restarted mining operations in the Irumafimpa mining area. Limited mining activities were undertaken in the lower parts of Irumafimpa during 2017, with mineralised material being mined from development headings and from stopes. A small amount of low-grade ore was also recovered from remnant stopes. Table 6-5 shows mill production since March 2016. K92ML started the Kora mine project by completing the underground incline drive from Irumafimpa to Kora and commencing underground drilling.

In late 2017 initial exploration drilling to the south of Irumafimpa identified mineralization in the area between Irumafimpa and Kora; in the area initially referred to as Kora North. In September and October 2017 K92 mined a bulk sample from the Kora North area and processed the material through the existing plant for metallurgical evaluation, with +90% recovery achieved for both gold and copper. In early 2018 mining activities ceased at Irumafimpa and the focus of mining changed to development of the Kora North deposit

On January 13, 2022, the Company announced record quarterly production in the fourth quarter of 2021 at Kainantu Gold Mine, of 36,145 oz AuEq, or 33,220 oz of gold, 1,048,100 pounds of copper and 28,818 oz of silver. Annual production also achieved a record of 104, 196 oz AuEq or 95,055 oz gold, 3,375,528 lbs copper and 70,792 oz silver.

Table 6-5.	Kainantu Mil	l Production	2016 to	2021

Year	Mill tonnes	Head grade Au g/t	Contained Oz Au	
2016**	633	3.41	69	
2017	61,932	4.47	8,900	
2018 ***	79,487	19.1	45,810	
2019	127,190	20.8	79,838	
2020	230,365	14.0	95,109	
2021	336,221	9.8	95,055	
** K92ML Restart, rehabilitation, refurbishment and commissioning from March 2016				
*** K92ML Commercial Production from February 2018				

A general timeline of operations to date at Irumafimpa-Kora is shown in Table 6-6.

Table 6-6. Summary of operations timeline for the Kainantu Project

From	То	Mine Operations History (ML150)
January 2004		Highlands Pacific DFS approved by Mineral Resources Authority
2005	October 2007	Kainantu Gold Mine operated by Highlands Kainantu Limited (HKL)
November 2007		Barrick purchased the Kainantu project.
January 2008	December 2008	Mining was suspended from January to June 2008, restarted in July 2008 and was halted permanently in December 2008.
January 2009	December 2009	Exploration of epithermal and sulphide veins continued on the ML until June 2009, and then halted due to review of exploration priorities.
January 2010	December 2014	Project on Care and Maintenance, limited exploration on EL's. K92PNG acquired K92ML from Barrick (Niugini) Limited pursuant to an agreement dated June 11, 2014 which closed March 6, 2015
January 2015	January 2018	Mining Lease granted. Operations restarted with rehabilitation of mine, refurbishment and re-commissioning of the processing plant.
April 2017	May 2017	K92 Mining Ltd discovers Kora North deposit, with KMDD0009.

February 2018	Current	K92ML declared commercial production at Kainantu mine and production focused on the northern Kora area.	
July 2020	Current	Judd 1 Vein, 1235 Drive commences as a vent drive, followed by drilling from underground on the Judd Vein system	

# 7 GEOLOGICAL SETTING AND MINERALIZATION

# 7.1 REGIONAL GEOLOGY

The Kainantu property is located within the New Guinea Thrust Belt, close to its northern contact with the Finisterre Terrane (Figure 7-1). The contact is marked by the northwest trending Ramu-Markham Fault, a major suture zone that marks the northern margin of the Australian Craton. The New Guinea Thrust Belt records an early Miocene or older ductile, tight folding event that was followed by middle Miocene intrusions. Late Miocene regional scale low-angle thrust faulting followed, associated with the collision of the Finisterre Terrane. The belt is characterised by a number of north-northeast trending fault zones that commonly host major mineral deposits (Williamson & Hancock. 2005).





# 7.2 PROPERTY GEOLOGY

The Kainantu area is underlain by rocks of the Early Miocene Bena Bena Formation, comprising pelite, psammite, conglomerate and marl beds metamorphosed to greenschist to amphibolite grade (.

 Table 7-1). These are unconformably overlain by Miocene age Omaura Formation consisting of volcano-lithic sandstones and siltstones and numerous fossiliferous limestone lenses. The overlying Yaveufa Formation consists of basaltic and andesitic flows, agglomerates, volcanoclastic sandstone and limestone (Tingey and Grainger,

1976). The mid-Miocene Akuna Intrusive Complex consists of multiple phases ranging from olivine gabbros, dolerites, hornblende gabbros and biotite diorites to granodiorites. Late Miocene age Elandora Porphyry dykes form small high level crowded feldspar porphyry dykes and diatreme breccias associated with gold and copper mineralization. A north-northeast trending transfer structure transects the area, with associated mineralization, alteration and porphyry complexes aligned along it.

Age	Rock Units		
Recent Quaternary	Kainantu Formation – basal fluvial conglomerate, sandstone and mudstone overlain by well bedded tephra.		
~~~ Unconformity ~~~			
Late Miocene	Elandora Porphyry – intermediate dykes sills and stocks.		
Early Miocene	Akuna Intrusive Complex – range in composition from olivine gabbros through to granodiorites.		
Early Miocene – Mid Miocene	Yaveufa Formation - basaltic and andesitic agglomerates, lithic tuffs, volcanoclastic sandstone and limestone.		
Late Oligocene – Late Miocene	Omaura Formation – thin bedded to laminated calcareous siltstone and mudstone.		
~~~ Unconformity ~~~			
Early Mesozoic	Bena Bena Formation - pelite, psammite, conglomerate and marl metamorphosed to schist and phyllite. Steeply dipping sequence with shearing mineralization accompanying isoclinally folded faults and breccias		

#### Table 7-1. Main regional rock units identified within the Kainantu area.

#### 7.3 MINERALIZATION OVERVIEW

Dominant host rock of the Kora Consolidated-Irumafimpa vein systems is the highly sheared and deformed Bena Bena Formation, composed of low grade metamorphosed phyllites and amphibolites, intruded by the Elandora porphyry at the north west end of the vein system. Mineralization on the property includes gold, silver and copper in low sulphidation epithermal Au-telluride veins (Irumafimpa), Au-Cu-Ag quartz-sulphide veins of Intrusion Related Gold Copper ("IRGC") affinity at Kora Consolidated, indications of porphyry Cu Au systems (Blue Lake) and alluvial gold.

The Kora Consolidated-Irumafimpa mineral zone occurs in the centre of a large mineralized system, approximately 5km x 5km in area, that has been subject to drilling in parts and comprises several individual zones of vein and porphyry-style mineralization. The Kora Consolidated-Irumafimpa (including Kora, Eutompi and Kora North) vein deposits has been demonstrated from drilling results and underground development to be a continuous mineralised structural system.

The Kora Consolidated mineral zone comprises a K1 footwall lode and a K2 hangingwall lode separated by varying widths of 0 to 15m. In parts there is interstitial mineralization between K1 and K2 known as the Kora Link lode and about 90 to 150m to the east lies the parallel Judd lode. The Judd lode (J1) as well as J2 to J4 mineralised zones appear to be a vein system similar to the Kora Consolidated zone, but as yet has not been fully defined by drilling.

Kora Consolidated vein system is a broad northwest trending mineralized zone more than 2.5 km long and up to 60m wide in which individual veins vary from less than one metre wide with pinch and swell features over short distances (Au telluride lodes at Irumafimpa) to more continuous veins up to several metres wide (Au, Cu – rich quartz and sulphide lodes, IRGC).

A substantially sized, gold/copper mineralised porphyry has been identified at Blue Lake (Kotampa), where drilling is continuing. The first ten holes, drilled on a fence, mostly at 200m spacing, demonstrated the presence of a prominent silica-clay lithocap, overlying mineralised propylitic (epidote-chlorite) alteration, with higher grade potassic alteration intersected in two drill holes.

Peripherally, exploration activities have also identified further areas of vein and porphyry-style mineralization.

Other less advanced prospects on the property include epithermal Au veins similar to Irumafimpa, IRGC veins similar to Kora, porphyry Cu-Au systems, skarn Cu, Pb and Zn mineralization and alluvial gold.

The location of the deposits and prospects in relation to the property boundaries is shown below.


**Figure 7-2. Kainantu property geology and known vein and porphyry deposits and prospects.** *The prospects are summarised in Table 7-2 (modified by K92ML in 2021 from Barrick, 2014)* 



Figure 7-3. Location plan Kora, Irumafimpa and Judd vein systems

Source: K92ML (2021)

A summary of the mineralization style, host rocks, dimensions and geological continuity for the Kora-Irumafimpa vein deposit and the other vein and porphyry prospects for the Kainantu Project is shown in Table 7-2 and described further below.

Deposit / Prospect	Mineralization	Host Rocks	Dimensions	Continuity
Irumafimpa	Epithermal Au-Te mineralization	Quartz veins in chlorite-sericite schist	Strike length of 1km 0.5-2m wide open at depth	Drilling indicates continuity of mineralization on a broad scale. Gold mineralization is discontinuous
Kora Consolidated (including Kora, Eutompi, Kora North and Kora south)	Vein Au-Cu intrusive vein style (described in Section 7.4)	Quartz veins in chlorite-sericite schist. Brecciated sometimes ductile deformation	>2.5 km strike (includes Kora South) x 60 m wide System is open along strike and at depth	Drilling shows strike and depth continuity at a kilometre scale. Gold mineralization is discontinuous.

Table 7-2	. Summary of	f mineralization,	host rocks,	dimensions,	and continuity	for main	Kainantu d	leposits and	prospects
		· · · · · · · · · · · · · · · · · · ·	,	,					

Deposit / Prospect	Mineralization	Host Rocks	Dimensions	Continuity
Judd	Vein Quartz sulphide veining IRG Au-Cu (described in Section 7.4) (Mineral Resources reported in Section 14)	Quartz veins in chlorite-sericite schist.	2.5km strike (includes Judd) structural system with multiple Veins as defined by surface mapping and sampling and sporadic drilling. Mineralization open along strike and to depth	Surface continuity along strike unknown due to poor outcrop exposure
Karempe	Vein Epithermal Au (best intercept; 2.45m @ 39.82 g/t Au, from 238.65m, including 0.75m @ 125.40 g/t Au from 239.0m, in drill hole KRDD0005)	Quartz veins in granodiorite and chlorite-sericite schist.	3km strike and 1- 2m wide vein as defined by surface mapping and sampling. Mineralization open along strike and to depth	Surface continuity along strike unknown due to poor outcrop exposure
Arakompa	Vein Epithermal Au	Quartz veins in Akuna Diorite	3km strike and 1- 2m wide vein system NNE trending No deep drilling.	Continuity is partially obscured at surface, due to poor outcrop exposure
Maniape	Vein Epithermal Au	Bena Bena Metamorphics, Akuna Diorite,	Strike length 1km Near surface zone of mineralization of 700m strike x 34m wide x 125m depth defined by surface sampling and diamond drilling	Continuity of near surface mineralization confirmed by drilling
Mati/Mesoan	Vein Epithermal Au (Rock chips average of 28g/t Au and a maximum of 131g/t Au)	Bena Bena Metamorphics, Akuna Diorite,	1 km strike mineralized zone defined No drilling	Surface continuity along strike unknown due to poor outcrop exposure No drilling

Deposit / Prospect	Mineralization	Host Rocks	Dimensions	Continuity	
	High-sulphidation and porphyry Cu-Au				
A1 (reconnaissance stage)	silica-pyrite- enargite mineralization and anomalous molybdenum in soils	Bena Bena Metamorphics, Akuna Diorite, Feldspar porphyry and breccias	Undefined	Undefined	
	Historic float sample of massive enargite-pyrite returned 16.6% Cu and 12g/t Au.				
Kokofimpa	Porphyry Cu-Au	Akuna Intrusive Complex and Elandora porphyry intrusions within the Bena Bena Metamorphics	3 km x 3 km Defined porphyry system with multiple magmatic phases with minimal drilling in centre of prospect.	Undefined	
Tankaunan	Porphyry Cu-Au	Akuna Intrusive Complex and mid- late Miocene Elandora Porphyry intrusions within Bena Bena Metamorphics	Extent of systems needs to be defined by first pass 400x400m drilling.	Undefined	
	Porphyry potential postulated				
	Cu-Au-As in Soils				
	Advanced argillic alteration		Quartz breccia is		
Timpa	Quartz Breccia (monomict, quartz cemented, with shallow quartz infill textures; soil sampling shows the breccia is anomalous in Au, As, Bi, Sb, W)	Bena Bena Metamorphics and breccia	500 m by 100 m. Other mineralization Undefined	Undefined	

Deposit / Prospect	Mineralization	Host Rocks	Dimensions	Continuity
Aifunka	Skarn (Porphyry- related) Cu and Au Au (Barda reefs)	Mineralization is hosted in calc- silicate bands spatially associated with the brecciated porphyry dyke contacts. Underlain by the Omaura Sediments and Akuna Intrusive Complex with Elandora Porphyry.	Undefined	Undefined
Yompossa	Porphyry Cu-Au (60m @ 0.3% Cu and 0.1g/t Au from 105m in BHP01; 118m @ 0.1% Cu and 0.1 g/t Au in KSDD0004)	Underlain by Bena Bena Formation and Omaura Formation. Contains feldspar porphyry intrusions interpreted to be associated with Elandora Porphyry	Anomaly is 500m x 600m and is open to the NE. Potential for further mineralization below existing drill holes.	Undefined
Kathnel	Base metal epithermal veins (Pb-Zn-Cu-Au)	-	Undefined	Undefined
Efontera	Porphyry Cu-Au	-	Undefined	Undefined
Blue Lake	Porphyry Cu-Au (175m @ 0.3 g/t Au and 0.2% Cu in KTDD0001). Indications of a large mineralized system.	Feldspar porphyry intrusions within Akuna Granodiorite	Au/Cu geochem in soil anomaly is 1.2 x 0.8km	Undefined

## 7.4 KORA CONSOLIDATED-IRUMAFIMPA VEIN SYSTEMS

The Kora Consolidated-Irumafimpa vein systems is interpreted to contain two stages of mineralization (Corbett, 2009, his work used the Irumafimpa mine working exposures and Barrick's Kora and Eutompi drill results). The earliest is a sulphide-rich Cu-dominant stage. This is overprinted by a quartz-rich, Au-dominant crustiform quartz

vein to breccia system with high grade gold associated with tellurides (e.g. Calaverite AuTe). The alteration and mineralization paragenesis recognised in the Kora-Irumafimpa vein system is summarised below in Table 7-3.

Stage	Name	Description
Stage 1.	Silicification and fuchsite alteration	silica, fuchsite
Stage 2.	Sulphide-rich Cu-dominant	quartz, pyrite, chalcopyrite, bornite
Stage 3.	Quartz-rich Au-dominant	quartz, gold tellurides (calaverite and kostivite), native gold
Stage 4.	Quartz Cu	quartz, pyrite, chalcopyrite, bornite

Table 7-3. Mineralization and alteration paragenesis in the Kora-Irumafimpa- vein system.

Stage 1 is the earliest period of alteration and is characterised by silicification and fuchsite alteration of phyllitic wall rock.

Stage 2 mineralization comprises coarse-grained idiomorphic quartz and pyrite (typically euhedral) veins with base metals. Volumetrically this early mineralization appears to be the most abundant mineralization. At Kora Consolidated the mineralization comprises massive pyrite veins to pyritic breccias, grading to pyrite-chalcopyrite-bornite veins characterised by elevated Zn, Pb, Sn, W, Bi, and Sb. Higher copper grades, in the order of 2% Cu, occur at Kora (Coote, 2018; Muller et al., 2019). There appears to be a lateral zonation to lower copper grades at Irumafimpa.

Stage 3 mineralization is the dominant gold-bearing stage and is characterised by crustiform, vuggy and colloform quartz veins, quartz breccias, and xenomorphic pyrite. Most of the gold occurs as the gold tellurides calaverite and kostivite, which are concentrated at vein margins. Significant native gold has been locally observed and is probably a result of either oxidation of tellurides at Irumafimpa, or as primary native gold at Kora Consolidated.

Stage 4 is manifested as local brecciation and deposition of low temperature quartz along with minor copper mineralization.

## 7.5 HOST ROCKS

Dominant host rock of the Kora Consolidated-Irumafimpa vein systems is the highly sheared and deformed Bena Bena Formation, composed of low grade metamorphosed phyllites and amphibolites, intruded by the Elandora porphyry at the northern end of the vein system.

## 7.6 CONTROLS

The structural history of the Kora Consolidated-Irumafimpa area has been documented by Blenkinsop (2005), this body of work was done prior to the discovery of Kora North. The Kora Consolidated-Irumafimpa vein systems are made up of the contiguous Kora, Eutompi, Kora North and Irumafimpa structures. Veins are breccia veins with abundant clasts of both altered wall rock and earlier stages of vein mineralization, these are tectonic in nature and are vuggy and annealed in places, however, at Irumafimpa they are mostly hydrothermal veins of epithermal origin. Vein formation was multistage, with at least four identifiable episodes of alteration and mineralization (Table 7-3).

At Kora Consolidated both the sulphide copper dominant and quartz gold dominant mineralization occur along the same NW trending sub-vertical structure. This is likely to be a long lived structure, which was reactivated at several different stages in time. The quartz gold dominant mineralization shows modest variations in dip (from sub-vertical to locally -60° dip) and strike this believed to be due to the formation of dilation from pre-existing structures that later was enhanced by structural dilatancy from continued mineral fluid injection.

Late stage faults with clay gouge postdate the mineralization. These usually occur on the vein margins but can cause local disruption of the veins.

#### 7.7 DIMENSIONS AND CONTINUITY

The current mineralization is part of a broad northwest trending mineralized zone more than 2.5 km long and up to 60m wide in which individual veins vary from less than one metre wide with pinch and swell features over short distances (Au telluride lodes at Irumafimpa) to more continuous veins up to several metres wide (Au, Cu – rich quartz and sulphide lodes) and 100s of metres of geological continuity at Kora.

Historical and more recent exploration has identified and subdivided several shoots within the lodes, defining the Kora, Kora North, Eutompi and Irumafimpa deposits. Minor modifications to the lode margins have been interpreted from the 2020-2021 drilling results with the southern phasing out of K1 at depths below the 1205 level, and the extended continuity of the K2 lode, which remains open to the south at both shallow and deeper levels. The interpretation has given K2 the dominant role for the vein system. The Kora Link lode has been re-interpreted as an amalgamation of smaller mineralised veins into a single zone juxtaposed with both K1 (on its hangingwall) and K2 (on its footwall).

The Kora Consolidated comprises two parallel, steeply west dipping, north-south striking quartz-sulphide vein systems, K1 and K2, within an encompassing dilatant structural zone hosted by phyllite. An additional structure, the Kora Link, has also been defined for part of the area between K1 and K2. The current Kora Consolidated resource estimate area covers an area of approximately 1250 metres along strike by 1050 to 1150 metres vertically. Kora Consolidated is along strike to south from the previously mined Irumafimpa deposit. The gold grade continuity is variable throughout the lodes as is typical of this style of mineralization, a drill spacing of 25 to 30m centres identifies with confidence to Indicated Resource category status.

#### 7.8 JUDD VEIN SYSTEM

The Judd lode is a narrow, intrusive related quartz-sulphide, Au-Cu-Ag vein system, similar to Kora Consolidated's located approximately 90 to 150m east of and parallel to Kora Consolidated on ML150**Error! Reference source not found.**). The system consists of four known narrow veins with significant inter-vein separation, steeply dipping and with a similar strike direction as Kora. The vein of most interest is the western vein, J1, this has been subject to development drives on two levels (1235 & 1265 level) totalling 692m and 197 face sample lines for 1,478 samples. This work indicated significant geological continuity with variable grade continuity, significant mineralization with potential for economic extraction, material from the development drives was treated by the process plant and achieved similar recoveries for gold and copper to that achieved with Kora material. K92ML has carried out diamond drilling from both underground and surface to define part of the Judd J1 vein system in the development area. Underground diamond drilling has concentrated on the J1 vein, with some holes being extended to intersect the other veins (J2, J3, and J4) previously documented by Barrick and HPL and which remain under-explored.

The Judd vein system was partially tested by Barrick holes that were drilled to test the Kora Consolidated lodes at depth. This sporadic drill testing returned a maximum intersection of 3m @ 278g/t Au. Core samples illustrate two types of Judd vein mineralization, a quartz dominant, Au-rich component and a sulphide dominant, Cu-rich vein style (Figure 7-4). Surface mapping and sampling has indicated a mineralized strike length of over 2.5 km.



BKDD0002 126.3 – 127.3m 0.9 g/t Au, 69.8 g/t Ag, 7.49 % Cu

# BKDD0002 113.6 -114m 1,870 g/t Au

Figure 7-4. Judd mineralization styles

(sulphide dominant elevated copper grades, left photo and quartz dominant gold enriched on the right)

## 7.9 HOST ROCKS

Dominant host rock of the Judd vein system is the highly sheared and deformed Bena Bena Formation, composed of low grade metamorphosed phyllites and amphibolites, intruded sometimes by thin intermediate intrusives of dacitic composition in sub-concordant positions.

## 7.10 CONTROLS

The Judd veins are intrusive vein style and are typically brecciated with abundant clasts of both altered wall rock and earlier stages of vein mineralization. The veins are tectonic in nature and are sometimes vuggy in places. The structures containing the quartz sulphide mineralization at Judd strike NNW and dip at 75 to 80<sup>o</sup> to the west This is likely to be a structure, which was reactivated at several different stages in time. The quartz gold dominant mineralization shows modest variations in dip and strike and is believed to be due to the formation of dilatancy from pre-existing structures that later were enhanced by continued mineral fluid injection. Minor late stage faults sometimes display the mineralization approximately subparallel to the mineralization.

#### 7.11 DIMENSIONS AND CONTINUITY

The dimensions of the wireframe interpretation used in MRE are 800m in strike length and 500 to 700m in the dip direction. The Judd vein system is interpreted where it has been sporadically intercepted in diamond drill holes from surface and under ground in the ML150 and passing into EL470 to the south for a total distance of 2.5km. this shows potential that is yet to be developed.

The J1 gold grade continuity and mineralization pinches and swells along the drive. The gold grades vary with ranges of similar grades typically between 5 up to 30metres along the drive, the variability is usual for this type of mineralization.

## 8 DEPOSIT TYPES

Gold-copper deposits within the SW Pacific Magmatic Arcs have been classified into groups by Corbett and Leach (Corbett and Leach, 1997; Corbett, 2009):

- Porphyry-related (including gold skarn).
- High sulphidation gold-copper.
- Low sulphidation (including sediment-hosted replacement).
- Intrusion related Gold Deposits
- Carbonate-base metal Au Deposits



Figure 8-1. Conceptual model for porphyry and related low and high sulphidation mineralization.

#### Source: modified by K92ML after Corbett 2009

Telescoping may overprint the varying styles of low sulphidation gold mineralization upon each other or upon the source porphyry intrusion. Some of K92ML's Kainantu prospects occur in Corbett's model and are highlighted in Figure 8-1.

## 9 EXPLORATION

## 9.1 HISTORIC EXPLORATION

A summary of historic exploration on ML150 (Irumafimpa, Kora, Judd, and Karempe) including drilling is reported in Section 6 of this report. Further exploration information at other prospects at Kainantu is described in Section 6 of the "Independent Technical Report, Resource Estimate and Summary of Mine Facilities, Kainantu Project, Papua New Guinea" dated 15 April, 2016 and in Section 6 of the "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for Expansion of the Kainantu Mine to Treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea", dated 27 July 2020 which are filed on SEDAR.

## 9.2 EXPLORATION BY K92 MINING 2015-2021

In September 2016 K92ML recommenced underground exploration work targeting the Irumafimpa deposit and the Judd vein system.

In May 2017 underground drilling by K92ML commenced at Kora North. Diamond drill hole, KMDD0009, intersected an extension of the Kora/Eutompi vein system approximately 130 metres from the Kora Drive. Following discovery of the Kora North mineralization and the delineation of an initial Mineral Resource, the

emphasis of K92ML's drilling aimed to extend the Kora North mineralization above and below that 2018 Mineral Resource. Drilling in conjunction with underground mining has continued in this area with expansions to the Mineral resource documented in the 2020 NI43-101 report and detailed in Chapter 14 of this report. Drilling since 2020 has concentrated on infilling the Resource to upgrade to Measured and Indicated, a minor amount of drilling has been used to extend the mineralization at depth to the south of the 2020 mineral resource estimate.

Within EL470 surficial Au-Ag-Cu mineralization, was identified in the Blue Lake area during September 2017. Follow up work revealed a substantial coincident geological, geochemical (Au-Cu) and geophysical anomaly now considered a top priority, mineralised porphyry target. An initial program of ten diamond drillholes has been completed. The first drill hole, KTDD0001, returned an open-ended intercept of 174.6m @ 0.28 g/t Au, 0.22 % Cu, from 259.3m.

K92ML's exploration team has prioritised several targets (listed below in Table 9-1) for follow-up work.

Porphyry Targets	Epithermal Targets/Deposits
Tankaunan	Irumafimpa Extension (Kokomo)
Kokofimpa	Kora (includes Kora South)
Timpa	Judd (includes Judd South)
A1 (Headwaters)	Karempe
Blue Lake (Kotampa)	Maniape
Efontera	Arakompa
Kathnell	Mati / Mesoan
Yompossa (Yanabo)	
Aifunka	

Table 9-1.	K92ML	Priority	Exploration	Targets	2021

## 9.3 ML 150 (KORA-JUDD)

In September 2016 two diamond drill rigs commenced work underground at Irumafimpa. Mining and drilling was put on hold at Irumafimpa in early 2017 to give priority to mining and exploration activities at the Kora North deposit because of logistics, higher grades of gold and copper and improved processing properties of the ore material.

In May 2017 K92ML commenced underground diamond drilling at Kora North. Diamond drill hole, KMDD0009, intersected what K92ML interpreted as an extension of the Kora/Eutompi vein system approximately 130 metres from the Kora Drive. The intersection of 5.4 metres at 11.68 g/t gold, 25.5 g/t silver and 1.33% copper was approximately 500 metres along strike to the north and 150 metres down dip from the closest point of what was the then defined as the Inferred Resource of the Kora deposit. Follow-up drilling expanded the discovery such that a Kora North Mineral Resource could be delineated in September 2018

K92 Mining Limited's previous underground diamond drilling has been described in the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Irumafimpa and Kora Gold Deposits, Kainantu Project, Papua New Guinea, dated 02 March 2017, the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Kora North and Kora Gold Deposits dated 07 January 2019 and the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020 which are filed on SEDAR.

