KOPY GOLDFIELDS AB

MINERAL RESOURCES

AND ORE RESERVES ESTIMATE

OF THE KRASNOE GOLD DEPOSIT

AND THE

VOSTOCHNOYE MINERAL OCCURRENCE

IRKUTSK REGION

RUSSIAN FEDERATION

Prepared By

Micon International Co Limited Suite 10 Keswick Hall, Norwich, NR4 6TJ, United Kingdom

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1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

Micon International Co Limited (Micon) was contracted by Kopy Goldfield AB (Kopy Goldfields) to complete an evaluation of the mineral resources and ore reserves of the Krasnoe gold deposit and the mineral resources of the Vostochnoye mineral occurrence located in the Irkutsk region, Russian Federation. Kopy Goldfields (49% shares) and PJSC GV Gold (51% shares) own the mining licence for the Krasnoe gold deposit and the Vostochnoye mineral occurrence. This Report contains the results of this evaluation and was prepared in accordance with the internationally recognised guidelines of the JORC Code 2012 (the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves prepared by the Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia).

Micon conducted a review of the exploration and metallurgical testwork results. The evaluation of the mineral resources and ore reserves was based on the constructed block models for the Krasnoe deposit and the Vostochnoye mineral occurrence. The Krasnoe deposit and the Vostochnoye mineral resources were evaluated within the outline of the optimal pit shell. The Krasnoe deposit ore reserves were evaluated within the outline of the designed pit constructed on the basis of the optimal ultimate pit shell.

The principal consultants responsible for the review of the project and the preparation of this Report are listed in Section 2.2.

Evgeny Kondratiev MAusIMM(CP), Micon's Senior Exploration Geologist, visited Bodaibo at the end of March 2017. During the site visit the Krasnoe deposit, the sampling area and assay laboratory were inspected. Core from two drill holes were reviewed along with the associated logs and additional information about the deposit was collected. Meetings were also conducted with the geological personnel from LLC Krasny and PJSC GV Gold.

It is emphasised that the results of this study are principally derived from the examination and interpretation of exploration works. No independent confirmatory sampling has been performed by Micon as a part of the current study to confirm or otherwise qualify the conclusions presented in this report.

1.2 PROPERTY DESCRIPTION AND LOCATION

The Krasnoe deposit and the Vostochnoye mineral occurrence are located in the upper reaches of the right bank of the Bodaibo River. The area is economically well developed and is located 70 km to 80 km from the hardrock deposits of Sukhoi Log, Verninskoye and Golets Vysochaishy. Gold mining from different types of placers occurs in the vicinity of the deposit. The property is located within the jurisdiction of the Artemovsky settlement in the Bodaibo Area of the Irkutsk Region.

The deposit location is presented in Figure 1.1.





Figure 1.1: Krasnoe Deposit Location

The deposit is located within the Patomsk highland, a mountainous area with elevations between 800 m to 1,200 m. In the deposit area the elevations range between 500 m and 600 m. The majority of the river valleys are covered by technogenic sediments as a result of placer mining. These deposits significantly complicate exploration in the area.

The climate in the area is extreme continental with long cold winters and temperatures reaching down to -54° C and short hot summers up to $+34^{\circ}$ C. The average annual temperature is -6° C. The average annual amount of precipitation is 350 mm, the majority falling during the summer. Snowfall begins in the middle to end of September and the region thaws out completely by the end of June. The thickness of the snow cover in the valleys varies between 2 m and 4 m. Permafrost is widespread in the area.

1.3 OWNERSHIP AND TITLE

Micon has not undertaken any legal due diligence of the asset portfolio associated with the Krasnoe deposit and does not present any legal opinion regarding the corresponding ownership or title. Micon has reviewed the documentation relating to the title of assets and



licences for exploration and mining. Currently Licence IRK 02804 BR for geological surveying and mining of gold at the Krasnoe deposit belongs to LLC Krasny, jointly owned by Kopy Goldfields AB and PJSC GV Gold. The licence was registered on 18th July 2011 and is valid until 25th December 2035.

1.4 INFRASTRUCTURE

Artemovsky, the nearest settlement, is located 15 km to the southwest and the regional centre of Bodaibo 75 km to the southwest. The Bodaibo-Kropotkin-Perevoz road runs through the site. The site is covered with a network of gravel and dirt roads, currently used by the placer gold miners. In winter, the roads within the site require snow clearing. Cargo is delivered to the Krasny site from the base in Bodaibo by all-terrain trucks. The bulk of the cargo is delivered to the base from the nearest railway station of Taksimo (Baikal Amur Mainline) along the road for a distance of 220 km. During the navigation period it is possible to deliver cargo by water along the Lena and Vitim Rivers from the Osetrovo (Ust Kut) river port to Bodaibo (750 km). Bodaibo has an airport capable of handling medium capacity cargo and passenger airplanes from the cities of Irkutsk (1,200 km) Bratsk, Mirnyi, Kirensk and Ust Kut.

The power supply in the area is provided by the Mamakan Hydroelectric Power Station via the LEP-110 kV and the LEP-220 kV Taksimo-Bodaibo power lines. Near the area there are also 110 kV and 36 kV power lines.

1.5 GEOLOGY AND MINERALISATION

The Krasny deposit and the Vostochnoye mineral occurrence are located within the first order structure of the Baikal folded area - the Mamsko-Bodaibo synclinorium on the border of the second order structures of the Kropotkinsky anticline and the Bodaibo complex syncline. The Baikal folded area is composed of sedimentary and metamorphic rocks from the Bodaibo Series of the Upper Riphean and is capped with loose Quaternary deposits. The area is characterised by intense multi-scale folding complicated with numerous faults, micro-folding zones, boudinage and tectonic melange.

The Krasnoe deposit is located in the upper sub-suite of the Aunakitskaya Suite of the Upper Riphean which consists of meta-siltstones, shales, occasional mica-quartz sandstones. The deposit is in the form of two zones of vein-veinlet-disseminated quartz-sulphide mineralisation- Lower and Upper Zones. The mineralised zones are confined to the axial part of the main deposit's structure, the Rudnaya anticline. The anticline is an overturned fold striking ESE, both limbs are dipping to the NNE; the northern limb dips at approximately 45° to 75° and the southern at 70° to 85°. The limbs are composed of interstratified sandstones and siltstones with thicknesses of up to 60 m. The fold is cut by large scale faults. The mineralised zone typically contains lens-like and complex folded quartz-sulphide veinlets, sparsely disseminated pyritic mineralisation and quartz veins.

An oxidation zone occurs at the deposit; the lower boundary of the oxide ores is located around 20 m to 100 m from the surface.

Two types of the gold mineralisation have been identified within the Krasnoe ore field: veinlet-disseminated quartz-sulphides, lithologically/structurally controlled and quartz veins with limited development. As a rule, these two types of gold mineralisation are spatially concurrent.

The quartz-sulphide mineralisation forms veinlet-disseminated zones within altered zones of sulphide mineralisation in structurally complicated areas. The internal structure of the zones is complex and consists of a dense network of variably-oriented veinlets, lenses and clusters of quartz, which occur together with disseminated sulphides (1% to 3%) in schistose and fractured host rocks. Sulphide mineralisation is typical over the entire ore field with a wide distribution, mainly represented by pyrite. Pyrrhotite, chalcopyrite, sphalerite, galena occur to a lesser degree.

The quartz mineralisation is localised in veins and veinlets, which usually have lens-like shapes, thicknesses ranging from 0.2 cm to 0.5 m, and lengths ranging from a few centimetres to several metres. Zones of quartz veins are confined to the southern limb of the Rudnaya anticline. They are located within the sub-latitudinal zones (strips) of the scattered quartz and quartz-sulphide mineralisation. The distribution of quartz vein material in these strips is uneven and the intervals with elevated concentrations alternate with barren areas.

Gold is predominantly found in joints with pyrite or in the form of inclusions in pyrite. The size of the gold grains ranges from 1 μ m to 150 μ m, most commonly of 30 μ m to 70 μ m. The surfaces of gold grains forming joints with pyrite are smooth, the edges may slightly "branch"; skeletal gold crystals are rare. In addition, free gold is also registered, which is characterised by smooth surfaces up to 200 μ m.

1.6 EXPLORATION

The Krasnoe veinlet-disseminated mineral deposit was identified within the ore field during the course of exploration within the syncline complex in the Bodaibo territory from 1978 to 1979.

During 1981 to 1983, exploration was completed within the Artemovsky ore cluster. As a result, three quartz-sulphide zones were identified and traced within the mineralisation area. Two ore bodies were identified in the No. 1 quartz-sulphide zone. The first ore body was classified as C_2 category gold reserves, estimated at 1 t. The second ore body as P_1 category prognostic resources, estimated at 1.4 t. Within zone No. 3, at depths of between 150 m to 300 m, two "blind" ore bodies with strike lengths of up to 900 m, thicknesses from 6 m to 12 m and average grades of between 2.0 g/t Au to 2.6 g/t Au were identified. The total P_1 category prognostic resource of the mineral occurrence was 19.3 t of gold at an average grade of 2.57 g/t Au. The estimate was completed using the following parameters: cut-off grade 1 g/t Au; minimum commercial block grade 1.5 g/t Au and minimum thickness of ore bodies set at 3 m. A negative assessment was reported for the remaining area.

From 2004 to 2005 exploration continued within the Krasnoe ore field. As a result, the Verkhne-Bodaibinskaya anticline structure, especially within its periclinal closure, was detailed and the factors controlling the gold mineralisation were described. Eight gold-bearing zones were identified comprising zones of intensive sulphide mineralisation and silicification within the Verkhne-Bodaibinskaya anticline.

From 2010 to 2012, the Krasnoe mineral occurrence was investigated by prospecting and exploration operations. The work included surface mine working drifts and core drilling. Based on these results, reserve calculations and prognostic resource estimates for three cut-off grades (0.7 g/t Au, 1.0 g/t Au and 1.3 g/t Au) were produced. The C₂ category reserves were declared to be 34,032.58 kg of gold with an average grade of 2.28 g/t Au.

Prognostic resources for the P_1 category totalled 31,062.68 kg of gold at an average grade of 2.55 g/t Au and P_2 category resources were 26,299.59 kg of gold at an average grade of 3.04 g/t Au. During the revision of the trenches drifted in 2004 the Vostochnoye mineral occurrence was discovered.

In 2014 exploration recommenced and has been ongoing within the Krasnoe deposit and within the recently discovered Vostochnoye mineral occurrence. The drill holes drilled since 2015 have traced the mineralisation exposed within the 2013 trenches along the dip and strike.

Between 2011 and 2017, 67,973 m of exploration and prospecting drilling (333 drill holes) and around 10,000 m of trenching were completed. Most of the exploration drill holes were drilled between 2014 and 2017 (285 drill holes totalling 52,676 m).

1.7 QUALITY ASSURANCE AND CONTROL

Quality control analysis was carried out in accordance with OST No. 41-08-272-04. According to this Standard, at least 5% of duplicate samples must be reanalysed in the main laboratory (Internal Control) and then sent for analysis to an authoritative certified laboratory (External Control). Samples for internal and external control are compiled by dividing a common array of samples into content classes. Each class should include at least 30 samples.

Micon conducted a review and analysis of the quality control results from LLC Krasny for the 2016 to 2017 geological survey programme. The results of the control analyses were compared with the main results to confirm the reliability of the data used for calculating the mineral resources.

For internal control, the correlation coefficient for paired analytical results showed a value of 0.79, close to the average value. However, for 51% of the analyses the absolute error was more than 10%, which shows a weak analytical reproducibility.

SGS Vostok Limited laboratory was used for external control in 2016 and 2017. The correlation coefficient for paired analytical results gave a value of 0.878, and the standard deviation was high, which indicates a low precision of the data. Data also shows that for 35.5% of the analyses an absolute error of more than 20% is typical.

Between 2016 and 2017 blank samples were added at the sampling stage within batches of samples and assigned numbers. The blank samples were used to detect possible gold contamination during the sample preparation. In total between 2016 and 2017 778 control blank samples were added which amounts to 3.41% of the total amount of samples. During this period only four samples showed abnormal values, therefore the blank sample results are considered satisfactory and there was no systematic sample contamination. However, the causes of the abnormal values should be investigated and eliminated during testing.

To control the analysis accuracy, certified standard samples were included in each batch of samples. Between 2016 and 2017 339 standard samples were added in total amounting to 1.49% of samples.

The standard results showed a low accuracy for the GV Gold laboratory analyses. For Rocklabs samples, the standard deviation of the main laboratory analytical results were twice as high as the inter laboratory standard deviations obtained from the certified standards.

1.8 PROCESSING AND METALLURGICAL TESTWORK

The processing and technological test review is based on the "Technological Regulations for the Processing Mill Design of the Krasnoye Ore Deposit" produced by the OJSC Irgiredmet Institute in 2017.

The technological regulations are based on the semi-industrial test results on the composite sample TP-4, consisting of 45.2% primary ore, 23.4% transitional ore and 31.4% oxide ore, as well as a set of technological tests performed by the OJSC Irgiredmet Institute between 2012 and 2016.

As a result of the technological research and review of the ore processing practices from similar enterprises to those at Krasnoe a scheme was recommended which provides two-stage grinding, gravity concentration of gold, flotation of gravity tailings, intensive cyanidation of gravity concentrate, sorption cyanidation of a mixture containing flotation concentrate, middlings gravity and tails intensive cyanidation, desorption, electrolysis, smelting, neutralisation of cyanidation tailings, separate storage of tailings flotation and sorption in bulk tailings.

The gold products are Doré alloy. Waste produced by sorption leaching and flotation enrichment tailings is neutralised from cyanides and rhodanides tailings.

The calculation of qualitative-quantitative and water-slurry parameters is performed for ore with an initial gold content of 1.54 g/t Au at a capacity of 126.8 t/h (1,000,000 t/a) at the processing plant.

According to the recommended flowsheet, the recovery of gold from ore with a gold content of 1.54 g/t Au into Doré alloy will be 85.51%.

Silver is extracted along with gold into ingots with a recovery of 40% to 60%. The estimated gold grade in the tailings from the processing plant (flotation and sorption tailings) including the losses from the solid and liquid phases of the cyanidation tails, will be 0.223 g/t Au.

1.9 MINERAL RESOURCES AND ORE RESERVES

Micon constructed block models and estimated the mineral resources and ore reserves for the Krasnoe deposit and Vostochnoye mineral occurrence in accordance with the requirements of the JORC Code (2012). Block models represent a justified estimate of the total resources of a deposit. Micon assumed that the deposits would be mined using open pit methods. In order to construct the final pit shells, an open pit optimisation analysis was performed based on the block models using Whittle software.

Two versions of the analysis were prepared for the Krasnoe deposit and one for the Vostochnoye mineral occurrence. For the Krasnoe deposit the first optimisation option included only Indicated cells (Measured category cells are not present in the model), and the



second optimisation including all the original block model cells. The optimisation option for the Vostochnoye mineral occurrence included all original block model cells.

The second model optimisation including all the original block model cells, was used to calculate the mineral resource estimate in accordance with the JORC (2012). The mineral resources were calculated within contours constructed for the block models with no cell limits for a gold price of US\$1,250/oz. Tables 1.1 and 1.2 present the mineral resources for the Krasnoe deposit and the Vostochnoye mineral occurrence, respectively..

JORC Category	Ore Type	Tonnage (kt)	Grade (g/t Au)	Gold (kg)	Gold (oz)
	Oxide	2,871	1.17	3,372	108,398
Indicated	Transitional	2,424	1.14	2,770	89,042
	Primary	2,244	1.29	2,904	93,353
Total Indicated		7,539	1.20	9,045	290,793
	Oxide	582	0.95	555	17,859
Inferred	Transitional	732	1.62	1,185	38,091
	Primary	17,201	2.07	35,631	1,145,559
Total Inferred		18,515	2.02	37,371	1,201,508
Total		26,054	1.78	46,416	1,492,302

Table 1.1: Mineral Resources for the Krasnoe Deposit as at 17th April 2018 (in accordance with the requirements of the JORC Code (2012)

 Table 1.2: Mineral Resources for Vostochnoye Mineral Occurrence as at 17th April 2018 (in accordance with the requirements of the JORC Code (2012)

JORC Category	ategory Tonnage Gr		Gold	Gold
	(kt) (g/t		(kg)	(oz)
Inferred	6,689	1.57	10,537	338,767

The results of the second optimisation for the block model for the Krasnoe deposit with the inclusion of only Indicated cells (Inferred cells were categorised as waste) was used to construct the final pit design contour. A surface corresponding to the base value of the gold price (US\$1,250/oz) was selected. The ore reserves were calculated within the outline of the designed open pit.

The Krasnoe deposit ore reserves estimated and classified by Micon in accordance with the requirements of the JORC Code (2012) are presented in Table 1.3.

JORC Category	Ore Type	Tonnage (kt)	Grade (g/t Au)	Gold (kg)	Gold (oz)
Probable	Oxide	3,031	1,06	3,203	102,978
Probable	Transitional	2,536	1,02	2,598	83,530
Probable	Primary	1,775	1,24	2,198	70,656
Total		7,342	1,09	7,999	257,164

 Table 1.3: Ore Reserves for the Krasnoe Deposit as at 17th April 2018
 (in accordance with the requirements of the JORC Code (2012)

1.10 ECONOMIC ANALYSIS

Micon completed an economic assessment of the development potential of the Krasnoe deposit, including an analysis of the planned discounted cash flow and the calculation of the net present value (NPV). The use of such assessments is common practice in the international mining industry.

The valuation period from 2017 to 2039 was used to determine the total development and processing of the ore reserves estimated by Micon for the Krasnoe deposit.

Micon constructed a cash flow model and estimated the projected operating and capital costs, using data provided by Kopy Goldfields AB.

The value of NPV for the base case valuation (discount rate of 6%, mid-years discounting) is 3,751 thousand US dollars. The NPV values for the discount rates considered in the range from 2% to 10% range from US\$18,624 thousand to US\$-6,084 thousand, respectively. The total undiscounted cash flow is US\$28,940.

Figure 1.2 is a graph of the dynamics of the main economic indicators for the project







1.11 CONCLUSIONS AND RECOMMENDATIONS

Micon's audit review of the Krasnoe Gold Deposit has led to the following conclusions and recommendations:

- 1. According to the amount of available geological information and the complexity of the mineralised zones the Krasnoe deposit mineral resources were estimated as Indicated and Inferred and the Vostochnoye mineral occurrence mineral resources as Inferred.
- 2. Additional exploration is required to upgrade the current Inferred mineral resources to a higher category.
- 3. Exploration of the Krasnoe deposit flanks and the Vostochnoye mineral occurrence should be continued.
- 4. For adequate internal and external quality control procedures the number of control samples should be increased to 5% of the total number of samples.
- 5. Analytical results for standard samples and internal and external control data showed low precision and accuracy for the GV Gold laboratory analyses. They are much lower than the "best practice" adopted in the industry.
- 6. Attention should be paid to the selection of certified standards for introduction into sample batches. Certified standard grades should correspond to the sample grades within the grade classes and also have a similar composition.
- 7. Micon recommends replacing the blank sample material with a material that does not contain any useful commodities i.e. gold or silver. The use of free samples from old drill holes can lead to errors in quality control data.
- 8. The ore mineralisation is of gold-quartz low-sulphide type and is relatively simple. Fine and finely-dispersed gold predominate in the ore.
- 9. Cyanide leaching in the presence of a sorbent extracts 86.8% to 87.0% of the gold, most of which is in the form of free gold (58.1% to 61.9%). Interstitial gold and that contained within rock-forming minerals constitutes 24.9% to 8.9%.
- 10. The main problem of high sorption activity of the ore and flotation concentrate is resolved using an effective reagent-depressor such as organic carbon.
- 11. The adopted branched enrichment scheme, based on the use of jigging machines and concentration tables, will provide the planned level of gold processing recovery of 85.5%.
- 12. Micon believes, it is possible to significantly simplify the gravity enrichment scheme by using Knelson concentrators or their equivalent without reducing the quality of the obtained gravity concentrate and maintaining the level of gold recovery adopted in the regulations. The client is recommended to review the actual results of this scheme implemented at the Pavlik gold deposit in the Magadan Region.
- 13. As a result of the economic modelling of the production operation based on the Krasnoe deposit, minimal positive results were obtained (the discount rate is 6%, mid-year discounting), the NPV value was US\$3,751 thousand dollars.

2.0 INTRODUCTION

2.1 PURPOSE AND SCOPE OF THE AUDIT

Micon International Co Limited (Micon) was contracted by Kopy Goldfields AB (Kopy Goldfields) to complete an evaluation of the mineral resources and ore reserves of the Krasnoe gold deposit located in the Irkutsk region, Russian Federation. The head office of Kopy Goldfields AB is located in Stockholm, Sweden. The contract between Kopy Goldfields and Micon was dated 19th March 2018. This Report contains the results of this evaluation and was prepared in accordance with the internationally recognised guidelines of the JORC Code 2012 (the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves prepared by the Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia).

The Krasnoe deposit and the Vostochnoye mineral occurrence have been audited prior to the production of this evaluation; however the deposit has never been developed. Exploration stages have been conducted and it is planned to put the reserves on the State Balance in the future; the TEO of permanent exploration conditions for the reserves calculation for the deposit is currently in progress.

The project licence area is located in the upper reaches of the right bank of the Bodaibo River. The area is economically well developed and is located 70 km to 80 km from the hardrock deposits of Sukhoi Log, Verninskoye and Golets Vysochaishy. Gold mining from different types of placers occurs in the vicinity of the deposit. The property is located within the jurisdiction of the Artemovsky settlement in the Bodaibo Area of the Irkutsk Region.

Evgeny Kondratiev MAusIMM(CP), Micon's Senior Exploration Geologist, visited Bodaibo from 21st to 24th March 2017. During the site visit at the Krasnoe deposit, the sampling area and the assay laboratory were inspected. Core from two drill holes was reviewed, and the associated logs and additional information about the deposit was collected. Meetings were also conducted with the geological personnel from LLC Krasny and PJSC GV Gold. In addition a visit to the deposit where drilling was being carried out was made.

It is emphasised that the results of this study are principally derived from the examination and interpretation of exploration data. No independent confirmatory sampling has been performed by Micon as a part of the current study to confirm or otherwise qualify the conclusions presented in this report.

2.2 CAPABILITY AND INDEPENDENCE

Micon is an independent consulting firm of geologists, mining engineers, metallurgists and environmental consultants, all of whom have extensive experience in the mining industry. The firm has offices in Norwich and Cornwall (United Kingdom), Toronto and Vancouver (Canada).

Micon offers a broad range of consulting services to clients involved in the mining industry. The firm maintains a substantial practice in the geological assessment of prospective properties, the independent estimation of resources and reserves, the compilation and review



of feasibility studies, the economic evaluation of mineral properties, due diligence reviews and the monitoring of mineral projects on behalf of financing agencies.

Micon's practice is worldwide and covers all of the precious and base metals, the energy minerals (coal and uranium) and a wide variety of industrial minerals. The firm's clients include major mining companies, most of the major United Kingdom and Canadian banks and investment houses, and a large number of financial institutions in other parts of the world. Micon's technical, due diligence and valuation reports are typically accepted by regulatory agencies such as the London Stock Exchange, the US Securities and Exchange Commission, the Ontario Securities Commission, the Toronto Stock Exchange, and the Australian Stock Exchange.

The principal consultants responsible for the review of the Krasnoe deposit and the preparation of this report have extensive experience in the mining industry and have appropriate professional qualifications:

Micon is internally owned and is entirely independent of LLC Krasny, PJSC GV Gold, Kopy Goldfields AB and their affiliated companies. The personnel responsible for this review and the opinions expressed in this Report are Micon's full-time employees or Micon associates. For its services in preparing this Report, Micon is receiving payment based upon time and expenses and will not receive any capital stock from LLC Krasny, PJSC GV Gold, Kopy Goldfields AB or any of their affiliated companies. Micon is reimbursing its associates based upon time and expenses.

The principal consultants responsible for the review of the Krasnoe Gold Deposit and the Vostochnoye mineral occurrence and the preparation of this Report have extensive experience in the mining industry and have appropriate professional qualifications:

- Stanley Bartlett, P.Geo, Micon Vice President, Senior Geologist and Managing Director of Micon's UK office; Kopy Goldfields Report Project Manager and Team Leader;
- Evgeny Kondratiev, MAusIMM(CP), Micon Senior Mineral Resource Geologist;
- Michael Khoudine, M.Sc., Micon Senior Mining Engineer;
- James Turner, B.Sc., ACSM, M.Sc., MCSM, MIMMM, CEng, Micon Senior Metallurgist;
- Ekaterina Pelenkova M.Sc. Micon Geologist; and,
- Sandra Stark, B.Sc., Micon Geologist.

Mr. Stanley Bartlett is responsible for the preparation or supervision of preparation of this Report. Mr. Bartlett by reason of education, experience and professional qualifications fulfils the requirements of a Competent Person as defined by the JORC Code (2012) and as such is qualified to the review this deposit and type of mineralisation.

The mineral resources stated in the report were evaluated by Michael Khoudine, M.Sc., based on the block model created by Evgeny Kondratiev, MAusIMM(CP), the mineral resource geologist. Mr. Kondratiev by reason of education, experience and professional qualifications fulfils the requirements of a Competent Person as defined by the JORC Code (2012) and as such is qualified to the review this deposit and type of mineralisation.

2.3 DISCLAIMER

Whilst Micon has reviewed the exploration and mining licences, permits and entitlements of the property in so far as these may influence the investigation and development of the mining assets, Micon has not undertaken legal due diligence of the asset portfolio described in this Report. The reader is therefore cautioned that the inclusion of exploration and mining properties within this Report does not in any form imply legal ownership.

During the preparation of this Report, Micon has relied upon information provided by LLC Krasny and PJSC GV Gold, which describes the exploration history, geology and mineralisation and resources. Micon has not independently verified the statements and data contained in the information supplied and has assumed that the information provided is representative and materially complete.

2.4 SOURCES OF INFORMATION

Various sources of information were accessed to prepare this report including:

- Licence on Subsoil Use IRK 02804 BR;
- A Report on the Prospecting Assessment Works with the Reserve Calculation on the Hardrock Gold Deposit Krasnoe Located in Irkutsk Region of Russian Federation as at 25th April 2014. Krasnoyarsk, 2014;
- A Brief Informational Report about the Operational Assessment of Reserves (Resources) of the Hardrock Gold of the Krasnoe Area (as at 17th November 2014), Krasnoyarsk, 2014;
- An Informational Report with Operational Assessment of Reserves (Resources) of the Hardrock Gold of the Krasnoe Area (as at 15th December 2014), Krasnoyarsk, 2014;
- TEO of Temporary Exploration Conditions for the Open Pit Ore Mining with the Gold Reserves Calculation as at 1st January 2015, LLC NPF Geoprognoz, Irkutsk, 2015;
- An Informational Note "Development of the Process Regulations for Processing of the Krasnoe Deposit Ore", OJSC Irgiredmet, Irkutsk, 2017;
- Process Regulations for the Designing of the Processing Plant to be Used for the Krasnoe Deposit Ore Concentration, OJSC Irgiredmet, Irkutsk, 2017;
- TEO of Investments of the Krasnoe Gold Deposit, LLC TOMS Engineering, St. Petersburg, 2017;
- A report "Results of the Krasnoe Area Exploration of 2017 with Operational Assessment of the Hardrock Gold Reserves and Resources of the Krasnoe Deposit and the Vostochnoye Mineral Occurrence as at 1st January 2018." Bodaibo, 2017;
- Database of Geological Sampling of the Trenches and Drill Holes of the Krasnoe Deposit as at the Beginning of 17.03.2018 in mdb;
- Process Schedule for the Krasny Ore Processing Plant Designing, OJSC Irgiredmet Laboratories, 2017;
- Research and Development Study Report "Vostochnoye Mineral Occurrence Ore Substantial Composition and Metallurgical Properties", Irkutsk, 2018;



- Technical Report "Geomechanical Substantiation of the Optimum Stability Parameters of the Pit Walls and Benches at Open Pit Development of the Krasnoe Deposit Located in the Bodaibo Area of the Irkutsk Region", Moscow, 2018;
- Triangulation Surface Model of the Krasnoe Deposit in dxf Format;
- Drill Hole and Trench Documentation Logs in jpg Format; and,
- Open Source Information.

