



# Metorex Mineral Resources and Ore Reserves

March 2011

**METOREX**  
L I M I T E D

## Group summary

All figures contained in this report are reflected on a 100 percent basis.

### Mineral resources

F2010 saw an increase in Group mineral resources, with a general upgrading of copper and cobalt resources from the inferred mineral resource category into the indicated and measured categories. During this period, historical non-SAMREC resource estimates for two of the growth projects (Dilala East and Lubembe) were converted into SAMREC compliant resources. Subsequent to period-end updated resource estimates have been received for both Kinsenda and Lubembe.

#### SUMMARY OF METOREX GROUP COMPANY COPPER MINERAL RESOURCES

Operation/project	Mineral resources (000t contained copper)					
	Measured + indicated		Inferred		Total resources	
	F2010	F2009	F2010	F2009	F2010	F2009
Ruashi oxides	611	630	181	186	792	817
Ruashi sulphides	45	0	407	248	452	248
Chibuluma	196	238	0	0	196	238
Chifupu	27	0	0	59	27	59
Kinsenda	166	863	774	0	910	863
Lubembe	1 040	0	761	1 045	1 801	1 045
Dilala East	452	0	110	0	563	0
<b>Total</b>	<b>2 537</b>	<b>1 732</b>	<b>2 203</b>	<b>1 539</b>	<b>4 740</b>	<b>3 270</b>
	<b>+46,5%</b>		<b>+43,2%</b>		<b>+44,9%</b>	

Total Group copper mineral resources for the F2010 period increased by 44,9 percent from 3,27 Mt to 4,74 Mt of contained copper, driven largely by the Dilala East and Lubembe deposits. Contained copper in resources at Dilala East and Lubembe increased by 563kt (+100 percent y-y) and 756kt (+72 percent y-y) respectively compared to the F2009 resource base. Incremental gains in total contained copper tonnage were also made at Kinsenda, where the total contained copper resource increased by 47kt (+5 percent y-y), and the Ruashi sulphides where the contained copper resource increased by 204kt (+82 percent y-y).

Drilling on the eastern side of the Ruashi 3 oxide resource has established a +100 metre strike continuation of the orebody as well as a significant thickening of the mineralisation in the upper stratigraphic units. In addition, the continued increase in the copper price during F2010 has had a positive impact on the economics of the operation and resulted in a reduction in the cut-off grade used in the December 2010 Ruashi life-of-mine reserve plan and schedule. In order to comply with the SAMREC Code and the Metorex MRM Code of Practice, the economic viability of the Ruashi resource has been defined

using a \$12 000/t copper optimised whittle pit (economic resource based on a +50 percent increase in the \$8 000/t pricing scenario used for LOM planning). The impact of both exploration and cut-off grade changes at Ruashi is a 179kt (+16 percent y-y) increase in the Ruashi oxide and sulphide contained copper mineral resource.

A large proportion of the Kinsenda resource was changed from measured/indicated to inferred by Snowden Mining Industry Consultants due to, in their opinion, the inadequacy of quality assurance quality control ("QA QC") data on the historical assay data. This resource had previously been signed off by FinOre, based in Perth, as a qualified JORC compliant measured mineral resource on the basis of limited QA QC checks against two historical drillholes to verify the historical assay data used in the resource estimate. Comparison of data from 19 new drillholes completed in F2010 with the historical data in a portion of the orebody does however indicate a conservative grade bias in the historical data and it is Metorex's opinion that this trend will be reflected in the rest of the orebody. Subsequent to year end the Metorex Board approved an additional drilling programme on the Kinsenda property.

## SUMMARY OF METOREX GROUP COMPANY COBALT MINERAL RESOURCES

Group cobalt Operation/project	Mineral resources (000t contained cobalt)					
	Measured + indicated		Inferred		Total resources	
	F2010	F2009	F2010	F2009	F2010	F2009
Ruashi oxides	98	71	14	11	112	83
Ruashi sulphides	7	—	41	21	48	21
Dilala East	136	—	34	—	170	—
<b>Total</b>	<b>241</b>	<b>71</b>	<b>89</b>	<b>32</b>	<b>330</b>	<b>103</b>
	237%		180%		219%	

Group cobalt mineral resources increased by 219 percent from F2009 to the end of F2010. The Dilala East project in Kolwezi was the main driver behind these increases, contributing an additional 170kt of contained cobalt.

## Ore reserves

### SUMMARY OF METOREX GROUP COMPANY COPPER AND COBALT MINERAL RESERVES

Operation/project	Copper reserves (000t)		Cobalt reserves (000t)	
	Proved + probable		Proved + probable	
	F2010	F2009	F2010	F2009
Ruashi oxides	523	491	88	59
Ruashi sulphides	0	0	0	0
Chibuluma	132	143	0	0
Chifupu	0	0	0	0
Kinsenda	0	0	0	0
Lubembe	0	0	0	0
Dilala East	0	0	0	0
<b>Total</b>	<b>655</b>	<b>634</b>	<b>88</b>	<b>59</b>
	3%		49%	

Group copper mineral reserves have increased by 3 percent due to exploration and changes in the reserve cut-off grade. There has been a 49 percent increase in the contained cobalt mineral reserves as a result of the application of a bi-metallic, copper equivalent cut-off grade at Ruashi.

Mining design and scheduling studies for the Kinsenda project were still in progress at year-end and were not defined to an adequate level of detail for reporting of mineral reserves.

## Outlook

Extension and infill drilling at Ruashi will continue during F2011 and is likely to continue adding incremental tons and confidence to the Ruashi oxide resource. Infill drilling on the Ruashi sulphide resource will convert further inferred sulphide resources in Ruashi 1 into the indicated or measured category.

