C ADVANCED EXPLORATION PROPERTIES

6 MUSONOI COPPER PROSPECT

6.1 Introduction

[SR1.5A(i)]

Ruashi Mining has acquired the rights to the Musonoi Est deposit, subject to the completion of a positive feasibility study. The Musonoi Est deposit comprises a greenfields copper prospect.

6.2 Location, Climate, Access and Infrastructure

[SR1.4A, SR1.5A(i), SR1.6, SV2.3]

The Musonoi Est property is located in the DRC at latitude 10°42'S and longitude 25°28'E, close to the town of Kolwezi, located 300 km northwest of the provincial capital, Lubumbashi (Figure 6.1).

The Musonoi Est property as shown in Figure 6.1 includes a large portion of the town of Kolwezi in the south and the Dilala Commune in the east. The project area is bounded to the southwest and north by the Musonoi Principal / T17 and Kananga open pits respectively. The Kingamyambo tailings dam held by First Quantum lies approximately 4 km due west.

The average air temperature remains fairly constant at between 16°C and 22°C throughout the year and there is no distinct winter and summer temperature regime. Average temperatures peak during September and October at 30°C. At only 10° latitude, daylight and night hours are almost equal, daylight lasting broadly from 06:00 to 18:00. Rapid temperature drops occur after sunset during the dry season due to lack of cloud cover.

Three distinct seasons can be readily distinguished, namely:

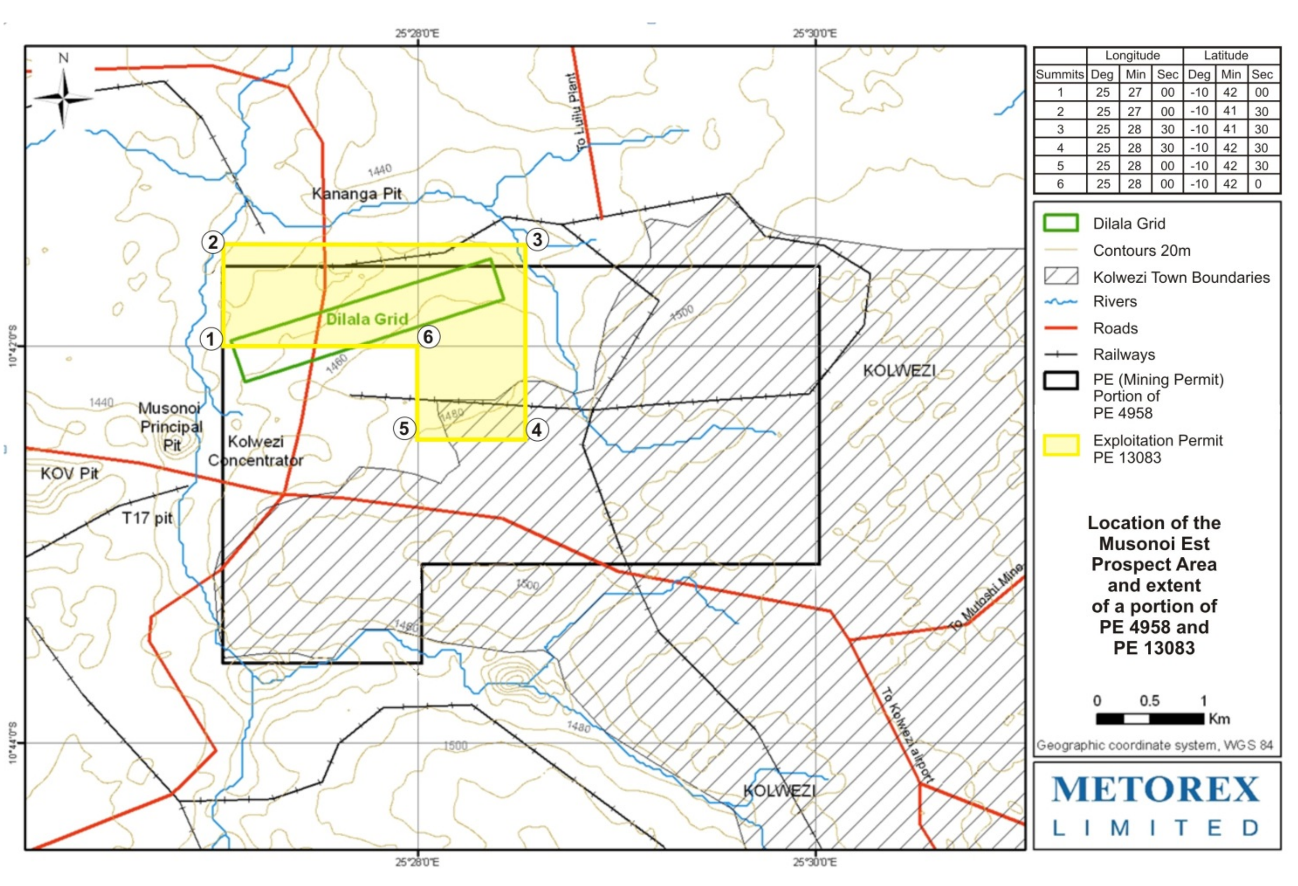
- Cool and dry: May to July;
- Hot and dry: August to September;
- Warm and wet: October to April.

For most of the year the general wind direction is south to south easterly, while for the remaining part of the year the wind direction is predominantly north westerly.

The Musonoi Est property lies at an average elevation of 1 450 m amsl. Topographically, the property is generally fairly flat, although there are several small ranges of low hills in the surrounding area underlain by silicified dolomites generally resistant to weathering. Where less resistant lithologies are encountered, the dolomites and siltstones have been eroded to form gently sloping hillsides and shallow valleys draining to the Musonoi and Dilala rivers. The Dilala River drains into the Musonoi River near the northwest corner of the property which in turn drains into the Lualaba (Congo) River to the north.

The Kolwezi area has historically produced some 75% of the copper output of the DRC, and thus has a significant mining history and associated infrastructure. The main regional access road is via Lubumbashi. Considerable rehabilitation work has been undertaken in recent times. However, conditions are poor towards the end of the rains.

Industrial power to Kolwezi is supplied by SNEL, by a single 120 kV power line to the Répartiteur Ouest ("RO") substation (with a capacity of 200 MVA). The RO substation supplies the major users in the area. This major distribution substation is part of the broader electrical Southern Network drawing power from the Inga, Nzilo and Nseke hydroelectric schemes on the Congo River.



srk consulting

Metorex
Locality of Musonoi Est prospect area (portion of PE4958 and PE13080)

Project No. 453459

Figure 6.1: Locality of Musonoi Est prospect area (portion of PE4958 and PE13083)

Municipal water and power supply is erratic and unreliable. Local dams, rivers, dormant mining pits, drill holes and inflow into workings will provide sufficient water for mining, concentrating and domestic requirements.

Kolwezi is connected to Lubumbashi by rail, which line continues through into Zambia linking to either Dar es Salaam or South Africa. The rail is in poor condition and the service is erratic and unreliable. Kolwezi airport has a paved runway that is in a reasonable condition and can accommodate large jets. However, no refuelling or maintenance facilities exist at the airstrip.

Exploration drilling activities on the prospects are generally restricted to the dry season as vehicle access off the main bush tracks is not feasible during the wet season.

More rental accommodation, at more realistic prices, is available in Kolwezi following the merger of the Katanga Mining and Nikanor operations in 2007. It is anticipated that all staff can be adequately accommodated in Kolwezi.

Private clinics (staffed by expatriate medical staff) are available in Kolwezi and can cater for most medical emergencies.

6.3 History

6.3.1 Historical Development of Musonoi Est Project

[SR1.3, SR1.4, SR1.5A(ii), SV2.4]

The historical development of the Musonoi Est project is summarised in Table 6.1.

6.3.2 Historical Production

[SR1.3, SV2.17]

Musonoi is a greenfields site, so there is no production history at the property.

Table 6.1: Musonoi Est – Historical Development

Date	Activity	Comments
1938 - 1990	Exploration limited to surface mapping and drilling of 112 drill holes by UMHK and Gécamines.	None of these holes intersected the Dilala East mineralisation.
1967	All mines around Kolwezi nationalised, Gécamines established as the state mining company.	
1980s to 1990s	Gécamines experiencing production problems due to lack of reinvestment into operations.	Cu production in DRC had declined from 450 ktpa to 30 ktpa, Co production from 10 ktpa to 4 ktpa.
2004 onwards	Renewed interest in the mines of the Kolwezi district – Katanga Mining, Nikanor plc, Anvil Mining, First Quantum acquire concessions from Gécamines.	
October 2005	RH negotiated amendment to partnership agreement with Gécamines, acquires rights to explore additional Cu/Co areas in Katangan Copperbelt region.	
2007	RH discovers Dilala East as a blind, high grade Cu and Co deposit.	
February 2009	Ruashi Mining contract No.377/6713/SG/GC 2000 confirmed during licence review process	Subject to RH providing a positive feasibility study.
2007 - 2010	Drilling of 62 diamond drill holes (15 573 m) completed by RH. Drilling on 100 m x 50 m grid, steeply dipping mineralisation intersected over strike of 600 m and depth of 550 m below surface.	Mineralisation open ended at depth. Dilala East deposit geologically similar to Kamoto underground mine 8 km away.
March 2010	RH submitted feasibility study to Gécamines.	
March 2012	RH commences feasibility study.	
December 2012	RM awarded exploitation permit PE13083 over part of the Musonoi Est area	

6.4 Title and Rights

6.4.1 Mineral Rights

[SR1.7A, SR5.1A, SV2.3]

RH acquired a portion of PE4958 (to be created in respect of the Dilala East deposit) in terms of Amendment No.3 to the Creation Contract of Ruashi Mining No.377/6713/SG/GC 2000 signed on 8 December 2005. This was confirmed during the licence review process in February 2009 subject to RH providing a positive feasibility study in respect thereof. The corner beacons of the portion of PE4958 in Figure 6.1 are a revision of those defined in Amendment 3, and were agreed to by Gécamines on 28 December 2008.

RH fulfilled its obligation in terms of Article 3 of the Amendment by paying USD3 million to Gécamines for the rights attached to these deposits, and undertook prospecting work as required in terms of Article 2. Amendment 4 to the creation of Ruashi Mining was signed in February 2009. In terms of Article 5 of this amendment, RH presented a feasibility study to Gécamines in February 2010. Once accepted, the permit was to be registered in the name of Ruashi Mining.

Following extensive negotiations and the payment of USD10 million minerals content royalty, an exploitation permit was awarded to Ruashi Mining on 4 December 2012 (shown in Figure 6.1).

The details of mineral rights held by RM related to the Musonoi Est property are summarised in Table 6.2.

Table 6.2: Details of Mineral Rights at Musonoi Est

Licence	Type of Title	Area (ha)	Valid From	Expiry Date	Commodity
PE13083	Exploitation Permit	324	4 Dec 2012	3 Apr 2024	Cu, Co, Ni and Au

PE13083 represents a part that has been separated from the larger surrounding permit area of the PE4958 held by Gécamines and awarded exclusively to Ruashi Mining. The extent of the PE13083 was not provided, so is not shown in Figure 6.1.

6.4.2 Surface Rights

In terms of the PE, Ruashi Mining has the right to use the land defined by the permit to build installations and facilities required for mining exploitation.

6.4.3 Royalties

[SR5.7C(v)]

In terms of the outcome of the licence review process relating to joint ventures with Congolese government subsidiary companies, a royalty of 2.5% of gross revenue is payable to Gécamines on ore treated from the mines.

6.5 Geology

[SR1.2, SR1.3, SR2.5A/B/C, SR4.1A(i), SV2.5]

6.5.1 Exploration History of the Project Area

Historical exploration of the Dilala unit was restricted to surface mapping and the drilling of 6 drill holes by UMHK between 1938 and 1950, and 106 holes by Gécamines up to 1990. None of these holes intersected the Dilala East mineralisation.

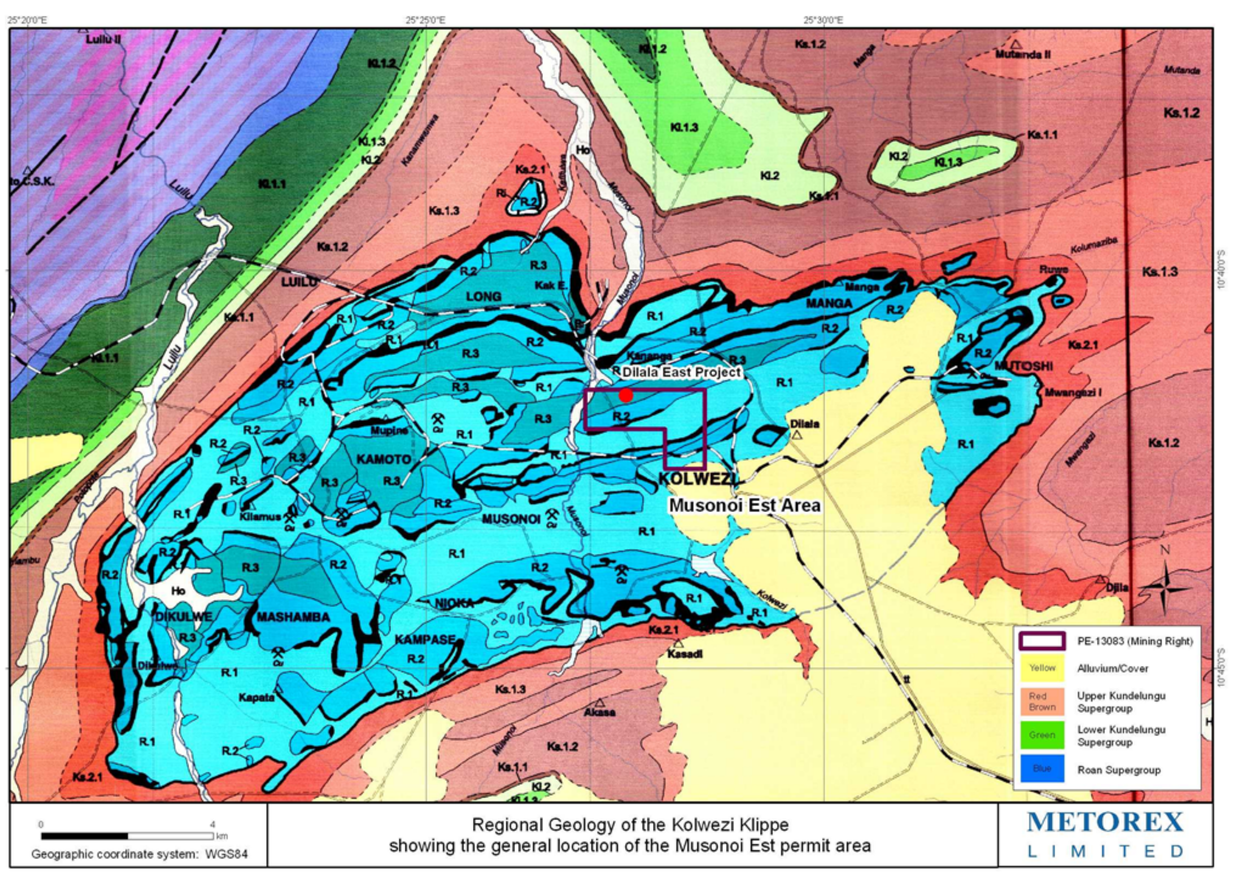
The Dilala East deposit was discovered by Ruashi Holdings as a blind, HG copper and cobalt deposit in 2007.

6.5.2 Regional Geology

The reader is referred to the discussion in Section 3.5.2.

6.5.3 Local Geology and Mineralisation

The Dilala East deposit is located at the northwestern end of the Congolese Copperbelt. The deposit is hosted in the meta-sedimentary rocks of the Lower Roan Unit of the Katangan System and occurs in a highly complex structural domain known interchangeably as either the "Kolwezi Nappe" or the "Kolwezi Klippe" as shown in Figure 6.2.



srk consulting	**Metorex** Detailed Geology of Musonoi Est Prospect Area showing Lower Roan Group "rafts" or "fragments" (source: IGS)	Project No. 453459

Figure 6.2: Regional Geology of the Kolwezi Klippe showing the general location of the Musonoi Est prospect area

The Kolwezi Klippe is an approximately elliptical, northeast striking synclinal basin with major and minor axes of approximately 20 km and 10 km, respectively. The structure is complex, with long E-W to NW-SE trending folds, the crests of which have been faulted, with Roan sediments having been thrust over rocks of younger (Kundelungu) age.

The Lower Roan stratigraphy in the Kolwezi area differs from that of Zambia in that the sediments are largely argillaceous dolomites while the Zambian Lower Roan is more arenaceous in nature. The base of the Lower Roan in the Kolwezi area has never been observed and no basement has been observed as outcrop in either mining operations or drill holes.

The surface topography is generally flat with thick soils or laterite limiting outcrop. Deep weathering has resulted in oxidation of the sulphides to depths in excess of 200 m thus mining operations to date have largely been by means of open-cast workings exploiting oxidised ores. The Kamoto Mine is the only underground mine extracting sulphide ore in the Kolwezi district at this time.

The area around the Musonoi Est permit encompasses a series of Lower Roan "rafts" including the "Commissar Syncline", "T17 East Fragment" and the "Dilala Syncline" as depicted in the Gécamines sectional interpretation in Figure 6.3.

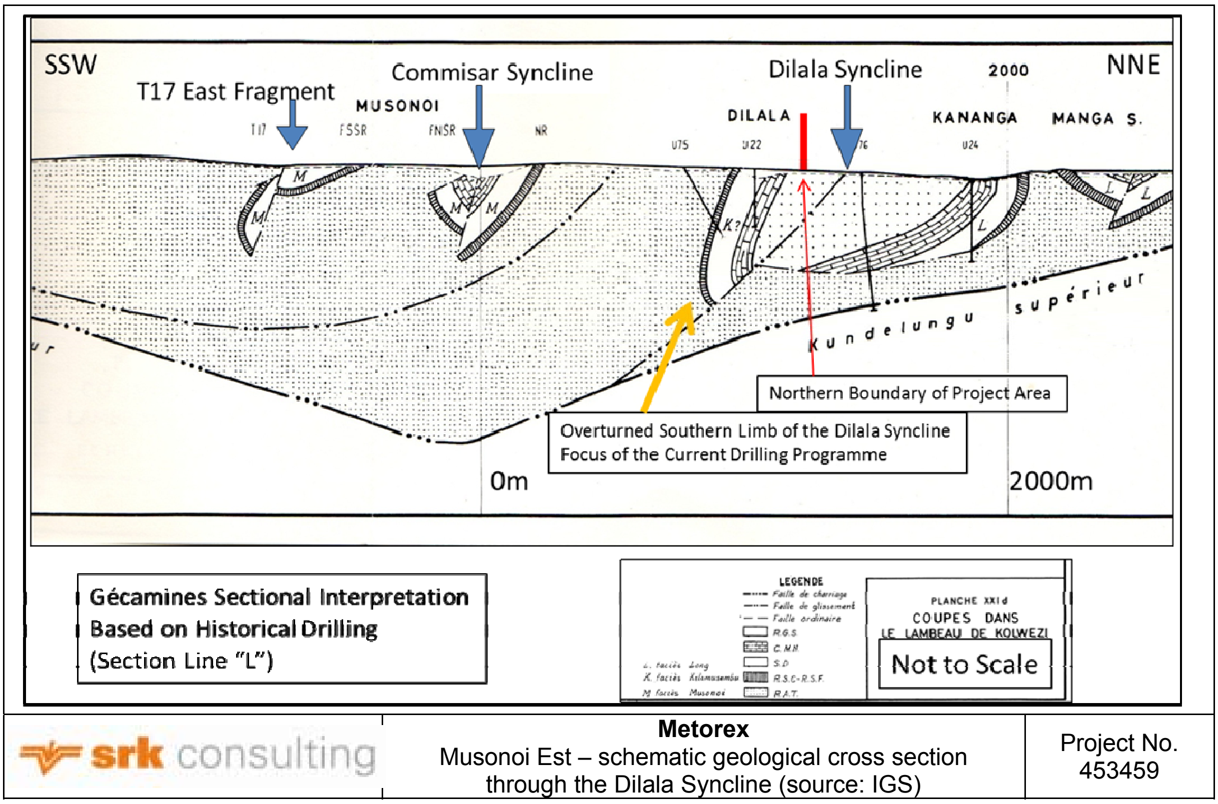
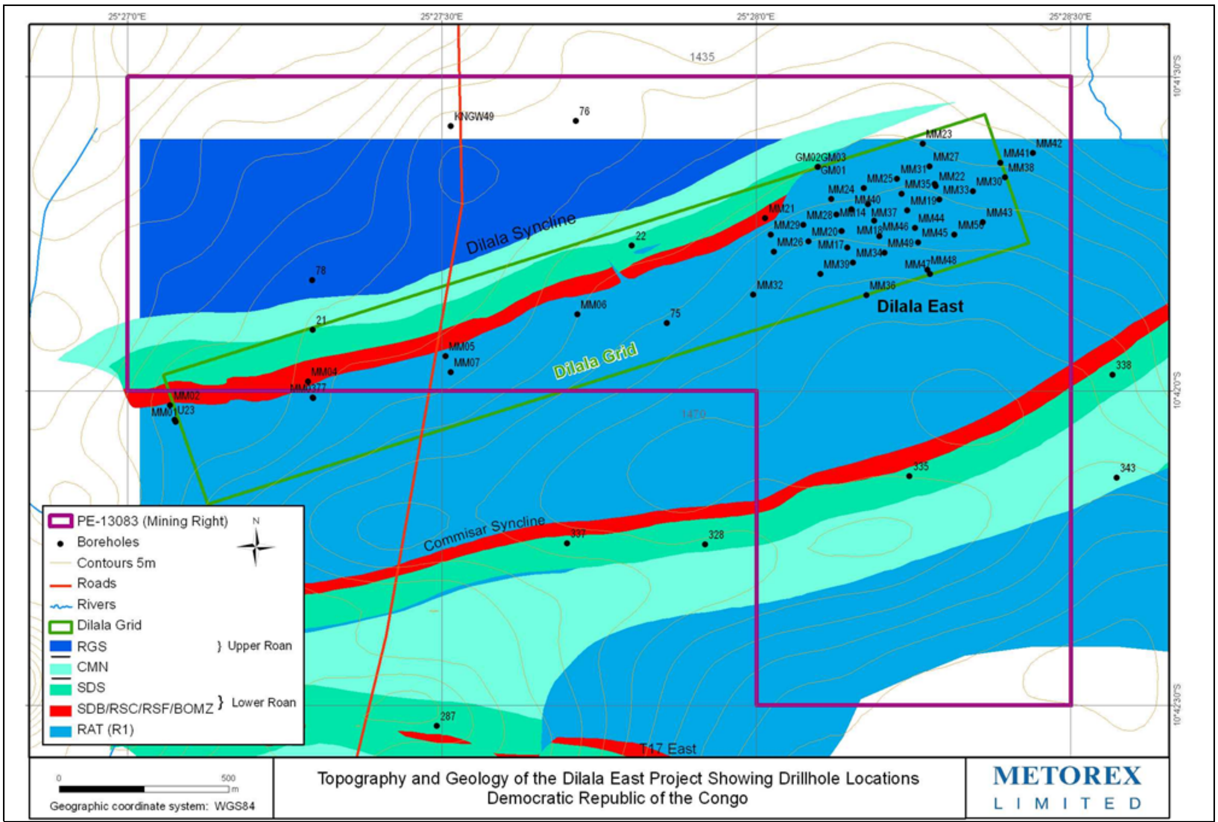


Figure 6.3: Musonoi Est - schematic geological cross section through the Dilala Syncline

Exploration activities by RM have been restricted to the Dilala Syncline (Figure 6.4). This is primarily due to the fact that there is little surface infrastructure in this area that could affect possible mining. No artisanal workings occur on the unit, as outcrop is poor and there are no signs of visible mineralisation on surface.

The south limb of the Dilala Syncline has a strike of 2 500 m and dips at approximately 60° to the south-east. It is terminated on its eastern and western flanks by shears or faults as mapped by Gécamines. Historical exploration of the Dilala Syncline was restricted to surface mapping and the drilling. Only 6 of the total 112 drill holes completed by UMHK and Gécamines between 1938 and 1990 on the Musonoi Est permit were drilled on the Dilala Syncline. These holes were drilled to the west of the Dilala East deposit and did not intersect significant economic mineralisation. Twenty one historical drill holes were completed on the Commissar Syncline, of which only 1 km of a total 4 km of strike is covered on PE13083. In the permit area, the most significant mineralisation occurs in hole U336 with a mineralised intersection of 32.3 m @ 1.04% Cu, 0.24% Co previously being reported by Gécamines. Metorex has not carried out any drilling on the Commissar Syncline, and this mineralisation remains unverified by recent drilling activity.

In 2007, Ruashi Mining discovered a significant Cu and Co deposit on the north-eastern end of the overturned southern limb of the Dilala Syncline through step out drilling. The Dilala East deposit does not outcrop, as the mineralised sequence is terminated by a curvilinear thrust fault about 50 m below surface.



srk consulting	**Metorex** Musonoi Est - Geology of Prospect Area showing Lower Roan Group "rafts" or "fragments" (source: IGS)	Project No. 453459

Figure 6.4: Musonoi Est - Geology of Prospect Area showing Lower Roan Group "rafts" or "fragments

A strike length of 600 m to 700 m has been identified with the deepest drill intersection obtained being 550 m below surface. Mineralisation remains open ended at depth. The mineralisation is typical of that of the Kamoto and KOV Mines with two HG zones (the "**RSF**", 14 m thick and the "**SDB**", 12 m thick), separated by the lesser mineralised "**RSC**" (20 m thick) as illustrated in Figure 6.5. The host rocks dip steeply to the south (70°).

The mineralised zones consist of talc shales, breccias and siltstones forming part of the meta-sedimentary sequence. Copper and cobalt mineralisation is generally in the form of malachite and heterogenite/kolwezite in the oxide portion of the deposit and chalcocite, bornite and carrollite in the deeper sulphide zone. The depth of oxidation is approximately 190 m to 220 m below surface.

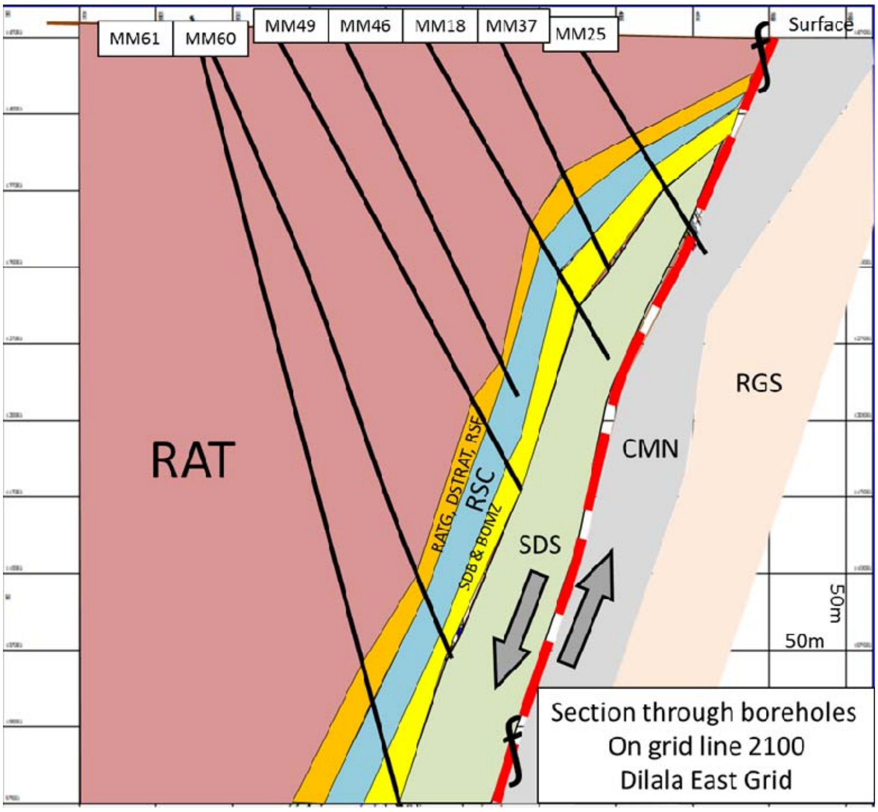
To date, the Dilala East deposit specifically has been tested by a total of 60 drill holes.

6.5.4 Exploration Programme and Budget

Metorex is currently busy with the work required to advance the Musonoi Est project to a feasibility study level of confidence.

Metorex's budget for the compilation of the feasibility study for Musonoi Est is USD6.8 million, split as USD2.7 million in H2-F2013 and USD4.1 million in F2014. USD1.8 million was spent during F2012 and H1-F2013.

SRK has not seen a detailed description of the planned work for the feasibility study nor the cost allocation within the budgeted amount for F2013. SRK is nevertheless satisfied that the quantum is of the right order of magnitude to advance the project to feasibility study level.



srk consulting	**Metorex** Musonoi Est - schematic section through the Dilala East deposit on grid line 2100 (source: IGS)	Project No. 453459

Figure 6.5: Musonoi Est - schematic section through the Dilala East deposit on grid line 2100

6.6 Mineral Resources and Mineral Reserves

[SR1.1A(iii), SR2.5A/B/C, SR7B, SR9A/B/C, SV2.6]

The Mineral Resources quoted for Musonoi are based on the IGS Competent Persons Report dated 22 March 2013. While issued in March 2013, the underlying exploration work and data collection was completed during 2012, and therefore these resources are deemed acceptable at the Effective Date of this CPVR.

6.6.1 Quality and Quantity of Data

[SR3.1, SR4.1]

IGS indicates that as of June 2012, a total of 81 diamond drill holes have been drilled on the Musonoi Est project area totalling 21 103 m. Sixty drill holes have been collared on the Dilala East deposit (17 880 m) and 21 drill holes on the Dilala West area (3 223 m). Additionally, the drilling of 6 geotechnical holes commenced in October 2012, and was still in progress as of 28 February 2013.

Drilling at both the Dilala East and Dilala West orebodies was largely conducted along section lines spaced 100 m apart and orthogonal to the strike of the deposit, with holes sited at 50 m intervals along the section lines. Steeply dipping copper-cobalt mineralisation (at Dilala East deposit) has been drilled over a strike length of 600 m and to a depth of 550 m below surface.

There are no details on the collar pickups and whether down-the-hole surveys were done on the historical UMHK and Sodimico holes.

For the holes drilled by Metorex and supervised by IGS, the drill hole collar positions were set out in field using a hand GPS using WGS84 UTM Zone 35S Coordinates. The collars were also checked and verified by a registered surveyor, in November 2012 with the exception of 3 collars.

Down the hole surveys were undertaken using a single-shot Sperry-Sun instrument conducted by either the drilling contractor or the Metorex geologist. Down the hole surveys were conducted at 50 m intervals whenever possible.

6.6.2 Sampling method and approach

[SR3.2, SR3.3]

There are no details on the sampling method and approach for the UMHK and Sodimico drilled holes. The discussion on the sampling method and approach is limited to the drilling exercises undertaken by Metorex.

Half drill hole core weas sampled with a minimum sample length of 0.5 m or greater was maintained throughout, with a standard 1 m sample length being the average.

Samples were bagged and labelled and despatched directly to the analytical laboratory at frequencies determined by sample generation or objective of sampling.

Assay results were received by the RM geologists from ALS Chemex via e-mail as MS Excel spread sheets or MS Access tables. The assay certificates were then up-loaded electronically to the primary database system.

All data relating to the drilling and sampling programmes for the Dilala East project has been captured in a Microsoft Access database by the RM geologist. Visual GeoBase, a database management software, is employed to capture all logging data. Within the database, distinction has been made between primary data (i.e. observations and measurements) and interpreted data (i.e. stratigraphic units and mineralised intersections).

6.6.3 Sample analytical methods

[SR3.3, SR3.4]

There are no details on the sample analytical methods adopted during the analyses of the RST drilled holes.

The analyses of the samples from verification work undertaken by Metorex in 1997 on the re-sampling of the old core and the twin drilling of selected RST drill holes was done by AAS at the RST Research and Development Laboratory. The laboratory was not accredited during the period of the analyses.

All the recent sample analyses were undertaken by ALS Chemex of Johannesburg South Africa. ALS Chemex is accredited in South Africa to ISO17025 standards, which incorporates accreditation to the ISO9001:2000 by the Standards Council of Canada, and SANAS accreditation T0387.

Samples are assayed by 4 acid digest for TCu and TCo, and by sulphuric acid leach for ASCu and ASCo as follows:

- Cu-ICP02 is the determination of Acid Soluble Copper in Ores, Feeds and Tails by Acid Leach with 20% H_2SO_4 with Sodium Sulphite with ICP-AES Finish;
- Method Precision: ±10%;
- Reporting Limit: 0.01 – 100%.

The IGS report states that this is not an accredited analytical method, and none of the certified reference material is certified for this analytical method.

6.6.4 Quality assurance and quality control

[SR2.1, SR3.1, SR3.2, SR4.1]

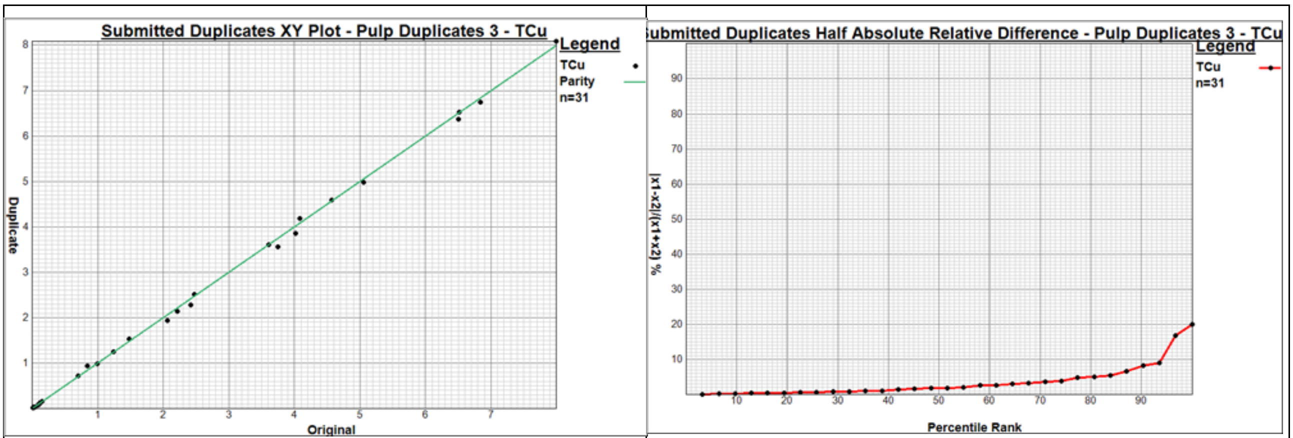
The following QA/QC protocols were in place during the exploration drilling:

- Insertion of blanks – blank samples made up of silica sand were submitted approximately every 20th sample;
- Insertion of standards - 3 different CRM standards sourced from AMIS were submitted with the sample batches, every 20th sample.
- pulp duplicates – 3 sets of blind pulp duplicates were resubmitted to ALS Chemex under new sample numbers at different times during the drilling programme.