2.5 UNITS OF MEASUREMENT

Quantities are generally stated in SI units, as utilised by international mining companies. These include metric tonnes (t), thousand metric tonnes (kt) million metric tonnes (Mt), kilograms (kg) and grammes (g) for weight; kilometres (km), metres (m), centimetres (cm) and millimetres (mm) for distance; cubic metres (m^3), thousand cubic metres (km^3), litres (l), millilitres (ml) and cubic centimetres (cm^3) for volume, square kilometres (km^2) and hectares (ha) for area, weight percent (%) for base metal grades, grammes per metric tonne (g/t) for gold and silver grades and tonnes per cubic metres (t/m^3) for density. Precious metal grades may also be reported in parts per billion (ppb) or parts per million (ppm) and their quantities may also be reported in troy ounces (ounces, oz), a common practice in the mining industry. All currency amounts are stated either in US dollars (US\$) or Russian roubles (RUB).

A glossary and a list of abbreviations are provided in Section 15.0.

3.0 GENERAL BACKGROUND INFORMATION

3.1 RUSSIAN GOLD INDUSTRY REGULATORY SYSTEM

The State is the beneficial owner of all mineral resources in Russia and licenses their exploration and exploitation to qualifying organisations in accordance with the regulatory system. The industry is governed principally through the following laws:

- The Constitution of the Russian Federation;
- The Civil Code of the Russian Federation;
- The Land Code of the Russian Federation;
- The Tax Code of the Russian Federation;
- Federal Law No. 41-FZ "On Precious Metals and Gems" dated 26th March, 1998 (as amended) (the "Precious Metals Law");
- The Law of the Russian Federation No. 2395-1 "On Subsoil" dated 21st February, 1992 (as amended) (the "Subsoil Law"); and,
- Federal Law No. 173-FZ "On Currency Regulation and Currency Control" dated 10th December, 2003 (as amended) (the "Currency Control Law").

3.1.1 Subsoil Licences

The use of the subsoil for geological research, exploration and mineral production purposes is primarily established under the Subsoil and Precious Metals Laws. These permit subsoil allotments to be licensed to interested and qualifying parties for geological exploration and assessment or production of natural resources, or through a combined licence for the exploration, assessment and production stages of a project. Since the introduction of amendments to the Subsoil Law in January, 2000, the maximum term of an exploration licence is 5 years, but a production (mining) licence may be issued for 25 years, or the useful life of the mineral reserves. It is also usual for the licence recipient to be granted the use of the land covered by the respective exploration or mining permit.

Under amendments of the Subsoil Law in August, 2004, licences are no longer issued by the federal or regional authorities, but are awarded through a tendering or auction system conducted by the Federal Agency for Subsoil Use. Winning bids are expected to be the most technically competent, financially attractive and environmentally sound proposals that meet the published tender terms and conditions. Licences for geological exploration may also be issued without the holding of an auction through decisions made by the federal authorities.

Licences are transferable only under certain circumstances in Russia, which include corporate reorganisations or mergers involving the licence-holder, transfer from a parent company to a subsidiary or vice-versa, or between subsidiaries of the same parent company, or the transfer of title to a newly-established legal entity in which the licence-holder has at least a 50% ownership interest, providing that the new entity is equipped and authorised for such activities.



A licence holder has the right to develop and use (including selling) resources extracted from a licence area, though the Russian Federation retains ownership of all subsoil resources at all times. The licences generally require the holder to make certain commitments, including:

- Extracting agreed annual target amounts of reserves;
- Complying with specified requirements including the use of technologies;
- Conducting agreed mining and other exploratory and development activities;
- Protecting the environment in the licence/s from damage;
- Providing geological information and data to the relevant authorities;
- Submitting on a regular basis formal progress reports to regional authorities; and,
- Making all obligatory payments when due.

Government authorities may undertake periodic reviews from time to time, to ensure the compliance of the licence-holder with the terms of the licence, the Subsoil Law and other applicable legislation. The penalties for contravening the regulations can be severe.

3.1.2 System of Payments

From 1st January 2002, the earlier system of payments for the use of the subsoil was modified by merging royalties, excise taxes and mineral restoration payments into a single tax called the mineral production tax. In addition, the following types of payment obligations were established:

- One-time payments as specified in a licence;
- Regular payments for subsoil use, such as rent payments for the right to conduct prospecting/appraising and exploration work;
- Payments to the State for geological subsoil information;
- Fees to participate in tenders and auctions;
- Fees for the issuance of licences; and,
- Other payments and fees set forth by the legislation of the Russian Federation on taxes and duties.

3.1.3 Precious Metals Regulation

The extraction, production and refining processes of precious metals are governed by the specific regulations of the Precious Metals Law.

3.1.4 Other Regulations

The exploration and production of mineral deposits are also subject to additional appropriate industrial and technological usage, environmental and health and safety regulations. Such legislation typically covers the handling and use of hazardous substances, explosives, waste materials, water use, construction of buildings and installations, and medical and training facilities.



3.2 RUSSIAN SYSTEM OF RESOURCE/RESERVE CLASSIFICATION

All mineral resources and reserves in Russia are formally classified according to an established system developed and administered by the Russian State Commission for Mineral Reserves (Gosudarstvennaya Komissia po Zapasam - GKZ). The GKZ applies strict control over the estimation and reporting of mineral reserves and utilises a prescribed protocol for their calculation that is usually based upon standard sectional methods.

Preliminary mineral reserve estimates, as completed by the licence holder, are submitted to the GKZ for approval in the form of a TEO, which justifies the cut-off grade criteria (temporary or permanent ones, depending on the degree of exploration). The approved cut-off criteria are used to generate the mineral reserves that are submitted to the GKZ for approval.

In many respects the system is similar to western classification systems, essentially measuring the level of confidence in quantity and quality information that is used to define the mineral resources or reserves. One of the systems commonly adhered to in Western countries is the JORC Code (the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves prepared by the Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia), which was released in 1989 and last updated in 2012.

In Micon's experience, the level of detail required to support a submission of mineral reserves to the GKZ is more systematic and comprehensive than is required under the JORC Code in almost all respects. The data submitted for approval to the GKZ are subject to rigorous review, including consideration of the geological complexity of the deposit, the distribution and complexity of the ore mineralogy, the degree of knowledge obtained from exploration activities such as the density of drilling, the extent of any underground development, the computation of resource estimates, cut-off grades, as well as numerous other economic, technological, mining and metallurgical characteristics.

The JORC Code and GKZ reserve reporting systems share a very important fundamental principle, which is that the economic viability of a reserve base must be demonstrated. For this reason, both systems utilise a similar set of geological, economical and technical factors within a sequential classification scheme which reflects the increasing degree of knowledge and confidence in the integrity of the reserves. Figure 3.1 illustrates Micon's understanding of the correlation between the two systems.

Using the GKZ system, mineral resources and reserves are recognised as either prognosticated resources, which include those resources that are of an inferred, potential or speculative nature, or mineral reserves, which can be effectively subdivided into those that demonstrate economic significance (balance mineral reserves) and those with only potential economic significance (off-balance mineral reserves).

Balance mineral reserves comprise that part of the mineralisation that has been demonstrated to a sufficient level of confidence to contain a metal or commodity whose economic viability has been approved by the GKZ. They may not however, include adjustment for technical and economic matters such as mining dilution and losses.





Figure 3.1: Comparison of GKZ and JORC Code Resource/Reserve Classification

The JORC (2012) classification term "mineral resources" approximately corresponds to the term "geological reserves" from the Russian GKZ system.

The GKZ categories for balance mineral reserves (A, B, C_1 and C_2) can be correlated by definition with mineral resources as defined under the JORC Code. Categories A and B are generally reported as Measured resources, whilst category C_1 generally constitutes Indicated mineral resources, with C_2 category as Inferred mineral resources. Under the GKZ system, C_2 category mineral reserves can be included in mine-planning studies, but it should be noted that under the terms and conditions of reporting public documents to Western standards, Inferred mineral resources cannot be included as 'ore reserves' or used for formal valuation purposes.

By contrast, the classification of prognosticated resources $(P_1, P_2, and P_3)$ refers to mineral resources that range from Inferred mineral resources, to potential and speculative resources. These are not generally recognised as quantifiable in Western terms and can only be regarded as indicators of the mineral potential of an area or region. Such resources may be subsequently upgraded to recognised categories of reserves and resources by successful exploration work, or excluded if the work is unsuccessful.



3.3 MICON APPROACH TO RESOURCE/RESERVE CLASSIFICATION

The classification of the mineral resources and ore reserves contained within this Report has been completed in accordance with the guidelines of the JORC Code (2012). Similar to the system followed by the GKZ, the JORC Code relies upon an increased level of geological knowledge and the application of mining and other modifying factors to elevate those categories of resources to reserves as summarised in Figure 3.2.

The JORC Code is similar in most respects to those systems adopted in North America and in Europe, in particular the system of resource definition established by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) and recognised under the guidelines of Canadian National Instrument (NI) 43-101.





3.3.1 Mineral Resources

The relevant sections of the JORC Code (2012) are provided for reference as follows:

- 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.
- 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 drill holes.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to Ore Reserves. It is



reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

• 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 drill holes, 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.

• 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 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 drill holes, 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 an Indicated or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

3.3.2 Ore Reserves

The relevant sections of the JORC Code are:

• An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level (as appropriate) and include application of Modifying Factors. Such studies demonstrate that, at the time of reporting extraction could reasonably be justified.

The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

- A 'Probable Ore Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve.
- A 'Proved Ore Reserve' is the economically mineable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors.

4.0 **PROPERTY DESCRIPTION**

4.1 **PROPERTY DESCRIPTION AND LOCATION**

The project licence area is located in the upper reaches of the right bank of the Bodaibo River. The area is economically well developed and is located 70 km to 80 km from the hardrock deposits of Sukhoi Log, Verninskoye and Golets Vysochaishy. Gold mining from different types of placers occurs in the vicinity of the deposit. The property is located within the jurisdiction of the Artemovsky settlement in the Bodaibo Area of the Irkutsk Region.

The deposit licence area location on the Irkutsk Region map is presented in Figure 4.1.



Figure 4.1: Krasnoe Deposit Location

The deposit has never been developed, however it has undergone several stages of exploration and it is planned to put the reserves on the State Balance this year.

4.2 **OWNERSHIP AND TITLE**

LLC Krasny is the licence holder of IRK 02804 BR which encompasses the right to use the sub-surface for geological exploration and production of hardrock gold within the Krasny site. LLC Krasny was registered in February 2010. LLC Krasny is owned by PJSC GV Gold (51% shares) and a Swedish company Kopy Goldfields AB (49% shares).

Licence IRK 02804 BR was registered by the state authorities on 18th July 2011 and is valid until 25th April 2035. For the geological surveying period, the licence site was given a status of geological lease with no depth restriction. For the exploration period a status of mining lease within the preliminary boundaries was granted and for the production period the status of mining lease was granted with the depth restricted by the bottom boundary of the reserve estimate. The licence site area is 31.05 km² and the geographical coordinates of the apices of the site are given in Table 4.1.

Aney	Northern Latitude			Eastern Longitude		
Арех	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
1	58	19	17	114	42	47
2	58	19	26	114	49	31
3	58	18	25	114	49	33
4	58	18	13	114	51	45
5	58	17	13	114	50	33
6	58	16	55	114	50	33
7	58	17	16	114	42	54

TADIE 4.1. ADICES OF THE LICENCE ATEA	Table 4.1	l: Apices	of the]	Licence Area
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4.3 INFRASTRUCTURE

Artemovsky, the nearest settlement, is located 15 km to the southwest of the site and the regional centre of Bodaibo is situated 75 km to the southeast. The Bodaibo-Kropotkin-Perevoz road runs through the site. The site is covered with a network of gravel and dirt roads, currently used by the placer gold miners. In winter, the roads within the site require snow clearing. Cargo is delivered to the Krasnoe site Bodaibo by all-terrain trucks. The bulk of the cargo is delivered to the base from the nearest railway station of Taksimo (Baikal Amur Mainline) along the road for a distance of 220 km. During the navigation period it is possible to deliver cargo by water along the Lena and Vitim Rivers from the Osetrovo (Ust Kut) river port to Bodaibo (750 km). Bodaibo has an airport capable of handling medium capacity cargo and passenger airplanes from the cities of Irkutsk (1,200 km) Bratsk, Mirnyi, Kirensk and Ust Kut.

The power supply in the area is provided by the Mamakan Hydroelectric Power Station along the LEP-110 kV and the LEP-220 kV Taksimo-Bodaibo power lines. The LEP-110 kV and LEP-36 kV power lines run next to the site area.

4.4 PHYSIOGRAPHY AND CLIMATE

Located within the Patomsk highland the deposit area is mountainous with elevations of between 800 m to 1,200 m, heavily dissected by rivers within a generally rounded topography. Locally the elevations range between 500 m and 600 m. The slopes average between 10° to 15° , up to a maximum of 30° , and are covered with scree.

The bed rock exposure in the territory is poor, outcrops are locally distributed. Watershed areas and slope bases are capped with glacial deposits several metres thick. The river valleys are wide and often boggy. The majority of the valleys are complicated with technogenic deposits from previous placer mining. Technogenic dumps have thicknesses of tens of metres which makes exploration difficult.

The project area is crossed by a network of rivers and streams, which almost entirely freeze over in winter. The Bodaibo River and its tributaries, the Krasny, Teply and Mokry Streams, are the main waterways in the area. The smaller valleys often host seasonal short creeks. The majority of the rainfall and water discharge from snow melt occurs in May, June and August. Permafrost is widespread along the slopes and watersheds, especially on northern slopes. Thawed zones are found under the river beds. By the end of the summer, the seasonal thawing depth is up to 2 m on the southern slopes and 1 m on northern slopes.

The climate in the area is extreme continental (long cold winters and short hot summers) with temperatures ranging between 54° C in January to $+34^{\circ}$ C in July; the average annual temperature is 6° C. The average annual amount of precipitation is 350 mm, the majority falling within the summer. Snowfall begins in the middle or the end of September and thaws out completely by the end of June. The thickness of the snow cover in the valleys reaches between 2 m to 4 m.

Fauna and flora are typically Siberian, taiga type. Forest is practically absent within the project area, due to the removal of trees associated with placer mining operations. In the valleys the vegetation consists of dense willow shrubs, young aspen, birch, spruce and larch trees. The higher slope and watershed areas are covered with thickets of cedar elfin wood.

4.5 LOCAL LABOUR RESOURCES

The Krasnoe deposit area is economically well developed near to the hardrock and placer deposits; however the surrounding area is sparsely populated. The nearest settlements in the area are Artemovsky (population 1,300), Kropotkin (population 1,450) and Marakan (population 400). The bulk of the local population is employed by the Golets Vysochaishy GOK and other enterprises (Verninskoye, Nevskoye, placer deposits) at different stages of exploration and development. In addition to the local population Bodaibo may also be a source of manpower.



5.0 GEOLOGY AND MINERALISATION

5.1 GEOLOGY

The project licence area is located within the northern limb of the Bodaibo syncline, one of the main structures in the central part of the Bodaibo synclinorium. The Bodaibo syncline is composed of sedimentary and metamorphic rocks from the Bodaibo Series of the Upper Riphean and is capped with loose Quaternary deposits.

Lithologically the Bodaibo Series can be divided into two sections; the lower section is composed of the Aunakitskaya and Vachskaya Suites, consisting of monomictic quartz sandstones and carbonaceous shale deposits. The upper section includes the Anangrskaya, Dogaldynskaya and Iligirskaya Suites and is characterised by sandy and terrigenouscarbonate deposits. Within the Krasnoe deposit are rocks from the Aunakitskaya, Vachskaya and Anangrskaya Suites outcropping underneath the Quaternary deposits.

Within the deposit area the Quaternary deposits consist of moraine and glacial deposits with thicknesses ranging from 4 m to 20 m.

Intrusive magmatic rocks have not been found within the deposit area, though they are widespread on the periphery of the Bodaibo zone and are predominantly represented by granitoids.

The deposits within the Bodaibo structural-facies zone have been extensively subjected to progressive zonal regional metamorphism with signs of contact metamorphism and regressive metamorphism in the vicinity of the granitoids within the Konkudero-Mamakansky Complex. Metamorphic faulting is also well developed within the deposit area.

Hydrothermal and metasomatic alteration, resulting in the recrystallisation of rock cement, redistribution of carbonaceous substances, intensive iron-magnesium-calcium carbonatisation and sulphidisation are typical for Riphean formations. These transformations are mainly seen in anticlinal structures and sites of increased fracturing.

Folds strike sub-latitudinally, which is generally typical for the Bodaibo River basin where the project licence area is located. Anticlinal folds are often asymmetric with steeper southern limbs. Synclines are usually smoother, with wide hinges. Cleavage and schistosity, small folds, boudinage, co-folded longitudinal faults and fracturing all occur. The network of abyssal faults plays a significant role in the structural formation of the area; multiple activation of these has resulted in the complication of earlier formed structures and the formation of new structures.

The project licence area is situated within the influence zone of the Verkhne-Bodaibinsky interblock abyssal fault, expressed on the surface in the linear folding of the regional shear zone. Intense, multi-scale folding complicated with numerous disjunctive faults, zones of micro-folding, boudinage and tectonic melange is typical for the area. The deposit site hosts the Verkhne-Bodaibinskaya anticline (in the north) and the Rudnaya anticline (in the south) with the Lozhkovaya syncline located between them.

Faulting is represented by sub-latitudinal upthrows and downthrows, submeridional downthrow-shifts and zones of increased fracturing and shearing. Sub-latitudinal faults



concentrating in the flat limb of the Rudnaya anticline and the central parts of the Verkhne-Bodaibinskaya anticline are the most widespread and these areas represent a part of the shearing zone. The fault lengths range from between 10 m to 100 m to 4 km to 5 km, occasionally more, with an en echelon arrangement. Tectonic wedges are usually represented with ground-in fractures or fracture zones filled with quartz, quartz-sulphide veinlets and quartz veins. The orientation of the sub-latitudinal faults conforms with the orientation of the main structures; they are usually steeply dipping, at angles of 60° to 80°. The amplitude of displacement along the tectonic wedges is small, approximately ranging from a few centimetres to a few metres. Submeridional downthrows-shifts occur as series of contiguous steeply dipping fractures with the planes and slickensides. The displacement amplitude is insignificant, from 0.5 m to 1.0 m, occasionally up to 5 m. The length of these faults does not exceed a few hundred metres.

The geological map of deposit area is presented in Figure 5.1.



Figure 5.1: Geological Map of the Deposit Area

5.1.1 Krasnoe Deposit

The Krasnoe gold deposit is located in the southern area of the cognominal ore field, in the upper reaches of the Teply and Krasny Streams, right tributaries of the Bodaibo River. The development area is composed of Upper Riphean carbonaceous shales, sericite-quartz shales with rare interlayers of sericite-quartz sandstones from the Vachskaya Suite (R_3vc). These are underlain by interstratified quartz sandstones and carbonaceous shales from the Aunakitskaya Suite (R_3au) and are capped by interstratified polymictic feldspar-quartz sandstones and carbonaceous phyllites from the Anangrskaya Suite (R_3an).

A geological map of the Krasnoe deposit is displayed in Figure 5.2 and a geological section across the central part of the deposit (exploration profile 42) is displayed in Figure 5.3.





Figure 5.2: Geological Map of the Krasnoe Deposit





The deposit occurs in the rocks of the upper sub-suite of the Aunakitskaya Suite within the Upper Riphean and represents a zone of vein-veinlet-disseminated quartz-sulphide mineralisation, confined to the axial part of the Rudnaya anticline, the main structure of the deposit. The anticline represents an overturned fold striking ESE, both limbs of which are



dipping to the NNE, 85° for the northern limb and 70° to 75° for the southern. The limbs are composed of interstratified sandstones and phyllites with thicknesses of up to 60 m. The fold is cut by large scale faults.

In the plan view, the mineralised zone has a band-like shape, in section a saddle-like and lens-like shape. The thickness of the mineralised zone ranges between 20m to 80 m on the flanks to 160 m to 200 m in the central area. In the central area of the deposit, between exploration profiles 35 and 65, the mineralised zone has a two level saddle-like structure in section view, associated with the location of the Upper and Lower ore zones. The contours of the ore bodies have no distinct boundaries and are determined only by sampling. To the east of exploration profile 65 and to the west of exploration profile 35, the mineralised zone just has one level structure, the Lower ore zone. The Upper ore zone has a length of around 1,200 m and a vertical span of mineralisation around 250 m. The Lower ore zone has a strike length of around 2,500 m and a vertical span of mineralisation of up to 400 m.

Based on the exploration drilling results, the Upper zone is contoured both along the strike and down the dip. Contouring of the Lower zone both at the flanks and down the dip will require additional drilling.

The tectonic alteration of the rocks in the area is represented with multi-scale, predominantly small scale folding, zones of shearing and cataclasis of rocks, and hydrothermal-metasomatic alteration, specifically silicification, carbonatisation and sulphidisation, generally leading to the formation of metasomatites close to the beresitic type.

An oxidation zone occurs at the deposit; the lower boundary of the oxide ores are located around 20 m to 100 m from the surface.

5.1.2 Vostochnoye Mineral Occurrence

The Vostochnoye mineral occurrence is located 3 km to the northeast of the Krasnoe deposit (Figure 5.4).



Figure 5.4: Relative Locations of the Krasnoe Deposit and the Vostochnoye Mineral Occurrence



A geological map of the mineral occurrence is presented in Figure 5.5.



Figure 5.5: Relative Locations of the Krasnoe Deposit and the Vostochnoye Mineral Occurrence

The mineral occurrence is located in the hinge part of the 4th level linear anticline oriented in a WNW direction, which complicates the Verkhne-Bodaibinskaya anticline. The fold hosting the mineralisation has a two-sided dipping apex. The mineralisation is confined to the meta-sedimentary rocks of the middle and upper members of the Aunakitskaya Suite. The rocks are relatively uniform, rich carbonaceous grey to dark grey shales, siltstone-shales, interstratified shales, meta-siltstones and meta-sandstones. The rocks are metasomatically altered and with ankeritisation and punctuated limonitisation (in the oxidation zone). The gold bearing zone typically contains layers of boudinaged sandstone with the boudins edged by aggregates of pyrite meta-crystals, which in turn are edged with quartz. The voids left after weathering of pyrite often host fine particles of visible gold.

The mineralisation is localised in the northern and southern limbs of the anticline, Upper ore zone, and in its core the Lower ore zone. The northern limb dips to the NNE at angles between 35° to 50° , the southern between 55° to 85° . The ore zones have a consistent sheet-like shape with thicknesses up to 7 m to 8 m.

The mineralised zones are open both along the strike and down the dip. In order to determine the scale of the mineral occurrence, additional drilling is required.

5.2 MINERALISATION

5.2.1 Krasnoe Deposit

The Krasnoe deposit mineralisation zone typically consists of lens-like and folded quartzsulphide veinlets (from 2 to 3 to 5 to 7 veins per metre), scattered disseminated pyrite mineralisation and intense tectonic, hydrothermal and metasomatic alteration.

Two types of the gold mineralisation are identified within the Krasnoe ore field: veinletdisseminated quartz-sulphides, lithologically/structurally controlled and quartz veins with limited development. As a rule, these two types of gold mineralisation are spatially concurrent.

Quartz-sulphide mineralisation forms veinlet-disseminated zones within metamorphogenic zones of sulphide mineralisation in the structurally complicated areas. The internal structure of the zones is complex and consists of a dense network of hetero-oriented veinlets, lenses and nests of quartz occurring together with scattered dissemination of sulphides occurring as more than 1% to 3% in schistose and fractured host rocks.

Sulphide mineralisation is typical over the entire ore field with a wide distribution, mainly represented by pyrite. Pyrrhotite, chalcopyrite, sphalerite, galena occur to a lesser degree. Pyrite occurs in the following morphological varieties:

- 1. Powdered pyrite (pre-ore).
- 2. Poorly expressed inclusions.
- 3. Porphyroblastic cubic pyrite.
- 4. Lens-like pyrite.
- 5. Pyrite in quartz veinlets.

The gold grades in the different pyrite varieties vary. The lens-like, aggregate cubic and cubic porphyroblastic pyrite varieties are considered to contain the most gold.

The pyrite contained within quartz veinlets is the most widespread within the deposit, but is considered to be low grade, from 0.02 g/t Au to 0.8 g/t Au. The thickness of the quartz-pyritic veinlets ranges from fractions of a millimetre to 2 cm and they occur in the host rocks with densities ranging from 1 veinlet per 1 m² to 5 to 6 veinlets per 1 m². The quartz in the veinlets is white, semi-transparent and amorphous.

Quartz mineralisation is localised in veins and veinlets which usually have lens-like shapes, thicknesses ranging from 0.2 cm to 0.5 m and lengths ranging from a few centimetres to several metres. Quartz vein fields and zones are confined to the southern limb of the Rudnaya anticline. They are located within the sub-latitudinal zones (strips) of scattered quartz and quartz-sulphide mineralisation. The distribution of quartz vein material in these strips is uneven and intervals with elevated concentrations alternate with barren areas. Only the areas which have undergone additional hydrothermal alteration are considered to be of interest. The veinlets are divided into two types, tabular sub-latitudinal veinlets with inconsistent dimensions and strike, and sub-horizontal and sub-meridional veinlets with inconsistent sizes.
Gold predominantly occurs in joints with pyrite or in the form of inclusions in pyrite. At the same time the highest gold-bearing variety of pyrite is the "porous" variety which also hosts inclusions of chalcopyrite, galena, sphalerite, fahl ore and pyrrhotite. Inclusions of native gold in pyrite can occur with joints with galena, chalcopyrite or sphalerite inclusions. The size of the gold grains ranges from 1 μ m to 150 μ m, with an average size of 30 μ m to 70 μ m. The surfaces of gold grains forming joints with pyrite are smooth, the edges may slightly "branch"; skeletal gold crystals are rare.

In addition, free gold is also registered, which is characterised by smooth surfaces and sizes of up to $200 \ \mu m$.

5.2.2 Vostochnoye Mineral Occurrence

The main ore mineral of the gold-quartz low-sulphide mineralisation within the Vostochnoye mineral occurrence is pyrite; iron hydroxides occur as well. Gold is predominantly free and in joints with pyrite and quartz. The Vostochnoye mineral occurrence ore is basically similar to the Krasnoe deposit ore.



