



# 中國有色礦業有限公司

China Nonferrous Mining Corporation Limited

(Incorporated in Hong Kong with limited liability)

Stock Code: 01258



## GLOBAL OFFERING

Joint Global Coordinators, Joint Bookrunners, Joint Sponsors and Joint Lead Managers



J.P.Morgan

**IMPORTANT:** If you are in any doubt about any of the contents of this prospectus, you should seek independent professional advice.



## China Nonferrous Mining Corporation Limited

中國有色礦業有限公司

*(Incorporated in Hong Kong with limited liability under the Companies Ordinance)*

### GLOBAL OFFERING

<b>Number of Offer Shares in the Global Offering :</b>	<b>870,000,000 new Shares (subject to the Over-allotment Option)</b>
<b>Number of International Offer Shares :</b>	<b>783,000,000 new Shares (subject to adjustment and the Over-allotment Option)</b>
<b>Number of Hong Kong Offer Shares :</b>	<b>87,000,000 new Shares (subject to adjustment)</b>
<b>Maximum Offer Price :</b>	<b>HK\$2.80 per Offer Share, plus 1% brokerage, SFC transaction levy of 0.003%, and Hong Kong Stock Exchange trading fee of 0.005% (payable in full on application in Hong Kong dollars and subject to refund)</b>
<b>Nominal value :</b>	<b>HK\$1.00 per Share</b>
<b>Stock code :</b>	<b>1258</b>

**Joint Global Coordinators, Joint Bookrunners, Joint Sponsors and Joint Lead Managers**



**J.P. Morgan**

Hong Kong Exchanges and Clearing Limited, The Stock Exchange of Hong Kong Limited and Hong Kong Securities Clearing Company Limited take no responsibility for the contents of this prospectus, make no representation as to its accuracy or completeness and expressly disclaim any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of this prospectus.

A copy of this prospectus, having attached thereto the documents specified in the paragraph headed “Documents Delivered to the Registrar of Companies and Available for Inspection” in Appendix VI, has been registered by the Registrar of Companies in Hong Kong as required by Section 38D of the Companies Ordinance (Chapter 32 of the Laws of Hong Kong). The Securities and Futures Commission and the Registrar of Companies in Hong Kong take no responsibility for the contents of this prospectus or any other document referred to above.

The Offer Shares have not been and will not be registered under the U.S. Securities Act or any state securities laws of the United States and may not be offered and sold within the United States or to, or for the account or benefit of, U.S. persons, except that Offer Shares may be offered or sold to qualified institutional buyers in reliance on an exemption from registration under the U.S. Securities Act provided by, and in accordance with the restrictions of, Rule 144A or outside the United States in accordance with Regulation S.

The Offer Price is expected to be fixed by agreement between the Joint Global Coordinators (on behalf of the Underwriters) and us on the Price Determination Date. The Price Determination Date is expected to be on or around Monday, June 25, 2012 and, in any event, not later than Wednesday, June 27, 2012. The Offer Price will be no more than HK\$2.80 per Offer Share and is currently expected to be no less than HK\$2.10 per Offer Share unless otherwise announced. If, for any reason, the Offer Price is not agreed by Wednesday, June 27, 2012 between the Joint Global Coordinators (on behalf of the Underwriters) and us, the Global Offering will not proceed and will lapse.

The obligations of the Hong Kong Underwriters under the Hong Kong Underwriting Agreement are subject to termination by the Joint Global Coordinators (on behalf of the Hong Kong Underwriters) if certain grounds arise prior to 8:00 a.m. on the Listing Date. See the section headed “Underwriting — Underwriting Arrangements and Expenses — Hong Kong Public Offering — Grounds for termination” in this prospectus.

June 20, 2012

## EXPECTED TIMETABLE<sup>(1)</sup>

If there is any change in the following expected timetable of the Hong Kong Public Offering, we will issue an announcement in Hong Kong to be published in English in the South China Morning Post and in Chinese in the Hong Kong Economic Times.

<p>Latest time to complete electronic applications under <b>White Form eIPO</b> service through the designated website <a href="http://www.eipo.com.hk">www.eipo.com.hk</a><sup>(2)</sup> . . . . .</p>	<p>11:30 a.m. on Monday, June 25, 2012</p>
<p>Application lists of the Hong Kong Public Offering open<sup>(3)</sup> . . . . .</p>	<p>11:45 a.m. on Monday, June 25, 2012</p>
<p>Latest time to lodge <b>WHITE</b> and <b>YELLOW</b> Application Forms . . . . .</p>	<p>12:00 noon on Monday, June 25, 2012</p>
<p>Latest time to complete payment of <b>White Form eIPO</b> applications by effecting internet banking transfer(s) or PPS payment transfer(s) . . . . .</p>	<p>12:00 noon on Monday, June 25, 2012</p>
<p>Application lists of the Hong Kong Public Offering close . . . . .</p>	<p>12:00 noon on Monday, June 25, 2012</p>
<p>Expected Price Determination Date<sup>(4)</sup> . . . . .</p>	<p>Monday, June 25, 2012</p>
<p>(1) Announcement of:</p> <ul style="list-style-type: none"> <li>● the Offer Price;</li> <li>● the level of interest in the International Offering;</li> <li>● the level of applications in the Hong Kong Public Offering; and</li> <li>● the basis of allocation of the Hong Kong Offer Shares</li> </ul>	
<p>to be published in the South China Morning Post (in English) and the Hong Kong Economic Times (in Chinese) and on the websites of the Hong Kong Stock Exchange at <a href="http://www.hkexnews.hk">www.hkexnews.hk</a> and our Company at <a href="http://www.cnmc1.net">www.cnmc1.net</a> on or before<sup>(5)</sup> . . . . .</p>	<p>Thursday, June 28, 2012</p>
<p>(2) Announcement of results of allocations in the Hong Kong Public Offering (including successful applicants' identification document numbers, where appropriate) to be available through a variety of channels including the websites of the Hong Kong Stock Exchange at <a href="http://www.hkexnews.hk">www.hkexnews.hk</a> and our Company at <a href="http://www.cnmc1.net">www.cnmc1.net</a> (see paragraph entitled "Publication of Results" in the section headed "How to Apply for Hong Kong Offer Shares" in this prospectus) from . . . . .</p>	<p>Thursday, June 28, 2012</p>
<p>(3) A full announcement of the Hong Kong Public Offering containing (1) and (2) above to be published on the website of the Hong Kong Stock Exchange at <a href="http://www.hkexnews.hk">www.hkexnews.hk</a><sup>(6)</sup> and the Company's website at <a href="http://www.cnmc1.net">www.cnmc1.net</a><sup>(7)</sup> from . . . . .</p>	<p>Thursday, June 28, 2012</p>

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## EXPECTED TIMETABLE<sup>(1)</sup>

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Results of allocations for the Hong Kong Public Offering and the Hong Kong identity card/passport/Hong Kong business registration numbers of successful applicants (where appropriate) will be available at <a href="http://www.iporeresults.com.hk">www.iporeresults.com.hk</a> with a “search by ID” function . . . . .	Thursday, June 28, 2012
Dispatch of Share certificates in respect of wholly or partially successful applications pursuant to the Hong Kong Public Offering on or before <sup>(5)</sup> . . . . .	Thursday, June 28, 2012
Dispatch of White Form e-Refund payment instructions/refund cheques on or before <sup>(8)</sup> . . . . .	Thursday, June 28, 2012
Dealings in Shares on the Hong Kong Stock Exchange to commence on . . . . .	Friday, June 29, 2012

*Notes:*

- (1) All times and dates refer to Hong Kong local time and date, except as otherwise stated.
- (2) You will not be permitted to submit your application through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) after 11:30 a.m. on the last day for submitting applications. If you have already submitted your application and obtained an application reference number from the designated website prior to 11:30 a.m., you will be permitted to continue the application process (by completing payment of application monies) until 12:00 noon on the last day for submitting applications, when the application lists close.
- (3) If there is a tropical cyclone warning signal number 8 or above, or a “black” rainstorm warning at any time between 9:00 a.m. and 12:00 noon on Monday, June 25, 2012, the application lists will not open on that day. See the section headed “How to Apply for Hong Kong Offer Shares — Effect of Bad Weather on the Opening of the Application Lists” in this prospectus.
- (4) The Price Determination Date is expected to be on or around Monday, June 25, 2012 and, in any event, not later than Wednesday, June 27, 2012. If, for any reason, the Offer Price is not agreed between the Joint Global Coordinators (on behalf of the Underwriters) and our Company by Wednesday, June 27, 2012, the Global Offering will not proceed and will lapse.
- (5) Share certificates are expected to be issued on Thursday, June 28, 2012 but will only become valid provided that the Global Offering has become unconditional in all respects and neither of the Underwriting Agreements has been terminated in accordance with its terms, which is scheduled to be at around 8:00 a.m. on Friday, June 29, 2012. Investors who trade Shares on the basis of publicly available allocation details before the receipt of share certificates and before they become valid do so entirely of their own risk.
- (6) The announcement will be available for viewing on the “Main Board — Allotment of Results” page on the Hong Kong Stock Exchange’s website [www.hkexnews.hk](http://www.hkexnews.hk) and our Company’s website at [www.cnmc.net](http://www.cnmc.net).
- (7) None of the website or any of the information contained on the website forms part of this prospectus.
- (8) e-Refund payment instructions/refund cheques will be issued in respect of wholly or partially unsuccessful applications and in respect of wholly or partially successful applications if the Offer Price is less than the price per Offer Share payable on application.