The duplicates submitted as part of the 2008 programmes showed a good precision, with 90% having less than 10% difference. No repeat assays were conducted for ASCu and ASCo. Good results were obtained for the 2010 duplicate assays for TCu and TCo, but the ASCu and ASCo showed poor precision.

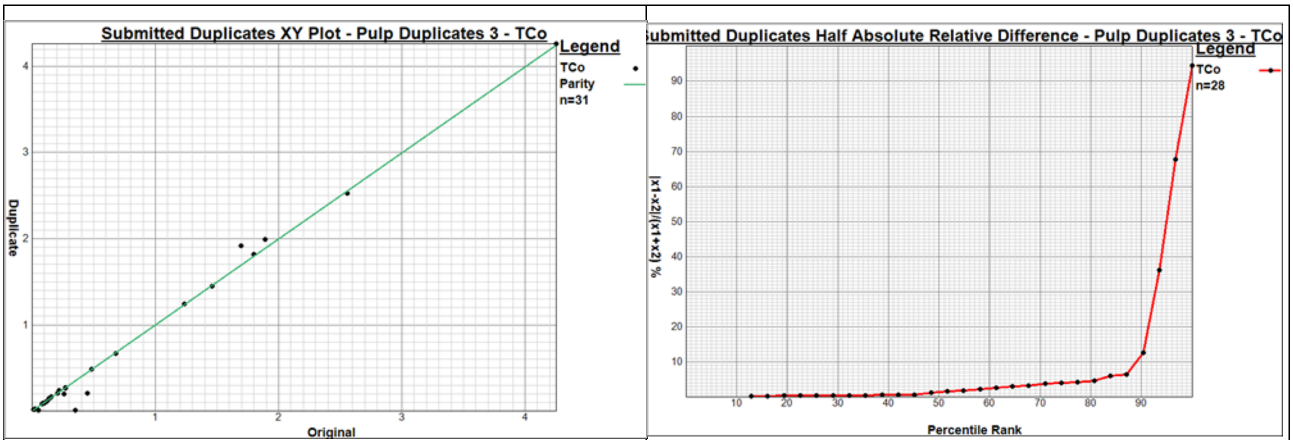
The results for the duplicate analyses carried out in 2012 are presented as scatter and HARD plots for %TCu and %TCo in Figures 6.6 and 6.7 respectively. No duplicate assays for ASCu and ASCo were done.

Certified reference material submitted with the drill hole samples shows very good accuracy for TCu. All CRMs submitted show good accuracy, with no bias evident. Duplicates for TCu show good precision throughout the drilling programme. The quality of the TCu estimates is therefore acceptable for resource estimation purposes.



srk consulting	Metorex Musonoi Est – scatter and HARD plots of 2012 pulp duplicates - %TCu (source: IGS)	Project No. 453459

Figure 6.6: Musonoi Est - scatter and HARD plots of 2012 pulp duplicates - %TCu



srk consulting	Metorex Musonoi Est – scatter and HARD plots of 2012 pulp duplicates - %TCo (source: IGS)	Project No. 453459

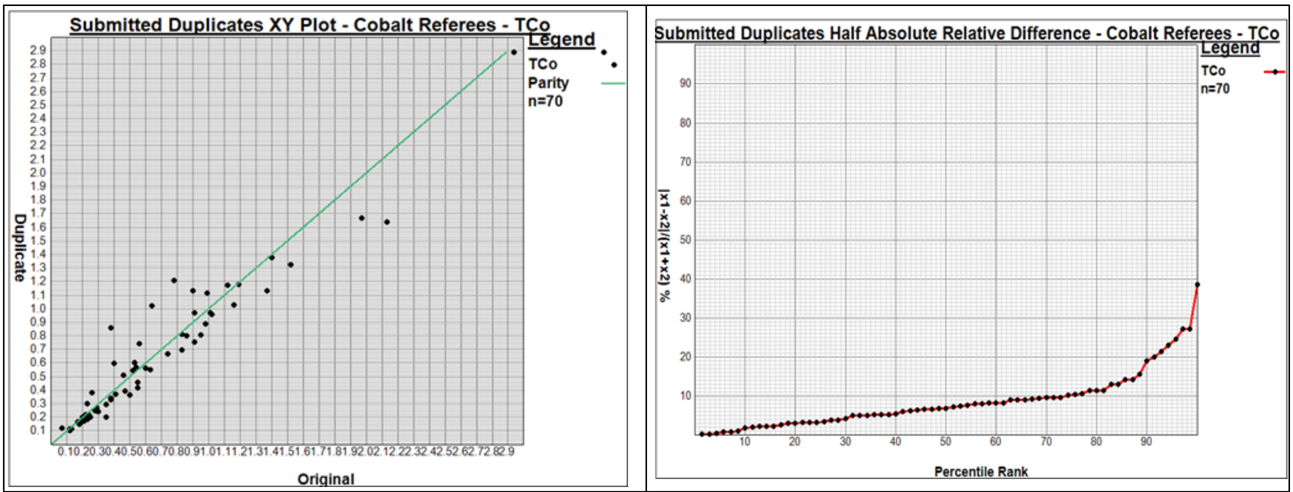
Figure 6.7: Musonoi Est - scatter and HARD plots of 2012 pulp duplicates - %TCo

Due to the very low grade of Co in the CRM used throughout the drilling programme, a set of pulps with a spread of Co values was selected and submitted to Setpoint as referee laboratory (Figure 6.8).

The cobalt referee samples show a good correlation in the range from 0.1% to 1.3% TCo. Above 1.3% TCo, the duplicates show a lower value for the duplicates as for the original sample. This may point to a slight risk that the extremely high TCo values are overstated, but the consequence to the resource estimate will be minimal.

Acid soluble copper results obtained for CRMs show significant drift over the period of the drilling programme. The duplicates, probably as a consequence of this, show poor precision. It is likely that ASCu estimates in the resource estimate may be significantly different from those encountered in mining.

Acid soluble cobalt results obtained for certified reference are generally too low to discern and the duplicates also show poor precision. It is likely that ASCo estimates in the resource estimate may be significantly different from those encountered in mining.



srk consulting	**Metorex** Musonoi Est – scatter and HARD plots of 2012 Co referee samples - %TCo (source: IGS)	Project No. 453459

Figure 6.8: Musonoi Est - scatter and HARD plots of 2012 Co referee samples - %TCo

6.6.5 Bulk density and bulk tonnage data

[SR2.4]

Horizontal slices were taken at 50 m intervals and measured bulk densities for each stratigraphic unit were averaged over each elevation range. The densities in Table 6.3 were assigned to the block model. It is unclear how many bulk density measurements were available for this.

Table 6.3: average densities by stratigraphic unit and depth

Depth								
From	**To**	**BOMZ**	**DSTRAT**	**RATG**	**RSC**	**RSF**	**SDB**	**WASTE**
1 400	2 000	1.33	1.67	1.77	1.87	1.73	1.31	1.63
1 350	1 400	1.34	1.53	1.78	1.68	1.69	1.47	1.74
1 300	1 350	1.35	1.49	1.78	1.69	1.76	1.72	1.73
1 250	1 300	1.38	1.70	2.46	1.76	1.75	1.81	1.79
1 200	1 250	1.53	2.41	2.46	1.99	2.38	1.84	1.99
1 150	1 200	2.38	1.89	2.26	2.10	2.21	2.09	2.21
1 100	1 150	1.86	2.34	2.25	1.88	1.65	2.14	1.88
1 050	1 100	2.69	2.45	2.34	2.22	2.31	2.51	2.19
1 000	1 050	2.69	2.10	2.27	2.15	1.99	2.27	2.31
950	1 000	2.41	2.21	2.19	2.06	2.10	2.37	2.07
900	950	2.44	2.21	2.25	2.17	2.10	2.30	2.23
0	900	2.39	2.21	2.25	2.31	2.10	2.35	2.40

6.6.6 Geological modelling and zones of mineralisation

[SR4.1A(ii)(iv), SR4.1A/B, SR4.2A, SR4.2B]

Two distinct domains are recognised within the project area, bounded by a sub vertical fault. These are termed Dilala West and Dilala East.

Sections were created orientated in a north-south direction on the drilling grid and triangulated to produce 3D solid models of the stratigraphic units within the Dilala East fault bounded block. The shear/breccia zone between the Dilala East and Dilala West bodies was also modelled and used to separate the Dilala East and West domains.

The ore body is open ended to depth and no flattening of the dip indicating proximity of the fold closure has been intersected thus far. The solids modelling was extrapolated 50 m east and west of the last drill hole intersection (along strike), and 50 m beyond the last drill hole intersection to depth (down dip).

Two block models were created. A primary model rotated orientated in the plane of the stratigraphy was used for the resource estimation. A second unrotated model was created for the purposes of mine planning. The grades from the primary model were assigned to the second model. The volume difference between the two models is less than 0.5%.

Composites of varying lengths were created for the different stratigraphic units and the resultant distributions compared. Composites of 2 m lengths were selected to be used for grade interpolation as the distribution of grade approached a normal distribution more closely than any other. Table 6.4 shows the averages for the 2 m composites for Dilala East and West, for each individual stratigraphic unit.

Table 6.4: Grade averages per 2 m composites

Unit	Dilala East		Dilala West	
	%TCu	%TCo	%TCu	%TCo
RATG	2.76	0.63	3.64	0.28
DSTRAT	4.37	0.42	2.60	0.18
RSF	4.72	0.76	0.26	0.14
RSC	1.02	0.66	0.04	0.22
SDB	3.20	1.38	0.44	0.44
BOMZ	1.26	0.40	0.77	0.27
Average	**2.89**	**0.71**	**1.29**	**0.25**

The sample data is too exhaustive to be included in the CPVR. The table of statistics is included to show the range of values intersected within the samples selected for resource estimation.

6.6.7 Variogram modelling

Variograms were modelled for the Lower Orebody comprising the combined RATG, DSTRAT, RSF and RSC composites and the Upper Orebody comprising the BOMZ and SDB. Directional variograms were created normal to the dip of the orebody and in the major and semi-major directions, according to any anisotropy identified in a variogram map in the plane of the orebody.

Variograms for the Lower Orebody for TCu and TCo are set out in Figure 6.9 and 6.10 respectively. Variograms for the Upper Orebody for TCu and TCo are set out in Figure 6.11 and 6.12 respectively.

6.6.8 Grade estimation

[SR4.2]

Block grades were estimated using ordinary kriging using the variogram parameters modelled above. The individual units were estimated separately using hard boundaries between the units.

The Dilala East and Dilala West domains were estimated separately using a hard boundary between the two domains. A minimum of 5 and a maximum of 30, 2 m composites were used to estimate each block. Points that were discretised on a 3 x 3 x 3 basis were used in the X, Y & Z directions.

Estimation was done into the primary dipping block model. The block estimates were then exported and assigned to the non dipping, mine planning model.

The proportion of acid soluble copper and cobalt was estimated using 50 m horizontal slices through the block model and by inverse distance estimation.

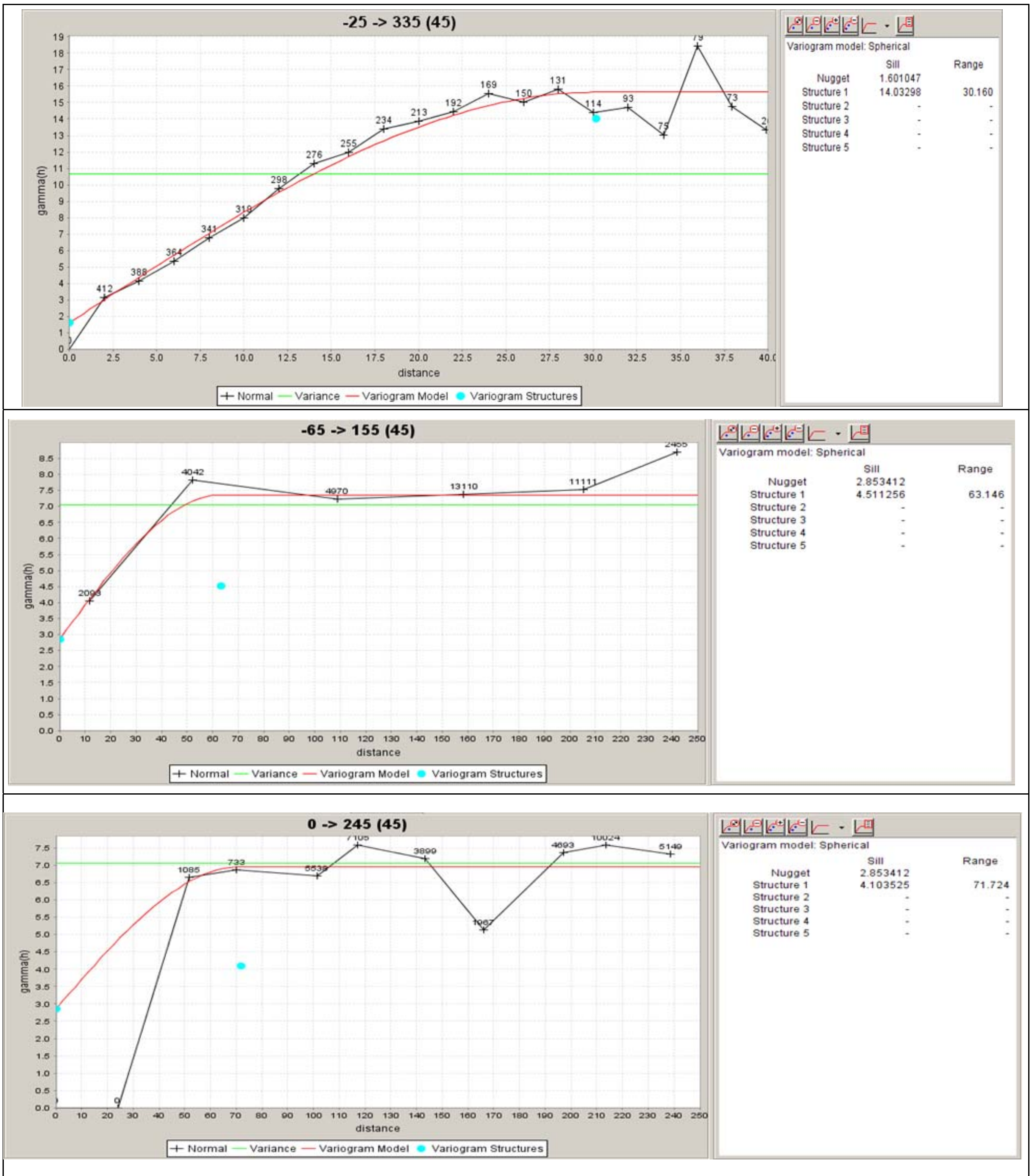
6.6.9 Mineral Resource Classification

[SR5.7B, SR7]

The resource is classified using a combination of distance from informing drill holes and more qualitative geological confidence considerations, as set out in Table 6.5. Any blocks further than 150 m from a data point are not assigned any resource classification.

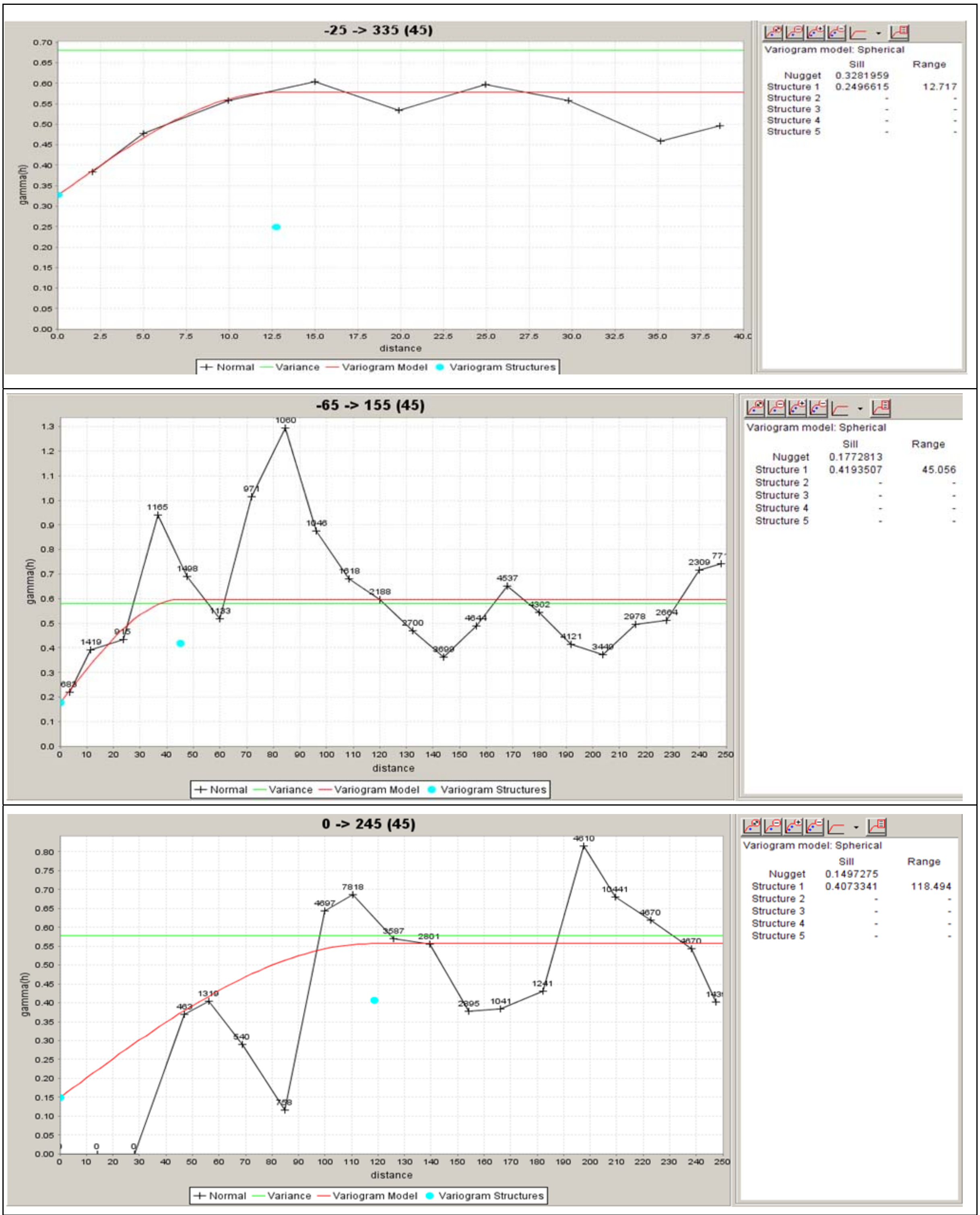
Table 6.5: Musonoi Est – classification criteria for mineral resources

Resource Category	Dilala East orebody	Dilala West orebody
Measured	The densely drilled area in the core of the Dilala East orebody, above 1 050 m is classified as Measured Resource. No block is further than 50 m from a data point along strike and approximately 30 m in the dip direction	-
Indicated	Blocks closer than 75 m to a data point are classified as Indicated Resource. The two small fault bounded ore zones to the north of the bounding breccia zone are classified as Indicated Resource due to the lower certainty in the geometry of the bodies	Blocks closer than 75 m to a data point are classified as Indicated Resource.
Inferred	Blocks closer than 150m to a data point are classified as Inferred Resource.	Blocks closer than 150 m to a data point are classified as Inferred Resource. The area around drill holes X and Y of Dilala West, projected 50 m from the two intersections is classified as Inferred Resource.



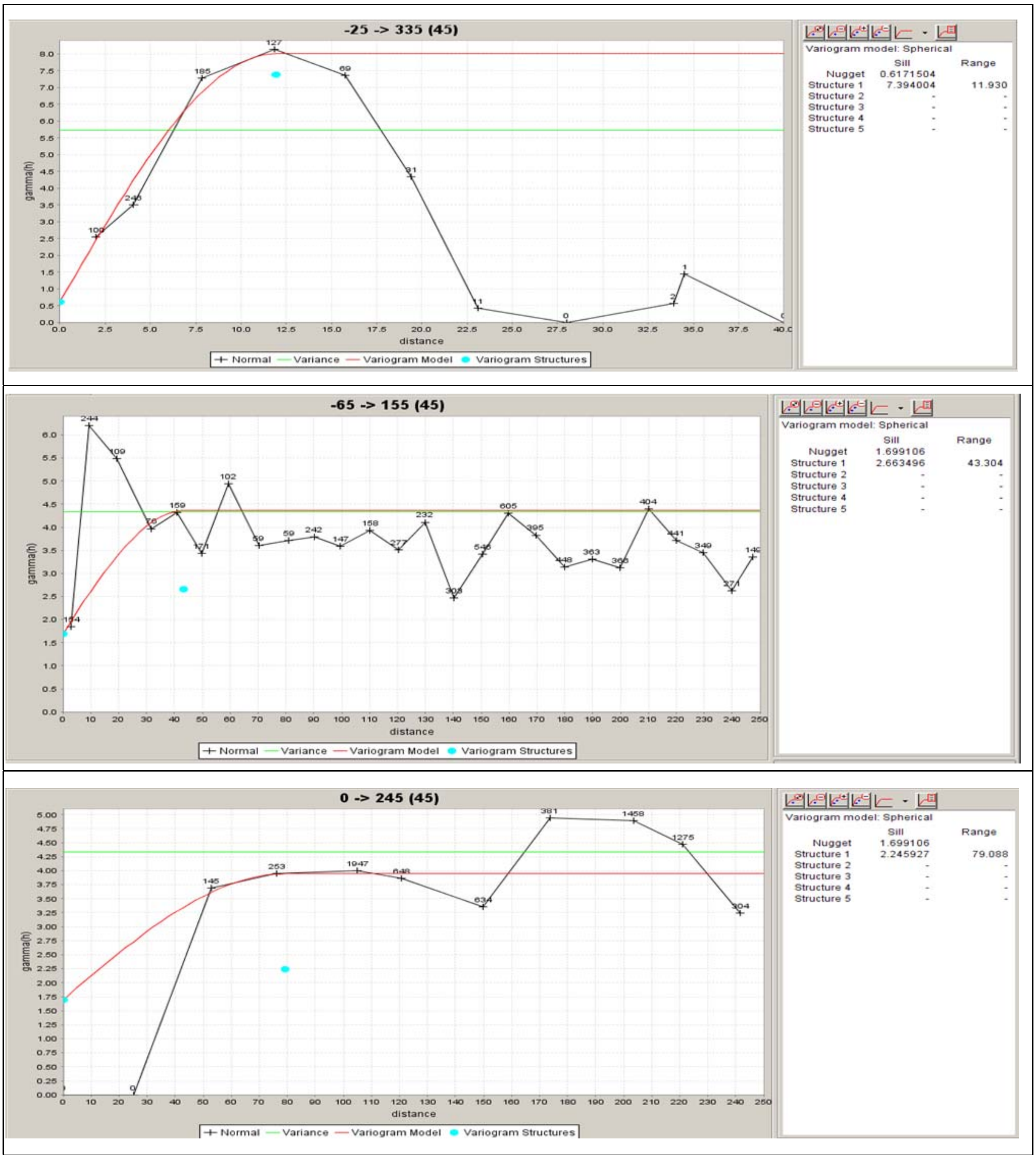
srk consulting	**Metorex** Musonoi Est – Lower Orebody %TCu variography – normal to strike & dip (top), downdip (middle) and along strike (bottom) (source: IGS)	Project No. 453459

Figure 6.9: Musonoi Est - Lower Orebody %TCu variography – normal to strike & dip (top), downdip (middle) and along strike (bottom)



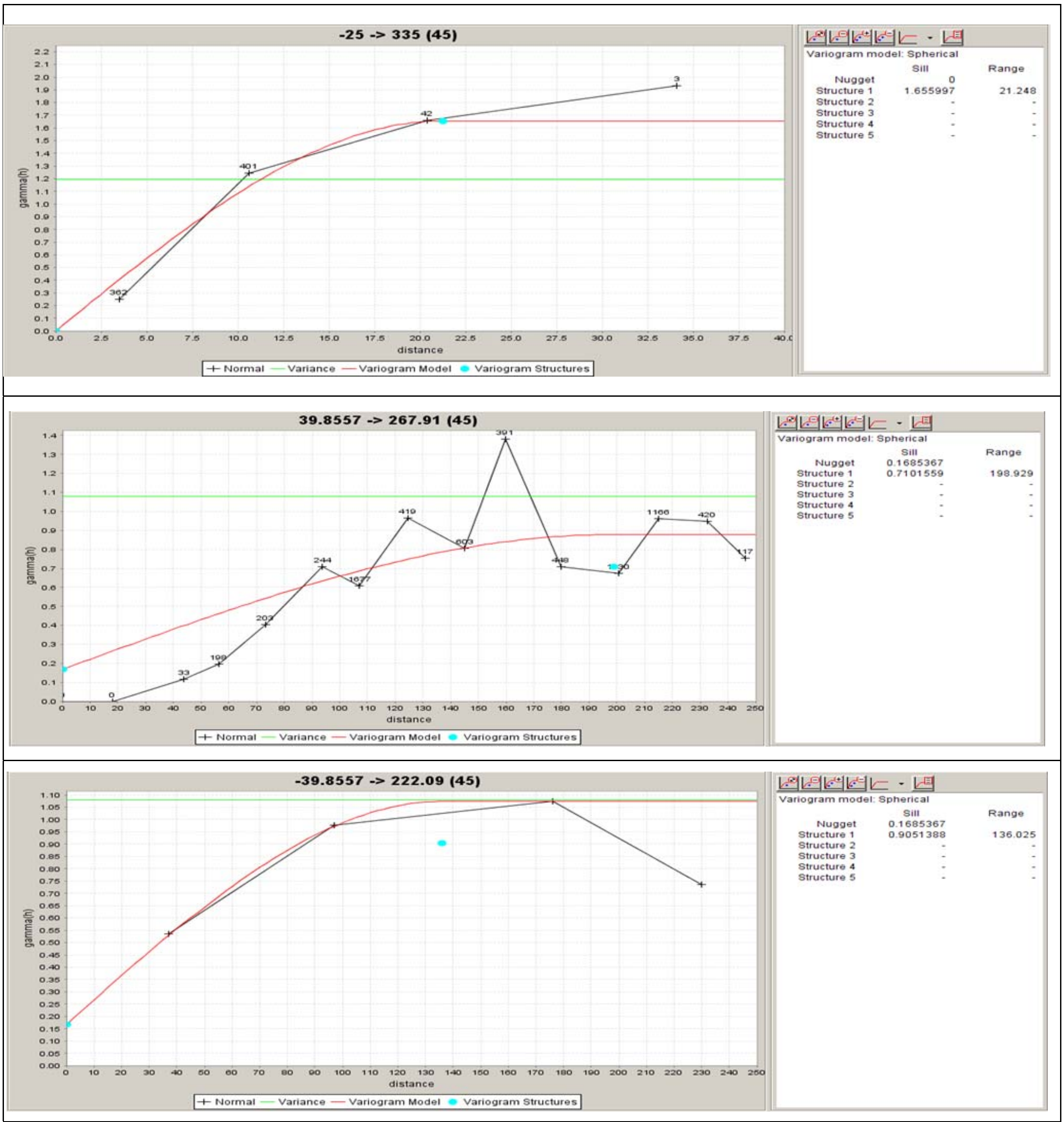
srk consulting	**Metorex** Musonoi Est – Lower Orebody %TCo variography – normal to strike & dip (top), downdip (middle) and along strike (bottom) (source: IGS)	Project No. 453459

Figure 6.10: Musonoi Est - Lower Orebody %TCo variography – normal to strike & dip (top), downdip (middle) and along strike (bottom)



srk consulting	**Metorex** Musonoi Est – Upper Orebody %TCu variography – normal to strike & dip (top), downdip (middle) and along strike (bottom) (source: IGS)	Project No. 453459

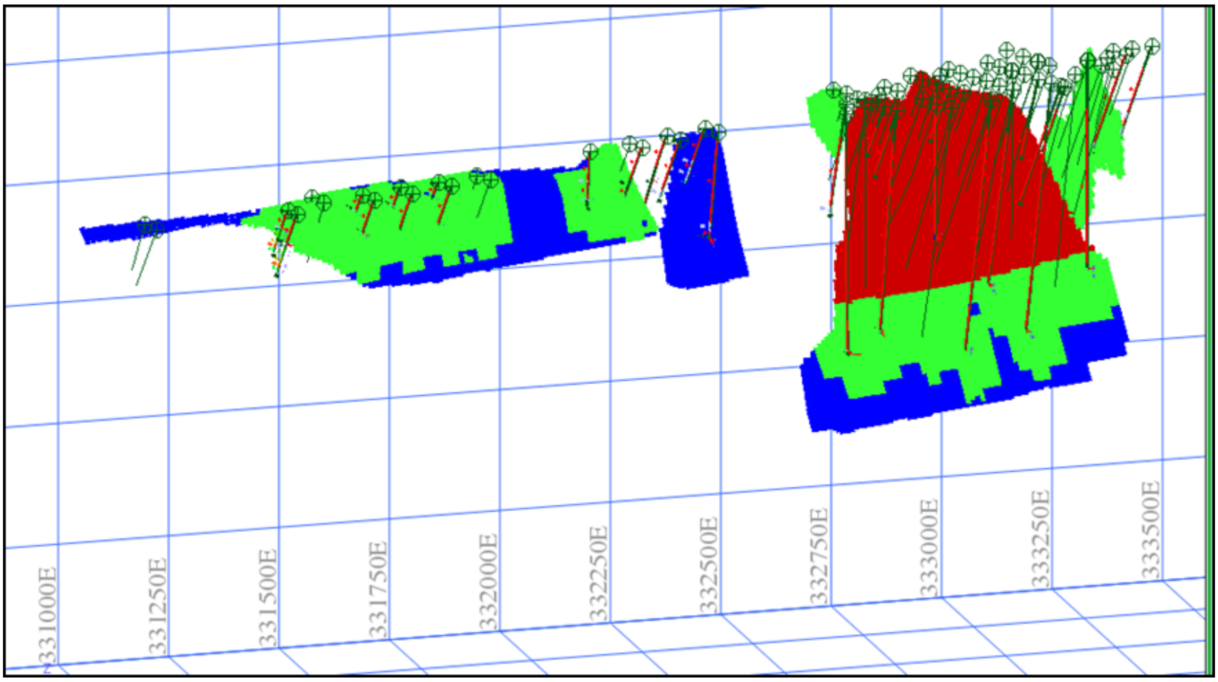
Figure 6.11: Musonoi Est - Upper Orebody %TCu variography – normal to strike & dip (top), downdip (middle) and along strike (bottom)



srk consulting	**Metorex** Musonoi Est – Upper Orebody %TCo variography – normal to strike & dip (top), downdip (middle) and along strike (bottom) (source: IGS)	Project No. 453459

Figure 6.12: Musonoi Est - Upper Orebody %TCo variography – normal to strike & dip (top), downdip (middle) and along strike (bottom)

The results of the application of the classification criteria are shown in Figure 6.13.



srk consulting	**Metorex** Musonoi Est – mineral resource classification (source: Metorex)	Project No. 453459

Figure 6.13: Musonoi Est – Mineral Resource classification

6.6.10 Cut-off Grade for 2012 Mineral Resource Estimates

[SR5.7B(ii), SR5.7C(iii)]

The parameters used by Metorex for the grade cut-off determination for reporting of Mineral Resources are set out in Table 6.6.

Table 6.6: Musonoi Est – parameters for cut-off determination for mineral resources

Parameter	Units	Values for Cu cut-off	Values for Co cut-off
Unit costs			
Mining	(USD/t)	38.00	38.00
Concentrator	(USD/t)	15.00	15.00
Admin / overheads	(USD/t)	10.87	10.87
Smelter	(USD/t)	26.00	26.00
Off mine	(USD/t)	24.00	24.00
Mine call factor	(%)	95.0%	95.0%
Dilution	(%)	13.0%	13.0%
Concentrate recovery	(%)	90.0%	87.0%
Smelter recovery	(%)	84.6%	77.4%
Revenue	(USD/t)	12 000	33 069
Royalty	(%)	4.5%	4.5%

A cut-off grade of 1.58% Cu or 0.65% Co results from these parameters.

The method used to determine the cut-off grade is consistent with industry practice and the cut-off grade thus determined is seen to be reasonable.

6.6.11 Mineral Reserves

To date, only mineral resources have been declared on the Musonoi Est property. The feasibility study will undertake the necessary mine planning, engineering design and costing, metallurgical testwork, environmental studies and tailings design, necessary for the full evaluation and application of modifying factors to enable the conversion of mineral resources to mineral reserves.

6.6.12 SRK Comments

SRK was on site at Musonoi in Kolwezi on July 30 2013 to locate the collars of the holes drilled in the field and review the core from the drilling. Collar positions from about 10 holes were found in the field with the cemented collar markers and the borehole ID clearly marked on the cement. Also marked on the holes were the end-of hole depths.

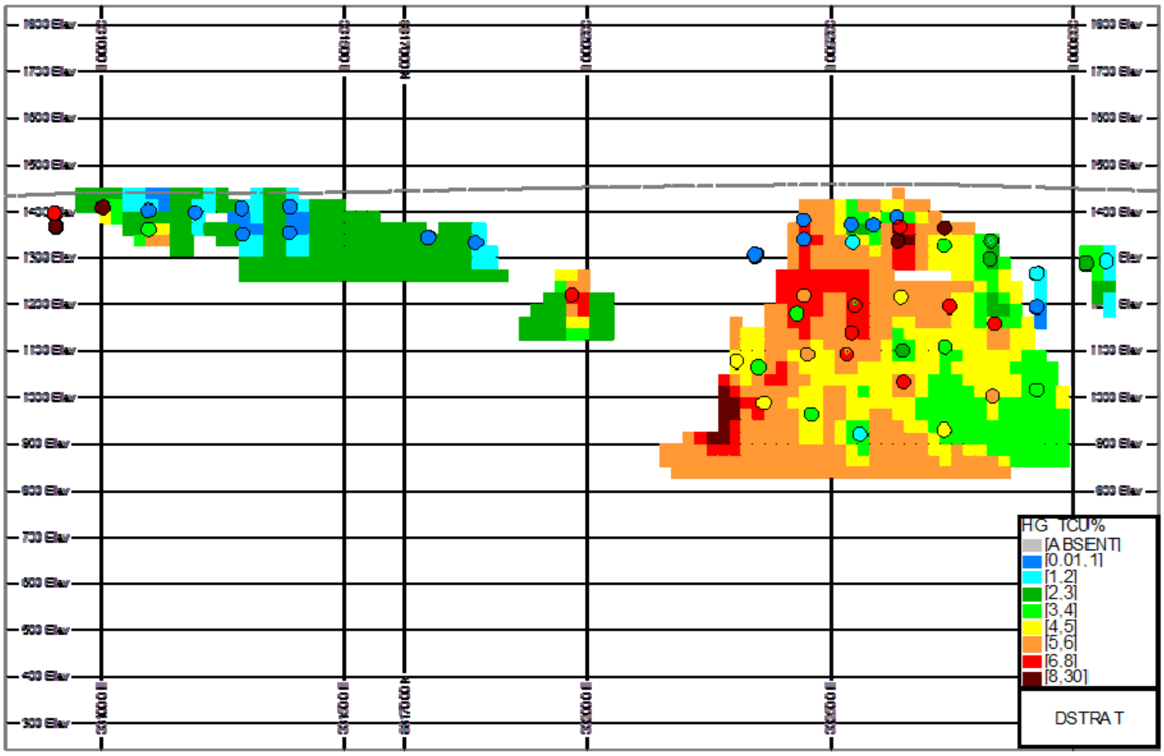
At the core shed on site, cores from 4 unsamples geotechnical holes were examined. Additional cores were also examined at the Musonoi office in Kolwezi where 4 other boreholes were laid out. The cores reviewed were from boreholes drilled in the shallower and western portion of the deposit and also from the deeper and eastern portion of the deposit where the majority of the drilling was done.