6.0 **DEPOSIT TYPE**

The geochemical signature of the ore field and the Krasnoe deposit is reflected in the secondary dispersion haloes of gold and low-contrast haloes of silver, arsenic, copper, lead and zinc.

In mineralogical terms, the Krasnoe deposit is described as a gold-quartz low-sulphide type of formation.

7.0 EXPLORATION

A systematic geological survey of the territory began in 1937. From 1937 to 1958, the 1:200000 and 1:100000 scale geological surveys were completed, and specialised geological and geomorphological studies were performed. The 1:200000 and 1:100000 scale geological maps were produced based on these results. Further in the late 1950's to early 1960's a region of the Bodaibo synclinorium was geologically surveyed on 1:50000 and 1:25000 scales. Geological surveying was accompanied by general prospecting. In 1968, the work on drawing up the 1:50000 scale geological maps was completed. Considering the structural setting analysis and the criteria and signs of gold mineralisation, the area was sectioned into prospective and priority areas for more detailed studies.

From 1971 to 1974, the East Siberian Research and Development Institute of Geology, Geophysics and Mineral Stock (VostSibNIIGGiMS) analysed localised patterns of hard-rock gold in the central part of the Lena gold field based on previous studies and drafted a 1:100000 scale map of gold mineralisation for the Bodaibo Area supported by forecasts and outlook assessments for hard-rock gold sites.

From 1978 to 1979 the Krasnoe veinlet-disseminated morphological mineral deposit was identified within the cognominal ore field during the course of identification of the potentially ore-bearing areas within the complex syncline in the Bodaibo territory.

During 1981 to 1983, exploration was completed within the Artemovsky ore cluster. Prospecting traverses, lithogeochemical and quartz surveys, trenches and core drill holes were completed within the Krasnoe ore field. As a result, three quartz-sulphide zones were identified and traced within the mineralisation area. Two ore bodies were identified in the No. 1 quartz-sulphide zone. The first ore body was classified as C_2 category gold reserves, estimated at 1 t. The second ore body as P_1 category prognostic resources, estimated at 1.4 t. Within zone No. 3, at depths of between 150 m to 300 m, two "blind" ore bodies with the strike lengths of up to 900 m, thicknesses from 6 m to 12 m and average grades of between 2.0 g/t Au to 2.6 g/t Au were identified. The total P_1 category prognostic resource of the mineral occurrence was 19.3 t of gold at an average grade of 2.57 g/t Au. The estimate was completed using the following parameters: cut-off grade 1 g/t Au; minimum commercial block grade 1.5 g/t Au and minimum thickness of ore bodies set at 3 m. A negative assessment was reported for the remaining area.

From 2004 to 2005 exploration continued within the Krasnoe ore field. As a result, the Verkhne-Bodaibinskaya anticline structure, especially within its periclinal closure, was detailed and the control factors of the gold mineralisation were described. Eight gold-bearing zones were identified within the outlined zones of intensive sulphide mineralisation and silicification in the project area within the Verkhne-Bodaibinskaya anticline.

From 2010 to 2012, the Krasnoe mineral occurrence was investigated by prospecting and exploration operations. The work included surface mine working drifts and core drilling. Based on these results, reserve calculations and prognostic resource estimates for three cut-off grades (0.7 g/t Au, 1.0 g/t Au and 1.3 g/t Au) were produced. The C₂ category reserves were declared to be 34,032.58 kg of gold with an average grade of 2.28 g/t Au. Prognostic resources for the P₁ category totalled 31,062.68 kg of gold at an average grade of 2.55 g/t Au and P₂ category resources were 26,299.59 kg of gold at an average grade of 3.04 g/t Au.

In 2014 exploration recommenced and has been ongoing within the Krasnoe deposit and within the recently discovered Vostochnoye mineral occurrence. The drill holes drilled since 2015 have traced the mineralisation exposed within the 2013 trenches along the dip and strike.

Between 2011 and 2017, 67,973 m of exploration and prospecting drilling (333 drill holes) and around 10,000 m of trenching were completed. Most of the exploration drill holes were drilled between 2014 and 2017 (285 drill holes totalling 52,676 m).



8.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

All surface mine workings and drill hole cores were sampled according to established Russian standards.

8.1 CHANNEL SAMPLING

Channel samples were collected using machine/manual methods taking into account the lithology. Channel sections of 10 cm by 5 cm and 3 cm by 5 cm were excavated. The entire length of a trench was sampled. After the channel sample material was collected, the channel was cleaned with a brush or a broom and the sweepings were added to the sample material. The following equipment was used for channel sampling: angle grinder, electric hammer, diamond discs and rock chisels. The samples were packaged into double bags with a dense polyethylene inside layer.

The determination of the optimum channel section was carried out via test studies. In addition to the sample collected from the main channel with a section of 3 cm by 5 cm, a sample from the adjacent twin channel with the section of 5 cm by 10 cm from the same interval was collected. This provided a total of 17 adjacent twin samples collected. Comparative analysis of the results showed a good convergence, and the researchers came to the conclusion that the 3 cm by 5 cm sections were representative and could be used as the primary size section.

For sample processing quality control each batch of samples was supplemented with blank samples; previously samples of Chamotte were used as the blank sample material. Currently barren material from the prospecting and estimation drill holes analysed in the analytical laboratory of LLC Stewart Geochemical and Assay, (Moscow) is used. These samples have been analysed using the fire assay method with an atomic absorption finish and have a gold grade of <0.01 g/t Au. Operational internal control was undertaken using standard samples which were included into each sample batch sent for analysis to the main laboratory.

8.2 CORE SAMPLING

Core drill holes were sampled after photographic documentation and detailed geological logging. Samples were collected from the bed rock intervals of the drill core, the capping loose alluvial-deluvial deposits were not sampled. The sampling intervals were determined taking into account the geological boundaries and the recovery of the core during the drilling runs. Intervals with a core recovery difference of more than 5% to 10% were sampled separately.

Within the mineralised zone, the average length of sample intervals was 1 m, in the host rocks it was 2 m. In order to improve the representativeness of the sampling in 2011, the whole core, with the exception of specimens collected for mineralogical and petrographical study, were collected into the sample. Later the absence of coarse gold in the ores of the site was proved, and starting from 2012 half of the core was sampled.

Core splitting was carried out on site using a core saw with diamond discs, diameter of 350 mm. Samples were crushed to the size of 7 cm to 10 cm, and were packed into double bags with a polyethylene internal layer and external layer of jute. The average sample weight collected from the ore zone intervals was 4.0 kg, from the host rocks intervals it was 8.0 kg.



Blank samples for sample processing quality control were added to each batch of samples. Operational internal control was also undertaken using standard samples which were included into each sample batch sent for analysis to the main laboratory. On average every 45th sample was a standard sample.

8.3 SAMPLE PROCESSING AND ANALYSIS

The sample preparation was carried out according to the sample processing flowsheets shown in Figures 8.1 and 8.2.



Figure 8.1: Core Sample Processing Flowsheet





Figure 8.2: Channel Sample Processing Flowsheet

After registration, the initial sample was placed into an electric furnace. After drying, the sample was weighed and subjected to two-stage crushing (jaw crusher, roll crusher).

Then a weighed sample of 1 kg was collected from the -1 mm class crushed sample material using the quartering method. Before the weighed sample was collected the sample material was thoroughly mixed. Subsequently this material was ground to pass -0.074 mm, and a weighed sample of 200 g was collected from the ground material for fire assay.

Every 50th sample, sent for analysis was a standard sample. LLC Krasny uses gold-bearing ore material acquired from OJSC Irgiredmet (Irkutsk) as the standard sample. Two types of standard samples were used during the batch processing: ZSR AuBL-IATs-09 grade of <0.005 g/t Au and ZSR IATs-10-11 grade of 0.5 g/t Au ± 0.03 g/t Au.

Samples were packed into paper envelopes and, in accordance with the register, placed into polypropylene bags, tied and sealed. The residual sample material weighing around 750 g to 800 g was packed into paper envelopes, placed in polypropylene bags in accordance with the register, tied, labelled with the register number and sent to storage. These duplicate samples are stored, and when necessary, weighed samples for check analyses and other types of analyses are collected from them.

Before 2014, the chemical analyses were completed by the LLC Stewart Geochemical and Assay Laboratory, (Moscow) by the fire assay method with a detection limit of 0.01 g/t Au. Currently the samples are assayed in the PJSC GV Gold laboratory by 3rd category accuracy quantitative fire assay, accurate within the range of 0.1 g/t Au to 100 g/t Au. The external control is carried out using the fire assay method in the CJSC SGS Vostok Limited laboratory in Chita. In total, the database contains fire assays of 34,302 core samples, and 19,333 channel samples collected from trenches, including the check channel samples.

8.4 QUALITY ASSURANCE AND QUALITY CONTROL

8.4.1 Introduction

The assay quality control procedures followed the prescribed Russian Industry Standard #41-08-272-04 regulations. This standard requires that not less than 5% of the pulp duplicates be re-analysed at the primary laboratory (Internal QC) and then these are required to be sent to a reputable referee laboratory that is authorised to act as an independent auditor (External QC). The batches for internal and referee quality control were produced by dividing the assay population into grade classes. Each class consisted of not less than 30 samples.

Apart from carrying out Internal and External control, blind certified standards and blank samples have been inserted into sample batches. Table 8.1 provides a quality control sample summary from 2016 to 2017.

Micon examined and analysed the results of the analytical quality control operations conducted by LLC Krasny from the 2016 to 2017 exploration programme. The results of the check analyses were compared against the primary assays in order to confirm the reliability of the data used for the mineral resource calculations.

Sample Type	Drill Holes	Number of Samples	Original Samples (%)
Internal Duplicates	46	1,183	5.19
External Duplicates	46	1,139	5.00
Blanks	113	778	3.41
Standards	84	339	1.49
Original Samples	114	22,799	100

 Table 8.1: Quality Control Sample Summary 2016 - 2017

8.4.2 Internal Duplicates

Summary statistics for the internal duplicates for the 2016 to 2017 exploration programme are presented in Table 8.2.

Table 8.2:	Internal	Duplicates	- Summary	Statistics
		2 apricates	Summing	Sectores

Element	Year	Parameters	Original	Duplicate
Gold (g/t Au) 2016-2017	Mean	1.26	1.21	
	2016 2017	Standard Deviation	2.30	2.05
	2010-2017	Correlation Coefficient	0.790	
		No. of Samples	1,183	

The correlation coefficient for paired assay results is 0.79 this means the sample values are similar. However, 51% of the analyses exhibit an absolute error of more than 10%, which shows weak reproducibility of assay results.



A correlation plot was generated to assess the relationship between the original and duplicate assay results (Figure 8.3). The correlation plot shows three correlation lines; the central blue line is the 1:1 line and the red lines denote $\pm 20\%$ error. The $\pm 20\%$ error limits indicate the acceptable range of analytical error for assays derived from unknown samples.



Figure 8.3: Correlation Plot of Original and Internal Duplicate Gold Assays 2016 - 2017

8.4.3 External Duplicates

Table 8.3 provides a statistical analysis of the PAO Vysochaishy Laboratory data versus the external paired assay data from the SGS Vostok Limited in 2016 and 2017.

Element	Year	External Laboratory	Parameters	Original	Duplicate
Gold (g/t Au) 2016 - 2017		SGS Vostok Limited	Mean	1.20	1.24
	2016 - 2017		Standard Deviation	2.08	2.17
			Correlation Coefficient	0.8	578
			No. of Samples	1,1	39

Table 8.3:	External	Duplicates -	- Summary	Statistics
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The correlation coefficient for paired assay results is 0.878 and the standard deviation is high, indicating low data precision. The sample selection is slightly biased, as only original samples with values over 0.1 g/t Au and at 0.001 g/t Au were sent for check assays. Figure 8.4 displays a scatter plot for sample grades of less than 1 g/t Au.





Figure 8.4: Scatter Plot for External Gold Assay Duplicates 2016-2017

Micon generated an error plot to present the absolute difference of the original assay value from the mean of assay pairs (Figure 8.3). The plot illustrates the analysis accuracy for sample pairs.



Figure 8.5: Error Plot for External Gold Assay Duplicates 2016-2017



The percentages of pairs with analytical errors of less than $\pm 20\%$ and $\pm 10\%$ are displayed in Table 8.4.

Year	External Laboratory	Parameters	%
2016	SGS Vostok	Pairs with Analytical Errors Less than ±20%	64.5
2010	Limited	Pairs with Analytical Errors Less than $\pm 10\%$	40.9

The SGS Vostok Limited 2016-2017 data shows that 35.5% of the analyses exhibit an absolute error of more than 20%.

8.4.4 Blanks

From 2016 to 2017 blank samples were inserted into batches of original samples on the sampling stage and allocated consecutive numbers. Blanks were used to detect possible gold contamination of samples during the sample preparation. Material for the blank samples was taken from 2012 drill hole cores with fire assay/AAS values less than the analysis method lower detection limit of 0.1 g/t Au.

The total number of control blank samples inserted into batches from 2016 to 2017 was 778 and these formed 3.41% of the total number of original samples. The results of the blank gold assays are presented in Figure 8.6.



Figure 8.6: Blank Gold Assay Results

The results for the blank assays are acceptable, from 2016 to 2017 only four samples displayed anomalous values. No systematic sample contamination was detected. Nevertheless, the reasons for the sporadic outliers should be investigated and mitigated as they occur. The possible causes could be sample contamination during preparation, mis-ordering of samples, or gold grades in blank material.

8.4.5 Standards

Certified standards were inserted into sample batches to control precision and accuracy of assay results. A total of 339 standards were inserted from 2016 to 2017, which comprised



1.49% of the total number of original samples. The standard numbers and specifications are displayed in Table 8.5.

Producer	Standard Number	Certified Value	Number of Assay	NumberCertifiedf AssayConfidence		Mean Std. Dev. (Lab)	
		(g/t Au)	Results	Value (P=0.95)	3+	-3	
Rocklabs	SL34	5.893	42	0.057	6.319	4.804	
Rocklabs	SQ28	30.14	145	0.3	31.783	25.929	
Rocklabs	SQ48	30.25	46	0.17	31.401	24.823	
Tulskoe NIGP	GSO10551-2015	0.18	17	0.02	0.386	0.000	
Tulskoe NIGP	GSO8511-2004	4.14	49	0.17	4.946	3.366	
Tulskoe NIGP	GSO8514-2004	1.19	26	0.09	1.720	0.583	
Irgiredmet	SOP51-2013	1.74	2	0.13	1.761	1.719	
Irgiredmet	SOP 3SR IAC-8-12	0.4	12	0.04	0.097	0.609	

Table 8.5: Gold Standards Specifications

Control charts (line graphs) were plotted for each of the standards. For Rocklabs the standards major units on the Y axis are set at 1 interlaboratory (round robin) standard deviation taken from the standard's certificate. The standards certificates of Russian producers do not provide interlaboratory standard deviations. The certified value is plotted as a green line with width equal to its uncertainty (95% confidence interval). The interval is based upon the round robin data provided in CRM certificates and reflects the limits of the absolute error of the certified value.

The global laboratory mean for all assay results (solid blue line) is plotted on the chart excluding outliers that fall outside the laboratory mean plus or minus the 3 times the laboratory's standard deviation (dashed green lines). Dashed red lines are set at ten percent above and below the certified value. The plots are presented in Figures 8.7 to 8.13.



Figure 8.7: Control Chart for Standard SL34





Figure 8.8: Control Chart for Standard SQ28









Figure 8.10: Control Chart for Standard GSO10551-2015









Figure 8.12: Control Chart for Standard GSO8514-2004





The standard results revealed poor analytical accuracy for the PAO Vysochaishy Laboratory. For Rocklabs standards the standard deviation of the primary laboratory results exceeded the round robin standard deviation by two times. At the same time, the grades in the standards are underestimated: after the exclusion of outliers, the negative bias is from 4% to 7%.

The gold grades in standard samples should correspond to the grade range in the original samples. Samples with gold grades > 20 g/t Au comprise merely 0.03% of the total amount of original samples. Therefore, the use of two standards with grades at ~30 g/t Au (SQ28, SQ48) is not justified. The negative bias for these standards should not influence the resource estimate for Krasnoe deposit.

The negative bias for standard SL34 (certified value 5.893 g/t Au) that corresponds to the high-grade range of the original samples is more critical and should be investigated. It is also important to determine the causes of grade underestimation for standard GSO10551-2015 that represents the low-grade sample ranges.

Standards GSO8514-2004 and GSO8511-2004 correspond to Krasnoe sample grades. Analytical data for these standards is characterised by acceptable accuracy and no bias.

8.4.6 Micon Comment

The blank assays proved no contamination was introduced to samples during sample preparation.

The analytical results for standards and data for the internal and external duplicates showed low precision and accuracy for the PAO Vysochaishy Laboratory assays. In addition, all three Rocklabs standards and the Russian GSO-10551-2015 standard analyses displayed negative deviation from the certified value. In order to identify the reasons for bias, the standards should be inserted into check batches and sent for external control. Among the possible causes are, low-quality performance of the primary laboratory and/or gold segregation in the lower parts of the containers due to incorrect standard storage.

Internationally, the best practice insertion rate of blind certified standards is from 4% to 6% of the total amount of samples in a batch, which enables assay quality monitoring. The online analytical processing of standard results allows decision making of accepting or rejecting assays for a certain batch. Processing quarter or half-year results according to the Russian Industry Standard #41-08-272-04 regulations only allows estimation of the general level of laboratory performance within this period.

Attention should be paid to the selection of standards to be inserted into samples batches. Standards should correspond to the grade ranges of original samples, and be characterised by a similar composition.

Micon also advises to change the blank sample material to material that is completely devoid of elements of economic interest. The use of barren core samples from old drill holes as blanks may introduce errors into the quality control data. It is possible that the analysis on old core could have been conducted incorrectly or by an outdated method with low precision or high values of a method with a lower detection limit. This may result in errors inherent in the blank material itself rather than the sample preparation quality.

8.5 BULK DENSITY DETERMINATION

The bulk density of the ores and host rocks for the project area was determined via the method of hydrostatic weighing without preliminary waxing. From 2014 a total of 3,099 specimens characterising all the varieties of rock and ore were collected from the area of the deposit and the mineral occurrence for the bulk density determination. The bulk density ranges from 1.48 t/m³ to 3.53 t/m³. The rocks of the deposit and the mineral occurrence typically have an inconsistent density resulting from the variability of their petrographic and mineral composition, secondary alteration, presence or absence of ore mineralisation, etc. The average value of bulk density equal to 2.68 t/m³ has been adopted for the purpose of the resource and reserve calculations.

9.0 METALLURGICAL TESTWORK STUDIES AND PROPOSED FLOWSHEET

9.1 **OVERVIEW**

The present overview is based on the report titled "Process Schedule for the Krasny Ore Processing Plant Design" developed by OJSC Irgiredmet Laboratories in 2017.

The process regulations are based on results of the pilot-plant testing of a composite ore sample TP-4 (45.2% primary ore, 23.4% transitional ore, and 31.4% oxide ore), together with data obtained from a series of extensive metallurgical studies performed by OJSC Irgiredmet Laboratories from 2012 to 1016.

Based on the results of the conducted metallurgical studies and practice of similar enterprises, to the Krasnoe deposit ore processing, it is recommended to apply a flowsheet with two-stage grinding, gravity concentration, flotation of the gravity tailings, intensive cyanide leaching of the gravity concentrate, carbon-in-leach processing (CIL) of the flotation concentrate plus gravity middlings and solid tailings from intensive cyanide leaching, and conventional elution, electrowinning and smelting for the production of Doré bars. The CIL tailings are subject to cyanide destruction and pumped to the cyanide section of a dedicated Tailings Storage Facility (TSF). The flotation tailings that do not require detoxification will be pumped to a separate section of the TSF.

The water and metal balances in the Process Schedule have been evaluated based on a design head grade of 1.54 g/t Au and a processing throughput of 126.8 t/h, equating to 1 Mt/a. The design gold recovery to Doré bars is **85.51%**.

Silver will be recovered as a by-product with the gold in the Doré bars (40% to 60% Ag recovery). The expected total tailings gold grade is 0.223 g/t Au.

9.2 ORE CHARACTERISTICS

Various process samples have been tested, including Sample No. 1 (primary ore) in 2012 (Table 9.1). A series of extensive metallurgical studies were performed from 2012 to 2016 on four metallurgical samples and six mapping samples, representing all types of ore in the Krasny deposit (i.e. oxide, transitional and primary ore) and including pilot plant testing of a bulk metallurgical sample (TP-4).

All samples are composed of quartz sandstones, siltstones and shales with the oxide samples affected by intense oxidation and leaching. The ore mineralisation is represented by pyrite as disseminated and as veinlets. The estimated gold grades vary from 0.81 g/t Au to 2.5 g/t Au.

Sample ID	Year	Ore Type	Sample Status	Gold Grade (g/t Au)
Sample No. 1	2012	Primary Ore	Laboratory Sample	2.5
TP-1	2015	Oxide Ore	Laboratory Sample	2.02
TP-2	2015	Primary Ore	Laboratory Sample	2.14
TP-3	2016	Oxide Ore	Laboratory Sample	1.74
TP-4	2016	Aggregated Ore	Pilot-Plant Sample	1.92
ТК-1	2016	Primary Ore Mapping Sample		0.94
ТК-2	2016	Aggregated Ore Mapping Sample		1.32
ТК-3	2016	Oxide Ore	Mapping Sample	1.16
ТК-4	2016	Oxide Ore	Mapping Sample	0.81
ТК-5	2016	Aggregated Ore	Mapping Sample	1.18
ТК-6	2016	Aggregated Ore	Mapping Sample	0.97

Table 9.1: List of Ore Samples Studied

An elementary analysis of all the ore types reported the following summarised findings:

- 1. The ore is considered to be a gold-quartz low-sulphide ore type.
- 2. The oxidation number (evaluated on the basis of the iron content) varies from 36% to almost 99% (61% for the TP-4 pilot plant sample).
- 3. Ore minerals are predominately represented by pyrite (3.3% by weight) and iron hydroxides (up to 2.0% by weight).
- 4. Gold grades in the metallurgical samples varied from 1.74 g/t Au to 2.5 g/t Au, with silver assays not exceeding 15.0 g/t Ag.
- 5. The gold particles are predominantly fine with 66.5% -70 μ m, although 33.5% are coarser within the -150+70 μ m fraction.
- 6. The organic carbon content varies from 0.8% to 1.0%.
- 7. Oxide ore is considered to be free-milling with 90.7% of the gold cyanide-leachable. Primary ore is considered refractory with 85% of the gold cyanide-leachable.
- 8. Diagnostic analysis of the pilot plant sample (TP-4) indicated approximately 87.0% of the gold to be cyanide-leachable, with 58.1% to 61.9% as free gold and 24.9% to 28.9% as gold occurring as intergrowths. The principle reason for the refractoriness of the gold is due to associations with iron hydroxides and carbonates (4.3%) and from very finely-dispersed gold (3.9%).
- 9. The preg-robbing nature of the ore is an issue, with high concentrations of organic carbon (0.4% to 0.7% oxide ore and 1.2% to 2.8% primary ore), with the flotation concentrate typically containing 4% to 5% C_{org} prior to CIL processing.
- 10. According to the Protodiakonov's Strength Scale, the primary ore in the Krasny deposit can be classified by the IVth strength category, i.e. the material is composed of relatively hard rocks, while the oxide ore is classified by the Vth category (moderately hard). Basic physical and mechanical characteristics of the ore include: specific gravity 2.58 g/cm³ to 2.67 g/cm³, Bond Abrasion index (Ai) 0.14 to 0.19, Bond Crushing Work index (CWi) 10.16 kWh/t to 11.9 kWh/t, Bond Ball Mill Work index (BWi) 11.46 kWh/t-to 15.54 kWh/t.

9.3 PREVIOUS METALLURGICAL STUDIES

9.3.1 Sample No. 1 Test Results (2012)

Based upon the results of metallurgical tests on Sample No. 1, completed by OJSC Irgiredmet Laboratories in 2012, a flowsheet was recommended incorporating gravity concentration with flotation of the gravity tailings and cyanide leaching of the flotation concentrate. An overall gold recovery of 92.82% was reported (82.6% recovery by gravity, 10.22% recovery by flotation). Cyanide leaching of the flotation concentrate recovered 73.3% of the gold.

A series of pressure oxidation tests were also conducted and, with 98.6% sulphide oxidation, subsequent gold recoveries by direct cyanide leaching and by CIL processing were 38.34% and 85.45% respectively. This difference in recovery was due to the highly preg-robbing nature of the ore in the sample tested.

9.3.2 TP-1 Sample and TP-2 Sample Testing (2015)

In 2015, both oxide ore (Sample TP-1; 1,076 kg) and primary ore (Sample TP-2; 961 kg) were tested by X-Ray radiometric separation, gravity concentration, flotation and heap leaching methods.

Initial X-Ray radiometric separation tests were unsuccessful, as were the heap leaching tests; only 24% and 7.5% gold recoveries for the oxide and primary ore samples respectively.

9.3.2.1 Gravity Concentration Tests

Testing using jigs and shaking tables resulted in 44% and 86% total gold recovery from the oxide and primary ore samples respectively, including gravity middlings. Gold recoveries to a final gravity concentrate were 19% (7 kg/t Au) and 50.6% (21 kg/t Au) from the oxide and primary ore samples respectively (grades too low for direct smelting).

Standard DGRG tests in Knelson concentrators indicated 73.5% gold recovery for both ore types, with an optimal feed size of 0.16 mm.

Further testing was performed using Knelson concentrators on reground tailings and an overall gold recovery was achieved, including gravity middlings, of 85.7% and 94.9% for oxide ore and primary ore respectively.

Gold recovery to the gravity middlings was 40.6% and 40.4% respectively for the oxide and primary ore samples, with gold recovery to a final gravity concentrate of 12.9% (6.9 kg/t Au) and 35.8% (19.7 kg/t Au) for the oxide and primary ores respectively.

Although the gravity testwork results were variable, they demonstrate the excellent applicability of gravity concentration to all Krasny ore types, with recovery generally significantly better for primary ore types.



9.3.2.2 Flotation Tests with Gravity Tailings

Initial flotation tests were conducted on gravity tailings from the oxide ore sample, after regrinding to a P80 of 75 μ m. The optimal flotation parameters were 120 g/t butyl xanthate, 150 g/t frother and flotation times of 10 minutes, 15 minutes and 4 minutes for the rougher, scavenger and cleaner stages. A 43.1% gold recovery into the cleaner concentrate was reported. Locked cycle tests increased the gold recovery to 59.1% with a tailings grade of 0.40 g/t Au. However, 43.7% (4.91 g/t) of the organic carbon was recovered into the concentrate which would cause problems for the subsequent CIL stage due to preg-robbing.

Preliminary carbon flotation removed 19.6% of the carbon with 7% of the gold, while desliming of the concentrate removed 20.5% of the carbon and 13.8% of the gold.

For primary ore, including flotation of the gravity concentration middlings, a locked cycle flotation test reported 70.7% gold recovery into concentrate with 27.8% (6.13 g/t) recovery of organic carbon. Preliminary carbon flotation rejected 21.8% of the carbon and 2.4% of the gold, while the desliming test removed 22.3% of the carbon and 3.1% of the gold.