You should read carefully the sections headed “Underwriting”, “Structure of the Global Offering” and “How to Apply for Hong Kong Offer Shares” for details relating to the structure of the Global Offering, procedures on the applications for Hong Kong Offer Shares and the expected timetable, including conditions, effect of bad weather and the dispatch of refund cheques and Share certificates.

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### IMPORTANT NOTICE TO INVESTORS

This prospectus is issued by the Company solely in connection with the Hong Kong Public Offering and the Hong Kong Offer Shares and does not constitute an offer to sell or a solicitation of an offer to buy any security other than the Hong Kong Offer Shares offered by this prospectus pursuant to the Hong Kong Public Offering. This prospectus may not be used for the purpose of, and does not constitute, an offer or invitation in any other jurisdiction or in any other circumstances. No action has been taken to permit a public offering of the Offer Shares in any jurisdiction other than Hong Kong and no action has been taken to permit the distribution of this prospectus in any jurisdiction other than Hong Kong. The distribution of this prospectus and the offering and sale of the Offer Shares in other jurisdictions are subject to restrictions and may not be made except as permitted under the applicable securities laws of such jurisdictions pursuant to registration with or authorization by the relevant securities regulatory authorities or an exemption therefrom.

You should rely only on the information contained in this prospectus and the Application Forms to make your investment decision. We have not authorized anyone to provide you with information that is different from what is contained in this prospectus. Any information or representation not made in this prospectus must not be relied on by you as having been authorized by us, the Joint Global Coordinators, the Joint Bookrunners, the Joint Sponsors, the Joint Lead Managers and the Underwriters, any of our or their respective directors or advisors, or any other person or party involved in the Global Offering. Information contained in our website, located at [www.cnmccl.net](http://www.cnmccl.net) does not form part of this prospectus.

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## SUMMARY

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This summary aims to give you an overview of the information contained in this prospectus. As this is a summary, it does not contain all the information that may be important to you and is qualified in its entirety by, and should be read in conjunction with, the full text of this prospectus. You should read the whole prospectus including the appendices hereto, which constitute an integral part of this prospectus, before you decide to invest in our Offer Shares.

There are risks associated with any investment. Some of the particular risks in investing in our Offer Shares are set out in the section headed “Risk Factors” in this prospectus. You should read that section carefully before you decide to invest in our Offer Shares.

Unless otherwise indicated, all reserves and resources information in this prospectus is stated on a 100% ownership basis.

### OVERVIEW

We are a leading, fast growing and vertically integrated copper producer, focusing on the mining, ore processing, leaching, smelting and sale of copper, based in Zambia. According to Wood Mackenzie, we were the first Chinese firm to invest in Zambia’s copper assets since the privatization of its copper industry in the late 1990s and we were the largest PRC enterprise in terms of total overseas copper production in 2011 (including copper concentrate, blister copper and copper cathode). Our main products are copper concentrate, blister copper and copper cathode. We also produce sulfuric acid, a by-product generated during the blister copper smelting process. In 2011, we produced 39.3 kt of contained copper in concentrate, 150.9 kt of blister copper, 7.0 kt of copper cathode and 328.8 kt of sulfuric acid. Our ultimate Controlling Shareholder is CNMC, a PRC state-owned enterprise directly administered by the SASAC and engaged in the development of nonferrous metal resources, construction and engineering, as well as related trade and services, both in the PRC and overseas. We are the overseas platform for the CNMC Group in terms of copper and cobalt resources development.

Our business is carried out through our four subsidiaries in Zambia: NFCA, Luanshya, CCS and SML. NFCA and Luanshya operate our mining assets, while CCS operates our copper smelter and SML operates our copper leaching plants. We currently have four producing mines: the Chambishi Main Mine, the Chambishi West Mine, the Baluba Center Mine and the Muliashi North Mine. We have also recently begun production at two new projects: the Muliashi Leach Plant and the DRC Project. In addition, we are undertaking various other projects to increase our mine, leaching and smelting production. Our major development projects include the exploration and development of the Chambishi Southeast Mine, the expansion of the Chambishi Copper Smelter, and SML’s development projects. We are also conducting various research projects with an aim to start cobalt production in the future. See “Business — Research and Development — Cobalt Development Plans”.

According to the Competent Person’s Report, as of December 31, 2011, our JORC compliant proved and probable ore reserves were 57.6 Mt at an average grade of 1.29% copper and 122.2 Mt at an average grade of 1.36% copper, respectively. Our measured, indicated and inferred mineral resources were 61.3 Mt at an average grade of 1.48% copper, 155.6 Mt at an average grade of 1.69% copper and 210.2 Mt at an average grade of 1.75% copper, respectively. Our JORC compliant total contained metal reserves were approximately 2,404.1 kt of copper and 92.7 kt of cobalt. Our JORC compliant total contained metal resources were approximately 7,197.8 kt of copper and 261.6 kt of cobalt.



## SUMMARY

During the Track Record Period, we sold a substantial portion of our products to a small number of customers. In 2009, 2010 and 2011, sales to our top five customers accounted for 86.2%, 97.2% and 92.8%, respectively, of our total revenue.

The following table sets forth a breakdown of our revenue by geographical location in the periods indicated:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
China <sup>(1)</sup> .....	200,275	750,744	847,976
Europe <sup>(2)</sup> .....	461,673	584,074	397,090
Africa <sup>(3)</sup> .....	34,342	22,467	38,840
<b>Total</b> .....	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>

*Notes:*

- (1) Including Hong Kong.
- (2) During the Track Record Period, our major sales markets in Europe included Switzerland, the United Kingdom and Luxembourg.
- (3) During the Track Record Period, our major sales markets in Africa included Zambia and South Africa.

### Summary of Operations

Our mining and ore processing operations are carried out through NFCA and Luanshya. NFCA, in which we have an 85% equity interest, holds three mining licenses covering an area of approximately 107 sq km. NFCA owns the Chambishi Main Mine, the Chambishi West Mine, the Chambishi Southeast Mine and the Chambishi Processing Plant. The Chambishi Main Mine produces sulfide ores and produced 1,028.3 kt of ore in 2011. The Chambishi West Mine commenced the production of mixed and sulfide ores in late 2010 and produced 487.1 kt of ore in 2011. We are currently undertaking the exploration and development of the Chambishi Southeast Mine, which is expected to commence production in 2016 and which, based on our current plans, will have an annual production capacity of 3,300 kt of ore upon its completion.

Luanshya, in which we have an 80% equity interest, owns the Baluba Center Mine, the Muliashi North Mine, the Baluba East Mine, the Mashiba Mine and the Baluba Center Processing Plant. The Baluba Center Mine produced 1,224.1 kt of sulfide ores in 2011. We have recently commenced production at the Muliashi Project, an integrated project for mining and leaching of copper oxide ores, which comprises the Muliashi North Mine, the Muliashi Leach Plant and the planned Baluba East Mine. See “— Our Mining Rights” and “— Life-of-Mine Plans” for additional details on our mining and exploration licenses and life-of-mine plans.

Our copper smelting operations are carried out through CCS, in which we hold a 60% equity interest. CCS operates the Chambishi Copper Smelter, which produced 150.9 kt of blister copper in 2011 and is the only large-scale overseas copper smelter owned by a PRC enterprise according to the Wood Mackenzie Report. We are currently expanding the facilities of the smelter to increase its annual production capacity to 250 kt of blister copper by 2013.