Since 2018 both surface and underground diamond drilling has continued, which has resulted in a substantial expansion of the Mineral Resource announced in 2020 and a consolidation and upgrade of the Mineral Resource for Kora Consolidated and a maiden Mineral Resource for the J1 Judd lode detailed in this report.

Figure 9-1 is a schematic longitudinal section showing the location of the Kora diamond drilling as of April 2020 at the time of the previous (2020) MRE and Figure 9-2 shows the Kora drilling as of October 2021. Drilling was designed to be of sufficient density to raise confidence in the classification of the resource to allow for an increase in the amount of Measured and Indicated Resource necessary for use in the Kora Expansion Feasibility Study.



Figure 9-1. Mine Lease Long Section – Irumafimpa, Kora and the drilling target area as of the Resource Estimate April 2020 Source: K92ML (2020)



Figure 9-2. Mine Lease Long Section – Irumafimpa, Kora, drilling target area and total intercept pierce points as of October 2021

Source: K92ML (2021)

## 9.4 EL470

#### 9.4.1 Kora South

The Kora structure is believed to extend more than 1km beyond the ML150 mining lease boundary but still lies within K92ML's exploration license EL470. This area is referred to as the Kora South prospect. The prospect has numerous artisanal workings and mineralized outcrops, some of which line up with the projected strike of the Kora structure. Underground and surface drilling, south of the ML150 boundary on EL470, commenced on the Kora South prospect in late 2021.

The extent of the structure has been highlighted by the recent geophysical survey. Figure 9-3 shows a zone of high Apparent Conductivity contours extending from Kora and Judd into EL470 for several kilometres and Figure 9-4 is a longitudinal section illustrating the highly conductive zone north and south of the mining centre at Kora.

The airborne deep penetrating geophysics program completed over the entire ~862 km<sup>2</sup> property, shows good correlation between known mineral deposits and conductive bodies. The results demonstrate an extensive untested potential strike length to Kora-Kora South and Judd-Judd South vein systems beyond the A1 Porphyry to the southeast for several kilometres. New vein and porphyry targets on K92ML's licenses were also identified as well as highlighting known mineralized porphyries, including A1, Blue Lake, Tankaunan and Timpa.

The program was flown in November 2021 and engaged Expert Geophysics Limited (EGL) to conduct the helicopter-borne MobileMT electromagnetic and magnetic survey. MobileMT is the latest generation of airborne AFMAG technologies, designed in 2017 by the inventor of the ZTEM system. MobileMT measurement frequency range is 25 Hz – 30,000 Hz, while ZTEM range is 25 Hz – 720 Hz, thus delivering a much greater depth range of investigation. Electromagnetic and magnetic data was collected along east-west survey lines, nominally spaced at 200m, and north-south tie lines nominally spaced at 2,000 m.



Figure 9-3. Plan View of Apparent Conductivity Contours



Figure 9-4. Longitudinal Section of Apparent Conductivity Contours

#### 9.4.2 Blue Lake (Kotampa Project)

Surficial Au-Ag-Cu mineralization, associated with enargite-bearing breccia and vuggy silica, was identified by K92ML geologists in the Blue Lake area (EL470) during September 2017. Detailed mapping, rock chip and soil sampling revealed a substantial (1.2 x 0.8 km) coincident geological, geochemical (Au-Cu) and EM geophysical anomaly which is considered a top priority mineralised porphyry target by K92ML geologists (Figure 9-5).



Figure 9-5. Plan View of Blue Lake prospect

#### Source: K92ML (2020)

Drilling in 2019 to depths of 600 metres through the centre of the primary geochemical anomaly at Blue Lake identified extensive gold and copper mineralisation associated with propylitic alteration beneath an advanced argillic lithocap. The first drill hole, KTDD0001, returned an open-ended intercept of 174.6m @ 0.28 g/t Au, 0.22 % Cu, from 259.3m and was terminated in mineralization at 433.9m

The pattern of alteration in the first few drillholes was interpreted to allow for the existence of a deeper potassic alteration zone with potentially significant higher grade gold-copper mineralization at depth. Additional drilling targeting the potassic zone is continuing.

Assessment of drill core by independent consultant Greg Corbett supported the conclusion that there is a major intrusive complex at the Blue Lake prospect with a flow-banded fractured dacitic dome cut by hydrothermal breccias and late mineral porphyritic dacite dykes. Many features in the drill core are typical of those expected in a porphyry environment marginal to a speculated buried intrusion source (Corbett, 2019).

## 9.4.3 Karempe Project

At the Karempe prospect just outside the western boundary of ML150 reconnaissance mapping and sampling and EM surveys have been carried out. Anomalous geochemical and geophysical indicators (potassium anomaly, strong conductivity) for mineralization were detected. Figure 9-6 is a plan view of the Kainantu Vein Field showing location of the Karempe vein system relative to Kora and Judd vein systems plus Karempe drill traces and rock chip sampling.

Several drill holes have been completed with high grade gold mineralization hosted mostly in intrusives. Best intercept is 2.45m @ 39.82 g/t Au, from 238.65m, including 0.75m @ 125.40 g/t Au from 239.0m, in drill hole KRDD0005 (Figure 9-7).



Figure 9-6. Plan View of Karempe Vein System

Source: K92ML (2021



Figure 9-7. Karempe vein system cross section

## 10 DRILLING

#### 10.1 KORA CONSOLIDATED/JUDD- DRILLING

The updated Mineral Resources for Kora Consolidated and Judd are based on diamond drill hole samples from both surface and underground drilling along with face sampling of underground development drives.

Table 10-1 provides summary details of the sampling for the overall deposit area. The majority of the recent K92ML drilling (March 2020 – Dec 2021) has been infill drilling to increase the amount of Measured and Indicated Resource for the mineral resource estimate. The drilling has also achieved some resource expansion by extending the Kora mineralization along strike to the south. Drilling into Judd was aimed at both expanding and defining the Mineral Resource from underground, after confirming economic mineralization while installing a vent drive along the J1 Lode.

Company	Year	Location	Туре	No of Holes	Metres	Ave Length (m)
Barrick	2008 - 2015	Surface	DD	24	10,690	445.4
		UG	DD	6	808	134. 7
Highlands & Others	1990 - 2007	Surface	DD	79	16,596	210.1
	(Irumafimpa)	UG	DD	562	26,514	47.2
			Total	671	54,608	
K92ML	Oct 2017 - Sept 2018	UG	DD	83	9,564.20	115.2
			Face	461	1,499.30	3.3
K92ML	Oct 2018 - Feb 2020	Surface	DD	16	7,390.00	461.9
			DDwedge	3	719.7	239.9
		UG	DD	96	21,224.50	221.1
			DDwedge	7	935.2	133.6
			Face	312	1,657.50	5.31
K92ML	Mar 2020- Oct 2021	Surface	DD	21	6,155.10	293.1
		UG-Kora	DD	231	36,152.64	156.5
			DDwedge	3	471.7	157.2
			Face	509	2,798.59	5.5
	Mar 2020-Dec 2021	UG_Judd	DD	49	8,935.60	182.4
			Face	193	1,059.84	5.5
		Kora Tot	al Drilling	569	110,707.04	
		Kora Total Face		1,282	5,955.39	
		Grand Total Drilling		618	119,642.64	
		Grand Tot Sampling	al Face	1,475	7,015.23	

(DD = diamond drilling; UG = underground)

The K92ML underground diamond drilling programs for Kora and Judd deposits have utilised up to 6 owneroperated LM90 drill rigs as well as using rigs supplied by Quest Exploration Drilling (QED) Contractors (PNG). QED provided two drill rigs, the Atlas Copco Diamec U4 and U6 drilling machines for this purpose. QED also carried out the surface drilling using Atlas Copco CS6 and CS1000 rigs, coupled with two owner operated drill rigs, these are Multi Power Discovery HD – Heli-portable deep hole drilling rigs. All drilling was carried out on a 12-hour shift basis, both on day and night shift.

The underground diamond drilling utilises several core sizes, namely LTK60, NQ, NQ2 and HQ. For the surface drilling all holes were collared to various depths in PQ, followed by HQ and NQ casing off where needed to maintain competent samples through the lode system.

K92ML follows an established drilling protocol in which the driller prior to drilling is given a drill hole work plan specifying the expected lode target positions, hole depth, azimuth, dip, core size and drilling method to use, the plan also highlights any safety concerns such as proximity to workings. All drilling was monitored to ensure that all precautions were taken so that the diamond core recovered from the barrel was maintained in the best possible condition to maximise the information obtained by minimising breakage and core loss.

All diamond drill hole collar positions are surveyed in prior to drilling and picked up after completion by a Leica Total Station TS09 Plus instrument. The hole design is uploaded into the instrument and set out in the field. A reference (azimuth) line is marked at the foresight and backsight. The drill collar is also marked. The drilling dip is positioned using a clinometer. A geologist checks the alignment of the rig on each hole before drilling is allowed to start. For hole pickup, a rod is inserted by the surveyor, into the hole at the collar and two points along the rod are surveyed to determine the initial drilled azimuth and dip.

Down hole surveys were taken for every diamond drill hole. Azimuths and inclination were measured using a Reflex EZ TRAC XTF capable of single and multi-shot operations. During the drilling of a hole single shots were done at 3, 9, 30, 60, 90m and so on including an end of hole shot. On the way back out of the hole, if hole conditions allowed, a multi-shot survey was carried out at every 3m intervals along the entire hole. To avoid erroneous readings aluminium extension rods were used to place the instrument away from magnetic interference caused by the drilling equipment. Results from surveys are automatically calculated and displayed on the handheld device for the geologist to use.

No core orientations were done for the underground drilling by K92ML as the results of the closed spaced drillholes clearly showed the geological continuity of each lode. Core orientations were performed for HQ and NQ core on the holes drilled from surface by K92ML. HPL and Barrick did minimal orientated core from surface and none from underground, siting difficulties of maintaining the orientation line between orientation readings because of the brecciated often broken-up nature of the core samples through the mineralised zones.

Diamond core was laid out in the core trays by the drilling contractor/company driller, beginning in the upper left corner of each tray with respect to the long axis of the trays. The core trays were labelled with the hole number, tray number, start and finish depths. Plastic and wooden core blocks marked the end of each run with its downhole depth. Any core loss was recorded on the core block and run timesheet by the driller. Core was then removed from the drill site by the drilling teams and taken to the core shed for processing.

At the core shed the core was measured for core loss and RQD determination. A reference line is marked on the core and one metre intervals are annotated onto the core. The core is then logged according to a set of predefined codes, in particular for lithology, alteration, veining and sulphide mineralogy. Figure 10-1 contains a flowsheet for the K92ML core handling procedure:



Figure 10-1. Flowsheet diagram of the diamond core handling process.

Face sampling and mapping is done after each cut along the drive, with the cut interval along the drive being nominally 3.5-4m using Jumbos or (historically) 1.5m using airlegs. The face geological mapping and channel samples are taken across the strike of the vein system (based on geology), at right angles to the drive, sample intervals are from 0.1m to 1m in length.

The Barrick/Highlands drilling was reviewed and endorsed by Nolidan Mineral Consultants in 2015. Drill core handling and sampling procedures used by Barrick are reported in Section 11.2.

## **10.2 CORE RECOVERY ANALYSIS**

The recovery data for each core run was recorded on paper logs and entered into the database. Equal length weighted composites of 1m were generated for gold (g/t) and recovery (%) values for the K1, K2, Kora Link and Judd, J1 lode structures. Selection of the lode intervals was based on the geologically logged vein tags, located in the assay table of the database in the field 'vein\_id' and the wireframe interpretations used to constrain each of

the lodes in the resource model. This was done for each lode structure and enabled the comparison of gold grade versus the core recovery. All K92ML drill recovery data has been used to construct the graphs.

#### 10.2.1 K92ML K1 Lode

The K1 lode core recovery averaged 96% for 2,534 composited samples with no significant relationship between gold grade and core recovery (Figure 10-2). 2,296 samples have >85% core recovery.



Figure 10-2. K1 gold grade versus core recovery

## 10.2.2 K92ML K2 Lode

The K2 lode core recovery averaged 93% for 2,341 composited samples with no signicant relationship between gold grade and core recovery (Figure 10-3.). 1,938 samples have >85% core recovery.



Figure 10-3. K2 gold grade versus core recovery

#### 10.2.3 K92ML Kora Link

The Kora Link lode core recovery averaged 92% for 598 composited samples with no signicant relationship between gold grade and core recovery (Figure 10-4). 476 samples have >85% core recovery.

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Figure 10-4. Kora Link gold grade versus core recovery

#### 10.2.4 K92ML Judd J1 Lode

The Judd J1 lode core recovery averaged 95% for 208 composited samples with no signicant relationship between gold grade and core recovery (Figure 10-5). 183 samples have >85% core recovery.



Figure 10-5. J1 Lode gold grade versus core recovery

In summary there is no relationship between core recovery and gold grade for the K1, K2, Kora Link and J1 lode structures.

#### 10.2.5 Highlands Pacific

Analysis of the core recovery data for the HPL drilling indicated no significant relationship between gold grade and core recovery for the K1 lode (Figure 10-6).



Figure 10-6. Highlands Pacific Gold Limited core recovery K1 lode

## 10.2.6 Barrick Gold Limited

Analysis of the core recovery data for the Barrick drilling indicated no significant relationship between gold grade and core recovery for the K1 and K2 lodes (Figure 10-7).



Figure 10-7. Barrick Gold Limited core recovery for K1 and K2 lodes

In summary there is no gold grade bias associated with core recovery, in particular there is no subset in the data of high gold grades associated with low recoveries.

#### **10.3 DOCUMENTATION AND STORAGE**

The drill data is recorded into an excel spreadsheet, for example core recovery, RQDs, density measurements, geological logging and sample intervals etc are all logged directly into a excel spreadsheet using tuff book computers at the core yard, once validated by the Database Geologist and Senior Geologist the data is then entered into the Site access database.

Core is stored on weather proof pallets. Pallets are nominally loaded to 1.5m high and contained 3x rows of core on them, core is strapped to the pallet with metal straps and tarpolines used to cover the core to prevent weathering. Pallets of core per hole\_id are then taken to a lay down area and stored for future reference. Some core is also, stored in sea containers this form of storage has been limited to the surface drill campaigns and has been limited to the older historical core from Barrick Gold's drilling.

## 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

#### **11.1 HIGHLANDS PACIFIC**

Highlands Pacific had documented drilling protocols and procedures for both surface and underground diamond drilling. In summary core was carefully reconstructed in the trays after transport a centre line marked on the core for reference for sampling purpose to avoid bias by the geologist, half core is sampled and the other half retained in the tray. Mineralised zones were sampled as well as 5m either side of the mineralised zone. Maximum sample interval was 1m and minimum 0.5m. Intervals were determined by a qualified Geologist on geological mineralised boundaries. This included 5 at 1metre intervals either side of the mineralization. the entire half-core sample is to be to be dried in a monitored oven so the heat remains between 95°C and 113°C. After 10 hours, the samples were removed from the oven and allowed to cool and reduced to minus 75 micron with LM5 before the assay portion is split off. All samples are to be analysed at Astrolabe's Madang Laboratory. Gold was determined by 50g fire assay and other elements such as Cu, Pb, Zn and As by acid digest, AA finish.

#### 11.2 BARRICK

The drill core handling procedures used by Barrick were reported by Nolidan Mineral Consultants in 2015. His findings are as follows: "All drill core was logged, photographed (wet and dry), then cut and sampled at Barrick's Kumian core yard. Logging data entry was completed using an in-house developed version of the AcQuire software. After logging, core was half-cut using diamond saws, and continuously sampled into numbered calico sample bags. The samples were submitted to the sample preparation facility of Intertek Laboratory Services in Lae (PNG). Sample preparation involved drying the samples at 105°C, crushing in a jaw crusher with 95% of the sample passing <2mm, riffle splitting and pulverising to 95% passing <75µm."

#### 11.3 K92ML

#### 11.3.1 Sampling

A sampling flow diagram is presented in Figure 11-1.



Figure 11-1. Diamond core sampling process flow diagram

The core tray labelling and installation is done by the drilling and field assistants team at the drill site, the core is removed to the core yard where the geologist logs the core, determining sampling intervals according to the geology intersected. Once sample intervals are determined they are marked on the core by the geologist along with the sample number using a white paint marker or red chinagraph pencil. Sample intervals were guided by geological contacts/boundaries. A minimum sampling width of 0.1 metres and a maximum of 1 metre were used. The smaller sample Intervals were utilised to sample individual sub-veins/stringers and sulphide intercepts. Core was sampled as a minimum to greater than 5m either side of each mineral lode, including stringer-style mineralization away from the lodes. Unmineralised areas at the start of the hole, at the end of the hole and between lodes was usually left unsampled. All mineralised occurrences were sampled.

Sampling of the core involved sawn half core cut along the reference line. For LTK60, NQ, NQ2, HQ and PQ core the left hand (looking down hole) half core is sampled. The remainder of the core is returned to the core tray. Core samples were placed in numbered calico and plastic bags and a numbered sample ticket placed in each for dispatch to the on-site assay laboratory managed by Intertek Testing Services (PNG) LTD, an independent accredited laboratory.

K92ML has a standard underground face sampling procedure in place. Face samples, under geological control, are taken across the full face of both the exposed lode system and any waste rock, with sample intervals ranging from 0.1 to 1m in width depending on what the geologist decided. Two samples are taken per interval at waist and knee height and the corresponding widths recorded. Sample lengths are <1.5m with samples approximately 3.5kg in size. Widths and dimensions of the mineralization were documented on a face sketch with the location of the face sketches determined by the geologist and surveyor using the surveyed stations along the drive. Two samples are taken per interval with the samples assayed separately for Au, Cu and Ag and the results averaged out using length weighting and channel orientation before entry into the database.

K92ML has a documented QAQC procedure that included the insertion standards, blanks and duplicates into the sample suite for each hole (for all drilling since 2017) and for the face sampling (since Oct 2019).

A twin hole programme was completed to confirm the Barrick assays as no QAQC data could be found from their drilling.

## 11.3.2 Sample Preparation

Intertek Laboratory services provides on-site laboratory facilities. The sample preparation for both the drill core and face samples is described below and as a flow diagram presented in Figure 11-2.

- Samples are sorted and dried at 105°C overnight
- Jaw crushed to 5mm
- Secondary jaw crush using a Boyd crusher to 2mm and then rotary split to give 1kg
- Pulverisation using an LM2 mill of the 1kg sample to 90% passing 106microns
- Duplicate splits 1 in 30



Figure 11-2. Sample preparation procedure

#### **11.3.3 Density Measurements**

#### 11.3.3.1 Historic Density Measurements

Previous density test work is summarized in the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Irumafimpa and Kora Gold Deposits, Kainantu Project, Papua New Guinea, 02 March 2017 (Woodward, A.J, Desoe C., and Park L.J., 2017).

During the initial 2002 feasibility study HPL carried out density determinations on 35 samples sourced predominantly from the Irumafimpa exploration adit. Density of these samples ranged from 2.9 t/m<sup>3</sup> to 3.7 t/m<sup>3</sup>. HPL used a default density of 2.9 t/m<sup>3</sup>. This incorporated a correction for voids which constitute approximately 10% of the total volume of the Irumafimpa lodes (SRK, 2006). Historic resource estimates by Hackchester (2005) and Mining Associates (2006) used an average density value of 2.9 t/m<sup>3</sup>.

Barrick made 428 density measurements of drill core from Kora. These were mostly waste material but included 5 intersections of the interpreted Mill and Robinson veins. Densities were determined using the water immersion method (Bond, R., Dobe, J., & Fallon, M., 2009). Average values from measurements for lode material ranged from 2.58 t/m<sup>3</sup> to 2.77 t/m<sup>3</sup>.

In the 2015 resource estimate vein blocks in the Irumafimpa deposit were assigned a density of 2.9 t/m<sup>3</sup> and vein blocks in the Kora deposit were assigned a density of 2.8 t/m<sup>3</sup>.

In 2018 density testing of core from diamond drilling at Kora North consisting of 154 samples concentrated on the mineralised zones. This used the geologists' discretion to take representative core samples of the lodes and were usually between 3-10cm in length. Samples were taken across the K1 and K2 lodes. This work indicated an average density of 2.8t/m<sup>3</sup> however, samples tested were spatially limited in their extent.

Density testing between October 2018 and March 2020 were summarised for K1 and K2 lodes in Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea, dated 27 July 2020. The work indicated the average density value for K1 Lode is 2.84t/m<sup>3</sup> and for K2 is 2.93t/m<sup>3</sup>.

#### 11.3.3.2 Current Density Measurements

The K92ML density determination method of the Kora and Judd drill core samples has been consistent since 2018. Density test samples are selected by the geologist during the logging process. Sticks of core are taken out of the core tray, preferencing solid pieces of core of 10-25cm length, dried in the oven at 105 degrees Celsius for 12 hours. The samples are then weighed dry, then weighed while submerged in water, then weighed after the submersion in water and moisture content and density calculated. Trials, of using cling film, to wrap the core prior to submersion in water were abandon as this tends to buoy the sample giving less weight to the sample. Typically, moisture content was less than 1% by weight. Results of the density tests were entered into the Access database and using the Surpac software the density results were extracted as sample points from the database within each of the lodes, i.e. K1, K2, Kora Link and J1. Results of the density testing statistics are summarised in Table 11-2 for the four lodes. As a result default density values were assigned to each lode, with the value for K1 and K2 being 2.84 t/m<sup>3</sup>, for the Kora Link 2.74 t/m<sup>3</sup> and for J1 2.71t/m<sup>3</sup>.

It was noted that there were outliers both of high and very low density values in the generated datasets, the values for these density test sample intervals were cross referenced against the core tray photos and a decision made to remove them if they were not representative of the material in the core tray. Details of removed samples are in **Table 11-1**. The ore zone material is characterised by silification and sulphidation with natural cavities in places from ground water activity, both high and low density values were excluded from the density estimate after this process. A summary of the results is presented in **Table 11-2**.

Lode	# of samples	Density used in MRE	Outliers above mean	Density value of outliers	Outliers below mean	Density value of outliers
К1	564	2.84	1	6.55	43	2.01
К2	527	2.84	-		68	2.05
Kora Link	222	2.74	1	6.2	42	2.17
J1	77	2.7	-		11	2.17

Table 11-1. Details of density sample removal from dataset

Descriptive Statistics	К1	К2	Kora Link	J1
Mean	2.84	2.84	2.74	2.71
Median	2.73	2.71	2.58	2.63
Standard Deviation	0.44	0.44	0.41	0.33
CV	0.15	0.16	0.15	0.12
Minimum	2.20	2.29	2.31	2.32
Maximum	4.71	5.27	4.80	3.80
Count	564	527	222	77

Table 11-2. Summary of density data for each lode

Also, the Process feed sulphur content Table 11-3 was analysed to give confidence in the density values obtained from core samples. Historically there has been uncertainty associated with the density analysis of core. The uncertainty is associated with the small natural voids in parts of the lodes coupled with, sometimes a clay component that can affect core recovery.

The Process sulphur content values were derived from the Process feed samples and used to estimate the density of the material fed to the Plant. The formula is:

Density= (2.65(density of host material)\*0.86 (% of host))+ 4.5 (density of Sulphides-pyrite, chalcopyrite & bornite)\*0.14 (% of sulphides based on S @6.6%)= 2.9t/cm3.

This then demonstrates that the density values derived from the core stick density test work are conservative in nature, giving a Maximum of 2.84t/m3 for K1 and K2 compared to 2.9t/cm<sup>3</sup> estimated from using the Process sulphur content values. Process sulphur content is a good indication and confirms that the densities assigned to the Lodes from core samples are conservative.

Month	Sulphur % Average
Sep-20	6.93
Oct-20	6.77
Nov-20	5.42
Dec-20	6.47
Jan-21	6.52
Feb-21	4.75
Mar-21	5.39
Apr-21	6.77
May-21	8.73
Jun-21	7.47
Jul-21	6.54
Aug-21	7.15
Sep-21	6.59

Table 11-3. Sulphur percentage contained in feed samples to the onsite process facility.

For the period (13 months) = 6.628% S.

As a check 20 test samples were taken from a single hole KMDD0418 and two density methods were used, the current method (water immersion method as described above) and the measuring cylinder method of known volume that is displaced when the sample is placed in it. In summary (Table 11-4) this showed that overall the mineralized lode was 2.86 using the current immersion method, (cut sample) versus 2.89 for cylinder method and for all samples 2.76 versus 2.78 l/m<sup>3</sup>, the difference is 1% and within experimental error bounds.

	Water Immersi	on	Cylinder method	Difference		
Rock type	Density l/m3	Cut Density I/m3	Density I/m3	cut/cylinder		
Mineralised/lode	3.21	2.86	2.89	99%		
All samples	2.83	2.76	2.78	99%		
one sample cut from 4.53 to 3.15						

Further work is to measure a bulk sample of known volume, excavated from an ore drive.

#### 11.3.4 Sample Analysis

The analytical method is detailed as follows:

#### 11.3.4.1 Gold

- Fire Assay Method with a 30g charge (FA30)
- Samples are fired with a modified fire assay flux, prills digested at 100oC with aqua regia and read on an atomic absorption spectrometer (AAS)

#### 11.3.4.2 Cu/Ag

- 3 acid digest at 180°C (Nitric, Perchloric & Hydrochloric mix).
- Diluted with water and read by AAS

#### 11.3.4.3 CS

• Read by combustion furnace.

11.3.4.4 Fluorine

• Following a carbonate fusion samples are read on a specific ion meter referenced against standards.

#### 11.3.5 QAQC Programme and Results

Since its acquisition of the project in 2016 K92 has implemented a QAQC programme. K92ML's documented QAQC programme for the drilling comprises standards, blank standards, laboratory duplicates, and 2nd laboratory checks. The face sampling prior to September 2018 had no QAQC samples inserted although the sample suites were inserted in between drillhole sampling suites. From September 2018 onwards the same QAQC protocols were applied to the face sampling.