Both preliminary flotation and concentrate desliming were rejected as methods to reduce the organic carbon content due to the low efficiency of carbon removal.

In summary, oxide ore testing reported **80.7%** overall gold recovery (60.3% Au recovered in the gravity concentrate and 20.4% Au recovered in the flotation concentrate). The overall gold recovery from primary ore testing was **91.4%** (73.6% Au recovered in the gravity concentrate, 14.4% Au recovered in the gravity middlings product and 3.4% Au recovered in the flotation concentrate). Gold grades in the flotation tailings for the oxide and primary ore samples were 0.40 g/t Au and 0.20 g/t Au respectively.

9.3.2.3 Leaching of Gravity Concentrates and Flotation Concentrates

Direct leaching of the gravity tailings was unsuccessful, with only 63.4% and 63.6% gold recovery achieved for the oxide and primary ore samples respectively. Therefore, further testwork was targeted on direct leaching of the gravity and flotation concentrates.

Intensive cyanide leaching of the gravity concentrate produced a gold recovery of 99.3% for the oxide ore and 99.2% for the primary ore. Intensive leach testing of the primary ore gravity middlings reported an overall gold recovery of 96.1%.

Leach tests indicated gold recoveries from the flotation concentrate of 80.5% and 90.2% for the oxide and primary ore samples respectively. Desliming of the flotation concentrate to remove organic carbon increased these recoveries to approximately 97.0% and 97.8% respectively.

As a result of these tests, the expected overall gold recovery from the proposed flowsheet is **75%** for the oxide ore at 2.0 g/t Au grade (Sample TP-1) and **90%** for the primary ore at 2.3 g/t Au grade (Sample TP-2).

9.3.3 Conclusions from 2015 Metallurgical Testwork

The result of the testwork programme concluded that both oxide and primary ores can be processed using the same flowsheet comprising: ore preparation; gravity with flotation processing of the gravity tailings; intense cyanidation of the gravity concentrates; desliming and re-cleaner flotation of the flotation concentrates followed by conventional CIL processing; elution, electrowinning and smelting of the pregnant gold solutions to produce gold bullion; neutralisation and deposition of the CIL tailings.

OJSC Irgiredmet concluded that, for oxide ores with a head grade of 2 g/t Au, an overall gold recovery of 75% can be achieved. For primary ore, a gold recovery of 90% can be achieved from a head grade of 2.3 g/t Au.

Forecast reagent consumptions are 120 g/t to 150 g/t PBX, 150 g/t PM-2 frother, 0.3 kg/t cyanide, 0.6 kg/t lime and 1.2 kg/t calcium hypochlorite.

The study also concluded that direct cyanide leaching of the oxide ore gravity tailings was possible with an overall gold recovery of 82%.

It should be noted that the inclusion of the desliming and the flotation concentrate re-cleaning operations into the flowsheet to decrease the sorption activity raises doubts and requires a detailed assessment and a technical and economic comparison. If these process operations are introduced, an increase in the gold recovery at the cyanidation stage would be set off with additional losses of gold in the re-cleaning and the flotation concentrate desliming operations (if the percentage of fine gold is high its loss with the slimes is inevitable).

Another option to reduce the flotation concentrates sorption activity is to use carbon depressors.

In order to resolve the issue of sorption activity reduction and increase gold recovery, an option providing for separate leaching of the underflow and slurry components of the flotation concentrate may be considered (hydrocycloning before the sorption cyanidation).

9.3.4 Sample TP-3 Testing, Mapping Samples KP-1 and KP-6 (2016) and Pilot Plant Testing

9.3.4.1 Sample TP-3

In 2016, the recommended gravity-flotation flowsheet was tested with oxide ore represented by the sample TP-3.

Gold recovery in the combined gravity and flotation concentrates increased to 90.0% with a tailings grade of 0.21 g/t Au.

Two direct intensive cyanidation tests of the gravity concentrates produced gold recoveries of 99.03% and 98.30% respectively. Regrinding of the solid tailings to 90% -71 μ m and processing by CIL recovered a further 28.93% and 25.75% gold for an overall gold recovery of 99.50% and 98.73% respectively.



Deslimed flotation concentrate containing 105.4 g/t Au was processed by CIL with gold recoveries in the range of 87.28% to 90.23%, with some preg-robbing still occurring.

It is expected that the process flowsheet proposed for the Krasny project will recover 78.0% to 79.1% of the gold from the type of ore represented by the oxide sample TP-3.

In general, the TP-3 sample metallurgical testwork confirmed the possibility of processing the oxide ores with the primary ores according to a uniform flowsheet.

9.3.4.2 Mapping Samples KP-1 and KP-6

A total of 1,428 kg of sample was received for metallurgical testing and six composite samples were generated.

The mapping samples were subjected to a phase analysis/diagnostic leach to determine the oxidation number and then processed according to the gravity concentration-flotation-cyanide leaching flowsheet recommended by the previous study (2015).

Tables 9.2 to 9.4 summarise the process performance parameters for the samples tested.

Sample ID	Gold Recovery (%)
ТК-1	99.38
ТК-2	97.94
ТК-3	99.84
ТК-4	99.31
ТК-5	99.93
ТК-6	99.86

Table 9.2: Gold Recovery from Gravity Concentrates Leaching



Item	Yield (%)	Gold Grade (g/t Au)	Gold Recovery (%)			
Sample	TK-1 (Primary (Dre)				
1. Gravity Concentrate	0.45	152.73	72.6			
2. Flotation Concentrate	3.30	3.49	12.2			
3. Tailings after Flotation	96.25	0.15	15.2			
Overall Recovery of the Feed Ore	-	-	84.8			
Sub-Total	100.00	0.94	100.00			
Sample T	K-2 (Transitiona	l Ore)				
1. Gravity Concentrate	0.44	233.50	77.5			
2. Flotation Concentrate	1.59	12.57	15.0			
3. Tailings after Flotation	97.97	0.10	7.5			
Overall Recovery of the Feed Ore	-	-	92.5			
Sub-Total	100.00	1.32	100.00			
Sampl	e TK-3 (Oxide O	re)				
1. Gravity Concentrate	0.10	703.63	60.2			
2. Flotation Concentrate	0.63	7.4	4.0			
3. Tailings after Flotation	99.27	0.42	35.8			
Overall Recovery of the Feed Ore	-	-	64.2			
Sub-Total	100.00	1.15	100.00			
Sampl	e TK-4 (Oxide O	re)				
1. Gravity Concentrate	0.18	335.1	76.0			
2. Flotation Concentrate	2.25	1.66	4.7			
3. Tailings after Flotation	97.57	0.16	19.3			
Overall Recovery of the Feed Ore	-	-	80.7			
Sub-Total	100.00	0.81	100.0			
Sample T	K-5 (Transitiona	l Ore)				
1. Gravity Concentrate	0.19	522.08	83.1			
2. Flotation Concentrate	1.32	8.17	9.1			
3. Tailings after Flotation	98.49	0.094	7.8			
Overall Recovery of the Feed Ore	-	-	92.2			
Sub-Total	100.00	1.18	100.0			
Sample T	Sample TK-6 (Transitional Ore)					
1. Gravity Concentrate	0.15	453.61	70.2			
2. Flotation Concentrate	0.18	38.7	7.2			
3. Tailings after Flotation	99.67	0.22	22.6			
Overall Recovery of the Feed Ore	-	-	77.4			
Sub-Total	100.00	0.97	100.00			

Table 9.3: Krasny Deposit Samples Process Performance Parameters



Test No.	Testing Conditions	Concentration in the Solution (mg/L Au)	Grade in Cakes (g/t Au)	Grade in the Feed (as per the Balance) (g/t Au)	Carbon Loading (Au %)	Relative Preg- Robbing (%)	
TV 1	No Carbon	0.38	1.59	2.40	54.44	22.2	
1K-1	Carbon added	-	0.64	5.49	81.66	55.5	
ти э	No Carbon	2.07	2.22	12.57	82.34	9.13	
1K-2	Carbon added	-	1.18	12.37	90.61		
No Carb	No Carbon	0.99	2.45	7.4	66.89	15.82	
1K-5	Carbon added	-	1.52		79.46		
	No Carbon	0.13	1.01	1.66	39.16	54.00	
1K-4	Carbon added	-	0.24	1.00	85.54	54.23	
TIC 5	No Carbon	0.93	3.52	9.17	56.92	28.09	
TK-5	Carbon added	-	0.55	8.17	93.27	38.98	
	No Carbon	4.9	14.2	- 38.7 -	63.31	22.10	
11-0	Carbon added	-	2.08		94.63	33.10	

Table 9.4: Flotation Concentrate Test Results

The recoveries of gold from different types of ores generally confirm the results of the testwork conducted earlier for the TP-1 and TP-2 ore samples and indicate it is possible to recover 85% to 90% of gold form the mixed and primary ores with the developed technology.

9.3.4.3 Pilot-Plant Testing (Sample TP-4)

Pilot-plant testing of the composite sample TP-4 was performed in 2017. The three ore types were combined in the ratios of 45.2% primary ore, 23.4% transitional ore and 31.4% oxide ore.

In total, 2,989 kg of ore was processed by the pilot-plant at an average throughput of 40 kg/hr and an average head grade of 1.63 g/t Au (1.9 g/t Au calculated head grade).

The sample TP-4 is a gold-quartz low-sulphide ore type with an oxidation number of 61% and therefore more transitional in nature. Sulphides at 1.8% of the mass occur predominantly as pyrite. The silver content is less than 1 g/t Ag. Diagnostic leach tests indicate that 87% of the gold is cyanide-leachable, with 30% as free gold, but with high preg-robbing potential.

Gold recovery in the combined gravity and flotation concentrate was reported to be 91.0% (70.4% gravity recovery and 20.6% flotation recovery). A gravity concentrate containing 919.2 g/t Au and a combined gravity middlings and flotation concentrate containing 27.8 g/t Au were produced for further hydrometallurgical testwork.

Intensive cyanide leaching of the gravity concentrate reported a high gold recovery of 94% at a residence time of 16 hours to 18 hours with the following reagent addition rates: 12.5 kg/t NaCN, 8.0 kg/t NaOH, and 0.5 kg/t Leachwell.

The flotation concentrate is refractory due to the preg-robbing organic carbon content. Laboratory hydrometallurgical tests indicated that use of a carbon-depressing reagent in the flotation stage (rather than by desliming or flotation) decreased the organic carbon concentration from 4.22% to 1.27% and consequently increased the CIL gold recovery to 98.0%.

Large-scale laboratory testing was conducted on a composite sample of flotation concentrate (using a carbon depressant in the flotation stage), the gravity middlings product and reground tailings after intensive leaching of the gravity concentrate. The sample was pre-aerated for 8 hours in a conditioning tank at pH 11.5 to pH 12.0 with a 4 kg/t CaO addition; then a CIL test conducted with 8.9 kg/t NaCN and 24 hours residence time. A stage recovery of 98.9% was reported for an overall gold recovery of **88.5%**.

Thickening and filtration tests were also successfully conducted and the optimum flocculant (Magnoflok 155) with the consumption of 5 g/t to 10 g/t has been selected. The unit capacity is 11.63 t/m²*day. The unit capacity of filtering of the blend cyanidation tailings with a density of 50% of solids without pre-drying was 4.13 t/m²*day, moisture content of the filtering cake was 16.82%; with 3 minutes pre-drying 3.45 t/m²*day and 7.5%, respectively.

A counter-current decantation circuit was recommended for neutralising and washing of the CIL tailings with reagent additions of 11.0 kg/t available chlorine (hypochlorite) and 1.6 kg/t CaO.

Therefore, the gravity-flotation flowsheet with hydrometallurgical processing of the concentrates is recommended to produce Doré bars from the Krasny deposit ores. It is recommended that the Process Schedule should incorporate the operating parameters, gold recoveries and other performance indices which have been gained from the pilot-plant testwork.

9.3.5 Micon Comment

Metallurgical testwork has confirmed that the oxide, transitional and primary ore types can be processed using the same process flowsheet, incorporating crushing, grinding, gravity concentration, flotation of the gravity tailings, intensive leaching of the gravity concentrate, CIL processing of the flotation concentrate, gravity middlings and reground tailings from intense cyanidation, elution, electrowinning and smelting of cathode gold to produce Doré bars. Leach tailings will be neutralised using hypochlorite and a counter-current decantation circuit, before disposal to a dedicated Tailings Storage Facility. Non-toxic flotation tailings will be stored in a separate area within the TSF. A carbon depressant will be used in the flotation stage to significantly reduce the preg-robbing potential of the ore.

It is expected that reagent consumptions will be as follows: 120 g/t to 150 g/t butyl xanthate, 150 g/t frother, 0.3 kg/t cyanide, 0.6 kg/t lime and 1.2 kg/t calcium hypochlorite.

An overall gold recovery of **88.5%** at a 1.9 g/t Au head grade can be accepted as a basis for the Process Schedule designing and in subsequent engineering. This is based on the pilot plant trial for Sample TP-4 using a blend of the different ore types.

The gravity circuit performance is fundamental to achieving design recoveries, particularly for oxide ores with significantly lower gravity recovery, and significant variation in gravity recovery was noted in the testwork. Therefore, a robust mining plan is required with suitable blending of the different ore types, similar to that achieved in the pilot plant testing of Sample TP-4, in order to maintain design recoveries.



9.4 PROCESS DESIGN CONCEPT OF THE PROCESS SCHEDULE

The key process design criteria, based on data contained in the "Technical Specifications for Designing a Process Schedule" are summarised in Table 9.5.

Parameter	Value		
Processing Plant Location	Near the Mine		
Type of Construction	New		
Processing Plant Operating Mode	Year Round		
Number of Service Days per Year (Days)	365		
Daily Schedule (Hours)	24		
Shift Schedule	2 Shifts, 12 Hours each		
Ore Type	Gold-Quartz Low-Sulphide		
Processing Plant throughput based on ROM ore (t/year)	1,000,000 with potential to 2,000,000		
Maximal Size of Feed Ore (mm)	400		
Plant Availability Factor	0.9		
Water Supply	Recirculating		
Tailings Disposal	Tailings Storage Facility (TSF)		
Gold Head Grade (g/t Au)	1.54		
Saleable product	Doré bullion bars (according to Industrial Standard TV 11 2-7-75)		

Table 9.5: Key Process Design Criteria

The mechanical equipment selection was based on a plant throughput of 1 Mt/a (126.8 t/h) with provision to increase throughput to 2 Mt/a.

For the design head grade of 1.54 g/t Au, the design gold recovery is 85.51%, adjusted for the head grade using the White formula.

Based upon the metallurgical testwork studies between 2012 to 2016 and the pilot plant testwork of 2017, a gravity and flotation based flowsheet is recommended by the Process Schedule to produce a gravity concentrate, gravity middlings product, flotation concentrate and final tailings.

The high-grade gravity concentrate is subjected to intensive cyanide leaching with the solid tailings reground and combined with the gravity middlings and flotation concentrate for CIL processing, preceded by a pre-aeration stage with lime conditioning. Due to the preg-robbing nature of the flotation concentrate, a carbon depressant is used in the flotation stage. The leach tailings are detoxified with calcium hypochlorite in a counter-current decantation circuit. The flotation tailings are non-toxic and both the flotation and detoxified leach tailings are stored separately within a dedicated Tailings Storage Facility.

Annual gold production (Doré bars) is forecast at 1,326.9 kg per annum, provided that the Processing Plant feed ore composition is similar to the material studied by OJSC Irgiredmet Laboratories.

An overall gold recovery of 85.5% is forecast, as detailed below:

• Gravity Concentrate - 60.19% (0.09% yield at 1,030 g/t Au);



- Gravity Middlings 8.21% (0.55% yield at 23 g/t Au);
 Flotation Concentrate 21.67% (1.11% yield at 30 g/t Au);
 Gold Recovery by CIL 94.94%; and,
- Overall Gold Losses 14.49% (0.223 g/t Au in tailings).

The Process Schedule includes a Metal and Water Balance and major equipment list. The Principal Process Flowsheet for the Krasny Project is illustrated schematically in Figure 9.1.



Figure 9.1: Krasny Processing Plant Process Flowsheet



The flowsheet used in the Process Schedule includes the following basic operations:

- ROM ore screening through a 400 mm by 400 mm grizzly equipped with a rock breaker;
- Loading of crushed ore to the Plant Feed Bin via an Apron Feeder; feeding a SAG Mill via a line of Belt Conveyors;
- Grinding in a SAG Mill (MMC 75 x 28) equipped with a Trommel and operating with a 10% ball charge;
- Gravity concentration of the I-stage grinding discharge in Jigs (MOД-3M1) with the Jig tailings pumped to the I-stage classification and jig concentrate reporting to the feed of the gravity concentration circuit;
- Cleaning of the concentrate after the I-stage jigging on Shaking Tables (BY 4,500 x 1,830);
- Classification of the tailings after the I-stage jigging in Cyclones (ΓЦ-710) with the underflow reporting to the SAG Mill feed and the overflow classified in smaller Cyclones (ΓЦ-500);
- Regrinding of Cyclone (ГЦ-500) underflow in Ball Mills (MQY 40 x 60);
- Gravity concentration of the Ball Mill discharge in Jigs (МОД-3М1), with jig tailings reporting to the II-stage classification and jig concentrate upgraded with Shaking Tables (BY 4,500 x 1,830);
- Further upgrading of the I-stage and II-stage Shaking Table concentrates on Shaking Tables (BY 4,500 x 1,830) with the concentrate reporting to intensive cyanide leaching and the table middlings reground in the Ball Mill (MQY 15x30);
- Gravity concentration of the Ball Mill (MQY 15 x 30) discharge on Shaking Tables (BY 4,500 x 1,830) with concentrate reporting to intensive cyanidation and the middlings classified in the III-stage Cyclones (ΓЦ-100); and,
- The Cyclone underflow is returned to the head of the gravity circuit with the overflow (gravity middlings product) reporting to the CIL circuit thickener.

Flotation of tailings after gravity concentration includes the following operations:

- Conditioning of the gravity tailings (Classification II overflow) in a Conditioner (КЧ25 РИФ) with addition of the carbon-depressing reagent (ПУ);
- Further conditioning in a Conditioner (КЧ25 РИФ) with butyl xanthate (ББК) and frother (ПМ-2) before flotation in the I-Rougher, II-Rougher and Scavenger stages;
- I-Rougher flotation utilises mechanical-air cells (РИФ-25) (19) with the tailings pumped to scavenger flotation and the concentrate reporting to the cleaner I stage;
- II Rougher flotation utilises mechanical-air cells (PIID-25) (20) with the tailings sent to the scavenger cells and the concentrate reporting to the middlings flotation;
- Cleaner I utilises mechanical-air cells (Φ M-3,2) with the concentrate being sent to the II-Cleaner stage and the middlings reporting to the middlings flotation stage;



- Scavenger flotation utilises mechanical-air cells (PHΦ-25); the concentrate is returned to the I-Rougher flotation and the tailings report to the Tailings Storage Facility;
- Cleaner II flotation of the Cleaner I concentrate utilises mechanical-air cells (ΦM-1,2) with the concentrate reporting to the CIL circuit thickener and the middlings reporting to the Cleaner I feed; and,
- Middlings flotation produces a concentrate that reports to Cleaner I feed and tailings that joins the Scavenger flotation concentrate.

Hydrometallurgical processing of the gravity and flotation concentrates is briefly described as follows:

The high-grade gravity concentrate is subjected to intensive cyanidation in a cone leach reactor designed by Irgiredmet (3 t capacity). The low-grade flotation concentrate is combined with the gravity middlings product and reports to the CIL circuit. After thickening, the slurry is pre-aerated with lime followed by conventional CIL processing. The CIL tailings report to the detoxification circuit employing counter-current decantation and the detoxified tailings report to the Tailings Storage Facility.

The Process equipment will be manufactured in China and Russia.

Specific consumption rates of the grinding balls, liners, process reagents, water and power are summarised in Table 9.6.

Item	Specific Consumption (kg/t milled)		
Liner	0.35		
Balls	1.43		
Carbon Depressor (ПМНСН (ПУ))	0.25		
Butyl Xanthate (БКК)	0.15		
Frother (IIM2)	0.1		
Sodium Cyanide (NaCN)	0.163		
Lime (CaO)	0.32		
Caustic Soda (NaOH)	0.12		
Flocculent (Magnafloc 155)	0.02		
Activated Carbon	0.01		
Hydrochloric Acid (HCl)	0.02		
Leachwell	0.001		
Lead Monoxide (PbO)	0.0005		
Calcium Hypochlorite (Ca(OCl) ₂)	0.4		
Power (kW*hr/t)	44.8		
Fresh Water (m^3/t)	0.49		

Table 9.6: Specific Consumption Rates of Materials, Water and Power

9.4.1 Micon Comment

The gravity-flotation-CIL flowsheet, as recommended by the Process Schedule and based on significant metallurgical testwork studies, is considered to be reasonable for the processing of the given ore types at Krasny and provides some flexibility for varying head grades.

The values of specific consumption rates for reagents, liners, balls, water and power appear to be reasonable based on the results of the metallurgical testwork.

The flowsheet selected includes SAG milling, gravity concentration using jigs and shaking tables with further gravity recovery of the reground jig tailings, intensive cyanide leaching of the gravity concentrate, flotation of the gravity tailings and CIL processing of the flotation concentrate and gravity middlings product. The flotation circuit includes roughing, scavenging, cleaning and middlings flotation stages.

Micon notes that the gravity concentration circuit, which is critical to achieving design gold recovery, is relatively complex. Furthermore, considering the relatively fine nature of the gold, with 66.5% -70 µm, this is typically too fine for efficient jig recovery. Micon therefore recommends that the use of a simpler gravity circuit employing Knelson centrifugal concentrators is considered, which are more efficient for fine gold recovery. Such a circuit has been successfully used in the Pavlik Gold Project, designed jointly by FLSmidth and OJSC TOMS Engineering and treating a similar ore type to Krasny ore (Figure 9.2).

This flowsheet allows the production of the required quality of the gravity concentrate for intense cyanidation (the recovery into the gravity concentrate is more than 60%, at the concentrate yield of 0.1% to 0.15% and the gold grade of more than 500 g/t Au).

It should be noted that the Pavlik deposit ores are more refractory than the Krasnoe deposit ores, the percentage of cyanidable gold is 68% to 75%. In addition the Pavlik gold deposit has similar grain-size characteristics with a dominance of small and fine classes and the Pavlik deposit ores are sorption-active due to the presence of organic carbon. Using this branched staged gravity processing flowsheet provides a high recovery of gold from the flotation concentrate at the expense of the resolution of an issue of the flotation concentrate sorption activity reduction. In this regard, the relevance of the focus on the maximum redistribution of gold into the gravity concentrates (as less refractory ores) becomes practically void.

Micon would also advise looking at replacing the cone leach reactor of Irgiredmet design to an ACACIA or GEKKO leach reactor, either of which are considered more reliable and used worldwide in the gold mining industry.





Figure 9.2: Recommended Flowsheet of the Krasnoe Deposit Ore Processing

9.5 MICON CONCLUSIONS AND RECOMMENDATIONS

Between 2012 to 2017, OJSC Irgiredmet completed the extensive metallurgical testwork programme using eleven samples (four laboratories, six mapping and one pilot-production composite sample). These samples covered all the natural types of ores found at the Krasnoe deposit (oxide, mixed, primary).

The ore mineralisation is classified as gold-quartz low-sulphide. Small, fine and finely dispersed gold of the size class -0.071 mm (66.5%) prevails in the ore, coarse gold totals 33.5% and predominantly occurs in the size class -0.15+0.07 mm.



Cyanidation leaching in the presence of a sorbent recovers 86.8% to 87.0% of gold, most of which occurs in the free form (58.1% to 61.9%); 24.9 to 8.9% of the gold is locked in joints with ore and rock-forming minerals.

The key issue of high sorption activity of the ore and the flotation concentrate can be solved with the application of an efficient organic carbon suppressor.

The adopted branched processing flowsheet based on the application of jigs and concentration tables will provide the target gold recovery of **85.5%**.

According to Micon, it is possible to simplify the gravity processing flowsheet significantly at the expense of applying Knelson concentrators or their equivalent without any losses in the quality of produced gravity concentrate and with the same level of gold recovery as the one adopted in the regulations.

In this case it is possible to improve the efficiency and reduce the size of the plant. In order to review this possibility, it is recommended to conduct some additional studies on modelling of the one stage processing in the centrifugal concentrators operating in the "ball mill-hydrocyclone" closed circuit.

The client should get acquainted with the actual results of the implementation of the flowsheet at the Pavlik gold deposit in the Magadan Region.



10.0 MINERAL RESOURCE ESTIMATES

10.1 NPF GEOPROGNOZ RESERVES

In April 2016, NPF Geoprognoz drafted the cut-off grade estimation report with the reserve calculations for LLC Krasny. In accordance with this estimate the C_2 category reserves for the central part of the Upper ore body as at 1st January 2015 totalled 6.317 Mt of ore containing 9,767 kg of gold at an average grade of 1.55 g/t Au.

10.2 MIRAMINE RESOURCE ESTIMATE

A mineral resource estimate for the Krasnoe deposit, in accordance with the guidelines of the JORC Code (2004), was first prepared by the Russian company Miramine in 2013. The mineral resources were estimated at a cut-off grade of 0.8 g/t Au within the optimum open pit designed for a gold price of US\$1,670/oz. Table 10.1 displays the mineral resources as at 25^{th} March 2013.

JORC Category	Tonnage (Mt)	Gold (g/t Au)	Gold (t)	Gold (Moz)
Indicated	4.3	1.53	6.6	0.21
Inferred	22.5	1.60	36.1	1.16

Table 10.1: Krasnoe Deposit Mineral Resources as at 25th March 2013

10.3 PREVIOUS MICON RESOURCE ESTIMATE

Results of the previous mineral resource estimate for the Krasnoe deposit conducted in accordance with the guidelines of the JORC Code (2012) are displayed in Table 10.2.