SRK made the following observations from the cores:

- The core was fresh and intact throughtout the lithological sucession from the boreholes in the eastern portion while the core from the western portion was weathered and decomposed, a consequence of depth;
- The copper minerlaisation was associated with the lithologies of the Series de Mines, with two main zones associated with the DSTRAT and RSF for the lower mineralised uone and the SDB and BOMZ for the upper minerlaised zone.
- Mineralisation in the RSC was associated with the contact zones; with the RSF for the lower contact and the SDB for the upper contact. The main portion of the RSC appeared devoid of copper minerlisation or was weakly minerlaised with cobalt. The Musonoi Project Geologist indicated that incidences of high copper mineralisation within the RSC were associated with brecciation, which introduced copper to the RSC. These incidences were observed in limited boreholes.
- The western portion of the deposit is low in copper concentration, but with elevated concetrations of the cobalt mineral heterogenite;
- The issue of the presence or absence of RATGR in the core was discussed with the Project Geologist during the review of the core the observations were that the presence of breccias masks the RATGR and therefore this material is not logged as RATGR proper but as breccia. The breccia remains mineralised and this is included in the RATGR Mineral Resources during modelling.

SRK has reviewed the Mineral Resource estimates for Musonoi and makes the following observations:

- The variography has been based on the combined lithological units of RATG, DSTRAT, RSF and RSC for the Lower Mineralised zone and the SDB and BOMZ for the Upper Mineralised Zone. The RSC is considered to be cobalt rich member at the expense of copper and has characteristics that are distinct from the adjacent overlying and underlying units. This is confirmed by SRK's observations of the core during the site visit. SRK understands that this was done to allow for variograms to be developed for the estimation of the RSC, but only RSC samples were used for the estimation of the RSC.
- Figure 6.14 is a longitudinal section along the east (X-Z) showing the drill hole data distribution by depth and the %TCu drill hole grade intersected within the DSTRAT. Similarly, the %TCu colour coded block estimates reflect the average of the column of blocks in the Y plane at the respective block centre. The colour coding of the block estimates compared to the drill hole intersections indicates an over-estimation within the DSTRAT. This is confirmed by the comparisons of the statistics of the composites against the block estimates (Table 6.7), where overall the over-estimation related to the DSTRAT is about 18%. Metorex ascribed the overestimation to a clustering of a few very HG intersections in the oxide zone skewing the estimate.



srk consulting | **Metorex** Musonoi Est – X-Z section showing % TCu in drill hole and block estimates - DSTRAT | Project No. 453459

Figure 6.14: Musonoi Est – X-Z section showing % TCu in drill hole and block estimates - DSTRAT

Table 6.7: Musonoi Est – comparison of the mean sample statistic against the block estimates

Lithology	Variable	Sample data					Block data					
		No. Samples	Min.	Max.	Mean	Std Dev	No. Samples	Min.	Max.	Mean	Std Dev	% Diff
RATG	TCu	30	0.01	8.28	**3.14**	2.58	79,446	1.26	5.42	**2.98**	0.53	-5%
RATG	TCo	30	0.01	2.22	**0.59**	0.52	79,446	0.12	1.47	**0.58**	0.24	0%
DSTR	TCu	310	0.01	23.00	**3.74**	3.71	121,558	0.71	15.60	**4.43**	1.52	18%
DSTR	TCo	310	0.00	5.56	**0.42**	0.61	121,558	0.06	1.35	**0.42**	0.21	1%
RSF	TCu	622	0.00	28.30	**3.55**	3.81	171,144	0.04	9.20	**3.45**	2.16	-3%
RSF	TCo	622	0.00	8.01	**0.59**	0.89	171,144	0.03	2.08	**0.61**	0.48	2%
RSC	TCu	1429	0.00	26.30	**0.62**	1.79	204,672	0.01	4.52	**0.75**	0.63	21%
RSC	TCo	1429	0.00	12.25	**0.51**	0.85	204,672	0.01	2.25	**0.72**	0.43	42%
SDB	TCu	644	0.01	15.00	**2.33**	2.95	192,426	0.08	6.84	**1.86**	1.45	-20%
SDB	TCo	644	0.00	15.30	**1.19**	1.71	192,426	0.28	4.22	**0.95**	0.43	-20%
BOMZ	TCu	414	0.00	12.35	**1.03**	1.50	137,840	0.30	2.52	**0.75**	0.32	-27%
BOMZ	TCo	414	0.00	11.60	**0.32**	0.76	137,840	0.02	0.78	**0.24**	0.10	-22%

After the review of the core during the site visit, SRK observed that in certain instances, the lithological unit RATGR was logged as Breccia and that this Breccia, which was mineralised, was used to model the RATGR unit during the Mineral Resources modelling process. This observation provided the understanding of the mineralisation within the "RATGR" unit. This explained the low data count for the "RATGR" proper.

6.6.13 SRK Audited Mineral Resources and Mineral Reserves

[SR9]

The SRK audited Mineral Resource estimates for Musonoi at 31 December 2012, using a 1.6% Cu cut-off or 0.65% Co cut-off, are set out in Table 6.8.

Table 6.8: Musonoi Est – SRK Audited Mineral Resources for Musonoi at 30 June 2013 at a 1.6% Cu cut-off grade

Classification	Tonnage **(Mt)**	**Cu grade (%)**	**Copper (kt)**	Co grade **(%)**	Cobalt **(kt)**
Oxide Material					
Measured	3.8	3.17	120.0	1.02	38.6
Indicated	1.3	1.72	22.8	0.84	11.1
Inferred	0.2	2.14	5.3	0.47	1.2
Total Oxide	5.4	2.76	148.1	0.95	50.9
Mixed + Sulphide Material					
Measured	9.2	3.32	304.3	0.87	80.3
Indicated	12.6	2.43	305.5	0.92	116.1
Inferred	4.5	2.54	115.3	0.89	40.2
Total Mixed/Sulphide	**26.3**	**2.76**	**725.1**	**0.90**	**236.6**
Oxide + Sulphide Material					
Measured	13.0	3.27	424.4	0.92	118.9
Indicated	13.9	2.36	328.2	0.92	127.2
Inferred	4.8	2.52	120.6	0.87	41.4
Total - Musonoi	**31.7**	**2.76**	**873.2**	**0.91**	**287.6**

SRK has reviewed the updated classification criteria for Musonoi and is satisfied with the process.

No Mineral Reserves have been declared for Musonoi at the Effective Date.

6.6.14 Reconciliation of Mineral Resources

[SR8B(iv), SR8C(vi)]

The previous Mineral Resource statement for Musonoi was published by Metorex in its Annual Report for 2011. The Mineral Resources at 31 December 2011 and at 30 June 2013 for Musonoi are compared in Table 6.9.

Table 6.9: Musonoi Est – Mineral Resources Reconciliation - 31 December 2011 to 30 June 2013

Total Resources	**At Jun 2013**			**At Dec 2011**		
	Tonnes	**Contained Metal**		**Tonnes**	**Contained Metal**	
	(Mt)	**Cu (kt)**	**Co (kt)**	**(Mt)**	**Cu (kt)**	**Co (kt)**
Measured	13.0	424.4	118.9	10.6	345.6	92.8
Indicated	13.9	328.2	127.2	8.3	279.2	71.6
Inferred	4.8	120.6	41.4	3.5	111.1	32.0
Total Min. Resources	31.7	873.2	287.6	22.5	735.9	196.4

The changes in the Mineral Resources for Musonoi from 2011 to 2012 are attributed to:

- Additional drilling which has increased the resource base;
- A different cut-off grade has been applied;
- SRK has modified the criteria applied in the classification of the resources.

6.7 Rock Engineering

[SR5.4]

Information has been extracted from a report entitled "Musonoi East Project – Feasibility Study" compiled by Ruashi Holdings in 2010 (the "**Musonoi Study**"). More recently, SRK carried out a comprehensive geotechnical investigation to provide information for the mine design being undertaken by DRA.

The rock mass quality near surface is very poor, and remains poor in the weathered zone to approximtely 200 m below surface. Transition zone of mixed oxide and sulphide ore lies between 200 m and 350 m below surface above the underlying sulphides, which are in relatively competent rocks.

A zone of poor quality ground, interpreted as a shear zone, lies close to the footwall contact. Consequently it has been decided to site access development in the hanging wall RAT to avoid the risk of traversing this zone on multiple occasions.

Primary access will be achieved via a decline shaft. Geotechnical investigations have been carried out to classify ground conditions existing in the box cut area and at some positions along the decline route.

Updip long hole retreat stoping will be practised in the two parallel steeply dipping orebodies. A competent stratum, the RSC, separates the two orebodies. Consideration is being given to siting access development in this zone. Recommended stope dip and strike dimensions for the different ground conditions to be expected have been provided to DRA to facilitate mine design.

Stopes will be backfilled with cyclone classified tailings (CCT) following ore extraction. Buttress pillars are planned at 90 m vertical intervals.

6.8 Hydrogeology and Hydrology

[SR5.4]

The discussion which follows has been extracted from the Musonoi Study, and some water sampling results provided by Metorex.

According to the Musonoi Study, little is known about the specific Musonoi East hydrological regime. Nevertheless, considerable water inflows are expected from the dolomitic strata and hangingwall/footwall acquifers. Water handling measures to cater for this have been considered and involve dewatering the oxide zone above the 250 Level and management of water flow below 250 m. The pumping capacity at these two levels will be designed to handle 600 l/s (50 Ml/day), but in the absence of hydrological data this could be an underestimate.

Dewatering of the weathered zone will be achieved by drives and crosscuts in the hangingwall and footwall on the 250 m level, to service dewatering crosscuts with watertight doors and concrete plugs. The crosscuts will be 100 m apart and will eventually be developed over the entire strike length. Holes under high pressure valve control will be drilled from the crosscuts to tap the water-bearing strata. Four groundwater isolation plugs were assumed for the initial capital estimate.

Below the 250 m Level, the water inflow is expected to be less because of the paste fill stoping method and general rock competence. The Musonoi Study however provided for an additional pumping capacity of 600 l/s, with 60 l/s from each of 10 development areas. Most of the water (90%) is planned to be drawn from drain holes fitted with valves drilled from ten drainage cubbies, with the remainder being service water from the workings.

Each pump station will be equipped with six high-lift clear water pumps such as a GPH 51 4-stage pump, with one on stand-by. The pumps will draw between 750 and 1 600 kVA at each station, and provision has been made for five 500 kVA generators at 11 kV for emergencies. Suitable settlers and clear water dams will be excavated at both levels. Ground water and dirty water from the sub-levels will be pumped by vertical spindle pumps to the dams and settlers via inter-level drain holes. A decline extending below shaft bottom for exploration purposes would provide an emergency sump in the event of a major inflow of water.

In terms of water quality, some water quality data covering the past year has been made available by Metorex. This could be the beginning of a water quality baseline database. It provides upstream and downstream water quality in the potentially affected rivers. The sampling results indicate elevated Cu, Fe, Mn, Mo, Se and Zn in some samples with Cu values exceeding the DRC standard of 1.5 mg/l at times.

6.9 Mining

[SR5.4]

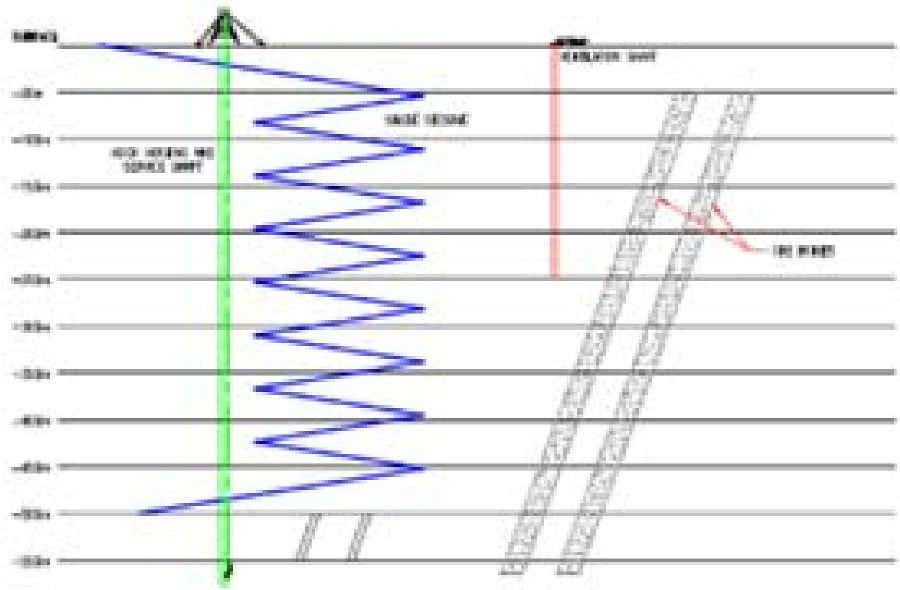
The discussion which follows has been extracted from the Musonoi Study.

The Musonoi East deposit comprises two mineralised zones roughly 14 m thick separated by a siliceous dolomite zone which is approximately 20 thick. The sequence dips 70° south and the strike length is approximately 600 m. The stratigraphic sequence has been overturned and the mineralised zone sub-outcrops on a fault some 50 m below surface, which are overlain by RAT strata. The Musonoi Study assumed a depth extent for the orebody of 500 m below surface.

Two scoping studies into mining and access options were conducted by AMC of Zambia and Turgis Consulting (Pty) Ltd ("**Turgis**") of South Africa. The AMC study concentrated mainly on the oxides. The key conclusions from these studies were:

- The oxide mineral resource is insufficient to justify the erection of a full SX/EW extraction plant;

- The waste to ore stripping ratio for an opencast mine for the oxides would be about 15:1, due to the overburden of 50 m and the steep dip of the deposit. The large size of the open pit footprint cannot be accommodated within the mining permit, as well as its proximity of the Kolwezi town;
- The oxide mineral resources should not be sterilised by mining of the underlying sulphides;
- Mining of the oxide zone by sub-level stoping or caving may be feasible, depending on ground conditions and resultant subsidence effects on surface;
- The best method of access would be a four compartment concrete lined vertical shaft to accommodate the depth of the orebody and water handling requirement, and a single decline from surface to provide a second outlet, increase flexibility and reduce start-up time. A ventilation shaft to 225 m below surface would also be required (Figure 6.15);



srk consulting	**Metorex** Musonoi Est – schematic of access to orebody	Project No. 453459

Figure 6.15: Musonoi Est – schematic of access to orebody

- All major infrastructural development would be located in the hangingwall due to suspected very poor geotechnical conditions in the footwall;
- The best mining method for the sulphides would be open stoping with a paste fill;
- These access and mining methods were seen to provide several advantages:
  - Minimise the risk of very poor ground conditions;
  - Lowest overall cost over the LoM;
  - Quickest start-up time;
  - A high ore extraction percentage;
  - Flexibility with mining and grade control;
  - Ease of water handling;
  - All tailings are used for paste fill;
  - A relatively low cost of access to orebody extensions below 500 m below surface.

The Turgis study recommended the optimal extraction rate for the mine as 70 ktpm RoM, which would give a mine life of 10 years.

6.9.1 Mining Method

In a steeply dipping deposit such as Musonoi Est, a key factor is the vertical metre rate at which ore reserves are depleted. From an analysis of data, AMC suggested that for a mine producing less than 1 Mtpa a vertical metre rate (drop down rate) of 40 m to 50 m would be required. At the recommended mining rate of 70 ktpm, a drop down rate of 35 m per annum was adopted.

Two open stoping methods with fill were selected, viz. top down underhand long hole open stoping ("**LHOS**") and bottom up sublevel open stoping ("**SLOS**"). Both methods have similar operating costs, maximise ore extraction, employ a vertical level interval of 25 m and permit maximum flexibility in terms of stope selection and grade control.

Long Hole open stoping (LHOS)

Drilling, blasting and cleaning longitudinal stopes in the normal sublevel open stoping mode would be followed, but without leaving pillars and working from top downwards. When the stope has been mined to its defined strike length, it is filled with a high density cemented paste that is allowed to cure before adjacent stopes are mined. The optimum strike length at Musonoi Est is 40 m. A temporary holding pillar of 4 to 5 m on strike is left between the stopes and blasted with the slot of the next stope. Section and longitudinal section views through the LHOS method are shown schematically in Figure 6.16.

Stopes are developed by driving horizontally on the orebody footwall contact at 25 m vertical intervals and by access drives in the hangingwall of each orebody at the same elevation. A sill pillar will be left between the sulphides and oxides to permit future mining of the oxide deposits. Based on available geotechnical information, the first level was set at 300 m below surface with the top holing on the 275 m level.

Each stope will contain about 36 kt of ore. The development, drilling, blocking, cleaning and filling cycle per stope will take about 5.2 months. Eleven active stopes will be required at any time, services by 4 LHDs with 10 t buckets.

Sub-level open stoping (SLOS)

This is the standard mechanised sublevel open stoping method where mining proceeds upwards. Similar hangingwall drives as for the LHOS method maintain the flexibility to enable up to 8 stopes to be mined simultaneously on one level. The Musonoi Study suggested that for production build-up and flexibility considerations mining should start from the 500 m and 350 m levels. Section and longitudinal section views through the LHOS method are shown schematically in Figure 6.17.

The SLOS and LHOS methods have the same development, drilling and productivity parameters, there are slight differences:

- Earlier production build-up can be achieved with LHOS;
- Stope length for SLOS is greater at 50 m;
- Drilling and cleaning are done on a filled floor;
- Return air routes comprise pipes in the fill for LHOS and raises in the hangingwall for SLOS;
- Lower dilution may be achieved with SLOS;
- Mining losses may be higher with SLOS.

6.9.2 Capital and Operating Costs

A total mining fleet of six 20 t trucks and 6 LHDs was required for development and stoping. With the inclusion of drills and support equipment, the capital cost for the mining fleet delivered in the DRC was estimated to be approximately USD25 million.

The mining capital cost estimate as extracted from the Musonoi Study is summarised in Table 6.10. The costs are based on data bank estimates for South African conditions, with a factor of 25% added to approximate DRC conditions to shaft sinking, underground development, pumps, settlers and backfill plant. The numbers include a 15% premium for taxes and duties on mobile equipment costs.

Table 6.10: Musonoi Est – Mining capital cost estimate

Item	Cost (USDm)
Vertical shaft	54.9
Ventilation shaft	17.4
Decline from surface	29.5
Electrical installations	49.4
Backfill plant	17.1
Mobile equipment	24.1
Oxide exploration	5.0
Total mining capital	**197.3**

The total underground manpower complement including supervision and technical services was estimated to be 328 people, based on a 2 shift per day operation for 24 days per month. The estimated mining operating cost as extracted from the Musonoi Study is summarised in Table 6.11.

Table 6.11: Musonoi Est – Mining operating cost estimate

Item	Annual Cost (USDm)	Unit Cost (USD/t milled)
Manpowwer	3.74	4.45
Mobile equipment	4.51	5.36
Power	4.11	4.18
Paste fill	8.55	10.18
Stores	5.67	6.75
Ongoing development	7.40	8.81
Total mining operating cost	**26.58**	**39.73**

6.9.3 SRK Comments

The Musonoi Study assumed a depth extent for the orebody of 500 m below surface.

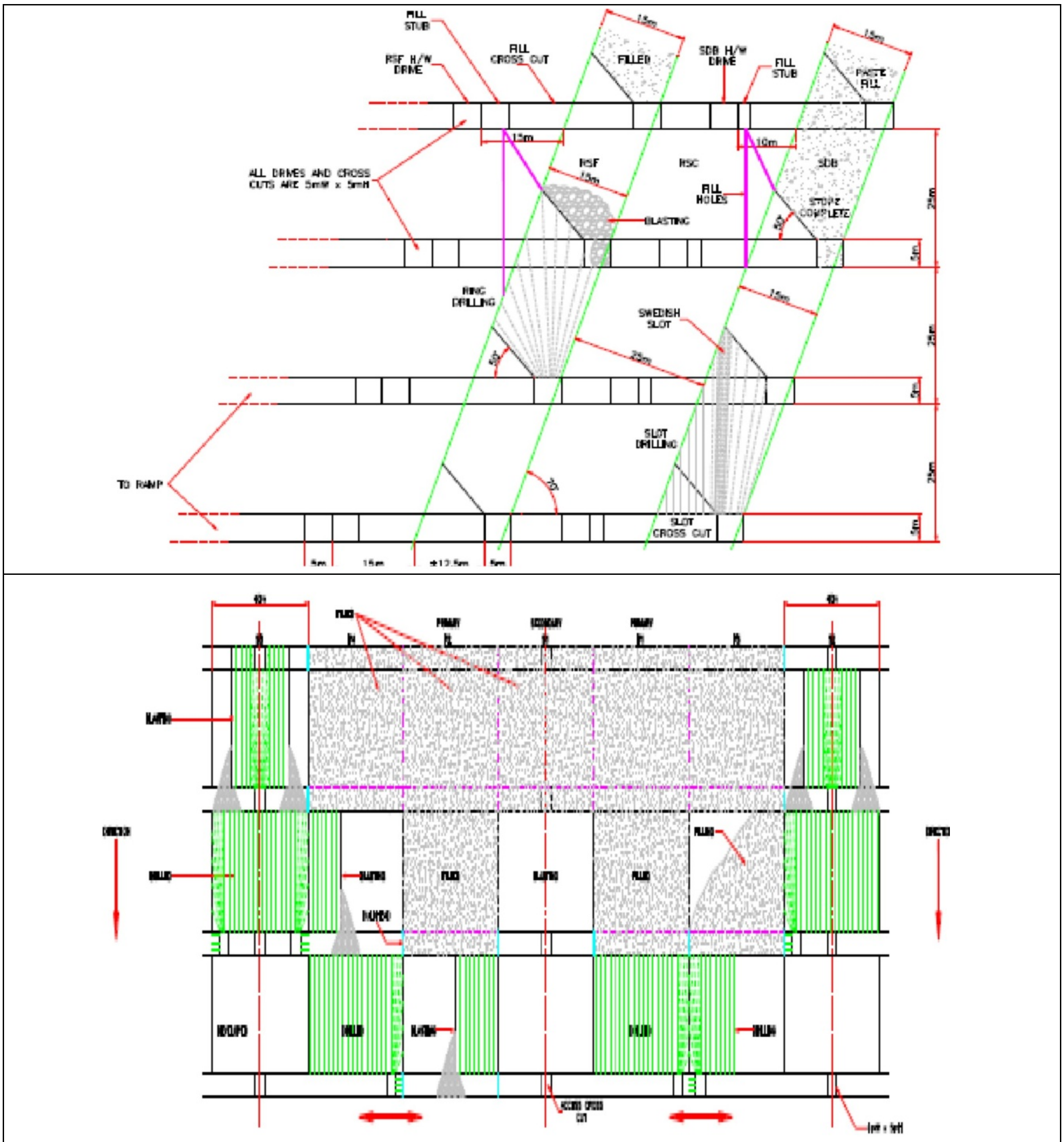
The oxide mineral resource is insufficient to justify the erection of a full SX/EW extraction plant. The large size of the open pit footprint cannot be accommodated within the mining permit, as well as its proximity of the Kolwezi town. An open pit operation was therefore not seen to be possible.

The best mining method for the sulphides would be open stoping with a paste fill.

The different mining and processing options were examined at scoping study levels of investigation. The capital costs presented for the Musonoi Project are data bank estimates for South African conditions, with certain adjustments made to cater for DRC conditions.

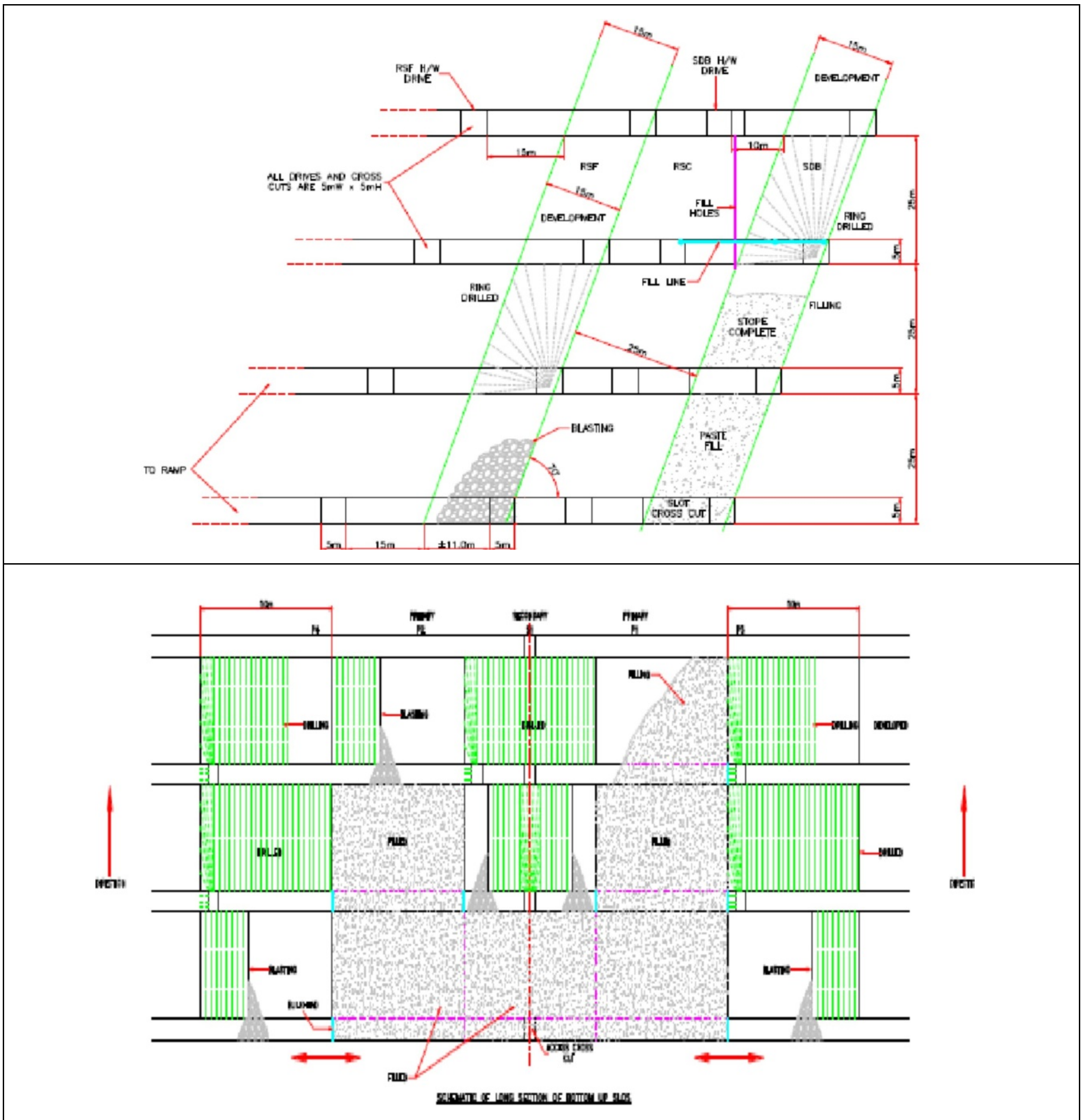
On this basis, the Musonoi Study does not satisfy the requirements of a feasibility study. Accordingly, no Mineral Reserves can be declared for Musonoi.

The feasibility study underway at Musonoi should address the uncertainties with access, mine design, mining method and capital/operating costs.



	Metorex Musonoi Est – LHOS mining method views - section (top) and longitudinal section (bottom)	Project No. 453459

Figure 6.16: Musonoi Est – LHOS mining method views - section (top) and longitudinal section (bottom)



srk consulting	**Metorex** Musonoi Est – SLOS mining method views - section (top) and longitudinal section (bottom)	Project No. 453459

Figure 6.17: Musonoi Est – SLOS mining method views - section (top) and longitudinal section (bottom)

6.10 Mineral Processing

[SR5.5]

The base metal sulphides occur in two parallel lithological units named the RSF ("*Roche Silicence Feuilleté*") and SDB ("*Schiste Dolomitique de Base*") which have slightly different mineralogy and tenors. For purposes of this study, it was assumed that both units are mined together over the LoM and are mixed underground before delivery to the processing plant.

Testwork was carried out by Mintek of South Africa into the mineralogy, floatability, leachability and gangue acid consumption of both sulphide and oxide samples.

The discussion which follows deals with the processing of sulphide ore and has been extracted from the Musonoi Study.

6.10.1 Metallurgical Testwork

Cu mineralisation occurs as fine to coarse disseminations, streaks and blobs of chalcocite, bornite, minor carrollite and chalcopyrite. The stratigraphically lower mineralised zone has higher Cu and lower Co tenors than the upper zone.

For the metallurgical testwork, two sets of NQ drill hole samples, extracted from different depths and with an approximate mass of 37 kg each, were investigated separately:

- Sample 1: extracted from a depth of 288 m to 309 m from the RSF, with an estimated head grade of 6.04% Cu and 0.40% Co; and
- Sample 2: extracted from a depth of 329 m to 344 m from the SDB, with an estimated head grade of 2.05% Cu and 1.53% Co.

The following conclusions were drawn from the qualitative mineralogical testwork on the sulphide ore samples conducted at Mintek:

- The two orebodies have similar gangue mineralogy;
- Both the SDB and RSF samples have a similar Cu-mineral assemblage, with the SDB containing more carrollite;
- The average grain size of the major Cu-minerals is approximately 100 µm for both sample;
- At a product grind of 150 µm, a larger proportion of Cu-sulphides are liberated in the SDB sample (approx. 80%) than in the RSF sample (approx. 40%).

Metallurgical testwork focused on investigating the viability of three possible "front-end" processing routes:

- **Coarse gravity separation** – entails processing a coarse feed through a DMS to yield a treatable concentrate and a floats product which can be stockpiled. The fines generated prior to the DMS are treated through a spirals plant. This is the least capital intensive route;
- **Fine gravity separation** – involves spirals processing of a finer feed to yield a flotation-treatable concentrate and discardable tails. This requires more capital; and
- **Standard crushing, milling and flotation** – involves crushing, milling and flotation of the RoM fed without prior waste rejection. This is the most capital intensive route.

The sulphide testwork results indicated the following:

- No saleable concentrate could be produced by DMS and the possibility of using DMS to reduce the capacity of the mill-float plant looks unlikely;
- Bulk flotation of the ores resulted in recoveries of 90% Cu and 63% Co, with concentrate grades of 37% Cu and 3-7% Co (depending on whether RSF or SDB material).

From the comminution and flotation variability testwork that was conducted on 15 drill hole samples, the Mintek report of June 2013 concluded that: the predicted products (combined concentrates of sulphide A cleaner + B re-cleaner) for the LOB 2, UOB and Global 2 composites determined from the locked cycles tests are:

- Global 2 composite: 28% Cu (92% recovery), 8% Co (93% recovery) and 16% S (95% recovery);
- LOB 2 composite: 34% Cu (93% recovery), 5% Co (90% recovery) and 13% S (92% recovery)
- UOB 2 composite: 19% Cu (91% recovery), 11% Co (95% recovery) and 17% S (94% recovery)

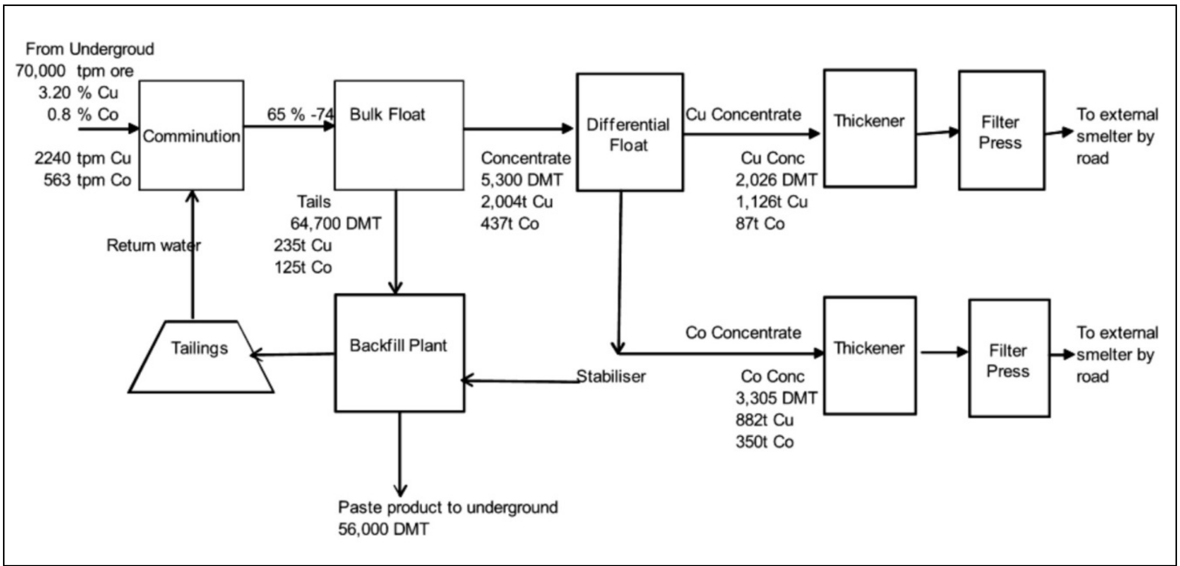
6.10.2 Process Plant Flow Sheet

The preliminary Musonoi Est flowsheet is shown in Figure 6.18.

Based on the June 2013 Mintek report, the envisaged flowsheet will probably entail single stage crushing followed by a RoM ball mill and flotation circuit. The optimum grind was found to be 80% -106 µm. A final decision on the flowsheet still needs to be made.

6.10.3 Tailings disposal

The paste fill mining method requires 80% of the tailings from the sulphide concentrator to report to the paste fill plant for return underground. There is thus no need for a large TSF, and a smaller area will be adequate for normal plant operations and for possible spirals plant tailings. It is expected that the TSF will need to be lined. Provision has been made for a polypropylene liner. The capital cost for the TSF was envisaged to USD6.0 million.



srk consulting | **Metorex** Musonoi Est – preliminary concentrator flowsheet) | Project No. 453459

Figure 6.18: Musonoi Est – preliminary concentrator flowsheet

6.10.4 Capital and Operating Costs

Engineering design was done at a basic level to determine capital estimates for the process plant. The Musonoi Study included a contingency of 25% on the costs, as shown in Table 6.12.