A key focus area for the Group will be the conversion of inferred resources at Kinsenda, Lubembe and Dilala East into the indicated and measured category to derisk the projects further and provide confidence in the resource estimate to be converted to reserves in the early years of the project.

Exploration drilling at Chibuluma South and Chifupu are also expected to add incremental tons to the resource.

Completion of the Kinsenda mining study for the BFS will enable the declaration of a SAMREC compliant mineral reserve during F2011.

## Ruashi Holdings (Pty) Limited

### Location

The Ruashi Mine is an opencast oxide copper and cobalt mine situated in the Democratic Republic of the Congo (DRC) on the outskirts of Lubumbashi, which is the capital of Katanga Province.

The Ruashi Mine consists of three open-pit deposits. These deposits occur along strike of each other over a combined strike length of 2 000 metres, and are separated by cross-cutting faults and breccias zones.

### Historical and recent exploration activities

#### Ruashi

The Ruashi deposits were discovered by Union Minière in 1919 and have been intensively evaluated by drilling over the years. Drilling has been conducted on sections spaced at 50 metre intervals along strike and drill hole intervals along sections of between 25 and 50 metres. Since discovery in 1919 and up to December 2010, 110 952 metres of drilling (1 434 holes) has been completed on the Ruashi property.

During F2009, Ruashi Mining completed two drilling campaigns. 1 651 metres (48 holes) of RC drilling was completed in the Ruashi 1 open pit with 5 229 metres (52 holes) of diamond drilling completed across all three orebodies. Infill and extension drilling activities have continued uninterrupted during F2010 with a further 12 685 metres (114 holes) of diamond drilling and 979 metres (51 holes) of percussion drilling having been completed. Infill drilling has been carried out to improve the confidence in both oxide and sulphide mineral resources, with 90 percent of the oxide ore drilling in the Ruashi 1 pit having been completed on a grid of 25 x 25 metres. Exploration drilling in the Ruashi 3 pit area has defined oxide and sulphide ore beyond the known limits of the orebody, and added significantly to the mineral resource.

In addition to activities at Ruashi, the Company has been involved in exploration activities on the other licences granted to Ruashi Mining sprl.

#### Dilala East

Exploration continued on the Musonoi Est Permis d'Exploitation (a portion of PE 4958) close to Kolwezi. Drilling activities recommenced in F2010 after being placed on hold in F2009, with a further 4 681 metres (13 holes) being completed in the period. To date, 15 573 metres (62 holes) of diamond drilling

has been completed. A SAMREC compliant resource estimate for the Dilala East Project was released in March 2010. A prefeasibility mining study was also submitted to Gécamines in F2010 in accordance with the legal agreement between Ruashi Holdings and Gécamines.

Limited work was carried out on the Sokoroshi I (PE523) and Sokoroshe II (PE538) permits north of Lubumbashi.

### Geological setting and geological model

#### Ruashi

The copper and cobalt deposits of Ruashi occur in the Proterozoic Katangan Supergroup rocks of the Congolese Copperbelt and are hosted in a succession of siltstones, sandy dolomites and shales associated with dislocated thrust sheets within the north-west trending Lufilian Thrust Belt.

The Ruashi deposits form part of a recumbent synclinal fold trending north-west with flanks comprising Kundulungu Group (Upper Katangan) sediments and a core of Mines Group sediments, which is the Lower Roan Formation equivalent in Zambia. Three orebodies have been recognised, namely Ruashi 1, 2 and 3 with respective strike lengths of 800 metres, 200 metres and 450 metres separated by barren breccia zones.

The primary copper and cobalt sulphide mineralisation is stratiform consisting of chalcopyrite, carrollite, pyrite and minor bornite. The orientation of these horizons has been affected by folding and their orientation in the orebody varies from horizontal through vertical to overturned. Supergene enrichment of copper and cobalt resulted in an irregular blanket of oxide ore to a depth of 50 to 70 metres overlying the steeply dipping sulphide ore and extending laterally beyond the sulphide bodies from 20 to 100 metres. The main oxide minerals are malachite, chrysocolla and heterogenite.

The supergene cap, which was previously mined by Union Minière and Gécamines, consists of malachite and heterogenite in massive saprolite or in fracture controlled mineralisation along joint and fracture planes, cleavages and shear zones. Mixed oxide-sulphide mineralisation occurs at the transition zone extending into the sulphides at depth over a thickness of 10 to 20 metres.

#### Dilala East

The Dilala East orebody in Kolwezi occurs along strike from, and is similar to the Kamoto underground orebody. The

orebody occurs on the eastern end of the Dilala Syncline and is a blind deposit with high-grade mineralisation starting at between 50 and 100 metres below surface. It consists of a lower and an upper copper-rich zone separated by a copper-poor, cobalt-rich zone. The full mineralised package is approximately 60 metres in width and is open ended at depth.

## Type of mining, mining activities

### Ruashi

Prior to Metorex's involvement, the Ruashi Mine comprised an old open pit originally mined by Union Minière starting in the early 1920s and later by Gécamines up to the early 1980s. Approximately 3,1 Mt was mined from the Ruashi 1 and Ruashi 2 deposits at an average grade of 7,8 percent copper and 0,11 percent cobalt.

Metorex has been involved since 2003 with a first phase of copper and cobalt production being derived from old stockpiles previously not treated by Gécamines. The old stockpiles and tailings were reclaimed in Phase I using a load-and-haul contractor with treatment through an oxide flotation circuit to recover a low-grade copper/cobalt concentrate.

The Ruashi 1 and 2 orebodies have been opened up and oxide copper and cobalt ore production has been ramped up to feed the SX-EW plant at a rate of 120 ktpm. Pre-stripping on the Ruashi 3 orebody commenced in F2010. Mining is by a conventional drill, blast, load-and-haul operation.