A definition of QAQC terms used in this report is supplied in Table 11-5.

Item	Description
Standard	A Certified Reference Material (CRM) used to measure accuracy of the sample prep and analysis of the samples.
Blank Standard	A sample with nil or negligible (i.e., undetectable) concentration of the tested element(s). Blank standards are used to monitor for contamination at the various stages of processing and assaying.
Field Duplicate	A second drillhole sample collected in the field. This sample provides a measure of the homogeneity of the sampled material, short scale grade continuity
Laboratory Duplicate	This sample provides a check on sample homogeneity from the sample prep stage and the repeatability of the sample extraction. Sample collected as a sub-sample of the originally submitted 2-3kg sample after crushing and pulverizing. Sometimes referred to as a pulp duplicate
2 <sup>nd</sup> Laboratory Checks	Check assays on all shipments are yielded from samples submitted to more than one laboratory (organization) for validation of consistency. Sometimes known as umpire laboratory checks
Laboratory Replicate	A second measurement (often analytical reading) of the same sub-sample after sample digest; a check for sample prep homogeneity and machine calibration.
Twin Hole	A repeat hole located in very close proximity to an original hole i.e. <5m spatial difference. It is used to validate the primary drilling and a check that the sampling is representative and provides a measure of short scale grade continuity.

Table 11-5. List of QAQC terms

The K92 2018 QA/QC programmes comprised the use of standards including blank samples, certified reference materials, laboratory duplicates and second laboratory check assays. The QAQC outcomes for the drilling were

reported by H&SC in the relevant resource estimation reports There were concerns over possible low-level contamination associated with the sample preparation. This was remediated with improved dust extraction system in the sample preparation location in following year.

The K92 2018-2020 QA/QC programmes comprised the use of standards including blank samples, certified reference material, laboratory duplicates and second laboratory check assays.

The K92 2020-2021 QA/QC programmes comprised the use of standards including blank samples, certified reference materials, laboratory duplicates and second laboratory check assays. The QAQC also included a diamond hole twinning programme of 4 pairs that was completed by K92ML in 2021 with variable and unbiased set of results, twinning previous historical surface drilling.

Standard insertions and check sample selections for the 2016-2021 drilling are listed below:

- All QAQC samples have an insertion rate, broken down as listed below:
  - Blanks: one inserted after 20<sup>th</sup> original sample as the 21<sup>st</sup> sample.
  - Standards: Gold, 1 after every 20 original samples as the 22<sup>nd</sup> sample.
  - Standards: Base metal, 1 after every 10 original samples as the 11<sup>th</sup> sample.
  - Duplicate as the 23<sup>rd</sup> sample.

#### 11.3.5.1 Standard (Certified Reference Material, CRM overview)

In the 2017 to 2018 resource period K92ML used two standards for gold only (G914-4, G915-8).

After the 2018 resource period, K92ML purchased a range of standards (Certified Reference Material) from Geostats Pty Ltd. The standards are certified for gold and in some instances, for copper and silver. Another set of standards were purchased from Gannet Holdings Pty Ltd for gold only. The standards comprise low, medium (head grade) and high grade values and were submitted to the laboratory as part of the sample suite.

As professionally prepared standards could not be hidden amongst the core samples they were submitted routinely as the 22<sup>nd</sup> sample in the sample sequence to the onsite laboratory (Intertek Laboratories). This meant that at least 2 standards were used for each hole.

Details of the standards are in Table 11-6.

CRM name	Certified for	Mean value	Lower bound	Upper bound	Supplier
G914-4	Gold (g/t)	0.2	0.18	0.22	Geostats PTY LTD
G915-8	Gold (g/t)	24.66	22.19	27.13	Geostats PTY LTD
G312-5	Gold (g/t)	1.60	1.44	1.76	Geostats PTY LTD
G915-2	Gold (g/t)	4.98	4.48	5.48	Geostats PTY LTD
G916-6	Gold (g/t)	30.94	27.85	34.03	Geostats PTY LTD
ST643	Gold (g/t)	4.94	4.45	5.43	Gannet Holdings PTY LTD
ST621	Gold (g/t)	33.24	29.92	36.56	Gannet Holdings PTY LTD
ST614	Gold (g/t)	1.00	0.90	1.10	Gannet Holdings PTY LTD
ST589	Gold (g/t)	2.42	2.18	2.66	Gannet Holdings PTY LTD
ST725	Gold (g/t)	12.38	11.14	13.62	Gannet Holdings PTY LTD
ST695	Gold (g/t)	33.50	30.15	36.85	Gannet Holdings PTY LTD
ST732	Gold (g/t)	4.98	4.482	5.478	Gannet Holdings PTY LTD
ST720	Gold (g/t)	0.30	0.27	0.33	Gannet Holdings PTY LTD

Table 11-6. Table of Certified Reference Materials (Standards)

GBM309-4	Copper (%)	2.2334	2.0101	2.4567	Geostats PTY LTD
	Silver (g/t)	42.3	38.1	46.5	Geostats PTY LTD
GBM915-16	Copper (%)	2.296	2.066	2.526	Geostats PTY LTD
	Silver (g/t)	51.2	46	56.5	Geostats PTY LTD
GBM910-4	Copper (%)	0.5412	0.48708	0.59532	Geostats PTY LTD
	Silver (g/t)	1.8	1.62	1.98	Geostats PTY LTD
GBM303-6	Copper (%)	1.3967	1.25703	1.53637	Geostats PTY LTD
	Silver (g/t)	5.5	4.95	6.05	Geostats PTY LTD
GBM910-6	Copper (%)	1.0084	0.90756	1.10924	Geostats PTY LTD
	Silver (g/t)	3.6	3.24	3.96	Geostats PTY LTD
GBM315-10	Copper (%)	0.2646	0.23814	0.29106	Geostats PTY LTD
	Silver (g/t)	4.7	4.23	5.17	Geostats PTY LTD

	Gold (g/t)	1.33	1.20	1.46	
GBMS911-3	Copper (%)	0.77	0.73	0.80	
	Silver (g/t)	1.7	1.53	1.87	Geostats PTY LTD
	Gold (g/t)	5.67	5.10	6.24	
GBMS304-4	Copper (%)	0.98	0.93	1.03	
	Silver (g/t)	3.4	3.06	3.74	Geostats PTY LTD
Blank	Gold (g/t)	0.1	0	0.2	

Copper (%)	0.01	0.00	0.02	Sourced locally from
Silver	1	<1	2	barren sediment

#### 11.3.5.2 Gold Standards

During the K92ML period of drilling from 2016 to 2018 (up to the 2018 MRE) two standards were used exclusively in the early phases of the drilling at Kora. The standards comprised a low grade sample at 0.2g/t and high grade sample at 25g/t gold.

**Figure 11-3.** shows the results for the low grade standard and **Figure 11-4 Error! Reference source not found.** shows results for the high grade standard. The central horizontal line on the graph is the certified value and the upper and lower horizontal lines are the +/- 10% variance of the certified value and are placed on the graph to give an indication of the accuracy of the reported laboratory results and if there are any biases in the data. The X axis represents time, with the higher numbers being more recent relatively.

The results for the high grade standard are good, indicating possibly some under-reporting of gold grade but with no real significant bias.



Figure 11-3. Low Grade Standard (G914-4)



Figure 11-4. High Grade Standard (G915-8)

Figure 11-5 Error! Reference source not found. shows results for the low grade G312-5 standard for both Kora and Judd. The results show no significant bias.



Figure 11-5. Low Grade Standard (G312-5)

ST614 in Figure 11-6, low grade gold standard shows slight bias above CRM value, however, within acceptable limits of variation.



Figure 11-6. Low Grade Gold Standard ST614

Low grade standard G314-2, Figure 11-7 and G904-7, Figure 11-8 show results within tolerable limits of variation however there are erratic results above and below the CRM value.



Figure 11-7 Low Grade Gold Standard G314-2



Figure 11-8. Low Grade Gold Standard G904-7



Approximately at the mines incremental cut-off grade, standard ST589, Figure 11-9 shows, overall, a good result with minor variation below the mean.

Gold standards with values approximately at the mine cut off grade, ST643-Figure 11-10 and G915-2-Figure 11-11 with overall a slight bias above the CRM value, but within acceptable limits. Some erratic results in 2018-2020 as a drilling and sampling ramp up took place and staffing was stretched. Also, in the 2020-2021 some Covid effects on manning numbers also effected the quality of the results over this period.



Figure 11-10. Gold Standard at mine cut-off grade standard ST643



Figure 11-11. Gold Standard at mine cut-off standard G915-2

Gold standard at the mines cut-off grade, Standard ST732 (Figure 11-12) shows almost no bias and within acceptable limits of variation.



Figure 11-12. Gold standard at mine cut-off grade standard ST732

Medium grade/ head feed standard, CRM ST725 (Figure 11-13), minor bias over time with increasing values, Judd slightly overstated however, within acceptable limits of variation.



Figure 11-13. Head feed grade standard (ST725)

High grade standard G916-6 (Figure 11-14), positive bias above the CRM value, however, within acceptable limits.



Figure 11-14. High Grade Standard (G916-6)

High grade gold standard ST621, (Figure 11-15), acceptable results slight positive bias, however, within acceptable limits.





High grade standard ST695, Figure 11-16, shows no bias


Figure 11-16. High grade gold standard ST695

### 11.3.5.3 Copper standards

Low copper value standard GBM315-10, Figure 11-17., slight positive bias above the CRM value, not considered significant.



Figure 11-17. Low grade copper standard GBM315-10

Copper standards GBM910-4-Figure 11-18., GBMS304-4-Figure 11-19., GBMS911-3-Figure 11-20, GBM910-6-Figure 11-21. and GBM303-6-Figure 11-22. all show results that are slightly under reported, however, within acceptable limits.







Figure 11-19. Copper standard GBM304-4



Figure 11-20 Copper standard GBMS911-3



Figure 11-21. Copper standard GBM910-6



Figure 11-22. High grade copper standard GBM303-6

High grade copper standard GBM309-4, Figure 11-23., gave results slightly above the value of the standard, however, within acceptable limits of variation. High grade copper standard GBM915-16, Figure 11-24. showed no bias, this standard not used much in preference to GBM309-4.



Figure 11-23. High grade copper standard GBM309-4



Figure 11-24. High grade copper standard GBM915-16

### 11.3.5.4 Silver standards

The silver method used by InterTek at the on-site laboratory has accuracy limitations at low silver levels with a range of +/-3ppm for samples containing less than 10ppm silver. For silver standards under 10ppm (g/t), upper and lower bound lines of + or - 1.5g/t have been plotted on the graphs. To date the cost of the silver analysis method required for increased accuracy, has not been entertained as the revenue generated by the Mine for silver is minor, compared to the benefit of improved silver assay accuracy and has not been supported by K92ML's economic analysis of the matter.

Low grade silver standards, GBM910-4 Figure 11-25., GBM910-6 Figure 11-26., GBM315-10 Figure 11-27., GBMS304-4 Figure 11-28., show satisfactory results for the accuracy in place for the method used for silver analysis.



Figure 11-25. Silver standard GBM910-4



Figure 11-26. Head feed grade standard GBM910-6



Figure 11-27. Silver standard GBM315-10



Figure 11-28. Silver standard GBMS304-4

At approximately the head grade feed to plant for silver grade the standard GBM303-6 Figure 11-29., shows are reasonable unbiased results.



Figure 11-29. Silver standard GBM303-6 head feed sample

For high silver standard values the on-site laboratory had a modest low bias and under reports silver grade as shown in Figure 11-30. and 11-31, this is considered insignificant for the resource estimate.



Figure 11-30. Silver standard GBM309-4



Figure 11-31. Silver standard GBM 915-16

#### 11.3.5.5 Blanks results

Blank gravel standards were inserted into the sample sequence on the 21<sup>st</sup>, 41<sup>st</sup> sample etc. The blank material consisted initially of clean crushed phyllites and then dacitic intrusives collected several kilometres away from any mineralization. The material was crushed in isolation from other samples; several samples were submitted to the laboratory for analysis to demonstrate its suitability as a blank prior to its use.

In the 2018-2020 period a total 980 blanks samples were submitted. Gold results for the blank assaying are within acceptable limits of variation and are continually being monitored. Blank results (Figure 11-32.) greater than 0.1g/t gold came to approximately 2% of all blanks submitted, nevertheless, the reasons were investigated. Two of the elevated gold blank values > 0.1g/t returned from the laboratory had mineral sample assays greater than 1g/t before them in the sample sequence, 9 blank values had samples before them > 0.1g/t and the remaining 8 samples had values <0.1g/t before them. This suggests that the Lab procedures have infrequently allowed for minor contamination between samples. Improvements in procedure occurred in the 2020-2021 period reducing the contamination mainly as a result of tightening up on cleanliness.



Figure 11-32. Gold blank results

There was minor contamination issue with the early drilling which was improved for 2018-2020 drilling campaign. Results for the 2020-2021 campaign has suggested some minor contamination however, this coincides with a change in the blank standard material, which probably accounts for the change in blank standard copper results **Figure 11-33**.



Figure 11-33. Copper blank results

Blank Values of silver were inconclusive because of the inaccuracy of the analytical method.

### 11.3.5.6 Laboratory Duplicates

Laboratory (or pulp) duplicates were inserted every 23<sup>rd</sup> sample in the sample submission sequence for the diamond core samples.

The results of the gold pulp duplicates showed a good match with the original sample with no evidence of any bias (Figure 11-34.).



Figure 11-34. Laboratory duplicates for gold

The results of copper pulp duplicates showed a good match with the original sample with no evidence of any bias (Figure 11-35.).



Figure 11-35. Laboratory duplicates for copper

The results of silver pulp duplicates showed a reasonably good match with the original sample with no evidence of any bias (Figure 11-36.). The bigger scatter with higher silver grades is noted, but has no, obvious bias.



Figure 11-36. Laboratory duplicates for silver

# 11.3.5.7 Second Laboratory checks

A program of check assaying was carried out by K92ML whereby a series of 100 to 200 mineralised pulp core samples including CRMs were submitted to a secondary laboratory (SGS, in Townsville Queensland). The SGS assaying used the same techniques as Intertek with the comparison of results between laboratories providing a check on the original laboratory's analytical accuracy.

Second Laboratory checks are a routine process completed on approximately a 6 month cycle.

The periods have been graphed according to K92ML's mineral resource estimates.

The first graph (Figure 11-37.) shows the gold results for the different periods. There is a slight positive bias to the original onsite Intertek laboratory for the 2020-2021 period, which needs to be to be monitored.

For gold in the 2018-2020 period there were two extreme pairs of values, SGS achieved 2,569g/t versus 2,675g/t from Intertek and the second pair was 370g/t SGS versus 1,020g/t Intertek considering these extreme values the results are not too unsettling.



Figure 11-37. Gold- Second Laboratory checks

The results for copper show no obvious bias (Figure 11-38.). The extreme value pairs (3 at 12-15% Cu) not included in the graph present no issues.



Figure 11-38. Copper- Second Laboratory checks

The results for silver (Figure 11-39Error! Reference source not found.) shows a bit more variability, particularly for the 2018 and 2018-20 drilling campaigns. A positive bias exists for medium to high grades associated the second laboratory, SGS, but is not considered a significant issue. The bias has not been maintained for silver grades over 200ppm.



Figure 11-39. Silver- Second Laboratory Checks

### 11.3.5.8 Hole Twinning

A twin hole program was conducted by K92ML for checking any bias in the Barrick sample preparation and assaying. Four surface holes were twinned, the collar statistics and hole depth of the drill program are detailed in Table 11-7.

Barrick Hole_id	North	East	elevation	dip	azimuth	depth
BKDD0008	58510.52	29852.29	1799.50	-66.2	269	166.2
BKDD0005	58297.41	29871.81	1802.34	-70	270.00	387.7
BKDD0011	58595.37	29776.82	1813.29	-45	90.00	129
BKDD0009	58595.35	29777.71	1813.31	-75.2	92.00	279.5
					Total (m)	962.4

Table 11-7. Twinned hole drill hole collar parameters

K92 Twin Hole_id	North	East	elevation	dip	azimuth	depth
KODD0002	58511.2	29854.7	1800.1	-66	267.77	170.6
KODD0003	58297.4	29871.8	1802.3	-70	270	212.2
KODD0010	58596	29776	1813.3	-45	90	90
KODD0016	58599.9	29776.4	1813.5	-75	92	283.2

Total	750
(m)	/50

Table 11-8 compares the original Barrick holes to the twin holes of K92 using several criteria. Most outcomes were reasonable except for the highly variable nature of the gold mineralization giving nuggety values for two of the twinned holes. The BKDD0009-KODD0016 had the mid point distance of 11.7m, in this case this was a down dip distance.

Lode comparisons have been made between the Barrick Holes BKDD series and the KODD holes twinned by K92ML. K1 lode results are presented in Table 11-8. and Table 11-9. and show a good match visually however, comparisons of intercept grades show significant variability in grade between twinned holes, which is probably to be expected with this type of mineralization.

Old Hole_id	K92 Twin Hole_id	Interval Length	Interval grade	Down hole pattern match	Midpoint Distance Apart
BKDD0008	KODD0002	Reasonable	Reasonable	Reasonable	1.1
BKDD0005	KODD0003	Reasonable	Limited	Matches well apart from gold values nuggety	2.6
BKDD0011	KODD0010	Reasonable	Reasonable	Reasonable	2.07
BKDD0009	KODD0016	Reasonable	Limited	Matches well apart from gold values nuggety	11.7

Table 11-8. K1 Lode comparison of the original Barrick hole compared to the K92 twin hole

#### Table 11-9. K1 lode comparison of intercepts

Twin pairs	Interval BKDD(m)	Interval KODD(m)	Au (g/t)	Au twin (g/t)	Cu (%)	Cu Twin (%)	Ag (g/t)	Ag twin (g/t)
BKDD0008- KODD0002	7	6.5	15.60	26.47	2.02	2.21	26	36
BKDD0005- KODD0003	7.9	9.1	20.14	2.82	6.74	5.57	134	71
BKDD0011- KODD0010	5.1	4.2	0.21	0.36	1.48	2.59	6	15
BKDD0009- KODD0016	26.3	23.4	25.43	1.34	1.10	1.57	5	11

K2 lode intercept comparisons are presented in Table 11-10. and

Table 11-11. and show similar trends and variability to K1.

Table 11-10. K2 Lode Twinning previous holes of Barrick Kora

Old Hole_id	K92 Twin Hole_id	Interval Length	Interval grade	Down hole pattern match	Midpoint Distance Apart
BKDD0008	KODD0002	Reasonable	Reasonable	Reasonable	1.3
				Matches well apart from gold values	
BKDD0005	KODD0003	Reasonable	Limited	nuggety	3.4
BKDD0011	KODD0010	Reasonable	Reasonable	Matches well	2.46

				Matches well apart from gold values	
BKDD0009	KODD0016	Poor	Limited	nuggety	10.6

			•					
Twin pairs	Interval BKDD(m)	Interval KODD(m)	Au (g/t)	Au twin (g/t)	Cu (%)	Cu Twin (%)	Ag (g/t)	Ag twin (g/t)
BKDD0008- KODD0002	6.62	5.8	9.56	1.95	0.44	0.35	20	17
BKDD0005- KODD0003	7	7	3.99	0.09	3.59	0.28	95	5
BKDD0011- KODD0010	9.6	9.8	17.99	21.75	1.02	0.38	32	12
BKDD0009- KODD0016	3.5	6.8	1.53	8.91	0.85	0.17	15	6

Table 11-11. K2 Lode twinning intercept comparison with Barrick's Kora

Graphs of original intercept grade versus the twinned hole intercept grade are presented as Figure 11-40. to Figure 11-42. for gold, copper and silver. The comparison of original intercept grades to twinned grades shows no obvious bias and therefore the Barrick assay results are acceptable and can be used in the resource estimation modelling.



Figure 11-40. K1 and K2 twinned holes original gold versus twinned intercept gold grade



Figure 11-41. K1 and K2 twinned holes original copper versus twinned intercept copper grade.



Figure 11-42. K1 and K2 twinned holes original silver versus twinned intercept silver grade.

In summary the whole twinning shows no bias between the Barrick and K92ML data, however, the program highlighted the variable nature of mineralization and lack of short scale grade continuity, which is normal for this type of high grade gold deposit.

#### 11.3.5.9 Coarse Rejects

No coarse reject analysis was completed.

#### 11.3.6 QAQC Summary

The 2018-2021 K92ML QA/QC programme is of an acceptable level and conforms to common industry practice.

The programme has included the use of a range of CRMs for gold, copper and silver, laboratory duplicates, 2<sup>nd</sup> laboratory checks and twin hole drilling.

The gold standards show a very small positive bias of 1 to 2% that seems to be slightly increasing with time. This needs to be continuously monitored but it may be a function of the standards themselves rather than any

fundamental problem with the laboratory. However, all recent results are acceptable and considered reasonably accurate and the low level of bias is not considered significant at this stage. The copper standard results indicate an under reporting by 2 to 3% in standards with values under 1.5% copper and at higher copper values ~2.2% a slight positive bias has occurred however, all results are within acceptable limits of variation. The silver standard results are inconclusive due to the relatively high lower detection limit of 1ppm and accuracy of analysis of +- 3g/t for the K92ML laboratory and the relative low level of some of the standards (1- 5ppm).

Blanks comprise a locally sourced dacite or phyllite fragment generally >5cm in size. The assay results for the blank indicate possible very minor contamination but the levels are low enough to be considered as not significant. The level of contamination gold has markedly improved over time.

Laboratory duplicates comprise a second crushed pulp of the original sample analysed by the K92ML laboratory with the results showing no issue with the sample homogenisation and subsequent acid digest and analysis. A good range of assays values have been included in the sample selection.

The second laboratory checks show no obvious bias. However, there is variation in results, this is not considered significant at this stage. A good range of assays values has been included in the sample selection.

No coarse reject samples have been tested.

Hole twinning has comprised 4 pairs of an original Barrick diamond drillhole with a K92ML diamond twin drillhole. The results show some degree of short scale variability in gold grade between the twin hole intercepts for the K1 and K2 lodes, as might be expected. Comparison of the overall average gold, copper and silver grades for the relevant lode intercepts has indicated no systematic bias allowing for the conclusion that there are no issues with the Barrick analyses and that the data can be used in the resource estimation.

The QAQC data for the Highlands drilling includes standards and duplicates and indicates no issues with the data.

None of the above issues are considered critical but the cumulative effect of various minor issues, may have a slight negative impact on the resource classification.

The conclusion is that there are no issues with the sample preparation or assaying of the drill core and face samples for the K92ML exploration work.

It is concluded that there are no major issues with the sample preparation or assaying of the drill core and face samples for the K92ML exploration work. The 2018-2021 K92ML QA/QC programme is of an acceptable level and conforms to common industry practice.

## 11.3.7 QAQC Recommendations

During the compilation of the QA/QC section for this report K92ML & H&SC have been in constant communication with regards to improving the QA/QC programme, which will flow through to a further improvement in the quality of any future resource estimates. The following recommendations are made:

### Standard Fail Procedure

H&SC would recommend that K92 review its procedure for deciding on the failure of a standard assay. Consideration perhaps needs to be given to consecutive standard assay failures within single batches and what threshold is used to trigger an enquiry for clarification with the laboratory.

### QA/QC Documentation

Documentation of the QAQC data needs to be improved so that it is much more easily assessed when receiving new assay results and for any subsequent resource estimation. Preferably a report is completed immediately at the end of any drilling campaign so that it is already available for review prior to any resource estimation work. This acknowledges that the outcomes of the QAQC are significant factors in the classification of the resource estimates. It also allows for any issues to be addressed prior to starting any resource estimation work.

Laboratory Duplicate Samples

A continuation of the laboratory duplicate sampling is recommended, particularly focussing on increasing the number of higher grade samples that are tested. This may require employing a more manual role in sample selection for higher grades.

### Second Laboratory Check Samples

The quality of the second laboratory check data supplied to H&SC has improved with H&SC's confidence in the accuracy of the analyses, particularly for higher grades, enhanced.

## **12 DATA VERIFICATION**

### 12.1 SITE VISITS

Andrew Kohler is a full time employee of K92ML. He visited the Kainantu site in September 2021 and prior to that was regularly at the mine site on a roster basis that was completed in March 2021. Prior to his role change he was employed as the Underground Mine Geology & Mine Exploration Manager. Mr Kohler regularly inspected the diamond drilling sites and core produced, core handling, sampling and the assaying processes. Also, numerous visits were made underground to all the ore drives for Kora and for Judd. Detailed verification of the processes took place.

A site visit to Kora North was completed by Simon Tear of H&SC Consultants Pty Ltd in October 2018. The visit included an inspection of underground workings including exploration drilling and geological assessment, an inspection of the processing plant including the on-site laboratory assay facilities, visual checks of randomly selected laboratory-issued assay sheets and a review of drill core.

Anthony Woodward visited the Kainantu site in November 2014 while the project was on care and maintenance. In November 2016 his site visit included a visit to the rehabilitated underground workings, underground diamond drilling sites, and the treatment plant. In January 2020 Mr Woodward inspected surface drilling sites at Kora during a helicopter reconnaissance and saw drilling sites at the Blue Lake prospect. Drill core from this work was inspected at the K92ML core yard. He also visited underground workings and inspected exposures of the K1 and K2 lodes in the 1225, 1220, and 1170 ore drives and surface infrastructure including the treatment plant and TSF.

### **12.2 LIMITATIONS**

No independent samples were collected for analysis during the site visits. Industry standard procedures appear to have been used.

### **12.3 VERIFICATION OPINION**

Based on the data verification performed, it is the QP's opinion that the collar coordinates, downhole surveys, lithologies, and assay results are considered suitable to support the mineral resource estimation.

### 13 MINERAL PROCESSING AND METALLURGICAL TESTING

### 13.1 HISTORICAL METALLURGICAL TESTWORK

Initial metallurgical test work on drill core samples was carried out by Metcon Laboratories (Sydney) in 2000 and by Amdel in 2002. This test work included gravity recovery, flotation, whole ore leaching and flotation concentrate leaching. Further test work was conducted by AMMTEC in 2009. This test work covered grind size and optimisation of flotation and gravity recovery at the particular grind size.