Our copper leaching operations are carried out through SML, in which we have a 67.75% equity interest. SML operates the Chambishi Leach Plant, which produced 7.0 kt of copper cathode in 2011, and the DRC Project, which commenced production in February 2012 and has a designed annual production capacity of 10 kt of copper cathode. In order to increase our production of



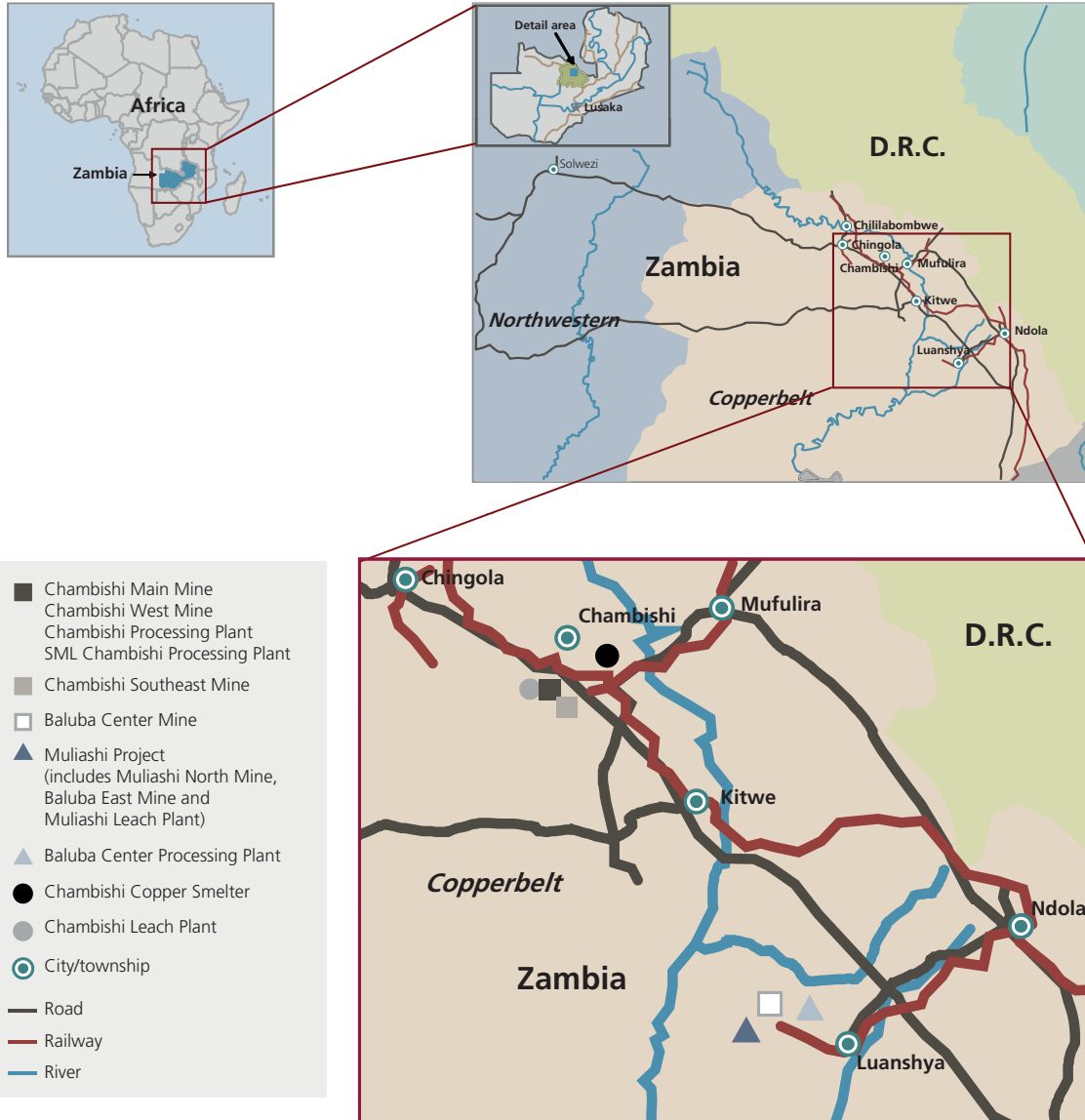
## SUMMARY

copper cathode, we are currently developing a number of leaching projects, including the Mabende Project with a designed annual production capacity of 20 kt of copper cathode and the Kakoso Tailings Development Project with a planned annual production capacity of 3 kt of copper cathode. SML also operates the SML Chambishi Processing Plant, which was completed in 2011 and has an annual processing capacity of 330 kt of ore. See “Business — Our Operations”.

In addition, as part of our strategy to develop our abundant cobalt resources, we are currently pursuing several projects with an aim to start cobalt production in the future, including further research on recycling methods for the extraction of cobalt from smelting slag and copper concentrate. Tests are currently underway and we will consider further expansion plans based on their outcome. We currently expect to complete the research relating to cobalt development and commence industrial production in three to five years. See “Business — Research and Development — Cobalt Development Plans”.

### Asset Locations

The following map shows the locations of our principal mining, ore processing, leaching and smelting operations:



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## SUMMARY

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### CONTROL OVER OUR SUBSIDIARIES

Our Zambian subsidiaries are joint ventures, each with different joint venture partners, which involve certain risks, such as the possibility that our joint venture partners may exercise veto rights and block actions that we believe to be in our or the joint venture's best interests. See "Our History and Reorganization — Our Joint Venture Arrangement — Joint Venture Partners and Shareholders Agreements", "Risk Factors — Risks Relating to our Business and Industry — We own our projects through joint venture companies and such joint venture arrangements may not be successful" and "Risk Factors — Risks Relating to Conducting Our Operations in Zambia and the DRC — The Zambian government could intervene in certain material business decisions on our projects in Zambia based on the right of the special share".

Our Directors consider that any veto rights enjoyed by our joint venture partners pursuant to the relevant joint venture agreement or articles of association of our joint venture subsidiaries represent only protective rights and do not have any impact on our ability to exercise control over the financial policies (which pertain to decision on capital expenditures, budget approvals, credit terms, issue of debt, cash management and accounting policies) and operating policies (which pertain to activities such as sales, marketing, manufacturing and human resources) of the relevant subsidiaries.

Our Directors are of the view that we are able to govern the financial and operating policies of our joint venture subsidiaries so as to obtain benefits from their activities. Accordingly, our joint venture subsidiaries are accounted for as subsidiaries and are consolidated according to the applicable accounting policies.

### SUMMARY OF HISTORICAL FINANCIAL INFORMATION

The following tables set forth extracts from the consolidated financial information of our Group. We have extracted the consolidated financial information as of and for the years ended December 31, 2009, 2010 and 2011 from our consolidated financial information set forth in the Accountants' Report in Appendix I to this prospectus. The extracts from the consolidated financial information should be read together with, and are qualified in its entirety by reference to, the consolidated financial information included elsewhere in this prospectus, including the related notes.

Extracts from our consolidated financial information were prepared in accordance with HKFRS.

#### Extract from Consolidated Statements of Comprehensive Income

	Year ended December 31,					
	2009		2010		2011	
	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)
Revenue	<u>696,290</u>	<u>100.0</u>	<u>1,357,285</u>	<u>100.0</u>	<u>1,283,906</u>	<u>100.0</u>
Gross profit	<u>91,740</u>	<u>13.2</u>	<u>216,139</u>	<u>15.9</u>	<u>188,258</u>	<u>14.7</u>
Profit and total comprehensive income attributable to:						
Owners of the Company	<u>81,674</u>	<u>11.7</u>	<u>73,911</u>	<u>5.4</u>	<u>70,014</u>	<u>5.5</u>
Non-controlling interests	<u>12,673</u>	<u>1.8</u>	<u>33,471</u>	<u>2.5</u>	<u>33,276</u>	<u>2.5</u>
Profit for the year	<u>94,347</u>	<u>13.5</u>	<u>107,382</u>	<u>7.9</u>	<u>103,290</u>	<u>8.0</u>

## SUMMARY

### Extract from Consolidated Statements of Financial Position

	At December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Non-current assets	446,966	557,486	925,725
Current assets	621,130	801,936	547,494
Current liabilities	300,977	440,299	364,342
Net current assets	320,153	361,637	183,152
Total equity	326,178	405,060	489,350
Non-current liabilities	440,941	514,063	619,527

### Condensed Consolidated Statements of Cash Flow

	Year ended December 31,		
	2009	2010	2011
	(US\$ '000)	(US\$ '000)	(US\$ '000)
Net cash from operating activities	25,378	178,352	168,509
Net cash used in investing activities	(125,237)	(158,707)	(412,420)
Net cash from financing activities	217,532	123,488	126,468
Net increase/(decrease) in cash and cash equivalents	117,673	143,133	(117,443)
Cash and cash equivalent at beginning of the year	76,089	194,302	336,789
Effect of foreign exchange rates changes	540	(646)	(2,043)
Cash and cash equivalent at end of the year	194,302	336,789	217,303

### Other Financial Information

	Year ended December 31,		
	2009	2010	2011
Profit attributable to owners of the Company (US\$'000)	81,674	73,911	70,014
Add: Profit attributable to non-controlling interests (US\$'000)	12,673	33,471	33,276
Add: Income tax expense (US\$'000)	11,480	20,202	15,020
Profit before tax (US\$'000)	105,827	127,584	118,310
Add: net finance costs (US\$'000)	5,330	8,232	9,248
EBIT <sup>(1)</sup> (US\$'000)	111,157	135,816	127,558
Add: Depreciation (US\$'000)	31,930	45,584	59,388
EBITDA <sup>(2)</sup> (US\$'000)	143,087	181,400	186,946
EBIT margin <sup>(3)</sup>	16.0%	10.0%	9.9%
EBITDA margin <sup>(4)</sup>	20.5%	13.4%	14.6%
Net profit margin <sup>(5)</sup>	13.5%	7.9%	8.0%
Net profit margin attributable to the owners of the Company <sup>(6)</sup>	11.7%	5.4%	5.5%

*Notes:*

- (1) Earnings Before Interests and Taxes, which equals profit before tax plus the absolute amount of net finance costs.
- (2) Earnings Before Interests, Taxes, Depreciation and Amortization, which equals profit before tax plus the absolute amounts of net finance costs, depreciation and amortization. EBITDA is not a standard measure under HKFRS and should not be considered in isolation or be construed as an alternative to cash flows, profit or any other measure of performance or as an indicator of our operating performance, liquidity, profitability or cash flows generated by operating, investing or financing activities.
- (3) EBIT margin equals EBIT divided by revenue, expressed as a percentage.