The Phase II solvent extraction, electrowinning (SX-EW) plant is now operating at a steady-state production rate of roughly 3 000t of finished copper cathode and 350t of cobalt in concentrate per month.

### Methods and key assumptions in estimation and classification of mineral resources and ore reserves

The Ruashi resource model was updated three times during F2010. The most recent update was completed in December 2010 by Integrated Geological Solutions (Pty) Limited (IGS), based in Johannesburg. Digital resource modelling is carried out by first modelling the broad lithological contacts, followed by definition of mineralised domains within specific lithological horizons using a 0,5 percent total copper or a 0,1 percent total cobalt grade envelope. A hard-boundary approach has been applied to oxide and sulphide zones of the same lithological unit to more accurately reflect the statistical difference in grades between the weathered and unweathered units.

The December 2010 grade model was interpolated using ordinary kriging into discrete domains based on geostatistical estimation parameters matched to each domain. This resource model has been classified into SAMREC compliant resource categories on a subjective basis by IGS working closely with the mine geologists. The majority of the drillhole data is spaced close enough to categorise the resource as either indicated or measured.

A high geological confidence exists in the location and continuity of the lower orebody stratiform units. These units have been categorised as measured in the Ruashi 1 and 2 pits where current mining activity has confirmed the continuity and grade of the units. Further drilling is required to upgrade these units to measured in the Ruashi 3 orebody. With the exception of the Calcaire a Minerais Noirs zone (CMN), all other lithological units have been classified as Indicated. The CMN zone is dominated by erratic wad mineralisation (weathered and altered dolomite) and generally requires drill testing at a spacing of less than 10 x 10 metres using the blasthole drill rig to upgrade the confidence in the resource estimate, and for conversion into mineable reserves.

Work commenced on an Unfold model in December 2010 to address geometric difficulties associated with the Ruashi fold structure. Grade in this model will be estimated using conditional simulation to determine a geostatistically derived, probabilistic classification methodology and recoverable reserve estimate.

A revised Ruashi life-of-mine (LOM) plan and scheduled reserve for F2011 was completed in January 2011 by VBKOM Consulting Engineers (Pty) Limited using the Whittle 4X pit optimisation, Mine24D and XPac mine planning software. A mining cost of US\$4,1/t material mined and a processing cost of US\$72,7/t ore processed have been used based on F2011 steady-state budget prices and the completion of the acid plant. An open pit with multi-phase push-back mining methodology has been selected for the LOM schedule based on optimal Whittle NPV shells using long-term copper price scenarios of US\$5 000/t and US\$8 000/t copper and a constant cobalt price of US\$15/lb. Pit 3 is planned to be mined in three phases, with phase 1 and 2 falling within the \$5 000/t copper ultimate pit shell, and phase 3 defined using the \$8 000 ultimate pit shell.

### Inclusion of inferred resources

Inferred resources are not included in the life-of-mine (LOM) plan and production schedule for Ruashi.

### Material risk factors that could impact on the mineral resource and ore reserve statement

Continuous drilling, reinterpretation and modelling of the orebody using hard lithological, structural and ore type boundaries in F2010 has significantly de-risked the resource estimate and has highlighted areas that need additional drilling. Modelling of previous mining activities from historical plans and pit mapping has also improved the reliability of the resource model to accurately forecast in situ ore grades and tonnages.

Positive changes in the copper price in F2010 have impacted on the cut-off grade used to define the mineral resources and mineral reserves. This has positively impacted on the declared resource and reserve at the end of the reporting period. Should copper and cobalt prices reduce during F2011, the cut-off grade and declared resources and reserves could reduce in the future.

### Legal proceedings or other material conditions that may impact on mining or exploration activities

Metorex was informed by Gécamines in 2009 that the Ruashi mining licence review process had been concluded and that no further amendments are likely.

Transfer of the Musonoi Est permit from Gécamines to Ruashi Mining is still outstanding, subject to the acceptance of a feasibility study submitted in F2010. Metorex continues to engage with Gécamines in this regard, and a favourable outcome is anticipated in F2011.

### Mineral resources for the Ruashi Mine

Mineral resources for Ruashi have been defined using an optimised whittle pit based on a \$12 000/t copper price (economic resource based on a +50 percent increase in the \$8 000/t pricing scenario used for LOM planning). A cut-off grade of 0,9 percent copper equivalent has been used. The copper equivalent cut-off grade is used as it best reflects the bi-metallic nature of the Ruashi ore body.

### OXIDE MINERAL RESOURCES

OXIDES Classification	Tons (Mt)		Cu grade (%)		Copper (000t)		Co grade (%)		Cobalt (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009
Measured	1,0	1,0	4,7	6,7	47	70	0,3	0,3	3	3
Indicated	22,3	19,6	2,5	2,8	548	553	0,4	0,4	90	68
Inferred	12,2	8,6	1,4	2,2	172	186	0,1	0,1	12	11
<b>Total oxides</b>	<b>35,5</b>	<b>29,2</b>	<b>2,2</b>	<b>2,8</b>	<b>766</b>	<b>809</b>	<b>0,3</b>	<b>0,3</b>	<b>106</b>	<b>83</b>
<b>Surface stockpiles</b>										
Measured	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Indicated	0,5	0,3	2,0	2,5	11	7	0,6	0,0	3	0
Inferred	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
<b>Total surface stockpiles</b>	<b>0,5</b>	<b>0,3</b>	<b>2,0</b>	<b>2,5</b>	<b>11</b>	<b>7</b>	<b>0,6</b>	<b>0,0</b>	<b>3</b>	<b>0</b>
<b>Surface tailings dams</b>										
Measured	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Indicated	0,3	0,0	1,8	0,0	5	0	0,4	0,0	1	0
Inferred	0,5	0,0	1,9	0,0	10	0	0,4	0,0	2	0
<b>Total surface tailings</b>	<b>0,8</b>	<b>0,0</b>	<b>1,9</b>	<b>0,0</b>	<b>15</b>	<b>0</b>	<b>0,4</b>	<b>0,0</b>	<b>3</b>	<b>0</b>
<b>Oxide total</b>	<b>36,8</b>	<b>29,5</b>	<b>2,2</b>	<b>2,8</b>	<b>792</b>	<b>817</b>	<b>0,3</b>	<b>0,3</b>	<b>112</b>	<b>83</b>

Rounding errors may occur.