Microscope examination of sized fractions from final flotation concentrate and tailings was conducted by Core Metallurgy in 2019/2020. The focus of the analysis by optical microscopy was gold mineralogy and sulphide mineral associations. The PNG University of Technology examined Kainantu mineralization ore with regards to fluorine mineral(s) and the deportment of fluorine to the final concentrate in 2019/2020.

### 13.2 JUDD TESTWORK

K92 treated a 4,256t bulk sample of Judd mineralization though the Kumian treatment plant in November 2020. The bulk sample returned 6.50 g/t AuEq (5.19 g/t Au, 0.82% Cu & 11 g/t Ag) versus a projected 5.56 g/t AuEq (4.4 g/t Au, 0.7% Cu & 11 g/t Ag).

Processing recoveries of 88.8% Au, 97.5% Cu & 88.2% Ag, were reported as similar to Kora ore with potential for improvement with flowsheet optimization. The high grade concentrate produced from treatment of the Judd bulk sample was reported to assay 86 g/t Au, 14.8% Cu and 178 g/t Ag with no significant deleterious/penalty elements.

## **14 MINERAL RESOURCE ESTIMATES**

The effective date of the MRE for the Kora lodes is the 11<sup>th</sup> of November 2021, which was the date that the latest database was received by H&SC. The effective date of the MRE for the Judd lode is the 20th of January 2022, which was the date that the latest database was received by H&SC.

The updated MRE for the Kora deposit including the Judd Lode are based on samples from diamond drillholes (surface and underground) and face sampling of development drives. There is some very minor underground sludge hole sampling included which was aimed at defining mineral limits to the face sampling intervals.

 Table 14-1 provides summary details of the sampling for the overall deposit area. The vast majority of the K92ML drilling has been on the Kora North section of the mineralization.

Company	Year	Location	Туре	No of Holes	Metres	Ave Length (m)
Barrick	2008 - 2015	Surface	DD	24	10,690	445.4
		UG	DD	6	808	134. 7
Highlands & Others	1990 - 2007	Surface	DD	79	16,596	210.1
	(Irumafimpa)	UG	DD	562	26,514	47.2
			Total	671	54,608	
K92ML	Oct 2017 - Sept 2018	UG	DD	83	9,564.2	115.2
			Face	461	1,499.3	3.3
K92ML	Oct 2018 - Feb 2020	Surface	DD	16	7,390.0	461.9
			DDwedge	3	719.7	239.9
		UG	DD	96	21,224.5	221.1
			DDwedge	7	935.2	133.6
			Face	312	1,657.5	5.31
K92ML	Mar 2020 - Oct 2021	Surface	DD	19	5,489	288.9
			DDwedge			
		UG	DD	280	48,158	172
			DDwedge			
			Face	218	1473.6	6.8
			Total Drilling	504	93,480.6	
			Total Face Sampling	991	4,630.4	

 Table 14-1.
 Summary Details of Sampling Methods

(DD = diamond drilling; UG = underground)

The MRE for the Kora Consolidated deposits were prepared using Ordinary Kriging (OK) in the H&SC in-house GS3 modelling software package. H&SC considers OK to be an appropriate estimation technique for the type of mineralization, its extent and the nature of the available data. The resource estimation includes some internal low grade material. The drillhole data and resulting GS3 models were loaded into the commercially available Surpac mining software for geological interpretation, composite selection, block model creation and validation, resource estimate reporting and to facilitate any transition to future mining studies.

The GS3 modelling software was developed by Neil Schofield (ex-Stanford University) and has capacity for both Multiple Indicator Kriging (MIK) and OK modelling techniques.

The approach to resource estimation for the Kora Consolidated deposits is relatively straightforward. A 3D interpretation of geological domains as wireframes for the K1, K2, Kora Link and Judd lodes was completed using the Surpac software. These wireframes were then used to select 1m data composites from samples in the drillhole database which were then subject to data analysis including aspects of spatial distribution (variography). OK modelling was used with up to seven search domains for each lode, based on subtle variations in dip and strike of the lodes with the resulting 3D models loaded into a Surpac block model. Post-modelling processing, including block model validation and reconciliation, was undertaken in Surpac. The newly generated resource estimates were classified taking into account a number of factors including sample spacing and distribution, variography, geological understanding, QAQC procedures and outcomes, density data, core recovery and reconciliation with production.

The MRE reported in this section have been classified under the 2014 CIM Definition Standards for Mineral Resources and Mineral Reserves.

### 14.1 SUPPLIED DATA

H&SC was supplied by K92ML the following items:

- A drillhole database in MSAccess for direct use in Surpac. Drillhole data comprises surface and underground diamond cored holes and face sample lines from the current underground mining.
- 3D wireframes for topography, the underground development and the stope solids generated from mining. Updated mineral wireframes were supplied as guidance for the geological interpretation.
- Mill production figures.
- A suite of reports covering previous drilling and resource estimation for the Kora deposit and different aspects of the underground drilling for Kora e.g. analysis of recovery, density data, QAQC procedures and outcomes.

A database summary for Kora is presented in Table 14-2 showing the data provided for a range of items. Table 14-3 is the database summary for Judd.

	Number o		
ltem	DD Holes Face Samples		Records
Collar	526		103,446m
Collar		1,402	7,067m
Survey	526	1,402	14,183
Au g/t	518	1,391	73,882
Cu %	507	1,364	61,793
Ag g/t	518	1,371	71,259
Lith	507	0	29,265
Altn	397	0	17,607
Min	397	0	17,607
RQD	417	0	72,940
Density	293	0	3,688

Table 14-2. Database Summary for Kora

	Number o		
ltem	DD Holes	Face Samples	Records
Collar	73		13,480m
Collar		208	1,204m
Survey	73	208	2,962
Au g/t	73	208	9,841
Cu %	73	208	9,842
Ag g/t	73	208	9,842
Lith	64	0	3,323
Altn	32	0	1,346
Min	32	0	1,346
RQD	61	0	11,452
Density	37	0	275

Table 14-3. Database Summary for Judd

### 14.2 GEOLOGICAL INTERPRETATION

The Kora Consolidated deposit consists of a relatively complex, dilational structural zone hosted in Tertiary phyllites. The mineralization zone comprises narrow, high grade gold quartz-sulphide veins, veinlets and disseminations associated with clay shear zones, the result of brittle/ductile shearing. Historically at the old Kora North deposit the K1E lode was delineated in the footwall of the structural zone and showed a marked higher gold grade than other lodes in the general Kora/Irumafimpa area. The K1W lode was identified immediately adjacent to the hangingwall of the K1E lode and had a much lower grade gold zone associated with it. This lode is then structurally overlain by a clay fault zone of varying widths. A distinct separation comprising relatively barren phyllite then occurs before reaching the hangingwall zone of the dilational structure where the K2 lode resides. This lode is noted in the Kora North area for its relative higher copper content compared to K1, occurring as chalcopyrite blebs, veins and masses associated with modest amounts of quartz veining. Initial modelling in 2018 by H&SC used the K92-supplied K1E, K1W and K2 lode wireframes, which were based on a 1g/t gold cut off and had resulted in wireframes considerably narrower than the current development drives and stope widths. Reconciliation with mill production indicated that using the narrow wireframes considerably understated the amount of tonnes sent to the mill and the gold ounces produced by the mill.

Work completed by Simon Tear in 2018 comprised a site visit and a reassessment of the geological interpretation of the mineral lodes, in conjunction with the current mining method, all of which led to an updated MRE.

The resulting geological interpretation featured a larger K1 wireframe shape, combining K1E and K1W lodes, and was based simply on the presence of gold mineralization derived from the assays i.e. using a much lower, circa 0.1 to 0.2g/t, gold cut-off grade, in combination with some geological control, spatial patterns and a nominal minimum mining width of the current stoping and development i.e. approximately 5.2m wide. A similar process was applied to the K2 lode which also resulted in a larger wireframe. For the 2020 MRE work, the wireframes were expanded to incorporate the recent and historic surface drilling, which involved including the previously defined Kora and Eutompi mineral zones. The outcomes of merging these two areas into the K1 and K2 wireframes appeared reasonable and were partly confirmed by surface drilling of Eutompi, which resulted in minimal changes to the wireframes.

From the 2020/2021 drilling the geological interpretation of mineral domains has been confirmed with only very minor modifications to the domain designs, although locally there has been some increased level of complexity ascertained from either the face sampling or in areas of more peripheral drilling to the main mineral zone. The

main changes are a trimming at depth of the K1 lode in the south, where the original lode interpretation was based on very weak intercepts that often ran below the cut-off grade. This has been offset by addition of material to the K2 lode in the same area. A nominal 25m extension of the base of the mineral lodes and the northern and southern ends was added at K92ML's request.

The Kora Link lode is a relatively smaller interstitial mineral zone between K1 and K2 where there is the appearance of possible multiple narrow, partially overlapping mineral vein systems. These veins appeared at times to be parallel to the bounding K1 and K2 structures, and other times they appeared slightly oblique, transecting from the K2 footwall to the K1 hangingwall. The 2020 geological interpretation favoured 3 sub zones but with expanded domain boundaries, such that most of the area between K1 and K2 for a sub-area of the whole deposit was included. The lode has been subject to further geological reassessment following a substantial amount of infill drilling and some face sampling such that H&SC now consider the most appropriate geological model for the lenses of quartz/gold mineralization is to treat the whole area between the K1 and K2 lodes, where there is significant segregation, as a single mineral domain i.e. the Kora Link lode. This was alluded to in the 2020 mineral estimation report.

The Judd lode is a parallel structure to the main Kora Consolidated mineral system, approximately 90 to 150m to the east. The vein system is slightly narrower than the K1 or K2 lode but has a very similar dip and strike. A 3D geological interpretation of the lode was developed by H&SC based on a supplied interpretation by K92ML and is consistent with the geological interpretation for the main Kora K1 & K2 lodes i.e. based on a nominal average minimum mining width of 5.2m. Geological continuity of the lode is regarded as good for the bulk of the drilling/sampling except for the southern end where the lode breaks down into a series of much narrower and lower grade lodes that seemingly are non-aligned with the main lode (further drilling is required to resolve this). Figure 14-1 shows the spatial relationship between the Kora Consolidated lodes and the Judd lode along with the development drives.



Cyan = K1 Lode; Blue = K2 Lode; Red = Kora Link; Brown = Judd Lode Figure 14-1. Plan and Cross Section of the Kora and Judd Mineral Lodes (H&SC)

The parallel K1 and K2 lodes for the Kora Consolidated deposits generally strike grid north-south with a very steep dip to the west (Figure 14-2, Figure 14-3 and Figure 14-4). However, there are subtle undulations for both dip and strike in both lodes, which may be due to the ductile nature of the structural zone (wrench fault tectonics) or possibly very minor cross-cutting and offsetting faults. The geological interpretation extends approximately 75m to 100m along strike and down dip beyond the last mineral intercept, sufficient for grade interpolation and the provision of target areas for further exploration and possible resource extension. The sub-parallel Kora Link zone is a relatively small area compared to the K1 and K2 lodes by having a much shorter strike and dip length; the zone generally dips steeply to the west in its southern and upper parts and dips almost vertical in its northern and lower parts.



Cyan = K1 Lode; Blue = K2 Lode; Red = Kora Link; drillhole traces & face sampling included

Figure 14-2. Plan and Cross Section of the Kora Mineral Lodes (H&SC)



Figure 14-3. Long Section of the Kora Consolidated K1 and K2 Mineral Lodes – looking west (H&SC)



Figure 14-4. Long Section of the K2 and Kora Link Mineral Lodes – looking west (H&SC)

The advantage of this wireframing technique for K1 and K2 is to first avoid over-constraining of the gold mineralization assay data, as the contacts are not always sharp, and hence avoid potential overstatement of the gold grade in any subsequent grade interpolation. The use of high grade domains is considered by H&SC for this type of deposit to be a higher risk strategy, working on the fundamental principle that the higher the grade the shorter the continuity. Second, the lode shapes better reflect what is actually mined and sent to the mill for processing, which will allow for the opportunity of better reconciliation. The new wireframes were primarily

constructed as strings on 10m spaced E-W sections expanding to 25m spaced sections at the southern end and 20m spaced sections at the northern end. There is no obvious evidence at the south end that K1 and K2 combine as K1 tends to just peter out. Comparison with the previously reported Irumafimpa mineral wireframes strongly suggests that the original mining at Irumafimpa was not on either of the K1 or K2 lodes. Both lodes also tend to narrow slightly both up and down dip of the current underground mining area although occasionally there were localised 'blow out' areas in both grade and width for both lodes.

Interpretation for the Judd lode was relatively straightforward except at the southern end where the mineralization became very complex partly due to the nature of the mineralization and the wide spaced drilling with its corresponding lack of information. Figure 14-5 and Figure 14-6 shows the orthogonal 2D views of the lode interpretation relative to the drilling. It should be noted that the holes drilled from east to west are wide spaced surface holes that have intersected variable grade gold mineralization, significantly above the current lode interpretation and offer potential for additional discovery of economic mineralization in the general area.



(Brown = Judd lode; drillhole traces & face sampling included) Figure 14-5. Plan and Cross Section of the Judd Mineral Lode (H&SC)





Dimensions of the mineral zones are listed in Table 14-4 with dimensions for the 2020 Kora mineral zones included for comparison. The increase in volume is due to a combination of the increased widths for both lodes associated with the infill drilling especially above and below the main development area and the exploration success at the southern end of K2. There have been 25m extensions to K2 at both north and south ends with an additional 25-50m added at the base of the lode. The revised geological interpretation of the Kora Link has resulted in a considerable expansion of the mineral domain as it includes a lot more material between the K1 and K2 lodes in the general area of the underground mining. Hence the substantial increase in the average width.

Lode	Strike (m)	Dip (m)	Ave Width (m)	Volume (m <sup>3</sup> )
2022 Interpretation				
K1	1275	600-1090	3.8	4,621,211
K2	1275	700-1250	4.6	6,311,704
Kora Link	450	340	9.4	1,438,591
Judd	850	300-700	4.9	2,263,070

	Table 14-4.	Dimensions	of the	Mineral	Lodes
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2020 Interpreta	ition			
К1	1250	1050	3.3	4,366,474
К2	1250	1150	3.5	5,077,382
Kora Link combined				
KLK	335	300	2.8	443,014

Figure 14-7 is a cross section example of the geological interpretation for Kora using both drilling and face sample data. The image shows the K1 lode (red dash), the K2 lode (green dash) and the Kora Link lode (light brown dash) abutting K1 HW and K2 FW. The figure also shows the logged vein on one side of the drillhole trace along with the gold grade as a scaled coloured bar on the other side. The development drives and stopes are shown as coloured solids. The lengths of the colour bars are intended to be relevant to the gold grade, but gold grades are so high that the maximum length has been limited at 50g/t.

Drillhole spacing is of the order of 10-25m in the general underground mining area expanding to approximately 100m for the rest of the deposit including the old Kora and Eutompi areas.



Figure 14-7. Geological Interpretation for Kora North Cross Section 58900mN (H&SC)

Figure 14-8 is a cross section example of the geological interpretation for Judd using both drilling and face sample data. The image shows the lode (green dash) and the drive and stope development (red dash). The figure also shows the logged vein on one side of the drillhole trace along with the gold grade as a scaled coloured bar on the other side. The lengths of the colour bars are intended to be relevant to the gold grade, but gold grades are so

high that the maximum length has been limited at 30g/t. Note the apparent migration of the high gold grade from the HW in the upper part to the FW in the lower/middle part.



Figure 14-8. Geological Interpretation for Judd Cross Section 58640mN (H&SC)

Drillhole spacing is of the order of 10-25m in the general underground mining area expanding to approximately 100m for the rest of the mineral lode.

### 14.3 DATA ANALYSIS

Sampling was under geological control with a minimum sampling width of 0.1m and a nominal maximum of 2m. The smaller sample intervals were utilised to sample individual sub-veins/stringers and sulphide intercepts. Core was sampled to at least 5m either side of each mineral lode, including any stringer style mineralization away from the lodes.

Figure 14-9 shows the range of sample intervals for the K1 lode wireframe with the dominant sample interval being 1m. The number of samples for the lode has doubled compared to the 2020 model, this is due to the dominant infill and minor extensional drilling plus the extra face sampling data.



Figure 14-9. Sample Interval Histogram for the K1 Lode (H&SC)

Figure 14-10 shows the range of sample intervals for the K2 lode. It is very similar to the data for the K1 Lode. Again, the number of samples has more than doubled compared with the 2020 model and for the same reasons as for K1.



Figure 14-10. Sample Interval Histogram for the K2 Lode



Figure 14-11. Sample Interval Histogram for the Kora Link Lode



Figure 14-12. Sample Interval Histogram for the Judd Lode

The above diagrams were used to decide that a 1m composite interval would be appropriate for subsequent grade interpolation. The wireframes were used to generate the 1m composites within the mineralised zones using the best fit sample length option in the Surpac mining software. This option allows for the equalising out of small residual sample lengths into the composite intervals so as to reduce the number of discarded residuals that are less than 0.5m. Each composite sample was assigned to the K1, K2, Kora Link or Judd lodes. A total of

17,253 composites for the Kora Consolidated lodes were extracted from the drillhole & sampling database for gold, copper and silver. For the Judd Lode a total of 1,389 composites were extracted. Data consisted of both diamond core samples and face sampling with a very minor amount of sludge hole samples. The mineral wireframes represent hard boundaries for the grade interpolation.

Figure 14-13 shows the uncut gold composite data for the K1 lode in long section (*zoom in on the figure to get better resolution*). This figure demonstrates the relatively close-spaced nature of some of the sampling, which is subsequently reflected in the chosen block size and resource classification. The dominant N-S flat-lying grade continuity direction lies within the current stope development area. The other thing of note is the high grade gold zone associated with the wider spaced drilling in the top left area of the section. From this there is a suggestion of a moderately north-plunging higher grade ore shoot from top left to bottom right.



Figure 14-13. Gold Composite Distribution for the K1 Lode Long Section View (H&SC)

Figure 14-14 shows the same K1 long section view for copper, with a significantly higher grade copper zone associated with the old Kora deposit (black ellipse). The main Kora mine area is conspicuous by a significant amount of lower grade intercepts relative to the old Kora area.



Figure 14-14. Copper Composite Distribution for the K1 Lode Long Section View (H&SC)

Figure 14-15 shows the uncut gold grade distribution in long section for the K2 lode. The grade continuity in the face sampling is much more limited than for the K1 lode and the distribution of the drillhole grades looks to be more random. The other small item of note is that there has been some minor reconfiguration of the geological interpretation of the near surface intercepts for the K2 lode around the old Kora area.

It should be noted that the 2021 infill drilling has encountered significantly lower grade intercepts for K2 in the peripheral zones to the general underground mining area.



Figure 14-15. Gold Composite Distribution for the K2 Lode Long Section View (H&SC)

The K2 copper composite grade distribution shows a moderately similar pattern to the K1 copper e.g. the old Kora enrichment zone, although there is now a marked increase in copper grades associated with the southern end of the main Kora zone (Figure 14-16)



Figure 14-16. Copper Composite Distribution for the K2 Lode Long Section View (H&SC)

Figure 14-17 shows a long section view of the uncut gold composites for the Kora Link lode. The upper half of the lode has been well drilled and shows a distinct enrichment in gold for the upper southern portion, consistent with high grades in both the K1 and K2 lodes around the 58750m northing. Elsewhere gold grades are more sporadic in their distribution, although there appears to be some low grade continuity to justify interpreting the mineral domain.

The figure also shows that some of the drive development has been in the Kora Link as noted by the horizontal lines of samples in the top left corner of the figure. There is some speculation that this portion of the Kora Link is in fact a repeated fault slice of the K1 lode, with the fault being only slightly oblique to the lode strike, hence the 'doubling up'.


Figure 14-17. Gold Composite Distribution for the Kora Link Lode Long Section View (H&SC)

Figure 14-18 shows a long section view of the gold composites (uncut) for the Judd lode. The limited amount of drilling has not indicated any significant trends in the data although there is a hint of a northerly down plunging trend at around 30°. Elsewhere gold grades are more sporadic in their distribution, although there appears to be some low grade continuity to justify interpreting the mineral domain.



Figure 14-18. Gold Composite Distribution for the Judd Lode Long Section View (H&SC)

Missing data for the K1 composites i.e. zeros and blanks, were noted for copper and silver with very low grade default values being inserted for the zeroes (Table 14-5). Simple regression equations with gold were used for the inserting values for the copper and silver blanks. The missing data is generally due to a lack of assaying for the copper and silver on samples that were originally perceived to be low grade and peripheral to the mineral lode interpretation made at the time of the drilling.

		Sam	ple Numbers
Regressions		Blanks	Zeroes
Copper	Cu = 0.049*Au	229	
Silver	Ag = 0.1076*Au	34	
Defaults			
Copper	0.0001%		33
Silver	0.01		9

Table 14-5.	Details of	Insert	Grades	for	the K1	Lode
10010 14 31	Detuns of	moure	Grades		the ftr	LOUC

Previous work completed by H&SC for the 2018 resource estimates mentioned that the distinct "difference between the gold means for the diamond core and face sampling types could be used to argue against combining the datasets. However, the face sampling is from mined material and is real and it is quite evident that the [earlier] drilling 'missed' this high grade zone". This statement is still valid. A key feature of the 2018 and 2020 models was that reasonable reconciliation was achieved with production using all the data with no top cuts, primarily from the K1 lode, and this appears to have been sustained after a further 15 months or so of mining (again mainly of the K1 lode). Experimentation by applying top cuts to the data generally indicated that the top cuts had little impact, except on certain noted occasions with extreme values.

H&SC prefers to apply minimal top cuts to composite data as firstly, applying top cuts adjusts real data and secondly often the threshold is arbitrarily decided without any statistical or geological validity. H&SC prefers to control any potential higher grade outliers through judicious use of the composite interval, grade interpolation parameters, variography and the geological interpretation. However, in some instances top cuts will be needed for extreme values.

Table 14-6 shows the summary statistics for the K1 lode. The data shows relatively modest coefficients of variation (CV = standard deviation/mean) for gold and copper, which might be considered a little surprising considering the type of mineralization but indicates a relative lack of skewed data and possibly a very limited number of data outliers and/or the data represents a single population. These relatively low CVs further suggest that no top cuts are required. This decision is also helped by the fact that the data around the current mining area is well structured. As part of an experimentation process a top cut of 600g/t was applied to the gold grades; the impacts of this will be detailed later. Top cutting for gold affected 12 samples, 9 of which were face samples and 3 were from diamond drilling, the latter of which had a maximum value of 1,404g/t. The immediate result was that the top cut resulted in only a 5% drop in mean gold composite grade. Silver (uncut) has a much higher CV than gold that is due to two extreme values, experimental top cutting of these values showed a very significant drop in CV but the extreme values had very limited effect in the block grade interpolation.

All data	Gold	Gold (cut)	Copper	Silver	Silver (cut)
Mean	14.49	13.72	0.52	9.03	7.98
Median	1.78	1.78	0.18	3.43	3.43
Standard Deviation	60.19	44.80	1.15	64.89	20.29
Coeff of Variation	4.15	3.27	2.21	7.18	2.54
Minimum	0.005	0.005	0.0001	0.0026	0.0026
Maximum	2235.61	600	23.326	4171	400
Count	7393	7393	7393	7393	7393

Table 14-6.	Summary	<b>Statistics</b>	for	the K1	Lode
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A histogram plot of the gold data indicates a lognormal distribution with a slight positive skew but overall, the histogram resembles the expectation for a single population (Figure 14-19).



Figure 14-19. Histogram of K1 Gold Composite Data (H&SC)

For K1, using the cut gold data, there is no correlation between gold and either copper or silver. However, there is a weak correlation between copper and silver (Table 14-7).

	Gold	Copper	Silver
Gold	1		
Copper	0.11	1	
Silver	0.14	0.63	1

Table 14-7. Correlation Coefficients for the K1 Lode Composite Data

Missing data for the K2 composites, i.e. zeros and blanks were noted for copper and silver. The missing copper and silver assays are due to the same reasons as for K1. The zeroes were replaced with a low grade default value and the blank values were generated from a regression equation (Table 14-8). A top cut of 1,000g/t was applied to extreme values in the gold data, this affected three samples, all from the diamond drilling.

		Sample Numbers		
Regressions		Blanks	Zeroes	
Copper	Cu = 0.0274*Au	134		
Silver	Ag = 1.2499*Au	29		
Defaults				
Copper	0.0002		19	
Silver	0.02		4	
Top Cuts		Cut	Samples Affected	
Gold		1000g/t	3	

Table 14-8. Details of Insert Grades and Top Cut for the K2 Lode

A histogram plot of the K2 gold composite data indicates a reasonable lognormal distribution with a slight positive skew but overall, the histogram resembles the expectation for a single population (Figure 14-20).



Figure 14-20. Histogram of K2 Gold Composite Data (H&SC)

Figure 14-21 shows the cumulative frequency curve for the uncut gold composite data. It indicates that possible top cuts to the data could be applied at 1,000g/t or 400g/t (black vertical lines in the figure). After lengthy discussion with K92ML it was decided to use the 1,000g/t top cut.



Figure 14-21. K2 Composites Cumulative Frequency Curve (H&SC)

Table 14-9 shows the summary statistics for the K2 lode. Previous work completed by H&SC for the 2020 and 2018 models mentioned that there was relatively little difference between the gold, silver and copper means for both datatypes (diamond core and face sampling), which suggest that the datatypes can be combined. This statement is still valid. The gold summary statistics are for the top cutted data.

All data	Gold	Copper	Silver
Mean	5.56	1.05	21.78
Median	0.94	0.39	7.30
Std Dev	31.11	1.87	61.33
Coeff of Var	5.6	1.78	2.82
Minimum	0.01	0.0002	0.02
Maximum	1000	24.6142	1513.459
Count	6230	6230	6230

Table 14-9. Summary Statistics for the K2 Lode

The impact of applying the 1,000g/t top-cut for gold is significant as whilst it affected only three samples, it generated a 16% drop in the overall mean value of the composites. Likewise, the CV for the uncut gold data is 11.79, with the 1,000g/t top cut that CV is reduced to 5.6. H&SC completed some experimentation work using a 400g/t top cut which indicated a 23% drop in mean gold grade on the uncut data and a CV of 3.8. The extreme grades were from drillholes (not the face sampling) where the potential to 'swamp' surrounding grades via the grade interpolation is high, leading to a potential overstatement of the MRE. The problem can be managed in the resource classification without using a lower top cut i.e. the 400g/t top cut.