IORC Category	Grade Class	Tonnage	Gold	Gold		
JORC Category	(g/t Au)	(kt)	(g/t Au)	(kg)		
Oxide Ore						
Indicated	0.0 - 1.0	2,912	0.670	1,950		
	1.0 - 2.0	1,864	1.363	2,542		
	2.0 - 3.0	450	2.413	1,086		
	3.0 - 4.0	129	3.364	434		
	4.0 - 5.0	28	4.446	124		
	>5.0	19	6.006	111		
Total Indicated (Oxide Ore)		5,402	1.157	6,247		
	0.0 - 1.0	790	0.624	493		
Inferred	1.0 - 2.0	256	1.480	379		
	2.0 - 3.0	84	2.352	197		
	3.0 - 4.0	11	3.369	38		
	4.0 - 5.0	6	4.347	28		
	>5.0	3	5.851	18		
Total Inferred (Oxide Ore)		1,150	1.002	1,153		
Total Oxide Ore		6,553	1.129	7,400		

 Table 10.2: Krasnoe Deposit Mineral Resources as at 1st January 2016



JORC Category	Grade Class (g/t Au)	Tonnage (kt)	Gold (g/t Au)	Gold (kg)		
Primary Ore						
	0.0 - 1.0	1,530	0.617	945		
	1.0 - 2.0	617	1.404	867		
Indicated	2.0 - 3.0	218	2.397	524		
	3.0 - 4.0	47	3.429	162		
	4.0 - 5.0	5	4.313	22		
	>5.0	28	6.720	191		
Total Indicated (Primary Ore)	2,447	1.108	2,710			
	0.0 - 1.0	3,733	0.596	2,224		
	1.0 - 2.0	4,074	1.449	5,904		
Informed	2.0 - 3.0	1,751	2.414	4,226		
Interred	3.0 - 4.0	760	3.527	2,683		
	4.0 - 5.0	451	4.447	2,005		
	>5.0	404	6.278	2,537		
Total Inferred (Primary Ore)		11,174	1.752	19,580		
Total Primary Ore		13,620	1.637	22,290		
	Total for	the Deposit				
	0.0 - 1.0	4,442	0.652	2,895		
	1.0 - 2.0	2,482	1.373	3,408		
Indicated	2.0 - 3.0	669	2.407	1,610		
Indicated	3.0 - 4.0	176	3.382	596		
	4.0 - 5.0	33	4.425	146		
	>5.0	47	6.438	302		
Total Indicated		7,848	1.141	8,958		
Inferred	0.0 - 1.0	4,523	0.601	2,717		
	1.0 - 2.0	4,331	1.451	6,283		
	2.0 - 3.0	1,835	2.411	4,424		
	3.0 - 4.0	772	3.525	2,721		
	4.0 - 5.0	457	4.446	2,033		
	>5.0	407	6.275	2,555		
Total Inferred		12,324	1.682	20,732		
Total Indicated and Inferred		20,172	1.472	29,690		

Table 10.2: Krasnoe Deposit Mineral Resources as at 1st January 2016 (cont)

10.4 MICON RESOURCE ESTIMATE (2017)

Mineral resources of the Krasnoe deposit and the Vostochnoye mineral occurrence were estimated by Micon utilising Surpac 6.6 software for the block modelling.

The mineral resources estimated by Micon are based on the data from 366 drill holes (including 298 Krasnoe deposit drill holes) and 30 trenches (including 27 Krasnoe deposit trenches). The basic gold statistical parameters were calculated using the samples falling within the wireframes of the ore zones. The main statistical parameters were determined after the outliers were top-capped. Further the grades were composited (adjusted to an

identical length interval) and subjected to additional statistical processing. The variograms and the block model based on the composites and the block model was then tested for errors.

In accordance with the guidelines of the JORC Code the estimated mineral resources were classified as Indicated and Inferred.

10.4.1 Database

All new exploration data are promptly input into the database by LLC Krasny. The database contains the drill hole collar coordinates, sampling intervals, assay results, inclinometry, lithology and secondary alteration rock details, core recoveries, drilling and trenching dates, the personnel engaged in the drilling, mining and logging, etc.

The drill hole and trench data contained in the database and used to calculate the mineral resources are summarised in Table 10.3.

Deposit	Туре	Number of Drill Holes/Trenches	Minimum Depth/Length (m)	Maximum Depth/Length (m)	Average Depth/Length (m)	Total (m)
Krasnoe	Drill Holes	298	26.7	700	219	65,382.1
	Trenches	27	78	890	291	7,856
Vostochnoye	Drill Holes	68	40	500	178	12,126.4
	Trenches	3	195.4	529	312	987.6

 Table 10.3: Drill Hole and Mine Workings Data Contained in the Database

For the Krasnoe deposit, the minimum sample length is 0.3 m, the maximum 2.25 m, averaging approximately 1 m. For the Vostochnoye mineral occurrence the minimum sample length is 0.5 and maximum is 1.1 m, averaging 1 m. In total 14,508 samples were used to calculate the Krasnoe mineral resources and 607 samples to calculate the Vostochnoye mineral resources. The inclinometry of the drill holes was gauged every 10 m down the shaft. The table 'Survey' contains 6,462 records on the Krasnoe drill holes of shafts curving and 1,232 records on the Vostochnoye drill holes of shafts curving.

The database underwent a number of checks for confirmation of its compliance with certain rules and for elimination of the overlapping intervals. No errors were detected.

10.4.2 Wireframes of Mineralised Zones

The ore zones were contoured using the cut-off grade of 0.4 g/t Au. In addition for low grades in marginal samples preference was given to groups of two to three samples and single samples were only included within the contour if there were a relatively high grade (not less than 1 g/t Au). The contours were referenced at the end of the samples in the drill holes.

Figure 10.1 displays the contours of the Upper ore body divided into two ore zones: the Southern and the Northern.





Figure 10.1: Contours of the Upper Ore Body (Blue – Northern Ore Zone, Black – Southern Ore Zone)

Wireframes were constructed using the contours for each mineralised zone. In total 12 wireframes were constructed, this includes four elongated ore zones and four smaller lense-like bodies. Figure 10.2 displays the relative position of the ore zones in plan view.



Figure 10.2: Krasnoe Deposit Ore Zones (Plan View)


Six wireframes were constructed for the Vostochnoye mineral occurrence (Figure 10.3).



Figure 10.3: Vostochnoye Mineral Occurrence Ore Zones (Plan View)

10.4.3 Geostatistics

Intersections of the drill holes with the wireframe were recorded into the database using Surpac software. Coordinates of the central points of the samples were calculated and these statistical parameters are displayed in Tables 10.4 and 10.5.

Area	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation.	Coefficient of Variation
	Channel	177	0.00	11.08	1.38	0.78	1.71	1.24
Upper Northern	Core	1,575	0.00	19.23	0.99	0.53	1.52	1.54
	Total	1,752	0.00	19.23	1.03	0.55	1.55	1.51
	Channel	794	0.00	17.16	1.11	0.61	1.52	1.36
Upper Southern	Core	9,843	0.00	107.90	0.90	0.34	2.15	2.40
	Total	10,637	0.00	107.90	0.91	0.37	2.11	2.32
Lower Eastern	Core	2,027	0.001	40.41	1.83	1.14	2.53	1.38
Lower Western	Core	194	0.001	18.05	1.52	0.89	2.13	1.40
Total Krasnoe	Channel	971	0.00	17.16	1.16	0.63	1.56	1.34
	Core	13,639	0.00	107.90	1.05	0.47	2.18	2.07
	Total	14,610	0.00	107.90	1.06	0.48	2.14	2.02

Table 10.4: Krasnoe Deposit Main Statistics for Gold



Ore Deposit	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation	Coefficient of Variation
	Channel	30	0.00	2.55	0.68	0.49	0.59	0.87
Upper	Core	272	0.001	10.97	1.55	1.02	1.63	1.05
	Total	302	0.001	10.97	1.47	0.94	1.58	1.07
Lower	Core	253	0.001	29.49	1.63	0.93	2.86	1.76
Total Vostochnoye	Channel	30	0.00	2.55	0.68	0.49	0.59	0.87
	Core	525	0.001	29.49	1.59	0.97	2.30	1.45
	Total	555	0.001	29.49	1.54	0.93	2.25	1.46

Table 10.5: Vostochnoye Mineral Occurrence Main Statistics for Gold

10.4.4 Top-Cutting of Outlier Assays

In order to determine the outlier threshold, the distribution of grades in the sample population falling within the wireframe models was examined. Figures 10.4 and 10.5 shows a cumulative frequency plots for gold grades and Tables 10.6 and 10.7 display the statistical parameters used for the determination of the outlier grades.

Table 10.6: Krasnoe Deposit Statistical Parameters for the Determination of Outliers

Parameter	Value
Number of Samples	14,610
Mean	1.06
Standard Deviation	3.20
Mean+2 SD	5.35
Mean+3 SD	7.49
95 Percentile	3.84
99 Percentile	8.30
99.5 Percentile	11.22

Table 10.7: Vostochnoye Mineral Occurrence Statistical Parameters for the Determination of Outliers

Parameter	Value
Number of Samples	555
Mean	1.54
Standard Deviation	3.79
Mean+2 SD	6.04
Mean+3 SD	8.30
95 Percentile	4.69
99 Percentile	9.05
99.5 Percentile	10.42





Figure 10.4: Krasnoe Deposit Cumulative Frequency Distribution of Gold Assays

Figure 10.5: Vostochnoye Mineral Occurrence Cumulative Frequency Distribution of Gold Assays



The threshold limit value was selected visually by determination the break of the smooth line in the plots considering the statistical parameters. In Micon's opinion, the gold grades exceeding 19.23 g/t Au represent outlier grades for the Krasnoe deposit and the grades exceeding 7.5 g/t Au represent outlier grades for the Vostochnoye mineral occurrence. In the absence of additional information on these high grades it was decided to top-cut all outliers to these specified values. For the Krasnoe deposit there were sixteen outliers representing 0.2% of the total number of assays and seven outliers for the Vostochnoye mineral occurrence deposit representing 1.2% of the total number of assays. The main statistical parameters calculated for the gold grades after top-cutting of the outlier assays are displayed in Tables 10.8. and 10.9

Area	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation.	Coefficient of Variation
	Channel	177	0.00	11.08	1.38	0.78	1.71	1.24
Upper Northern	Core	1,575	0.00	19.23	0.99	0.53	1.52	1.54
	Total	1,752	0.00	19.23	1.03	0.55	1.55	1.51
	Channel	794	0.00	17.16	1.11	0.61	1.52	1.36
Upper Southern	Core	9843	0.00	19.23	0.87	0.34	1.59	1.83
	Total	10,637	0.00	19.23	0.89	0.37	1.59	1.78
Lower Eastern	Core	2027	0.001	19.23	1.81	1.14	2.32	1.28
Lower Western	Core	194	0.001	18.05	1.52	0.89	2.13	1.40
Total Krasnoe	Channel	971	0.00	17.16	1.16	0.63	1.56	1.34
	Core	13,639	0.001	19.23	1.03	0.47	1.75	1.69
	Total	14,610	0.00	19.23	1.04	0.48	1.74	1.67

Table 10.8: Krasnoe Deposit Main Statistics for Gold Grades after Top-Cutting

Table 10).9: Vostochnoy	e Mineral Occurren	ce Main Statistics	for Gold (Grades after '	Top-Cutting
						- F

Ore Deposit	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation	Coefficient of Variation
Upper	Channel	30	0.00	2.55	0.68	0.49	0.59	0.87
	Core	272	0.001	7.50	1.53	1.02	1.50	0.98
	Total	302	0.001	7.50	1.44	0.94	1.46	1.01
Lower	Core	253	0.001	7.50	1.44	0.93	1.54	1.07
Total Vostochnoye	Channel	30	0.00	2.55	0.68	0.49	0.59	0.87
	Core	525	0.001	7.50	1.49	0.97	1.52	1.02
	Total	555	0.001	7.50	1.44	0.93	1.49	1.04

10.4.5 Compositing

The length of 1.0 m was selected for compositing the gold grades as this is closest to the average length of the sampling interval for both deposits. Composites were generated for each wireframe using the best adjustment algorithm permitting a variation of the sample's length within the first percent's from the set value. In this case the data loss was minimised and the length of the bulk of the composites varied from 0.97 to 1.04 m. The main statistical parameters for the composites are displayed in Tables 10.10 and 10.11.



Area	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation.	Coefficient of Variation
Upper Northern	Channel	176	0.00	11.08	1.38	0.78	1.68	1.22
	Core	1,543	0.00	18.68	0.98	0.56	1.45	1.47
	Total	1,719	0.00	18.68	1.02	0.57	1.48	1.44
	Channel	779	0.00	13.50	1.11	0.63	1.43	1.28
Upper Southern	Core	9,602	0.00	19.23	0.88	0.38	1.52	1.73
	Total	10,381	0.00	19.23	0.89	0.40	1.51	1.69
Lower Eastern	Core	2003	0.001	19.23	1.81	1.16	2.23	1.24
Lower Western	Core	191	0.001	16.94	1.51	0.90	2.05	1.35
Total Krasnoe	Channel	955	0.00	13.50	1.16	0.65	1.48	1.28
	Core	13,338	0.00	19.23	1.04	0.50	1.68	1.62
	Total	14,293	0.00	19.23	1.05	0.51	1.67	1.60

Table 10.10: Krasnoe Deposit Main Statistics for Composite Gold Grades

Fable 10.11:	Vostochnoye Minera	l Occurrence Mai	n Statistics for	Composite	Gold Grades
				e e p e a e	

Ore Deposit	Sampling Type	Number of Samples	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	Median (g/t Au)	Standard Deviation	Coefficient of Variation
Upper	Channel	29	0.00	2.55	0.69	0.49	0.60	0.88
	Core	268	0.001	7.50	1.53	1.02	1.48	0.97
	Total	297	0.00	7.50	1.44	0.94	1.44	1.00
Lower	Core	249	0.001	7.50	1.42	0.95	1.50	1.05
	Channel	29	0.00	2.55	0.69	0.49	0.60	0.88
Total Vostochnovo	Core	517	0.00	7.50	1.48	0.98	1.49	1.01
vostocnnoye	Total	546	0.00	7.50	1.44	0.94	1.47	1.02

10.4.6 Search Ellipsoids

In order to determine the parameters of the search ellipsoids experimental variograms were calculated for each ore deposit and their models were constructed. Figure 10.6 shows an example of the Krasnoe Upper Southern ore deposit strike variogram.







The parameters from the variogram models were used to determine the size and orientation of the search ellipsoid axes. This information is presented in Table 10.12.

Zone	Major Axis Bearing	Major Axis Plunge	Semi-Major Axis Dip	Search Radius along the Major Axis	Major / Semi-Major	Major / Minor
Upper Southern	109	-2	83	60	2	4
Upper Northern	108	0	49	55	3.5	4
Lower Eastern	109	1	48	50	2	3
Lower Western	116	0	0	45	1	2

Table 10.12: Krasnoe Deposit Parameters of the Search Ellipsoids

No reliable variograms were created for the Vostochnoye mineral occurrence due to insufficient data. The parameters of the search ellipsoids were determined based on the grid parameters and bedding elements of each of the wireframes (Table 10.13).

Table 10.13	Vostochnoye	Mineral O	ccurrence	Parameters	of the Search	Ellipsoids
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Wireframe	Major Axis Bearing	Semi-Major Axis Plunge	Semi-Major Axis Dip	Search Radius along the Major Axis	Major / Semi-Major	Major / Minor
Vost_low_c	296	26	56	75	3	6
Vost_low_n	298	28	58	75	3	6
Vost_low_s	297	27	52	75	3	6
Vost_up_n_nw	296	26	41	75	3	6
Vost_up_n_se	297	27	46	75	3	6
Vost_up_s	295	25	70	75	3	6

10.4.7 Block Model

The unit cell dimensions of the Krasnoe deposit block model are 5 by 5 by 5 m. No cell subblocking was applied, instead for each block model cell, the Surpac Partial Percentage function calculated the percentage for entry into the wireframe models. This value was used later for the mineralised zone volume calculations. The block model parameters are presented in Table 10.14.

Table 10.14: Krasnoe Depo	osit Block Model Parameters
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Parameter	X	Y	Z
Minimum Coordinates	367,400	6,463,600	400
Maximum Coordinates	369,900	6,464,800	1,050
Block Size (m)	5	5	5
Rotation (°)	0	0	0

The Vostochnoye mineral occurrence block model parameters are displayed in Table 10.15. In contrast to the Krasnoe block model, this block model applied sub-blocking for the ore zones volume determination.



Parameter	X	Y	Z
Minimum Coordinates	369,700	6,464,800	750
Maximum Coordinates	372,200	6,466,100	1,250
Parent Block Size (m)	5	5	5
Minimum Sub-Block Size (m)	1.25	1.25	1.25
Rotation (°)	0	0	0

Table 10.15: Krasnoe Deposit Block Model Parameters

10.4.8 Block Model Interpolation

Interpolation of the gold grades into the block model cells (both for the Krasnoe deposit and the Vostochnoye mineral occurrence) was conducted using the inverse distance weighted method to the power 3 (IDW^3). A minimum of three and a maximum of ten samples falling within the corresponding wireframes were used for the interpolation of each cell in the block model. The influence of one drill hole was restricted to three samples. In the majority of cases the interpolation was conducted in two runs; the second run was applied if the number of samples falling within the ellipsoid was less than two. In this case the search radius was increased twofold. If there were blank cells after the second run, then a third run was performed with the initial radius increased four-fold.

Figures 10.7 and 10.8 display the block models of the Krasnoe deposit and the Vostochnoye mineral occurrence.



Figure 10.7: Krasnoe Deposit 3D View of the Block Model Plan View from the Northwest





Figure 10.8: Vostochnoye Mineral Occurrence 3D View of the Block Model Plan View from the Southwest

10.4.9 Block Model Verification

The block model verification included the following:

- Visual comparison of the grades in the drill holes with the grades in the block model cells; and,
- Comparison of the composites declustered within the cells with the interpolated grades.

10.4.9.1 Visual Comparison of Drill Hole and Block Model Grades

Visual comparison of the grades in the drill holes and in the block model cells was completed. The comparison did not detect any material bias. Figure 10.9 demonstrates an example of such comparison done for the Krasnoye deposit block model.





Figure 10.9: Krasnoe Deposit Comparison of Drill Hole and Block Model Cell Grades

10.4.9.2 Comparison of Declustered Composites and Interpolated Block Model Grades

All composites falling within the block model cells were declustered, i.e. the average value was calculated for these composites and assigned to the coordinates of the centre of that cell. The average grades for the points were imported into the block model for comparison of the grades of the composites and the interpolated cell values. This analysis provides insight into the accuracy of the grade interpolation. The resulting diagram for the Krasnoe deposit is presented in Figure 10.10.

The diagram demonstrates that the dispersion of values, i.e. their deviation from the regression line 1:1, is not significant. The correlation coefficient between the pairs of values is 0.76, which is indicative of a good convergence of the data.





Figure 10.10: Krasnoe Deposit Comparison of Declustered Composite and Block Model Grades

In addition paired diagrams of the interpolated and declustered data distribution were constructed for the Krasnoe deposit. Figure 10.11 shows that the distribution curves are very close. The good correlation of interpolated and declustered data indicates that in the course of the interpolation, the gold grades were not excessively "dispersed" or smoothed within the block model.





Figure 10.11: Comparison of the Grades of Gold in the Declustered Composites and the Block Model Cells

10.4.10 Mineral Resource Classification

The mineral resources estimated within the wireframes were classified in accordance with the guidelines of the JORC Code (2012).

The Krasnoe deposit mineral resources were assigned to the categories of Indicated and Inferred. The categorisation was based on the following principles:

- Those cells of the block model that fall within the exploration grid of 40 m to 50 m by 40 m to 50 m were assigned to the Indicated category; and,
- Other cells which did not satisfy these conditions were assigned to the Inferred category.

Figure 10.12 illustrates the Krasnoe deposit block model, the cells of which are coloured according to the assigned categories (Indicated – green, Inferred – blue).

In view of the insufficient amount of available geological information, the Vostochnoye mineral occurrence mineral resources were classified as Inferred.





Figure 10.12: Krasnoe Deposit Classified Mineral Resources (Plan View from the Southwest)

10.4.11	Krasnoe Dep	osit Resources a	t Different Cut	t-Off Grades
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This section is presented solely for the informational purposes as it describes the mineral resources not defined using the guidelines of the JORC Code (2012), but resources in general for the block model (Table 10.16). According to Article 20 of the JORC Code (2012) "a mineral resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade, likely mining dimensions, location or continuity. It is a realistic inventory of mineralisation which, under assumed and justifiable technical, economic and development conditions, might, in whole or in part, become economically extractable."

Cut-Off	Indicated Mineral Resources Inferred Mineral Resou			sources		
Grade (g/t)	Tonnage (Mt)	Gold (g/t Au)	Gold (t)	Tonnage (Mt)	Gold (g/t Au)	Gold (t)
0	10.9	0.891	9.7	30.6	1.706	52.2
0.1	9.9	0.972	9.7	30.1	1.735	52.2
0.2	9.2	1.038	9.6	29.3	1.776	52.1
0.3	8.4	1.111	9.4	28.7	1.811	51.9
0.4	7.5	1.2	9.0	27.9	1.853	51.7
0.5	6.7	1.294	8.7	26.8	1.907	51.2
0.6	5.9	1.394	8.2	25.6	1.972	50.5
0.7	5.3	1.485	7.8	24.2	2.05	49.6
0.8	4.6	1.585	7.3	22.9	2.126	48.6
0.9	4.0	1.693	6.8	21.6	2.202	47.5
1	3.5	1.802	6.4	20.3	2.28	46.3

 Table 10.16: Krasnoe Deposit Mineral Resources as at 1st January 2018 (for a Range of Cut-Off Grades)



Figures 10.13 and 10.14 show the tonnage grade curves for Indicated and Inferred mineral resources, respectively.







Figure 10.14: Krasnoe Deposit Tonnage Grade Curve for Inferred Mineral Resources at Different Cut-Off Grades



Table 10.17 shows the Vostochnoye mineral occurrence mineral resources as at 1st January 2018 for a range of cut-off grades and Figures 10.15 shows the tonnage grade curve for the Inferred mineral resources.

Cut-Off Grade	Inferred Mineral Resources				
(g/t Au)	Tonnage (Mt)	Gold	Gold (t)		
0.0	10.0	(g/t Au)	15.0		
0,0	10.0	1.321	13.2		
0.1	10.0	1.521	15.2		
0.2	10.0	1.521	15.2		
0.3	10.0	1.521	15.2		
0.4	10.0	1.525	15.2		
0.5	9.9	1.535	15.1		
0.6	9.6	1.568	15.0		
0.7	9.0	1.624	14.6		
0.8	8.7	1.655	14.4		
0.9	8.1	1.714	13.9		
1,0	7.7	1.759	13.5		

 Table 10.17: Vostochnoye Mineral Occurrence Mineral Resources as at 1st January 2018 (for a Range of Cut-Off Grades)



Figure 10.15: Vostochnoye Mineral Occurrence Tonnage Grade Curve for Inferred Mineral Resources at Different Cut-Off Grades



The mineral resources estimate, taking into account the final mining contours, developed in accordance with the guidelines of the JORC Code (2012), is presented in the next section of this report.



11.0 MINING AND ORE RESERVES ESTIMATE

11.1 MAIN TECHNICAL SOLUTIONS AND MINING PARAMETERS

At the time of preparation of the present report, the technical solutions associated with the development of the Krasnoe deposit have not been elaborated to the extent which would allow deposit ore reserves to be estimated in accordance with the guidelines of the JORC Code (2012), i.e. with the detailsation at the level of a Preliminary Feasibility Study or Russian Cut-Off Grade Estimation Report for the reserves.

The preliminary analysis, associated with the mining operations, was performed on the basis of the deposit block model and the development of the deposit, which is reviewed in the previous sections of the present report. Figures 10.7 and 10.8 display general views of the block models for the Krasnoe deposit and the Vostochnoye mineral occurrence. Figure 10.12 illustrates the mineral resource categories for the Krasnoe deposit in accordance with the guidelines of the JORC Code (2012). The Vostochnoye mineral occurrence only has Inferred mineral resources which cannot be converted to ore reserves in accordance with the JORC Code (2012).

The block model view in Figure 10.12 of the Krasnoe deposit only contains visible cells containing gold. The elevations of the mineralised zones range from 420 m to 1,000 m. The topography elevations within the site immediately over the deposits range between 890 m to 1,020 m. The identified deposits outcrop under the scree in the south-eastern part of the site and are traced to a depth of up to 400 m in the north-western area of the deposit.

Micon proceeded with the assumption, that the Krasnoe deposit will be developed using open pit mining methods. The possibility of developing the deep deposit levels by underground means requires a detailed analysis, particularly those areas that are uneconomic to mine by surface mining. Micon did not complete a study on underground mining; this should be done at a later stage in the project life after further geological study of the deposit.

Micon did not undertake any detailed designs for the open mining operations, Micon studied the report "Technical and economic calculation of the construction of the GOK on the basis of the Krasnoe deposit", prepared by Irgiredmet in 2016. Micon completed a thorough analysis and corrected several solutions suggested by this report.

Micon proceeded from the assumption that the conventional truck and shovel mining method with external dumping of waste will be used in accordance with the deposit setting. The rock will be prepared for excavation using the drill and blast method.

Micon did not use the value (800 kt/a of ore production capacity) proposed by the Irgiredmet report in 2016 for open pit mining methods, the value considered in the processing section of the report of 1 Mt/a was used. Micon used a temporary version of the ore processing, due to the limited amount of mineral resources in the deposit. A concentration plant has already been built at a distance of 14 km from the deposit which offers Kopy Goldfields a processing capacity of 200 kt/a. Micon has assumed that Kopy Goldfields would invest the funds needed to build another plant with a capacity of 200 kt/a and accept the offer of the original plant. The total production capacity of plants will be 400 kt/a. Micon assumes that both plants will implement the same processing flowsheets, as suggested in the processing section



of this report. Assuming this, Micon predicts that the oxide ore will be processed with a gold recovery of 77.5%, transitional ore recovery of 87.8% and primary ore recovery of 88.5%.

During the assessment of the deposit development and mining capital costs, Micon proceeded by using the main types of loading and hauling machinery which the Client plans to use from the 2016 Irgiredmet report. However Micon completed a revision of the number of machines and the total cost of this equipment. The list and number of mining equipment is shown in Table 11.1.

No.	Name a Type of Machine	Number of Equipment
1	Atlas Copco ROC L8, 110-203 mm	1
2	Caterpillar Hydraulic Shovel CAT 390FL, bucket 6 m ³	2
3	Mining Truck Volvo, A40G, 30 t	4
4	Bulldozer CAT D9R, Caterpillar	2
5	Water Drainage Station	1
6	Other Equipment	1

Table 11.1: Mining Equipment Suggested by the Irgiredmet Report (2016)

These equipment models correspond to the conditions of the deposit and the scale of the future operations.

Kopy Goldfields suggested that Micon use the report detailing the safe slopes for the pit walls, issued in 2018 by the Moscow Mining Institute. The report suggests the angles shown in Table 11.2.

Line	Azimuth Line (°)	Stable Vertical Angle (°)	Height of the Wall (m)	Ratio of Stability
A-A	18	40	347.3	1.15
Б-Б	84	45	233.9	1.153
B-B	108	41	316.8	1.187
Γ-Γ	144	51	220.0	1.164
A-A	198	45	271.5	1.153
Б-Б	264	52	178.0	1.29
B-B	288	44	292.0	1.178
Γ-Γ	324	48	245.8	1.15

 Table 11.2: Stable Pit Wall Parameters

 (Suggested by the Moscow Mining Institute 2018 Report)

Micon incorporated these angles into the Whittle Software which was used to construct the optimal final pit walls. The software automatically declined several angles, giving an explanation that the difference between corners was too large along the lines that are too close to each other. Micon used the angles shown in Table 11.3.



Line	Azimuth Line (°)	Stable Vertical Angle (°)
A-A	18	40
Б-Б	84	43
B-B	108	41
Γ-Γ	144	46
A-A	198	45
Б-Б	264	46
B-B	288	44
Γ-Γ	324	48

Table 11.3: Stable Pit Wall Parameters Angles Used

Micon used the values of 5.0% and 10.0% for loss and dilution in the mining operations, respectively. These values correspond to the actual performance of similar mining operations and are considered suitable.