## SUMMARY

- (4) EBITDA margin equals EBITDA divided by revenue, expressed as a percentage.
- (5) Net profit margin equals profit for the year as a percentage of revenue.
- (6) Net profit margin attributable to the owners of the Company equals net profit attributable to the owners of the Company as a percentage of revenue.

### OUR PRODUCTS

Our main products are blister copper, copper cathode and copper concentrate. We also produce sulfuric acid as a by-product generated during the copper smelting process.

The following table sets out our production of blister copper, copper cathode, copper concentrate and contained copper in concentrate for the periods indicated:

Product	Year ended December 31,		
	2009	2010	2011
		(kt)	
Blister copper <sup>(1)</sup>	108.4	165.1	150.9
Copper cathode	6.5	7.1	7.0
Copper concentrate <sup>(2)</sup>	53.9	99.7	124.1
Contained copper in concentrate <sup>(2)</sup>	23.6	32.0	39.3

*Notes:*

- (1) Chambishi Copper Smelter's designed capacity of 150 kt is calculated on the basis of a year consisting of 330 working days. In 2010, the actual blister copper production exceeded the designed production capacity because the smelter performed no maintenance and operated at full capacity for more than 330 days.
- (2) All of the copper concentrate produced in 2010 and 2011 was sold internally to the Chambishi Copper Smelter for copper smelting. Currently, we do not plan to sell copper concentrate to external parties in the ordinary course of our business.

The following table sets forth the breakdown of our sales volume and revenue by product category for the periods indicated:

Product	Year ended December 31,								
	2009			2010			2011		
	Sales Volume	Revenue	% of Revenue	Sales Volume	Revenue	% of Revenue	Sales Volume	Revenue	% of Revenue
	(kt)	(US\$ '000)	(%)	(kt)	(US\$ '000)	(%)	(kt)	(US\$ '000)	(%)
Blister copper	105.2	624,185	89.6	163.0	1,278,483	94.2	147.8	1,186,840	92.5
Copper cathode	6.2	33,848	4.9	7.4	56,336	4.2	7.0	58,223	4.5
Contained copper in concentrate <sup>(1)</sup>	5.1	28,218	4.1	—	—	—	—	—	—
Sulfuric acid	196.7	10,039	1.4	313.6	22,466	1.6	338.2	38,843	3.0
<b>Total</b>		<u>696,290</u>	<u>100.0</u>		<u>1,357,285</u>	<u>100.0</u>		<u>1,283,906</u>	<u>100.0</u>

*Note:*

- (1) All of the copper concentrate produced in 2010 and 2011 was sold internally to the Chambishi Copper Smelter for copper smelting. Currently, we do not plan to sell copper concentrate to external parties in the ordinary course of our business.

### SALES TO THE RETAINED GROUP

The Retained Group was our single largest customer in 2009, 2010 and 2011, and accounted for 28.8%, 55.3% and 51.0% of our total revenue in 2009, 2010 and 2011, respectively.

Since we commenced sales of copper products to the Retained Group in 2006, the Retained Group has gradually become our single largest customer, primarily due to its increasing demand for our

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## SUMMARY

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products fueled by the shortage of copper supply in the PRC, the more flexible payment settlement terms and the reduced counterparty risks offered by the Retained Group. In view of the shortage of copper supply in the PRC, the Retained Group has been increasing its orders for our products as we increased our production volume over the years. In addition, due to our affiliation with the Retained Group, the Retained Group is more willing to, at our request, make advance payments instead of issuing letters of credit to us which allows us to better manage our working capital. The letters of credit that we have with independent customers usually have a 45-day settlement period. The advance payment made by the Retained Group thus allows us to save on the interest on bank loans which we may otherwise have to pay. However, in the event that the Retained Group ceases to make advance payments to our Group and issues only letters of credit to our Group, our Directors believe that there will be no material impact on the financial performance of our Group. Further, due to the nature of commodity transactions, the settlement amount is usually relatively high. Consequently, settlement risk is an important consideration for us. While our independent major customers were carefully selected based on a number of factors including their creditworthiness, we believe that the risk of default by the Retained Group is even lesser as the Retained Group is a state-owned enterprise in the PRC. Accordingly, we have no intention to cease selling our products to the Retained Group. For additional details, see “Risk Factors — Risks Relating to Our Business and Industry — We derive a substantial portion of our sales from a small number of customers” and “Business — Sales, Distribution and Marketing”.

Even though the Retained Group has been our single largest customer since 2009, we have other available independent customers to replace the Retained Group should the Retained Group cease to be our customer or our single largest customer. The Retained Group only constituted one of the top five customers of our Group during the Track Record Period, and the other major customers of our Group during the Track Record Period were all Independent Third Parties, save for Yunnan Copper Group which is a minority shareholder of our subsidiary, CCS, and to whom we commenced direct sales in the second quarter of 2011. The major customers which were Independent Third Parties include Trafigura AG, LN Metals International Ltd, Transamine Trading SA (Swiss) and two other European trading companies, the principal business locations of which are the United Kingdom and Switzerland. We commenced selling our products to these major independent customers between 2004 to 2009. During the Track Record Period, our major sales markets included the PRC, Switzerland, the United Kingdom, Zambia, South Africa and Luxembourg. Our independent major customers, including those in Switzerland, are commodity traders whose business is to resell copper products to third parties. We believe that each of our independent major customers, or a combination of a few of them, has the capacity to purchase at least a very significant portion of our production output as they are international trading companies and there have been instances in the past when we had to turn down part of their orders due to their demand being greater than our supply capacity. Nevertheless, to minimize customer concentration risk, we diversify our sales to these few major customers, which were carefully selected with regard to their demand, creditworthiness, financial ability and reputation. We may selectively diversify our sales to other additional high quality customers in future should the need arise. However, we do not see the commercial need to overly diversify our customer base at this stage, which would bring additional administrative burdens.

Even though the Retained Group has copper production operations in the PRC and the copper products produced by us and the Retained Group are both sold in the PRC market, we believe that it is unlikely that there will be extreme competition between the copper products of our Group and those of the Retained Group in the PRC in view of the shortfall in copper supply in the PRC. The PRC, which is our major market, has severe supply shortfalls in both refined copper and copper concentrate. According to Wood Mackenzie, the refined copper supply shortage was 2,513 kt and copper concentrate supply shortage was 1,687 kt in 2011 on a contained copper basis. In the near future, a considerable shortfall between domestic supply and demand for copper in the PRC is also

## SUMMARY

expected. For example, the supply deficit of copper concentrate in the PRC is expected to increase from 1.7 Mt in 2011 to 2.8 Mt in 2015. According to Wood Mackenzie, this shortfall will have to be met through imports of raw materials and refined metal. See “Industry Overview — China Copper Market Overview”. We maintain close commercial relationships with various copper refiners in the PRC, which are customers for blister copper, and downstream copper processing plants, which are customers for copper cathode. We believe that we will be able to sell our products directly to these refiners and copper processing plants upon needs in the unlikely event that we are unable to conduct sales via trading companies. In addition, copper cathode is actively traded on the LME, Shanghai Futures Exchange and COMEX, which can provide additional means of distribution for our Group’s copper cathode products.

Accordingly, we are of the view that we do not rely on any of our major customers in view of the following:

- (a) copper is a commodity and can be sold on public markets at a transparent market price;
- (b) our Group may easily find other replacement customers given the demand for copper exceeds its supply globally and in the PRC, our major market; and
- (c) the loss of any one major customer will not affect the financial performance of our Group materially as our other existing or past customers are able to absorb more of our Group’s supply on no less favorable terms.

### COPPER RESOURCES AND RESERVES

#### Summary of Our Copper Reserves

The following table sets out the ore reserves of our subsidiaries, together with the ownership percentage, as of December 31, 2011:

<u>Company</u>	<u>Ownership percentage</u>	<u>JORC category</u>	<u>Ore (Mt)</u>	<u>Average grade<sup>(1)</sup> Total copper (%)</u>
NFCA .....	85%	<b>Reserves</b>		
		Proved .....	9.1	1.64
		Probable .....	54.6	1.78
		<b>Total</b> .....	<u>63.7</u>	<u>1.76</u>
Luanshya .....	80%	<b>Reserves</b>		
		Proved .....	48.5	1.22
		Probable .....	67.6	1.07
		<b>Total</b> .....	<u>116.1</u>	<u>1.11</u>

*Note:*

- (1) As only some of our deposits contain cobalt reserves, it would not be meaningful to include average cobalt grades in the table above. For information on our cobalt reserves, see the description of individual mining assets under “Business — Mining and Ore Processing Operations”.