Table 6.12: Musonoi Est – Infrastructure capital cost estimate

Item	Cost (USDm)
Bulk earthworks and civils	13.3
Plant buildings & infrastructure	1.3
Steelwork, piping & valve supply	6.8
Mechanical supply	11.0
SMP installation	11.1
E&I supply & install	8.6
Transport & logistics	5.9
EPCM fees	9.5
First fill of reagents	1.1
Sub-total	68.6
Contingency	17.2
Total process plant capital	**85.8**

The plant operating costs for Musonoi, taking into account the historical costs and manpower efficiencies experienced at Ruashi, were estimated to be USD17/t of plant feed.

6.10.5 SRK Comments

The Musonoi Study concluded that due to high off-mine costs associated with the transport and treatment of Cu and Co concentrates, a preferable option would be to produce a bulk Cu/Co concentrate through a flotation plant. This concentrate could then in the future be combined with the Kinsenda sulphide concentrates in a central roasting plant to produce a calcined product that would be leachable in a conventional SX-EW plant.

The Musonoi Study indicates that no commitments had been made with any of the copper of cobalt offtakers/smelters regarding how the concentrates would be treated. Metorex advised SRK that the feasibility study underway will address the concerns regarding the treatment of the bulk Cu-Co concentrate.

In the interim the concentrate can be exported to Zambia at an export tariff of USD100/t concentrate.

6.11 Infrastructure and Bulk Services

[SR5.6]

The general location of the Musonoi Est prospect in relation to the high level of historical mining activity surrounding Kolwezi can be seen in Figure 6.19.

6.11.1 Power supply

The Musonoi Est project will require approximately 25 MW of power, to be supplied by SNEL. The power is planned to be fed from SNEL's Repartiteur de Oest ("**RO**") substation via a 120 kV line which traverses the Musonoi Est property. This line was being upgraded to a 180 MW transmission capacity, to cater for various industrial facilities including the Mutoshi mine (45 MW), Mutanda mine (40 MW) and Musonoi. Indications from SNEL were that Musonoi would have to install an additional 220/120 kV transformer of 200 MW capacity at the RO substation. The indicative tariff for power is USc3.9 /kWh.

srk consulting	**Metorex** Musonoi Est – prospect in relation to high level of historical activity surrounding Kolwezi	Project No. 453459

Figure 6.19: Musonoi Est – prospect in relation to high level of historical activity surrounding Kolwezi

6.11.2 Water supply

Based on the high ground water inflow rates experienced by neighbouring mines, raw water will be abstracted from the weathered zone in underground pump chambers and pumped to surface. Planned installed pumping capacity will cater for inflows of 48 000 m^3/day, whilst the process plant will require approximately 4 000 m^3/day of raw water. The balance will be treated and discharged into the nearby Kolwezi River. Water treatment capital and operating costs have not been established.

A potable water plant capable of producing 200 m^3/day of potable water will be established on site.

6.11.3 Buildings and roads

Buildings for administration, maintenance, security, laboratory, stores and change houses are required. The capital costs for these buildings and associated equipment are allowed in the mining and process plant capital estimates.

Accommodation for skilled and unskilled personnel is reasonably available in the adjacent town of Kolwezi.

All-weather access roads and internal roads will need to be constructed. The road transport system linking Kolwezi to Lubumbashi has been recently upgraded, though the border post linking Zambia to the DRC remains a significant bottleneck in the logistics pipeline.

6.11.4 Communications

The communication network is reasonable with numerous cellular telephone operators having extensive coverage in the area.

6.11.5 Capital costs

Infrastructure capital costs were shown to be USD25.1 million, of which USD18.5 million was for power supply.

6.11.6 SRK Comments

High ground water inflow rates can be expected at Musonoi. There is a risk that the water treatment capital and operating costs may be very high.

Given the proximity of Kolwezi town, space for the development of the mine and supporting infrastructure will be limited.

6.12 Human Resources

[SR5.3, SR5.4C, SR5.5C]

The project staffing envisages 450 to 500 people, of whom approximately 5% will be expatriates. The balance will be drawn from the existing pool of manpower available from former Gécamines employees and the local community.

The Musonoi Study indicates that based on the experience at Ruashi, there is a dependency ratio of some 10:1 for each mine employee. On this basis, Musonoi could provide indirect income to some 4 500 to 5 000 people.

6.13 Occupational Health and Safety

All work at the Musonoi project is governed by the terms of Metorex's health and safety policy.

SRK could not find any occupational health and safety statistics for Musonoi in the information provided.

6.14 Environmental

[SR5.2B/C, SR5.3, SR5.2C]

The existing impact on the environment is recorded in the Environmental Audit of PE 4958, conducted in 2008 by DRC Green. Mining activities have taken place in the Kolwezi area for over 100 years. There are numerous open pits, rock dumps, tailings dams, concentrators and other mining-related infrastructure. Tailings and mine processing water has been discharged into the rivers, and artisanal miners have disturbed the local surface and water courses.

The Audit notes the Plan of Environmental Adjustment previously submitted by Gécamines in order to qualify for PE 525, which was prepared to facilitate the transfer of mining title in accordance with Article 405 of the Mining Regulations.

Other environmental obligations, before mining can commence, are the preparation and acceptance of an Environmental Impact Study ("EIS") and an Environmental Management Plan ("EMP"), to be prepared by third party consultants, based on the mining parameters established for a feasibility study, such as tonnage milled, location of plant and infrastructure and matters relating to water and land usage change. There is the potential that underground dewatering may be discharged into the environment – a permit will be required should this be the case.

The principal environmental issues relating to a new mine at Dilala East will be the potential impact on land use, biodiversity, water resources and air quality.

Limited resettlement of local people is envisaged. In this respect Metorex reports that a RAP is in process. Resettlement of housing and farming land will be required and surveys in this respect have commenced but no estimation of compensation requirements is yet available.

6.15 Summary of Key Risks

[SV2.10]

A summary of the key risks identified for Musonoi is provided here. Metorex advised SRK that it has a comprehensive risk management process in place which is aimed at identifying and ranking risks across all of the group's operations to determine an overall risk profile for the group. The risks identified by SRK have broadly been incorporated into the overall group risk management process and are being addressed through this.

6.15.1 Tenure

The exclusive PE has been awarded to Ruashi Mining. Ruashi Mining thus has the right to use the land to build installations and facilities required for mining exploitation.

6.15.2 Mineral Resources

Block estimates are not consistent with drill hole grade distributions and appear overly smoothed. Below 950 m elevation, there is limited drill hole coverage and block estimates are extrapolated over 300 m from the last known point. The quality of the TCu estimates is acceptable for resource estimation purposes. High TCo values may be overstated, but the consequence to the resource estimate will be minimal.

The ASCu and ASCo results obtained from CRMs and reference material generally showed poor precision. It is likely that ASCu and ASCo estimates in the resource estimate may be significantly different from those encountered in mining. Metorex stated that the CRM material was certified for TCu only – many of the differences noted were for AsCu for which there is no certified material.

There is a risk that the level of classification in the RATG is not supported by the available information, but it constitutes less than 10% of the Mineral Resource so it is not material.

The RSC is considered to be a cobalt rich member at the expense of copper and has characteristics that are distinct from the adjacent overlying and underlying units. Inclusion of the RSC into the Lower Mineralised Zone was done to allow for variograms to be developed for the estimation of the RSC, but only RSC samples were used for the estimation of the RSC.

Comparison of the statistics of the block grades relative to the sample data show instances where Cu and Co grades in the block estimates are both over- and under-estimated.

SRK considers that the risk of the aggregate tonnage and grade estimates being materially wrong is low.

6.15.3 Rock Engineering

SRK carried out a comprehensive geotechnical investigation to provide information for the mine design being undertaken by DRA.The rockmass quality of the oxide ore zones remains poor in the weathered zone to approximtely 200 m below surface. Open stoping options cannot be considered. Caving may be the only option, provided access development can remain open.

Primary access will be achieved via a decline shaft. Geotechnical investigations have been carried out to classify ground conditions existing in the box cut area and at some positions along the decline route.

Access development will be sited in the hanging wall RAT to avoid the risk of traversing poor quality ground, interpreted as a shear zone, which lies close to the footwall contact.

A competent stratum, the RSC, separates the two parallel steeply dipping orebodies. Consideration is being given to siting access development in this zone.

6.15.4 Hydrogeology

Although little is known about the specific Musonoi East hydrological regime, considerable water inflows are expected from the dolomitic strata and hangingwall/footwall aquifers. Water handling measures to cater for this have been considered, but in the absence of hydrological data this could be an underestimate. Metorex reported that hydrogeology is being addressed as part of the EIA process, which is in progress.

6.15.5 Mining

The Musonoi Study assumed a depth extent for the orebody of 500 m below surface.

The oxide mineral resource is insufficient to justify the erection of a full SX/EW extraction plant. The large size of the open pit footprint cannot be accommodated within the mining permit, as well as its proximity of the Kolwezi town. An open pit operation was therefore not seen to be possible.

The best mining method for the sulphides would be open stoping with a paste fill.

The feasibility study underway at Musonoi should address the uncertainties with access, mine design, mining method and capital/operating costs.

6.15.6 Metallurgical Processing

There were limitations with the Musonoi Study as it was conducted on a single sample, so there was very little comminution testwork. The comminution and flotation variability testwork described in the Mintek report of June 2013 has addressed these issues.

The Musonoi Study concluded that a preferable option would be to produce a bulk Cu/Co concentrate through a flotation plant.

To mitigate against the export ban on Cu/Co concentrates and increased export taxes, Metorex has initiated an investigation into a central roasting plant to produce a calcined product that would be leachable in a conventional SX-EW plant such as that at Ruashi Mine. This roasting plant would be able to treat the Musonoi and Kinsenda sulphide concentrates.

The Musonoi Study indicates that no commitments had been made with any of the copper of cobalt offtakers/smelters regarding how the concentrates would be treated.

Metorex advised SRK that the feasibility study underway will address the concerns regarding the treatment of the bulk Cu-Co concentrate.

6.15.7 Tailings

Due to 80% of the tailings from the sulphide concentrator will report to the paste fill plant for return underground, a relatively small lined TSF will be required. The risk to find a suitable area for the TSF within the mining permit boundary is reduced.

6.15.8 Engineering and Surface Infrastructure

High ground water inflow rates can be expected at Musonoi. There is a risk that the water treatment capital and operating costs may be very high. Metorex has initiated the design of a gravity dewatering system for Musonoi during 2013.

Given the proximity of Kolwezi town, space for the development of the mine and supporting infrastructure may be limited.

6.15.9 Environmental

Due to over 100 years of mining activity in the Kolwezi area, considerable degradation of the Kolwezi environment has occurred. There has been no mining on the Dilala East Mining License area to date but the area may have been impacted by a lowering of the water table or dust fall out from neighbouring mines. If not adequately defined, the closure cost for the project may be much higher than initially estimated.

Nevertheless in order to prevent any future claims of degradation, Metorex is currently performing a base line study on the Dilala East area to define its environmental background and the extent to which the background may have been impacted by mining in the region.

The principal environmental issues relating to a new mine at Dilala East will be the potential impact on land use, biodiversity, water resources and air quality. SRK has been appraised by Metorex that these issues will be addressed in the Environmental Plan and mitigating measures will be determined.

7 LUBEMBE COPPER PROSPECT

7.1 Introduction

[SR1.5A(i)]

KICC, a private limited liability company registered in the DRC, holds mining title to the Lubembe Cu Project. CRC, a 100% owned subsidiary of Metorex, has a 72.15% interest in KICC, with Metorex holding a direct 4.85% in KICC. The remaining 23% of KICC is held by Sodimico, a state owned mining company registered in the DRC.

Lubembe is a greenfield site in the Pedicle region of southern Katanga Province of the DRC.

7.2 Location, Climate, Access and Infrastructure

[SR1.4A, SR1.5A(i), SR1.6, SV2.3]

The Lubembe Prospect is located at latitude 12°23' and longitude 28°06' E, and is situated 30 km to the southeast of Kinsenda. Geographically, the deposit is located approximately 120 km south southeast of Lubumbashi and 25 km northwest of Mufulira in Zambia. The international border between Zambia and the DRC forms the western margin of the permit. Logistically, Lubembe is closer to the operating mines and support industries of the Zambian Copperbelt than it is to Lubumbashi (see Figure 7.1). It is possible that many of the services for the project will be sourced via Zambia.

Infrastructure is limited to the road between Kinsenda and the Mokambo border post and a railway line between DRC and Zambia crossing the property on the western side of the property. Engineering and medical facilities are available in Lubumbashi. The road from the town of Tshinsenda to the Lubembe project turn-off was upgraded to an all-weather laterite surface during 2010 by KICC. Power will need to be brought in from the Kinsenda or Kasumbalesa substations, or routed via Zambia. No studies have been completed in this regard.

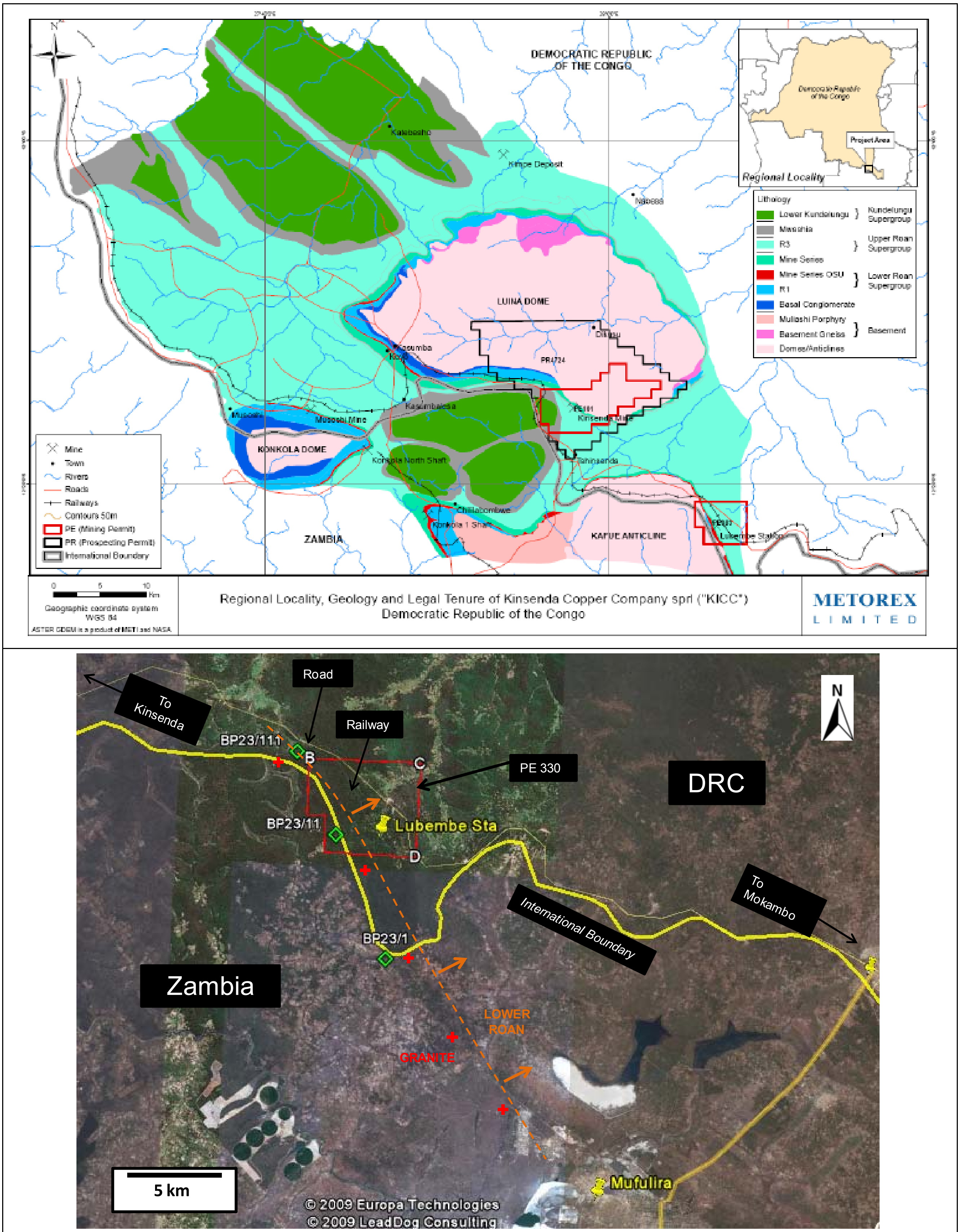
The project is located on the topographic divide between the Congo river system and the Kafue-Zambezi river system. As such, there are no significant rivers or streams in the area, and water for the project will need to be sourced via a wellfield. High water yields have been encountered in water drill holes at Lubembe, although no specific hydrological studies have been completed to establish if a concentrator plant could be supported from a well field.

The Lubembe project area is located on gently undulating topography at an altitude of 1 280 m to 1 320 m amsl.

The Copperbelt region is sub-tropical and is characterised by distinct wet and dry seasons. The wet season is from November to March with annual rainfall varying between 1 000 mm to 1 500 mm. Between December and April, most field work is restricted to areas served by good roads, effectively limiting exploration to the dry season.

The average air temperature remains fairly constant at between 17°C and 24°C throughout the year and there is no distinct winter and summer temperature regime. Average temperatures peak during September and October at 32°C. The coldest month is July with an average daily minimum of 6°C.

The vegetation in the area is deciduous tropical woodland generally referred to as Miombo Woodland. Trees seldom grow to heights exceeding 20m, with the majority less than 8m high.



srk consulting	**Metorex** Lubembe – regional locality, geology and extent of mining permit (PE330), proximity to Mufulira in Zambia	Project No. 453459

Figure 7.1: Lubembe – regional locality, geology and extent of mining licence (PE330), proximity to Mufulira in Zambia

7.3 Mining History

7.3.1 Historical Development of Lubembe Project

[SR1.3, SR1.4, SR1.5A(ii), SV2.4]

The historical development of the Lubembe Project is summarised in Table 7.1.

Table 7.1: Lubembe Project – Historical Development

Date	Activity	Comments
1933 to 1935	Lubembe deposit first prospected by UMHK 3 drill holes drilled on Lubembe – UM5 and UM8 mineralised intersections, but not analysed; UM6 intersected 15 m at 1.85% Cu.	Work poorly documented, some drill hole logs and assay sheets
1972	Sodimico conducts first exploration campaign	Total of 33 drill holes (9 800 m) drilled on400 m x 200 m grid. Revealed three mineralised levels (upper, middle and lower), strike extent of 800 to 1 000 m.
1985 to 1986	Sodimico conducts second exploration campaign	
1990 to 1991	Sodimico conducts third exploration campaign	
1991	Sodimico calculates "*Reserve Certaines*" of 37.5 Mt at 2.2% Cu and "*Reserve Probables*" of 10 Mt at 1.8% Cu, using triangular polygonal method and 2% Cu cut-off grade on the main target area ("Tache B").	Non-SAMREC compliant. Total historical resource of 47.5 Mt at 2.1% Cu. Tache B open along strike and down-dip.
1991	One isolated drill hole on secondary target ("Tache A") 2.5 km north of Tache B intersected 21 m at 2.22% Cu and 0.14% Co.	Tache A open along strike and down-dip.
1998	Caledonia Mining Corporation ("**Caledonia**") signed joint venture with Sodimico, carried out re-assessment of historical data. No verification of drill hole collar positions, re-logging/re-sampling and re-assaying of historical drill core done.	
1998	Caledonia concluded that Lubembe deposit had: • Drill indicated resource of 82.2 Mt at 1.93% Cu; • Near-surface resource (<240 m) of 41.4 Mt at 1.70% Cu; • Deeper resource of 40.8 Mt at 2.16% Cu. Concluded that: • Extensive drilling programme required to increase confidence and knowledge of the ore body; • Mineralisation open ended in a number of directions; • Of particular interest was the area up dip of the drill indicated resource zone.	Non-JORC compliant. Increased tonnage explained by interpreting mineralisation to be related to a gently undulating palaeo basin, vs horst and graben structure with abrupt faulted cut-offs.
2003	MMK formed, owned by EGMF (80%) and Sodimico.	EGMF completed feasibility study
September 2005	CRC took controlling interest in MMK. EGMF dilutes interest in MMK to 5% in exchange for 38.7% stake in CRC.	
September 2007	Metorex acquires EGMF's stake in CRC, also acquires EGMF's stake in KICC	
May 2008	Metorex had increased its stake in CRC to 50.3%.	
2008	Metorex undertakes drilling programme to test Caledonia's recommendations and hypotheses. 91 reverse circulation (7 506 m) and 21 diamond core (5 272 m) drill holes completed.	
2008	Trial geophysical surveys using induced polarisation and natural source acoustic magneto-telluric methods conducted along 2 lines totalling 3 000 m.	Encouraging results, but insufficient post processing work done to confirm the applicability of these methods.
February 2009	Part of project finance facility provided by Metorex converted to shares in CRC – Metorex holds 87% interest.	Metorex's economic interest in CRC is however 99.9% as CRC shares held by Central African Mining and Exploration Company Plc ("**CAMEC**") were disenfranchised.
July 2009	Name of operating company changed from MMK to KICC	
2010	Metorex compiles SAMREC compliant resource model.	
2010	Infill drilling programme undertaken, additional 5 326 m (29 holes) drilled.	
2011	Updated SAMREC compliant Mineral Resource Estimate compiled.	
2012	Metorex completes preliminary economic assessment on Lubembe project	

7.3.2 Historical Production

[SR1.3, SV2.17]

Lubembe is a greenfields site, so there is no production history at the property.

7.4 Title and Rights

[SR1.7A, SR5.1A, SV2.3]

KICC holds the exploration permit over the Lubembe project as set out in Table 7.2.

Table 7.2: Lubembe – details of Mining Licences

Licence	Type of title	Area (ha)	Valid From	Expiry date	Commodity
PE330	Exploitation Permit	2 338	29 Jan 2002	28 Jan 2017	Cu, Co, Pb, Ni, Pd, W

Following the settlements in terms of the Revisitation Process and the change of name of MMK to KICC (refer discussion in Section 5.4), the exploitation rights to the Lubembe mineral deposit were held by KICC.

7.5 Geology

[SR1.2, SR1.3, SR2.5A/B/C, SR4.1A(i), SV2.5]

7.5.1 Exploration History of the Project Area

Historical exploration activities in the Lubembe area were carried out in three phases:

- UMHK (1933 to 1935) – a total of 2 500 m in 8 diamond drill holes were drilled in and around Lubembe, but only UM5, UM6 and UM8 were drilled on the Lubembe deposit. All three holes returned some notable copper mineralisation. This work is not well documented in the reports held by Metorex.
- Sodimico (1972 to 1991) – the deposit was explored in three different exploration campaigns in 1972, 1985 to 1986 and 1990 to 1991. Sodimico noted that the Lubembe deposit has an approximate N-S strike dipping between 20° and 25° NE, occupying faulted structures associated with horsts and grabens. Finely disseminated mineralisation (chalcocite and chalcopyrite in sulphide zones, malachite and chrysocolla in oxide zones) was deemed to be hosted in arkosic sandstones, quarts sandstones and in clastic grits. Three mineralised zones (upper, middle and lower) were identified over a strike extent of 800 to 1 000 m. A non-JORC resource of 37.57 Mt at 2.8% TCu was estimated between 90 and 450 m depth at the Tache B prospect. Sodimico noted that the Tache B and A prospects remained open along strike and both up-dip and down-dip.
- Caledonia Mining (1998) – this work comprised a review of all available information and did not involve any verification work. A new non-JORC resource was estimated using a manual cross sectional weighted average grade method. Caledonia reported that the Lubembe deposit had a total drill indicated resource of 82.18 Mt at 1.93% TCu. Caledonia interpreted the mineralisation to be related to a gently undulating palaeo-basin, in contrast to Sodimico's horst/graben structures with abrupt faulted cut-offs.

Metorex undertook exploration work from March 2008, which incorporated the following:

- Collection and compilation of all archival maps, plans and sections;
- Field location of most of drill hole collars using a hand-held GPS;
- Digitizing of relevant data and creation of first-pass geological model;
- Execution of a RC and diamond drilling programme from June 2008 to September 2011;
- Cu and Co analyses by ALS Chemex laboratory in South Africa;
- Trial induced polarisation and NSAMT surveys on two separate lines.

7.5.2 Regional Geology

The reader is referred to the discussion in Section 3.5.2.

7.5.3 Local Geology and Mineralisation

The Lubembe deposit is more typical of the Zambian Copperbelt deposits and is geologically similar to the Mufulira, Chambishi and Chibuluma South mines in Zambia. The Lubembe ore body is hosted in a thick sequence of coarse to fine-grained sandstones, siltstones and shales of the Lower Roan Group in the footwall of the Ore Shale Member, and is generically referred to as a "footwall orebody". Figure 7.2 illustrates the local formation naming convention and correlation with the Musoshi succession, which is typical of the Zambian Copperbelt stratigraphy.

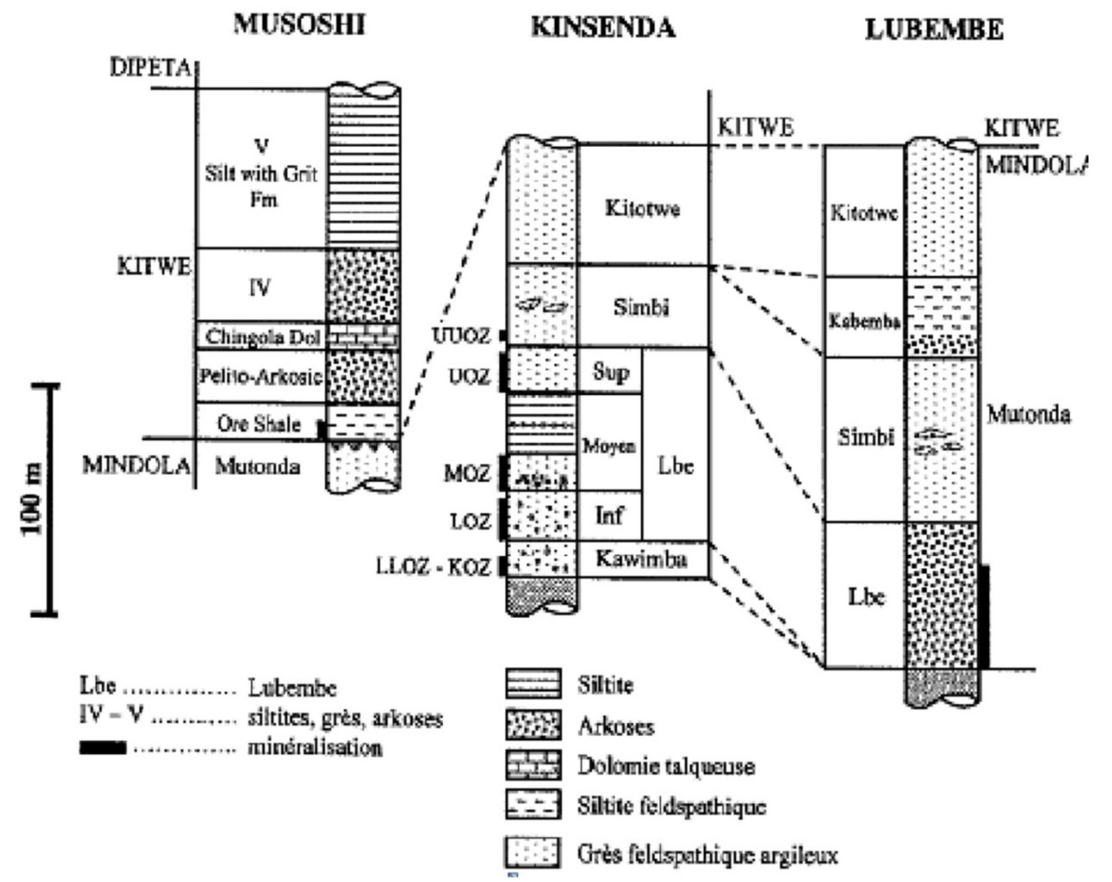
The deposition of the Lubembe deposit occurred in a fault-controlled, active rift environment. In the Lubembe project area (see Figure 7.2), the Mindola Group rocks of the Lower Roan show local thickness and facies variations corresponding to pulses of sedimentation progressing from conglomerates at the base to siltstones and dirty sandstones at the top of the hosting sediment package.

Sub parallel horst (highs) and graben (depressions) features in the pre-deposition basement are suggested by rapid variations in the thickness of the basal units of the Lower Roan both along strike and down dip. There is a strong correlation between the position of the Lubembe deposit and the basement granite paleotopography, very similar to that of the Chibuluma South deposit.

The host rocks occur as valley fill sediments in the down-faulted graben structures adjacent to growth faults that were active during sedimentation. The basement growth faults are oriented in a roughly ENE alignment and have a well-defined magnetic signature that can be traced into the basement rocks of the Luina Dome to the north of the Kinsenda deposit. While not a primary indicator of mineralisation, this is a key geophysical signature for future exploration on the KICC exploration permit areas.

7.5.4 Project Geology

The Lubembe deposit is located within a few hundred metres of the Zambian border and occurs along strike of the Luansobe deposit owned by Mopani Copper Mines (Glencore) in Zambia, north of Mufulira.



srk consulting	**Metorex** Lubembe Project – local stratigraphic subdivision on the Kinsenda and Lubembe deposits	Project No. 453459

Figure 7.2: Lubembe Project – local stratigraphic subdivision on the Kinsenda and Lubembe deposits

The Lubembe deposit has a NNW-SSE strike dipping between 20° and 25° NE. The general geology of the Lubembe area is illustrated in Figure 7.3. Copper mineralisation is hosted in arkosic sandstones, quartz sandstones and in clastic grits, occupying geologically faulted structures associated with basement horsts and grabens. A typical section is shown in Figure 7.4, illustrating the relationship between shallow dipping mineralisation and the paleo-basement topography.

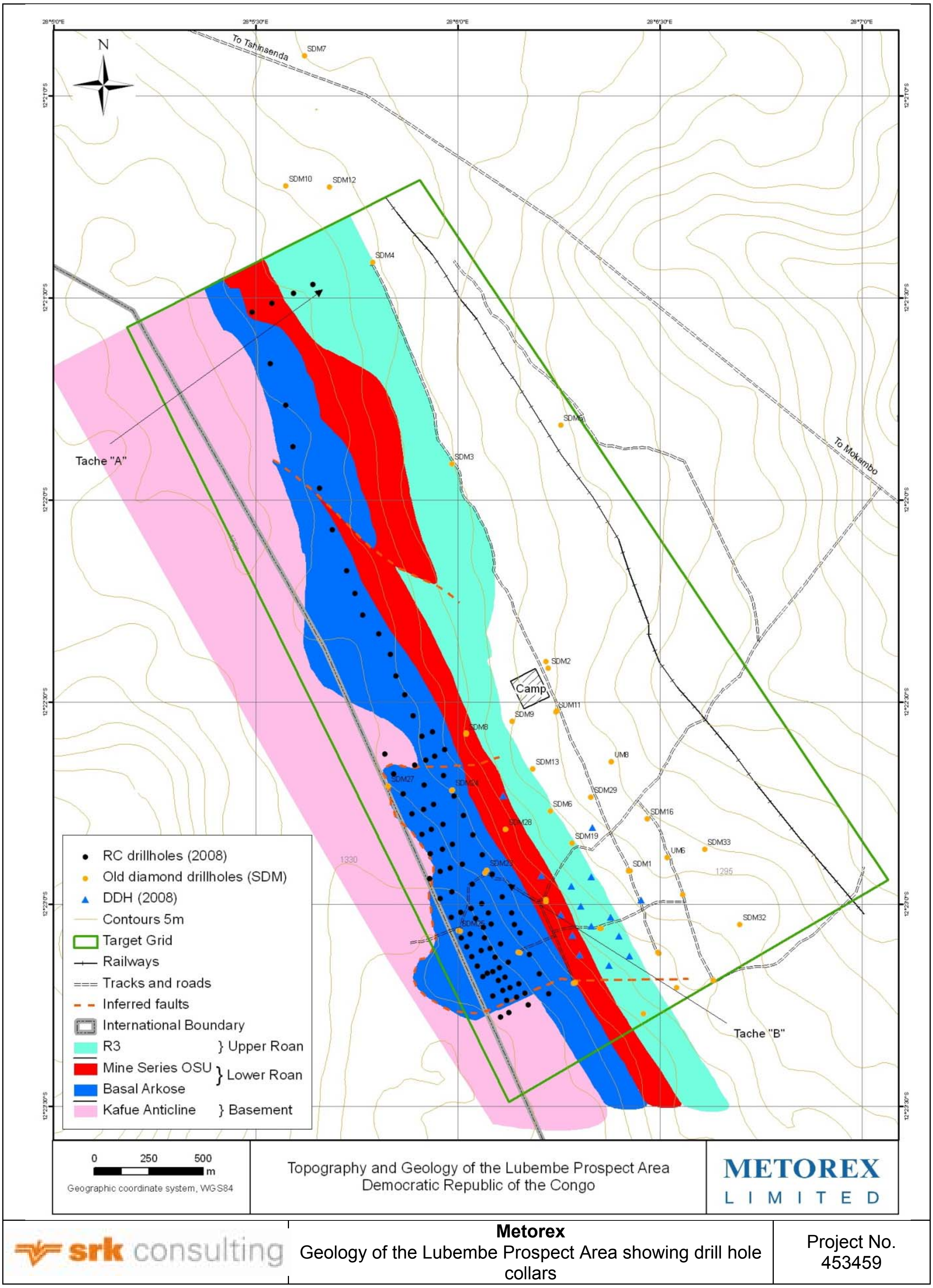
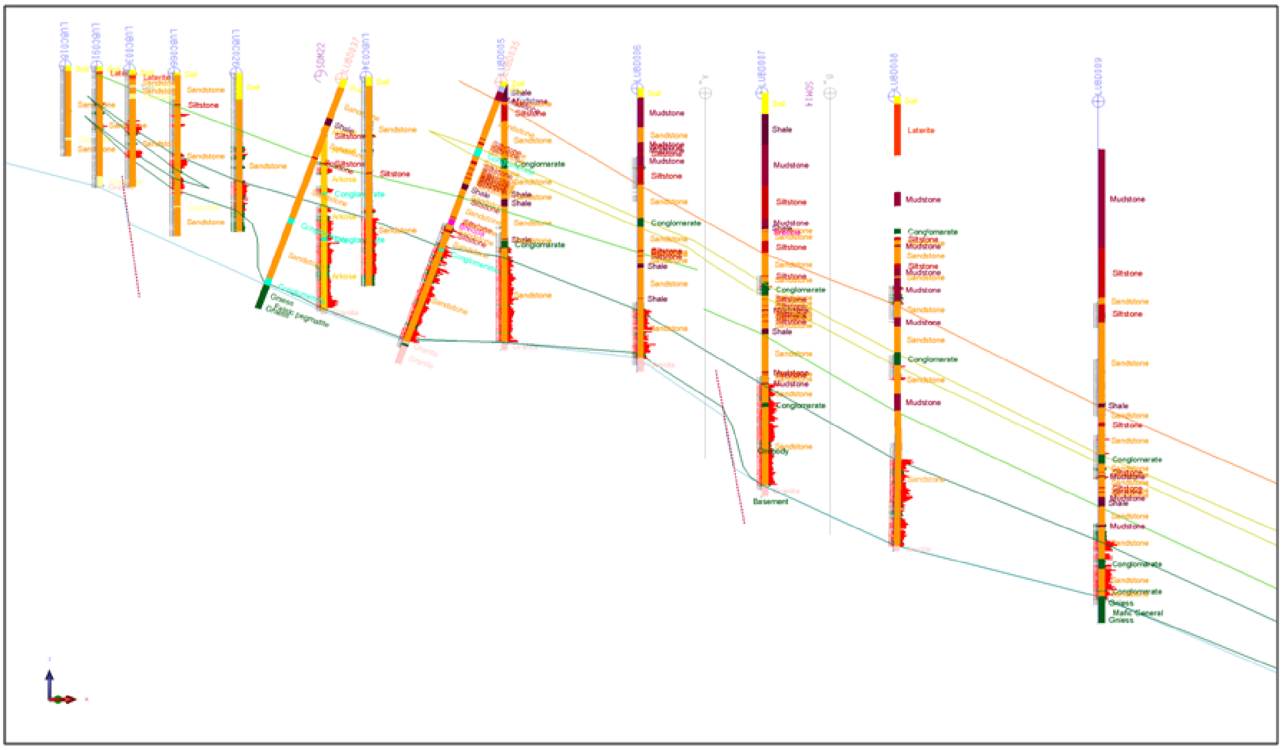


Figure 7.3: Geology of the Lubembe Prospect Area showing drill hole collars

Two Lower Roan target areas ("Tache A" and "Tache B") adjacent to ENE structural trends in the basement were identified by Sodimico during the early 1980s, and led to the discovery of graben structures containing thick, sub-concordant bodies of finely disseminated mineralisation adjacent to the vertical faults bounding the basins.