11.2 OPEN PIT OPTIMISATION

To construct the final open pit contour on the basis of the deposit block model an optimisation analysis was performed using Whittle software. During the optimisation the topographic surface area of the deposit provided by LLC Krasny was used.

Kopy Goldfields proposed the final open pit parameters shown in Table 11.4 for the construction of the open pits to be used in the optimisation. Micon considers these parameters suitable and used them for constructing the open pits.

Parameter	Unit	Value	Unit	Value
Specific Cash Costs for Waste Stripping (direct operating costs)	RUB/t	83.1	US\$/t	1.38
Specific Cash Costs for Balance Ore Mining (direct operating costs)	RUB/t	109.0	US\$/t	1.82
Specific Cash Costs for Ore Processing (direct operating costs)	RUB/t	417.2	US\$/t	6.95
General Production Costs	RUB/t	248.2	US\$/t	4.14
Administrative Costs	RUB/t	84.0	US\$/t	1.40
Deductions and Payments (land rent, subsoil use, ecology and transport tax)	Million RUB/year	12.1	US\$/t	0.07
Gold Price	US\$/oz	1,250.0	US\$/t	40.19
Exchange Rate	RUB/US\$	60.0	-	-
Refining and Transportation	%	0.24	US\$/g	0.10
Royalty	%	6.50	US\$/g	2.61
Gold Recovery from Oxide Ore	%	77.5	-	-
Gold Recovery From Transitional Ore	%	87.8	-	-
Gold Recovery from Primary Ore	%	88.5	-	-

Table 11.4: Parameters of Final Open Pit Optimisation

The optimisation of the final open pit mine was carried out in Whittle Software for two versions of the initial data. The first optimisation version used the block model with the inclusion of Indicated and Inferred mineral resource cells. The result of this calculation version cannot be used to estimate ore reserves in accordance with the guidelines of the JORC Code (2012); it is intended to demonstrate the overall resource potential of the Krasnoe deposit. The second optimisation version was completed using only Indicated mineral resource cells. The result of this optimisation is used to estimate the ore reserves in accordance with the guidelines of the JORC Code (2012); the second optimisation version was completed using only Indicated mineral resource cells. The result of this optimisation is used to estimate the ore reserves in accordance with the guidelines of the JORC Code (2012).

11.2.1 Optimisation Version 1

This optimisation was completed using Indicated and Inferred mineral resources. A sequence of surfaces for the final open pit contours (shells) were constructed for a range of revenue factors from 0.4 to 2.0 (nine values). For each of the constructed pit shells in the sequence the metal price is multiplied by this revenue factor.

The pit shell obtained for the base gold price of US\$1,250/oz (gold revenue is equal to 1) was used for the estimation of mineral resources and is illustrated in 3D in Figure 11.1.

A cut-off grade of 0.4 g/t Au was used in Surpac to estimate the mineral resources within the resultant pit shell (Table 11.5).

JORC Category	Ore Type	Tonnage (kt)	Grade (g/t Au)	Gold (kg)	Gold (oz)
	Oxide	2,871	1.17	3,372	108,398
Indicated	Transitional	2,424	1.14	2,770	89,042
	Primary	2,244	1.29	2,904	93,353
Total Indicated		7,539	1.20	9,045	290,793
	Oxide	582	0.95	555	17,859
Inferred	Transitional	732	1.62	1,185	38,091
	Primary	17,201	2.07	35,631	1,145,559
Total Inferred		18,515	2.02	37,371	1,201,508
Total		26,054	1.78	46,416	1,492,302

 Table 11.5: Mineral Resources for the Krasnoe Deposit as at 17th April 2018 (in accordance with the guidelines of the JORC Code (2012)





Figure 11.1: View of the Final Open Pit in 3D for Indicated and Inferred Mineral Resources

11.2.2 Optimisation Version 2

This optimisation was completed using Indicated mineral resources, Inferred mineral resource cell are reported as waste. As in Version 2 a sequence of surfaces for the final open pit shells were constructed for a range of revenue factors from 0.4 to 2.0 (nine values). For each of the constructed pit shells in the sequence the metal price is multiplied by this revenue factor.

The pit shell obtained for the base gold price of US\$1,250/oz (gold revenue is equal to 1) was used for the estimation of resources. This pit shell was used in Surpac to produce an open pit design.

11.3 OPEN PIT DESIGN

Micon constructed a final open pit based on the selected optimal final pit shell produced in Whittle software from the version 2 optimisation using a gold price of US\$1,250/oz.

While constructing the final open pit Micon used the open pit design parameters presented in Table 11.6.

Item	Value
Final Height of the Bench (m)	20
Bench Slope Angle (°)	60
Safety Berm Width (m)	8
Two Lane Ramp Width (m)	20
Minimum Width of the Stripping Line (accounting for motor transport turning conditions) (m)	23
Ramp Gradient (%)	8

Table 11.6: Parameters for the Open Pit Mining Operations

The resulting open pit design is displayed in Figures 11.2 and 11.3 in 3D and in plan view, respectively.





Figure 11.2: Plan of the Final Open Pit in 3D for Indicated Resources



Kopy Goldfields AB



Figure 11.3: Plan View of the Final Open Pit for Indicated Resources



11.4 EVALUATION OF KRASNOE DEPOSIT RESERVES

The constructed final open pit was used to estimate the ore reserves of the Krasnoe deposit in accordance with the guidelines of the JORC Code (2012). The ore reserves are presented in Table 11.7. When estimating the deposit ore reserves a cut-off grade of 0.4 g/t Au was used along with 5% losses and dilution of 10%.

JORC Category	Ore Type	Tonnage (kt)	Grade (g/t Au)	Gold (kg)	Gold (oz)
Probable	Oxide	3,031	1,06	3,203	102,978
Probable	Transitional	2,536	1,02	2,598	83,530
Probable	Primary	1,775	1,24	2,198	70,656
Total		7,342	1,09	7,999	257,164

Table 11.7: Ore Reserves for the Krasnoe Deposit as at 17th April 2018 (in accordance with the guidelines of the JORC Code (2012)

11.5 VOSTOCHNOYE MINERAL OCCURRENCE

An assessment of the mineral resources was completed for the Vostochnoye mineral occurrence. It was not possible to estimate ore reserves as the mineral resources for the Vostochnoye mineral occurrence are categorised as Inferred.

A pit shell was constructed in Whittle and the mineral resources calculated within this pit shell in Surpac. Micon used the same mining parameters used for the Krasnoe deposit (Table 11.4). The angles of all pit slopes were estimated at 45°.

A cut-off grade of 0.4 g/t Au was used for the mineral resources and the estimate is presented in Table 11.8.

 Table 11.8: Mineral Resources for the Vostochnoye Mineral Occurrence as at 17th April 2018 (in accordance with the guidelines of the JORC Code (2012)

JORC Category	Tonnage	Grade	Gold	Gold
	(kt)	(g/t Au)	(kg)	(oz)
Inferred	6,689	1.57	10,537	338,767

11.6 MINING PRODUCTION SCHEDULE

Based on the deposit block model and the final pit shell Micon constructed a production schedule for mining the reserves of the Krasnoe deposit.

When constructing the production schedule Micon assumed the following:

- 1. Oxide, transitional and primary ore extracted from the deposit will be processed by the plant located 14 km from the deposit with a production capacity of 0.2 Mt/a. In addition to this plant an additional plant will be constructed at the deposit with a production capacity of 0.2 Mt/a also.
- 2. Processing plants will commence production on 1st January 2020.



- 3. In the first year the capacity of the plants will reach 0.3 Mt/a.
- 4. In the future, the production capacity of the ore processing plants will be 0.4 Mt/a (total value for oxide, transitional and primary ore); the production value will exceed this value.
- 5. In the first 13 years of mining (2020 to 2033) ore with grade exceeding 0.7 g/t Au will be submit to the processing plant. Ore with grades between of 0.4 g/t Au to 0.7 g/t Au will be stockpiled. In the 14th year of production, 44,000 tons of ore with a grade in excess of 0.7 g/t Au will be delivered to the plants from the pit. Previously stockpiled ore will be processed together with ore supplied from the pit, and later stockpiled ore will be processed independently.
- 6. Mining at the deposit will produce 433 kt of ore in the first year of production; then it will vary between 557 kt and 578 kt of ore per year. In 2033, the last year of pit mining, the production capacity of the pit will decrease to 61 kt.
- 7. During 2033 to 2038 processing will mainly include ore previously stockpiled with grades between 0.4 g/t Au to 0.7 g/t Au.

The mining schedule is presented in Table 11.9 and the processing schedule is presented in Table 11.10. The graphs in Figure 11.4 graphically represent the dynamics of the main indicators of the plan for the project.

Table 11.9: Krasnoe Deposit Production Schedule

									Ye	ars						
Parameter	Units	Total	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1	T	1	Oxide	Ore	1	1	1	1		1	1	1	1	1	
Mining of Oxide Ore (grade > 0.7 g/t Au)	kt	2 118	182	222	222	202	196	188	187	181	190	190	158	-	-	-
Gold Grade in Oxide Ore	g/t	1.300	1.305	1.315	1.290	1.280	1.302	1.334	1.267	1.298	1.304	1.306	1.307	-	-	-
Gold in Oxide Ore	kg	2,754	237	292	286	259	255	251	237	235	248	248	206	-	-	-
Transition Ore																
Mining of Transitional Ore (grade > 0.7 g/t Au)	kt	1,738	118	178	178	159	126	115	113	110	114	114	114	228	70	-
Gold Grade in Transitional Ore	g/t	1.274	1.180	1.152	1.186	1.222	1.380	1.381	1.386	1.404	1.326	1.270	1.270	1.272	1.272	-
Gold in Transition Ore	kg	2,214	139	205	211	194	174	159	157	154	151	145	145	290	90	-
Primary Ore																
Mining of Primary Ore (grade > 0.7 g/t Au)	kt	1,289	-	-	-	39	78	97	100	109	96	96	128	172	330	44
Gold Grade in Primary Ore	g/t	1.522	-	-	-	1.178	1.303	1.514	1.615	1.615	1.615	1.636	1.733	1.647	1.369	1.385
Gold in Primary Ore	kg	1,962	-	-	-	46	102	147	162	176	155	157	222	283	452	61
				Total	Ore											
Total Ore Mining (grade > 0.7 g/t Au)	kt	5,144	300	400	400	400	400	400	400	400	400	400	400	400	400	44
Total Gold Grade in Ore	g/t	1.347	1.256	1.242	1.244	1.247	1.327	1.392	1.388	1.413	1.385	1.375	1.433	1.433	1.352	1.385
Total Gold in Ore	kg	6,930	377	497	497	499	531	557	555	565	554	550	573	574	541	61
			Oxi	ide Ore	Stockpil	e										
Oxide Ore (grade > $0.4 \text{ g/t Au} < 0.7 \text{ g/t Au}$)	kt	913	78	96	96	87	84	81	81	78	82	82	68	-	-	-
Gold Grade in Oxide Ore	g/t	0.491	0.493	0.497	0.487	0.484	0.492	0.504	0.479	0.490	0.493	0.493	0.494	-	-	-
Gold in Oxide Ore	kg	448	39	48	47	42	42	41	39	38	40	40	34	-	-	-
Oxide Accumulated Ore (grade > 0.4 g/t Au < 0.7 g/t Au)	kt	-	78	174	270	357	441	522	603	681	763	845	913	-	-	-
Gold Grade in Accumulated Oxide Ore	g/t	-	0.493	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	-	-	-
Total Gold in Oxide Accumulated Ore	kg	-	39	86	133	175	216	257	296	334	374	415	448	-	-	-

 Table 11.9: Krasnoe Deposit Production Schedule (cont)

										Years						
Parameter	Units	Total	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
				Fransiti	onal Ore	Stockpi	le					-	-			
Transitional Ore (grade > 0.4 g/t Au < 0.7 g/t Au)	kt	799	54	82	82	73	58	53	52	51	52	52	52	105	32	-
Gold Grade in Transitional Ore	g/t	0.481	0.446	0.435	0.447	0.461	0.521	0.521	0.523	0.530	0.500	0.479	0.479	0.480	0.480	-
Gold in Transitional Ore	kg	384	24	36	37	34	30	28	27	27	26	25	25	50	16	-
Transition Accumulated Ore (grade > 0.4 g/t Au < 0.7 g/t Au)	kt	-	54	136	218	291	349	402	454	505	557	610	662	767	799	-
Gold Grade in Accumulated Transitional Ore	g/t	-	0.446	0.44	0.44	0.45	0.46	0.47	0.47	0.48	0.48	0.48	0.48	0.48	0.48	-
Total Gold in Transitional Accumulated Ore	kg	-	24	60	96	130	160	188	215	242	268	293	318	369	384	-
Primary Ore Stockpile																
Primary Ore, (grade > $0.4 \text{ g/t Au} < 0.7 \text{ g/t Au}$)	kt	486	-	-	-	15	29	37	38	41	36	36	48	65	124	17
Gold Grade in Primary Ore	g/t	0.485	-	-	-	0.376	0.416	0.483	0.515	0.515	0.515	0.522	0.552	0.525	0.436	0.442
Gold in Primary Ore	kg	236	-	-	-	6	12	18	19	21	19	19	27	34	54	7
Primary Accumulated Ore (grade > $0.4 \text{ g/t Au} < 0.7 \text{ g/t Au}$)	kt	-	-	-	-	15	44	81	118	159	196	232	280	345	469	486
Gold Grade in Accumulated Primary Ore	g/t	-	-	-	-	0.376	0.40	0.44	0.46	0.48	0.48	0.49	0.50	0.50	0.49	0.49
Total Au in Primary Accumulated Ore	kg	-	-	-	-	6	18	35	55	76	95	113	140	174	228	236
				Tota	Ore Sto	ockpile										
Total Ore (grade > 0.4 g/t Au < 0.7 g/t Au)	kt	2,198	133	178	178	175	172	170	170	170	171	171	169	170	157	17
Gold Grade	g/t	0.486	0.473	0.468	0.469	0.465	0.489	0.505	0.500	0.508	0.500	0.495	0.506	0.497	0.445	0.442
Total Gold in Accumulated Ore	kg	1,069	63	83	83	81	84	86	85	86	85	84	85	84	70	7
					Total O	re										
Total Ore Mined (grade > 0.4 g/t Au)	kt	7,342	433	578	578	575	572	570	570	570	571	571	568	570	557	61
Total Gold Grade	g/t	1.089	1.016	1.004	1.005	1.009	1.075	1.127	1.123	1.144	1.120	1.112	1.158	1.154	1.097	1.127
Total Gold in Mined Ore	kg	7,999	440	580	581	580	615	643	640	652	639	634	658	658	611	68
				Wa	ste Strip	oping										
Waste Stripping Corrected Volume	k m ³	18,555	1,100	1,300	1,350	1,400	1,500	1,500	1,600	1,600	1,600	1,500	1,400	1,300	1,250	155
Waste Stripping Corrected Accumulated Volume	k m ³	18,555	1,100	2,400	3,750	5,150	6,650	8,150	9,750	11,350	12,950	14,450	15,850	17,150	18,400	18,555
Stripping Ratio	m ³ /t	2.53	2.54	2.25	2.34	2.44	2.62	2.63	2.81	2.81	2.80	2.63	2.46	2.28	2.24	2.56

Parameters	Units	Total	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2020	2021	2022	2023	2024
Oxide Ore																					
Processing of Oxide Ore	kt	2,118	182	222	222	202	196	188	187	181	190	190	158	-	-	-	-	-	-	-	-
Gold Grade in Oxide Ore	g/t	1.300	1.30	1.31	1.29	1.28	1.30	1.33	1.27	1.30	1.30	1.31	1.31	-	-	-	-	-	-	-	-
Gold in Oxide Ore	kg	2,754	237	292	286	259	255	251	237	235	248	248	206	-	-	-	-	-	-	-	-
Gold Recovery	%	77.5	77.5	77.5	77.5	77.5	77.5	77.5	77.5	77.5	77.5	77.5	77.5	-	-	-	-	-	-	-	-
Gold Extracted from Oxide Ore	kg	2,134	184	226	222	200	198	194	184	182	192	192	160	-	-	-	-	-	-	-	-
Transitional Ore																					
Processing of Transitional Ore	kt	1,738	118	178	178	159	126	115	113	110	114	114	114	228	70	-	-	-	-	-	-
Gold Grade in Transitional Ore	g/t	1.274	1.18	1.15	1.19	1.22	1.38	1.38	1.39	1.40	1.33	1.27	1.27	1.27	1.27	-	-	-	-	-	-
Gold in Transitional Ore	kg	2,214	139	205	211	194	174	159	157	154	151	145	145	290	90	-	-	-	-	-	-
Gold Recovery	%	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	87.8	-	-	-	-	-	-
Gold Extracted from Transitional Ore	kg	1,944	122	180	185	171	153	139	138	136	133	127	127	255	79	-	-	-	-	-	-
	Primary Ore																				
Processing of Primary Ore	kt	1,289	-	-	-	39	78	97	100	109	96	96	128	172	330	44	-	-	-	-	-
Gold Grade in Primary Ore	g/t	1.522	-	-	-	1.178	1.303	1.514	1.615	1.615	1.615	1.636	1.733	1.647	1.369	1.385	-	-	-	-	-
Gold in Primary Ore	kg	1,962	-	-	-	46	102	147	162	176	155	157	222	283	452	61	-	-	-	-	-
Gold Recovery	%	88.5	-	-	-	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	88.5	-	-	-	-	-
Gold Extracted from Primary Ore	kg	1,736	-	-	-	41	90	130	143	156	137	139	196	251	400	54	-	-	-	-	-
							Ox	tide Ore	Stockpile	e											
Processing of Oxide Ore	kt	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	271	400	242
Gold Grade in Oxide Ore	g/t	0.491	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.491	0.491	0.491
Gold in Oxide Ore	kg	448	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	133	196	119
Gold Recovery	%	77.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.5	77.5	77.5
Gold Extracted from Oxide Ore	kg	347	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	152	92

Parameters	Units	Total	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2020	2021	2022	2023	2024
							Tran	sition Or	e Stockp	ile											
Processing of Transition Ore	kt	799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	400	129	-	-
Gold Grade in Transition Ore	g/t	0.481	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.481	0.481	0.481	-	-
Gold in Transition Ore	kg	384	-	-	-	-	1	1	-	-	-	-	-	-	-	-	130	192	62	-	-
Gold Recovery	%	87.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.8	87.8	87.8	-	-
Gold Extracted from Transition Ore	kg	337	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	169	55	-	-
							Prin	nary Ore	Stockpi	le											
Processing of Primary Ore	kt	486	-	-	-	-	-	-	-	-	-	-	-	I	-	356	130	-	-	-	-
Gold Grade in Primary Ore	g/t	0.485	-	-	-	-	I	I	-	-	-	-	-	1	-	0.485	0.485	-	-	-	-
Gold in Primary Ore	kg	236	-	-	-	-	-	-	-	-	-	-	-	-	-	173	63	-	-	-	-
Gold Recovery	%	88.5	-	-	-	-	-	-	-	-	-	-	-	-	-	88.5	88.5	-	-	-	-
Gold Extracted from Primary Ore	kg	209	-	-	-	-	-	-	-	-	-	-	-	-	-	153	56	-	-	-	-
								Total	Ore												
Total Ore Processing	kt	7,342	300	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	242
Total Gold Grade	g/t	1.089	1.256	1.242	1.244	1.247	1.327	1.392	1.388	1.413	1.385	1.375	1.433	1.433	1.352	0.584	0.482	0.481	0.488	0.491	0.491
Total Gold in Ore	kg	7,999	377	497	497	499	531	557	555	565	554	550	573	574	541	234	193	192	195	196	119
Gold Recovery	%	83.9	81.31	81.75	81.87	82.52	82.98	83.34	83.61	83.74	83.39	83.35	84.36	88.15	88.38	88.50	88.03	87.80	80.78	77.50	77.50
Total Gold Extracted	kg	6,708	306	406	407	412	440	464	464	473	462	458	483	506	478	207	170	169	158	152	92

 Table 11.11: Processing Production Schedule for the Krasnoe Deposit (cont)







12.0 ECONOMIC ANALYSIS

12.1 ECONOMIC ASSESSMENT BASIS

12.1.1 General Provisions

Micon completed a preliminary economic assessment on the mining potential of the Krasnoe deposit, including the production of the planned discounted cash flow and calculation of the net present value (NPV). This type of assessment is standard practice in the international mining industry.

The assessment period from 1st January 2020 to 2039 includes complete depletion of the mineable resources, previously estimated by Micon.

The mining schedule prepared by Micon for the Krasnoe deposit reserves served as the basis for the assessment (see Section 11.6 Mining Production Schedule).

12.1.2 Cash Flow Model Structure

The structure of the cash flow model and the calculations correspond to the standard methodology used for such assessments and, in particular, the method used by Micon. The cash flow model incorporates the cost data structure provided by the Client, Kopy Goldfields, and the data in every year of the model includes:

- Forecasted tonnages of oxide, transitional and primary ore, the gold grade of mined ore, scheduled volume of stripping;
- Forecasted tonnage of ore processed at the plant (plant construction at the deposit is accounted for), the gold grade of processed ore, the total recovery of gold for the oxide, transitional and primary ores and the tonnage of produced metal;
- Commodity costs for transportation and refining;
- Forecasted revenues from commodity sales;
- Forecasted operating production costs: for ore mining and other mining operations for ore processing (including the haulage costs);
- Forecasted general production and general running costs (administrative and other company costs which are not directly associated with the production);
- Royalty (mineral extraction tax), property tax, income tax;
- Annual profit;
- Estimated capital investments;
- Flow of the working capital; and,
- Free cash flow.

The cash flow model analysis is based on the review of the calculated NPV values and on the main production schedule and economic parameters. Micon has also constructed and analysed diagrams showing the NPV sensitivity to variations in the main factors affecting the economic efficiency of the project such as the gold price, operating and capital costs.

12.1.3 Macroeconomic Parameters Forecast

All operating and capital costs values used by Micon in the cash flow model for the entire forecast period were factored to the US\$ equivalent and based on the deposit mineral resource assessment dated as of 17th April 2018 and does not account for inflation.

The official US\$/RUB exchange rate of the Central Bank of the Russian Federation as at 1st January 2018 was used, valued at RUB 60.0/US\$.

12.1.4 Gold Price Forecast

Micon's assessment is based on the permanent gold price of US\$1,250/oz. Micon believes it is practical to use this value in the preliminary economic assessment of the deposit.

12.1.5 Taxes

The taxes in the cash flow model include royalty (mineral extraction tax), income tax and property tax. The rates, compliant with current Russian legislation, are presented in Table 12.1.

Tax	Rate (%)	Taxable Basis
Royalty/Mineral Extraction Tax for Gold	6.0	Gross profit from metal sales
Income Tax	20.0	Income of the enterprise
Property Tax	2.2	Depreciated cost of the real estate assets

Table 12.1: Rates and Basis of Calculated Taxes

The cash flow model is based on the assumption that all taxes and fees, except for those accounted for specifically, are included in the general running costs.

12.1.6 Depreciation

The cash flow model prepared by Micon accounts for depreciation. For buildings and constructions the deprecation is calculated at a per tonne rate. Equipment depreciation is determined using the straight-line method with a fixed rate. Micon used the depreciation period of seven years for mining and other mobile equipment and ten years for the processing and other fixed plant.

12.1.7 Discount Rate

In determining the net present value (NPV) for the project an acceptable discount rate was applied. The discount rate represents the weighted average cost of the capital set for the project by the capital markets. The basic discount rate used by Micon for this project is 6%. The NPV sensitivity analysis was set with a variation of the discount rate ranging from 2% to 10% was completed.

12.2 CAPITAL COSTS

Micon's assessment is based on the Capital Costs Schedule provided by the Irgiredmet report issued in 2016. The capital costs were estimated for operation with the productive capacity of 0.4 Mt/a of ore.

Micon assumed that all costs associated with the construction and the installation of equipment were in local RUB prices. The RUB values of these cost elements were factored to 1st January 2018 with due account of the official commodity producers price index of the Russian Federation, as the index of the RUB inflation, and then were converted to US\$ as at 1st January 2018.

Micon assumed that all costs associated with acquisition of equipment (mainly foreign) are in US\$ prices. Not accounting for US\$ inflation, Micon used the US\$ prices of this equipment.

Micon included the mining equipment capital costs schedule provided by the Irgiredmet report into the model. The equipment park was subjected to an audit involving the change in the production capacity of the operation.

The base cash flow model that Micon reviewed does not include the capital mining operations. All waste stripping costs are taken into account as operating costs.

Micon supplemented the capital cost data with the reclamation and enterprise closure costs for the years 2033 to 2038, which represent the last year of mining the reserves and the last year of processing the mined ore in accordance with the used schedule. Table 12.2 displays the schedule of capital costs used in the Micon assessment.

Micon believes the values used are acceptable for the assessment of the economic potential of the Krasnoe deposit.

Table 12.2: Capital Cost Schedule of Investments (conditions as at 1st January 2018)

Parameter	Units	Total	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
	-					Desig	n and	Engine	ering										1					
Open Pit	US\$'000	542	0	163	379	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant	US\$'000	903	0	271	632	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Detailed Drawings and Textual Documents	US\$'000	903	0	226	678	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Design and Engineering	US\$'000	2,349	0	659	1,689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	•					Pl	ant Eq	uipme	nt															
Equipment	US'000	7,183	0	3,591	3,591	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Equipment	US'000	7,183	0	3,591	3,591	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nstruction																								
Preparation of the Territory	US\$'000	186	0	93	93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Main Objects of the Construction	US\$'000	12,635	0	6,317	6,317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Objects of Ancillary and Serving Purpose	US\$'000	1,996	0	1,330	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Facilities	US\$'000	3,277	0	0	3,277	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport Facilities	US\$'000	283	0	0	283	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
External Networks and Facilities	US\$'000	621	0	311	311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Construction	US\$'000	18,997	0	8,051	10,946	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
						Mi	ning E	quipm	ent															
Drill Rig ROC L8, 110-203 mm, Atlas Copco	US\$'000	935	0	0	935	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydraulic Shovel CAT 390FL, 6 m ³ , Caterpillar	US\$'000	2,287	0	0	1,143	1,143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Truck Volvo, A40G, 39 t	US\$'000	4,361	0	0	2,181	2,181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dozer CAT D9R, Caterpillar	US\$'000	1,572	0	0	786	786	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drain Station	US\$'000	92	0	0	92	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Technical Equipment	US\$'000	456	0	0	456	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Mining Equipment	US\$'000	9,703	0	0	5,593	4,110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Others																							
Costs for the Renewal of Fixed Assets	US\$'000	767	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50	50	33	33	33	33	33	0
Cost of Reclamation	US\$'000	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,500	-	-	-	-	1,500
Total Capital Cost, beginning of 2018	US\$'000	41,998,	-	12,302	21,819	4,110	50	50	50	50	50	50	50	50	50	50	50	50	1,533	33	33	33	33	1,500



12.3 OPERATING COSTS

When estimating the projected operating costs, Micon relied on the data provided by the Client, Kopy Goldfields. These data were supplemented and updated by Micon. The specific unit operating costs used are presented in Table 12.3.