## SUMMARY

### Summary of Our Copper Resources

The following table sets out the mineral resources of our subsidiaries, together with the ownership percentage, as of December 31, 2011:

Company	Ownership percentage	JORC category	Ore (Mt)	Average grade <sup>(1)</sup>	
				Total copper (%)	Oxide copper (%)
NFCA .....	85%	<b>Resources</b>			
		Measured .....	11.3	2.13	—
		Indicated .....	66.3	2.16	—
		<b>Subtotal<sup>(2)</sup></b> .....	<b>77.6</b>	<b>2.16</b>	<b>—</b>
		Inferred .....	151.0	1.88	—
Luanshya .....	80%	<b>Resources</b>			
		Measured .....	49.1	1.30	0.68
		Indicated .....	78.5	1.30	0.40
		<b>Subtotal<sup>(2)</sup></b> .....	<b>127.7</b>	<b>1.30</b>	<b>0.51</b>
		Inferred .....	46.0	1.55	0.59
SML .....	67.75%	<b>Resources</b>			
		Measured .....	0.8	2.18	0.34
		Indicated .....	10.8	1.63	0.63
		<b>Subtotal<sup>(2)</sup></b> .....	<b>11.6</b>	<b>1.68</b>	<b>0.61</b>
		Inferred .....	13.1	0.88	0.50

*Notes:*

- (1) As only some of our deposits contain cobalt resources, it would not be meaningful to include average cobalt grades in the table above. For information on our cobalt resources, see the description of individual mining assets under “Business — Mining and Ore Processing Operations”.
- (2) Only measured and indicated mineral resources can be used for ore reserve estimation and mine planning.

### LIFE-OF-MINE PLANS

The following table sets out the details of the Life-of-Mine plans for our producing mines and development projects, according to the Competent Person’s Report, as of December 31, 2011:

Mine	Designed capacity	2011 production	Life-of-Mine <sup>(1)</sup>
	(Mtpa)	(Mt)	(years)
Chambishi Main <sup>(2)</sup> .....	2.145	1.028	8.5
Chambishi West <sup>(3)</sup> .....	0.99	0.487	24
Chambishi Southeast <sup>(4)</sup> .....	3.3	n/a	20
Baluba Center <sup>(5)</sup> .....	1.5	1.224	11
Muliashi North <sup>(6)</sup> .....	4.5	n/a	12.5
Baluba East <sup>(7)</sup> .....	0.9	n/a	7

*Notes:*

- (1) For Chambishi West and Baluba Center, Life-of-Mine represents the remaining mine life of the respective mine as of December 31, 2011 according to the Competent Person’s Report. For development projects, Life-of-Mine represents the estimated mine life of each project following commencement of operations according to the Competent Person’s Report. SRK’s Life-of-Mine estimates are based on respective projects’ mine designs, which take into account the mineable reserves and the projected mining schedule. The designed maximum production capacity of each mine is disclosed in the table above.



## SUMMARY

- (2) Production re-commenced in 2003. Remaining mine life of 8.5 years was calculated based on ore reserves at the Chambishi Main Mine as of December 31, 2011 divided by an assumed production rate of 1,000 kt of ore per year.
- (3) Production commenced in 2010.
- (4) Production is expected to commence in 2016.
- (5) Production re-commenced in 2010.
- (6) Production commenced in December 2011.
- (7) Production is expected to commence in 2017.

### OUR MINING RIGHTS

As of December 31, 2011, we had ten large-scale mining licenses in Zambia covering an aggregate area of approximately 218 sq km and one prospecting license covering an area of approximately 339 sq km. The following table sets out the details of our mining and prospecting licenses:

<u>Mining license No.</u>	<u>License type</u>	<u>Current license holder</u>	<u>Commencement date</u>	<u>Expiration date</u>	<u>Minerals granted</u>
7068-HQ-LML <sup>(1)</sup>	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
7069-HQ-LML	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
7070-HQ-LML <sup>(1)</sup>	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
8097-HQ-LML	Large-scale mining license	Luanshya	January 23, 2004	January 23, 2024	Copper, cobalt and other minerals
8396-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8394-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8393-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8395-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8404-HQ-LML	Large-scale mining license	Luanshya	November 9, 2006	November 9, 2031	Copper and cobalt
8392-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
15201-HQ-LPL	Prospecting license	SML	December 20, 2011	December 20, 2013	Copper

*Note:*

- (1) Mining licenses No. 7068-HQ-LML and 7070-HQ-LML have been merged and form a single license with license No. 7069-HQ-LML.

Mining licenses in Zambia are usually granted for a period of 25 years and can be renewed for another 25 years if an application is made within one year prior to the expiration date. We paid ZMK5,400,000 (equivalent of US\$1,104) in license fees in respect of the three mining licenses owned by NFCA and ZMK15,120,000 (equivalent of US\$3,092) in license fees in respect of the seven mining licenses owned by Luanshya in March 2010. There are no caps on production in respect of our mining licenses.

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## SUMMARY

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### OFFER STATISTICS

All statistics in this table are based on the assumption that the Over-allotment Option is not exercised.

	<u>Based on Minimum Indicative Offer Price of HK\$2.10</u>	<u>Based on Maximum Indicative Offer Price of HK\$2.80</u>
Market capitalization of our Shares <sup>(1)</sup> .....	HK\$7,287 million	HK\$9,716 million
Unaudited pro forma adjusted net tangible assets value per Share <sup>(2)</sup> .....	US\$0.17	US\$0.19

*Notes:*

- (1) The calculation of market capitalization is based on the 3,470,000,000 Shares expected to be in issue immediately upon completion of the Global Offering, assuming no exercise of the Over-allotment Option.
- (2) The unaudited pro forma adjusted net tangible assets value per Share has been arrived at after adjustments referred to in the paragraph headed “Unaudited Pro Forma Statement of Adjusted Net Tangible Assets” in Appendix II to this prospectus and on the basis of 3,470,000,000 Shares in issue at the indicative offer prices of HK\$2.10 and HK\$2.80 per Share immediately following completion of the Global Offering but takes no account of any Shares which may be issued upon exercise of the Over-allotment Option. The unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share is converted to US dollars at an exchange rate of US\$0.1282 to HK\$1.00 prevailing on the Latest Practicable Date.

### USE OF PROCEEDS

The net proceeds from the Global Offering, after deducting underwriting fees and estimated total expenses paid and payable by us in connection with the Global Offering, are estimated to be approximately HK\$2,010.7 million (equivalent to approximately US\$257.8 million) before any exercise of the Over-allotment Option, assuming an Offer Price of HK\$2.45 per Share, being the mid-point of the proposed Offer Price range of HK\$2.10 to HK\$2.80 per Share. We intend to use such net proceeds as follows:

- approximately HK\$603.2 million (equivalent to approximately US\$77.3 million, or approximately 30% of our total estimated net proceeds) for financing the exploration and development of the Chambishi Southeast Mine;
- approximately HK\$402.1 million (equivalent to approximately US\$51.6 million, or approximately 20% of our total estimated net proceeds) for financing the expansion of the Chambishi Copper Smelter;
- approximately HK\$100.5 million (equivalent to approximately US\$12.9 million, or approximately 5% of our total estimated net proceeds) for financing the Muliashi Project;
- approximately HK\$100.5 million (equivalent to approximately US\$12.9 million, or approximately 5% of our total estimated net proceeds) for financing the development of the Mwambashi Project;
- approximately HK\$301.6 million (equivalent to approximately US\$38.7 million, or approximately 15% of our total estimated net proceeds) for acquisitions of companies with existing exploration rights and additional mining assets. As of the Latest Practicable Date, we had not identified any acquisition targets;
- approximately HK\$301.6 million (equivalent to approximately US\$38.7 million, or approximately 15% of our total estimated net proceeds) for the repayment of certain existing loans; and

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## SUMMARY

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- the balance of the net proceeds to be used for working capital and other general corporate purposes.

If the Offer Price is set at the highest or lowest point of the indicative Offer Price range, the net proceeds of the Global Offering, assuming that the Over-allotment Option is not exercised, will increase to approximately HK\$2,305.7 million or decrease to approximately HK\$1,715.6 million, respectively. In such event, we will increase or decrease the intended use of the net proceeds for the above purposes on a pro-rata basis.

If the Over-allotment Option is exercised in full, the net proceeds from the Global Offering will increase to approximately HK\$2,320.5 million, assuming an Offer Price of HK\$2.45 per Share, being the mid-point of the proposed Offer Price range. If the Offer Price is set at the high-end or low-end of the proposed Offer Price range, the net proceeds of the Global Offering, including the proceeds from the exercise of the Over-allotment Option, will increase or decrease by approximately HK\$339.3 million or HK\$339.3 million, respectively. In such event, we will increase or decrease the allocation of the net proceeds to the above purposes on a pro-rata basis.