The main Lubembe deposit (Tache B) is geologically similar to Kinsenda, but is limited to a single lower grade (1.8 to 2.2% Cu) mineralised zone with a strike length of 1 km and an average width of 40 m (up to a maximum of 70 m) dipping 25° to 30° to the northeast. Results to date indicate the possibility of having one or more lower width, higher grade zones within the greater mineralised package. The correlation of such zones between drill holes will be tested during F2011. Tache B mineralisation is bound to the SE by a fault that runs perpendicular to the basement granite interface. Tache B is bound to the NW by an inferred fault that trends ENE – WNW.



srk consulting	**Metorex** Lubembe Project – Section through Tache B (line 750, drill hole spacing 50-100 m)	Project No. 453459

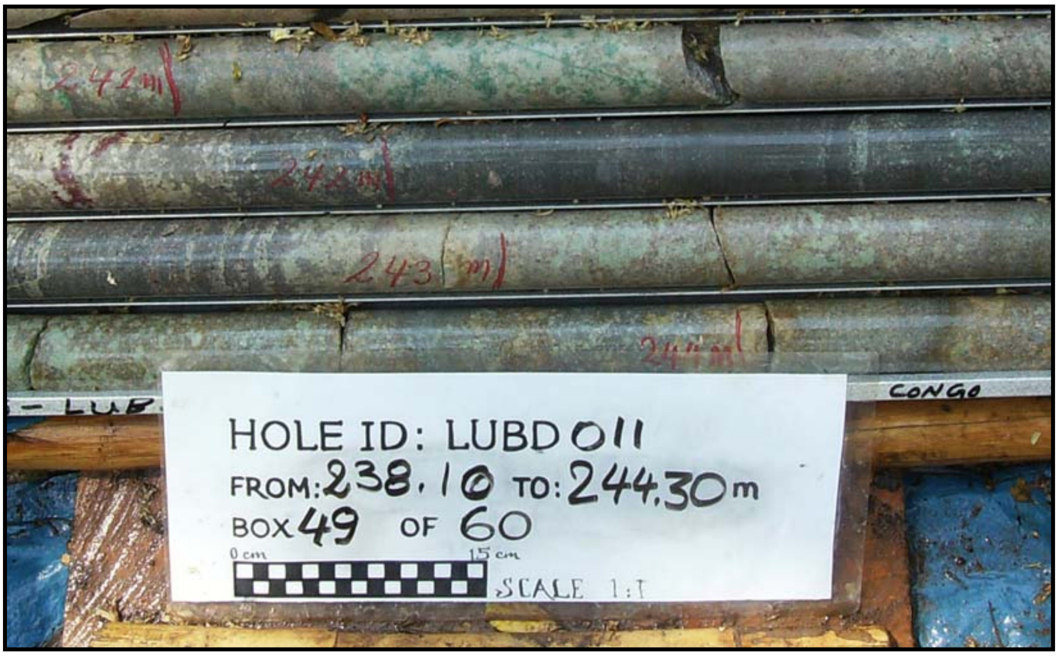
Figure 7.4: Lubembe Project – Section through Tache B (line 750, drill hole spacing 50-100 m)

The oxide zone at Tache B is variable and can occur between 34 m and 250m depth. Copper mineralisation occurs mainly as finely disseminated malachite with some azurite and chrysocolla, whilst cobalt mineralisation occurs as rare heterogenite. Native copper was observed in two holes at depths of approximately 240-250 m as illustrated in Figure 7.5.

Within the sulphide zone (generally below 200 m), copper mineralisation is mainly in the form of finely disseminated chalcocite, with some chalcopyrite, minor bornite and pyrite. Mixed mineralisation however continues at depth as evident in Figure 7.6, with a sample taken at 317 m consisting of disseminated chalcocite and malachite mineralisation.

In contrast to the Kinsenda deposit, the host rock at Lubembe is finer grained, more homogeneous and less stratified. Consequently stratigraphic control on mineralisation at Lubembe is not as strong. There are, however, thin siltstone horizons which may form important marker horizons within the Lubembe Formation.

No significant Co mineralisation has been reported.



srk consulting	**Metorex** Lubembe Project – Blebs and stringers of native copper, malachite and disseminated chalcocite mineralisation in drill hole LUBD011	Project No. 453459

Figure 7.5: Lubembe Project – Blebs and stringers of native copper, malachite and disseminated chalcocite mineralisation in drill hole LUBD011 (source: Metorex)

srk consulting	**Metorex** Lubembe Project – Disseminated chalcocite and malachite mineralisation within a pebbly arkosic sandstone unit (drill hole LUBD008, approx. 317m)	Project No. 453459

Figure 7.6: Lubembe Project – Disseminated chalcocite and malachite mineralisation within a pebbly arkosic sandstone unit (drill hole LUBD008, approximately 317m) (source: Metorex)

7.5.5 Exploration Programme and Budget

Metorex is currently busy with the work required to advance the Lubembe project to a feasibility study level of confidence. Metorex has already spent USD4.0 million on exploration at Lubembe.

SRK understands that Metorex's budget for the compilation of the feasibility study for Lubembe is USD9.0 million, split into USD3.0 million and USD6.0 million to be spent in F2014 and F2015 respectively.

SRK has not seen a detailed description of the planned work for the feasibility study nor the cost allocation within the budgeted amount for F2014 and F2015. SRK believes that the quantum should be the right order of magnitude to advance the project to feasibility study level.

7.6 Mineral Resources and Mineral Reserves

[SR1.1A(iii), SR2.5A/B/C, SR7B, SR9A/B/C, SV2.6]

7.6.1 Data Quality and Quantity

[SR3.1, SR4.1]

The Lubembe Mineral Resources are based on two sets of drillhole data: an older data set collected by Sodimico and a 2009 drilling programme undertaken by Metorex. The statistics of the drillhole data used in mineral resources is shown in Table 7.3

Table 7.3: Lubembe – statistics of drill holes data used in the mineral resources

Unit	%TCu	%TCo	ASCu	ASCo
Number of drillholes	96	81	85	81
Average	1.62	0.001	0.88	0.005
Minimum	0.40	0.001	0.152	0.005
Maximim	3.17	0.007	1.89	0.022
Range	2.77	0.006	1.74	0.017

According to the IGS report, the Sodimico drill holes were widely spaced, up to 300 m apart and that detail of the Sodimico database inclusive of drill hole core, assay certificates, core and data handling procedures, assay procedures and quality control results, are not available making it difficult to verify the Sodimico database.

However, IGS further states that where a Metorex hole is close to a Sodimico hole, the intersections agree quite well in terms of thickness of mineralised intersection and average assays within the intersected zones.

IGS considered the Sodimico data to be useable.

The Metorex Drilling programme carried out during 2009 drilled a total of 7 500 m of RC drilling, and 5 200 m of diamond drilling. The drill hole spacing was at 100m spacing, with some infill at 50m spacing in the shallower parts of the mineralised body. The drilling, logging, sampling was carried out to a high standard, although some of the detailed mineralogical logging remains to completed. The assay quality control results are good and show no significant errors or bias, except for the acid soluble copper assays.

The sample data is too exhaustive to be included in the CPVR.

7.6.2 Sample Analyses

[SR3.3, SR3.4]

There is no information available on the assay method used for analysing the Sodimico drill holes.

Samples from the Metorex drilling were submitted for assaying at the laboratory of ALS Chemex in Johannesburg and the assaying method was a 4 acid digest TCu and TCo and by sulphuric acid leach as follows:

- Cu-ICP02 is the determination of % AsCu in Ores, Feeds and Tails by Acid Leach with 20%;
- H_2SO_4 with Sodium Sulphite with ICP-AES Finish;
- Method Precision: ±10%
- Reporting Limit: 0.01 – 100%.

7.6.3 Quality Assurance and Quality Control

[SR2.1, SR3.1, SR3.2, SR4.1]

The QA/QC programme in place included insertion of blanks made from acid washed silica sand and certified standards within the sample stream at a frequency of 1:20 or 5%. No external blind duplicates were submitted.

The summary results from the QA/QC indicated the following:

- The results obtained for the submitted blanks and laboratory blanks show that a negligible amount of contamination is present.
- The results obtained for the submitted standards and laboratory standards are well within the 95% confidence limits for each standard. Where means and confidence limits are not known, the deviation is within 10% of the average value obtained for the standard.
- Acid soluble copper returns results that are significantly different from the expected value for batches JB10169444, JB10194156 and JB10194157
- Internal laboratory duplicate precision is better than 90%, less than 10% difference.

7.6.4 Bulk Density Data

[SR2.4]

Metorex determined the SG for Lubembe through Archimedes principle on over 400 samples obtained from diamond drill core. An SG-depth regression curve had been established and compared well with the accepted range of SGs on the Zambian Copperbelt.

SRK could not find any density information for hanging or footwall rocks.

7.6.5 Geological Modelling and Resource Estimation

[SR4.1A(ii)(iv), SR4.1A/B, SR4.2A, SR4.2B]

The 2 m composite length was chosen for grade estimation since it gave a better variogram due to the smoothing of the distribution, but not to the extent of smoothing of 5 m composites which gave very poor variograms.

Variograms were created in in the plane of the reef and the direction the normal to the plane of reef. There was a slight anisotropy along strike as opposed to down dip. Variograms in normal to the plane of reef gave a first structure range of 8m.

Blocks of dimensions 50 m x 50 m x 5 m in the X, Y and Z directions were used to model the mineralised zone.

Estimation of % TCu grades into the block model used a minimum of 10 composites and maximum of 70 to estimate each block.

The proportion of acid soluble copper was estimated into the blocks using inverse distance estimation within 25 m horizontal slices through the orebody. A minimum of 10 and a maximum of 50 samples were used to estimate the proportion in each block. % AsCu was then calculated using the %TCu estimates and the estimated proportion of acid soluble copper.

7.6.6 Resource Estimation

[SR4.2]

Of the two sets of drill hole data used in the resource estimation, the older Sodimico drill holes data cannot be verified since only limited documentation is available in the form of some scans of drill hole logs. No drill hole core, assay certificates, core and data handling procedures, assay procedures and quality control results are available. The spread of drill holes is also quite wide (up to 300 m). The drill hole dataset does however seem to agree quite well with the more recent drilling, since where recent drill holes have intersected close to a Sodimico drill hole, the mineralised intersection thickness, as well as the assay results agree quite closely.

The deeper parts of the resource, whose grade estimates are only informed by drill holes of the older Sodimico dataset, or by isolated Metorex drill holes, are therefore classified as Inferred Mineral Resource (Figure 7.7).

The part of the resource, where the grade estimates and the geological model are informed by predominantly recently drilled drill holes, was classified as Indicated Resource.

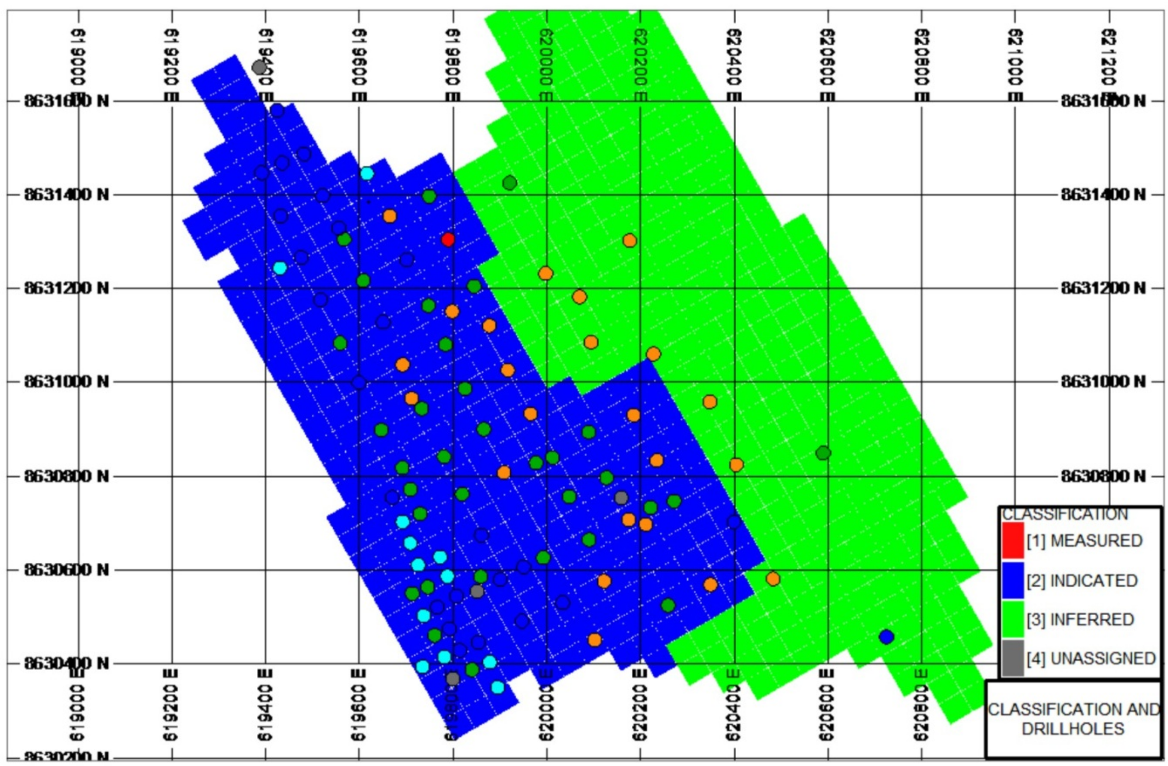
7.6.7 Cut-off Grade determination for 2012 Mineral Resources

[SR5.7B(ii), SR5.7C(iii)]

The parameters used for the grade cut-off determination for reporting of Mineral Resources at Lubembe are set out in Table 7.4. A cut-off grade of 1.15% Cu results from these parameters.

Table 7.4: Lubembe – parameters for cut-off determination for mineral resources

Parameter	Units	Value
Unit costs		
Mining	(USD/t)	41.50
Concentrator	(USD/t)	17.10
Admin / overheads	(USD/t)	18.06
Off mine	(USD/t)	12.90
Mine call factor	(%)	95.0%
Dilution	(%)	5.0%
Concentrate recovery	(%)	73.0%
Smelter recovery	(%)	100.0%
Revenue	(USD/t)	12 000
Royalty	(%)	2.5%



srk consulting	**Metorex** Lubembe Project – drill hole spacing and resource classification	Project No. 453459

Figure 7.7: Lubembe Project – drill hole spacing and resource classification

7.6.8 Audited Mineral Resources

[SR9]

The audited Mineral Resource estimates for Lubembe at 30 June 2013, using a 1.15% Cu cut-off, are set out in Table 7.5.

Table 7.5: Lubembe – SRK Audited Mineral Resource Estimate at 30 June 2013 at 1.15% Cu cut-off

Resource classification	Tonnage (Mt)	% TCu	Cu metal contained, (kt)
Measured	-	-	-
Indicated	54.0	1.88	1 015.8
Inferred	36.6	2.08	761.4
Total	**90.6**	**1.96**	**1 777.2**

7.6.9 SRK Comments

SRK visited the Lubembe deposit on 29 July 2013 and located the collars of some of the Metorex holes in the field. Collar positions from about 6 holes were found in the field with the cemented collar markers and the borehole ID clearly marked on the cement. Also marked on the holes were the end-of hole depths. The bulk of the cores from the drilling are kept in two core sheds located near the camp at Lubembe while a few are kept at the core shed at Kinsenda. SRK saw the cores stacked neatly in both core sheds but due to limited time for the visit, did not examine any of the cores from the drilling.

The Mineral Resources have been based on largely historical drill holes drilled by Sodimico supplemented in places by limited Metorex drilling information, generally in the shallower part of the mineralised body.

There is a general lack of information on the processes undertaken in the sample collection, sampling, assaying and QA/QC of the Sodimico database.

There is a risk in the quality of the estimates arising out of the areas where the Sodimico samples alone have been used for the estimation due to the lack of QA/QC.

The conversion of volume to tonnes has been based on lithologies from 8 drillholes. SRK consider the data set to be limited and is a risk in the quality of the tonnes being reported

Indicated Mineral resources have been defined in areas where Metorex drilling has infilled the Sodimico drilling and with attendant QA/QC processes in place.

Inferred Mineral Resources are based largely on Sodimico drilling.

SRK consider the classification appropriate for the level of information available and the risks identified in the data quality.

No Mineral Reserves for Lubembe have been estimated, because much of the Lubembe Study reviewed by SRK does not satisfy the requirements of a feasibility or pre-feasibility study study (see for example Sections 7.9, 7.10 and 7.12).

7.6.10 Reconciliation of Mineral Resources

[SR8B(iv), SR8C(vi)]

The previous resource statement for Lubembe was published by Metorex in its Annual Report for 2011. The Mineral Resources at 31 December 2011 and at 30 June 2013 for Lubembe are compared in Table 7.6.

Table 7.6: Lubembe – Mineral Resources Reconciliation - 31 December 2011 to 30 June 2013

Total Resources	At Jun 2013 Tonnes (Mt)	At Jun 2013 Contained Metal Cu (kt)	At Dec 2011 Tonnes (Mt)	At Dec 2011 Contained Metal Cu (kt)
Measured	0.0	0.0	0.0	0.0
Indicated	54.0	1 015.8	56.5	1 039.6
Inferred	36.6	761.4	36.6	761.4
Total Min. Resources	90.6	1 777.2	93.1	1 800.9

The changes in Mineral Resources from 2011 to 2013 arise primarily due to the application of a different cut-off grade.

7.7 Rock Engineering

[SR5.4]

Snowden Mining Consultants logged 17 of the HQ diamond drill holes for structural and geotechnical features. Samples (75 in total) were collected from the drill core and submitted for laboratory strength testing (Table 7.7).

Rock mass ratings were assessed according to the GSI and Q' methodologies. Geotechnical domains were selected on the basis of stratigraphy and degree of weathering.

Table 7.7: Lubembe – Geotechnical characteristics determined by Snowden (Lubembe FS)

Geotechnical Domain	Weathering	Mean RQD (%)	Mean UCS (MPa)	Mean GSI	Mean Q'	Description
Musoshi	Fresh	73	37	61	11	Good
	Weathered	12	5	47	2	Fair
Kitotwe	Fresh	91	75	72	20	Good
	Weathered	54	36	59	8	Fair
Simbi	Fresh	89	72	69	24	Good
	Weathered	94	74	71	14	Good
Upper Lubembe	Fresh	85	72	69	24	Good
	Weathered	72	14	59	15	Fair
Middle Lubembe	Fresh	92	39	74	23	Good
	Weathered	91	34	73	23	Good
Lower Lubembe	Fresh	93	77	77	23	Good
	Weathered	84	34	70	21	Good
Basement	Fresh	94	173	82	23	Very Good

Two pervasive discontinuity sets were identified as consistent features at Lubembe. The first set (bedding) dips between 13° and 59°, with a dip direction between 060° and 080°. The second set (jointing) dips between 46° and 63°, with a dip direction between 240° and 260°.

7.8 Hydrogeology and Hydrology

[SR5.4]

From the Lubembe feasibility report it is clear that no conceptual or numerical ground water modelling has been done and there is no detailed ground or surface water information available.

The Lubembe FS report acknowledges the fact that the following impacts are "probable":

- Lowering of water table; and
- Contamination from tailings dam or waste rock dumps.

These impacts will have to be addressed in future planning along with other impacts which will be identified in an EIA process.

7.9 Mining

[SR5.4]

The discussion on mining which follows has been extracted from the Lubembe Feasibility Study - Volume 1 Project Summary, compiled by Metorex in October 2012 ("**Lubembe Study**").

7.9.1 Mining method selection

Due to the large scale, low grade nature of the Lubembe deposit, Metorex performed a trade-off study between bulk underground and open pit mining methods. From eleven underground mining methods, Metorex selected three for evaluation – longitudinal sub-level open stoping, longitudinal sub-level cave and down dip block cave.

Sub-level open stoping

The SLOS method would be applied where the stope height is 20 to 40 m. The panel width has been set at 15 m based on geotechnical considerations, so the stope and pillar dimensions would be as set out in Table 7.8. The layout for the SLOS mining method is shown schematically in Figure 7.8.

Table 7.8: Lubembe – Panel and Pillar dimensions for SLOS mining method

Stope Height (m)	Panel Length (m)	Pillar Width (m)
20	55	10
30	36	12
40	20	15

The mining method would result in mining recoveries around 65%, though dilution would be expected to be low at 5%.

Sub-level Cave ("SLC")

The SLC method would be applied where the stope height is 40 to 60 m. The sub-levels would be spaced at 15 m vertical intervals. The horizontal distance between drilling drives would be 15 m centre to centre. As the SLC stopes would be adjacent to the SLOS stopes, the scheduling allowed for the operating SLOS areas to be 100 m from the SLC zones, to minimise the risk of the cave propagating into the SLOS area. The layout for the SLC mining method is shown schematically in Figure 7.8.

The mining method would result in mining recoveries around 85%, with dilution of 15%.

Panel Cave ("PC")

The PC method would be applied where the stope height is greater than 60 m. The dimensions of the PC are 400 m on strike and 900 m along dip. Propagation of the cave zone to surface can be expected. The PC stopes would be adjacent to the SLC stopes and the scheduling planned for the PC to commence once the SLC is 200 m from the PC zone. The layout for the PC mining method is shown schematically in Figure 7.8.

The mining method would result in mining recoveries around 90%, with dilution of 20%.

Rock Hoisting

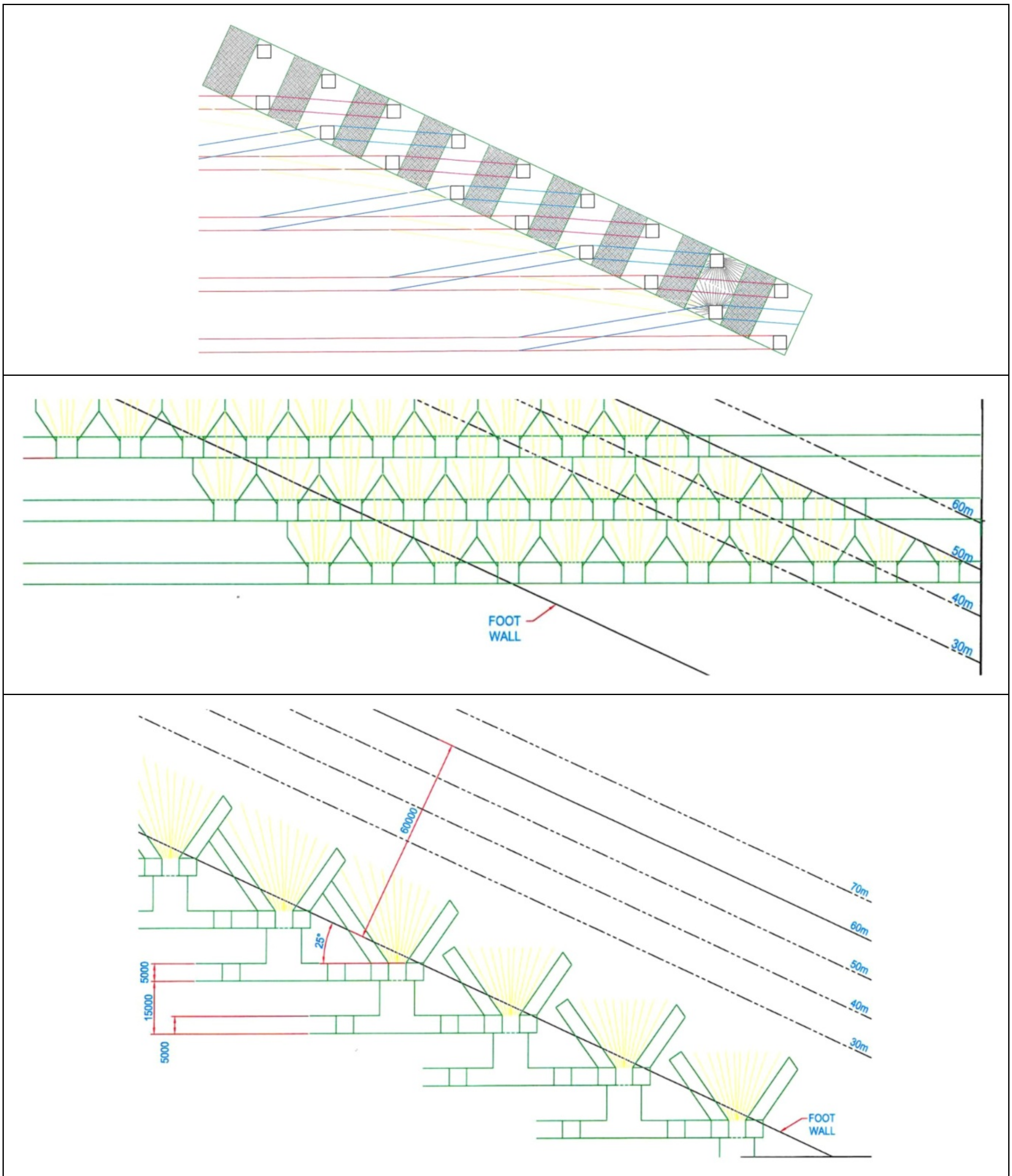
Rock hoisting options of trucking, conveying and winding were through a vertical shaft were evaluated for the underground mining options. On a comparative cost basis, hoisting the rock through a vertical shaft was shown to be the more cost effective option.

Open Pit Mining

A pit optimisation study using Gemcom Whittle 4X pit optimisation software was conducted as part of the Lubembe Study to determine the economic depth of the open pit mining. Fixed mining costs and pit design parameters were used for each optimisation run, while the recoveries, processing costs and off mine costs for a number of different process scenarios were varied. Just two processing options were presented in the Lubembe Study – both involved production of Cu cathode SX/EW, but the earlier leach stages for oxide and sulphide ores were different. The Whittle input parameters used in the optimisation runs are summarised in Table 7.9.

Table 7.9: Lubembe – Whittle optimisation input parameters

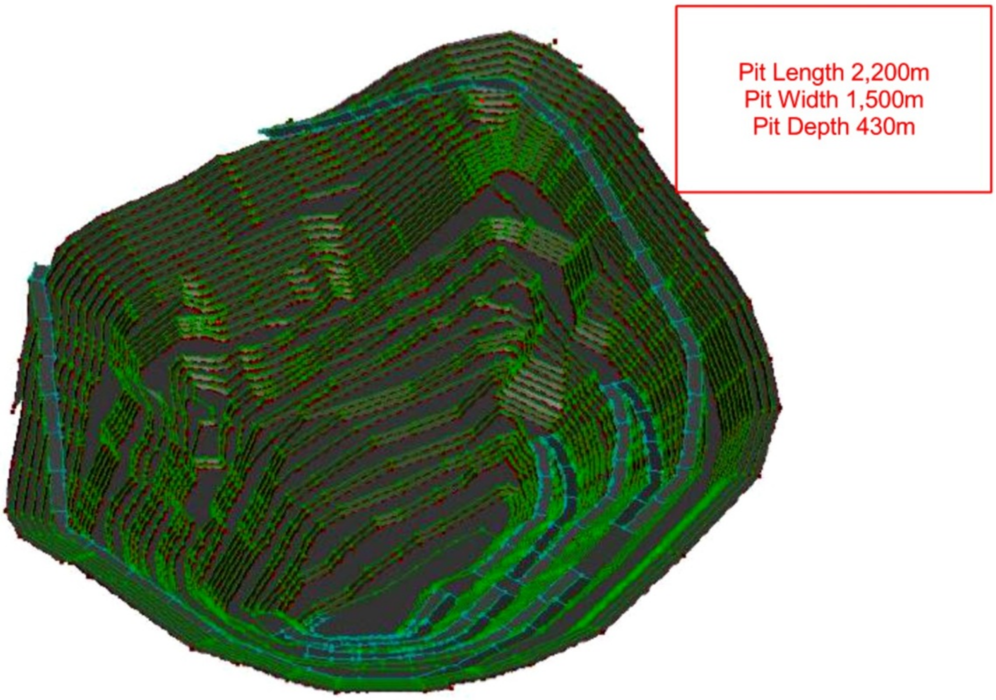
Parameter	Units		Value
Mining			
Recovery	(%)		98%
Dilution	(%)		0%
Slope angle (weathered material)			30°
Slope angle (fresh material)			45°
Free-dig mining cost	(USD/t)		3.25
Waste mining cost	(USD/t)		4.68
Ore mining cost	(USD/t)		4.23
Processing		**Process Option 3**	**Process Option 5b**
Process cost	(USD/t)	26.60	13.10
Off-mine cost	(USD/t)	680	1 254
Process recovery	(%)	77%	74%
Cu price	(USD/t)		8 000



srk consulting	**Metorex** Lubembe Project – schematic layouts for different mining methods – SLOS (top), SLC (middle) and PC (bottom)	Project No. 453459

Figure 7.8: Lubembe Project – schematic layouts for different mining methods – SLOS (top), SLC (middle) and PC (bottom)

Pit 16 under process option 5b was selected as the pit shell on which to base the mine design. Pit 16 contains 67.9 Mt of ore, relative to waste of 685.0 Mt for a strip ratio of 10.1. Using pit slope angles of 30° and 38° in weathered and fresh material respectively, a ramp width of 28 m and a bench height of 10 m, the pit design as shown in Figure 7.9 was produced. The large pit is planned to reach a depth of approximately 430 m with a footprint covering about 190 ha.



	Metorex Lubembe Project – pit design	Project No. 453459

Figure 7.9: Lubembe Project – pit design

Based on an annual ore production rate of 3.6 Mtpa, the primary load and haul mining fleet was selected to be a Caterpillar 793 haul truck matched with a Terex RH340 face shovel.

Mining was planned to be conducted on a four by 8-hr shift continuous operations basis, which resulted in the total mining complement including engineering staff being around 500.The financial comparison of the open pit and underground mining methods as set out in the Lubembe Study is summarised in Table 7.10.

Table 7.10: Lubembe – comparison of Open Pit vs Underground Mining Methods

Parameter	Units	Open Pit	Underground
Capital cost	(USDm)	550.4	992.9
Operating Cost	(USDm)	2 541.1	3 149.5
Total Cost	(USDm)	3 041.5	4 142.4
Total tonnes mined	(Mt)	844.8	204.1
Ore tonnes mined	(USD/t)	64.5	95
Unit cost per tonne mined	(USD/t)	3.6	20.3
Unit cost per ore tonne mined	(USD/t)	47.2	45.4

Metorex considered that the open pit presented less of a financial risk than the underground mine as upfront capital costs are lower for similar operating costs. Further, the proposed underground mining methods are not widely practised, particularly in Africa. The availability of skills for underground mining is considered a significant risk. By contrast, open pit mining is considered to be more flexible and more inherently safer than underground mining.

7.9.2 SRK Comments

Consideration of different mining and processing options is usually done as part of a pre-feasibility study. Furthermore, Metorex is currently busy with a feasibility study for Lubembe.

The capital costs required to bring Lubembe into operational readiness are referred to as a "high level estimate", symptomatic of a scoping level of study.

On this basis, the Lubembe Study does not satisfy the requirements of a feasibility study, so no Mineral Reserves can be estimated.

7.10 Mineral Processing

[SR5.5]

7.10.1 Metallurgical Testwork

The summary of metallurgical testwork which follows has been extracted from the Lubembe Study.

Mineralogy

Of the total mass of copper in the sample of deeper ore, 72% is associated with chalcocite and 12% with bornite. Copper sulphide grains are mostly in the -160 µm size class.

Chemical Analysis

Mintek undertook the chemical analysis of the deeper ore and showed that the %TCu was 1.73%.

Diagnostic Copper Leach

The diagnostic leach tests showed that the sample contains 37% acid soluble copper (copper oxides) and 60% cyanide soluble copper (copper sulphides).

Comminution Tests

The results from the JKTech drop weight tests indicate the ore has a high resistance to impact breakage. Ball bond work index tests yielded results of 16.0 kWh/t and 12.1 kWh/t at 75 µm and 106 µm limiting screens respectively, putting the sample into a medium to hard classification.

Flotation Tests

Tests were performed to determine the effect of grind size on flotation performance. Results showed that the highest recovery of copper was achieved at a grind size of 80% passing 75 µm.

The head grades of the sulphide and oxide flotation concentrates were 50% and 10.7% Cu respectively. Overall recovery of Cu to the concentrates was 85.3%.

Dense Medium Separation

Results from dense medium separation ("**DMS**") testwork showed that at a density cutpoint of 2.55 g/cm^3, Cu recovery ranged from 53.5% to 56.8%. It was concluded that DMS is not a feasible option for upgrading the ore.

Bottle Roll Leach Tests

The results of bottle roll leach tests, obtained after 30 days, are summarised in Table 7.11.