Cost Elements	Units	Value	Micon Comments
Cost of Ore Mining	US\$/t	1.89	
Cost of Overburden Stripping	US\$/m ³	3.71	
Cost of Processing Oxide and Primary ore	US\$/t	7.65	50% at the plant at 14 km, 50% at the plant built
General Production and General Running and Administrative Costs	US\$/t	4.15	Reduced by 50% to take into account reduction of processing volume
General and Administrative Costs per Tonne of Stockpiled Ore	US\$/t	0.25	
Ore Re-Handling and Transport to Processing Plant	US\$/t	2.33	
Refining and Transportation of Gold	US\$/g	0.10	

Table 12.3: Operating Cost Values as at 1st January 2018

Micon believes it is acceptable to use the values in Table 12.3 in the economics assessment.

12.4 PRODUCTION SCHEDULE

The Krasnoe mining schedule which was used for the economic assessment is based on the current deposit block model data and corresponds to the ore reserves within the final open pit contour created by Micon. The mining schedule used by Micon at the Krasnoe deposit is presented in Mining Schedule Section. According to this schedule, development of the deposit will commence in 2020 and the estimated ore reserves will be depleted by 2033; stockpiled ore will be processed up to 2038.

Micon used the recovery figures of 77.5% for oxide ore, 87.8% for transitional ore and 88.5% for the primary ore. These figures correspond to the processing studies performed to date for the deposit ores.

Taking into account the enterprise liquidation and land reclamation activities, the economic model covers the entire period from 2017 to 2039.

12.5 CASH FLOW MODELLING RESULTS

Table 12.4 displays the basic cash flow model data for the Krasnoe gold project over the reviewed period of 2017 to 2039.

The dynamics of the main economic parameters for the Krasnoe gold project are presented in Figure 12.1.







The value of net present value for the base case estimate (discount rate of 6%, mid-year discounting) is 3,751 thousand US dollars. The NPV values for the discount rates were considered in the range 2% to 10% changing from US\$18,624 thousand to US\$-6,084 thousand, respectively (see Table 12.4). The total undiscounted cash flow is US\$28,940.

The payback period of the project from the starting date of the deposit development for undiscounted cash flow is 12 years.


Table 12.4: Krasnoe Deposit Main Cash Flow Data 2017 to 2039

		Years																							
Parameter	Units	Totals	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
			-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
									Minir	ng															
Oxide Ore Mined (grade > 0.7 g/t Au)	kt	2,118	0	0	0	182	222	222	202	196	188	187	181	190	190	158	0	0	0	0	0	0	0	0	0
Oxide Ore Gold Grade	g/t	1.300	0.000	0.000	0.000	1.305	1.315	1.290	1.280	1.302	1.334	1.267	1.298	1.304	1.306	1.307	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gold in Oxide Ore	kg	2,754	0	0	0	237	292	286	259	255	251	237	235	248	248	206	0	0	0	0	0	0	0	0	0
Transitional Ore Mined (grade > 0.7 g/t Au)	kt	1,738	0	0	0	118	178	178	159	126	115	113	110	114	114	114	228	70	0	0	0	0	0	0	0
Transitional Ore Gold Grade	g/t	1.274	0.000	0.000	0.000	1.180	1.152	1.186	1.222	1.380	1.381	1.386	1.404	1.326	1.270	1.270	1.272	1.272	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gold in Transitional ore	kg	2,214	0	0	0	139	205	211	194	174	159	157	154	151	145	145	290	90	0	0	0	0	0	0	0
Primary Ora Minad (grada $> 0.7 \text{ g/t} \text{ Au}$)	kt	1 280		0	0	0	0	0	20	70	07	100	100	06	06	120	172	220	4.4	0	0	0	0	0	
Primary Ore Cold Crade	Kl a/t	1,209	0 000	0 000	0 000	0 000	0 000	0 000	1 179	1 202	97	1 615	1 615	90	90	1 722	1/2	1 260	1 295	0 000	0 000	0 000	0 000	0.000	0.000
Cold In Primery Ore	g/t	1.522	0.000	0.000	0.000	0.000	0.000	0.000	1.178	1.505	1.314	1.013	1.013	1.013	1.050	1.755	1.047	1.309	1.363	0.000	0.000	0.000	0.000	0.000	0.000
Gold III Fliniary Ole	ĸg	1,902	0	0	0	0	0	0	40	102	147	102	170	155	137	222	203	432	01	0	0	0	0	0	0
Total Mined Ore (grade $> 0.7 \text{ g/t Au}$)	kt	5 144	0	0	0	300	400	400	400	400	400	400	400	400	400	400	400	400	44	0	0	0	0	0	0
Gold in Mined Ore	g/t	1 347	0.000	0.000	0.000	1 256	1 242	1 244	1 247	1 327	1 392	1 388	1 413	1 385	1 375	1 433	1 433	1 352	1 385	0,000	0.000	0.000	0.000	0.000	0.000
Total Gold in Mined Ore	ka	6.930	0.000	0.000	0.000	377	497	497	499	531	557	555	565	554	550	573	574	541	61	0.000	0.000	0.000	0.000	0.000	0.000
	ĸş	0,550	Ŭ	0	0	511	171	477	777	551	551	555	505	554	550	515	574	541	01	0	0	U		0	
Total Ore (grade > $0.4 \text{ g/t Au} < 0.7 \text{ g/t Au}$)	kt	2,198	0	0	0	133	178	178	175	172	170	170	170	171	171	169	170	157	17	0	0	0	0	0	0
Gold in ore	g/t	0.486	0.000	0.000	0.000	0.473	0.468	0.469	0.465	0.489	0.505	0.500	0.508	0.500	0.495	0.506	0.497	0.445	0.442	0.000	0.000	0.000	0.000	0.000	0.000
Gold in ore	kg	1,069	0	0	0	63	83	83	81	84	86	85	86	85	84	85	84	70	7	0	0	0	0	0	0
Wests Stringing Deviced	1r m ³	19 555		0	0	1 100	1 200	1 250	1 400	1 500	1 500	1 600	1 600	1 600	1 500	1 400	1 200	1.250	155	0	0	0		0	
Waste Stripping	$\frac{K III}{m^{3}/t}$	2 53	0	0	0	2.54	2 25	2 34	2.44	2.62	2.63	2.81	2.81	2.80	2.63	2.46	2.28	2.24	2.56	0	0	0		0	0
waste Surpping	III /t	2.55	-	-	-	2.54	2.23	2.34	Process	2.02	2.03	2.81	2.01	2.80	2.03	2.40	2.20	2.24	2.30						<u> </u>
Oxide Ore Processed	kt	2 118	0	0	0	182	222	222	202	196	188	187	181	190	190	158	0	0	0	0	0	0	0	0	0
Oxide Ore Gold Grade	σ/t	1 300	-	-	-	1 305	1 315	1 290	1 280	1 302	1 334	1 267	1 298	1 304	1 306	1 307	0.00	0	0	0	0	0	0	0	0
Gold in Oxide Ore	ko	2.754	0	0	0	237	292	286	259	255	251	237	235	248	248	206	0	0	0	0	0	0	0	0	0
Oxide Ore Gold Recovery	%	77.5%	-	-	-	78	78	78	78	78	78	78	78	78	78	78	0	0	0	0	0	0	0	0	0
Recovered Gold	kg	2.134	0	0	0	184	226	222	200	198	194	184	182	192	192	160	0	0	0	0	0	0	0	0	0
	8	, -	1 1					I		I			L	I			L								1
Transitional Ore Processed	k t	1,738	0	0	0	118	178	178	159	126	115	113	110	114	114	114	228	70	0	0	0	0	0	0	0
Transitional Ore Gold Grade	g/t	1.274	-	-	-	1.180	1.152	1.186	1.222	1.380	1.381	1.386	1.404	1.326	1.270	1.270	1.272	1.272	0	0	0	0	0	0	0
Gold in Transitional Ore	kg	2,214	0	0	0	139	205	211	194	174	159	157	154	151	145	145	290	90	0	0	0	0	0	0	0
Transitional Ore Gold Recovery	%	87.8%	-	-	-	88	88	88	88	88	88	88	88	88	88	88	88	88	0	0	0	0	0	0	0
Recovered Gold	kg	1,944	0	0	0	122	180	185	171	153	139	138	136	133	127	127	255	79	0	0	0	0	0	0	0
	•											·									•				
Primary Ore Processed	kt	1,289	0	0	0	0	0	0	39	78	97	100	109	96	96	128	172	330	44	0	0	0	0	0	0
Primary Ore Gold Grade	g/t	1.522	-	-	-	-	-	-	1	1	2	2	2	2	2	2	2	1	1	0	0	0	0	0	0
Gold in Primary Ore	kg	1,962	0	0	0	0	0	0	46	102	147	162	176	155	157	222	283	452	61	0	0	0	0	0	0
Primary Ore Gold Recovery	%	88.5%	-	-	-	-	-	-	89	89	89	89	89	89	89	89	89	89	89	0	0	0	0	0	0
Recovered Gold	kg	1,736	0	0	0	0	0	0	41	90	130	143	156	137	139	196	251	400	54	0	0	0	0	0	0
Processing of ore	kt	-	0	0	0	300	400	400	400	400	400	400	400	400	400	400	400	400	44	0	0	0	0	0	0
Processing of ore stockpile	kt	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	356	400	400	400	400	242	0



Table 12.4: Krasnoe Deposit Main Cash Flow Data 2016 to 2032 (cont.)

Parameter	Units	Totals	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Total Processed Ore	k t	7,342	0	0	0	300	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	242	0
Gold in Processed Ore	g/t	1.089	-	-	-	1.256	1.242	1.244	1.247	1.327	1.392	1.388	1.413	1.385	1.375	1.433	1.433	1.352	0.584	0.482	0.481	0.488	0.491	0.491	0
Total Gold in Processed Ore	kg	7,999	0	0	0	377	497	497	499	531	557	555	565	554	550	573	574	541	234	193	192	195	196	119	0
Total Gold Recovery	%	83.9%	-	-	-	81	82	82	83	83	83	84	84	83	83	84	88	88	89	88	88	81	78	78	0
Total Recovered Gold	kg	6,708	0	0	0	306	406	407	412	440	464	464	473	462	458	483	506	478	207	170	169	158	152	92	0
Total Recovered Gold	koz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
									Rever	nue															
Gold Price	US\$/oz	1,250	0	0	0	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Gold Value	US\$'000	269,598	0	0	0	12,311	16,325	16,367	16,546	17,699	18,644	18,653	19,025	18,563	18,420	19,417	20,322	19,223	8,312	6,825	6,787	6,336	6,120	3,703	0
Refining and Transportation	US\$'000	850	0	0	0	39	51	52	52	56	59	59	60	59	58	61	64	61	26	22	21	20	19	12	0
Gold Gross Revenue	US\$'000	268,748	0	0	0	12,272	16,274	16,316	16,493	17,644	18,585	18,594	18,965	18,504	18,362	19,355	20,258	19,163	8,285	6,803	6,766	6,316	6,101	3,691	0
								(Operating	g Costs															
Ore	US\$'000	9,723	0	0	0	567	756	756	756	756	756	756	756	756	756	755	757	757	83	0	0	0	0	0	0
Waste Stripping	US\$'000	68,839	0	0	0	4,081	4,823	5,009	5,194	5,565	5,565	5,936	5,936	5,936	5,565	5,194	4,823	4,638	575	0	0	0	0	0	0
Ore Transport to Plant	US\$'000	8,554	0	0	0	350	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	282	0
Ore Re-Handling to Plant	US\$'000	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	50	50	50	50	30	0
Total Mining	US\$'000	87,391	0	0	0	4,998	6,045	6,231	6,416	6,787	6,787	7,158	7,158	7,158	6,787	6,415	6,046	5,861	1,169	516	516	516	516	312	0
Processing	US\$'000	56,160	0	0	0	2,295	3,059	3,059	3,059	3,059	3,059	3,059	3,059	3,059	3,059	3,057	3,062	3,063	3,059	3,059	3,059	3,059	3,059	1,851	0
Cash Production Cost	US\$'000	143,551	0	0	0	7,292	9,104	9,290	9,475	9,846	9,846	10,217	10,217	10,217	9,846	9,472	9,108	8,923	4,228	3,575	3,575	3,575	3,575	2,163	0
Unit Cash Production Cost	US\$/t	21.4	-	-	-	24.3	22.8	23.2	23.7	24.6	24.6	25.5	25.5	25.5	24.6	23.7	22.8	22.3	10.6	8.9	8.9	8.9	8.9	8.9	-
G & A Costs	US\$'000	21,912	0	0	0	1,246	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,660	1,662	1,663	272	100	100	100	100	61	0
Taxes in Costs																									
Royalty	US\$'000	16,176	0	0	0	739	980	982	993	1,062	1,119	1,119	1,142	1,114	1,105	1,165	1,219	1,153	499	409	407	380	367	222	0
Property Tax	US\$'000	6,358	0	128	416	573	549	508	468	428	389	351	314	281	257	238	219	201	200	199	180	163	146	149	0
Total Taxes	US\$'000	22,534	0	128	416	1,311	1,528	1,490	1,460	1,490	1,508	1,470	1,455	1,395	1,362	1,403	1,438	1,355	699	608	587	543	513	372	0
Cash operating costs	US\$'000	187,997	0	128	416	9,850	12,294	12,441	12,597	12,998	13,015	13,349	13,334	13,273	12,870	12,535	12,208	11,941	5,199	4,284	4,263	4,218	4,188	2,596	0
Unit Operating Cost	US\$/t	25.6	-	-	-	33	31	31	31	32	33	33	33	33	32	31	30	30	13	11	11	11	10	11	-
Unit Operating Cost	US\$/oz Au	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unit Operating Cost	US\$/g Au	28.0	-	-	-	32.2	30.3	30.5	30.6	29.5	28.1	28.8	28.2	28.7	28.1	25.9	24.1	25.0	25.1	25.2	25.2	26.8	27.5	28.2	-
									Incor	ne															
Cash Income	US\$'000	80,751	0	-128	-416	2,422	3,980	3,875	3,897	4,646	5,570	5,245	5,631	5,231	5,492	6,821	8,050	7,222	3,086	2,520	2,503	2,098	1,912	1,096	0
Profit Tax	US\$'000	9,814	0	0	0	0	141	119	136	285	482	576	783	775	912	1,178	1,437	1,272	459	318	332	251	232	127	0
Net Cash Income	US\$'000	70,938	0	-128	-416	2,422	3,839	3,756	3,760	4,361	5,088	4,669	4,848	4,456	4,580	5,643	6,613	5,951	2,627	2,202	2,171	1,846	1,680	969	0
									Capital	Costs															
Capital Expenditure	US\$'000	41,998	0	12,302	21,819	4,110	50	50	50	50	50	50	50	50	50	50	50	50	1,533	33	33	33	33	1,500	0
Including Closure Cost	US\$'000	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,500	-	-	-	-	1,500	0
Unit Capital Expenditure	US\$/t	5.7	-	-	-	13.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.8	0.1	0.1	0.1	0.1	6.2	-
Working Change	US\$'000	0	0	0	1,094	272	28	28	56	0	56	0	0	-56	-56	-55	-28	-704	-98	0	0	0	-212	-325	0
Capital Expenditure + Working change	US\$'000	41,998	0	12,302	22,913	4,382	78	78	106	50	106	50	50	-6	-6	-5	22	-654	1,435	33	33	33	-178	1,175	0

Kopy Goldfields AB



Table 12.4: Krasnoe Deposit Main Cash Flow Data 2016 to 2032 (cont.)

Parameter	Units	Totals	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Net Cash Flow	US\$,000	28,940	0	-12,430	-23,329	-1,960	3,761	3,678	3,655	4,311	4,982	4,619	4,798	4,462	4,586	5,648	6,590	6,605	1,192	2,168	2,138	1,813	1,859	-206	0
Cumulative Net Cash Flow	US\$,000	28,940	0	-12,430	-35,759	-37,719	-33,958	-30,280	-26,625	-22,314	-17,332	-12,713	-7,915	-3,453	1,133	6,781	13,371	19,976	21,168	23,336	25,474	27,287	29,146	28,940	28,940
Discounted Net Cash Flow, 6%	US\$,000	-1,571	0	-11,063	-19,588	-1,552	2,810	2,593	2,431	2,705	2,949	2,579	2,527	2,217	2,150	2,498	2,750	2,600	443	760	707	565	547	-57	0
Discounted Cumulative Cash Flow, 6%	US\$,000	-1,571	0	-11,063	-30,651	-32,203	-29,392	-26,799	-24,369	-21,664	-18,715	-16,136	-13,608	-11,391	-9,241	-6,743	-3,993	-1,393	-950	-190	516	1,082	1,628	1,571	1,571
	Ν	NPV		NPV mi	d-year di	iscount																			
2.0%	10	5,811			18,624																				
4.0%	7	,997			10,389		1																		
6.0%	1	,571			3,751																				
8.0%	-3	3,121			-1,650																				
10.0%	-6	5,542			-6,084																				
Internal Rate of Return			6.6%																						

12.6 SENSITIVITY ANALYSIS

Micon analysed a sensitivity of the Krasnoe deposit development project net present value to positive and negative variation of the gold price, total operating and capital expenses.

12.6.1 Gold Sale Price

The diagram in Figure 12.2 shows the net present value at the relative variation of the gold sale price by 30% in both directions.



Figure 12.2: NPV Sensitivity to Gold Price

Micon notes high sensitivity of the project's net present value (NPV) to the gold price. A reduction of the gold price by 10% results in a negative NPV.

12.6.2 Operating Costs

The diagram in Figure 12.3 displays the net present value at the relative variation of the total operating costs by 30% in both directions.

Micon notes that NPV is sensitive to the operating expenses variation, but to a lesser extent, than to the commodity sale price variation. Micon notes that at the growth of the operating costs by 10%, the Krasnoe deposit exploitation becomes unprofitable.





Figure 12.3: NPV Sensitivity to Operating Costs

12.6.3 Capital Costs

The diagram in Figure 12.4 displays the net present value at the relative variation of the total capital costs by 30% in both directions.

It is evident that the relative variation of capital costs has a significantly smaller influence on the NPV than operating costs. Growth of the capital costs by 10% reduces the project's NPV to a negative value.



Figure 12.4: NPV Sensitivity to the Capital Costs

Kopy Goldfields AB



13.0 CONCLUSIONS AND RECOMMENDATIONS

Micon's audit review of the Krasnoe Gold Deposit has led to the following conclusions and recommendations:

- 1. According to the amount of available geological information and the complexity of the mineralised zones the Krasnoe deposit mineral resources were estimated as Indicated and Inferred and the Vostochnoye mineral occurrence mineral resources as Inferred.
- 2. Additional exploration is required to upgrade the current Inferred mineral resources to a higher category.
- 3. Exploration of the Krasnoe deposit flanks and the Vostochnoye mineral occurrence should be continued.
- 4. For adequate internal and external quality control procedures the number of control samples should be increased to 5% of the total number of samples.
- 5. Analytical results for standard samples and internal and external control data showed low precision and accuracy for the GV Gold laboratory analyses. They are much lower than the "best practice" adopted in the industry.
- 6. Attention should be paid to the selection of certified standards for introduction into sample batches. Certified standard grades should correspond to the sample grades within the grade classes and also have a similar composition.
- 7. Micon recommends replacing the blank sample material with a material that does not contain any useful commodities i.e. gold or silver. The use of free samples from old drill holes can lead to errors in quality control data.
- 8. The ore mineralisation is of gold-quartz low-sulphide type and is relatively simple. Fine and finely-dispersed gold predominate in the ore.
- 9. Cyanide leaching in the presence of a sorbent extracts 86.8% to 87.0% of the gold, most of which is in the form of free gold (58.1% to 61.9%). Interstitial gold and that contained within rock-forming minerals constitutes 24.9% to 8.9%.
- 10. The main problem of high sorption activity of the ore and flotation concentrate is resolved using an effective reagent-depressor such as organic carbon.
- 11. The adopted branched enrichment scheme, based on the use of jigging machines and concentration tables, will provide the planned level of gold processing recovery of 85.5%.
- 12. Micon believes, it is possible to significantly simplify the gravity enrichment scheme by using Knelson concentrators or their equivalent without reducing the quality of the obtained gravity concentrate and maintaining the level of gold recovery adopted in the regulations. The client is recommended to review the actual results of this scheme implemented at the Pavlik gold deposit in the Magadan Region.
- 13. As a result of the economic modelling of the production operation based on the Krasnoe deposit, minimal positive results were obtained (the discount rate is 6%, mid-year discounting), the NPV value was US\$3,751 thousand dollars.



14.0 SIGNATURE AND DATE PAGE

The effective date for the mineral resources and ore reserves estimates presented in this report is 17th April 2018.

Signed on behalf of Micon International Co Limited



Stanley C. Bartlett, M.Sc, P.Geo (#19698)

Senior Economic Geologist & Managing Director Micon International Co Limited

Date: 30th August 2018

Evgeny Kondratiev, MAusIMM(CP) (#305355)

Senior Geologist Micon International Co Limited

Date: 30th August 2018

15.0 CERTIFICATES

CERTIFICATE OF CO-AUTHOR EVGENY KONDRATIEV

As the co-author of the "Mineral Resources and Ore Reserves Estimate of the Krasnoe Gold Deposit, Irkutsk Region, Russian Federation", effective date 17th April 2018, dated 30th August 2018, I, Evgeny Kondratiev, do hereby certify that:

- I am employed by, and conducted this assignment for, Micon International Co Limited, Suite 10, Keswick Hall, Norwich, United Kingdom, tel. +44(1603) 501501, fax +44(1603) 507 007, e-mail <u>ekondratiev@micon-international.co.uk;</u>
- 2) I hold the following academic qualification:

M.Sc. (Applied Geology) Voronezh University, Russia 1981

- 3) I am a member of the Australasian Institute of Mining and Metallurgy (Member #305355) and a Chartered Professional in the discipline of Geology;
- 4) I have worked as a geologist in the minerals industry for 36 years;
- 5) My work experience includes 10 years as an exploration geologist exploring for base metal deposits, more than 10 years as a mine geologist in underground mines and approximately 10 years as a consulting geologist on precious and base metals;
- 6) I do, by reason of education, experience and professional qualifications fulfil the requirements of a Competent Person as defined by the JORC Code 2012;
- 7) I visited the LLC Krasny and PJSC GV Gold offices and the Krasnoe gold deposit at the end of March 2017;
- 8) I am responsible for Sections 2.0 to 9.0 and 11.0 of this report;
- 9) I am independent of Kopy Goldfields AB, OJSC GV Gold and LLC Krasny, their affiliated companies, their directors, senior management, and other advisers; I have no economic or beneficial interest (present or contingent) in the companies or in any of the mineral assets being evaluated and I will not be remunerated by way of a fee that is linked to the admission or value of the issuer; and,
- 10) As of the date of this certificate, to the best of my knowledge, information and belief, the "Mineral Resources and Ore Reserves Estimate of the Krasnoe Gold Deposit, Irkutsk Region, Russian Federation", effective date 17th April 2018, dated 30th August 2018, contains all scientific and technical information that is required to be disclosed to make this Report not misleading

Evgeny Kondratiev, M.Sc., MAusIMM(CP) (#305355) Senior Geologist Micon International Co Limited Date: 30th August 2018



CERTIFICATE OF CO-AUTHOR STANLEY CURRIE BARTLETT

As the co-author of the "Mineral Resources and Ore Reserves Estimate of the Krasnoe Gold Deposit, Irkutsk Region, Russian Federation", effective date 17th April 2018, dated 30th August 2018, I, Stanley Currie Bartlett, hereby certify that:

- I am employed by, and conducted this assignment for, Micon International Co Limited, Suite 10, Keswick Hall, Norwich, United Kingdom. tel. 0044(1603) 501501, fax 0044(1603) 507 007 e-mail <u>sbartlett@micon-international.co.uk</u>;
- 2) I hold the following academic qualification:

B.Sc. Geological Sciences	University of British Columbia,	Vancouver,	Canada,	1979;

M.Sc. (Mining Geology) Camborne School of Mines, Redruth, England, 1987;

- 3) I am a registered Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia (membership # 19698); In addition I am a member in good standing of the Society for Mining, Metallurgy and Exploration;
- 4) I have worked as a geologist in the minerals industry for 39 years;
- 5) My work experience includes five years as an exploration geologist developing tungsten, gold, silver and base metal deposits, more than 14 years as a mining geologist in both open pit and underground mines and 17 years as a consulting geologist working in precious, ferrous and base metals and industrial minerals. I have a more than 28 years experience of mineral resource estimation;
- 6) I do, by reason of education, experience and professional qualifications fulfil the requirements of a Competent Person as defined by the JORC Code 2012;
- 7) I am responsible for the preparation or supervision of the preparation of all sections of this Report.
- 8) I am independent of Kopy Goldfields AB, OJSC GV Gold and LLC Krasny, their affiliated companies, their directors, senior management, and other advisers; I have no economic or beneficial interest (present or contingent) in the companies or in any of the mineral assets being evaluated and I will not be remunerated by way of a fee that is linked to the admission or value of the issuer; and,
- 9) As of the date of this certificate, to the best of my knowledge, information and belief, the "Mineral Resources and Ore Reserves Estimate of the Krasnoe Gold Deposit, Irkutsk Region, Russian Federation", effective date 17th April 2018, dated 30th August 2018, contains all scientific and technical information that is required to be disclosed to make this Report not misleading.



Stanley C. Bartlett, M.Sc., PGeo. (#19698) Senior Economic Geologist, Managing Director Micon International Co Limited Date: 30th August 2018





16.0 GLOSSARY AND ABBREVIATIONS

16.1 GLOSSARY

Activated Carbon: Carbonaceous material with a very high surface area used for adsorption of gold from solution.

Balance ore: Ore that meets the cut-off criteria approved by GKZ and has been recorded on the Russian Federation State balance once approved by GKZ reserve estimation.

Block Models: Three-dimensional representations of mineralization created using regularsized blocks and sub-blocks. The model contains user defined collection of attributes associated with every block (sub-block). Values of attributes (first of all - metal grades) are calculated on the basis of data base representing sampling of the deposit. Block model is reflecting geometry of geological and topographic features and spatial distribution of quantitative characteristics of the mineral resource.

Carbon-in-leach (CIL): A gold recovery process in which gold-bearing ore, activated carbon and cyanide are mixed as slurry. The cyanide dissolves the gold, which is subsequently absorbed by and separated from the carbon.

Carbon-in-pulp (**CIP**): A method of recovering gold and silver from pregnant cyanide solutions by adsorbing the precious metals onto granules of activated carbon, which are typically ground up coconut shells.

Cataclasis: A deformation process caused by mechanical fracture or break-up of rocks usually associated with metamorphism and faulting, produces cataclastic rock.

Cut-off grade: The minimum concentration of a valuable component in a marginal sample of the mineral. The cut-off grade is used to delineate parts of the deposit to be mined.

Cyanide leaching: A method of extracting gold or silver from crushed or ground ore by dissolution with a weak cyanide solution. This may be conducted in slurry tanks or in large external heaps.

Dilution: Waste rock that is, by necessity, removed along with the ore in the mining process subsequently lowering the grade of the ore.

Doré: The final saleable product from a gold mine; obtained by smelting the products from previous processes.

Footwall: Rock located on the underside of a fault, vein or ore structure.

Geological fault: Discontinuity of rock with or without a shift on the surface. Faults occur due to the movement of rock masses.