**SULPHIDE MINERAL RESOURCES**

SULPHIDES Classification	Tons (Mt)		Cu grade (%)		Copper (000t)		Co grade (%)		Cobalt (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009
Measured	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Indicated	1,5	0,0	3,0	0,0	45	0	0,5	0,0	7	0
Inferred	14,3	7,9	2,9	3,1	407	248	0,3	0,3	41	21
<b>Total sulphides</b>	<b>15,8</b>	<b>7,9</b>	<b>2,9</b>	<b>3,1</b>	<b>452</b>	<b>248</b>	<b>0,3</b>	<b>0,3</b>	<b>48</b>	<b>21</b>

Rounding errors may occur.

**Mineral resources for the Dilala East Project**

A new mineral resource estimate was declared for the Dilala East Project in F2010 using a 2 percent copper equivalent cut-off grade. This has added 563kt of contained copper and 170kt of contained cobalt to the Metorex mineral resource inventory.

**DILALA EAST PROJECT – MINERAL RESOURCE**

Classification	Tons (Mt)		Cu grade (%)		Copper (000t)		Co grade (%)		Cobalt (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009
<b>Oxides</b>										
Measured	4,1	0,0	3,0	0,0	122	0,0	1,0	0,0	39	0,0
Indicated	1,1	0,0	3,2	0,0	36	0,0	0,9	0,0	10	0,0
Inferred	0,0	0,0	1,3	0,0	0	0,0	0,5	0,0	0	0,0
<b>Total oxides</b>	<b>5,2</b>	<b>0,0</b>	<b>3,0</b>	<b>0,0</b>	<b>158</b>	<b>0,0</b>	<b>0,9</b>	<b>0,0</b>	<b>48</b>	<b>0,0</b>
<b>Sulphides</b>										
Measured	3,5	0,0	3,0	0,0	106	0,0	0,9	0,0	30	0,0
Indicated	6,5	0,0	2,9	0,0	189	0,0	0,9	0,0	58	0,0
Inferred	3,9	0,0	2,8	0,0	110	0,0	0,9	0,0	34	0,0
<b>Total sulphides</b>	<b>13,9</b>	<b>0,0</b>	<b>2,9</b>	<b>0,0</b>	<b>404</b>	<b>0,0</b>	<b>0,9</b>	<b>0,0</b>	<b>121</b>	<b>0,0</b>
<b>Oxides + sulphides</b>										
Measured	7,6	0,0	3,0	0,0	228	0,0	0,9	0,0	68	0,0
Indicated	7,6	0,0	2,9	0,0	225	0,0	0,9	0,0	68	0,0
Inferred	3,9	0,0	2,8	0,0	110	0,0	0,9	0,0	34	0,0
<b>Total oxides + sulphides</b>	<b>19,1</b>	<b>0,0</b>	<b>2,9</b>	<b>0,0</b>	<b>563</b>	<b>0,0</b>	<b>0,9</b>	<b>0,0</b>	<b>170</b>	<b>0,0</b>

Rounding errors may occur.

**Mineral reserves for Ruashi Mine**

Only oxide (and mixed) indicated and measured mineral resources have been converted to proved and probable reserves for inclusion in the LOM design and schedule at a 0,9 percent copper equivalent cut-off. The LOM has been extended by a further five years giving a total LOM of 15,5 years from F2011. The schedule has been prepared using a three bench per annum drop-down rate.

**RUASHI – MINERAL RESERVES**

OXIDES Classification	Tons (Mt)		Cu grade (%)		Copper (000t)		Co grade (%)		Cobalt (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009	F2010	F2009
<b>Open pit</b>										
Proved	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Probable	21,4	15,1	2,4	3,2	507	483	0,4	0,4	84	59
<b>Total oxides</b>	<b>21,4</b>	<b>15,1</b>	<b>2,4</b>	<b>3,2</b>	<b>507</b>	<b>483</b>	<b>0,4</b>	<b>0,4</b>	<b>84</b>	<b>59</b>
<b>Surface stockpiles</b>										
Proved	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Probable	0,5	0,3	2,0	2,5	11	7	0,6	0,0	3	0
<b>Total surface stockpiles</b>	<b>0,5</b>	<b>0,3</b>	<b>2,0</b>	<b>2,5</b>	<b>11</b>	<b>7</b>	<b>0,6</b>	<b>0,0</b>	<b>3</b>	<b>0</b>
<b>Surface tailings dams</b>										
Proved	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Probable	0,3	0,0	1,8	0,0	5	0	0,4	0,0	1	0
<b>Total surface tailings</b>	<b>0,3</b>	<b>0,0</b>	<b>1,8</b>	<b>0,0</b>	<b>5</b>	<b>0</b>	<b>0,4</b>	<b>0,0</b>	<b>1</b>	<b>0</b>
Proved	0,0	0,0	0,0	0,0	0	0	0,0	0,0	0	0
Probable	22,2	15,4	2,4	3,2	523	491	0,4	0,4	88	59
<b>Oxide total</b>	<b>22,2</b>	<b>15,4</b>	<b>2,4</b>	<b>3,2</b>	<b>523</b>	<b>491</b>	<b>0,4</b>	<b>0,4</b>	<b>88</b>	<b>59</b>

Rounding errors may occur.