Table 7.11: Lubembe – Summary of bottle roll leach test results

Size	Cu Extraction (%)	Total Acid Consumption (kg/t)	Gangue Acid Consumption (kg/t)
100% < 25 mm	41.5	24.1	14.6
100% < 12.5 mm	56.5	31.5	19.6
100% < 6.5 mm	63.7	37.5	22.2
80% < 75 µm	78.1	47.3	27.6

Based on the poor recovery (associated with a poor liberation) of Cu listed in Table 7.10, Mintek concluded that heap leaching of the ore is not a feasible option.

Agglomerate Stability Tests

The testwork indicated that the ore is only slightly amenable (15% recovery) to acid agglomeration techniques. Since practical experience shows that crushing circuits reduce about 20% of the RoM ore to fines (<1 mm) when crushing ore to 100% passing 50 mm, the results suggest that the process route should be suitable for processing fine ore material.

7.10.2 Alternative Process Flowsheets

Six alternative flowsheets were considered in the Lubembe Study:

- Option 1 (whole ore leach) – crushing and milling, acid leach and ferric leach at atmospheric pressure, solvent extraction and electrowinning;
- Option 2 – crushing and milling, flotation, ferric and acid leach at atmospheric pressure, solvent extraction and electrowinning;
- Option 3 - crushing and milling, two-stage flotation, acid and ferric leach at atmospheric pressure, solvent extraction and electrowinning;
- Option 4 - crushing and milling, two-stage flotation, pressure leaching autoclave, acid leach at atmospheric pressure, solvent extraction and electrowinning;
- Option 5a - crushing and milling, two-stage flotation, acid leach at atmospheric pressure, solid/liquid separation, flotation, pressure leaching autoclave, solvent extraction and electrowinning;
- Option 5b - crushing and milling, two-stage flotation, acid leach at atmospheric pressure, solid/liquid separation, flotation, solvent extraction and electrowinning, sulphide concentrate.

The sulphide/oxide recoveries and financial feasibility of the various options are summarised in Table 7.12.

Table 7.12: Lubembe – Comparison of Recovery and Economics of the Different Process Options

Parameter	Units	Option 1	Option 2	Option 3	Option 4	Option 5a	Option 5b
Sulphide recovery	(%)	90	78	79	83	73	75
Oxide recovery	(%)	94	60	62	61	63	57
Overall Recovery	(%)	91	75	77	79	71	73
Annual Revenue	(USDm)	427.1	355.4	360.9	373.8	334.7	343.9
Annual Opex	(USDm)	315.8	261.6	266.0	260.1	249.5	228.6
Plant capital costs	(USDm)	790	456	456	588	566	405
Start-up working capital	(USDm)	93.1	73.5	77.6	79.5	64.7	62.1
IRR	(%)	6.8	11.2	11.3	10.6	7.5	16.7

Although Option 1 achieves the highest Cu recovery, Options 3 and 5b were seen to be the most economically feasible for processing the Lubembe ore. The block flow diagrams for Options 3 and 5b are compared in Figure 7.10.

Metorex has currently commissioned Mintek to characterise the orebody by doing the following work:

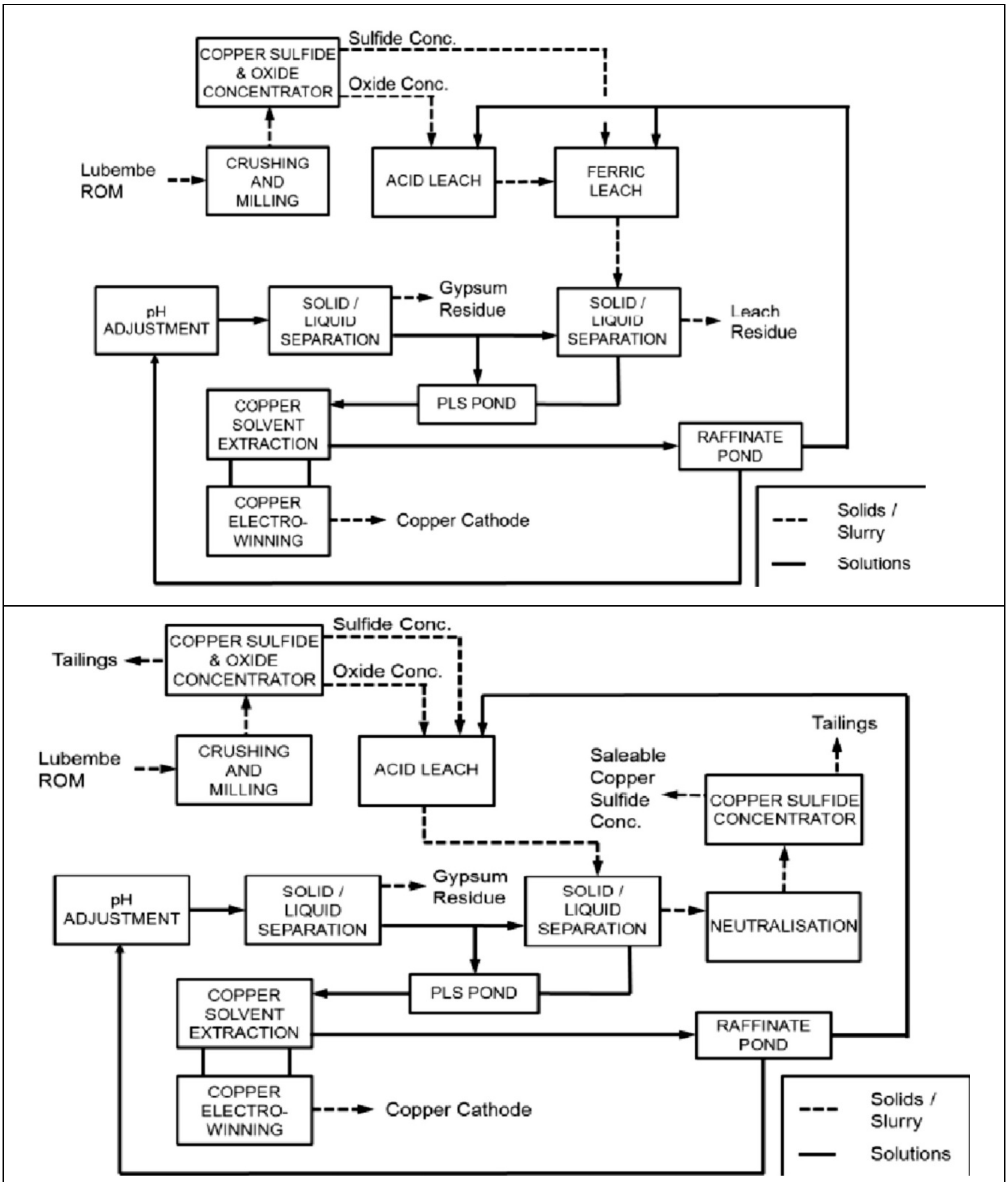
- Sequential leaching of 80 samples across the orebody (along strike and down dip);
- Mineralogy of selected samples.

7.11 Tailings Storage Facilities

[SR5.6]

The Lubembe Study showed that an area of 100 to 120 ha would be required for the TSF, to store approximately 42 Mm^3 of tailings to a height of 40 m.

The Lubembe Study concluded that there is insufficient space within the PE330 for this size TSF. Land surrounding the Lubembe Project is owned by Sodimico, Metorex's partner in the Lubembe Project and Metorex plans to enter into discussions with Sodimico during 2013 regarding utilising some of this land for purposes of dumping waste from open pit mining activities in the future.



srk consulting	**Metorex** Lubembe Project – Block Flow Diagrams for Option 3 (top) and Option 5b (bottom)	Project No. 453459

Figure 7.10: Lubembe Project – Block Flow Diagrams for Option 3 (top) and Option 5b (bottom)

7.12 Infrastructure and Engineering

[SR5.6]

SRK reviewed the Infrastructure section of the Lubembe Study which had been compiled by Metorex and SRK's findings are presented below.

7.12.1 Executive summary

The start of the executive study of the Lubembe Study stated that the Lubembe resource will be exploited using large scale open pit mining methods to mine 64.5 Mt over a 20 year life of mine. The planned scale of operation is 3.6 Mtpa RoM ore at an average mill feed grade of 1.92% TCu.

The Lubembe Study states that the study "considered approximately 15 alternative ore processing options and recommends one of two possible ore processing alternatives be taken to definitive feasibility study status". By definition, comparisons of options, is clearly a prefeasibility study, after this stage only then is it possible to conduct a feasibility study. The Lubembe Study goes on to state "The study recommends proceeding with a definitive feasibility study of the Lubembe Project in early 2013 with possible construction of the mine and associated infrastructure following in 2014, subject to a favourable investment decision emanating from the definitive feasibility study" - this again confirms that the study provided for review is not a feasibility study. The SRK infrastructure review therefore was carried out to see if the level of study would satisfy SRK's requirements for a prefeasibility study.

7.12.2 Study confidence levels

The executive study stated that the contingency level for the capital estimates was set at 25% contingency. This contingency level satisfies the requirements for a prefeasibility study.

7.12.3 Infrastructure capital

For a prefeasibility study, SRK would normally expect that the infrastructure costs would be broken down into sub-sections. This is not the case with this study. The total Infrastructure cost is reflected in the capital expenditure table as a single line item.

7.12.4 In-pit dewatering

The water pumping requirements have been assumed to be 40 Mega-litres per day, without any hydrological ground water study being carried out. No mention has been made regarding rainfall amounts in the region, during the dry and rainy seasons. No water balance has been included as part of the study.

There are no general arrangements detailing the surface and underground water reticulation systems.

In SRK's opinion, the infrastructure component of the Lubembe Study is largely at a conceptual or scoping study level, not up to the level expected for a prefeasibility study.

7.12.5 Electrical reticulation

This section does not have a detailed load list for the site, or a single line diagram for the site electrical supplies. This should form part the study.

The 12 x 2.5 MVA diesel driven standby generators specified for the plant is seen as excessive. Normally, with most plants the normal design practice is to list key drives, such as thickeners, pumps, driers, furnaces, and cater for supporting power for these only. SRK would have specified around 5 MVA for such a plant loading, but the necessity to cover the complete plant load with standby generators is not clearly defined in the report.

7.12.6 Manpower plans

The manning levels, together with manpower costs have not been broken down by discipline/department. SRK would expect to see this detailed in the study, together with the relative salary bands for each level of worker.

7.12.7 General arrangement drawings

There are no general arrangement drawings for the following items, which SRK would normally include in its prefeasibility study work:-

- Surface plot plan showing the site topography and surface infrastructure;
- The surface electrical reticulation;
- Surface water reticulation, storage, setters and dewatering pumping systems;

- Surface workshops.

7.12.8 Conclusions

In conclusion, SRK is of the opinion that there are many sections of the infrastructure study that have not been adequately covered and in some instances have been excluded from the study. For this reason, the infrastructure section of this report is seen by SRK as being to a scoping study level.

The short comings in the infrastructural aspects of this report, outlined above, need to be addressed to bring this study up to a prefeasibility or feasibility study level.

7.13 Human Resources

[SR5.3, SR5.4C, SR5.5C]

SRK could not find any information related to human resources in the information provided.

7.14 Occupational Health and Safety

All work at the Lubembe project is governed by the terms of Metorex's health and safety policy.

SRK could not find any occupational health and safety statistics for Lubembe in the information provided.

7.15 Environmental

[SR5.2B/C]

This section of the report is based on a desktop review of the information provided to SRK. No site visit was undertaken and no Metorex personnel were interviewed.

7.15.1 Regional Setting

The Lubembe deposit is located in Katanga Province within PE330 alongside the Zambian border, 24 km SE of Kinsenda Mine and approximately 25 km NW of the mining town of Mufulira in Zambia.

PE330 area can be accessed from either Kasumbalesa or Mokambo border posts via a gravel road which is badly affected during the rainy season. The main railway line from Zambia to Lubumbashi passes close to the NE edge of the Lubembe deposit. The process option selected to be taken to feasibility level involves leaching of oxide and sulphide ores and SX/EW to produce copper cathode.

If open pit mining takes place, as envisaged, the pit will be some 430 m deep and cover a footprint of 190 ha. It has been assumed that waste rock dumps will cover an area of 1 000 ha and a site for the tailings dam, which will require a footprint of 150 ha, has still to be identified.

7.15.2 Environmental Issues and risks

Legal Compliance

With adequate attention Environmental and Social Impact Assessment (ESIA) there is no reason to expect any problems in terms of legal compliance. While not identified as an issue to be addressed in the Feasibility Study by Metorex, it is likely that an ESIA will be required for the bankable feasibility study. In addition, a Relocation Action Plan will be required.

Potentially material risks to the project

The Lubembe Study has identified the following risks to the project which relate to environmental management:

- Significant potential for environmental degradation and AMD;
- Securing additional real estate for waste rock dump and tailings facilities.

The Lubembe Study takes the view that there is not much difference, from an environmental point of view, between underground an open pit mining (the preferred option in the study), with the pit and waste rock dumps being regarded as legacies of mining. In the increasingly stringent environmental context this view will have to be tested. Given the extent of approved open pit mining in Katanga, it is unlikely that this option will not be approved by the DRC authorities but consideration will have to be given to the assessed impacts for the feasibility study, preferably for both options. Rehabilitation costs may make underground mining preferable.

Apart from these considerations, environmental issues listed in the Lubembe Study are those normally encountered and manageable in terms of good practice.

Tailings disposal

It is noted that the site for the TSF still has to be identified.

Water management

As one of the recommendations for proceeding to a bankable feasibility study, Metorex has identified the need for detailed hydrological studies to estimate the water inflows and associated pumping costs. SRK concurs with this view. The Lubembe Study assumes inflow into the mine of 40 Ml/day.

7.15.3 Social Issues and Risks

[SR5.3]

A settlement of some 50 houses, comprising 400 to 500 people which may require resettlement, has been identified. Metorex advised that a full SIA on the project is to be conducted. The need to re-settle will depend on the proximity of the community to the pit, waste dumps and proposed infrastructure. The social scan contains numerous references to inadequacies in the social work and information available to date, including non-compliance with the Metorex Community Policy. The community attitude to the KICC is noted as being positive although a comment from the community that they had received no company support to date was noted. A number of social risks are identified in the social scan report, many of them very typical for mining operations in the area and it is clear that expectation management, resettlement planning, especially in the light of the proximity of the residential area to the mine, and acceptable implementation of the Corporate Social Initiatives will be critical.

In brief, the social scan report draws attention to the potential for Metorex to lose its good image in the company but notes that in general the perception of stakeholders was good. The need for adequate planning, as will be required in a bankable ESIA, is emphasized.

Metorex advised SRK that potential social impacts will be addressed in a full social and environmental impact assessment, which still has to be undertaken.

7.16 Summary of Key Risks

[SV2.10]

A summary of the key risks identified for Lubembe is provided here. Metorex advised SRK that it has a comprehensive risk management process in place which is aimed at identifying and ranking risks across all of the group's operations to determine an overall risk profile for the group. The risks identified by SRK have broadly been incorporated into the overall group risk management process and are being addressed through this.

7.16.1 Tenure

There does not appear to be any risk with Metorex's mineral rights to the Lubembe project.

7.16.2 Mineral Resources

SG data was obtained from 400 samples taken from drill cores. Metorex confirmed that a SG-depth regression curve had been established and compared reasonably well with the accepted range of SGs on the Zambian Copperbelt.

The lack of QA/QC support for the Sodimico drill holes used in the Lubembe resource classification implies that the assay results could be incorrect, leading to a false interpretation of geology or grade.

7.16.3 Rock Engineering

The additional data required to adequately define the geotechnical characteristics of the different rock types would be collected as part of the feasibility study underway at Lubembe.

7.16.4 Hydrogeology

No work with respect to groundwater and surface water has been done. Potential impacts (e.g. water table lowering and contamination) have been identified as probable, but the mitigation is aimed at compensation rather than prevention. There is the risk that this compensation could become quite costly, unless properly quantified via a full hydrogeological investigation.

While social issues need not represent a material risk, a considerable amount of planning will have to be done to ensure that social impacts are adequately managed.

7.16.5 Mining

Metorex considered that the open pit presented less of a financial risk than the underground mine as upfront capital costs are lower for similar operating costs.

The availability of skills for underground mining is considered a significant risk. By contrast, open pit mining is considered to be more flexible and more inherently safer than underground mining.

7.16.6 Metallurgical Processing

Additional metallurgical testwork will be required to properly define the metallurgical characteristics. Metorex has commissioned Mintek to undertake ore characterisation and leaching tests on 80 samples.

7.16.7 Tailings

The Lubembe Study concluded that there is insufficient space within the PE330 to accommodate a TSF of 100 to 120 ha. It is noted that the site for the TSF still has to be identified.

There is a risk that additional land will not be available, thereby restricting how much ore can be treated over the LoM. Land surrounding the Lubembe Project is owned by Sodimico, Metorex's partner in the Lubembe Project and Metorex plans to enter into discussions with Sodimico during 2013 regarding utilising some of this land for purposes of dumping waste from open pit mining activities in the future.

7.16.8 Engineering and Surface Infrastructure

The need to cover the complete plant load with standby generators is not clearly defined. The 12 x 2.5 MVA diesel generators specified for the plant is seen as excessive.

The water pumping requirements have been assumed to be 40 Ml/day, without any hydrological ground water study being carried out. Metorex has identified the need for detailed hydrological studies as part of the feasibility study to estimate the water inflows and associated pumping costs.

7.16.9 Environmental

The Lubembe Study has identified the following risks to the project which relate to environmental management:

- Significant potential for environmental degradation and AMD;
- Securing additional real estate for waste rock dump and tailings facilities.

Metorex has identified that a settlement of some 50 houses, comprising 400 to 500 people, may have to be relocated. A number of social risks are identified in the social scan report, many of them very typical for mining operations in the area and it is clear that expectation management, resettlement planning, especially in the light of the proximity of the residential area to the mine, and acceptable implementation of the Corporate Social Initiatives will be critical. Metorex has informed SRK that this will be addressed as part of the feasibility study for Lubembe.

8 VALUATION REPORT – METHODOLOGY

[SV2.8]

8.1 Introduction

There are numerous recognised methods applied in valuing "mineral assets". There is also a diversity of situations in which a valuation may be required and hence no simple formula or recipe can be used without critical appraisal of the specific situation at hand.

Valuation methods in common usage for mineral assets are dependent on numerous factors including and not necessarily limited to: the nature of the valuation undertaken; the development status of the mineral or petroleum assets; and the extent and reliability of available information.

Regardless of the technical application of various valuation methods and guidelines, the valuer should strive to adequately reflect the considered risks and potentials of the project in the valuation ranges and the preferred values.

8.2 Valuation Approach and Valuation Methods

The valuation of the Mineral Assets has been prepared in accordance with the SAMVAL Code.

In general there are three main and generally accepted analytical valuation approaches that are in common use for determining the "Fair Market Value" of mineral assets, each of which is described below and which largely rely on the principle of substitution, using market derived data.

The "Fair Market Value" in respect of a mineral asset is defined by the VALMIN Code 2005 as the amount of money (or the cash equivalent of some other consideration) determined by the relevant expert in accordance with the provisions of the VALMIN Code for which the Mineral or Petroleum Asset or Security should change hands on the Valuation Date in an open and unrestricted market between a willing buyer and a willing seller in an "arm's length" transaction, with each party acting knowledgeably, prudently and without compulsion. The "fair market value" of a mineral asset usually comprises two components: the underlying or "technical value" of the assets and a premium or discount relating to market, strategic and other considerations. The fair market value is therefore more likely to fluctuate with time.

The "Technical Value'" is defined in the VALMIN Code as an assessment of a Mineral or Petroleum Asset's future net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by an Expert or Specialist, excluding any premium or discount to account for factors such as market or strategic considerations.

SRK has determined the Technical Value for the Mineral Assets, which for some of the properties is based on Measured and Indicated Mineral Resources that have not been modified to Mineral Reserves. This is permitted under Chapter 18 of the Listing Rules.

In determining the values for the individual properties, SRK has:

- Not included the value of the remaining oxide Mineral Resources at Ruashi Mine because they fall outside of the current engineered mine design shell which supports the LoM plan, are based on a much higher Cu price and are covered by waste dumps and tailings dams that would have to be moved before the resources could be accessed;
- Included production from Chifupu in the Chibuluma LoM plan, even though this generates a marginal return for Chibuluma due to lower grades, as this represents a strategic decision by Metorex to lengthen the LoM at Chibuluma. This allows Metorex to maintain its skills base for longer, during which time it is hoped that additional resources can be located and proved.

In accordance with Chapter 18 of the Listing Rules, SRK has not included any consideration of Inferred Mineral Resources in determining the value for the Mineral Assets. The exclusion of these sources of potential value as well as the exclusion of a premium or discount related to market, strategic or other considerations means that the value for the Mineral Assets does not reflect a Fair Market Value (defined above).

The three generally accepted approaches to mineral asset valuation, as given in Section 20 of the SAMVAL Code and shown in italics below, are:

- "**Cash Flow Approach**" *which relies on the 'value-in-use' principle and requires determination of the present value of future cash flows over the useful life on the mineral asset*.

  The most widely used valuation method for pre-development, development and operating mines is the discounted cash flow ("**DCF**").

  This method considers the majority of factors that can influence the value of a business enterprise, including expected changes in the mineral asset or property's operating activity. Under this approach, it is necessary to utilize projections of revenues, operating expenses, depreciation, income taxes, capital expenditures and working capital requirements. The present value of the resulting cash flows provides an indicated value of the operating business enterprise.

  In order to eliminate the impact on value of the different long-term financing arrangements that have been or could be implemented, analysis is generally done on a debt-free basis. The net present value ("**NPV**") of the projected real terms pre-finance cash flows, using either mid-year or end-year discounting, provides an indication of the value for the mineral asset or property appraised. This NPV at the appropriate discount rate would have to be reduced by the value of the debt at the valuation date to derive the net value of the property or asset.

- "**Market Approach**" *which relies on the principle of 'willing buyer-willing seller' and requires that the amount obtainable from the sale of the mineral asset is determined as if in an arm's-length transaction*.

  The Market Approach utilises information relating to transactions in either public or private firms similar to the subject. The approach is based on the principle of substitution and the assumption that comparable opportunities yield appropriate values. The various methods apply multiples from such data to the subject's financial information in order to obtain comparable measures of value (Hanlin and Claywell, 2010. The Market Approach generally provides fair value, since it is based on transactions that are normally consummated between willing buyers and willing sellers in an open market.

  Hanlin and Claywell (2010) present two primary valuation methods in the Market Approach:

  - Completed Transaction Method ("**CTM**") – looks at completed sales transactions in the subject's industry that are a qualified substitute, i.e. the comparable businesses or items need only to be substantially quantitatively and qualitatively similar.
  - Guideline Company Method ("**GCM**"), also known as the Market Capitalisation Method – share prices of actively-traded publicly owned companies are applied to the subject through valuation multiples. The valuation multiple is derived from the market capitalisation, adjusted for the value of options, convertible securities, preference shares and debt.

  Where **Comparable Transactions** relating to the sale, joint venture or farm-in/farm-out of mineral assets are known, such transactions may be used as a guide to, or a means of, valuation. For a transaction to be considered comparable it should be similar to the asset being valued in terms of **location, timing and commodity**, and the transaction should be regarded as of "arm's length" (that would take place between a willing buyer and willing seller) (Lawrence, 2010). If the transaction was the result of a forced or distressed sale, the resulting unit value would not be applicable. The Comparable Transactions method is best suited to Exploration and Advanced Exploration areas, and Pre-Development Projects. Its application to more advanced mineral assets is generally restricted to recent sales (whole or part) of the actual assets under consideration.

  An alternative market approach that is frequently appropriate is the In Situ Resource (or "**Yardstick**") method of technical valuation for such assets. The In Situ Resource technique involves application of a heavy discount to the value of the total in-situ metal contained within the resource. The discount is usually taken as a range of a certain percentage of the spot metal price as at the valuation date. The actual range varies for different commodities, being typically between 2% and 4.5% for gold (Lawrence, 1994) and diamonds, and between 0.5% and 3% for base metals (including platinum group elements) (van der Merwe and Erasmus, 2006), but may also vary substantially in response to a range of additional factors such as physiography, infrastructure and the proximity of a suitable processing facility. The depth (and hence cost) of a potential mining operation on the asset is also a determining factor. It is mostly used for exploration, pre-development and development properties.

- "**Cost Approach**" *which relies on historical and/or future amounts spent on the mineral asset*.

  Where previous and future committed exploration expenditures are known, or can be reasonably estimated, the Multiple of Exploration Expenditures ("**MEE**") method can be applied to derive a cost-based technical value. The method requires establishing a relevant Expenditure Base ("**EB**") from past and future committed exploration expenditure. A premium or discount is then assigned to the EB through application of a Prospectivity Enhancement Multiplier ("**PEM**"), which reflects the success or failure of exploration done to date and the future potential of the asset. The PEM usually ranges between 0.5 and 3.0, but can be as low as 0 and as high as 5 (Lawrence, 2010). The lower factor would reflect disappointing exploration results and the higher identification of potentially economic mineral resources. The basic tenet of this approach is that the amount of exploration expenditure justified on a property is related to its intrinsic technical value. This reasoning is usually valid in a qualitative sense, but the quantity (i.e. the actual amount expended) may vary greatly for properties of similar intrinsic value, hence the experience of the valuer in carefully weighing up the PEM and the final result is of great import.

  The MEE method is best suited to Exploration and Advanced Exploration Areas.

The applicability of the three valuation approaches to the different property types as set out in the SAMVAL Code is shown in Table 8.1.

Table 8.1: Applicability of Valuation Approaches to Property Types

Valuation Approach	Exploration Properties	Development Properties	Production Properties	Dormant Properties		Defunct Properties
				Economically Viable	Not Viable	
Cash Flow	Not generally used	Widely Used	Widely Used	Widely Used	Not generally used	Not generally used
Market	Widely Used	Less widely used	Quite widely used	Quite widely used	Widely Used	Widely Used
Cost	Quite widely used	Not generally used	Not generally used	Not generally used	Less widely used	Quite widely used

The SAMVAL Code requires that at least two valuation approaches must be applied and the results from the valuation approaches and methods must be weighed and reconciled into a concluding opinion on value. A range of values is provided, together with the estimated value.

The currency of valuation used in this report is United States Dollars ("USD").

8.2.1 Materiality

The SAMVAL Code definition for materiality requires that a public report contains all the relevant information that investors and their professional advisors would reasonably require, and expect to find, for the purpose of making a reasoned and balanced judgement regarding the mineral asset valuation.

Materiality as defined within the VALMIN Code means that (a) the contents and conclusions of the CPVR; (b) any contributing assessment, calculation or the like; and (c) data and information; are of such importance that their inclusion or omission from a technical assessment or valuation may result in a reader of the CPVR reaching a different conclusion than would otherwise be the case.

The determination of what may be material depends on both qualitative and quantitative factors. Something may be material in the qualitative sense because of its very nature, e,g, country risk. In the case of quantitative issues in this CPVR, SRK considers that if omission or inclusion of an item could change the value or post-tax pre-finance annual operating cash flow by more than ten per cent (10%), the item is material and would have to be included.

8.2.2 Transparency

In terms of the SAMVAL Code, the reader of a Public Report (this CPVR) must be provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled.

8.3 Selection of Valuation Methods

[SV2.8]

SRK has derived the value for Metorex based on a "sum of the parts" where the values for the individual properties are derived as set out in Table 8.2, according to the "widely used" and "quite widely used" criteria of Table 8.1.

Table 8.2: Valuation Methods selected for different properties

Property	Most Appropriate Method	Method for Reasonableness Check
Ruashi	DCF (Cash Flow Approach)	Market Approach (weighed from CTM, GCM, Yardstick methods)
Chibuluma	DCF (Cash Flow Approach)	Market Approach (weighed from CTM, GCM, Yardstick methods)
Kinsenda	DCF (Cash Flow Approach)	Market Approach (weighed from CTM, GCM, Yardstick methods)
Musonoi	Market Approach (weighed from CTM, GCM, Yardstick methods)	Cost Approach
Lubembe	Market Approach (weighed from CTM, GCM, Yardstick methods)	Cost Approach
Ruashi sulphides	Market Approach (weighed from CTM, GCM, Yardstick methods)	-

Expected costs and cash flows for Metorex Head Office are considered over the longest LoM between Ruashi, Chibuluma and Kinsenda. The NPV of these cash flows at a 8% real discount is determined and offset against the property values derived per Table 8.2.

9 VALUATION REPORT – RISKS AND OPPORTUNITIES

[SR6, SV2.10]

9.1 Introduction

The following section presents a risk and opportunity assessment for the Mineral Assets and attempts to identify and quantify the impact should such risk or opportunity materialise. The analysis is generally limited to a qualitative assessment only, so no direct financial impact is considered. Details relating to the individual risks and opportunities have been discussed in the various sections of this CPVR above, so only a summary is provided here.

It is possible that many of the identified risks and/or opportunities will have an impact on the cash flows for Ruashi, Chibuluma / Chifupu and Kinsenda. SRK has provided sensitivity tables for simultaneous (twin) parameters, which cover the anticipated range of accuracy in respect of commodity prices, operating expenditures and capital expenditures. SRK is of the view that the general risks and opportunities are adequately covered by these sensitivity tables, as these address fluctuations in operating expenditure and commodity prices.

In addition to those identified above, the Mineral Assets are subject to specific risks and opportunities, which independently may not have a material impact, but in combination may do so.

In accordance with Guidance Note 7 of the Listing Rules, SRK has further reviewed the specific risks identified below relative to likelihood (within a seven year time frame) and consequence of risk, in order to derive an overall risk measure classified as low, medium and high. Classification of a risk as medium or high does not necessarily constitute a scenario which leads to project failure.

Certain of the risks identified comprise either generic risk elements which are adequately covered by the various twin-parameter sensitivity analyses, or which do not readily lend themselves to quantitative analysis, or will only materialise outside the ten year time frame.

9.2 Specific Risks

The specific risks identified for the Mineral Assets are set out below.

9.2.1 Commodity Price Risk

These may be influenced inter alia by commodity-supply balances for copper and cobalt, fuel (oil price related) and sulphuric acid. In the three-year period from July 2010 to June 2013, the copper price ranged between USc285/lb and USc462/lb, with a three-year trailing average of USc371/lb. Similarly, cobalt prices ranged between USc10.2/lb and USc19.6/lb, with a three-year trailing average of USc14.66/lb. Long term price forecasts for copper are well established and readily available, e.g the London Metal Exchange forward market, whereas until recently the cobalt market was opaque so similar forecasts for cobalt are relatively short dated.

The impact of movements in the prices of copper and cobalt can be readily assessed in the various sensitivity tables included in sections 4.18, 5.18 and 6.18 of this CPVR.

Metorex informed SRK that to remain cash generative under extreme pricing conditions, it will consider price hedging aimed at locking in favourable price points. In addition, it actively pursues a continual review of operating costs as part of its Continuous Improvement Programme.

9.2.2 Foreign Exchange and CPI Risk

CPI for each country or currency is affected by the relationship between exchange rates and the differential in inflation between the respective currencies.

Given Metorex's low exposure to non USD-related expenditures, the overall foreign exchange risk is considered immaterial.

9.2.3 Tenure

KICC received confirmation that PE12548 has been converted from the exploration permit PR4274. While such permit has been converted, KICC has not been provided with the ministerial decision of automatic registration ("décision d'inscription d'office") but only with the exploitation certificate. SRK has been advised that there are no outstanding steps required to be done by Metorex for such conversion and that PE12548 is valid. In terms of the DRC mining regulations, where the Minister of Mines has not granted or rejected approval for the issue of an exploitation permit within the prescribed period of 30 days, the exploitation permit shall be deemed to be granted if the cadastral, technical and environmental recommendations are positive.

The exclusive PE for the Musonoi Project has been awarded to Ruashi Mining. Providing Ruashi Mining adheres to the requirements of the PE and the mining/environmental legislation, the risk that the right could be removed is seen to be low.

9.2.4 Mineral Resource Estimation Risk

The Mineral Resource estimates are largely premised on a Cu price which is higher than the price ruling at the Valuation Date which was around USD8 000/t. While this is acceptable practice in resource estimation, there is a risk that portion of the estimated resources cannot be economically extracted.

- **Ruashi** - a significant part of the data used in the resource estimation is historical data where the quality control methods applied to the data collection are unknown. There are risks associated with the quality of the estimates compared to the input data. The Indicated Mineral Resource classification over a localised portion of the north-west of Pit I is not supported by the limited drill hole coverage, but this represents a small proportion of the total Indicated Mineral Resources. There is limited data at depths below 1 160 m elevation.
- **Chibuluma/Chifupu** - SRK has reclassified the Mineral Resource estimates for Chibuluma and Chifupu, on the basis that there are procedural inaccuracies in the modelling and estimation process, coupled to data quality, drill hole spacing issues and lack of QA/QC. The risk that the aggregate tonnage and grade estimates are materially wrong is considered to be low.
- **Kinsenda** – despite problems with possible sample cross contamination or swapped samples, poor precision on analyses of standards and ore grade wireframes overextended beyond dataset, the risk that the tonnage and grade estimates are wrong is small.
- **Musonoi** – SRK notes that there are risks associated with the Mineral Resource estimate for Musonoi, with respect to classification of part of the RATGR and the over/under-estimation of some of the block grades relative to the sample data. Block estimates are not consistent with drill hole grade distributions and appear overly smoothed. Below 950 m elevation, there is limited drill hole coverage and block estimates are extrapolated over 300 m from the last known point. SRK considers that the risk of the aggregate tonnage and grade estimates being materially wrong is considered to be low.
- **Lubembe** - The lack of QA/QC support for the Sodimico drill holes used in the Lubembe resource classification implies that the assay results could be incorrect, leading to a false interpretation of geology or grade.

Metorex confirmed that its procedures and planning process ensure that all resources are extracted profitably, without sterilising any grades below the calculated cut-off grade.

9.2.5 Mineral Reserve Estimation Risk

The modifying factors applied by Metorex to convert Resources to Reserves are consistent with historical performance and are seen to be reasonable and appropriate for the mining methods. The risk associated with the selection of the mining methods is low.

The Mineral Reserves have been estimated at a Cu price of USD8 000/t. Under a reduced copper price scenario, there is a risk that the reserve estimates will be overstated.

Metorex indicated that in its view, a long term price of USD8 000/t for purposes of reserve estimation is reasonable and that whilst short term pricing may drop to below this level, it is unlikely to be sustained for long periods of time.

9.2.6 Mining Risk

The principal mining risks relate to effective grade control / material tracking and limited space for waste dumping (Ruashi), geotechnical considerations, and effectiveness of dewatering programmes:

- **Waste dumping** (Ruashi) - The limited space for waste material requires that Metorex's waste dumping strategy has to be carefully managed;
- **Grade control / material tracking system** (Ruashi) - The successful blending of ore to the mill is dependent on effective grade control procedures and implementation of a sophisticated truck dispatch / material tracking system. Inefficiencies in such systems are a concern and could negatively influence

profitability. The availability (or lack) of skilled personnel required to implement and operate sophisticated procedures is of concern;

Metorex indicated that whilst grade control procedures are in place for the pit to stockpile mining strategy, a continuous improvement process will be introduced to ensure the effectiveness of the system. Capital will be provided for the purchase of a truck monitoring and dispatch system which will assist with the stockpiling strategy.