Gosudarstvennaya Komissia po Zapasam (**GKZ**): State Commission for Mineral Reserves. Founded in 1927, GKZ manages mineral reserves on behalf of the Ministry for Environmental Protection and Natural Resources of the Russian Federation.



Hangingwall: The rock on the upper side of a vein or ore deposit.

Heap leaching: A process whereby valuable metals, usually gold and silver, are leached from a heap, or pad, of crushed ore by leaching solutions percolating down through the heap and collected from a sloping, impermeable liner below the pad.

JORC Code: The Australasian Code for Reporting of Mineral Resources and Ore Reserves prepared by the Joint Ore Reserve Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia. The current edition is dated 2012.

Mineral Deposit: A body of mineralization that represents a concentration of valuable metals. The limits can be defined by geological contacts or assay cut-off grade criteria.

Mineral Reserve: The Russian equivalent of the Western mineral resource and ore reserve. Mineral reserves are subdivided into A, B, C_1 and C_2 categories, depending on the level of definition and technological study.

Mineral Resource: A concentration or occurrence of solid material 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 subdivided, in order of increasing confidence, into Inferred, Indicated and Measured categories.

Off-balance ore: Ore that does not meet the GKZ approved cut-off criteria, but is of potential interest.

Open pit: A complex of mine workings formed in the course of mining a mineral by open method; a mining enterprise engaged in open-pit mining of minerals.

Operational reserves: Russian balance mineral reserves that have been adjusted for dilution and losses, and that have been incorporated into a mine production schedule.

Ore: Natural mineral formation that contains valuable components in such compounds and concentrations that make the mining technically and economically feasible.

Ore body: A natural accumulation of ore confined to a certain structural and geological element or a combination of such elements that either has been, or demonstrates a reasonable probability of being mined profitably.

Ore Reserve: The economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

Oxide Ore: Ore which has undergone the process of natural oxidation.

Placer: A placer deposit is an accumulation of valuable minerals formed by gravity separation during alluvial sedimentary processes.



Primary Ore: Ore that is in its primary mineralized state and has not undergone the process of natural oxidation.

Pyrite (FeS₂): Iron sulphide. Sulphide mineral which can contain refractory gold.

Refractory ore: Ore that resists the action of chemical reagents during normal treatment processes and which may require pressure leaching or other means to effect the full recovery of the valuable minerals.

Stripping ratio: The relation of overburden volume to a mineral volume. A stripping ratio largely defines the economic feasibility of open-pit mining.

Sulphide Ore: Ore which is in its primary mineralized state and has not undergone the process of natural oxidation.

Tailings dump: Specialized area for disposal of the processing plant wastes after most of valuable minerals are recovered from them.

TEO: Russian standard form of reporting. The document that justifies the cut-off criteria used for reserve estimation. These are used to decide upon technical and economic feasibility of investments into construction of a mining enterprise.

16.2 ABBREVIATIONS

The metric system has been used throughout this report unless otherwise stated. All prices are reported in US\$. Market prices are reported in US\$ per troy ounce of gold and silver. The following abbreviations are typical to the mining industry and may be used in this report.

0	degree (angle)
°C	degree Centigrade
30	three dimensional
	silvor
Ag	silver
As	arsenic
Au	gold
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
cm	centimetre
CoV	coefficient of variation
Cu	copper
GKZ	The State Commission for Mineral Reserves
g/t	gramme/tonne
ID^3	inverse distance weighting to the power of three
kg	kilogramme
km	kilometre
km ²	square kilometre
k m ³	thousand cubic metres
koz	thousand ounces
kt	thousand tonnes
kV	kilovolt
LOM	life-of-mine
μm	micron
mm	millimetre



m	metre
m^2	square metre
m^3	cubic metre
Moz	million ounces
Mt	million tonnes
Mt/a	million tonnes per year
OZ	ounce
Report	Technical report
RUB	Russian rouble
t	tonne
t/a	tonnes/year
t/d	tonnes/day
t/h	tonnes/hour
TEO	Techniko-Ekonomicheskie Obosnovie
US\$	United States dollar
VAT	Value Added Tax

17.0 APPENDIX 1

17.1 JORC CODE, 2012 EDITION – TABLE 1

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	 Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation. 	 The Krasnoe deposit and the Vostochnoye mineral occurrence core and channel sampling was conducted according to established Russian guidelines and under the supervision of experienced geologists. Channel samples were collected using machine methods with an uninterrupted channel having a section of either 5 cm by 10 cm or 3 cm by 10 cm and oriented along the trench. Each section characterised a separate interval differing from the neighbouring ones in substantial composition and/or textural-structural features. For homogeneous geological structures the section lengths were 1 m. Samples were packaged into double bags with a dense polyethylene inside layer. Core drill holes were sampled after photographic documentation and detailed geological logging. Samples were not sampled. The core was sampled in sections, the length of which was determined based on the substantial composition variability, lithological, structural, textural and other features of rocks. Taking into account the rock characteristics, the drilling diameter, drill run length and core recovery, the length of some core sampling sections ranged from 0.3 m to 2.25 m, with an average of 1 m.
Drilling techniques	• Drill type (eg core, reverse circulation, open- hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	• In 2011-2017, the drilling was carried out by different contractors using the SKB-41, SKB-5, SKB-5113, CHRISTENSEN CS 14, ONRAM 1500, LF-90C drill rigs. The contractors used diamond bits and, in most cases, tools with a double-tube core barrel and a wireline inner core barrel. Drillhole spudding was carried out using the PQ diameter with the casing of a drill hole along the deluvial deposits. Drilling to the target depth was performed with the HQ diameter diamond bits.
Drill sample recovery	 Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material. 	 The main core recovery determination method is linear. The weight method was applied for control. The average actual bedrock core recovery was 99.1%.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a	• Geological logging of trenches was performed on 1:50 scale and included a description of the structural and



Criteria	JORC Code explanation	Commentary
	 level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged. 	 textural features of rock formations, substantial composition, hydrothermal-metasomatic alterations, bedding elements of the contacts of rocks and tectonic faults. Core logging was performed by qualified geologists and geo technicians at the permanent supervision of senior specialists. Leading geologists carried out monthly random checks of the documentation quality and comparison of the logs and real core. Relevant results were documented with the acts. Logs of the drill holes contained a detailed description of the lithological varieties of rocks, hydrothermal alterations, tectonic elements on 1:50 scale. The logs also registered lengths of the runs, the core recoveries in meters and percent, the drilling diameter, the sampling intervals and the number of samples. After the description, the core was photographed, sampled and stored in the on site core shed.
Sub-sampling techniques and sample preparation	 If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled. 	 Before 2011, the whole core was taken as a sample, after that a half of the core, split along its axis. Standard methodologies approved with the State reserves Committee GKZ were used for reduction, preparation including the jaw and roll crushing, grinding to 0.074 mm and assaying of the samples. Weights of the samples correspond to the industry standards applied for this type of ore mineralisation. The samples preparation was performed in the sample preparation facility by trained personnel according to the standard industry methodologies.
Quality of assay data and laboratory tests	 The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established. 	 Fire assays of the regular samples were carried out in the LLC Alex Stewart Geo Analytics laboratory (Moscow) according to the methodology of Au 4-50-Fire Assay with the subsequent atomic absorption spectrometry Au determination (accreditation certificate AAC.A.0004). From 2014 to 2016, at the exploration stage, the regular assays were carried out in the PJSC GV Gold Fire Assay Laboratory according to the methodology of fire assaying with gravity ending. The same laboratories also performed the internal control using the duplicates of laboratory (analytical) samples, the numbers of which were coded. The quality control of analytical works was carried out according to the regulations of the Russian Federation. The internal control (duplicates) demonstrated a good convergence of the results and an absence of the bias with the exception of determinations of the PJSC GV Gold Fire Assay Laboratory in the classes <0.5 g/t Au 0.5 g/t Au to 0.99 g/t Au and > 4.0 g/t Au in 2016 and 2017. Reasons of the failure to pass the control are being investigated.



Criteria	JORC Code explanation	Commentary
		 The external control (duplicates) also showed an absence of the bias. In order to control the accuracy and correctness of assays, certified standard samples were introduced into the batches of regular samples. The standard samples assay results demonstrated low accuracy for the PJSC GV Gold laboratory. For the Rocklabs samples, a standard deviation of the main laboratory assay results exceeds the inter-laboratory standard deviation produced at certification of the standard samples twofold. At the same time, grades in the standard samples are underestimated: after top-cutting of the outliers, a negative bias error was 4% to 7%. Attention should be paid to the choice of standard samples to be introduced in the batch of samples. Standard samples should correspond to the grade classes of the regular samples and have a similar composition.
Verification of sampling and assaying	 The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data. 	• No verification has been carried out at the Krasnoe deposit.
Location of data points	 Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used. Quality and adequacy of topographic control. 	 The topographic and geodetic works have been completed in accordance with the requirements of the regulations. From 2011 to 2015, the designed drill holes were positioned and the actual drill holes and trenches were controlled with the Leica TSO6 Arctic electronic total station on the basis of the Ust-Teply reference point. Later it was established that the reference point coordinates were wrong. After the new reference grid was created, all available coordinates were recalculated, and within 2016 to 2017, the control was carried out from the new point with the Trimble R4-3 high accuracy GPS unit.
Data spacing and distribution	 Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied. 	 Central part of the Krasnoe deposit is covered with the grid of 40 m to 50 m by 40 m to 50 m, some smaller parts of the Upper ore deposit is covered with the grid of 10 m to 20 m by 10 m to 20 m, the flanks and the Lower ore deposit are covered with the grid of 50 m to 70 m by 80 m to 150 m. Within the Vostochnoye mineral occurrence the spacing between the drill holes ranges from 40 m to 100 m (50 m to 60 m on average) and the spacing between the profiles ranges from 80 m to 240 m. Micon believes that the data spacing and distribution is sufficient to establish the Krasnoe deposit mineral resources in the current classification.
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	 Drilling profiles have been oriented across the strike of the main geological structures. Core sampling has predominantly been carried out along the thickness of mineralised zones.



Criteria	JORC Code explanation	Commentary
	• If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	
Sample security	• The measures taken to ensure sample security.	• The samples are safely stored at the PJSC GV Gold base in the specialised premises.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• Results of the Krasnoe deposit mineral resources audit conducted by Micon International Co Ltd in 2012 are provided in the relevant report.





Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	 Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. 	 At the moment, LLC Krasny, owned by PJSC GV Gold and Kopy Goldfields AB, is the holder of the IRK 02804 BR licence registered with the state authorities on 18th July 2011 and valid until 25th April 2035. A designated purpose of the licence is geological exploration and production of hardrock gold within the Krasny site. As at the date of this report, there were no reasons for the licence status reconsideration.
Exploration done by other parties	• Acknowledgment and appraisal of exploration by other parties.	• Has not been performed
Geology	Deposit type, geological setting and style of mineralisation.	 The licence area is located within the northern limb of the Bodaibo syncline, one of the main structures in the central part of the Bodaibo synclinorium. The Bodaibo syncline is composed of sedimentary and metamorphic rocks from the Bodaibo Series of the Upper Riphean and is overlain with loose Quaternary deposits. Riphean sediments are compressed into the sub-latitudinal folds and broken with the tectonic folds with both upthrow and downthrow character. The Krasnoe deposit occurs in the rocks of the upper sub-suite of the Aunakitskaya Suite composing the 4th level Rudnaya anticline and represent a zone vein-veinlet-disseminated quartz-sulphide mineralisation, confined to the axial part of the anticline. Two types of the gold mineralisation are identified within the Krasnoe ore field: veinlet-disseminated quartz-sulphides, and quartz veins with limited development. A characteristic feature of the entire ore field is a wide distribution of sulphide mineralisation mainly represented by pyrite. Pyrrhotite, chalcopyrite, sphalerite, galena occur to a lesser degree. Gold predominantly occurs in joints with pyrite or in the form of inclusions in pyrite. The size of the gold grains ranges from 1 µm to 150 µm, with an average size of 30 µm to 70 µm. The surfaces of gold grains forming joints with pyrite are smooth, the edges may slightly "branch"; skeletal gold crystals are rare. In addition, free gold is registered as well, which is characterised by smooth surfaces and sizes of up to 200 µm. The Vostochnoye mineral occurrence is located 3 km to the northeast of the Krasnoe deposit. The mineral occurrence is located in the hinge part of the 4th level linear anticline oriented in the enst-north-eastern direction, which complicates the Verkhne-Bodaibinskaya anticline. The mineralisation is confined to the meta-sedimentary rocks of the middle and upper members of the Aunakitskaya Suite. In the lithological respect, the rocks are relatively uniform – highly-carbonaceous grey to dark

Criteria	JORC Code explanation	Commentary
Drill hole	• A summary of all information material to	 and in its core (the Lower ore zone). The northern limb dips to the NNE at 40° to 45°, the southern is subvertical. The ore zones have consistent sheet-like shapes with thicknesses up to 7 m to 8 m. The mineralised zones are open both along the strike and down dip. In order to determine the scale of the mineral occurrence, additional drilling is required. The main ore mineral of the Vostochnoye mineral occurrence is pyrite as well. Gold is predominantly free and in joints with pyrite and quartz. In mineralogical terms, the Krasnoe deposit and the Vostochnoye mineral occurrence are referred to as gold-quartz low-sulphide formations. The drilling has been conducted in accordance with the
Drut hole Information	 A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case. 	 The drilling has been conducted in accordance with the Russian standards and under the supervision of experienced geologists. All drill holes data relevant for an understanding of the report is tabulated in the database spreadsheets.
aggregation methods	 In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. The assumptions used for any reporting of metal equivalent values should be clearly stated. 	• Exploration results and aggregates are not reported as part of the Micon report
Relationship between mineralisation widths and intercept lengths	 These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known'). 	• Exploration results are not reported as part of the Micon report.



Criteria	JORC Code explanation	Commentary
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• Exploration results are not reported as part of the Micon report.
Balanced reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	• Exploration results are not reported as part of the Micon report.
Other substantive exploration data	 Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	• Exploration results are not reported as part of the Micon report.
Further work	 The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	• It is planned to perform further exploration on the flanks of the Krasnoe deposit and the Vostochnoye mineral occurrence and infill drilling aimed at mineral resource re-categorisation.



Section 3 Estimation and Reporting of Mineral Resources

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

Criteria	JORC Code explanation	Commentary
Database integrity	 Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. Data validation procedures used. 	 The data have been provided in the Microsoft Access format and imported into the Surpac software. No errors have been identified in the course of the import. The data integrity has been checked with the standard Surpac function
Site visits	 Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case. 	 Evgeny Kondratiev, M.Sc., MAusIMM(CP), a Senior Geologist with Micon visited the LLC Krasny office in Bodaibo and the Krasnoe deposit at the end of March 2017. During the site visit, the exploration site, the core shed, the sampling area and the assay laboratory were inspected, and the relevant documentation was reviewed.
Geological interpretation	 Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit. Nature of the data used and of any assumptions made. The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation. The factors affecting continuity both of grade and geology 	 The geological interpretation is based on the information obtained at the core examination, the drill holes and channels logging, the database, plans and sections. Rocks of the deposit have features of hydrothermal alterations expressed in the form of quartz-sulphide mineralisation, ankeritisation, silicification. Mineralised zones of the Krasnoe deposit and the Vostochnoye mineral occurrence have no distinct geological boundaries. Contours of the ore bodies are determined based on the sampling results.
Dimensions	 The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource. 	 The Krasnoe deposit represents a combination of two ore deposits with a level-over-level arrangement striking in the ESE direction for about 2.5 km (in the plan view, the distribution width is up to 250 m). The Upper ore deposit has the length of 1,200 m (the southeaster flank is open) and is confined to the limbs of the anticlinal fold, dipping to the northeast: the northern at the angles from 30° to 80° (50° on average), the southern – in the western part at 75° to 90°, flattening out in the east to 25° to 30°. The bedding depth of the Upper deposit ranges from a few metres (immediately underneath the deluvial deposits) to 230 m. The Lower deposit has the length of 2.5 km and is divided into two parts - the western and the eastern, probably divided by the faults. The eastern part has the length of about 1,450 m and dips to the northeast at the average angle of 45° in the west and about 70° in the east. At the cut-off grade of 0.4 g/t Au the western part of the Lower deposit represents a series of thin band-like ore bodies located one above another and dipping to the northeast at the angle of about 30°. The depth of the Lower deposit represents a series from 100 m to 500 m. The Vostochnoye mineral occurrence is located in the hinge part of the 4th level linear anticline oriented in ENE direction, which complicates the Verkhne-Bodaibinskaya anticline. The mineralisation is localised in the northern and the southern limbs of the southern and the southern limbs of the direction.



Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	 The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. The assumptions made regarding recovery of by-products. Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation). In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. Any assumptions about correlation between variables. Description of how the geological interpretation was used to control the resource estimates. Discussion of basis for using or not using grade cutting or capping. The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. 	 ore zone) and has the length of 2,500 m and the width in the plan view ranging from 50 m to 330 m. The limbs dip to the NNE: the northern at the angle of 35° to 50°, the southern from 55° to 85°. The ore zones have a consistent sheet-like shape with thicknesses up to 7 m to 8 m. The variability of grades of both the Krasnoe deposit and the Vostochnoye mineral occurrence is extremely high. In view of the uneven gold distribution, and to avoid the "dispersion" of grades, the interpolation has been carried out with the inverse distance weighted method to the power 3 (ID3). The unit cell dimensions of both models are 5 m by 5 m by 5 m. These dimensions correspond to the best fit for the mineralisation morphology and the sample data distribution. For the Krasnoe deposit, the outliers were top-cut to 19.23 g/t Au, for the Vostochnoye mineral occurrence to 7.5 g/t Au. Interpolation of the gold grades has been carried out separately for each wireframe. Only the composites falling within the corresponding wireframe have been used for the interpolation. The search ellipsoid has been oriented is such a way that the major axis is parallel to the strike of the ore mineralisation and the minor axis is oriented along the thickness. For the mineral resources classification, the method of estimation in several runs with the search ellipsoid's major axis extension has been used. In order to compare the sampling data and the block model results, the block models have been checked with the visual and the calculated data.
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	• The tonnage of ore was estimated on a dry basis.
Cut-off parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	• After the project data analysis, Micon has selected a cut-off grade of 0.4 g/t Au.
Mining factors or assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	 The open pit development system has been reviewed. The final open pit contour optimisation has been performed in Whittle software. The optimum open pit shell corresponding to the base gold price of US\$1,250/oz was chosen.



Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	For the design head grade of 1.54 g/t Au, the design gold recovery is 85.51%, adjusted for the head grade using the White formula.
Environmental factors or assumptions	 Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. 	Has not been reviewed.
Bulk density	 Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. Discuss assumptions for bulk density estimates used in the evaluation process of the different 	 The bulk density of ores and host rocks of the Krasnoe deposit and the Vostochnoye mineral occurrence has been calculated on the basis of hydrostatic weighing of numerous core specimens and the value 2.68 t/m³ has been used. The moisture content of the ores is insignificant, and can be ignored for the mineral resource estimation.
Classification	 materials. The basis for the classification of the Mineral Resources into varying confidence categories. Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data). Whether the result appropriately reflects the Competent Person's view of the deposit. 	 The Krasnoe deposit mineral resources are classified as Indicated and Inferred, the Vostochnoye mineral occurrence mineral resources classified as Inferred, in accordance with the amount of available exploration data and complexity of the structure of mineralised zones. The Indicated resources are defined as a part of the block model cells covered with the exploration grid of 40 m to 50 m by 40 m to 50 m. Models of a mineralised zone or a lens should be constructed based on more than one intersection. The Inferred mineral resources are defined as a part of the block model cells with the density of exploration grid lower than 80 m by 80 m
Audits or reviews	• The results of any audits or reviews of Mineral Resource estimates.	• Micon audited the Krasnoe deposit mineral resources in 2015 to 2016. Based on the findings of that audit, the Krasnoe deposit mineral resources as at 1 st



Criteria	JORC Code explanation	Commentary
Discussion of relative accuracy/ confidence	 Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. 	 January totalled: Indicated resources: 7.9 Mt of ore containing 9.0 t of gold at a grade of 1.14 g/t Au; Inferred resources: 12.3 Mt of ore containing 20.7 t of gold at a grade of 1.68 g/t Au. The block model statistical and visual checks demonstrate a good convergence of the primary and the calculated data. The statistical and geostatistical methods (non linear or modelling) have not been applied for the quantitative determination of relative accuracy of the estimation within the confidence limits. Accuracy of the geological domains interpretation, accuracy of the drilling data (location and results), orientation of the local anisotropy and estimation parameters, which are reflected in the categorisation of the mineral resources. High irregularity of the ore mineralisation and the relatively high nugget effect may result in a situation where a reliability of the grade estimations turns out to be relatively low.



Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves Site visits	 Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves. Comment on any site visits undertaken by the 	 The Krasnoe deposit ore reserves are based on Micon's mineral resource model (see Section 3). The Vostochnoye mineral occurrence ore reserves have not been estimated due to the insufficiency of available geological information. Evgeny Kondratiev, M.Sc., MAusIMM(CP), a
	 Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case. 	Senior Geologist with Micon visited the LLC Krasny office in Bodaibo and the Krasnoe deposit at the end of March 2017. During the site visit, the exploration site, the core shed, the sampling area and the assay laboratory were inspected, and the relevant documentation was reviewed.
Study status	 The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered. 	 The ore reserves have been estimated using the deposit block model produced as the result of the open pit optimisation completed in Whittle software. Micon has chosen the optimum final pit contour corresponding to the gold price of US\$1,250/oz. The ore reserves estimation has been carried out based on a conversion of the Indicated mineral resources into Probable ore reserves at a cut-off grade of 0.4 g/t Au, with dilution of 10% and mining losses of 5%. The cut-off grade has been determined by Micon, the dilution and the losses have been taken from the design documentation. All material with the grades below the cut-off has been classified as "waste". The ore reserves estimation has been completed in accordance with the gridelings of the IORC Code (2012)
Cut-off parameters	• The basis of the cut-off grade(s) or quality parameters applied.	 Micon used a calculation for the data analysis and made a conclusion relating to the value of the cut-off grade for the Krasnoe deposit and the Vostochnoye mineral occurrence. When completing the analysis, forecast data of mining costs, processing and taxes were used.
Mining factors or assumptions	 The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design). The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc. The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling. The major assumptions made and Mineral 	 The ore deposits occurring near the surface will be mined with open pit methods. The mining method selection is based on the position, dimensions and geometry of the ore bodies. The resources available for open pit mining, with the grades above the cut-off, occurring between the topographic surface and the design pit shell have been converted into ore reserves. The ore reserves were estimated proceeding from the assumption that with due account of the actual losses and dilution, all Indicated mineral resources within the open pit may be converted into Probable ore reserves. The ore reserves estimation has been based on
	Resource model used for pit and stope	Indicated mineral resources at a cut-off grade of



Criteria	JORC Code explanation	Commentary
	 optimisation (if appropriate). The mining dilution factors used. The mining recovery factors used. Any minimum mining widths used. The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion. The infrastructure requirements of the selected mining methods 	0.4 g/t Au, including dilution of 10% and mining losses of 5% adopted from the design documentation (provided by the Client).The Inferred category mineral resources have not been used for the ore reserve estimation
Metallurgical factors or assumptions	 The metallurgical process proposed and the appropriateness of that process to the style of mineralisation. Whether the metallurgical process is well-tested technology or novel in nature. The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied. Any assumptions or allowances made for deleterious elements. The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications? 	 Based on results of the conducted metallurgical studies and practice of similar enterprises it is recommended for the Krasnoe deposit ore processing to apply the flowsheet with two-staged grinding, gravity concentration, gravity tailings flotation, intense gravity concentrate cyanidation, sorption cyanidation of a mix of flotation concentrate, gravity middlings and intense cyanidation tailings, desorption, electrowinning, smelting, cyanidation tailings detoxification, separate disposal of the flotation and sorption tailings in the tailings ponds. Ore mineralisation refers to the gold-quartz low-sulphide type. It corresponds to the adopted processing flowsheet. It is planned to use the existing plant located 14 km from the deposit, as well as the construction of a small plant on the Krasnoe deposit site.
Environmental	• The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	• Has not been reviewed.
Infrastructure	• The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	• The deposit has the appropriate infrastructure: the area for the location of the plant, electricity supply, water supply. The deposit area is well developed. It is assumed that labour resources will be available for work at the deposit. Their accommodation will be provided in the camp, the construction of which is expected.
Costs	 The derivation of, or assumptions made, regarding projected capital costs in the study. The methodology used to estimate operating costs. Allowances made for the content of deleterious elements. The source of exchange rates used in the study. Derivation of transportation charges. The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc. 	 Capital costs are estimated on the basis of the Irgiredmet 2016 report, with the necessary changes due to the size of the production (400 kt/a) and ore processing at the existing plant located 14 km from the deposit. The operating costs provided by the Customer Kopy Goldfields AB were used. The analysis showed the suitability of these costs. Changes and additions related to the use of the existing plant were made. The fixed price of gold used is US\$1,250/o which covers the entire evaluation period, from 2017 to



Criteria	JORC Code explanation	Commentary
	• The allowances made for royalties payable, both Government and private.	2039. The fixed price of gold at fixed costs seems reasonable.Used costs include royalty, which is fixed by Russian law.
<i>Revenue factors</i>	 The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals, and co-products. 	• The gold price of US\$1 250/oz is used in the report. It has been determined as the gold price that was close to 1st July 2017, and remains constant in future periods – the economic model does not account for the inflation.
Market assessment	 The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. A customer and competitor analysis along with the identification of likely market windows for the product. Price and volume forecasts and the basis for these forecasts. For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract 	• Has not been reviewed.
Economic	 The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. NPV ranges and sensitivity to variations in the significant assumptions and inputs. 	 The gold price of US\$1,250/oz is used in the report. All operating and capital costs values used by Micon in the cash flow model for the entire forecast period were factored to the US\$ equivalent and based on the deposit mineral resource assessment dated as of 1st July 2018 and do not account for inflation. Micon notes high sensitivity of the project's net present value (NPV) to the commodity sale price. A reduction of the sale price by 10% results in a significant reduction of the operating costs affects the NPV, but to a lesser extent, than to the relative commodity sale price variation, i.e. the NPV is sensitive to the operating costs upward variation, the increase by 10% of NPV makes it negative. Relative variation of the capital costs has a smaller effect on the NPV, which still becomes negative over the 10% upward variation of the capital costs Variation of the discount rate affect the NPV of the project to a larger extent: a 2% increase in the rate makes the NPV value negative.
Social	• The status of agreements with key stakeholders and matters leading to social licence to operate.	 Has not been reviewed.
Other	• To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:	• Has not been reviewed.
	 Any identified material naturally occurring risks. 	



Criteria	JORC Code explanation	Commentary
	 The status of material legal agreements and marketing arrangements. The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent. 	
Classification	 The basis for the classification of the Ore Reserves into varying confidence categories. Whether the result appropriately reflects the Competent Person's view of the deposit. The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any). 	• Only the Indicated mineral resources were converted into the Probable ore reserves.
Audits or reviews	• The results of any audits or reviews of Ore	• Has not been reviewed.
Discussion of relative accuracy/ confidence	 Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. Accuracy and confidence discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence should be compared with production data, where available. 	• Has not been reviewed.