## Chibuluma Mines Plc

### Location

The Chibuluma South Mine is part of the Chibuluma mines complex situated near the Zambian town of Kalulushi, approximately 12 kilometres west of Kitwe. Kitwe is the second largest town on the Zambian Copperbelt and is approximately 300 kilometres north of the capital city, Lusaka.

### Historical and recent exploration activities

The Chibuluma South orebody was discovered in 1969 by Roan Selection Trust (RST). A total of 113 diamond drill holes were drilled in the area, of which 77 drill holes intersected the Chibuluma South orebody. Orebody intersections were spaced between 75 and 150 metres apart. Metorex drilled three twin holes in 1999 and verified the thickness and grade of the orebody as defined by the historical drilling.

A feasibility study for Chibuluma South was completed by Metorex in May 2000. The oxide zone down to 60 metres below surface was mined in an open pit and treated through a differential flotation and oxide leach plant. The open pit was stopped in 2001 due to poor leach recoveries and low copper prices, and operations focused on opening up the underground reserve.

Chibuluma Mines has recognised the risk associated with a relatively short remaining life-of-mine, and was embarked on a resource replacement exploration programme. Extension drilling has commenced at both the Chibuluma South and Chifupu deposits, with encouraging early results at Chifupu. A high-resolution airborne electromagnetic (EM), magnetic and radiometric geophysical survey was completed by Spectrem Air in October 2010, covering both the Chibuluma East and Chibuluma South licences. A high-resolution gravity survey over Chibuluma South was also completed in January 2011. A regional geological and geophysical data integration study will be completed in early F2011 for detailed target generation.

## Geological setting and geological model

Mineralisation in the copper mines of the Zambian Copperbelt is predominantly stratabound and confined to the Lower Roan Group of the Katanga stratigraphic succession. The Katanga Supergroup consists of Proterozoic age siliclastic, greywacke and carbonate sediments deposited in an extensional rift basin environment that has subsequently been subjected to pan-African age tectonism and deformation.

Mineralisation in the Chibuluma orebody is limited to copper only and is hosted in detrital conglomerates, sandstones and argillaceous siltstones of the Lower Roan Group. The orebody occurs over a strike length of 300 metres, dipping at about 38° towards the west and varies in thickness from a few metres to over 30 metres in places.

## Type of mining, mining activities

Post pillar cut and fill (PPCF) mining with trackless mining equipment is used to extract the bulk of the orebody and longhole stoping (LHS) is often used where the orebody is narrow. The longhole stopes are post filled along with the adjacent cut. The sulphide ore is hauled to surface via a decline ramp at a rate of 45 to 50ktpm.

Development is from the top down, while mining takes place from the bottom up. The orebody is mined in 40 metres vertical sections as they become available. This necessitates the leaving of sill pillars between these sections, which locks up ore. The sill pillars are partially recoverable at the end of the life of mine.

Underground development waste and classified tailings are used as backfill in the mining process to support exhausted stopes and minimise dilution from the hangingwall through adequate support of the weak hangingwall sediments.

The underground sulphide ore is treated by conventional flotation, which produces a concentrate grade of between 45 and 50 percent copper at recoveries of 95 percent. The concentrates are currently transported approximately 40 kilometres by road to the Chambishi copper smelter (CCS).

## Methods and key assumptions in estimation and classification of mineral resources and mineral reserves

Geological block modelling of the Chibuluma orebody is carried out using Surpac. Grade envelopes are delineated on a

1 percent copper assay grade and wireframed to produce a three-dimensional solid model. Lithological contacts are modelled as surfaces, and grade is interpolated into the blocks using ordinary kriging. A Surpac model was completed by IGS (Pty) Limited (IGS) in 2008 utilising updated surface and underground drill hole data. This model was updated on-mine in F2010 by the Mining Technical Services Department and depleted on a cut-by-cut basis using a three-dimensional mining excavation volume model.

The resource is classified as a measured or indicated resource based on drillhole spacing. A block is considered measured if there are three or more drill holes within a 40 metre radius of the block and indicated if there are more than three drill holes between 50 and 150 metres. In general, infill drilling is carried out from the ramp decline.

The modifying factors applied to convert the mineral resources to ore reserves in the upper levels considered a waste parting, which was identified in the boreholes and modelled accordingly. While current mining activities have largely mined beyond the waste parting zone in the upper levels, a small proportion of internal waste is anticipated in the lower levels. The modifying factors for the conversion of the resources to reserves have consequently been modified in F2011 to reflect the higher dilution expected in the lower levels of the mine.

## Inclusion of inferred resources

Inferred resources are not included in the LOM plan and production schedule.

## Material risk factors that could impact on the mineral resource and reserve statement

The method of stope support was considered adequate at shallow mining depths, and was substantially revamped in December 2008 following a number of hangingwall failures on the 298 and 309 metre levels. On advice from African Mining Consultants in Kitwe, the mining echelon and timing of backfill support have been scheduled such that the risk of stope failure due to geotechnical reasons will be contained and kept to a minimum.

Changes in the copper price could impact on the cut-off grade used to define the mineral resources and mineral reserves which in turn would affect the LOM.

## Legal proceedings or other material conditions that may impact on mining or exploration activities

The Company is not aware of any material conditions that may affect the mining activities at Chibuluma.