The combined drill hole and face sampling data shows relatively low CVs for both copper and silver, which strongly suggests there is no need for top cutting.

There is no significant correlation between the three elements as shown in Table 14-10.

	Gold	Copper	Silver
Gold	1		
Copper	0.02	1	
Silver	0.32	0.42	1

Table 14-10. Correlation Coefficients for the K2 Lode Composite Data

A histogram plot of the Kora Link gold data indicates a modest lognormal distribution with a positive skew but overall, the histogram moderately resembles the expectation for a single population (Figure 14-22).



Figure 14-22. Histogram of Kora Link Gold Composite Data (H&SC)

Figure 14-23 shows the cumulative frequency curve for the uncut gold composite data. It indicates that an appropriate top cut to the data could be applied at 400g/t (black line in figure).



Figure 14-23. Kora Link Composites Cumulative Frequency Curve (H&SC)

Table 14-11 shows the summary statistics for the Kora Link lode. Uncut gold data had a CV of 12.2 due to extreme grades and necessitated the application of a top cut. Applying the top cut affected two samples and resulted in a 17.7% reduction in the composite mean and reduced the CV to 4.74, which is still considered quite high but because of the structure to the data, a further reduction in the top cut was not considered necessary. The two samples consisted of one drillhole sample (2,788g/t) and one face sample (586g/t).

The moderate CVs for copper and silver suggest that top cuts need not be applied.

	Gold	Copper	Silver
Mean	3.30	0.46	6.84
Median	0.32	0.15	2.40
Standard Deviation	15.61	1.04	15.17
Coeff of Variation	4.74	2.27	2.22
Minimum	0.01	0.0001	0
Maximum	400	15.83	369.1689
Count	3640	3640	3640

Table 14-11. Summary Statistics for the Kora Link Lode

There is no significant correlation between gold and the other two elements as shown in Table 14-12. There is a weak correlation between copper and silver.

Table 14-12.	Correlation	Coefficients	for	the Kora	Link	Lode	Composite	Data
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	Gold	Copper	Silver
Gold	1		
Copper	0.21	1	
Silver	0.33	0.57	1

Missing data for the Judd composites i.e. zeros and blanks, were noted for copper only with 7 low grade default values of 0.001%, being inserted for the zeroes.

A histogram plot of the Judd gold composite data indicates a modest lognormal distribution with a slight positive skew but overall, the histogram resembles the expectation for a single population (Figure 14-24).



Figure 14-24. Histogram of Judd Gold Composite Data (H&SC)

Figure 14-25 shows the cumulative frequency curve for the uncut gold composite data. It indicates that an appropriate top cut to the data could be applied at 400g/t (black line in figure).



Figure 14-25. Judd Composites Cumulative Frequency Curve (H&SC)

Table 14-13 shows the summary statistics for the Judd lode. Application of the 400g/t top cut resulted in a drop of 16.7% in the average gold grade for the composites. The uncut gold data had a CV of 6.7 due to the two extreme grades and with the limited amount of data necessitates the application of a top cut. Applying the top cut saw a reduction in the CV to 4.44 which is still considered quite high but because of the structure to the data a further reduction in the top cut was not considered necessary.

KL1	Gold	Copper	Silver
Mean	7.57	0.65	15.3
Median	1.19	0.195	4.5
Standard Deviation	33.59	1.31	38.67
Coeff of Variation	4.44	2.02	2.53
Minimum	0.01	0	1
Maximum	400	22.668	881.496
Count	1389	1389	1389

Table 14 12	C	Chatistics	£	+ -	اماميرا	
Table 14-15.	Summary	/ Statistics	IOL	tne	Juaa	Loae

The moderate CVs for copper and silver suggest that top cuts need not be applied.

Unlike the other lodes there appears to be a modest correlation between gold and silver for the Judd lode as shown in Table 14-14.

Table 14-14. Correlation Coefficients for the Kora Link Lode Composite Data

	Gold	Copper	Silver
Gold	1		
Copper	0.17	1	
Silver	0.73	0.47	1

### 14.4 VARIOGRAPHY

Variography was undertaken on the composite data of the individual lodes to ascertain spatial continuity of metal grades. The general comment is that the variography was weak. However, it should be noted that outside the drive development and stoping areas the drillhole spacing is very large and, in combination with the narrow lode structure and undulations in their dip and strike, good variography is difficult to achieve and is subject to compromises. The main implication from the variography is that more infill drilling is required.

As an alternative for Kora Consolidated, H&SC windowed out an area of detailed drilling and undertook variography of the complete composited dataset without any lode subdivision (Figure 14-26 and Figure 14-27). The result was that a substantial increase in the amount of data available (as a proxy for increased drilling) for spatial analysis which resulted in improved variograms leading to an improved variogram model for each element that could be used for all three lodes providing appropriate axes' rotations were factored in.



Figure 14-26. Kora Composite Data Subset used for Variography Plan View (H&SC)



Figure 14-27. Kora Composite Data Subset used for Variography Long Section View (H&SC)

Figure 14-28 shows the strike and dip variogram maps for the Kora Consolidated detailed drilling area. They are consistent with the geological understanding of the Kora lodes.



Figure 14-28. Variogram Maps for Gold (H&SC)

Figure 14-29 shows the orthogonal variograms and the resulting 3D variogram model for the unconstrained gold composites for the Kora lodes. In an attempt to improve the variography an arbitrary top cut of 600g/t was used. The variograms indicate a lack of grade continuity across strike (the down hole variogram), generally of the order of 1 or 2m. whereas the dip and strike continuity of the composite gold grade is of the order of 15 to 20m which is consistent with limited visual data review by H&SC of the grade continuity seen with the face sampling.

A similar procedure was repeated for copper and silver.



(trigonometrical convention for rotations)



Figure 14-30 shows the 3D variogram models for copper and silver. The shallow plunges are a function of the abundance of the face sampling data.





Figure 14-31 shows the orthogonal variograms and the resulting 3D variogram model for the gold composites for the Judd lode. To improve the variography an arbitrary top cut of 200g/t was used. The variograms indicate a lack of grade continuity across strike (the down hole variogram), generally of the order of 1 or 2m. whereas the dip and strike continuity of the composite gold grade is of the order of 15 to 20m which is consistent with limited visual data review of the grade continuity seen with the face sampling and with the Kora Consolidated lodes.



(trigonometrical convention for rotations)



Figure 14-32 shows the Judd lode 3D variogram models for copper and silver. The shallow plunges are likely to be a function of the abundance of the face sampling data.





## 14.5 BLOCK MODEL DETAILS

Two separate 1m by 5m by 5m N-S oriented block models were created for Kora Consolidated and Judd. The block size is mainly in deference to the close spaced drilling for the K1 and K2 lodes and the face sampling. Details of the Surpac block models are included in Table 14-15.

Block Model Summary	Kora OK Block Model						
Block model: kora_ok_working_170122.mdl							
Туре	х	Y	Z				
Minimum Coordinates	29720.5	58102.5	602.5				
Maximum Coordinates	29900.5	59507.5	2002.5				
User Block Size	1	5	5				
Min. Block Size	1	5	5				
Rotation	0	0	0				
Discretisation	2 4		4				
Block model: kora_judd_ok_wc	orking_10222.mdl						
Туре	х	Y	Z				
Minimum Coordinates	29880	57800	650				
Maximum Coordinates	30100	59250	2000				
User Block Size	1	5	5				
Min. Block Size	1	5	5				
Rotation	0	0	0				
Discretisation	2	4	4				

Table	14-15	Block	Models	Details
lane	14-12	DIOCK	ivioueis	Details

Grade interpolation was undertaken using the OK option from H&SC's in-house GS3 software. The resulting models were then loaded into a Surpac block model for post-modelling processing and resource reporting. The interpolation strategy consisted of three search passes each with increasing search radii and/or decreasing number of octants and/or decreasing minimum number of data. Details of the search pass parameters are listed in Table 14-16.

Pass No	X radius (m)	Y radius (m)	Z radius (m)	Min Data	Min Octants	Max Data
Kora						
1	2	25	25	12	4	32
2	4	50	50	12	4	32
3	12	125	125	6	2	32
Judd						
1	2	25	25	12	4	32
2	4	50	50	12	4	32
3	5	100	100	6	2	32

## Table 14-16. Search Ellipse Parameters

A slightly smaller search pass 3 was used for Judd to avoid over-extending the impact of the occasional isolated high grade drill intercept.

There are subtle variations in the dip and strike of both the K1 and K2 lodes that necessitated the use of search sub-domains with the block grade interpolation. These sub-domains are a product of the changes in the axes' orientations of the search ellipses. Seven search sub-domains, labelled 10 to 18, were used for the K1 grade interpolation and six domains for the K2 grade interpolation, labelled 31 to 36. The Kora Link grade interpolation was completed using two search domains, labelled 21 and 22, whilst Judd used six search domains labelled 41 to 46.

Density data and analysis was supplied by K92ML. Table 14-17 contains details on the number of samples and the default density values used for the MRE. The Archimedes Method, i.e. weight in air weight/in water measurements, was used on selected pieces of core wrapped in clingfilm for the different lodes. There is a risk to this method in that often there is a bias towards selecting more competent pieces of core, and vuggy core or areas of poor recovery are not always factored in. In addition, there is potential for the cling film to contain air pockets that affect the weight in water measurements. These potential risks to accurate density measurements and the subsequent calculation of default density values is small.

The other risk to the accuracy of the default density values was the exclusion by K92ML of low density values generally <2.3t/m<sup>3</sup>. This amounted to the removal of approximately 6.5% of the K1 density sample data, 10% for K2, 15% for the Kora Link and 11.5% for Judd. The impact of removing the low values has been a 1.5 to 3.5% increase in the average density value and is not considered significant, although it may not be considered as best practice especially when the values appear to be part of a single population.

A peripheral density 'skin' of 2.78t/m<sup>3</sup> was applied to blocks on the margin of the K1 and K2 lodes as transition to the waste rock zones.

Lode	No of samples	Default Values t/m <sup>3</sup>		
К1	641	2.84		
К2	527	2.84		
Kora Link	222	2.74		
Judd	77	2.71		
Waste n/a		2.67		

#### Table 14-17. Summary of Supplied Density Values

## **14.6 ESTIMATION RESULTS**

K92ML supplied H&SC with price and recovery assumptions in order to produce a gold equivalent value to include the copper and silver grades. Metal equivalents are reported here to give a better indication of potential project value.

The Gold Equivalent (Au\_Eq) g/t was calculated using the formula:

# Au g/t + ((0.928\*Cu %)\*1.607) + ((0.89\*Ag g/t)\*0.0125)

Assumptions include:

- Gold prices of US\$1,600/oz: Silver US\$20/oz; Copper US\$3.75/lb
- Recoveries relative to gold of 92.8% for copper and 89% for silver

The new global estimation results for Kora Consolidated with mining depletion removed (up to the end of October 2021) are reported for a range of different gold cut-off grades as shown in Table 14-18. Estimation results are reported for all block centroids inside the relevant mineral wireframe (in/out basis). The results are split by lode and finally combined as one. The same data is presented as a series of graphs in Figure 14-33. Classification of the estimates is included later in this chapter.

Au Cut off g/t	Mt	Au g/t	Cu %	Ag g/t	Au_Eq g/t	Au Mozs	Cu Kt	Ag Mozs	Au_Eq Mozs
K1 Lode									
0	10.74	4.79	0.79	11.4	6.10	1.65	85.1	3.9	2.11
1	7.56	6.58	0.87	13.1	8.03	1.60	66.1	3.2	1.95
2	5.12	9.01	0.98	15.1	10.64	1.48	50.3	2.5	1.75
3	3.84	11.21	1.01	15.8	12.88	1.38	38.6	1.9	1.59
4	3.14	12.94	1.03	16.1	14.66	1.31	32.3	1.6	1.48
5	2.66	14.46	1.05	16.6	16.21	1.24	28.0	1.4	1.39
6	2.27	16.02	1.06	17.1	17.79	1.17	24.0	1.2	1.30
7	1.92	17.77	1.06	17.6	19.54	1.09	20.2	1.1	1.20
8	1.62	19.64	1.05	18.2	21.41	1.02	17.0	0.9	1.12
9	1.36	21.74	1.03	18.6	23.48	0.95	14.1	0.8	1.03
10	1.16	23.95	1.03	19.3	25.69	0.89	11.9	0.7	0.96

K2 Lode									
0	14.35	4.43	1.13	23.5	6.38	2.04	162.2	10.9	2.94
1	10.66	5.76	1.29	27.9	8.00	1.98	138.0	9.6	2.74
2	7.54	7.54	1.44	32.3	10.05	1.83	108.6	7.8	2.44
3	5.26	9.75	1.54	36.0	12.45	1.65	81.2	6.1	2.11
4	3.81	12.15	1.58	37.2	14.91	1.49	60.0	4.6	1.83
5	2.90	14.57	1.53	36.5	17.26	1.36	44.3	3.4	1.61
6	2.26	17.13	1.46	36.0	19.70	1.25	33.0	2.6	1.43
7	1.86	19.40	1.41	36.5	21.91	1.16	26.3	2.2	1.31
8	1.57	21.60	1.36	37.1	24.03	1.09	21.4	1.9	1.22
9	1.36	23.65	1.31	37.8	26.02	1.04	17.9	1.7	1.14
10	1.20	25.57	1.28	38.1	27.90	0.99	15.3	1.5	1.08
Kora Link									
0	3.83	2.25	0.32	5.8	2.79	0.28	12.2	0.7	0.34
1	2.03	3.86	0.43	8.1	4.59	0.25	8.7	0.5	0.30
2	1.19	5.58	0.55	9.9	6.51	0.21	6.5	0.4	0.25
3	0.81	7.08	0.64	11.2	8.16	0.18	5.1	0.3	0.21
4	0.58	8.52	0.71	11.9	9.71	0.16	4.1	0.2	0.18
5	0.41	10.12	0.77	12.7	11.41	0.13	3.2	0.2	0.15
6	0.30	11.92	0.81	13.2	13.28	0.11	2.4	0.1	0.13
7	0.23	13.63	0.81	13.2	14.98	0.10	1.8	0.1	0.11
8	0.18	15.05	0.79	13.0	16.37	0.09	1.5	0.1	0.10
9	0.15	16.51	0.77	12.8	17.80	0.08	1.2	0.1	0.09
10	0.13	17.77	0.76	12.8	19.04	0.07	1.0	0.1	0.08
Kora Global									
0	28.92	4.27	0.90	16.7	5.80	3.97	259.4	15.5	5.39
1	20.25	5.88	1.05	20.4	7.67	3.83	212.9	13.3	5.00
2	13.85	7.92	1.19	24.0	9.97	3.53	165.4	10.7	4.44
3	9.91	10.10	1.26	26.1	12.27	3.22	125.0	8.3	3.91
4	7.52	12.20	1.28	26.5	14.41	2.95	96.4	6.4	3.49
5	5.97	14.21	1.26	26.0	16.39	2.73	75.5	5.0	3.15
6	4.83	16.28	1.23	25.7	18.41	2.53	59.4	4.0	2.86
7	4.01	18.30	1.21	26.1	20.38	2.36	48.3	3.4	2.63
8	3.38	20.30	1.18	26.7	22.36	2.21	39.9	2.9	2.43
9	2.88	22.37	1.15	27.4	24.39	2.07	33.1	2.5	2.26
10	2.48	24.41	1.14	28.0	26.42	1.95	28.2	2.2	2.11

(minor rounding errors)

The K1 and K2 data is presented as a series of graphs in Figure 14-33.  $% \left( 1-\frac{1}{2}\right) =0$  .



Figure 14-34 shows the global representation of the grade tonnage data for Kora Consolidated.



Figure 14-34. Grade Tonnage Curves for the Combined Kora Deposits (H&SC)

Observations of the global results relative to the 2020 estimation results include:

- A consistent shape to the grade-tonnage curves compared to the 2020 estimation results.
- The 2022 figures show a general increase in the tonnes with a corresponding drop in grade for approximately a very modest increase in contained gold equivalent ounces, even allowing for depletion.
- The increase in tonnes/drop in gold grade is expected, based on a combination of K92ML's drilling strategy and the low grades associated with the recent infill drilling over the past two years.

Figure 14-35 shows the gold block grade distribution for the K1 lode for all search passes with no cut off grade. There seems to be a central enriched zone plunging moderately to the north with possibly an intersection with a vertical plunging ore shoot.



Figure 14-35. K1 Lode Gold Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

Gaps in the block model are due to a lack of data being available for the grade interpolation, particularly with the six minimum data condition for a lode less than 5m wide. Hence some of this lack of data might be due to a narrowing of the lode and/or a relatively dramatic local change in dip and/or strike. It emphasises the need for further infill drilling. Other items of note are:

- Reconfiguration of the southern end of the lode equates to a relatively cleaner termination of the mineralization.
- Potential improvements in the search domain design combined with the infill drilling have led to less 'holes' in the block grade interpolation.
- Similar block grade distribution to the 2020 model.

Figure 14-36 shows the copper block grade distribution for the K1 lode for a zero gold cut off grade. It shows marked zones of enrichment associated with the Kora and Eutompi deposits relative to the old Kora North. However, it should be noted that there is a possible resurgence of copper grades at the central base of K1.



Figure 14-36. K1 Copper Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

Figure 14-37 shows the gold block grade distribution for the K2 lode for all search passes with no cut off grade. Higher grade zones seem to be scattered about as localised lenses, which may be a real feature and not an artifact of the modelling. These zones do represent a higher risk in which follow up drilling may not match the expected grades. Other items of note are:

- There is an increase in size of the lode at its southern end with mineralization being open to the south.
- The poddy nature to the mineralization represents a grade continuity risk but has partly been smoothed out with infill drilling.
- Refinements to the search domaining improved modelling resulting in a more broadly coherent mineral zone.
- There are one or two suspect high grade zones due to isolated high grades in the drilling (black ellipses).



Figure 14-37. K2 Gold Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

Figure 14-38 shows the copper block grade distribution for the K2 lode for a zero gold cut off grade. It shows an overall elevation in copper values relative to K1 and has a higher grade in parts of the Kora area as per the K1 lode. Other items of note are:

- There is an expansion of the copper mineralization at the southern end of the lode and remains open to the south.
- There appears to be better control of grade in the Eutompi/Kora area as a result of the Barrick validation drilling.



Figure 14-38. K2 Copper Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

Figure 14-39 shows the gold grade distribution for the Kora Link lode for all search passes. The upper picture shows the mineral lode against the same backdrop as for the K1 and K2 lodes, whilst the lower picture is a close-up image of the gold block grade distribution.

It confirms a patchy nature to the higher grade mineralization as per the K2 lode.



Figure 14-39. Kora Link Lode Gold Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

The maiden global estimation results for Judd with mining depletion removed (up to the end of December 2021) are reported for a range of different gold cut-off grades as shown in Table 14-19. Estimation results are reported for all block centroids inside the relevant mineral wireframe (in/out basis). The same data is presented as a series of graphs in Figure 14-40. Classification of the estimates is included later in this chapter.

Au Cut off g/t	Mt	Au g/t	Cu %	Ag g/t	Au_Eq g/t	Au Mozs	Cu Kt	Ag Mozs	Au_Eq Mozs
0	2.83	3.29	0.60	9.0	4.29	0.30	17.1	0.82	0.39
0.5	2.59	3.56	0.63	9.5	4.61	0.30	16.3	0.80	0.38
1	2.03	4.34	0.71	10.8	5.52	0.28	14.5	0.71	0.36
1.5	1.59	5.21	0.80	12.0	6.53	0.27	12.6	0.61	0.33
2	1.20	6.32	0.87	13.4	7.78	0.24	10.5	0.52	0.30
2.5	0.94	7.46	0.93	14.6	9.01	0.23	8.7	0.44	0.27
3	0.74	8.71	0.99	15.6	10.36	0.21	7.4	0.37	0.25
4	0.53	10.80	0.99	16.7	12.46	0.18	5.3	0.29	0.21
5	0.42	12.47	0.95	17.4	14.08	0.17	4.0	0.24	0.19
10	0.16	21.09	0.79	23.5	22.52	0.11	1.3	0.12	0.12

Table 14-19. Estimation Results for Judd



Figure 14-40. Grade Tonnage Curves for the Judd Lode (H&SC)

Figure 14-41 shows the gold block grade distribution for the Judd lode for all search passes with no cut off grade.



(view: looking west) (green lines = drillhole traces and face samples)

Figure 14-41. Judd Lode Gold Block Grade Distribution All Passes Long Section (H&SC)

Figure 14-42 shows the copper block grade distribution for the Judd lode for a zero gold cut off grade.



Figure 14-42. Judd Lode Copper Block Grade Distribution All Passes Long Section (H&SC) (view: looking west) (green lines = drillhole traces and face samples)

## 14.7 BLOCK MODEL VALIDATION

Block model validation has consisted of visual inspection of block grades against drillhole assay grades and composite values, comparison of summary statistics for block grades and composite values, cumulative frequency curves for global block grades and composites, check models and reconciliation with mine production.

## 14.7.1 Block Grade-Drill Assays Visual Comparison

Block grades were viewed in section against both drillhole assays and composite values. Minor discrepancies were noted for the more peripheral drillholes. The narrowness of the sample intervals and the block size make visual representations difficult to show clearly.

Figure 14-43 shows a cross section example of gold block grades versus drillhole assays for the K1 (red dash), K2 (green dash) and Kora Link (light brown dash) lodes. The comparison is reasonable considering the section window is 10m and the tenor of the surrounding drillhole and face sampling data.



Figure 14-43. Kora Gold Block Grade & Drillhole Assay Comparison Cross Section 58900mN

Figure 14-44 shows a cross section example of gold block grades versus drillhole assays for the Judd lode. Again, the results are reasonable considering the 10m section window and the tenor and limits of the surrounding face sampling and drillhole data.



Figure 14-44. Judd Gold Block Grade & Drillhole Assay Comparison Cross Section 58620mN

Figure 14-45 and Figure 14-46 are examples of gold block grades against composite values for the K1 and K2 lodes respectively (*zoom for better resolution*).



Figure 14-45. Au Block Grade and Composite Value Comparison for the K1 Lode Cross Section 58910mN (H&SC)



Figure 14-46. Au Block Grade and Composite Value Comparison for the K2 Lode Cross Section 58690mN (H&SC)

Figure 14-47 is an example of gold block grades against composite values for the Kora Link lode.



Figure 14-47. Au Block Grade and Composite Value Comparison for the Kora Link Lode Cross Section 58770mN (H&SC)

Figure 14-48 shows an example of gold block grades against composite values for the Judd Lode (*zoom in for better resolution*)



Figure 14-48. Au Block Grade and Composite Value Comparison for the Judd Lode Cross Section 58640mN (H&SC)

# 14.7.2 Summary Statistics Comparison

A comparison of composite and block grade means would normally be expected to show the composite mean being higher than the block grade mean. This is clearly the case for gold for the K1 lode as shown in Table 14-20. It indicates no obvious issues with the grade interpolation and suggests that the uncut high gold grades, particularly from the face sampling, have been managed by the modelling. However, copper and silver show higher block means than the composite averages, which is attributed to higher copper and silver composite values in areas of widely spaced drilling, where the higher values are likely to have a greater impact on the magnitude of the block grades and the number of higher block grades. In addition, a large majority of the composites, mainly from the face sampling, are in an area of lower copper grades and thus would tend to have the effect of lowering the average copper composite grade (along with silver-noting the weak correlation). It should also be noted that the pass 1 and pass 2 mean copper and silver grades are much lower than the means for the remaining pass 3.

K1 lode	Gold		Сор	per	Silver	
	Comp	Block	Comp	Block	Comp	Block
Mean	14.49	5.37	0.52	0.78	9.03	11.25
Median	1.79	1.96	0.18	0.44	3.43	6.29
Standard Deviation	60.19	12.05	1.15	0.92	64.90	16.91
Coeff of Variation	4.15	2.24	2.21	1.18	7.18	1.50
Minimum	0.005	0.03	0.0001	0	0.0026	0.02
Maximum	2235.61	795.01	23.3257	10.62	4171	991.12
Count	7393	156487	7393	156487	7393	156487

Table 14-20.	Comparison of Summar	y Statistics for Composites 8	k Block Grades for the K1 Lode
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Table 14-21 shows the summary statistics comparison for the K2 lode composites and block grades. The gold means behave according to expectation but for both silver and copper the block means are slightly higher than the respective composite means. In the case of copper this is put down to a large number of relatively higher grade blocks on the periphery of the deposit having a significant impact of raising the block mean. It should also be noted that the pass 1 and pass 2 mean copper grades are lower than the means for the remaining pass 3, which implies that the face sampling, which accounts for a substantial portion of the composite data, is in an area of relatively lower copper grade. The difference in the means for silver is much smaller but likely due to the same reasons as for copper.

Table 14-21. Comparison of Summary Statistics for Composites & Block Grades for the K2 Lode

K2 lode	Gold		Copper		Silver	
	Comp	Block	Comp	Block	Comp	Block
Mean	5.56	4.44	1.05	1.13	21.78	23.47
Median	0.94	2.12	0.39	0.8	7.30	14.85
Standard Deviation	31.11	10.64	1.87	1.13	61.33	33.28
Coeff of Variation	5.60	2.40	1.78	1.00	2.82	1.42
Minimum	0.01	0.02	0.0002	0	0.02	0.11
Maximum	1000	323.33	24.6142	15.83	1513.459	783.53
Count	6230	203516	6244	203516	6244	203516

Table 14-22 shows the summary statistics comparison for the Kora Link lode. The gold, copper and silver composite means are higher than the block grade means which would be a normal expectation and validates the geological interpretation and the grade interpolation method including any top cutting.
Kora Link lode	Go	old	Сор	per	Silver		
	Comp	Block	Comp	Block	Comp	Block	
Mean	3.30	2.31	0.46	0.32	6.84	5.90	
Median	0.32	1.1	0.15	0.21	2.40	3.84	
Standard Deviation	15.61	4.14	1.04	0.39	15.17	5.63	
Coeff of Variation	4.74	1.79	2.27	1.21	2.22	0.95	
Minimum	0.01	0.03	0.0001	0.01	0	0.8	
Maximum	400	171.24	15.83	6.96	369.1689	113.79	
Count	3640	56606	3640	56606	3640	56606	

Table 14-22.	Comparison of Su	immary Statistics for	Composites & Block	Grades for the Kora	Link Lode
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Table 14-23 shows the summary statistics comparison for the Judd lode. The gold, copper and silver composite means are higher than the block grade means which would be a normal expectation and validates the geological interpretation and the grade interpolation method including any top cutting.