- **Geotechnical considerations** - There is a concern that the overall core recovery achieved in saprolites at Ruashi is only in the range 55% to 63%. It is probable that the weaker material, particularly talc, which will have a major influence on stability, has not been recovered. This implies that there is a very strong bias in the test results towards stronger material.

  The LHS method is appropriate at the current depths for Chibuluma, but may need to be modified for greater depth to cater for increased amounts of stress damage.

  Diamond drilling has indicated that the rock mass quality in the weathered zone at Musonoi is very poor from surface to about 200 m below surface. This has major implications for shaft, decline, horizontal development and stoping methodology, design and support requirements. Metorex will employ appropriate soft rock mining and support techniques at Musonoi to progress mining of the long term access infrastructure.

- **Dewatering programmes** – without thorough hydrogeological assessments, there is a risk that the extent of inflows/recharge of aquifers is higher than expected. This will translate into an increased pumping cost to ensure dry mining conditions.

  The proposed dewatering system at Kinsenda is exposed to the double risks of power availability and drill hole pump reliability. It is noted that implementation of a gravity driven drainage system has been included in the project implementation plan.

  Metorex confirmed that the feasibility studies in respect of Musonoi and Lubembe will include hydrogeological aspects and these matters will be adequately addressed.

9.2.7 Water Management Risk

Groundwater contamination has been identified as a significant risk at Ruashi. Pollutant concentrations have increased by 3 to 10 times from the background concentrations. Metorex reports that it has drilled a fence of drill holes around the TSF and equipped these with pumps to pump low pH water back to the TSF for neutralisation with lime.

Groundwater contamination has been identified as a risk at Chibuluma, particularly from the TSF. Due to the nature of sulphide ores mined, AMD can also be expected. Metorex reported that further studies would be conducted to determine the potential for AMD at Chibuluma South and mitigating measures would be identified.

The groundwater and surface monitoring programme for Kinsenda still needs to be developed and implemented. There is a risk that Kinsenda will not have sufficient data to disprove any claims for contamination of water. Metorex maintains that the monitoring programme will provide sufficient base line information to refute any claims. No significant lowering of the water table has been detected so far.

Concerns about the structural integrity of the dolomites during dewatering in the Roan aquifer are raised in the Kinsenda FS report. Metorex has advised that this will be investigated during H2-F2013.

Knowledge of the hydrological/groundwater regime at Musonoi and Lubembe is scant. Nevertheless, considerable water inflows are expected and water handling measures have been considered. There is a risk that the inflows are higher than expected, which means that the pumps will be undersized. Metorex reported that hydrological studies at Musonoi Project and Lubembe Project will form part of the feasibility studies and mitigating factors implemented as appropriate.

9.2.8 Metallurgical Processing Risk

Unstable and unreliable power has affected the availability of sulphur dioxide and steam supply to the driers. The commissioning of the diesel-generator sets in F2013 will effectively make Ruashi self-sufficient in terms of power supply, thereby minimising the effects of the power interruptions that plagued production in F2012. Despite assurances from the suppliers, delayes in delivery of diesel are a significant risk to Ruashi.

The forecast production levels at Ruashi may be optimistic as these production levels have not been previously achieved.

The concentrator crushing circuit at Chibuluma is a single line plant. A breakdown of any of the major equipment pieces can stop the whole plant. The two stockpiles in the plant provide a buffer. Metorex has advised that a Hazemag crusher provides some flexibility in the crushing circuit while attention is being given to improve the availability of critical equipment such as the cone crushers, screen and conveyors.

The overall copper recovery of 88% at Kinsenda is consistent with the laboratory test work, but this will need to be confirmed in practice.

Refining of Kinsenda's oxide concentrates at CCS would be at risk if changes in export regulations occurred. To mitigate against the export ban on Cu/Co concentrates and increased export taxes, Metorex has initiated an investigation into a central roasting plant to produce a calcined product that would be leachable in a conventional SX-EW plant such as that at Ruashi Mine. This roasting plant would be able to treat the Musonoi and Kinsenda sulphide concentrates.

The Musonoi Study indicates that no commitments had been made with any of the copper of cobalt offtakers/smelters regarding how the concentrates would be treated.

9.2.9 Tailings Risk

SRK is aware that the selected site for the TSF at Kinsenda may have to be moved as a result of a bigger area being required. No decision has yet been made in this respect and the new site selection process has yet to be finalised. There is thus a risk that an area sufficiently large cannot be located. If only 60% of the tailings volumes report to the TSF, Metorex maintains that the area for the TSF should be sufficient.

The preliminary geotechnical investigation concludes that the underlying soils, once the topsoil and upper transported soils have been removed, should be suitable for construction of the proposed tailings storage facility embankments. This will have to be confirmed prior to construction.

Test work undertaken for the Kinsenda tailings to date indicates that an unlined TSF will be acceptable for the operation in terms of water quality as AMD is not anticipated. Further testwork is underway in a final leachate test work programme. If the results require that a lined facility has to be constructed, the capital cost of the TSF would have to be increased. It appears in the light of test work undertaken to date that this will be unlikely.

There is a risk associated with the deposition of the -40 µm tailings on the TSF, that it will be too fine to drain and will be inadequate for wall building. However, as only 40% of the total tailings material will be used as fill underground, Metorex believes that there will be sufficient coarse material available to provide more stability. In addition the available free board should provide adequate time for fines to settle.

The Lubembe FS report states that there will not be sufficient space to store the "42,000,000 m^3 of tailings material" that will be generated. Metorex indicated that the land surrounding the project is owned by Sodimico and it will engage with Sodimico for the use of some of this land.

9.2.10 Engineering Risk

The present site maximum demand at Chibuluma is close to incurring under declaration penalties from CEC, and will need to be closely monitored in future. The mine has a low power factor of 0.85, which should be 0.97 to 1.0. The engineering team is planning to improve on this by installing power factor control equipment in the future. Metorex advised that the power situation is closely monitored on a daily basis to ensure the peak demand limit is not exceeded.

Unless the drainage system is improved, there is a risk that Chibuluma will have increasing torque convertor and transmission failures on loaders and trucks as a result of water ingress into the units.

The proposed dewatering system at kinsendawill be extended as the mine deepens, but only allows for dirty water pumping, which tends to suggest that no mud pumping is taking place. SRK is concerned that the quality of the water feeding into the Sulzers will not be clean and this will have a negative impact on pump life.

High ground water inflow rates can be expected at Musonoi. There is a risk that the water treatment capital and operating costs may be very high. Metorex has initiated the design of a gravity dewatering system for Musonoi during 2013. Given the proximity of Kolwezi town, space for the development of the mine and supporting infrastructure may be limited.

The water pumping requirements at Lubembe have been assumed to be 40 Ml/day, without any hydrological ground water study being carried out. Metorex has identified the need for detailed hydrological studies as part of the feasibility study to estimate the water inflows and associated pumping costs.

9.2.11 Logistics Risk

Possibly the highest logistics risk that Ruashi Mine faces is the extended periods that road vehicles have to endure at the DRC-Zambia border crossing point, especially the fuel (diesel) vehicles, necessary to power the mining and the diesel generators. Metorex has entered into a 12-month diesel supply agreement. Metorex has received written confirmation that the suppliers will be able to meet the increased diesel demand due to running 20 diesel-powered generators.

9.2.12 Capital Risk

The estimated cost to develop the underground mine on Chifupu is included in the capital estimate. If the development rates and the cost parameters used are too aggressive/optimistic, there is a risk that the capital cost cannot be funded out of cash generated by operations. Metorex confirmed that the project would be delayed if these materialise.

There is a risk that the capital cost for the construction of the Kinsenda plant may be higher than allowed in the capital budget. Metorex indicated that the capital budget is conservative, taking into account its knowledge of the operating environment in the DRC and inclusion of adequate contingencies.

9.2.13 Human Resources

There is a risk that the amounts provided for terminal benefits on closure may be understated. Metorex indicated that these are conservatively estimated and reviewed annually, to ensure that adequate provision and funding is in place.

9.2.14 Occupational Health and Safety Risks

Metorex has developed a health and safety strategy that follows a systematic approach. The comprehensive process for safety management is based on a risk management framework and is designed around five key elements: identify hazards, establish procedures, train employees, implement procedures and monitor compliance.

Lack of compliance with standards and procedures has been recognised by Metorex as a major issue.

The safety statistics supplied do not reflect the standards of safety, maintenance, repairs and operations seen during the site visits. Given the observations made by SRK during its visits, it does tend to suggest that there is a worker behavioural issue that is impacting on safety performance. Metorex referred to this as the "cultural tolerance to risk". Metorex stated that internal compliance to the procesures is continually monitored and is non-negotiable.

The risk is that if the work based auditing and planned task observation processes carried out by management and supervisors are not maintained, safety standards may slip.

SRK could not find any information relating to a HIV/AIDS policy.

9.2.15 Environmental and Social Risks

There are risks associated with the closure cost estimates with respect to the possibility of ongoing long term water treatment, and unexpected social costs due to community expectations being enforced. There is a risk that the provisions for aftercare, maintenance and monitoring may be inadequate.

The Ruashi Mine is faced with several social challenges / issues related *inter alia* to poverty in the area, poor basic infrastructure in communities, high community expectations and government scrutiny. The mine is involved in several Corporate Social Responsibility projects in the areas of education, health, infrastructure, potable water and power. These projects, which are co-ordinated by a committee on which the mine, the mayoral office, the water and electricity utilities and local chiefs are represented, are continuing.

While social issues need not represent a material risk, a considerable amount of planning will have to be done to ensure that social impacts are adequately managed.

The Equator Principles audit at Ruashi identified a number of omissions from the closure cost estimate, which reflect a deviation from international best practice. This presents a risk especially if Metorex will seek to acquire debt finance at some stage.

It appears that Metorex may be liable for environmental damage at Chibuluma East not caused by Chibuluma. There is thus a risk that the projected environmental rehabilitation and closure costs may be understated. Metorex reports that Chibuluma East is included in the current liability assessment.

Effluent quality leaving the Chibuluma mine at the control point is monitored but a more intense monitoring programme would provide a better understanding of impacts on the mine site. Metorex indicated that the extent of the pollution and treatment methods are being evaluated by AMC.

Sulfides in waste rock and in-situ rock in the underground workings at 4 and 5 Shafts pose a risk of AMD. Metorex is rehabilitating an existing water treatment plant at Chibuluma West which will be managed by Nkana Water (state owned water utility) to treat water from 5 Shaft. The intention is to use the water for domestic use and distribution.

There are 80 affected households living in close proximity to the TSF at Chibuluma South that have expressed concern regarding impacts, including air quality and possible AMD. Metorex reports that it has allocated a budget of USD1 million for the resettlement of these people according to an approved RAP.

The closure costs at Kinsenda are not based on a definitive closure plan and hence may change as closure objectives are identified and/or more information becomes available.

The Lubembe Study has identified the following risks to the project which relate to environmental management:

- Significant potential for environmental degradation and AMD;
- Securing additional real estate for waste rock dump and tailings facilities.

Metorex has identified that a settlement of some 50 houses, comprising 400 to 500 people, may have to be relocated. A number of social risks are identified in the social scan report, many of them very typical for mining operations in the area and it is clear that expectation management, resettlement planning, especially in the light of the proximity of the residential area to the mine, and acceptable implementation of the Corporate Social Initiatives will be critical. Metorex has informed SRK that this will be addressed as part of the feasibility study for Lubembe

Metorex has a group-wide provision for post-closure water treatment of around USD5 million. In SRK's experience, this figure is likely to be considerably more. SRK has in agreement with Metorex increased this provision for post closure water treatment to USD25 million for the group for evaluation purposes. The additional provision does not eliminate this risk, but it reduces the potential financial impact on the company significantly.

9.2.16 Cost of Production Risk

As Ruashi and Chibuluma are operating mines with historical data to support its cost inputs, the risk of the operating costs being materially wrong is considered to be low. There is a fair degree of conservatism in the key cost drivers in the forecasts, such as power, diesel and realisation costs. The potential impact of changes in the operating costs can be assessed in the sensitivity tables in Sections 4.17 and 5.17.

The budgeted costs for Kinsenda are a combination of comparable costs from Chibuluma and cost estimates taken from the feasibility study. Apart from power and diesel, the off-mine cost for the refining of Kinsenda's sulphide and oxide concentrates represents the largest cost risk to Kinsenda. The sulphide concentrates are scheduled to be sent to the Chambishi smelter in Zambia, so any changes to regulations regarding the export of copper concentrates could negatively impact on this. The potential impact of changes in the operating costs can be assessed in the sensitivity tables in Section 6.17.

9.2.17 Economic Performance Risk

The off-take agreements for the sale of finished Cu product or concentrates are all of one year duration, but can be renewed by mutual agreement. There is a risk that one of more of the agreements is not renewed. Metorex believes that renewal of the agreements or finding an alternative does not pose any risk.

An order signed by the DRC Minister of Mines in April 2013 banned the export of Cu/Co concentrates. Permission was obtained from the DRC Government to export the sulphide concentrates across the border to Zambia, subject to paying an increased export tax of USD100/t. Communiques from the DRC Government suggest that the export tax could be even higher. To mitigate against the ban and increased export taxes, Metorex has initiated an investigation into a central roasting plant to produce a calcined product that would be leachable in a conventional SX-EW plant such as that at Ruashi Mine.

9.3 Risk Assessment Methodology

In accordance with Guidance Note 7 of the Listing Rules, SRK has completed a risk assessment in respect of the Mineral Assets which draws on issues highlighted in the risk sections associated with each of the Mineral Assets. SRK notes that such assessments are necessarily subjective and qualitative, however where quantification is possible the consequence rating has been classified from minor to major:

- **Major Risk**: the factor poses an immediate danger of a failure, which if not corrected, will have a material effect (>15%) on the operational/project cash flow and performance and could potentially lead to failure of the operation or project;
- **Moderate Risk**: the factor, if uncorrected, could have a significant effect (10% to 15%) on the operational/project cash flow and performance unless mitigated by some corrective action; and
- **Minor Risk**: the factor, if uncorrected, will have little or no effect (<10%) on operational/project cash flow and performance.

The likelihood of any specific risk materialising has been assessed within a 7-year time-frame as defined in the Listing Rules, as follows:

- **Likely**: will probably occur;
- **Possible**: may occur; and
- **Unlikely**: unlikely to occur.

The degree or consequence of a risk and its likelihood has been combined into a risk assessment matrix as set out in Table 9.1.

Table 9.1: Risk Assessment Matrix

Likelihood of Risk	Consequence of Risk		
	Minor	Moderate	Major
Likely	Medium	High	High
Possible	Low	Medium	High
Unlikely	Low	Low	Medium

9.4 Specific Risk Assessment

The results of the specific risk assessment as considered applicable to the Mineral Assets are set out in Table 9.2. Some of these risks are specific to certain of the Mineral Assets, while others are more generic and apply to most of the Mineral Assets.

Table 9.2: Mineral Assets Risk Assessment before mitigation

Hazard Risk	Likelihood	Consequence Rating	Overall Risk
Economic Performance Risk			
Impact of off-take agreements not being renewed	Unlikely	Moderate	Low
Increased export taxes on Cu/Co concentrates	Likely	Moderate	High
Ban on Cu/Co concentrates enforced	Possible	Major	High
Mineral Resources Risk			
Tonnage/grade estimates overstated due to data problems (Kinsenda)	Possible	Minor	Low
Classification of resources overstated at Ruashi, Chibuluma and Musonoi	Possible	Minor	Low
Incorrect geological interpretation at Lubembe	Possible	Minor	Low
Mineral Reserves Risk			
Reduced Mineral Reserves – higher cost base or reduced metal prices	Possible	Moderate	Medium
Mining Risk			
Limited space for waste (Ruashi)	Unlikely	Moderate	Low
Grade control/material tracking – impact on grade into plant (Ruashi)	Possible	Moderate	Medium
Impact of geotechnical considerations on mine stability	Possible	Minor	Low
Impact of increased dewatering requirements	Possible	Moderate	Medium
Metallurgical Risk			
Impact of unstable and unreliable power on Cu/Co production	Likely	Moderate	High
Targeted production levels at Ruashi too high	Possible	Minor	Low
Impact of different metallurgical characteristics of Chifupu ore	Unlikely	Moderate	Low
Impact of extending PE to provide sufficient space for TSF at Lubembe	Possible	Minor	Low
Tailings Risk			
Subsoil not suitable for construction of Kinsenda TSF	Possible	Minor	Low
Deposition of -40 µm tailings too fine to drain	Possible	Minor	Low
Insufficient space for the TSF at Kinsenda and Lubembe	Possible	Minor	Low
Water Management Risk			
Contamination of groundwater – impact on other users	Likely	Moderate	High
Post-closure water treatment – ongoing cost	Likely	Moderate	High
Impact of dewatering on other users	Possible	Moderate	Medium
Engineering Risk			
Pumping requirements at Lubembe and Musonoi may be understated	Possible	Minor	Low
Low power factor at Chibuluma incurs penalties	Possible	Minor	Low
Logistics Risk			
Impact of delays in delivery of diesel	Possible	Moderate	Medium
Impact of delays in delivery of plant consumables	Possible	Minor	Low
Capital Cost Risk			
Impact of low capital cost estimates for Chifupu and Kinsenda	Possible	Minor	Low
Cost of Production Risk			
Kinsenda costs understated	Possible	Minor	Low
Human Resources/ Occupational Health & Safety Risk			
Impact of cultural tolerance to risk / worker behavioural issue	Likely	Minor	Medium
Impact of insufficient provision for terminal benefits	Possible	Minor	Low
Impact of lack of HIV/AIDS policy	Possible	Minor	Low
Environmental Risk			
Impact of inadequate provisions for closure	Possible	Minor	Low
Impact if social issues not properly managed	Possible	Minor	Low

To mitigate against the export ban on Cu/Co concentrates and/or increased export taxes, Metorex has initiated an investigation into a central roasting plant to treat the sulphide concentrates to be produced by Musonoi and Kinsenda. If this proves to be economically feasible, the 'High' risk against the export taxes and/or enforcement of the export ban would reduce to Low.

SRK notes that Metorex has made provision for diesel-generated power at the Mineral Assets, so the "High" risk attached to unreliable power supply would reduce to Medium to Low. This however creates increased demand for diesel, which due to delays at the border, puts the supply of diesel into a 'Medium' risk category.

Water issues related to increased dewatering, contamination of groundwater and post-closure water treatment all rate 'High'. SRK has increased the provision for post closure water treatment to USD25 million for the group. The additional provision does not eliminate this risk, but it reduces the potential financial impact on the company significantly.

Hydrogeological investigations are needed to assess the long-term dewatering and discharge requirements, as well as the extent of contamination of water and the potential impact on other water users.

Through active implementation of Metorex's Health and Safety strategy, particularly training and worker education, it may be possible to reduce the severity of the cultural tolerance to risk.

9.5 Opportunities

[SR10]

The principal opportunities with respect to the Mineral Assets are:

- Power supply becomes more stable and reliable;
- Supply of SO_2 and acid improves;
- Mineral Resources increase through:
  - Further exploration of open ended deposits;
  - Further exploration in new project areas identifies new deposits;
- Mineral Reserves increase through:
  - Upgrading of Inferred Resources;
  - Completion of technical studies which demonstrate that the treating of sulphide concentrates are both technically feasible and economically viable.

Metorex has the opportunity to reduce the unknowns surrounding environmental closure liabilities by undertaking thorough surface and ground water investigations.

9.6 Summary Comments

The risk and opportunity assessment undertaken for the Mineral Assets indicates that there are limited opportunities other than substantially increasing the Mineral Resources. The principal risks which require further technical analysis and/or management intervention to mitigate their negative impacts are:

- Water-related issues - the long-term dewatering and discharge requirements, extent of contamination of water and potential impact of dewatering on other water users. Hydrogeological investigations are needed to assess the magnitude and and inform the possible day-to-day management required;
- Critical evaluation of the closure provisions, especially the ongoing treatment of contaminated water after mine closure;
- Ban on the export of sulphide concentrates or increased export taxes - Metorex nneds to conduct an investigation into a central roasting plant to treat the sulphide concentrates to be produced by Musonoi and Kinsenda;
- If Kinsenda (and Musonoi) is prevented from treating its sulphide concentrates at CCS, additional capital would have to be sourced to cater for a more complex plant design;
- Delays in delivery of diesel and plant consumables may have to be addressed by increasing the stockholding levels.

10 VALUATION REPORT – CHAPTER 18 VALUE

[SV2.8, SV2.15]

10.1 Introduction

The following section presents the results of the Chapter 18 Value for the Mineral Assets as at the Valuation Date.

10.2 DCF (Cash Flow) Values

The DCF (Cash Flow) values as NPVs for Ruashi, Chibuluma and Kinsenda have been extracted from Tables 3.33, 4.21 and 5.22 respectively and these are set out in Table 10.1. The WACC for each property and the discount rates used in the selection of the NPVs for the upper and lower ranges of value are also shown in Table 10.1.

Table 10.1: DCF Values for Ruashi, Chibuluma and Kinsenda

Property	Low / Minimum	WACC (preferred)	High / Maximum
Selected discount rates			
Ruashi	12.0%	10.4%	8.0%
Chibuluma	12.0%	9.6%	7.0%
Kinsenda	12.0%	10.4%	8.0%
NPVs (USDm)			
Ruashi	547.6	577.2	628.5
Chibuluma	103.3	109.5	117.0
Kinsenda	145.5	174.0	225.5

NB: The values in Table 10.1 represent a 100% interest in the respective properties.

The WACC were based on risk free rate and the country risk rate as at 30 June 2013.

10.3 Market Values

10.3.1 Comparable Transactions

SRK subscribes to the SNL Metals Economics Group ("**MEG**") database, which has been used for at least five years to obtain comparable transaction information. In SRK's experience, the information provided on the MEG database is reliable and trustworthy. Using the MEG database, SRK extracted during December 2012 data on all Cu projects on the MEG database that were located in Zambia and DRC for which transactions were reported. To ensure that a sufficiently large data set was obtained, a search criterion of January 2000 to December 2012 was used. By 30 June 2013, the Effective Date of this CPVR, no additional transactions had occurred.

The following key technical and economic parameters were extracted for the relevant projects from the MEG database:

- Project name, status and location;
- Date interest purchased;
- Interest purchased in the project;
- Price paid to acquire the interest (consideration paid, whether as cash and/or shares, including any farm-in arrangements);
- The total resources (tonnes and Cu/Co grades) declared in the Measured and Indicated ("**M&I**") and Inferred ("**Inf**") Resource categories for the project at the date the interest was purchased;
- Mining method – underground ("**UG**") or open pit ('**OP**") (tailings retreatment was included in the open pit category).

Transactional information on 41 projects was obtained from this search, with the key information summarised in Table 10.2. This is not an exhaustive list, but gives a large enough data set that provides defendable statistics.

Table 10.2: Copper Project Transaction Information (Copyright: SNL Metals Economics Group 2012)

Project Name	Location	Status	Transaction Date	Acquisition Price (USDm)	% acquired	M&I Resources (Mt)	M&I Resources Grade (Mlb CuEq)	Inf Resources (Mt)	Inf Resources Grade (Mlb CuEq)	Amt paid at transaction date (USD/lb CuEq) M&I	Amt paid at transaction date (USD/lb CuEq) Inf	Mining Method	Unit price at Trans Date
Congo Mines & Infr	DRC	Feas	Sep-08	5	5%			206	19,362		0.005	n/s	305
Deziwa	DRC	Feas	May-10	284	68%	316	13,623	3	183	0.030	0.025	n/s	332
Dikulushi	DRC	RD	Aug-97	2	13%	2	396			0.036		UG-OP	139
Dikulushi	DRC	Prod	Feb-10	11	90%	1	51	1	66	0.183	0.048	UG-OP	349
Kabolela	DRC	Prod	Oct-08	85	50%	9	643	2	102	0.241	0.146	OP	192
Kakanda	DRC	RD	Oct-11	4	88%	19	756	19	1,621	0.003	0.002	OP	327
Kamoto JV	DRC	Prod	Jul-07	1,483	59%	179	22,983	151	11,877	0.076	0.065	UG-OP	382
Kansuki	DRC	Preprod	Aug-10	400	38%	81	4,587	117	3,569	0.151	0.105	n/s	352
Kinsevere	DRC	Prod	Sep-11	1,300	100%	41	2,403			0.514		OP	327
Kipoi	DRC	Prod	Nov-09	34	60%	41	1,954	23	671	0.021	0.022	OP	329
Kolwezi Tailings	DRC	Feas	Jan-12	1,250	100%	113	6,903			0.181		OP	390
Luisha South	DRC	RD	Sep-10	1	18%			21	1,141		0.007	OP	385
Mutanda	DRC	Prod	May-12	480	20%	76	6,811	172	11,079	0.178	0.107	OP	385
Ruashi-Etoile	DRC	Prod	Mar-07	45	13%	8	530	23	1,339	0.281	0.149	OP	394
Shituru	DRC	Feas	Apr-11	217	38%	7	672			0.843		OP	434
Tenke Fungurume	DRC	Prod	Apr-07	1,300	25%	341	24,757	247	15,242	0.147	0.105	OP	394
Cheowa-Neningombe	Zambia	RD	Aug-06	10	51%	6	145	4	158	0.079	0.052	n/s	349
Chambishi	Zambia	Feas	May-98	120	85%	34	1,911			0.074		n/s	108
Chibuluma	Zambia	Prod	Aug-97	18	85%	10	851			0.024		UG-OP	139
Chibuluma South	Zambia	Prod	Feb-07	21	35%	2	572			0.103		UG-OP	349
Chingola Tailings	Zambia	RD	Dec-11	17	80%			99	3,183		0.007	OP	363
Eagle Eye		RD				1	37						
Mkushi	Zambia	Feas	Jul-12	13.5	49%	12	282			0.085	0.016	UG-OP	386
Mokambo South		RD				4	143	6	317				
Ndola		RD						40	670				
Kalumbila (Trident)	Zambia	RD	Feb-10	11	10%	1,277	26,614	173	1,534	0.004	0.003	n/s	341
Kangaluwi	Zambia	RD	Jun-09	5	51%	18	230	28	444	0.020	0.012	n/s	246
Kansanshi	Zambia	RD	May-01	28	80%	360	12,972	365	5,733	0.005		OP	91
Konkola	Zambia	Prod	Feb-08	214	28%	104	17,049	215	12,993	0.029	0.020	UG-OP	420
Konkola Deep	Zambia	Preprod	Aug-04	48	51%	21	1,574			0.004		UG	160
Luanshya	Zambia	RD	Jul-11	6	76%	162	857			0.009		OP	420
Luanshya Division	Zambia	Prod	Feb-98	104	85%	53	2,767			0.019		UG	110
Luanshya Division	Zambia	Prod	Jun-09	50	75%	196	3,326			0.017		UG	250
Lumwana	Zambia	Feas	Aug-03	5	49%	205	3,589			0.001		OP	100
Lumwana	Zambia	Feas	Mar-06	30	6%	152	2,083	801	10,661	0.079	0.031	OP	288
Mokambo	Zambia	RD	Aug-06	3	70%	9	446	15	401	0.009	0.002	OP	390
Mufulira	Zambia	Prod	May-02	22	28%	23	2,559	37	2,036	0.013	0.022	UG	94
Mumbwa	Zambia	RD	Jun-04	2	70%	80	2,343	107	2,361	0.001	0.001	OP	158
Nkana	Zambia	Prod	May-02	22	28%	337	17,253	35	1,729	0.004	0.003	UG-OP	94
Rephidim	Zambia	RD	Jan-08	9	51%			6	132		0.129	OP	420
Zambian copperbelt	Zambia	Targ	May-96	3	30%	28	1,965			0.005		n/s	169

All transaction metrics as presented are based on the total consideration paid divided by the total attributable 'resource' (inclusive of reserves) of contained metal transacted, expressed in USD/lb of copper equivalent contained metal ("**CuEq**").

There are four projects in Zambia in Table 10.2 that are not located within the Zambia copperbelt – these have been excluded from any further analysis.

Many of the transactions were based on Measured, Indicated and Inferred Mineral Resources. Seeing as only the M&I Mineral Resources can be valued in terms of the Listing Rules, the value for the Inferred Mineral Resources needs to stripped out of the transaction value. There were instances where the transactions had been based on Inferred Resources only. By inspection, the average of these transaction values was approximately 80% of the average USD/lb value for the combined Measured, Indicated and Inferred Resources. Accordingly, SRK has used 80% as a factor to extract the value for the Inferred Resources only out of a transaction value based on all resources. This value is applied to total Inferred Mineral Resources and the resultant value subtracted from the total consideration paid. The balance of the total consideration paid is then attributed to the M&I Mineral Resources and the resultant USD/lb for M&I Mineral Resources determined.

Comparable transactions result in market-related value estimates, but if the target commodity market or any other material influences on the market's perception of the value of a mineral asset have changed significantly during the time elapsed between the comparable transaction occurring and the Valuation Date, then an adjustment must be made. The adjustment factor is derived as the ratio of the applicable Cu price at the Valuation Date (see Figure 2.5) to the ruling Cu price at the time of each transaction. The adjustment factor converts all transaction information to be valid/usable at the Valuation date of the CPVR.

The derived value in USD/lb for a given transaction is multiplied by the appropriate adjustment factor for that month and year. This then brings all transacted USD/lb values from Table 10.2 on to the common time basis of the Valuation Date used in this CPVR. The resultant adjusted values are given in Table 10.3.

The adjusted values were further split according to the mining method for the project provided in the MEG database. Where mining was shown to be underground and open pit ("UG-OP" in Table 10.2), the adjusted unit value was assigned to both categories of mining. Mining of tailings material was deemed to be a metric for open pit mining. If the mining method was not provided, that unit value was ignored, as can be seen in Table 10.3.

The adjusted values in Table 10.3 have been grouped in two ways:

- Country with mining method; and
- Project status with mining method.

From these groupings, the minimum, median and maximum values were selected after removal of any outliers. The resultant minimum, median and maximum metrics for use in the valuation process are summarised in Table 10.4.

Table 10.3: Copper Project Transaction Information with adjusted prices

Project Name	Location	Project Status [1]	Transaction Date	Amt paid for M&I Resources at transaction date (USD/lb CuEq)	Adjustment Factor	Adjusted Price (USD/lb CuEq)		
						All	OP	UG
Congo Mines & Infr	DRC	Feas	Sep-08		1.224			
Deziwa	DRC	Feas	May-10	0.030	1.124	0.034		
Dikulushi	DRC	RD	Aug-97	0.036	2.686	0.097	0.097	0.097
Dikulushi	DRC	Prod	Feb-10	0.199	1.070	0.196	0.196	0.196
Kabolela	DRC	Prod	Oct-08	0.241	1.944	0.469	0.469	
Kakanda	DRC	RD	Oct-11	0.003	1.142	0.003	0.003	
Kamoto JV	DRC	Prod	Jul-07	0.085	0.977	0.075	0.075	0.075
Kansuki	DRC	Preprod	Aug-10	0.151	1.061	0.160		
Kinsevere	DRC	Prod	Sep-11	0.284	1.142	0.587	0.587	
Kipoi	DRC	Prod	Nov-09	0.021	1.135	0.024	0.024	
Kolwezi Tailings	DRC	Feas	Jan-12	0.181	0.957	0.173	0.173	
Luisha South	DRC	RD	Sep-10		0.970			
Mutanda	DRC	Prod	May-12	0.178	0.970	0.172	0.172	
Ruashi-Etoile	DRC	Prod	Mar-07	0.450	0.948	0.266	0.266	
Shituru	DRC	Feas	Apr-11	0.843	0.860	0.725	0.725	
Tenke Fungurume	DRC	Prod	Apr-07	0.147	0.948	0.140	0.140	
Chambishi	Zambia	Feas	May-98	0.074	3.457	0.255		
Chibuluma	Zambia	Prod	Aug-97	0.024	2.686	0.065	0.065	0.065
Chibuluma South	Zambia	Prod	Feb-07	0.103	1.070	0.110	0.110	0.110
Chingola Tailings	Zambia	RD	Dec-11		1.028			
Kalumbila (Trident)	Zambia	RD	Feb-10	0.004	1.095	0.004		
Kangaluwi	Zambia	RD	Jun-09	0.020	1.518	0.031		
Kansanshi	Zambia	RD	May-01	0.005	4.103	0.019	0.019	
Konkola	Zambia	Prod	Feb-08	0.029	0.889	0.026	0.026	0.026
Konkola Deep	Zambia	Preprod	Aug-04	0.004	2.333	0.010		0.010
Luanshya	Zambia	RD	Jul-11	0.009	0.889	0.008	0.008	
Luanshya Division	Zambia	Prod	Feb-98	0.019	3.394	0.064		0.064
Luanshya Division	Zambia	Prod	Jun-09	0.017	1.493	0.026		0.026
Lumwana	Zambia	Feas	Aug-03	0.001	3.733	0.005	0.005	
Lumwana	Zambia	Feas	Mar-06	0.046	1.296	0.103	0.103	
Mokambo	Zambia	RD	Aug-06	0.009	0.957	0.008	0.008	
Mokambo South		RD						
Mkushi	Zambia	Feas	Jul-12	0.085	0.967	0.081	0.081	0.081
Ndola		RD						
Mufulira	Zambia	Prod	May-02	0.013	3.972	0.051		0.051
Nkana	Zambia	Prod	May-02	0.004	3.972	0.017	0.017	0.017
Rephidim	Zambia	RD	Jan-08		0.889			
Zambian copperbelt	Zambia	Targ	May-96	0.005	2.209	0.011		

1 Prod = production; Preprod = preproduction; Feas = feasibility; RD = resource development;

Table 10.4: Valuation metrics for two data groupings

Metric (USD/lb CuEq)	DRC		Zambia		Production - Preproduction		Feasibility	
(excl. outliers)	OP	UG	OP	UG	OP	UG	OP	UG
Minimum	0.049	0.075	0.017	0.017	0.019	0.017	0.019	-
Median	0.173	0.096	0.077	0.064	0.049	0.064	0.049	-
Maximum	0.583	0.194	0.146	0.146	0.273	0.336	0.273	-

10.3.2 Copper Trading Comparables

SRK was provided with a set of Cu trading comparable figures that had been compiled based on information provided by Bloomberg and company announcements (Table 10.5). SRK examined the operations/projects of the various companies and found that most were not in the DRC/Zambian copperbelt area, and therefore were deemed not to be comparable. The Cu trading comparables that have been used for evaluation purposes are highlighted in Table 10.5.