### CHIBULUMA SOUTH – MINERAL RESOURCES

Classification	Tons (Mt)		Cu grade (%)		Copper (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009
Chibuluma – underground						
Measured	2,2	2,4	4,1	3,3	91	80
Indicated	1,3	2,1	5,1	4,8	65	99
<b>Total underground</b>	<b>3,5</b>	<b>4,5</b>	<b>4,5</b>	<b>4,0</b>	<b>156</b>	<b>179</b>
Resources in buttress pillars						
Measured	0,9	0,7	3,6	4,0	32	30
Indicated	0,2	0,7	4,2	4,0	8	30
<b>Total pillars</b>	<b>1,1</b>	<b>1,5</b>	<b>3,7</b>	<b>4,0</b>	<b>40</b>	<b>60</b>
Chifupu prospect						
Indicated	1,1	0,0	2,4	0,0	27	0,0
Inferred	0,0	1,9	0,0	3,1	0,0	59
<b>Total prospects</b>	<b>1,1</b>	<b>1,9</b>	<b>2,4</b>	<b>3,1</b>	<b>27</b>	<b>59</b>
<b>Total underground and prospects</b>	<b>5,7</b>	<b>7,9</b>	<b>3,9</b>	<b>3,7</b>	<b>223</b>	<b>297</b>

### CHIBULUMA SOUTH – MINERAL RESERVES

Classification	Tons (Mt)		Cu grade (%)		Copper (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009
Underground						
Proved	1,9	2,1	3,5	2,9	69	61
Probable	1,2	1,8	4,2	4,1	50	73
<b>Total underground</b>	<b>3,1</b>	<b>3,9</b>	<b>3,8</b>	<b>3,4</b>	<b>119</b>	<b>135</b>
Reserves in buttress pillars						
Proved	0,3	0,0	3,4	0,0	10	0,0
Probable	0,1	0,3	4,0	3,0	3	8
<b>Total pillars</b>	<b>0,4</b>	<b>0,3</b>	<b>3,5</b>	<b>3,0</b>	<b>13</b>	<b>8</b>
<b>Underground total</b>	<b>3,5</b>	<b>4,2</b>	<b>3,8</b>	<b>3,4</b>	<b>132</b>	<b>143</b>

Rounding errors may occur.

### Minière de Musoshi et Kinsenda sarl (MMK)

#### Location

The Kinsenda Mine together with the Lubembe prospect is owned by Copper Resources Corporation through Minière de Musoshi et Kinsenda sarl (MMK). Both are located within a 50 kilometre radius of Kasumbalesa, the main border town into the DRC from Zambia. The border is located approximately 75 kilometres north-west of Kitwe in Zambia, and 130 kilometres southeast of Lubumbashi in the DRC.

The Kinsenda Mine is located approximately 24 kilometres east of Kasumbalesa and is the focus of a bankable feasibility study to bring the mine back into production. Lubembe is located a further 25 kilometres south-east of Kinsenda. The Musoshi Mine was returned to Sodimico during F2009 as part of the mining title revisitation process, and no longer forms part of the MMK assets.

## Historical and recent exploration activities

### Kinsenda

51 000 metres (203 holes) of surface diamond drilling was completed by Sodimico and Nippon Mining on the Kinsenda orebody from the mid-1960s to early 1970s. Very little core remains from these drilling programmes and the lack of adequate QA QC has been raised as a concern with respect to the SAMREC sign-off of the resource estimate. During F2010, Metorex undertook a 7 790 metre (26 hole) drilling programme comprising five twin holes and 15 infill holes focused on an area of high grade mineralisation to the west of the Fracture Zone. Six holes were abandoned in this programme as a result of poor ground conditions. This drilling was carried out to test the reliability of the historical assay database and the confidence in the resource model for the bankable feasibility study. All analytical results have been received and an updated geological resource model for the western portion of the mine has been completed by Snowden Mining Industry Consultants ("Snowden").

### Lubembe

The Lubembe deposit is an advanced exploration prospect, with 22 holes drilled by Sodimico in the early 1970s. An infill drilling programme on the Lubembe deposit was funded by Metorex and commenced in June 2008 to verify old data and improve the resource confidence. In total, 7 506 metres (91 holes) of shallow reverse circulation drilling and 5 272 metres (21 holes) of diamond core drilling were completed during F2009. A SAMREC compliant resource model was declared in F2010 and an infill drilling programme was initiated in the latter half of the year to upgrade tonnages from inferred to indicated. At year-end, an additional 5 326 metres (29 holes) had been drilled. Subsequent to period-end an updated resource model was received from IGS.

## Geological setting and geological model

The Kinsenda and Lubembe orebodies are Zambian Copperbelt style orebodies and are geologically similar to the Chibuluma South and Mufulira Mines in Zambia. Mineralisation occurs in the footwall of the Ore Shale Member.

### Kinsenda

Mineralisation in the Kinsenda orebody is limited to copper only and is hosted in detrital conglomerates, sandstones and argillaceous siltstones of the Lower Roan Group and varies from 2 to 20 metres with an average width of 6 metres. The orebody occurs in four zones, namely the LLOZ, LOZ, MOZ and UOZ over a strike of approximately 2 000 metres dipping moderately at 25° – 30°. The LOZ zone bifurcates and merges

in places to form a single zone. The Kinsenda Mine mineral resource is split into an East and a West section by a north-south trending Fracture Zone. The East section is dominated by the UOZ and MOZ zones and was the main area of focus for previous mining activities. The West section has a larger remaining mineral resource and is dominated by the LOZ and LLOZ zones.

Kinsenda is a sulphide orebody consisting of predominantly chalcocite, chalcopyrite and minor bornite mineralisation with native copper observed in places. The orebody has not been subjected to significant folding and is reasonably uniform along strike and down-dip. A basement fault with a throw of 50 to 100 metres results in a rapid down-dip thickening of the Lower Roan stratigraphy on the southern extent of the resource. This block (starting at 600 metres below surface) has not been extensively delineated, and presents upside potential for the Kinsenda resource.

### Lubembe

The Lubembe Tache B deposit is geologically similar to Kinsenda with a strike length of 1 kilometre and an average width of 40 metres dipping 25° – 30°. Lubembe is distinguished from Kinsenda by lower grades (1,8 to 2,2 percent copper) and a mixed oxide/sulphide ore type consisting of predominantly chalcocite and malachite with minor chalcopyrite.