### DIVIDENDS

In 2009, 2010 and 2011, the aggregate dividends declared by our subsidiaries, after intra-group elimination, amounted to US\$9.4 million, US\$28.5 million and US\$22.8 million, respectively. As of the Latest Practicable Date, all outstanding dividends payable have been fully settled. We funded the payment of the declared dividends with cash in hand. In March 2012, the board of directors of SML resolved the appropriation of dividend of US\$10.0 million for the approval in the forthcoming shareholders' meeting.

The amount of dividend declared by our Board of Directors in the future will depend upon: (a) our overall results of operation; (b) our financial position; (c) our capital requirements; (d) our shareholders interests; (e) our future prospects; and (f) other factors that the Board of Directors deem relevant. Any declaration and payment as well as the amount of dividends will be subject to our constitutional documents and the Companies Ordinance, including, among others, the approval of our Shareholders.

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## DEFINITIONS

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In this prospectus, unless the context otherwise requires, the following words and expressions shall have the following meanings.

“Application Form(s)”	WHITE application form(s), YELLOW application form(s) and GREEN application form(s) or where the context so requires, any of them
“ARO”	assets retirement obligation
“Articles of Association” or “Articles”	the articles of association of our Company that were conditionally adopted on April 27, 2012, which will become effective upon the Listing, as amended from time to time
“associate(s)”	has the meaning ascribed thereto under the Listing Rules
“Audit Committee”	the audit committee of the Board
“Board of Directors” or “Board”	our board of Directors
“BPs”	basis points. A basis point is a unit that is equal to 1/100th of 1%, and is used to denote the change in a financial instrument
“Business Day”	a day (other than a Saturday, Sunday or public holiday in Hong Kong) on which banks in Hong Kong are open generally for normal banking business to the public
“BVI”	the British Virgin Islands
“CAGR”	compound annual growth rate
“CCASS”	the Central Clearing and Settlement System established and operated by HKSCC
“CCASS Clearing Participant”	a person admitted to participate in CCASS as a direct clearing participant or general clearing participant
“CCASS Custodian Participant”	a person admitted to participate in CCASS as a custodian participant
“CCASS Investor Participant”	a person admitted to participate in CCASS as an investor participant who may be an individual or joint individuals or a corporation
“CCASS Participant”	a CCASS Clearing Participant or a CCASS Custodian Participant or a CCASS Investor Participant
“CCS”	Chambishi Copper Smelter Limited (謙比希銅冶煉有限公司*), a company incorporated in Zambia on July 19, 2006 and a subsidiary of our Company

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## DEFINITIONS

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“CDF”	Congolese Franc, the lawful currency for the time being of the DRC
“Chambishi Copper Mine”	the mining complex located in the Copperbelt province in Zambia where NFCA carries out its business activities, comprising the Chambishi Main Mine, the Chambishi West Mine and the Chambishi Southeast Mine
“Chambishi Copper Smelter”	the copper smelter located in the Copperbelt province in Zambia held by CCS and where CCS undertakes its smelting operations
“Chambishi Leach Plant”	the copper leaching plant located in the Copperbelt province in Zambia held by SML and where SML undertakes its leaching operations
“China” or “PRC”	the People’s Republic of China. For the purpose of this prospectus and for geographical reference only and except where the context requires, references in this prospectus to “China” and the “PRC” do not include Taiwan, the Macau Special Administrative Region and Hong Kong
“CNMC”	China Nonferrous Metal Mining (Group) Co., Ltd* (中國有色礦業集團有限公司), a state-owned enterprise incorporated under the laws of the PRC in 1997 with operating history dating back to 1983, directly administered by SASAC
“CNMC Group”	CNMC together with its subsidiaries
“CNMC International Trade”	CNMC International Trade Ltd*(中色國際貿易有限公司), a company incorporated under the laws of the PRC on August 28, 2007 and a subsidiary of CNMC
“CNMC-Mabende”	CNMC-Mabende Metal Leach SPRL, a joint venture to be established in the DRC by SML and Huachin SPRL, an associate of our Group. As at the Latest Practicable Date, this joint venture has not been established
“CNMD”	China Nonferrous Mining Development Limited (中色礦業發展有限公司), an investment holding company incorporated under the laws of the BVI on July 12, 2011, a wholly owned subsidiary of CNMC and the Controlling Shareholder of our Company
“CNMH”	China Nonferrous Mining Holdings Limited (中色礦業控股有限公司*), an investment holding company incorporated under the laws of the Republic of Ireland on September 23, 2011 and a wholly owned subsidiary of our Company
“COMEX”	Commodity Exchange, Inc., a division of the New York Mercantile Exchange

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## DEFINITIONS

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“Companies Ordinance”	the Companies Ordinance of Hong Kong (Chapter 32 of the Laws of Hong Kong), as amended, supplemented or otherwise modified from time to time
“Company,” “our Company”, “we”, “us” or “our”	China Nonferrous Mining Corporation Limited (中國有色礦業有限公司), a company incorporated in Hong Kong on July 18, 2011 with limited liability under the Companies Ordinance and, except where the context otherwise requires, all of its subsidiaries or where the context refers to any time prior to its incorporation, the business which its predecessors or the predecessors of its present subsidiaries were engaged in and which were subsequently assumed by it
“Competent Person’s Report”	the independent technical review report by SRK as set out in Appendix III to this prospectus
“Compliance Committee”	the compliance committee of the Board
“connected person(s)”	has the meaning ascribed thereto in the Listing Rules
“connected transaction(s)”	has the meaning ascribed thereto in the Listing Rules
“Controlling Shareholder”	has the meaning ascribed thereto under the Listing Rules
“Deed of Indemnity”	a deed of indemnity dated May 14, 2012 entered into between CNMC and our Company for itself and as trustee for its subsidiaries, under which CNMC has given certain indemnities in favor of our Group
“Deed of Non-Competition Undertaking”	a deed of non-competition undertaking dated May 14, 2012 entered into between CNMC and our Company under which CNMC has given us certain undertakings in respect of the conduct of certain of its activities outside the PRC
“Director(s)”	director(s) of our Company
“DRC”	The Democratic Republic of the Congo
“DRC Project”	the leaching plant in the DRC owned by Huachin
“EIT Law”	the PRC Enterprise Income Tax Law passed by the National People’s Congress of the PRC on March 16, 2007 and took effect on January 1, 2008, as amended, supplemented and otherwise modified from time to time
“EPF”	Environmental Protection Fund
“euro” or “€”	the lawful currency of the member states of the European Monetary Union that have adopted the single currency in

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## DEFINITIONS

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	accordance with the Treaty establishing the European Community, as amended by the Treaty on European Union
“Fifteen MCC Africa”	Fifteen MCC Africa Construction & Trade Ltd (中國十五冶非洲建築貿易公司*), a company incorporated under the laws of Zambia on May 24, 2007 and a subsidiary of CNMC
“First Quantum”	First Quantum Minerals Ltd., a company incorporated under the Company Act (British Columbia) on December 21, 1983 and an Independent Third Party
“Global Offering”	the Hong Kong Public Offering and the International Offering
“GREEN application form(s)”	the application form(s) to be completed by White Form eIPO Service Provider, Computershare Hong Kong Investor Services Limited
“Group”, “our Group”, “we” or “us”	our Company and our subsidiaries or any of them, or where the context so requires, in respect of the period before our Company became the holding company of our present subsidiaries, the present subsidiaries of our Company
“GRZ”	the Government of the Republic of Zambia
“Hainan Sino-Africa Mining”	China Hainan Sino-Africa Mining Investment Ltd.* (海南中非礦業投資有限公司), a company incorporated under the laws of the PRC in October 2004 holding 30% of our subsidiary SML
“HK\$” or “Hong Kong dollar(s)”	Hong Kong dollars and cents respectively, the lawful currency for the time being of Hong Kong
“HKFRS”	Hong Kong Financial Reporting Standard, as issued by the Hong Kong Institute of Certified Public Accountants
“HKSCC”	Hong Kong Securities Clearing Company Limited
“HKSCC Nominees”	HKSCC Nominees Limited, a wholly-owned subsidiary of HKSCC
“Hong Kong” or “HK”	The Hong Kong Special Administrative Region of the People’s Republic of China
“Hong Kong Offer Shares”	the 87,000,000 new Shares being offered by us for subscription pursuant to the Hong Kong Public Offering, subject to adjustment as described in the section headed “Structure of the Global Offering” in this prospectus