Judd lode	Gold		Сор	per	Silver	
	Comp	Block	Comp	Block	Comp	Block
Mean	7.57	3.46	0.65	0.60	15.28	9.31
Median	1.19	1.73	0.19	0.37	4.48	6.46
Standard Deviation	33.60	6.74	1.31	0.65	38.67	9.08
Coeff of Variation	4.44	1.95	2.02	1.07	2.53	0.98
Minimum	0.01	0.06	0	0.01	1	1
Maximum	400	187.88	22.6675	7.37	881.4957	251.17
Count	1389	42718	1389	42718	1389	42718

 Table 14-23. Comparison of Summary Statistics for Composites & Block Grades for the Judd Lode

The conclusion from the drillhole samples, the composites' and block grades' comparisons is that there appears to be no obvious issues with the grade interpolation for all elements.

#### 14.7.3 Cumulative Frequency Curves Comparison

Another grade interpolation check is to compare cumulative frequency curves for the composites and block grades for the different elements for the different lodes. Figure 14-49 shows the cumulative frequency comparison for uncut gold in the K1 lode and exhibits a very acceptable pattern. The comparison was completed for all elements for the other lodes and indicated no significant issues with the grade interpolation or post modelling processing.



Figure 14-49. Gold Block Grade & Composite Cumulative Frequency Curves for the K1 Lode (H&SC)

Figure 14-50 shows the cumulative frequency curves for the gold composite and block grade data for K2. Similar curve patterns were produced for copper and silver.



Figure 14-50. Gold Block Grade & Composite Cumulative Frequency Curves for the K2 Lode (H&SC)

Figure 14-51 shows the cumulative frequency curves for the gold composite and block grade data for the Kora Link lode. Similar curve patterns were produced for copper and silver.



Figure 14-51. Gold Block Grade & Composite Cumulative Frequency Curves for the Kora Link Lode (H&SC)

Figure 14-52 shows the cumulative frequency curves for the gold composite and block grade data for Judd lode. Similar curve patterns were produced for copper and silver.



Figure 14-52. Gold Block Grade & Composite Cumulative Frequency Curves for the Judd Lode (H&SC)

The conclusion from the cumulative frequency curves is that there appears to be no obvious issues with the grade interpolation for all elements for all lodes.

#### 14.7.4 Check Models

The 2018 work comprised a number of check models with the following conclusions:

- The use of an expanded wireframe to represent the mining widths appeared to be appropriate especially in respect to the production reconciliation.
- The relatively small block size does not seem to result in an over-statement of grades via over-smoothing.
- Using the combined drilling and face sampling data for grade interpolation is acceptable.

For 2020 rudimentary check Multiple Indicator Kriged ("MIK") models for the K1 and K2 lodes were completed by H&SC's Sydney office using a dynamic search interpolation method. The results for each lode from this model were reported for the OK model pass categories. The MIK K1 outcomes showed a very good match with the OK model estimates (<0.3% difference between gold equivalent ounces), whilst the K2 results were acceptable; the MIK estimates had just under 6% more gold equivalent ounces although the increase was associated with the more peripheral search pass and therefore of higher risk. A comparison of the results for the mined material showed very similar overall gold ounces for both K1 and K2, although the OK model had slightly more gold equivalent ounces from the MIK model for K2. The check provides added confidence in the estimation results generated by the OK modelling. Whilst the MIK modelling method is a more sophisticated method than OK, it is generally better suited to open pit operations and requires expert knowledge when used for underground stope design. The MIK model with the dynamic interpolation was only intended as a check model that confirmed the OK approach with multiple search domains.

## 14.7.5 Reconciliation

Reconciliation data was supplied by K92ML, comprising total mined tonnes, tonnes processed by the mill and the amount of gold (and copper and silver) ounces recovered from Kora for the end of October 2021, covering approximately three and a half years of mining. The mill processed material has included the K1 and K2 development drives and stopes plus 'other' material derived from reprocessed material and small amounts of material from dilution from CAF mining operations as well as from mining of Irumafimpa, Judd and other mineralised structures.

The block model was flagged using the supplied development and stope wireframes on a centroid in/out basis. Blocks with a centroid inside the Kora Consolidated mineral wireframes were reported for a zero gold cut off using the uncut gold modelled data (most of the data was from the K1 lode). For Judd the data was reported from the top cutted gold attribute.

Reporting of the estimates from the H&SC model used the development centroids and detailed 520,847 tonnes of lode material had been extracted for 297,084 gold ounces (Table 14-24). A proposed more accurate method of measuring the extracted volume using partial percents for the stope and drive development was provided by K92ML and this detailed the extraction of 578,730 tonnes at a lower gold grade giving 284,891 gold ounces, an approximate 4% drop in contained ounces compared to the H&SC number. The result of reporting both methods is that the tonnage is considerably less than the ROM figures which comprised 717,481 tonnes for 317,406 contained ounces.

The tonnage and contained ounces discrepancies are attributed to the 'other' material which includes Judd lode material of 63,685 tonnes for 22,466 gold ounces. The final unaccounted material i.e. ex-Judd, consisted of 132,949 tonnes for the simple centroid in/out reporting or 75,067 tonnes for the more detailed partial percent reporting.

The end result is that the centroid method has slightly overstated the gold estimates by <1% and requires the remaining unaccounted material to have zero grade. Whereas for the more accurate partial percent method the reported estimates is approximately 10,000 ounces understated but means that the gold grade of the unaccounted material needs to be around 4.1g/t to make up the missing ounces. Further discussion with K92ML has confirmed that this grade is acceptable considering the likely sources of the material e.g., Irumafimpa. The conclusion is that depending on either depletion measuring method there is good reconciliation with mill feed.

Lode	Tonnes	Au g/t	Cu %	Ag g/t	Au ozs	Cu Tonnes	Ag ozs
K1	374,525	22.09	0.42	7.0	266,057	1,584	84,852
К2	99,400	6.21	0.92	16.6	19,838	916	53,002
Klink	46,923	7.42	0.80	10.7	11,191	375	16,130
	520,847	17.74	0.55	9.2	297,084	2,875	153,993
STOPE	164,629	17.66	0.34	5.85	93,509	566	30,964
DEV	414,100	14.37	0.53	9.14	191,382	2,210	121,689
Subtotal	578,730	15.31	0.48	8.20	284,891	2,776	152,654
bbul	63,685	10.97	0.67	21.0	22,466	424	42,978
Actual ROM	717,481	13.8	0.4	7.2	317,406	3,091	165,439
Remaining u	unaccounted						
HSC Centroid	132,949				-2,144	-207	-31,533
K92_Partial_pc	75,067				10,049	-109	-30,193
Required Au	75,067	4.163			10,048		

Table 14-24. Reported Depletion and Reconciliation with ROM Figures (Oct 2021)

(the use of significant figures does not imply accuracy)

A second part to the reconciliation is comparing the report depletion with the production numbers for gold, copper and silver metal. Table 14-25 shows the production ounces/tonnes for the three metals and based on the supplied ROM figures indicates the metal recoveries (note improved recoveries have been reported by K92ML for more recent processing). Applying the plant recoveries to the depletion results for both reporting methods indicate that the centroid reporting overstates the gold ounces by 0.7% whereas the partial percent reporting method understated the estimates by 3.2%, however this does not include any of the 'other' material, apart from Judd, which most likely will bring the reconciliation difference down.

	Au ozs	Cu T	Ag ozs				
Production	290,783	2,782	119,000				
Recoveries	91.6	90.0	71.9				
HSC_Centroid	272,165	2,587	110,767				
HSC_Partial_pc	260,996	2,499	109,804				
Judd	20,581	381	30,914				
HSC_Centroid	292,747	2,969	141,681				

HSC_Partial_pc	281,577	2,880	140,718
HSC	0.7	6.7	19.1
HSC_K92	-3.2	3.5	18.3

The results of the reconciliation would appear to justify that the combination of using both drillhole and face sampling data, limited use of top cuts, variography, composite length, geological interpretation and search parameters has removed/significantly reduced the smearing of the very high gold grades and any subsequent over-statement of the resource estimates.

The reconciliation outcomes are reasonably similar to the outcomes from March 2020 and September 2018 and allow for a good level of confidence in the new resource estimates and the methodologies used to generate them.

## 14.8 RESOURCE CLASSIFICATION

Allocation of the classification of the Mineral Resources is derived from the search pass number associated with each block, which essentially is a function of the drillhole and face sample data point distribution. Additional considerations were included in the assessment of the classification, in particular the geological understanding and complexity of the deposit, variography, sample recovery, quality of the QAQC sampling and outcomes, density data, block model validation and reconciliation with production.

Table 14-26 contains details of the resource classification from the pass categories.

Pass Category	Resource Classification					
1	Measured					
2	Indicated					
3	Inferred					

#### Table 14-26. Resource Classification Details

Issues impacting on the resource classification are:

- The geology of the deposit and the style of mineralization: shear zone hosted gold mineralization is notorious for poor grade continuity. The ability to physically put a finger on any of the gold mineralization contacts for the K1 and K2 lodes is considered variable, which can lead to sub-optimal resource estimation if care is not exercised with the geological interpretation and grade interpolation. To counteract the complex grade distribution H&SC has fused a combination of composite length, geological interpretation, variography and search parameters (especially the minimum number of data points required) so as to minimise the possible over-statement of grade within the resource estimates. This appears to have been successfully completed based on the block model validation and reconciliation with mill production.
- The sampling methods: the bulk of the resource estimates have been generated from diamond drilling
  results which is generally considered the best sampling technique (assuming good core recoveries).
  However, a substantial amount of the high grade assays are from face sampling which can be prone to
  variance associated with the actual sampling method e.g. not passing into background on both
  hangingwall and footwall and is considered a sub-optimal sampling method with respect to diamond
  drilling. Counter to these potential negatives is that K92ML have a good, documented face sampling
  procedure that attempts to minimise the risk with the sampling technique, and it is worth noting that the
  development and stoping associated with the face sampling appears to be reconcilable with the block
  model. Another positive is that the face sampling is covered by reasonably close spaced diamond core
  drilling, particularly for the K1 lode.

- The general drill hole spacing and hence data distribution is considered wide for a large part of the deposit. This impacts negatively on the variography, which in turn indicates that much closer spaced drilling is required for more confidence in the grade continuity, which in turn is reflected in the resource classification. The close spaced face sampling and subsequent mining provides a high level of confidence in the gold grade continuity in that area.
- Limited density data: there is an insufficient amount of data for density grade interpolation. However, results presented seem to indicate modest variations between and within each lode such that the calculated default values are reasonable. Thus, there is a moderately high level of confidence in the density values. Sample selection for density measurement is at risk of a positive bias with samples of competent core preferentially selected. An assumption has been made that there are no significant cavities or that if they exist their impact is minimal. The K92ML practice of removing some of the lower density values, generally <2.3t/m<sup>3</sup> on the grounds of implausibility, in the calculation of default density values is perhaps not best practice as it looks to have removed data that is part of a normal distribution. However, the impact is considered by the QP as marginal but perhaps justification of such action requires a review of low values at the time of data collection.
- The QAQC procedures and outcomes: these are considered to industry standard and the QAQC outcomes impart a high level of confidence in the appropriateness of the sampling methods and the accuracy of the assays. For the 2018-2021 period QAQC has been completed on the face sampling with acceptable results. The pre-Sept 2018 face sampling had no QAQC data, but sample preparation and assaying had been completed on concurrent drilling samples, which indicated no significant issues. Data has been procured for the Highlands and Barrick drilling and indicates no systematic bias with the historic data.
- Core recoveries: the current recovery of >95% is reasonable but some of the initial drilling was a little low (around the 90% mark). However, the confidence level in gold grade of the samples is high.
- Reconciliation: this is reasonable with predicted block model ounces generally within 1-3% of mill production up to the end of October 2021. This has allowed for a reasonably high level of confidence in the gold content for material in the immediate vicinity of the development drives and mined stopes.
- The use of top cuts for gold has provoked considerable discussion with K92ML. The main issues are with the K2 and Judd lodes where extreme values have been demonstrated to show high grade smearing out with the general development area. In areas of K2 where this effect is abundant the classification of any Measured material has been downgraded to Indicated. It is important to point out that while a substantial part of K1 has been mined, it has included extreme grades and the impact on mining has been observed whereas for K2 no mining of extreme grades has been undertaken and so no measure of the impact of extreme grades is available.
- The Judd lode exhibited a 'spotted dog' pattern for the Measured and Indicated Resources with a modification to the classification implemented by using a Measured Resource defined shape based on the distance from the development drives.

Figure 14-53 represents the distribution of Measured (red blocks), Indicated (green blocks) and Inferred Resources (blue blocks) for the K1 lode irrespective of cut off grade. The gaps in the model are blocks with no interpolated grades due to a lack of data and conceivably represent areas for expanding the resource estimates via additional drilling.

The change from the 2020 model has been an increase in size and coherency of the Measured and Indicated Resources which was the main aim of the past one and half years of drilling.



(view: looking west) (green lines = drillhole traces and face samples)

A similar pattern occurs for the K2 lode.

Figure 14-54 represents the distribution of Measured (red blocks), Indicated (green blocks) and Inferred Resources (blue blocks) for the Kora Link lode. There are no significant gaps in the model.



Figure 14-54. Resource Classification for the Kora Link Lode (H&SC)

Figure 14-55 represents the distribution of Measured (red blocks), Indicated (green blocks) and Inferred Resources (blue blocks) for the Judd lode. The gaps in the model are blocks with no interpolated grades due to a lack of data and conceivably represent areas for expanding the resource estimates via additional drilling. The relative narrow nature of the lode and the wide-spaced drilling has resulted in a lack of data at the hangingwall and footwall margins of the lode causing the classification to be Inferred. A defined shape based on proximity to the development drives was used to classify isolated blocks of Indicated Resource to Measured Resource. No defined shape was applied to the Indicated Resources.



Figure 14-55. Resource Classification for the Judd Lode (H&SC)

# 14.9 DISCUSSION OF FACTORS FOR THE MINERAL RESOURCES

- Ordinary Kriging as a valid modelling method. Coefficients of variation for the gold composites are
  relatively low for this type of deposit, around the 2-2.5 mark, which indicates limited skewed data and
  thus in combination with visual reviews of the composite grade distribution (well-structured data), the
  method is acceptable for grade interpolation. This is in preference to a more sophisticated and timeconsuming modelling method like Multiple Indicator Kriging, at this stage.
- Geological interpretation completed by H&SC. The wireframing method used by H&SC is based on
  encompassing the gold mineralization with a nominal cut off grade of 0.1-0.2g/t Au in conjunction with
  copper and silver grade and geological sense including avoidance of over-constraining the data. The
  sampling has been to geological control which adds some control to the interpretation of gold
  mineralization. The wireframes have also been based in part on the current mining method which can
  involve some dilution with generally lower gold grade material and possibly a small amount barren waste
  rock. In more peripheral areas there is sometimes less certainty in the interpretation due to multiple
  mineral drill intercepts and the wide drillhole spacing. The spotty nature to the gold mineralization for
  K2 might be considered indicative of the issue.
- Wide drillhole spacing. Large parts of the mineral lodes have been interpreted from wide spaced drilling generally in the order of 100m. In H&SC's experience modelling of gold composite data with such wide spacings is relatively high risk, hence the Inferred classification, but the situation could lead to substantial changes, most likely reductions, in the resources estimates with any follow up infill drilling. The spotty nature to the gold mineralization for K2 might be considered indicative of such a scenario possibly happening.
- Incorporation of the face sampling data into the grade interpolation. Summary statistics for the K1 lode have shown a much higher mean for the face sampling (with a relatively low CV) compared to the drillhole values, which is attributable to the high grade zone encountered in the current mining. Check modelling in 2018 of just the drillhole data failed to fully pick up this high grade K1 zone. Therefore, inclusion of the

face sampling data in the grade interpolation is considered justified. Summary statistics for the K2 lode indicates reasonably similar data populations for drilling and face sampling with the latter having a lower coefficient of variation. Therefore, inclusion of the face sampling data in the grade interpolation is considered justified. In general, the summary statistics support the inclusion of the face sampling data with the vast majority of the face sampling included in the wireframes en masse. In addition, modelling just the drillhole data would significantly under-report the resource estimates for the K1 Lode.

- Limited density data. There is not enough density data for interpolating at this stage and has resulted in the use of default values. However, the similarity in the rather limited range of values for the different lodes suggest the default values used in resource estimation are reasonable. The collection of more data is being continued with the current drilling. K92ML's removal of lower values, generally <2.3t/m<sup>3</sup> on grounds of implausibility, from the default density calculations is perhaps not best practice but has a very minor impact on the overall default density values. Checks on these low values at the time of measurement would confirm whether they were real or not.
- The relatively small block size. Often a small block size can lead to over-smoothing of grades and thus an over-statement of grade, especially associated with a deposit of this type. However, in this case the block size is a function of the relatively close spaced drilling and face sampling associated with the K1 and K2 lodes. In 2018 a check model was completed using a more typical 1m by 15m by 15m block size for the wider-spaced drilling of the K2 lode but there seemed to be no significant difference in the reported estimation results.
- Limited top cutting was applied to extreme high grade gold composites. Whilst the use of top cutting is regarded as standard industry practice, H&SC considers that it is often used rather arbitrarily with no sound geological or statistical basis. H&SC is generally reluctant to apply top cuts preferring to control any high grade samples by a combination of geological interpretation, composite length, variography and search parameters. However, very extreme values with a strong demonstrable negative impact on likely block grades were top cutted i.e. for the K2, Kora Link and Judd lodes. If a top cut is required the level of cutting is always hotly debated but factors that must be considered are the resultant composite mean and coefficient of variation from applying the top cut, a cumulative frequency plot with breaks in continuity, the spatial location of the extreme grades and the QP's experience. Maintaining too high a cut off will often result in subsequent disappointment with follow up infill drilling especially in areas of wide spaced drilling and low sample numbers. At Kora Consolidated it is noted that the reconciliation outcomes strongly suggest that gold top cuts are not needed for the general mined area. This works well for K1 but K2 is an unknown quantity as none of the areas of extreme grades for the lode have been mined.
- Minimum number of data. H&SC has kept the minimum number of data for the Pass 3 grade interpolation search relatively high at 6. In H&SC's experience using a lower number of minimum data invites an increase in risk to the interpolated grades particular at the margin of the lodes or in areas of wide drillhole spacing.
- Reconciliation. Considering the geological complexity and localised high grades being within 1 or 3% of the mill processed ounces is considered a good result. However, linking the confidence for the resource estimates to reconciliation is significantly dependant on the details of tonnes and grade of the 'other' material as provided by K92ML and the geological interpretation of the mineral lode in conjunction with the current mining method. A significant variation in the current numbers used for reconciliation may undermine some of the confidence in the resource estimates, particularly on account of the generally small volumes being considered as a proportion of the overall MRE.

The key to the confidence of the resource estimates is the apparent good reconciliation of the block model with the mill production in an area of very high gold grades. This would strongly support the methodologies used for the resource modelling, in particular the geological interpretation, the composite interval, the apparent lack of need for top cutting, the search parameters and the relatively small block size.

The Qualified Person is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the potential development of the MRE.

## **14.10 MINERAL RESOURCE ESTIMATES**

Reporting of the new MRE for the Kora Consolidated deposits are included as Table 14-27 for a 1.75g/t Au cut off. The constraints for the K1 lode are uncut gold grade for block centroids inside the K1 mineral wireframe with mined depletion removed. The constraints for the K2 lode are cut gold grade (1,000g/t) for block centroids inside the K2 mineral wireframe with mined depletion removed. The same constraints are used for reporting MRE for the Kora Link and Judd lodes but for cut gold grade data of 400g/t.

The Mineral Resources reported in this section have been classified under the 2014 CIM Definition Standards for Mineral Resources and Mineral Reserves.

K92ML requested reporting of a gold equivalent (Au\_Eq) g/t to include copper and silver credits using the formula:

## Au g/t + ((0.928\*Cu %)\*1.607) + ((0.89\*Ag g/t)\*0.0125)

Assumptions provided by K92ML include:

- Gold prices of US\$1,600/oz: Silver US\$20/oz; Copper US\$3.75/lb
- Recoveries relative to gold of 92.8% for copper and 89% for silver

The 1.75g/t cut off was supplied by K92 and is based on mine design studies incorporating previous mining.

	Tonnes	Gold		Silver		Copper		Au_Eq	
	Mt	g/t	moz	g/t	moz	%	kt	g/t	moz
<u>Kora</u>									
Measured	2.8	9.07	0.8	15.7	1.4	0.85	24.1	10.51	1.0
Indicated	4.4	6.68	0.9	20.2	2.8	0.97	42.4	8.35	1.2
Total M&I	7.2	7.62	1.8	18.4	4.3	0.92	66.4	9.20	2.1
Inferred	8.1	7.12	1.8	27.3	7.1	1.38	111.1	9.48	2.5
Judd									
Measured	0.22	11.26	0.08	19.9	0.14	0.72	1.59	12.56	0.09
Indicated	0.15	7.46	0.04	13.9	0.07	0.77	1.20	8.76	0.04
Total M&I	0.38	9.70	0.12	17.5	0.21	0.74	2.79	11.00	0.13
Inferred	1.01	4.24	0.14	11.0	0.36	0.87	8.82	5.66	0.18
Kora and Judd									
Measured	3.1	9.23	0.9	16.0	1.6	0.84	25.7	10.66	1.0
Indicated	4.5	6.70	1.0	20.0	2.9	0.97	43.6	8.36	1.2
Total M&I	7.6	7.72	1.9	18.3	4.5	0.91	69.2	9.29	2.3
Inferred	9.1	6.80	2.0	25.5	7.4	1.32	0.1	9.05	2.6

Table 14-27. Mineral Resources for the Kora & Judd Deposits at 1.75g/t Au Cut-off Grade

(minor rounding errors)

Figure 14-56 shows the gold equivalent block grade distribution for the K1 Mineral Resources at a 1.75g/t goldonly cut off (includes depletion). The brown line represents the ground surface.



(view: looking west)



Figure 14-57 shows the gold equivalent block grade distribution for the K1 Mineral Resources at a 5g/t cut off (includes depletion). Clearly there are some strong controls to the higher grade mineralization both with the moderately north plunging termination of the high grade juxtaposed with steeper south plunging structures.



Figure 14-57. K1 Lode Mineral Resources Gold Equivalent Long Section 1.75g/t Au Cut Off (H&SC)

Figure 14-58 shows the gold equivalent block grade distribution for the K2 Mineral Resources at a 1.75g/t goldonly cut off (includes depletion).



Figure 14-58. K2 Lode Mineral Resources Gold Equivalent Long Section 1.75g/t Au Cut Off (H&SC)

Figure 14-59 shows the gold equivalent block grade distribution for the K2 Mineral Resources at a 5g/t cut off (includes depletion). The pattern is different to K1 in that it appears to be composed of clusters of higher grade mineralization rather than a coherent single body. This may be a function of the drill hole spacing rather than any geological control but it highlights the risk of isolated high grade intercepts having significant impact on interpolated metal content.



Figure 14-59. K2 Lode Mineral Resources Gold Equivalent Long Section 1.75g/t Au Cut Off (H&SC)

Figure 14-60 shows the gold equivalent block grade distribution for the Kora Link Mineral Resources at a 1.75g/t gold-only cut off (includes depletion).



Figure 14-60. Kora Link Lode Mineral Resources Gold Equivalent Long Section 1.75g/t Au Cut Off (H&SC)

Figure 14-61 shows the gold equivalent block grade distribution for the Judd Mineral Resources at a 1.75g/t gold-only cut off (includes depletion).



(view: looking west)

Figure 14-61. Judd Lode Mineral Resources Gold Equivalent Long Section 1.75g/t Au Cut Off (H&SC)

To complete the resource reporting K92ML requested that the global MRE be reported for a range of cut off grades (Table 14-28).

Total N	leasured	d & Indicate	d						
Au cut off	Mt	Au g/t	Cu %	Ag g/t	Au_Eq g/t	Au Mozs	Cu Kt	Ag Mozs	Au_Eq Mozs
0	12.31	5.08	0.73	14.4	6.33	2.01	90.2	5.69	2.51
0.5	11.00	5.65	0.79	15.6	7.00	2.00	86.8	5.51	2.48
1	9.55	6.40	0.84	16.8	7.85	1.96	80.6	5.15	2.41
1.5	8.15	7.28	0.90	17.9	8.82	1.91	73.0	4.69	2.31
1.75	7.57	7.72	0.91	18.3	9.29	1.88	69.2	4.46	2.26
2	7.02	8.17	0.94	18.8	9.78	1.85	65.7	4.25	2.21
2.5	6.07	9.11	0.97	19.7	10.77	1.78	58.8	3.83	2.10
3	5.29	10.05	1.00	20.4	11.77	1.71	52.7	3.47	2.00
4	4.08	12.00	1.03	21.4	13.77	1.57	42.1	2.80	1.81
5	3.22	14.02	1.05	22.0	15.83	1.45	33.6	2.27	1.64
10	1.36	23.71	0.96	23.5	25.41	1.04	13.1	1.03	1.11
Inferred									
Au cut off	Mt	Au g/t	Cu %	Ag g/t	Au_Eq g/t	Au Mozs	Cu Kt	Ag Mozs	Au_Eq Mozs
0	19.43	3.62	0.96	17.0	5.24	2.26	186.3	10.64	3.27
0.5	16.33	4.25	1.04	18.9	6.01	2.23	169.2	9.95	3.15
1	12.74	5.24	1.15	21.5	7.20	2.15	146.6	8.82	2.95
1.5	10.24	6.22	1.26	24.1	8.37	2.05	129.2	7.93	2.76
1.75	9.09	6.80	1.32	25.5	9.05	1.99	119.9	7.45	2.65
2	8.03	7.46	1.37	27.0	9.80	1.92	110.2	6.97	2.53
2.5	6.42	8.76	1.45	29.1	11.24	1.81	92.9	6.02	2.32
3	5.36	9.95	1.49	30.3	12.50	1.72	79.7	5.22	2.16
4	3.98	12.22	1.50	30.4	14.79	1.56	59.5	3.88	1.89
5	3.18	14.17	1.44	28.9	16.64	1.45	45.9	2.95	1.70
10	1.28	24.74	1.27	32.2	27.00	1.02	16.3	1.33	1.11

Table 14-28. Global Mineral Resources for a Range of Gold Cut Off Grades

Figure 14-62 contains the above data as a set of grade tonnage curves for the total Measured and Indicated Resources. Figure 14-63 contains the above data as a set of grade tonnage curves for the total Inferred Resources.