A second zone of mineralisation (Tache A) was identified by drilling in F2008 approximately 2 kilometre north of the Lubembe Tache B deposit. Step-out drilling during F2010 has established the lateral continuity of low to medium-grade mineralisation over a strike length of 200 metres at an average width of 10–15 metres. Further follow-up drilling is needed to convert this into a mineral resource.

## Type of mining, mining activities

### Kinsenda

The Kinsenda Mine is an old underground operation commissioned in 1977 as a joint venture between Sodimico and Nippon Mining. Ore was mined from Kinsenda and hauled 25 kilometres by truck to Musoshi where it was treated through the Musoshi concentrator. In total, 4,5 million tons was mined from 1977 to 2002 at an average grade of 5 percent copper.

The operation was taken over by a Canadian company in the early 1980s, but was curtailed in 1987 due to low copper prices and limited developed reserves. Operations stopped completely with the flooding of the mine in 2002. The infrastructure at Kinsenda comprises three inclined shafts and

one vertical shaft to a depth of 285 metres below surface. Mine dewatering has lowered the water level to 305 metres below surface. Metorex has been involved in re-establishing the operation since F2008.

The Kinsenda Mine rehabilitation programme was curtailed in F2009 to conserve cash outflows with the project being placed on care and maintenance in January 2009. A bankable feasibility study is in progress with sulphide ore production planned at a rate of 40ktpm using the cut-and-fill mining method.

### Lubembe

Lubembe is a greenfields site and is at a concept study level. The deposit has not been previously mined.

### Methods and key assumptions in estimation and classification of mineral resources and ore reserves

The F2010 drilling programme was independently managed by GeoQuest (Pty) Limited, based in Lusaka, Zambia. All samples were analysed by ALS Chemex Laboratory in Johannesburg, with QA QC of the programme carried out under the supervision and sign-off of IGS.

The bankable feasibility study has focused exclusively on the West section of the mine. Mineral resources for the West section were re-estimated by Snowden in December 2010 using the Datamine software. The Snowden model has defined a low-grade halo around the orebody at a 0,5 percent copper-grade with a high-grade, internal zone being delineated using 2 percent copper grade envelope. The East section mineral resource is based on a resource estimate carried out by MMK and Deswik Mining Consultants in F2009 using a 2 percent copper grade envelope.

A lithological domain model was generated by Snowden and was used to domain the mineralisation into discrete lithostratigraphic units. The Snowden resource estimation has used ordinary kriging to estimate both total and acid-soluble copper with separate geostatistical parameters for each zone and variable. Snowden has classified the resources into measured, indicated and inferred using the SAMREC Code for resource reporting.

In Snowden's opinion, although the historical drill spacing for a large part of the area investigated is considered adequate to allow a reasonable level of confidence in the estimate of the data, the lack of historical laboratory QA QC records (as per the SAMREC reporting code) restricts any new estimate to an

inferred resource. Consequently, Snowden has accepted certain of the historical drilling data where it is supported by proximal new drilling data as reasonable for the purposes of resource estimation at the indicated level. All other areas, where the old results are not supported by new and proximal results, have been classified as inferred resource.

In Snowden's opinion, the confidence in the estimate for these areas could be rapidly upgraded by carrying out additional drilling, which will both increase the density of drillhole data and provide additional data to validate the historical data. Snowden is also preparing the mining study and mineral reserves for the Kinsenda BFS. This study was not completed by year-end, and consequently, no mineral reserves have been declared. These will be released on completion of the BFS in F2011.

### Inclusion of inferred resources

The mining study is being carried out on the total resource inclusive of inferred resources, and as at year-end had not been completed. Any inferred resources included in the BFS mining plan will be flagged as "inferred resources scheduled in reserve".

### Material risk factors that could impact on the mineral resource and ore reserve statement

Snowden has reclassified a significant part of the Kinsenda mineral resource to the inferred category, on the basis that the historical assay data was not subjected to rigorous, modern assay laboratory QA QC. Comparison of the historical data against the new QA QC controlled data collected by Metorex in F2010 (in a portion of the West mine) has however indicated a positive bias of approximately 10–15 percent. Snowden has recommended that further drilling with QA QC measures in place be carried out to test this positive bias in the areas of historical drilling reclassified as inferred, and convert these resources to a SAMREC compliant indicated resource. The Metorex Board has approved this programme of drilling.

Metorex plans to actively follow up on these recommendations in a second phase of drilling to commence in F2011, to further derisk the Kinsenda BFS and mining project.

### Legal proceedings or other material conditions that may impact on mining or exploration activities

It has been confirmed that the review process relating to MMK has been finalised, and no further payments or relinquishing of licences will be required.