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## DEFINITIONS

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“Hong Kong Public Offering”	the offer of the Hong Kong Offer Shares for subscription by the public in Hong Kong
“Hong Kong Share Registrar”	Computershare Hong Kong Investor Services Limited
“Hong Kong Stock Exchange”	The Stock Exchange of Hong Kong Limited
“Hong Kong Underwriters”	the underwriters of the Hong Kong Public Offering listed in the section headed “Underwriting — Hong Kong Underwriters” in this prospectus
“Hong Kong Underwriting Agreement”	the underwriting agreement dated Friday, May 18, 2012 and as amended on Tuesday, June 19, 2012 relating to the Hong Kong Public Offering entered into among, among others, the Company, the Joint Global Coordinators and the Hong Kong Underwriters
“Huachin”	Huachin Metals Leach SPRL (中色華鑫濕法冶煉公司*), a company incorporated under the laws of the DRC on December 17, 2010 and a subsidiary of SML
“Huachin Minerals”	Huachin Minerals SPRL (華鑫礦產有限公司*), a company incorporated under the laws of the DRC on January 27, 2011 and an associate of our Company
“Independent Third Party(ies)”	party(ies) not connected with any of the Directors, chief executive, Substantial Shareholders of our Company or any of its subsidiaries or any of their respective associates
“Industry Consultant” or “Wood Mackenzie”	Wood Mackenzie (Australia) Pty Ltd., a provider of consulting services to the energy and metals industries and our industry consultant
“International Offer Shares”	the 783,000,000 new Shares initially being offered by us for subscription at the Offer Price under the International Offering, subject to adjustment and the Over-allotment Option, as more fully described in the section headed “Structure of the Global Offering” in this prospectus
“International Offering”	the conditional offering by the International Underwriters of the International Offer Shares to institutional and professional investors and other investors, as described in the section headed “Structure of the Global Offering” in this prospectus
“International Underwriters”	the several underwriters of the International Offering who are expected to enter into the International Underwriting Agreement to underwrite the International Offering
“International Underwriting Agreement”	the underwriting agreement expected to be entered into on or around Monday, June 25, 2012 by our Company and the Joint Global Coordinators on behalf of the

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## DEFINITIONS

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	International Underwriters in respect of the International Offering, as further described in the section headed “Underwriting — Underwriting Arrangements and Expenses — International Offering” in this prospectus
“Joint Bookrunners”	UBS AG, Hong Kong Branch, China International Capital Corporation Hong Kong Securities Limited and J.P. Morgan Securities Ltd.
“Joint Global Coordinators”	UBS AG, Hong Kong Branch, China International Capital Corporation Hong Kong Securities Limited and J.P. Morgan Securities (Asia Pacific) Limited
“Joint Lead Managers”	in respect of the Hong Kong Public Offering, UBS AG, Hong Kong Branch, China International Capital Corporation Hong Kong Securities Limited and J.P. Morgan Securities (Asia Pacific) Limited and in respect of the International Offering, UBS AG, Hong Kong Branch, China International Capital Corporation Hong Kong Securities Limited and J.P. Morgan Securities Ltd.
“Joint Sponsors”	UBS AG, Hong Kong Branch, China International Capital Corporation Hong Kong Securities Limited and J.P. Morgan Securities (Asia Pacific) Limited
“JORC”	the Australasian Joint Ore Reserves Committee
“JORC Code”	the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
“Kakoso Company”	Kakoso Metals Leach Limited, a company incorporated under the laws of Zambia on August 18, 2010, and a subsidiary of SML
“Latest Practicable Date”	June 13, 2012, being the latest practicable date prior to the printing of this prospectus for the purpose of ascertaining certain information contained in this prospectus
“LIBOR”	London Interbank Offer Rate
“Listing”	the listing of the Shares on the Main Board of the Hong Kong Stock Exchange
“Listing Committee”	the listing sub-committee of the board of directors of the Hong Kong Stock Exchange
“Listing Date”	the date, expected to be on Friday, June 29, 2012 on which dealings in our Shares first commence on the Hong Kong Stock Exchange

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## DEFINITIONS

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“Listing Rules”	The Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited, as amended from time to time
“LME”	the London Metal Exchange
“Luanshya” or “CLM”	CNMC Luanshya Copper Mines PLC (中色盧安夏銅業有限公司*), formerly Luanshya Copper Mines PLC, a company incorporated in Zambia on July 10, 2003 and a subsidiary of our Company
“Luanshya Mine”	the mining complex located in the Copperbelt province in Zambia where Luanshya carries out its business activities, comprising the Luanshya-Baluba, Muliashi, Roan Basin, Roan Extension East, Roan Extension West, Baluba East and Muva Hill deposits
“Mabende Project”	the project undertaken by SML to construct and operate a leaching plant in the DRC
“Main Board”	the Main Board of the Hong Kong Stock Exchange
“Memorandum of Association” or “Memorandum”	the memorandum of association of our Company
“MOFCOM”	Ministry of Commerce of the PRC (中華人民共和國商務部)
“MPongwe”	CNMC MPongwe Mining Company Ltd (中色鵬威礦業有限公司*), a company incorporated in Zambia on May 3, 2010, and a subsidiary of CNMC
“Muliashi Project”	an integrated project involving the mining and leaching of copper oxide ores undertaken by Luanshya, including the Muliashi North Mine, the Muliashi Leach Plant and the planned Baluba East Mine
“MUZ”	the Mine Workers Union of Zambia
“Mwambashi Project”	a project involving the development of the Mwambashi deposit located near Mwambashi River Lodge, Zambia by SML
“NDRC”	National Development and Reform Commission of the PRC (中華人民共和國國家發展和改革委員會)
“NFCA”	NFC Africa Mining PLC (中色非洲礦業有限公司*), a company incorporated in Zambia on March 5, 1998, and a subsidiary of our Company
“Nomination Committee”	the nomination committee of the Board

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## DEFINITIONS

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“NUMAW”	the National Union of Miners and Allied Workers
“Offer Price”	the final Hong Kong dollar price per Offer Share (exclusive of brokerage fee, Hong Kong Stock Exchange trading fee and SFC transaction levy) at which the Offer Shares are to be subscribed pursuant to the Global Offering
“Offer Shares”	the Hong Kong Offer Shares and the International Offer Shares including, where relevant, any additional Shares issued or sold pursuant to the exercise of the Over-allotment Option
“Over-allotment Option”	the option expected to be granted by the Company to the International Underwriters exercisable by the Joint Global Coordinators under the International Underwriting Agreement pursuant to which the Company may be required by the International Underwriters to issue up to 130,500,000 additional Shares, representing in aggregate 15% of the initial number of Offer Shares offered under the Global Offering, at the Offer Price, to, among other things, cover over-allocations in the International Offering, if any
“PBOC”	the People’s Bank of China (中國人民銀行), the central bank of China
“PRC government” or “State”	the government of the PRC, including all governmental subdivisions (including provincial, municipal and other regional or local government entities)
“Price Determination Date”	the date, expected to be on or around Monday, June 25, 2012, but no later than Wednesday, June 27, 2012, on which the Offer Price is fixed for the purposes of the Global Offering
“Qualified Institutional Buyers” or “QIBs”	qualified institutional buyers within the meaning of Rule 144A
“Regulation S”	Regulation S under the U.S. Securities Act
“Remuneration Committee”	the remuneration committee of the Board
“Renminbi” or “RMB”	Renminbi yuan, the lawful currency of the PRC
“Reorganization”	the reorganization undertaken by our Group in preparation for the Listing as described in the section headed “Our History and Reorganization — Reorganization” in this prospectus
“Retained Group”	CNMC and its subsidiaries (excluding our Group)

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## DEFINITIONS

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“Retained Operations”	the operations of the Retained Group that were not transferred to our Company and were retained by CNMC in connection with the Reorganization, which mainly represented companies and divisions engaging in the development of mineral resources, construction engineering and related trade and service, the details of which are described in “Relationship with our Controlling Shareholder” in this prospectus
“Rule 144A”	Rule 144A under the U.S. Securities Act
“SAFE”	the State Administration of Foreign Exchange of the PRC (中華人民共和國國家外匯管理局)
“SASAC”	State Assets Supervision and Administration Commission of the PRC (中華人民共和國國務院國有資產監督管理委員會)
“Securities and Futures Commission” or “SFC”	the Securities and Futures Commission of Hong Kong
“SFO”	the Securities and Futures Ordinance of Hong Kong (Chapter 571 of the Laws of Hong Kong), as amended, supplemented or otherwise modified from time to time
“Share(s)”	ordinary share(s) with nominal value of HK\$1.00 each in the share capital of our Company
“Shareholder(s)”	holder(s) of our Shares
“Sinotra”	Sinotra Company Ltd (中色非洲物流貿易有限公司*), a company incorporated under the laws of Zambia on May 25, 2009 and a subsidiary of CNMC
“SML”	Sino-Metals Leach Zambia Limited (贊比亞謙比希濕法冶煉有限公司*), a company incorporated under the laws of Zambia on December 3, 2004 and a subsidiary of our Company
“sq km”	square kilometers
“SRK”	SRK Consulting (China) Ltd, an independent technical consultant of mineral assets
“Stabilizing Manager”	China International Capital Corporation Hong Kong Securities Limited
“State Council”	State Council of the PRC (中華人民共和國國務院)
“Stock Borrowing Agreement”	the stock borrowing agreement expected to be entered into on or about the Price Determination Date between CNMD and the Stabilizing Manager, pursuant to which