Table 10.5: Cu Trading Comparables

Company	In DRC/Zambia (Y/N)	Enterprise Value (USDm)	Reserves & Resources (Mlb CuEq)	EV/Res& Res (USD/lb CuEq)
Producers				
Inmet	N	5,451	80,388	0.07
Lundin Mining	part	2,812	31,668	0.09
OZ Minerals	N	1,678	16,220	0.10
MMG Limited	part	3,559	29,502	0.12
PanAust	N	2,217	15,856	0.14
Hudbay	N	925	14,614	0.06
Sandfire Resources	N	1,712	1,714	1.00
Katanga Mining	Y	1,424	43,885	0.03
Copper Mountain	N	774	5,382	0.14
Developers				
CuDECO	N	728	31,763	0.02
Discovery Metals	N	922	4,353	0.21
Tiger Resources	Y	247	1,516	0.16
Rex Minerals	N	84	5,287	0.02
Altona Mining Ltd	N	136	3,775	0.04
Hillgrove Resources Ltd	N	158	663	0.24
Finders Resources	N	82	520	0.16

From Table 10.5, the minimum, median and maximum metrics to be used for valuation purposes are 0.03, 0.09 and 0.12 (all in USD/lb CuEq).

10.3.3 Acquisition Data

Various acquisitions that had occurred in the DRC/Zambian copperbelt area during the past five years are summarised in Table 10.6.

Table 10.6: DRC/Zambia Copperbelt Acquisition Data

Acquiring Company / Acquired Company	Transaction Date	Trans. Price (USDm)	Attributable CuEq (Mlb) M&I	Inf	Amt paid for M&I Resources at transation date (USD/lb CuEq)	Amt paid at transaction date (USD/lb CuEq) M&I	Inf	Adjusted Price (USD/lb CuEq) M&I
Jinchuan / Metorex	Jul-11	1,356	2,724	1,968	0.131	0.150	0.105	0.154
MMG / Anvil	Sep-11	1,288	1,591	408	0.292	0.307	0.234	0.315
Camrose / Africo	Apr-08	100	275	346	0.073	0.091	0.058	0.086
Katanga / Nikkanor	Nov-07	2,027	6,706	3,203	0.093	0.102	0.074	0.112
Trafigura / Anvil	Aug-09	100	322	273	0.076	0.089	0.061	0.118
/ Camrose	Dec-12	550	2,023	573	0.096	0.102	0.077	0.104
First Quantum / Kiwara	Nov-09	260	0	2,254	0.052	0.000	0.052	0.000
First Quantum / Equinox	Dec-07	194	468	614	0.081	0.103	0.065	0.128

Where the transactions were based on Measured, Indicated and Inferred Resources, the same approach as discussed above was applied, viz. Inferred Resources USD/lb value was deemed to equate to 80% of the USD/lb value of the combined M&I and Inferred Resources.

From Table 10.6, the minimum, median and maximum metrics to be used for valuation purposes are 0.09, 0.12 and 0.31 (all in USD/lb CuEq).

10.3.4 In-Situ / Yardstick Approach

Per Section 8.2, the range of percentages of the spot metal price for base metals is 0.5% to 3.0% (van der Merwe and Erasmus, 2006). Additional factors are applied to this range to account for various technical issues *inter alia* infrastructure (or lack thereof), mining difficulty, metallurgical complexity, environmental issues, likely capital costs to develop, operating costs, logistics and stage of development of the project. The additional factors that have been applied for the various properties of the Mineral Assets are set out in Table 10.7. The resultant percentages to be applied are also shown. The technical factors follow the premise that a simple operation (mining and processing at low cost with no complexity) are assigned factors of 1.0, whereas a very complex operation (deep level mining, refractory ores, low recoveries, high environmental risks) are assigned factors of 0.1. For conditions somewhere in between, a factor of 0.5 is used.

Table 10.7: Additional technical factors applied to Yardstick discounts

Factor	Ruashi	Chibuluma	Kinsenda	Musonoi	Lubembe	Ruashi Sulphides
Mining complexity	1.0	1.0	0.5	0.1	1.0	1.0
Process/recovery	1.0	1.0	1.0	0.5	1.0	0.5
Capex	1.0	0.5	1.0	0.5	0.5	0.5
Opex	1.0	1.0	1.0	0.5	0.5	0.5
Environmental	1.0	1.0	1.0	1.0	0.5	1.0
Groundwater issues	1.0	1.0	0.1	0.1	1.0	1.0
Logistics	1.0	1.0	0.5	0.5	0.5	1.0
Off-take agreements	1.0	1.0	0.5	0.1	0.1	1.0
Level of study/operations	1.0	1.0	0.5	0.1	0.1	0.5
Weighted total	**1.00**	**0.94**	**0.68**	**0.38**	**0.58**	**0.78**
Yardstick Factors						
Low (0.5%)	0.50%	0.47%	0.34%	0.19%	0.29%	0.39%
Mid (1.75%)	1.75%	1.65%	1.19%	0.66%	1.01%	1.36%
High (3.0%)	3.00%	2.83%	2.03%	1.13%	1.73%	2.33%

As the stage of development of the project has been taken into account in Table 10.7, no further discount is required to differentiate between Measured and Indicated Resources.

10.3.5 Derivation of Market Values

The market values are derived by applying the minimum, median and maximum metrics as developed in Sections 10.3.1 to 10.3.4 to the contained CuEq in M&I Resources for each of the Mineral Assets. The results for the various properties within the Mineral Assets are set out as follows:

- Ruashi, in Table 10.8;
- Chibuluma, in Table 10.9;
- Kinsenda, in Table 10.10;
- Musonoi, in Table 10.11;
- Lubembe, in Table 10.12; and
- Ruashi Sulphides, in Table 10.13.

SRK has taken all data sources into consideration, even if a small sample size, and compared the spread (high to low) and mid points of the different data sources to locate where these values converged. The selected values in Tables 10.8 to 10.13 arise from SRK's assessment of this convergence.

Table 10.8: Ruashi - Market Values

Ruashi - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	25.2	88.3	151.4
Comp. Trans. - country & mining method	66.2	235.3	793.4
Comp. Trans. - project status & mining method	25.3	66.2	371.5
EV trading comparables	44.2	109.7	164.2
Acquisitions	117.7	160.6	428.7
Selected	**55.7**	**132.0**	**450.0**

Table 10.9: Chibuluma - Market Values

Chibuluma - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	12.8	44.8	76.9
Comp. Trans. - country & mining method	5.5	19.7	48.4
Comp. Trans. - project status & mining method	6.6	25.9	135.0
EV trading comparables	13.1	35.7	48.5
Acquisitions	34.8	47.5	126.7
Selected	**14.6**	**34.7**	**100.0**

Table 10.10: Kinsenda - Market Values

Kinsenda - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	19.7	68.9	118.1
Comp. Trans. - country & mining method	116.8	150.8	304.4
Comp. Trans. - project status & mining method	25.9	101.1	526.2
EV trading comparables	50.9	139.2	189.1
Acquisitions	135.6	185.0	493.8
Selected	**69.8**	**129.0**	**300.0**

Table 10.11: Musonoi - Market Values

Musonoi - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	44.7	156.4	268.1
Comp. Trans. - country & mining method	283.7	366.1	739.3
Comp. Trans. - project status & mining method	62.9	245.5	1277.8
EV trading comparables	123.5	338.0	459.2
Acquisitions	329.2	449.2	1199.0
Selected	**168.8**	**311.0**	**450.0**

Table 10.12: Lubembe - Market Values

Lubembe - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	24.0	83.9	143.9
Comp. Trans. - country & mining method	108.9	387.2	1305.6
Comp. Trans. - project status & mining method	41.6	108.9	611.3
EV trading comparables	72.7	198.9	270.2
Acquisitions	193.7	264.3	705.4
Selected	**88.2**	**208.6**	**350.0**

Table 10.13: Ruashi Sulphides - Market Values

Ruashi Sulphides - market values	Market Values (USDm)		
	Low	Mid	High
In-situ/Yardstick	3.2	11.4	19.5
Comp. Trans. - country & mining method	16.8	21.7	43.8
Comp. Trans. - project status & mining method	3.7	14.5	75.7
EV trading comparables	7.3	20.0	27.2
Acquisitions	19.5	26.6	71.0
Selected	**10.1**	**18.8**	**60.0**

10.4 Cost Approach

Where previous and future committed exploration expenditures are known, or can be reasonably estimated, the MEE method can be applied to derive values.

Feasibility studies are underway at the Musonoi and Lubembe projects. The MEE method (see Section 9.2) to derive a cost-based technical value can therefore be applied to these two properties.

The EBs from past and future committed exploration expenditure for Musonoi and Lubembe are summarised in Table 10.14.

Table 10.14: Exploration Costs for Musonoi and Lubembe

Item		Exploration Expenditure			
		up to H1-F2013	H2-F2013	F2014	F2015
Musonoi					
Historical exploration expenditure	USDm	6.52			
Mineral rights payments	USDm	10.00			
Feasibility study	USDm	1.80	2.73	4.06	
	USDm	18.32	2.73	4.06	
Total EB for Musonoi	**USDm**	**25.11**			
Lubembe					
Historical expenditure	USDm	4.04			
Feasibility study	USDm	-		3.00	6.00
	USDm	4.04	0.0	3.00	6.00
Probability of money spent				100%	80%
Total EB for Lubembe	**USDm**	**9.65**			

Applying a PEM of 5 (see Lawrence, 2010, on page V-305) gives values for Musonoi and Lubembe in terms of the Cost Approach of USD125.3 million and USD48.2 million respectively. The cost approach gives a single value only, so to establish ranges in value as required by the SAMVAL Code, these values have been decreased and increased by a factor of 20% (see Table 10.15).

Table 10.15: Cost Approach Values for Musonoi and Lubembe

Property	Cost Approach Values (USDm)		
	Low	Selected	High
Musonoi	100.4	125.5	150.6
Lubembe	38.6	48.2	57.9

10.5 Selected Values for the Mineral Assets

The various values as have been determined above using the Cash Flow, Market and Cost Approaches for the Mineral Assets are considered here, from which the selected value for each of the Mineral Assets is determined. The reasons for the selection are given.

SRK has placed greater reliance on the values for a property that have been obtained using the more applicable valuation approach per Table 8.1 (Section 8.2).

It is not advisable to "force" values derived from different approaches to align. This can be likened to arriving at a pre-determined value.

10.5.1 Ruashi Mine

The two sets of values as determined for Ruashi Mine from the above are summarised in Table 10.16.

Table 10.16: Ruashi Final Value

Valuation Method	Values (USDm)		
	Low	Selected	High
Cash Flow Approach	547.6	577.2	628.5
Market Approach	55.7	132.0	450.0
Ruashi	547.6	577.2	628.5

There is a poor correlation between the values determined for Ruashi by the Cash Flow and Market Approaches. However, the upper limit of the Market Approach shows reasonable alignment with the lower limit of the Cash Flow Approach. As the values derived from the Cash Flow approach are for an operating mine, based on a formal mine plan and projected TEPs that are in line with those achieved previously, the value derived per the Cash Flow Approach is seen to be more appropriate. The sensitivity of the NPV to changes in metal price and operating cost can be seen in the tables in Section 3.18.

10.5.2 Chibuluma Mine (and Chifupu)

The two sets of values as determined for Chibuluma Mine including Chifupu from the above are summarised in Table 10.17.

Table 10.17: Chibuluma Final Value

Valuation Method	Values (USDm)		
	Low	Selected	High
Cash Flow Approach	103.3	109.5	117.0
Market Approach	14.6	34.7	100.0
Chibuluma	103.3	109.5	117.0

There is good alignment between the upper limits determined for Chibuluma by the Cash Flow and Market Approaches. However, the Market Approach gives a much wider range than the cash Flow Approach, with the median value much lower than the NPV at the calculated WACC for Chibuluma. As the values derived from the Cash Flow approach are for an operating mine, based on a formal mine plan and projected TEPs that are in line with those achieved previously, the value derived per the Cash Flow Approach is seen to be more appropriate. The sensitivity of the NPV to changes in metal price and operating cost can be seen in the tables in Section 4.18.

10.5.3 Kinsenda Mine

The two sets of values as determined for Kinsenda Mine from the above are summarised in Table 10.18.

Table 10.18: Kinsenda Final Value

Valuation Method	Values (USDm)		
	Low	Selected	High
Cash Flow Approach	145.5	174.0	225.5
Market Approach	69.8	129.0	300.0
Kinsenda	145.5	174.0	225.5

There is reasonable agreement between the preferred value for Kinsenda by the Cash Flow and Market Approaches. However, the Market Approach gives a much wider range than the Cash Flow Approach. As the values derived from the Cash Flow Approach are for a prospective mine supported by a feasibility study, the value derived by the Cash Flow Approach is seen to be more appropriate.

The sensitivity of the NPV to changes in metal price and operating cost can be seen in the tables in Section 5.18.

10.5.4 Musonoi Project

The two sets of values as determined for the Musonoi Project from the above are summarised in Table 10.19.

Table 10.19: Musonoi Final Value

Valuation Method	Values (USDm)		
	Low	Selected	High
Market Approach	168.8	311.0	450.0
Cost Approach	100.4	125.5	150.6
Musonoi	168.8	311.0	450.0

There is a poor correlation between the values determined for Musonoi by the Market and Cost Approaches. However, the upper limit of the Cost Approach and the lower limit of the Market Approach align well. As a rule, the Cost Approach tends to undervalue a project in comparison to a Market Approach, unless an unrealistically high PEM (Prospectivity Enhancement Multiplier) is applied. Accordingly, the value determined by the Market Approach is seen to be more appropriate.

10.5.5 Lubembe Project

The two sets of values as determined for the Lubembe Project from the above are summarised in Table 10.20.

Table 10.20: Lubembe Final Value

Valuation Method	Values (USDm)		
	Low	Selected	High
Market Approach	88.2	208.6	350.0
Cost Approach	38.6	48.2	57.9
Lubembe	88.2	208.6	350.0

There is a poor correlation between the values determined for Lubembe by the Market and Cost Approaches. However, there is a fair correlation between the upper limit of the Cost Approach and the lower limit of the Market Approach. As a rule, the Cost Approach tends to undervalue a project in comparison to a Market Approach, unless an unrealistically high PEM (Prospectivity Enhancement Multiplier) is applied. Accordingly, the value determined by the Market Approach is seen to be more appropriate.

10.5.6 Ruashi Sulphides Project

Only one set of values has been determined for the Ruashi Sulphides project using the Market Approach. The project is not at a level of development where a cash flow model can be determined, nor is there any detail regarding the exploration costs incurred in the evaluation of the sulphides at depth at Ruashi. In this instance, SRK is forced to use a set of values from only one valuation approach.

SRK believes this is not material to the overall value of Metorex and has accepted the value for Ruashi Sulphides, as set out in Table 10.13.

10.6 Metorex Head Office Costs

The management fees from Ruashi and Chibuluma are income in the hands of Metorex. In the case of the management fees paid by Chibuluma, withholding taxes are due to the Government of Zambia – this is modelled by taking only 85% of the management fees paid by Chibuluma into Metorex. The MCS recovery fee in Table 10.21 is a charge for consulting services provided by Metorex to Ruashi Mining.

The operating costs reduce in F2016, as the incentives paid to Metorex employees in relation to the Jinchuan transaction come to an end.

The operating costs of the Metorex head office exceed the income from management fees, so no company tax is payable in South Africa. Table 10.21 shows the income and cost items only up to F2019.

Table 10.21: Metorex Head Office Costs

Item	Units	H2-F2013	F2014	F2015	F2016	F2017	F2018	F2019
Management fee received (Ruashi)	(USDm)	1.1	2.1	2.1	2.1	2.1	2.1	2.1
Management fee received (Chib)	(USDm)	0.9	1.8	1.8	1.8	1.8	1.8	0.9
Management fee received (Kinsenda)	(USDm)	-	-	-	-	-	-	-
MCS fee recovery	(USDm)	0.8	2.9	2.9	2.9	2.9	2.9	2.9
Interest received	(USDm)	-	-	-	-	-	-	-
Operating costs	(USDm)	-6.3	-13.8	-12.0	-9.0	-9.0	-9.0	-9.0
Taxable income for the year	(USDm)	-3.5	-7.0	-5.2	-2.2	-2.2	-2.2	-3.1

The NPV of the net cash outflows for the Metorex Head Office using an 8% real discount rate is -USD26.7 million.

10.7 Terminal Value of Plant & Equipment

[SV2.16]

At the end of the LoM for Ruashi, Chibuluma and Kinsenda, there would still be economic life in the long-life assets such as the processing plant and equipment. Metorex would have a range of options for the plant and equipment at these mines at the end of the LoM, such as being able to toll treat ores for other mines in the area, transfer the equipment to another facility or to sell the plant and equipment to a third party.

Within the Cash Flow Approach of valuation, the Terminal Value method is an accepted way to attach a value to long-life assets that have an economic life after mineral reserves have been depleted. The last full-year after-tax cash flow is assigned to the year after the final year of the LoM and discounted to the Valuation Date using the appropriate WACC for the mine.

The resultant terminal values for the long-life assets at Ruashi, Chibuluma and Kinsenda at the applicable WACC are:

- Ruashi USD40.4 million;
- Chibuluma USD12.5 million;
- Kinsenda USD18.6 million.

It should be noted that these are the total terminal values of the plant and equipment, and not the value attributable to Metorex.

10.8 Summary Value for the Mineral Assets

The summary value for Metorex and the Mineral Assets has been done as a sum-of-the-parts, as set out in Table 10.22. All values for the Mineral Assets derived above have been done on a 100% basis, and not what is attributable to Metorex. In addition, the effects of debt/loans and debt servicing have been excluded in the derivation of the values for the individual Mineral Assets. These are netted off against the selected values for Ruashi, Chibuluma and Kinsenda to derive the equity value, before application of Metorex's attributable interest.

Table 10.22: Metorex Summary Value

Item	Selected Value (USDm)	Net Debt (USDm)	Metorex Loans (USDm)	Equity Value (USDm)	Metorex Interest (%)	Value to Metorex (USDm)
Operations						
Ruashi	577.2	-41.7	-215.8	319.7	75.0%	455.6
Chibuluma	109.5	-17.8	0.0	91.7	85.0%	77.9
Kinsenda	174.0	0.0	-174.0	0.0	77.0%	174.0
Projects						
Musonoi	311.0				75.0%	233.3
Lubembe	208.6				77.0%	160.6
Ruashi Sulphides	18.8				75.0%	14.1
Sub-total	1 3992.0					1 115.6
Adjustments						
Metorex Head Office	-26.7	-9.0 (1)				-35.7
Hedge contracts - mark to market						None in force
Musonoi Feasibility Study costs						Incl in Ruashi capex
Lubembe Feasibility Study costs	-7.8					-7.8
Environmental liabilities						included in cash flows
Terminal value of plant & equipment						
Ruashi	40.4				75.0%	30.3
Chibuluma	12.5				85.0%	10.6
Kinsenda	18.6				77.0%	14.3
Net Metorex Value						1 127.3

2 Net cash on hand at 30 June 2013.

The concluding value for Metorex is therefore USD1 127 million. This is not a fair market value for Metorex or the Mineral Assets, as no value has been assigned to the Inferred Resources in terms of the Listing Rules and excludes premiums or discounts to account for factors such as market or strategic considerations.

10.9 Previous Valuations

[SV2.12]

Jinchuan purchased Metorex for USD1.356 billion in July 2011. This was the value of the deal on the date the offer was made, versus the actual price paid which decreased due to movement in the ZAR:USD exchange rate. This effectively represents a market value for Metorex in 2011 of this amount.

SRK is not aware of any other valuations of Metorex that have appeared in the public domain in the last two years.

11 CONCLUDING REMARKS

[SR10, SV2.9, SV2.10, SV2.14]

11.1 Introduction

SRK has conducted a comprehensive review and assessment of all material issues likely to influence the future operations of the Mineral Assets of Metorex. In terms of Chapter 18 of the Listing Rules, the value for the Mineral Assets is based on Measured and Indicated Mineral Resources only.

11.2 Mineral Resources and Mineral Reserves

All Mineral Resources and Mineral Reserves as stated in this CPVR are reported in accordance with the terms and definitions of the SAMREC Code. Mineral Resources are reported on an inclusive basis of Mineral Reserves, and all Mineral Resources and Mineral Reserves as presented are the total resources and reserves at any deposit, and not the percentage attributable to Metorex.

11.3 Principal Issues

The principal technical risks which impact on the Mineral Resource statements and the Chapter 18 Value for Metorex and the Mineral Assets are summarised in Section 9.2 of this CPVR.

Specific Risks

- Potential Water-related issues - the long-term dewatering and discharge requirements, extent of contamination of water and potential impact of dewatering on other water users;
- Potential for increased closure costs, especially the ongoing treatment of contaminated water after mine closure;
- Ban on the export of sulphide concentrates or increased export taxes;
- If Kinsenda (and Musonoi) is prevented from treating its sulphide concentrates at CCS, additional capital would have to be sourced to cater for a more complex plant design;
- Increased stockholding levels to cater for delays in delivery of diesel and plant consumables.

Specific Opportunities

The principal opportunities with respect to the Mineral Assets are:

- Increase in Mineral Resources through exploration of open ended deposits and identification of new deposits;
- Power supply becomes more stable and reliable;
- Supply of SO_2 and acid improves;
- Increase in Mineral Reserves through upgrading of Inferred Mineral Resources and completion of technical studies which demonstrate that the treating of sulphide concentrates is both technically feasible and economically viable;
- Reduce the unknowns surrounding environmental closure liabilities by undertaking thorough surface and ground water investigations.

11.4 Chapter 18 Value

The net attributable Chapter 18 Value for the Mineral Assets on a sum-of-the-parts basis is estimated at USD1 127 million (Table 10.22).

This is not a fair market value for Metorex or the Mineral Assets, as no value has been assigned to the Inferred Resources in terms of the Listing Rules and excludes premiums or discounts to account for factors such as market or strategic considerations.

Yours faithfully

SRK Consulting (South Africa) (Pty) Ltd

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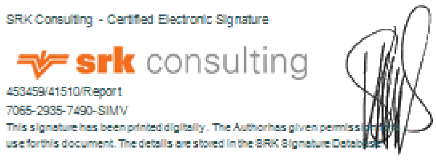

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30 August 2013
(Effective date30 June 2013)

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13 GLOSSARY OF TERMS, ABBREVIATIONS, UNITS

TERMS

Acid leach	leaching an ore or concentrate with a mineral acid, normally sulphuric acid, to dissolve one or more metals into solution
Agitation leaching	vigorously mixing a slurry with an acid in a tank, usually sulphuric acid, to promote the dissolution of metal values into solution
Anticline	rock strata folded to give a convex upward structure
Argillaceous	term describing sedimentary rocks with a modal grain size in the silt fraction
Artisanal	a term describing an informal miner using unsophisticated recovery methods
Assay	the chemical analysis of ore samples to determine their metal content.
Bornite	a widely occurring copper bearing mineral commonly called 'peacock ore' – Cu_5FeS_4
Breccia	rocks consisting of relatively large angular fragments of durable minerals or rock in a fine matrix
Carrolite	cobalt bearing mineral - $(Co_2Cu)S_4$. Contains 35.2 – 36.0% cobalt
Chalcopyrite	an important copper mineral commonly called 'fool's gold' – $Cu_2S.Fe_2S_2$
Chalcocite	one of the most important copper minerals - Cu_2S
Chrysocolla	a copper mineral – $CuO.SiO_2.2H_2O$
Conglomerate	rocks consisting of relatively large rounded fragments of durable minerals or rock in a fine matrix
Diapirically	refers to the action of diapirs. A diapir is typically an igneous rock mass that ascends through an overlying terrain.
Dip	the angle of inclination from the horizontal of a geological feature.
Dolomite	a common rock-forming mineral. A sedimentary rock of which more than 50% by weight consists of the mineral dolomite
Dolomitic	rock derived from dolomite
Electrostrip	the reduction of metal values in solution to a very low level using electrowinning - normally applies to the reduction of copper prior to cobalt recovery.
Electrowin	metallurgical process where a metal is removed from a rich electrolytic solution and electroplated on to stainless steel cathodes.
Heterogenite	cobalt bearing mineral – CoO(OH). Contains 64.1% cobalt
Hydrothermal	process of injection of hot, aqueous, generally mineral-rich solutions into existing rocks or features
Indicated Mineral Resource	that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological or grade continuity but are spaced closely enough for continuity to be assumed.
Inferred Mineral Resource	that part of a Mineral Resource for which volume or tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geologically or through grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited, or of uncertain quality and reliability.
Kriging	an interpolation method that minimises the estimation error in the determination of a mineral resource.
Malachite	a common copper mineral often used as an ornamental stone – $Cu_2[(OH)_2\|CO_3]$
Measured Mineral Resource	that part of a Mineral Resource for which the tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.

Metasedimentary	originally a sedimentary rock which has undergone a degree of metamorphism but the physical characteristics of the original material is not destroyed
Mineral Reserve	the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project and a Life of Mine Plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the modifying factors). Such modifying factors must be disclosed.
Mineral Resource	a concentration or occurrence of material of economic interest in or on the earth's crust in such a form, quality, and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, or estimated from specific geological evidence, sampling and knowledge interpreted from an appropriately constrained and portrayed geological model.
Orogeny	the complex series of processes which culminate in the formation of mountains
Overburden	material, usually barren rock overlying a useful mineral deposit.
Pisolitic	describes pea sized crystals forming layers around a nucleus
Probable Reserve	the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It is estimated with a lower level of confidence than a Proved Mineral Reserve. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project or a Life of Mine Plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.
Proterozoic	of or relating to the later of the two divisions of Precambrian time, from approximately 2.5 billion to 570 million years ago, marked by the buildup of oxygen and the appearance of the first multicellular eukaryotic life forms
Proved Reserve	the economically mineable material derived from a Measured Mineral Resource. It is estimated with a high level of confidence. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project or a Life of Mine Plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.
RoM	Run-of-Mine – usually ore produced from the mine for delivery to the process plant.
SAMREC Code	The South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (2007 Edition) as amended July 2009, compiled by The South African Mineral Resource Committee (SAMREC) Working Group.
SAMVAL Code	The South African Code for the Reporting of Mineral Asset Valuation (2008 Edition) as amended July 2009, compiled by the South African Mineral Asset Valuation (SAMVAL) Working Group.
Sandstone	medium grained clastic (mechanically formed) rocks composed usually of fragments of quartz in a cementing material
Saprolite	deeply weathered rock retaining certain of its rock structure but displays extensive chemical modification
Shale	a fine grained detrital sedimentary rock formed by the compaction of clay, silt or mud
Silicified	introduction of silica in hydrothermal deposits
Stratigraphic column	a grouping of sequences of strata onto systems
Stripping Ratio	ratio of waste rock to ore in an open pit mining operation
Stromatolitic	of fossilized biogenic structure typically found in dolomitic environments

Supergene enrichment	the process initiated at or near the surface whereby part of an ore deposit is enriched at the expense of the parts above.
Tailings	refuse or dross remaining after the mineral has been removed from the ore - metallurgical plant waste product
Unconformable	sedimentary strata are laid down on top of one another. When deposition ceases for a time and later recommences over the area so that a new sequence of sediments are laid down the new layer is said to be unconformable with one another
Unconformities	a surface between successive strata representing a missing interval in the geologic record of time and produced either by an interruption in deposition or by the erosion of depositionally continuous strata followed by renewed deposition
Variogram	a measure of the average variance between sample locations as a function of sample separation
Vug	during hydrothermal deposition minerals are deposited on the walls of open spaces in rocks. The opening remaining after mineralisation is known as a vug
Wad	insoluble residue (most commonly manganese and iron oxides) remaining after the dissolution of dolomites by rain water found in the bottom of sinkholes

ABBREVIATIONS

AARL	Anglo American Research Laboratories.
AAS	Atomic Absorption Spectrometry
ABA	acid base accounting
ADT	articulated dump truck
AMC	African Mining Consultants, Kitwe Zambia
AMIS	African Mineral Standards
amsl	above mean sea level
BEMC	Bureau d"Etudes Environmentales et Minieres du Congo
BOMZ	black ore mineral zone
Capex	Capital Expenditure
CBE	control budget estimate
CCD	counter current decantation
CCIC	CCIC MineRes
CCS	Chambishi Copper Smelters (Zambia)
CCT	cyclone classified tailings
CEC	Copperbelt Electrical Corporation
Chapter 18 Value	the value of the Mineral Assets per Chapter 18 of the Listing Rules
CMC	Cobalt Metals Company Ltd
Coffey Mining	Coffey Mining (SA) (Pty) Ltd
CP	Competent Person
CPI	consumer price index
CPR	Competent Persons' Report.
CPVR	Competent Person's and Valuation Report
CRC	Copper Resources Corporation
CRM	certified reference material
CTM	completed transaction method
DA	development agreement
DCF	Discounted Cash Flow.
DD	Diamond Drilling.
DGPS	digital global positioning system
DMS	Digital Mining Services
DRA	DRA Mineral Projects (Pty) Ltd
DRC	Democratic Republic of Congo
EAP	Environmental Adjustment Plan
ECA	Environmental Conservation Act.
ECSA	Engineering Council of South Africa
ECZ	Environmental Council of Zambia
EGMF	Enterprise Groupé Malta Forrest
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Programme.
EMPR	Environmental Management Programme Report.
EPB	Environmental Project Brief
EPCM	Engineering Procurement and Construction Management.
EW	Electrowinning
FM	Financial Models.
GCM	guideline company method
Gécamines	Générale des Carrières et des Mines

GeoQuest	GeoQuest Ltd, Lusaka Zambia
GFL	Gold Fields Laboratories
Glencore	Glencore International AG
Golder	Golder and Associates Africa (Pty) Ltd
GRZ	Government of Zambia
GSSA	Geological Society of South Africa
HARD	Half Absolute Relative Difference
HKSE	Hong Kong Stock Exchange
ICP	inductive coupled plasma
IDS	Inverse Distance Squared
IGS	Integrated Geological Services (Pty) Ltd
IMS	Integrated Mapping Solutions
Inf	Inferred, Inferred Mineral Resource
IoM3	Institute of Materials, Minerals and Mining (London)
JCI	JCI Projects (Pty) Ltd
Jinchuan	Jinchuan Group International Resources Co. Ltd
KICC	Kinsenda Copper Company sarl
KLMCS	KLM Consulting Services (Pty) Ltd
Lakefield	SGS Lakefield Research Africa Laboratory in Johannesburg
LHOS	long hole open stoping
LoM	Life-of-Mine.
LME	London Metals Exchange
LML	large mining licence
LOZ	lower ore zone
LLOZ	basal lower lower ore zone
LTI	lost time injury
LTIFR	lost time injury frequency rate
MAR	mean annual rainfall
MARC	maintenance and repair contract
MCK	Mining Company Katanga sprl
MDM	MDM Engineering (Pty) Ltd
MEE	multiple of exploration expenditure
MEG	SNL Metals Economic Group
Metorex	Metorex (Pty) Ltd
M&I	Measured and Indicated, Measured and Indicated Mineral Resources
MMA	Mines and Minerals Act (Zambia)
MMF	multi media filters
MMK	Miniére de Musoshi et Kinsenda sarl
MoU	memorandum of understanding
MOZ	middle ore zone
MR	Mining Regulations
MRI	MRI Trading AG
Musonoi	Musonoi project, also referred to as Dilala East project
NMC	New Mining Code (DRC)
NPV	Net Present Value.
OBQ	orebody quartzite
OEM	original equipment manufacturer
OHMS	Open House Management Solutions
OP	open pit

Opex	Operating Expenditure.
PE	Permis d' Exploitation (Exploitation Permit)
PEM	Prospectivity enhancement multiplier
pH	measure of acidity or alkalinity
PPE	personal protective equipment
QA/QC	Quality Assurance / Quality Control
RAP	relocation action plan
RAT	Roches Argileuses Talceuse
RC	Reverse Circulation Drilling.
RH	Ruashi Holdings Limited
Robinsons	Robinson International Laboratory in Lubumbashi
RoM	Run of Mine.
RPO	recognised professional orgainsation
RST	Roan Selection Trust
RWD	return water dam
SACNASP	South African Council for Natural Scientific Professions.
SAG	Semi Autogenous Grinding
SAIMM	Southern African Institute for Mining and Metallurgy
SANAS	South African National Accreditation System
Setpoint	Setpoint Laboratories
SG	specific gravity
SHEC	safety, health, environment and community
SLOS	sub-level open stoping
SLC	sub-level cave
SMBS	sodium metabisulphite
SML	Small Mining Licence
SNCC	Société Nationale des Chemins de Fer du Congo
SNEL	Société Nationale de Electricité
Snowden	Snowden Mining Consultants (Pty) Ltd
Sodimico	Société de Développement Industriel et Miniere du Congo
SRK	SRK Consulting (South Africa) (Pty) Limited.
SRK Group	SRK Global Limited.
SSC	stratiform sediment hosted copper deposit
SX	Solvent Extraction
TEC	Total Employees Costed.
TEM	Technical-economic models.
TEP's	Technical-economic parameters.
TSF	tailings storage facility
Turgis	Turgis Consulting (Pty) Ltd
TWC	Total Working Cost
UG	underground
UMHK	Union Miniére du Haut Katanga
VBKOM	VBKOM Consulting (Pty) Ltd
VSD	variable speed drive
XRF	X-ray fluorescence
WACC	weighted average cost of capital
WHO	World Health Organisation
WRD	waste rock dump
ZCCM-IH	Zambian Consolidated Copper Mines Investment Holdings plc

ZESCO	Zambian Electrical Supply Commission

CHEMICAL ELEMENTS

Ag	Silver
Al	Aluminium
ASCo	Acid Soluble Cobalt
ASCu	Acid Soluble Copper
Au	gold
Ca	Calcium
CaO	Calcium Oxide
Co	Cobalt
Cr	Chrome
Cu	Copper
CuO	Copper Oxide
Fe	Iron
Mg	Magnesium
MgO	Magnesium Oxide
Mn	Manganese
$Na_2S_2O_5$	Sodium Metabisulphite
NaHS	Sodium Hydrosulphide
Ni	Nickel
Pb	Lead
Pd	palladium
Pt	platinum
Si	Silicon
SO_2	Sulphur Dioxide
TCo	Total Cobalt
TCu	Total Copper
W	tungsten
Zn	Zinc

UNITS

A	ampere
bcm	bank cubic metres
bcm/t	bank cubic metres per tonne of ore
cm	a centimetre.
g	grammes.
g/t	grammes per metric tonne – metal concentration.
ha	a hectare.
kg	one thousand grammes
km	a kilometre.
kt	a thousand metric tonnes.
ktpa	a thousand tonnes per annum
ktpm	a thousand tonnes per month.
kV	one thousand volts
kVA	one thousand volt-amperes
kWh	kilo watt hours
lb	a pound (2.204lb = 1kg)
m	a metre.
m^3	cubic metre
mm	millimetre
Ma	a million years before present
MPa	a million pascals
Mt	a million metric tonnes
Mtpa	a million tonnes per annum
MVA	a million volt-amperes
MW	a million watts
t	a metric tonne.
t/m^3 / tm^{-3}	density measured as metric tonnes per cubic metre.
tpa	tonnes per annum
USc	United States cents (100 cents equals one dollar)
USc/lb	US cents per pound
USD	United States Dollar.
USDm	million dollars
USD/lb	US dollars per pound
USD/t	US Dollars per tonne
V	volt
°	degrees.
‘	minutes.
%	percentage.