**MINIERE DE MUSOSHI ET KINSEDA SARL (MMK) – MINERAL RESOURCES**

SULPHIDES Classification	Tons (Mt)		Cu grade (%)		Copper (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009
<b>Kinsenda – high-grade sulphides</b>						
Measured	0,0	13,1	0,0	4,8	0	628
Indicated	2,7	4,1	5,2	5,8	142	235
Inferred	11,9	0,0	5,8	0,0	685	0
<b>Total Kinsenda – high-grade sulphides</b>	<b>14,6</b>	<b>17,1</b>	<b>5,7</b>	<b>5,0</b>	<b>827</b>	<b>863</b>
<b>Kinsenda – low-grade sulphides</b>						
Measured	0,0	0,0	0,0	0,0	0	0
Indicated	2,3	0,0	1,1	0,0	24	0
Inferred	5,3	0,0	1,1	0,0	59	0
<b>Total Kinsenda – low-grade sulphides</b>	<b>7,5</b>	<b>0,0</b>	<b>1,1</b>	<b>0,0</b>	<b>83</b>	<b>0</b>
<b>Total Kinsenda sulphides</b>	<b>22,1</b>	<b>17,1</b>	<b>4,1</b>	<b>5,0</b>	<b>910</b>	<b>863</b>
<b>Lubembe – mixed and sulphides</b>						
Measured	0,0	0,0	0,0	0,0	0	0
Indicated	56,5	0,0	1,8	0,0	1 040	0
Inferred	36,6	47,5	2,1	2,2	761	1 045
<b>Total Lubembe – mixed and sulphides</b>	<b>93,1</b>	<b>47,5</b>	<b>1,9</b>	<b>2,2</b>	<b>1 801</b>	<b>1 045</b>
<b>Grand total</b>	<b>115,2</b>	<b>64,6</b>	<b>2,4</b>	<b>3,0</b>	<b>2 711</b>	<b>1 908</b>

Rounding errors may occur.

## Sable Zinc

### Location

The Sable Zinc facility is located approximately 2 kilometres south of the centre of Kabwe in central Zambia, some 150 kilometres

north of the capital Lusaka. Sable Zinc is a copper and cobalt toll processing facility which produced a combination of standard and A-grade copper cathode and was commissioned during May 2006.

### Exploration activities

Sable Zinc holds the mineral rights to an old dump of oxidised zinc material containing approximately 400kt of zinc at a grade of 9,8 percent zinc. In addition, there is a tailings dam containing approximately 219kt of zinc at a grade of 4,5 percent zinc. A third party investigated these dumps in F2010 with an option to purchase.

### Processing activities

The leach, solvent extraction and electrowinning circuits previously enabled Sable to process the copper and cobalt concentrates from Ruashi Phase I. Sable Zinc plant no longer receives oxide concentrate from Ruashi and is reliant on sourcing high-grade oxide copper feed in the open market and via traders.

### Methods and key assumptions in estimation and classification of mineral resources and ore reserves

Metorex has classified the two dumps as inferred mineral resources due to the inherent problems associated with representative sampling and tonnage determination of dumps and the restricted sampling data.

### Material risk factors that could impact on the mineral resource statement

The classification of the dumps into the inferred resource category adequately reflects the unknowns and risks associated with the dumps.

### Legal proceedings or other material conditions that may impact on mining or exploration activities

The Company is not aware of any material conditions that may affect the operating activities at Sable Zinc.

**SABLE ZINC KABWE LIMITED – MINERAL RESOURCES**

OXIDES Classification	Tons (Mt)		Zn grade (%)		Zinc (000t)	
	F2010	F2009	F2010	F2009	F2010	F2009
<b>Washing plant stockpiles</b>						
Inferred	0,4	0,4	9,8	9,8	39	39
<b>Total washing plant</b>	0,4	0,4	9,8	9,8	39	39
<b>Leach plant tailings</b>						
Inferred	4,9	4,9	4,5	4,5	219	219
<b>Total plant tailings</b>	4,9	4,9	4,5	4,5	219	219
<b>Grand total</b>	5,3	5,3	4,9	4,9	258	258

**ATTRIBUTABLE INTEREST**

Operation/project	Attributable interest
	F2010 %
Ruashi	75
Chibuluma	85
Chifupu	85
Kinsenda	77
Lubembe	77
Dilala East	75

## Competent persons declaration

Mineral Resources and Reserves for the various operations have been compiled and signed off under the direction of the following independent consultants in compliance with the South African Code for Reporting of Mineral Resources and Reserves (SAMREC) of 2007.

Mine/Project	Mineral Resource	Mineral Reserve
Ruashi Mine	Mr S Savage, BSc (Hons), MEng, PrSciNat Integrated Geological Solutions (Pty) Limited Most recent update: February 2011	Mr F van Daalen, BEng (Mining), PrEng VBKOM Consulting Engineers (Pty) Limited Most recent update: February 2011
Chibuluma South Mine	Mr C Sihole, BSc (Hons) Chibuluma Mines plc Independently verified and signed off by Venmyn Rand (Pty) Limited Most recent update: March 2011	Mr C Sihole, BSc (Hons) Chibuluma Mines plc Independently verified and signed off by Venmyn Rand (Pty) Limited Most recent update: March 2011
Kinsenda Project	Mr I Jones, BSc (Hons), MSc, FAusIMM Snowden Mining Industry Consultants Most recent update: March 2011	In progress by Snowden Mining Industry Consultants
Lubembe Project	Mr S Savage, BSc (Hons), MEng, PrSciNat Integrated Geological Solutions (Pty) Limited Most recent update: March 2011	No reserve declared
Dilala East Project	Mr S Savage, BSc (Hons), MEng, PrSciNat Integrated Geological Solutions (Pty) Limited Most recent update: November 2009	No reserve declared
Sable Zinc	Mr T P Williams, BSc (Hons), PrSciNat, FSAIMM Metorex Limited	No reserve declared

Mineral Resources and Reserves in this report have been reviewed and compiled by Mr T P Williams, BSc (Hons), PrSciNat (South African Council of Natural and Scientific Professionals Registration No 400387/04), Fellow of the Southern African Institute of Mining and Metallurgy. Mr Williams is Group Mineral Resource Manager and is a full-time employee of the Company. He is a mining geologist with 20 years' experience in exploration, resource development, estimation and mining geology in gold and base metals through west, central and east Africa. Mr Williams is based at the Company's Head Office at 5th Floor, The Mall Offices, Cradock Avenue, Rosebank, 2146, Johannesburg.

Mr Williams has confirmed in writing that the information disclosed is compliant with section 12 of the JSE Listings Requirements and Table 1 of the SAMREC Code, 2007 and that it may be published in the form and context in which it is intended.

**METOREX**  
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