Figure 14-62. Kora Consolidated & Judd Grade Tonnage Curves for Total Measured and Indicated Resources



Figure 14-63. Kora Consolidated & Judd Grade Tonnage Curves for Inferred Resources

For the purposes of announcing the new global MRE (Table 14-29) a 1.75g/t gold cut off was used with an effective date of 11th November, 2021, for Kora and 20th January, 2022 for Judd.

Table 14-29. Kora Consolidated Global Mineral Resources for a 1.75g/t Gold Cut Off									
Global									
Category	Mt	Au g/t	Au Moz	Ag g/t	Ag Moz	Cu %	Cu Kt	Au_Eq g/t	Au_Eq Moz
Measured	3.1	9.23	0.9	16.0	1.6	0.84	25.7	10.66	1.0
Indicated	4.5	6.70	1.0	20.0	2.9	0.97	43.6	8.36	1.2
Total M & I	7.6	7.72	1.9	18.3	4.5	0.91	69.2	9.29	2.3
Inferred	9.1	6.80	2.0	25.5	7.4	1.32	0.1	9.05	2.6

(minor rounding errors)

# **15 MINERAL RESERVE ESTIMATES**

This item is not applicable for this report.

# **16 MINING METHODS**

This item is not applicable for this report.

# **17 RECOVERY METHODS**

This item is not applicable for this report.

# **18 PROJECT INFRASTRUCTURE**

The Kainantu mine is located within ML150. The main Kumian camp and processing plant are located within LMP78 which is located within EL693. The property is well supported by regional infrastructure and contains all the necessary site infrastructure for mining operations. The following infrastructure developments exist on the property.

# 18.1 POWER

Power is supplied to the Property from two sources. The primary source is the PNG Power national grid (PPL) from the Ramu sub-station, located 20 km from the processing plant site. Power from the national grid is reticulated to site via 22kV overhead line and services plant, mine and camp area. An overhead 11 kV line then provides grid power to the 800 Portal to supply the underground mine and portal area. Standby diesel generators are located at the process plant site, 800 Portal and Camp Site to ensure normal operations can be maintained during PPL power outages.

## 18.2 WATER

Process water is recovered from the concentrate thickener, concentrate filter and tailings storage facility. Potable water is drawn from two existing bore wells supplemented by water harvested from building roofs. The water is channelled into tanks, chlorinated and filtered for use.

## 18.3 UNDERGROUND MINE

Underground mining at Kainantu operated from 2004 to December 2008. Rehabilitation and refurbishment of underground mining infrastructure commenced in April 2016 with first batch of underground ore from Irumafimpa treated in October 2016. K92ML started the Kora mine project by completing the underground incline drive from Irumafimpa to Kora and commencing underground drilling. Since August 2017 operations have been focused on the Kora deposit with underground drilling, development and stoping.

In March 2019, K92 announced the decision to implement the Kora Expansion Project, with the aim of doubling mine production and plant throughput capacity from 200,000 tpa to 400,000 tpa. Since this decision the mining fleet has undergone a significant expansion and modernization with an increase in the quantity of equipment and also a significant increase in size of equipment. The underground mine infrastructure was considerably upgraded and expanded during 2019, and continues to expand year on year.

Mining infrastructure and underground mine workings in place are described in the "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea", dated 27 July 2020 which is lodged on SEDAR.

Additional improvements since 2019 include construction of an equipment maintenance workshop and office at the mine portal, commissioning of a concrete batching plant for both site construction projects and underground shotcrete capability, mine warehouse expansion and a new lime mixing and dosing plant

The majority of mobile equipment related to the expansion was delivered in early 2020. However some additional exploration diamond drills were added later in the year, along with two larger surface mill and mine loaders, and some underground service equipment. Additional mobile plant including an additional 517i Loader and a new underground service truck were added to the fleet in 2021.

The portals for two 3-km twin inclines commenced in Q1 2020. By 31 December 2021 K92 reported that Incline #2 had advanced 803m and Incline #3 893m from the portal.

#### **18.4 PROCESSING PLANT**

The Kainantu Processing Plant is located approximately 6 km from the opening of the 800 Portal. The plant was on care and maintenance from December 2008 until March 2016 when refurbishment commenced. Commercial production was declared in February 2018.

The original plant design was conventional 2-stage crushing, ball milling, flash flotation, rougher and cleaner flotation, and concentrate filtering.

The expansion of the process plant from its initial capacity of 200,000 tpa to 400,000 tpa was completed in Q4 2020. Modifications were made to the crushing circuit, including installation of a larger secondary crusher, the flotation circuit was expanded including installation of a new cleaner-recleaner circuit and new flotation feed tanks as well as various ancillary equipment was upgraded. Installation of a gravity recovery circuit, including gold room, was also undertaken as part of the expansion. While the plant expansion was commissioned in Q4 2020, ramp up to the full expanded throughput was only completed in Q4 2021 when the underground production rate ramped up to the required 400,000 tpa.

# 18.5 TAILINGS STORAGE FACILITY

A tailing storage facility (TSF) is located downstream of the process plant adjacent to the Kumian Creek, which flows into the Baupa River. The waste stream generated from the processing of ore comprises of sand tailings from the flotation circuit. The flotation tailings are relatively inert, composed primarily of quartz and waste rock sand and only very minor sulphur bearing minerals.

The tailings storage facility is classified as a high hazard dam. Runoff from within the dam is captured in catchment ponds behind the dam wall and is intermittently decanted into the tailings treatment ponds prior to discharge to Kumian Creek. Overflow and decant from the TSF flows through a wetland system prior to discharge to Kumian Creek. Water quality of the discharge from the ponds indicates that the water quality does not pose a risk to the receiving environment.

A closure plan was included in the initial design of the storage facility, and is upgraded year on year to meet the mine's expanded production. Further details of the tailings disposal are described in in the "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea", dated 27 July 2020 which is lodged on SEDAR.

The tailings dam is licenced to operate under an amended Environment Permit EP-L3 (34) issued by the Papua New Guinea Conservation and Environment Protection Authority (CEPA) which expires on 31 December 2053.

# **18.6 SURFACE INFRASTRUCTURE**

Additional infrastructure at the property includes bridges over water courses, an accommodation camp at Kumian, administration offices, a warehouse with laydown facilities, equipment workshops, a core shed with storage containers and large core storage yards, an assay laboratory, and a surface explosives magazine.

The Kumian Camp can accommodate 850 personnel after additional accommodation units for both COVID-19 quarantine capability and increased personnel were installed and constructed during 2019 and 2020. Construction of a new kitchen and mess was completed in 2020. The camp also contains a health/first aid clinic for the benefit of K92ML employees. In addition, there are recreation facilities including gym, covered basketball court and sports grounds.

# **19 MARKET STUDIES AND CONTRACTS**

This item is not applicable for this report.

# 20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

#### 20.1 MINE CLOSURE STRATEGY AND ENVIRONMENTAL LIABILITIES

A conceptual mine plan was prepared by K92ML personnel in March 2019 and submitted to the Conservation and Environment Protection Authority ("CEPA"). This aim of this Mine Closure Plan (MCP) is to outline the conceptual plan for closure of the Kainantu Mine with its existing footprint; and has been developed in accordance with the requirements of the relevant Permits and any K92ML applicable Standards.

It is noted that this conceptual document continues to be developed, and more detail added year on year as the mine becomes closer to the time of Mine Closure. At the time of drafting this conceptual MCP, mine closure was expected to be more than 10 years in the future.

The overall strategy for closure at the Kainantu operation is to extinguish all long-term environmental and legal liabilities and to relinquish the leases to the State government. In order to attain this strategy the operation will be decommissioned with all infrastructure removed from site (unless there has been prior agreement to retain), contaminated areas will be remediated or contained and the remaining landforms rehabilitated so that they are safe, stable and suitable for use in the desired post closure land use. The current basic notional milestones for the mine's closure are outlined in Table 20-1.

Year	Closure Milestone
2023	Revision of Mine Closure Plan to align with Resource Model / Life of Mine Plan
Closure – 2 years	Revision of Mine Closure Plan, stakeholder planning.
Closure – 1 year	Revision of Mine Closure Plan, active participation in Mine Closure Works.

#### Table 20-1. Notional Closure Milestones for the Mine

There are no known environmental liabilities on the property which are not fully disclosed in the Mine Closure Plan by K92ML dated 31 December, 2018, a summary of which is given below.

The un-discounted LOM (Life of Mine) closure cost as at 31 December 2021 was determined as US\$7.95m. This estimate was determined by K92ML based on operational changes and a closure review using the Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment of Kora North and Kora Gold Deposits, Kainantu Project, Papua New Guinea, dated 07 January 2019 which is filed on SEDAR. However, on an annual basis K92ML reviews the estimated closure costs. As at December 31, 2021, K92ML estimates the un-discounted LOM closure cost to be US\$7.0 million.

#### 20.2 PERMITS

K92 Mining Limited has obtained or applied for all permits required for the Kainantu mining operations.

#### 20.3 ENVIRONMENTAL PERMITS

K92 Mining holds environmental permits current to 31 December 2053 for Water Extraction and Waste Discharge. On 20 November 2019 Water Extraction Permit WE-L3(13) and Waste Discharge Permit WD-L3(34) were amalgamated into Environment Permit EP-L3 (34) expiring 31 December 2053.

### 20.4 COMMUNITY IMPACT

K92ML has many long-term social and economic development initiatives in the communities impacted by the mine. A population of approximately 21,000 live in the project impact area of 50 sq.km and this community has limited access to basic health and educational services and facilities. The 800 Portal is located less than three hundred meters from a local settlement named Kokomo, comprised of Pomasi residents and Bilimoian squatters.

The company has a growing External Affairs and Sustainable Development ("EA&SD") team involved in exploration access; sustainable community development; women in mining; and business development.

Much of the K92ML EA&SD work is prescribed and guided by the United Nations Development Program Sustainable Development Goals 2030. PNG has adopted these 17 Sustainable Development Goals. K92ML has set targets to ensure that impacted communities will be self-sufficiently able to thrive without dependence upon the mine. Targets areas include self-sufficiency in water, power, health, education and food production.

## 20.5 ENVIRONMENT, SOCIAL AND GOVERNANCE

K92 reported the following environmental social and governance highlights in their 2020 Sustainability Report.

- 95% of the workforce are PNG Nationals with priority hiring from local communities.
- Total community investment increased from US\$655,000 to US\$1.2 million.

• The Kainantu mine is in the top 3% safety record in the Australasia region with one lost time incident (LTI) during 2020.

• K92 was the major corporate taxpayer in PNG with the first tax instalment paid in July 2020, 2 years after declaring commercial production.

• A 1.5 million PGK (US\$433,500) COVID-19 Assistance Fund was created supporting Papua New Guinea National Government, Eastern Highlands and Morobe Provincial Governments and local communities to respond to the COVID-19 pandemic.

• Agreement in Principle on a revised Memorandum of Agreement covering the Kainantu Gold Mine operation.

• K92 is a participant in a 10 million tree program supporting Papua New Guinea's goal of planting one million new trees a year for ten years.

• A strong COVID-19 resiliency was developed through successful implementation of hygiene distancing, testing and quarantine measures in addition to on-site medical staff to protect the health and safety of our workforce and local communities. Vaccination programs commenced on site in 2021.

• Access to clean water expanded to another local community in 2020, ending generations of loading and carting water almost 2km to the community.

• The Sustainable Agriculture Livelihoods program developed business and empowered women through 75% of the farmers taking part being women and successfully growing new types of crops in the lowlands.

• A 1.0 million PGK (US\$285,000) contribution was made for a new market in Kainantu to support regional commerce.

• 63% of expenditures have been locally procured since start of operations, supporting the development of long-term sustainable businesses in PNG more broadly.

• K92's strong commitment to education included 50 tertiary education scholarships, financial assistance to the University of Technology in Lae, PNG, work experience to students and recent graduates, and assisting parents in local communities with primary education enrolment fees.

Details of the company initiatives are described in the "Independent Technical Report, Mineral Resource Estimate Update and Preliminary Economic Assessment for expansion of the Kainantu mine to treat 1 MTPA from the Kora Gold Deposit, Kainantu Project, Papua New Guinea", dated 27 July 2020 which is lodged on SEDAR.

# 20.6 MEMORANDUM OF AGREEMENT (MOA)

The original tenement holder, Highlands Pacific Limited ("HPL") signed a Memorandum of Agreement (MOA) with the State, the Eastern Highlands Province ("EHP") Government, the Kainantu LLG, the Bilimoia Landowners Association ("BLA"), and Associated Landowners on 11 November 2003. This MOA provides for the allocation and use of the royalties derived from the project for the benefit of the provincial and local governments and the landowners. The Memorandum of Agreement was reviewed over 13-17 July 2020 by all stakeholders, has been initialled by all of them, but awaits final signature by the government and the landowners.

The most significant documents to emerge from the 2020 Review are K92ML's Supply and Procurement Plan (SPP) and Business Development Plan (BDP) produced by K92ML's External Affairs unit. The SPP indicates the type and range of possible contracts and joint ventures for properly qualified landowner entities to take part in, while the BDP is a business training and instruction curriculum and schedule for landowners. These plans, with the Memorandum of Agreement, signed or not, now provide the External Affairs' team's approach to engagement and business with the community.

Part of the Memorandum of Agreement renegotiation was an offer of 5% equity in the mine to the Provincial Government (1.5%), the Blimoias (3%) and the Watarais, Unantu and Pomasi peoples (0.5%). Shareholding would be paid from dividends on the basis of the value of K92ML's sunk costs. Equity issue is, however, dependent on the final signing of the Memorandum of Agreement by all parties.

Consistent with the expectation of resource projects in PNG, the local communities have two Landcos which represent them businesswise to K92ML. All community members are shareholders in one or the other. The two Landcos have their own chairmen and boards and are assisted management-wise by K92ML's External Affairs' business development officers, of which there are two Papua New Guineans are two from Australia. A fifth officer, a dedicated Landco finance analyst and controller is soon to arrive at Kumian. K92MI is currently endeavouring to combine the two landcos under one Umbrella, as expected by the government, which would then entail the joint ventures currently enjoyed by the two Landcos with significant goods and services providers to K92ML but distributed discretely between them being redistributed across all four communities.

# 20.7 COMPENSATION AGREEMENT

HPL signed a Lands and Environment Compensation Agreement with identified impact communities in June 2003. The agreement was to be reviewed three years from commencing commercial production, and every three years thereafter. There have been no reviews of the agreement due initially to delays in completion of an investigation into landholding at the Project by the Land Titles Commission (LTC), and subsequently due to further delays from appeals to the determination by the LTC in 2009. Landownership will remain under dispute until the LTC declaration of 2009 is resolved.

K92ML has discussed and agreed with the MRA that the review of the Compensation Agreement will be delayed until the LTC has finalised review of all appellants to the 2009 LTC determination, and the primary Landholders for the Project have been declared. Whilst there are still 27 appeals of the LTC Declaration of 2009 to be dealt with, all stakeholders agreed to commence with the review of the 2003 MOA. The Compensation Agreement review will commence on completion of the MOA review and it will form an annexure of the MOA.

These forums will involve the signatories to the Compensation Agreement (which includes all beneficiaries of the 2009 LTC determination), the LTC, the Provincial Administration, and the Development Coordination Division arm of the MRA.

### 20.8 OTHER SIGNIFICANT FACTORS AND RISKS

Barrick conducted an extensive investigation into the matter of all outstanding sales royalties and compensations payable from the commencement of the project through to when ownership transferred to K92ML in 2015. Some of these monies remain outstanding due to internal disputes over land ownership, the resolution of which is beyond K92ML's control. Barrick, in conjunction with the K92ML Purchase Agreement, set up bank accounts under K92ML to hold these monies in trust. Considerable effort was expended to ensure that Barrick had determined the entire value of the amounts outstanding. Where there are discrepancies, Barrick has erred on the side of caution with respect to determining amounts payable. However, any discrepancies discovered after closing of the K92ML Purchase Agreement are the responsibility of the new management.

The Company has obligations to compensate landowners annually who are affected by the operations of the Kainantu mine. These compensations are governed by the Papua New Guinean Mining Act 1992 and land and environment compensation agreement ("CA") for ML 150 that the prior owner of the Kainantu mine entered into with the BILA and certain landowners/clans listed in the agreement. The actual recipients of the compensation determined under the CA and landowners' share of sales royalty could not be paid as required under the CA until the legitimate landowners were identified by the Papua New Guinean Land Titles Commission ("LTC") and so compensation payments have been accrued but not paid.

The estimation of landowners' compensation in Kainantu requires significant judgmental assumptions regarding compensation rates and land area affected by the mining activities. The principal factors that cause expected cash flows to change are: changes in the land area lost due to mining or other activities; changes in compensation rates; future claims for additional compensations and in particular individual one off compensations that are found to be legitimate and requiring additional payments.

The amount of landowners' compensation provision for Kainantu mine as of 31 December, 2021 was 26.5 million PNG Kina, which reflects expected cost.

Access to areas with existing surface miners is challenging, although well under control at the present time. K92ML maintains a security presence at the main artisanal mining areas (Kora and Irumafimpa). The Security teams are supervised by K92ML personnel but are comprised of local Bilimoian security contractors who source their personnel from the nearby Bilimoian villages. There have been no significant artisanal mining issues since this approach was employed.

Land Ownership and access issues result from inter-clan fighting. This results in delays in assessment and advancement of exploration properties. The risk to property is minimal and is mitigated by ongoing and proactive External Affairs and Sustainable Development ("EA&SD") engagement.

Strong community relations are imperative to exploring in PNG with community agreement required before any exploration activities can take place. The Kainantu area has been beset with community relations issues since modern exploration commenced, resulting in many prospective areas not being explored and very limited drilling. The K92ML EA&SD team have worked to gain the trust of the local landowners and this has resulted in access being granted in many areas which have not previously undergone detailed exploration.

As part of K92ML's commitment to deal equitably with local communities, Service Agreements between K92ML and local landowners are put in place prior to any exploration activities commencing. These set out what the community can expect from K92ML, the goods and services the landowners can provide at what prices, incentive payments, rental payments and dispute resolution procedures. The K92ML EA&SD team includes ten community relations field officers with experience in many other parts of PNG and in other industries, and seven village liaison officers supported by a Manager and General Manager. Community relations personnel deal with all access negotiations prior to any exploration activities being undertaken, calculate, resolve and payout compensation payments and attend all Warden's Hearings.

The Bilimoia Landowners Association ("BLA") represents the landowning Bilimoian community to the government, thus the body with which K92ML is expected to negotiate. A new BLA Executive was elected mid-2021 with whom discussions and negotiations are carried out by K92ML very carefully, with all other stakeholders in the Memorandum of Agreement always present to ensure accountability within the limits set by the Memorandum of Agreement.

As to political risk, Nolidan notes that on the Fraser Institute's Investment Attractiveness Index for 20202018 Papua New Guinea ranks higher than Indonesia but below Australia. It is almost equal ranking with New Zealand (Fraser Institute Annual Survey of Mining Companies, 2020). Its score was 54.67 compared with 63.48 in 2016. Papua New Guinea was ranked at 65 of 77 countries reviewed by the Fraser Institute. Respondents indicated that the country's infrastructure and security are the two main policy factors deterring investment.

# 21 CAPITAL AND OPERATING COSTS

This item is not applicable for this report.

# 22 ECONOMIC ANALYSIS

This item is not applicable for this report.

# 23 ADJACENT PROPERTIES

Kainantu occurs within a well-endowed belt of epithermal and porphyry style mineralization that reportedly contains several major deposits (Figure 23-1). Nolidan is unable to verify this information and the information is not necessarily indicative of the mineralization on the property that is the subject of this technical report.



Figure 23-1. Location of Kainantu project and gold deposits within major mineralized province. Source: PNG Chamber Mines and Petroleum (2018)

K92ML does not have any interest in any adjacent properties.

# 24 OTHER RELEVANT DATA AND INFORMATION

This updated resource estimate for the Kora and Judd deposits is planned to be used in a feasibility study for the expansion of the Kainantu mine to process 1.2 MTPA.

# 25 INTERPRETATION AND CONCLUSIONS

### 25.1 RECENT WORK

Since the last resource estimate effective date April 1, 2020 the majority of the drilling has been done to enable the increase in the amount of Measured and Indicated Resource for the mineral resource estimate. The drilling has also achieved some resource expansion by extending the Kora mineralization along strike to the south. Drilling into Judd was aimed at both expanding and defining the Mineral Resource from underground, after confirming economic mineralization while installing a vent drive along the J1 Lode. Over the period, diamond Drilling into Kora from underground totalled 231 holes for 36,152m plus 3 wedges for 472m. Also, a total of 509 face samples for 2,799m of drive length was achieved. Judd diamond drilling totalled 49 holes for 8,936m and 193 face samples for 1,060m of drive length. Diamond Drilling from the surface, targeted Kora and totalled 21 holes for 6,155m, this also included four holes that were used for twinning previous holes for QAQC purposes.

Surface exploration involved airbourne geophysical survey as well as drilling. Drilling on the periphery of the Resource showed significant potential for growth of the Resource. The results of geophysical survey results indicated strong potential for extensions to the known mineralisation.

## 25.2 QAQC PROGRAMMES

The quality of the QAQC programme has improved significantly over the time periods from resource estimates in 2018, 2020 and now 2021. Improvements to protocol documentation and informative graphs over longer time periods showing the whole K92ML datasets and the behaviour of the QAQC samples have progressed.

Of note was the acquisition of previous data on historical core recoveries and QAQC data and protocols generated by HPL. The twining program of selected Barrick holes showed no obvious bias and the previous drill data is acceptable. This has had a positive effect on the MRE for 2021, increasing the confidence in the MRE and its classification. A review of all QAQC outcomes comprises part of the subjective assessment for the classification of resource estimates. Additional QAQC programs such as several bulk density tests need to be conducted to further enhance the QAQC program.

#### 25.3 MINERAL RESOURCE ESTIMATE

The effective date of the MRE for the Kora lodes is the 11<sup>th of</sup> November 2021, which was the date that the latest database was received by H&SC. The effective date of the MRE for the Judd lode is the 20<sup>th</sup> January 2022, which was the date that the latest database was received by H&SC.

The MRE for the Kora Consolidated and Judd deposits were prepared using Ordinary Kriging (OK) in the H&SC inhouse GS3 modelling software package. H&SC considers OK to be an appropriate estimation technique for the type of mineralization, its extent and the nature of the available data. The resource estimation includes some internal low-grade material. The drillhole data and resulting GS3 models were loaded into the commercially available Surpac mining software for geological interpretation, composite selection, block model creation and validation, resource estimate reporting and to facilitate any transition to future mining studies.

The GS3 modelling software was developed by Neil Schofield (ex-Stanford University) and has capacity for both Multiple Indicator Kriging (MIK) and OK modelling techniques.

The approach to resource estimation for the Kora Consolidated deposits is relatively straightforward. A 3D interpretation of geological domains as wireframes for the K1, K2, Kora Link and Judd lodes was completed using the Surpac software. These wireframes were then used to select 1m data composites from samples in the drillhole database which were then subject to data analysis including aspects of spatial distribution (variography). OK modelling was used with up to seven search domains for each lode, based on subtle variations in dip and strike of the lodes with the resulting 3D models loaded into a Surpac block model. The same search parameters were used for all the lodes. Post-modelling processing, including block model validation and reconciliation, was undertaken in Surpac. The newly generated MRE were classified taking into account a number of factors including sample spacing and distribution, variography, geological understanding, QAQC procedures and outcomes, density data, core recovery and reconciliation with production.

From the 2020/2021 drilling the geological interpretation of mineral domains has been confirmed with only very minor modifications to the previous 2020 Kora Consolidated domain designs, although locally there has been some increased level of complexity ascertained from either the face sampling or in areas of more peripheral drilling to the main mineral zone. The main changes are a trimming at depth of the K1 lode in the south, where the original lode interpretation was based on very weak intercepts that often ran below cut-off grade. This has been offset by addition of material to the K2 lode in the same area. The Kora Link lode is a relatively smaller interstitial mineral zone between K1 and K2 where there is the appearance of possible multiple narrow, partially overlapping mineral vein/stringer systems. These veins appeared at times to be parallel to the bounding K1 and K2 structures, and at other times they appeared slightly oblique, transecting from the K2 footwall to the K1 hangingwall. The lode has been subject to further geological reassessment following a substantial amount of infill drilling and some face sampling such that H&SC now consider the most appropriate geological model for the lenses of quartz/gold mineralization is to treat the whole area between the K1 and K2 lodes, where there is significant segregation, as a single mineral domain.

The Judd lode is a parallel structure to the main Kora Consolidated mineral system, approximately 150m to the east. The vein system is slightly narrower than the K1 or K2 lode but has a very similar dip and strike. A 3D geological interpretation of the lode was developed by H&SC based on a supplied interpretation by K92ML and is consistent with the geological interpretation for the main Kora K1 & K2 lodes. Geological continuity of the lode is regarded as good for the bulk of the drilling/sampling except for the southern end where the lode breaks down into a series of much narrower and lower grade lodes that seemingly are non-aligned with the main lode (further drilling is required to resolve this).

The MRE are reported at a 1.75g/t Au cut off, up from 1g/t Au in 2020, which is based on mining studies completed by K92ML. The global grade tonnage curves indicate a consistent shape to the curves compared to the 2020 estimation results. The MRE are in line with H&SC's expectations based on a combination of K92ML drilling strategy and the lower grades associated with the recent infill drilling over the past two years. Further consideration on the use of appropriate top cuts is required, with a possible revision for K2 needed.

The MRE reported in this section have been classified under the 2014 CIM Definition Standards for Mineral Resources and Mineral Reserves.

#### 25.4 EXPLORATION POTENTIAL

The Kainantu Project is recognised as an important mineral district, owing to the presence of multiple economic vein deposits, as well as additional veins and porphyry prospects, at various stages of exploration. K92 Mining Ltd has a very substantial land package of exploration tenements, totalling approximately 862 km<sup>2</sup>. Several exploration companies are active in the immediate surrounds, emphasising the potential of the district.

Within the K92ML tenements, two prominent belts, the Bilimoia-Kesar and Arakompa-Kathnell corridors, overlap. The economic veins are focussed at this intersection. There is potential along both corridors, in particular between Kora and A1, where mineralization exists as both narrow, high grade and also bulk tonnage moderate grade mineralization.

There are numerous lodes which have only been partially drill tested, with all open in most directions including the Karempe lode, where some high-grade intercepts have been returned. Maniape and Arakompa are other veins to be followed up, with both vein systems having historic inferred resources. Most of the veins are parallel to the main Kora Consolidated lode, while Maniape and Arakompa are oblique. A number of veins are, as yet, only partially explored, yet have the potential to represent significant vein lodes. These include the K3 vein and an additional vein to the east of Judd.

There are a number of porphyry systems in the Kainantu Project area, two of which, Tankaunan and Kokofimpa, were drill tested by Barrick. Drilling results to date indicate the Blue Lake Porphyry has the potential to be a large mineralised porphyry deposit. At Blue Lake a pronounced silica-clay lithocap overlies the mineralised porphyry and K92ML geologists have postulated that a similar lithocap at A1 may conceal a large porphyry at depth.

An airborne geophysical (Mobile MT) survey was completed in 2021 over the entire area of K92ML's tenements. Numerous conductive targets were identified, and, where previously drill tested, conform closely with known deposits and prospects, both vein and porphyry occurrences.

All K92ML's prospects are depicted in the following pyramid, ranked by the level of data and the prospectivity.



Figure 25-1. Kainantu exploration project ranking

# **26 RECOMMENDATIONS**

### 26.1 QAQC

K92ML needs to review its procedure for deciding on the failure of a standard assay. Consideration needs to be given to consecutive standard assay failures within single batches and what threshold is used to trigger an enquiry for clarification with the laboratory.

Documentation of the QAQC data needs to be improved so that it is much more easily assessed when receiving new assay results and for any subsequent resource estimation. Preferably a report is completed immediately at the end of any drilling campaign so that it is already available for review prior to any resource estimation work. This acknowledges that the outcomes of the QAQC programme are significant factors in the classification of the resource estimates. It also allows for any issues to be addressed prior to starting resource estimation work.

A continuation of the laboratory duplicate sampling has been recommended, particularly focussing on increasing the number of higher grade samples that are tested. This may require employing a more manual role in sample selection for higher grades.

#### 26.2 MINERAL RESOURCE ESTIMATES

Continue infill drilling to upgrade both the Kora Consolidated and Judd Mineral Resources.

Drilling to the south of both Judd and Kora, following up significant isolated drill intercepts, with a view to expanding the current Mineral Resources.

Continue reconnoitre drilling of other potential mineral lodes/systems identified from surface mapping and sampling within the general Kora Consolidated and Judd lode areas.

New drilling should assess areas of geological complexity; e.g. the possible 'doubled up oblique fault section' in the middle of the deposit.

#### 26.3 EXPLORATION

The entire mineralised district held under tenement should be assessed but with priority given to certain areas.

The highest priority is to test (and extend) the Kora trend towards A1. This will facilitate the expansion of the current inferred Kora and Judd resource. Much of the vein system towards the south is under shallow cover (colluvium) and will require drill testing owing to the paucity of outcrop.

The Kora Consolidated lode(s) is demonstrably rich in copper towards the south, thus potentially being closer to the original fluid source. This corresponds with an area of extensive dilation, where high grade Au/Cu veins are haloed by long intervals of moderate grade. This corridor, linking Kora Consolidated and Judd with the A1 porphyry target, should be a priority in the ongoing exploration program.

Maniape and Arakompa both have historic resources which makes them high priority for follow up exploration programs.

The work program for each licence has been planned taking into consideration the current level of exploration on that tenement. Some programs will require detailed surface work prior to any drilling. Surface work should include assessment of lithocaps and vein expressions, as well as geophysical anomalies prior to drilling.

K92ML has enjoyed consistent success from its exploration drill programs, both underground and at surface. Therefore, drilling should continue to be the ultimate goal for all of its project evaluations. Fortunately, much of the K92ML tenement package is accessible by road, at least to within walking distance of the prospects. This will enable teams to assess lithocaps and vein expressions, as well as geophysical anomalies, by systematic exploration, while advanced drill programs are carried out concurrently.

Tenement No.	Term End Date	Proposed Work Program Budget		Planned 2 Year Program
		Unit	Amount	
EL470	04/02/2023	PGK	4,800,000	16 km <sup>2</sup> reconnaissance mapping, 6 km <sup>2</sup> detailed geological mapping, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km <sup>2</sup> airborne EM geophysics, 24 cored drill holes. Also bulk sampling underground.
EL693	04/02/2023	PGK	1,000,000	14 wks exploration reconnaissance, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km <sup>2</sup> airborne EM geophysics, 6 cored drill holes.
EL1341	20/06/2022	PGK	1,200,000	16 wks exploration reconnaissance, 4 km <sup>2</sup> reconnaissance mapping, 12 km <sup>2</sup> detailed mapping, significant soil + rock chip sampling (including costeaning), samples for petrology, 25 km2 airborne EM geophysics, 6 cored drill holes.
EL2619	22/01/2022	PGK	300,000	10 wks exploration reconnaissance, 250 km <sup>2</sup> aerial photography and satellite imagery, 40 km <sup>2</sup> reconnaissance mapping, 12 km <sup>2</sup> detailed mapping, significant soil + rock chip sampling (including costeaning), 50 samples for petrology.
EL2620	02/06/2023	PGK	250,000	10 wks exploration reconnaissance, 400 km <sup>2</sup> aerial photography and satellite imagery, 60 km <sup>2</sup> reconnaissance mapping, significant soil + rock chip sampling (including costeaning), 50 samples for petrology.

For and on behalf of K92 Mining Ltd Andrew Kohler BAppSc(Geol), PGCert(Geostatistics), MAIG For and on behalf of H&S Consultants Simon Tear BSc (Hons), MAusIMM, PGeo IGI For and on behalf of Nolidan Mining Consultants Anthony Woodward BSc Hons., M.Sc., MAIG Effective Date: 20 January 2022
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#### 28 CERTIFICATES OF QUALIFIED PERSONS

### **CERTIFICATE OF QUALIFIED PERSON**

### **Andrew Kohler**

I, Andrew Guy Kohler hereby certify that:

I am a full time employee of K92 Mining Limited employed as Mine Geology and Exploration Manager and reside at 259 Canning Highway Perth, Western Australia 6152, Australia. (Telephone +61-415 842510).

In 1986 I graduated from Curtin University of Technology Western Australia with a Bachelor degree in Applied Science (Geology) and in 2004 from Edith Cowan University with a Postgraduate Certificate in Geostatistics.

I have over 30 years' experience in the minerals industry as a Geologist in the fields of mineral exploration, mine geology and mineral resource estimation. I have had senior exploration and mining roles with K92 Mining Limited, India Resources Limited, Ramu NiCo Management (MCC) Limited, Avocet Gold Limited, Panaustralian Resources Limited, Portman Iron Ore Ltd, Resolute Tanzania Ltd and Sons of Gwalia Limited. I have worked and conducted advanced exploration and mining projects in Australia, Papua New Guinea, India, Malaysia, Laos and Tanzania. I am currently working as Mine Geology and Mine Exploration Manager at Kainantu Operations, PNG, for K92 Mining Limited since 2016 and prior to that as Technical Services Manager for India Resources Limited from 2014 to 2016, at the Surda Copper Mine and on Exploration Licenses in India. Also, as Chief Geologist Ramu NiCo Management (MCC) Limited 2011 to 2014 at Kurambukari in PNG. Resource Development Manager Avocet Gold Limited 2008 to 2009 in Malaysia. Mine Geology Superintendent Panaustralian Resources Limited 2005 to 2008, at Phu Kham Copper- Gold operation in Laos. In these roles I have been responsible for some or all of the following mine and exploration geology, drilling, surveying, mine planning, environment (AMD), and assay laboratory.

Applicable to the Kainantu Project is my extensive experience in mineral deposits in volcanic terrains, specifically the Penjom gold mine in Malaysia and the Panaustralain copper gold mine in Laos. I have also worked on epithermal/hydrothermal and porphyry-style mineralization in similar environments in Papua New Guinea, Laos, Malaysia as well as Australia.

I am a Member of the Australian Institute of Geoscientists (Member No. 6795).

For the purposes of the Technical Report entitled: "Independent Technical Report, Mineral Resource Estimate Update, Kora and Judd Gold Deposits, Kainantu project, Papua New Guinea", effective date 20th January 2022, of which I am a part author and responsible person, I am a Qualified Person as defined in National Instrument 43-101 ("the Rule").

I am responsible either wholly or partly for the preparation of Sections 6 to 11 of the technical report.

I have visited the Kainantu Project on the 12<sup>th</sup> August to 8<sup>th</sup> of September 2021. Prior to that I was employed at the Kainantu operation on a roster basis, on a 19 on and 9 days off roster from 16<sup>th</sup> of August 2016 to 26<sup>th</sup> February 2021, before working full time K92ML's Perth office.

I have read the Rule and this technical report is prepared in compliance with its provisions. I have read the definition of "qualified person" set out in the Rule and certify that by reason of my education, affiliation with a professional association (as defined in the Rule) and past relevant work experience, I fulfil the requirement to be a "qualified person" for the purposes of the Rule.

To the best of my knowledge, information and belief the technical report contains all scientific and technical information that is required to be disclosed in order to make this report not misleading.

I do have a full time position with K92 Mining Limited. I have no direct or indirect interest in the properties which are the subject of this report and I have had no involvement with the Property prior to 2016. I do hold options directly in K92 Mining Inc, as part of K92 Mining Limited's employee share plan. I have no direct or indirect interest in K92PNG, K92 Holdings, K92 or other companies with interests in the exploration assets thereof. Although I am an employee of K92ML, I am acting in accordance with and as independence is described by Section 1.5 of NI 43-101.

I will receive only normal salary, paid monthly for the preparation of this report.

Signed at Brisbane this 31<sup>st</sup> March 2022.

Anna

Andrew Guy Kohler, BAppSc(geol), MAIG

# CERTIFICATE OF QUALIFIED PERSON Simon James Tear

I, Simon James Tear, BSc(Hons), P.Geo, EurGeol as a co-author of this report "INDEPENDENT TECHNICAL REPORT MINERAL RESOURCE ESTIMATE UPDATE KORA AND JUDD GOLD DEPOSITS, KAINANTU PROJECT, PAPUA NEW Guinea", prepared for K92ML, effective date 20<sup>th</sup> January 2022, do herby certify that :

I am a Director and Consultant Geologist of H&S Consultants Pty Ltd, with a business address of Level 4, 46 Edward Street, Brisbane, QLD 4000, Australia.

I graduated from the Royal School of Mines, Imperial College, London, UK in 1983 with a BSc (Hons) degree in Mining Geology.

I am registered as a Professional Geologist with the Institute of Geologists of Ireland (registration number 17) and as a European Geologist with the European Federation of Geologists (registration number 26). I have worked as a geologist in the mining industry for over 35 years. I have extensive experience with a variety of different types of mineral deposits and commodities in Europe, Africa, South America, Asia and Australia. I have over 23 years' experience with the resource estimation process including 3.5 years minesite experience (open pit and underground) and have worked on feasibility studies. I have completed over 125 resource estimations on a variety of deposit types including narrow vein gold, structural gold, nickel laterite, stratabound base metal including Iron Ore and industrial minerals. I have completed over 30 reports that are in accordance with the JORC Code and Guidelines and/or NI43-101 rules.

My relevant experience for the purpose of this Technical Report is:

- Involvement from high level review to geological interpretation and resource estimation for over 50 gold projects worldwide including narrow vein epithermal and mesothermal gold deposits.
- Completion of geological modelling and/or resource estimates for the following narrow gold vein deposits: Cavanacaw (N.Ireland), Nbanga (Burkino Faso), Kestanalik (Turkey), Savoyardy (Kyrgyzstan), Woolgar, Barambah, Glen Eva and Koala (all Queensland).
- Due diligence/property assessment for the following narrow gold vein deposits/mines: Curraghinalt (N.Ireland), Tolukuma (PNG), Lorena, Pajingo (both Queensland), Bronzewing, Marda (both Western Australia)
- Completion of a geological interpretation and resource estimates for the Kora Vein system in 2018 and 2020

I have visited the project's mining lease and operations on one occasion dated 21st to 23rd October 2018 for 3 days.

I have read the definition of "qualified person" set out in Section 1.1 of the national Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of this Technical Report.

I am responsible, either wholly or partly, for Sections 1, 14, 25 and 26, of the Technical Report.

I do not hold, directly or indirectly, any shares in K92ML, K92PNG, K92 Holdings, K92 or other companies with interests in the exploration assets thereof. I am independent of K92ML, K92PNG, K92 Holdings, K92, and, the Property, as independence is described by Section 1.5 of NI 43-101.

Prior to 2018, I had no involvement with the property that is the subject of the Technical Report.

I have read NI 43-101 and this Technical Report has been prepared in compliance with the version of NI43-101 that came into effect on 30 June 2011.

To the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed by

Simon J Tear PGeo, EurGeol

Director & Consultant Geologist

H&S Consultants Pty Ltd

Date: 31st March 2022.

### **CERTIFICATE OF QUALIFIED PERSON**

## ANTHONY JAMES WOODWARD

I, Anthony James Woodward hereby certify that:

I am a Consulting Geologist and Professional Geoscientist residing at 14 Carlia Street, Wynnum West, Queensland 4178, Australia (Telephone +61-438 747141). I am independent of the issuer as independence is described in Section 1.5 of NI 43-101.

I graduated from the University of Nottingham, UK in 1968 with a B.Sc. (Hons) in Geology and from James Cook University, Townsville, Australia in 1976 with a M.Sc in Exploration and Mining Geology.

I have over 35 years' experience in the minerals industry as a Geologist in the fields of mineral exploration, mine geology and mineral resource estimation. I have had senior exploration roles with Buka Gold, Niugini Mining, Eltin Minerals and Oakbridge Ltd. I have conducted evaluation of advanced exploration and mining projects in Australia, Brazil, Fiji, Indonesia, Kazakhstan, New Zealand, and Turkey. I worked as Technical Services Manager and Chief Geologist at the Vatukoula Gold Mine in Fiji (Emperor Mines Ltd) from 1995 to 2005 and as Technical Services Manager for Anvil Mining Congo at the Kinsevere copper mine, DRC from 2007 to 2008. At these mines I was responsible for mine and exploration geology, surveying, mine planning, environment, drilling, and assay laboratory. At both operations I spent time as Acting General Manager of Operations. In this role I supervised multiple disciplines and integrated their work into operational mine plans. Most recently, I have been an exploration consultant in the Philippines involved with total exploration program management on tenements prospective for both epithermal gold-molybdenum and porphyry copper-gold deposits including regional exploration targeting through to deposit resource drilling.

Applicable to the Kainantu Project is my extensive experience in mineral deposits in volcanic terrains, specifically the Vatukoula and Tuvatu epithermal gold deposits in Fiji. I have also worked on epithermal/hydrothermal and porphyry-style mineralization in similar environments in Papua New Guinea, Fiji, New Zealand, Philippines, Indonesia, Brazil and Turkey as well as Australia.

I am a Member of the Australian Institute of Geoscientists (Member No. 2668).

For the purposes of the Technical Report entitled: "Independent Technical Report, Mineral Resource Estimate Update, Kora and Judd Gold Deposits, Kainantu project, Papua New Guinea", effective date 20th January 2022, of which I am a part author and responsible person, I am a Qualified Person as defined in National Instrument 43-101 ("the Rule").

I am responsible either wholly or partly for the preparation of Sections 1 to 5, 12 to 13, 15 to 27 of the technical report.

I have visited the Kainantu Project on the 12th and 13th of November 2014, the 21st to 25th November, 2016 and 15th to 17th January 2020 and have had no prior involvement with the Kainantu property.

I have read the Rule and this technical report is prepared in compliance with its provisions. I have read the definition of "qualified person" set out in the Rule and certify that by reason of my education, affiliation with a professional association (as defined in the Rule) and past relevant work experience, I fulfil the requirement to be a "qualified person" for the purposes of the Rule.

To the best of my knowledge, information and belief the technical report contains all scientific and technical information that is required to be disclosed in order to make this report not misleading.

I have no direct or indirect interest in the properties which are the subject of this report and I have had no involvement with the Property prior to 2014. I do not hold, directly or indirectly, any shares in K92ML, K92PNG, K92 Holdings, K92 or other companies with interests in the exploration assets thereof. I am independent of K92ML, K92PNG, K92 Holdings, K92, and, the Property, as independence is described by Section 1.5 of NI 43-101.

I will receive only normal consulting fees for the preparation of this report.

Signed at Brisbane this 31<sup>st</sup> March 2022.

ATILDOLOG.

Anthony James Woodward, BSc Hons, M.Sc., MAIG

## APPENDIX: GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

This glossary comprises a general list of common technical terms that are typically used by geologists. The list has been edited to conform in general to actual usage in the body of this report. However, the inclusion of a technical term in this glossary does not necessarily mean that it appears in the body of this report, and no imputation should be drawn. Investors should refer to more comprehensive dictionaries of geology in printed form or available in the internet for a complete glossary.

"2D"	Two dimensional space, typically Y and Z planes
"3D"	Three dimensional space, Y, X, Z planes
"200 mesh"	the number of openings (200) in one linear inch of screen mesh (200 mesh approximately equals 75 microns)
"AAS"	Atomic Absorption Spectroscopy
"Ag"	chemical symbol for silver
"Au"	chemical symbol for gold
"AuEq"	Gold equivalent, assumptions include metal prices and assumed metallurgical recoveries.
"BLA"	Bilimoian Landowners Association
BSc (Hons)	Bachelor of Science with Honours
"block model"	A block model is a computer based representation of a deposit in which geological zones are defined and filled with blocks which are assigned estimated values of grade and other attributes. The purpose of the block model (BM) is to associate grades with the volume model. The blocks in the BM are basically cubes with the size defined according to certain parameters.
"bulk density" "BD"	The dry in-situ tonnage factor used to convert volumes to tonnage. Bulk density test work is carried out on site and is relatively comprehensive, although samples of the more friable and broken portions of the mineralized zones are often unable to be measured with any degree of confidence, therefore caution is used when using the data.
"°C"	Degrees Celsius
"Composite"	Drill hole sampling data under geological control will often have variable sample lengths. Prior to grade interpolation this data is standardised to equal lengths known as compositing, with the process generating gold grades for that standard interval. Ideally the composite is of the dominant sample length e.g. 1m or may factor in the largest sample interval, if there is a large number of these sample lengths.
"Cu"	Chemical symbol for copper
"DDH" "diamond drilling, diamond core"	Rotary drilling technique using diamond set or impregnated bits, to cut a solid, continuous core sample of the rock. The core sample is retrieved to the surface, in a core barrel, by a wireline.
"down-hole survey"	Drillhole deviation as surveyed down-hole by using a conventional single-shot camera and readings taken at regular depth intervals, usually every 50 metres.
"drill-hole database"	The drilling, surveying, geological and analyses database is produced by qualified personnel and is compiled, validated and maintained in digital and hardcopy formats.
"dynamic search interpolation method"	A grade interpolation method which constantly rotates the search ellipse axes to each block within the block model relative to the orientation of the nearest triangle in the constraining mineral wireframe.
"EL"	Exploration Lease
"FA"	Fire Assay: an laboratory analytical technique mainly used for gold
"g.m"	Grams x metres, metal accumulations across the width of the vein

"grade cap, also called top cut"	The maximum value assigned to individual informing sample composites to reduce bias in the resource estimate. They are capped to prevent over estimation of the total resource as they exert an undue statistical weight. Capped samples may represent "outliers" or a small high-grade portion that is volumetrically too small to be separately domained.
"g/t"	grams per tonne, equivalent to parts per million
"g/t Au"	grams of gold per tonne
"Grade interpolation"	The spatial and mathematical process used to generate block grades between drillholes; can be used to extrapolate beyond limiting drillholes for modest distances. The method uses composited data in conjunction with variogram models for block grade weighting and data search parameters to select the appropriate data.
"HGL"	Highlands Gold Limited
"HPL"	Highlands Pacific Limited
"ID" "inverse distance estimation"	It asserts that samples closer to the point of estimation are more likely to be similar to the sample at the estimation point than samples further away. Samples closer to the point of estimation are collected and weighted according to the inverse of their separation from the point of estimation, so samples closer to the point of estimation receive a higher weight than samples further away. The inverse distance weights can also be raised to a power, generally 2 (also called inverse distance squared, ID2). The higher the power, the more weight is assigned to the closer value.
	It is a relatively unsophisticated grade interpolation method
"Inferred Resource"	An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources with continued exploration.
"Indicated Resource"	An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.
"IRG" or "IRGC"	Intrusion Related Gold or Intrusion Related Gold Copper
"JORC"	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 (the 'JORC Code' or 'the Code') sets out minimum standards, recommendations and guidelines for Public Reporting in Australasia of Exploration Results, Mineral Resources and Ore Reserves. The Code is a required minimum standard for Public Reporting b. JORC also recommends its adoption as a minimum standard for other reporting. Companies are encouraged to provide information in their Public Reports that is as comprehensive as possible. The definitions in the JORC Code are either

	identical to, or not materially different from, those similar codes, guidelines and standards published and adopted by the relevant professional bodies in Australia, Canada, South Africa, USA, UK, Ireland and many countries in Europe.
"kriging neighbourhood analysis, or KNA"	The methodology for quantitatively assessing the suitability of a kriging neighbourhood involves some simple tests. It has been argued that KNA is a mandatory step in setting up any kriging estimate. Kriging is commonly described as a "minimum variance estimator" but this is only true when the block size and neighbourhood are properly defined. The objective of KNA is to determine the combination of search neighbourhood and block size that will result in conditional unbiasedness.
"km"	Kilometre Unit of Length = 1000 metres. $km^2$ unit of area = 1km x 1 km
"kVa"	1000 volt-amperes
"lb"	Avoirdupois pound (= 453.59237 grams). Mlb = million avoirdupois pounds
"micron (μ)"	Unit of length (= one thousandth of a millimetre or one millionth of a metre).
"mm"	Millimetre (=1/1000 metre)
"LMP"	licence for mining purposes
"LOM"	Life of Mine
"LTC"	Land Titles Commission
"m"	Metric Metre
MAusIMM(CP)	Member of The Australian Institute of Mining and Metallurgists (Certified Professional)
MAIG	Member of The Australian Institute of Geoscientists
"Measured Resource"	A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drillholes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.
"Multiple Indicator Kriging (MIK)"	A relatively more sophisticated method of non-linear grade interpolation compared to Ordinary Kriging; often best suited to open pit gold deposits.
"Mineral Resource"	A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.
"ME"	Mining Easements
"ML"	Mining Lease
"MOA"	Memorandum of Agreement
"MRA"	Mineral Resources Authority of Papua New Guinea
"NN" "nearest neighbour estimation"	Nearest Neighbour assigns values to blocks in the model by assigning the values from the nearest sample point to the block attribute of interest.
"OH&S"	Occupational Health and Safety

"OK" "ordinary Kriging estimation	Kriging is an inverse distance weighting technique where weights are selected via the variogram according to the samples distance and direction from the point of estimation. The weights are not only derived from the distance between samples and the block to be estimated, but also the distance between the samples themselves. This tends to give much lower weights to individual samples in an area where the samples are clustered. The kriging estimates are controlled by the variogram parameters. The variogram model parameters are interpreted from the spatial distribution and value of the data
"oz"	Troy ounce (= 31.103477 grams). Moz = million troy ounces
"PGK"	Papua New Guinea Currency, Kina.
"рН"	measure of the acidity or basicity of an aqueous solution (scale 1 to 14)
"PhD"	Doctorate of Philosophy
"PNG"	Papua New Guinea
"Portal"	Opening/access to the underground Mine, Adit
"QA/QC"	Quality Assurance ("QA") concerns the establishment of measurement systems and procedures to provide adequate confidence that quality is adhered to. Quality Control ("QC") is one aspect of QA and refers to the use of control checks of the measurements to ensure the systems are working as planned.
"RC drilling"	Reverse Circulation drilling. A method of rotary drilling in which the sample is returned to the surface, using compressed air, inside the inner-tube of the drill-rod. A face-sampling hammer is used to penetrate the rock and provide crushed and pulverised sample to the surface without contamination.
"ROM"	Run of Mine, usually referring to an ore stockpile near the crusher
"survey"	Comprehensive surveying of drillhole positions, topography, and other cadastral features is carried out by the Company's surveyors using 'total station' instruments and independently verified on a regular basis. Locations are stored in both local drill grid and UTM coordinates.
"Stoping"	An underground excavation made by the mining of ore from steeply inclined or vertical veins
"t"	Metric Tonne (= 1 million grams) "kt" = thousand tonnes
"te"	Chemical symbol for tellurium
"t/h"	Tonnes per hour
t/m³	Tonnes per metre cubed (density units)
"TSF"	Tails Storage Facility
"unfolded space"	Undulating 3D veins projected onto a 2D plane.
"variogram"	The variogram (or more accurately the Semi-variogram) is a method of displaying and modelling the difference in grade between two samples separated by a distance h, called the "lag" distance. It provides the mathematical model of variation with distance upon which the Krige estimation method is based.
"wireframe"	This is created by using triangulation to produce an isometric projection of, for example, a rock type, mineralization envelope or an underground stope. Volumes can be determined directly of each solid.