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## DEFINITIONS

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	CNMD will agree to lend certain Shares to the Stabilizing Manager on terms set forth therein
“subsidiary” or “subsidiaries”	has the meaning ascribed thereto in section 2 of the Companies Ordinance
“Substantial Shareholder”	has the meaning ascribed thereto in the Listing Rules
“Takeovers Code”	the Hong Kong Code on Takeovers and Mergers and Share Repurchases
“Track Record Period”	the three years ended December 31, 2011
“Underwriters”	the Hong Kong Underwriters and the International Underwriters
“Underwriting Agreements”	the Hong Kong Underwriting Agreement and the International Underwriting Agreement
“United States”, “USA” or “U.S.”	the United States of America, its territories, its possessions and all areas subject to its jurisdiction
“US\$” or “US dollar(s)” or “USD”	United States dollars, the lawful currency for the time being of the United States
“U.S. Securities Act”	the U.S. Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder
“VAT”	value-added tax; all amounts are exclusive of VAT in this prospectus except indicated otherwise
“White Form eIPO”	the application for Hong Kong Offer Shares to be issued in the applicant’s own name by submitting applications online through the designated website of White Form eIPO at <a href="http://www.eipo.com.hk">www.eipo.com.hk</a>
“White Form eIPO Service Provider”	Computershare Hong Kong Investor Services Limited
“Wood Mackenzie Report”	the industry report prepared by Wood Mackenzie at our commission
“Yunnan Copper”	Yunnan Copper Industry Co., Ltd* (雲南銅業股份有限公司), a company incorporated under the laws of the PRC on May 15, 1998 and a subsidiary of Yunnan Copper Group
“Yunnan Copper Group”	Yunnan Copper Industry (Group) Co., Ltd* (雲南銅業集團有限公司), a company incorporated under the laws of the PRC in April 1996 holding 40% of the issued share capital of our subsidiary CCS

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## DEFINITIONS

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“Yunnan Copper Technology”	Yunnan Copper Technology Development Co., Ltd* (雲南銅業科技發展股份有限公司), a company incorporated under the laws of the PRC on June 26, 2000, a subsidiary of Yunnan Copper Group
“Zambia”	The Republic of Zambia
“ZCCM”	Zambia Consolidated Copper Mines Limited, a company incorporated in Zambia in 1982 and succeeded by ZCCM-IH
“ZCCM-IH”	Zambia Consolidated Copper Mines Investments Holdings Plc, the successor company to ZCCM, majority owned by the GRZ
“ZCCZ”	Zambia-China Economic & Trade Cooperation Zone Development Ltd (贊比亞中國經濟貿易合作區發展有限公司*), a company incorporated in Zambia on January 16, 2007 and a subsidiary of CNMC
“Zhongrui”	Zhongrui Mining Investments Company Limited (中瑞礦冶投資有限公司*), a company incorporated in Zambia in November 2010, and a subsidiary of CNMC
“ZMK”	Zambian Kwacha, the lawful currency for the time being of Zambia

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\* Translation of English or Chinese terms for reference purposes only.



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## GLOSSARY OF TECHNICAL TERMS

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“agitation leaching”	a leaching method of extracting useful minerals by agitation of finely ground mineral inputs and leaching agent in the agitation tank
“anode furnace”	a furnace in which blister copper is refined into anode copper
“associated ores”	ores, minerals or elements present in the ore body of the main minerals in such a small quantity that they technically and economically have no mining value of their own. However, such ores, after they have been mined and extracted together with the main minerals, may be processed and utilized
“ball mill”	a large rotating cylinder used for grinding ore with steel balls as the grinding medium
“bioleaching”	an aqueous method of treating refractory ore through pre-treatment with bacterial cultures
“blister copper”	copper which has been cast after passing through a converter. Blister copper contains approximately 99% copper
“c/lb”	US cents per pound
“Co”	cobalt
“contained copper in concentrate”	copper metal contained within copper concentrate, which is equal to copper grade multiplied by volume of copper concentrate
“converter”	an equipment in which the principal phase of the smelting process, which involves the blowing of oxygen-enriched air through molten metal, causing oxidation and the removal of sulfur and other impurities, takes place
“copper anode”	blister copper which has undergone further refinement to remove impurities. In an anode furnace, the molten blister copper is blown with air and natural gas to upgrade its purity to approximately 99.5% copper. It is then cast into keystone-shaped slabs that are shipped to an electrolytic refinery
“copper cathode”	copper sheet which is 99.9% and above pure produced by either an electrolytic refining process or by electrowinning
“copper concentrate”	product of applying the flotation process to copper ore, with a copper metal content typically ranging between 20% and 45%
“crusher”	a machine for crushing rock, ore or other material

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## GLOSSARY OF TECHNICAL TERMS

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“Cu”	copper
“drilling”	a technique or process of making a circular hole in the ground with a drilling machine which typically occurs to obtain a cylindrical core as a sample of ore
“electrode”	an electrical conductor used to make contact with a nonmetallic part of a circuit
“electrolysis”	a process whereby two electrodes are placed in a solution containing ions and an electric current is passed between them, as a result of which the metal can be deposited on the negative electrode
“electrowinning”	recovery of metal from solution by electrolysis
“exploration”	activity to prove the location, volume and quality of an orebody
“exploration right”	the licensed right to explore mineral resources in areas where exploration activities are legal
“flotation process”	the process by which minerals attach themselves to the bubbles on an oily froth and rise to the top where they are skimmed off. This process is used for the concentration of sulfide ores
“grade”	the percentage of metal elements or their component in ore, usually expressed as a percentage or gram per tonne
“heap leaching”	a leaching method of extracting useful minerals involving the dissolution of ores in a leach solution
“indicated resource”	the 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 exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed
“inferred resource”	the part of a mineral resource for which 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 geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability

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## GLOSSARY OF TECHNICAL TERMS

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“kt”	kilo tonnes
“leaching”	metallurgy technique which extracts and separates out the useful elements by chemical reactions with certain leaching agents
“measured resource”	the part of a mineral resource for which 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 exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity
“mining”	the extraction of useful minerals or other geological materials from the crust, from an orebody, vein or (coal) seam
“mining right”	the licensed right to mine mineral resources and obtain mineral products in areas where mining activities are legal
“Mt”	million tonnes
“ore”	a mineral or mineral aggregate containing precious or useful minerals in such quantities, grade and chemical combination as to make extraction economic
“ore processing”	the process through which physical or chemical properties, such as density, surface reactivity, magnetism and color, are utilized to separate the useful components of ores from stones and concentrate or purify them by means of flotation, magnetic selection, electric selection, physical selection, chemical selection, reselection and combined methods
“overburden”	the alluvium and rock that must be removed in order to expose an open pit ore deposit
“overburden stripping”	the removal of waste material, required prior to ore mining
“oxide ore”	orebody which has been oxidized and as a result may become softer or may release metallic minerals thus simplifying metallurgical treatment
“probable reserves”	those measured and/or indicated mineral resources, which are not yet “proved” reserves but of which detailed technical and economic studies have demonstrated that extraction can be justified at the time of the determination and under specified economic conditions

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## GLOSSARY OF TECHNICAL TERMS

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“proved reserves”	those measured mineral resources of which detailed technical and economic studies have demonstrated that extraction can be justified at the time of the determination and under specified economic conditions
“RC”	refining charges
“refining”	the process of upgrading the metal quality
“reserves”	the economically mineable part of a measured and/or indicated resource, including diluting materials and allowances for losses which may occur when the material is mined
“resources”	concentration or occurrence of material of intrinsic economic interest upon or inside the Earth’s crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. Resources, or mineral resources, are subdivided, in order of increasing geological confidence, into “inferred,” “indicated” and “measured” categories
“slag”	a partially vitreous by-product of smelting ore to separate the metal fraction from the unwanted fraction
“smelting”	a process of separating metal by fusion from those impurities with which it is chemically combined or physically mixed
“solvent extraction”	a method of selectively removing one or more substances from a leach solution by treating it with a solvent that extracts certain substances
“stripping ratio”	represents the number of units of waste rock or material that need to be moved per unit of ore extracted from an open pit mine
“sulfide ore”	a type of ore formed normally as a result of geological movement and rich in sulfide. Sulfide ores may contain nickel, copper, zinc or many other metallic minerals, either alone or more often in some combination of two or more. They have not been exposed to weathering or alteration. Their metallic minerals may be easily recovered by crushing, milling and froth flotation
“SxEw” or “solvent extraction/ electrowinning”	the process of copper recovery from leach solutions by solvent extraction and electrowinning
“tailings”	finely ground waste material from which valuable minerals have been extracted by concentration
“TC”	treatment charges
“tonne”	references to tonne herein are to metric tonne. A metric tonne equals approximately 2,204.62 pounds

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## FORWARD-LOOKING STATEMENTS

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### FORWARD-LOOKING STATEMENTS CONTAINED IN THIS PROSPECTUS ARE SUBJECT TO RISKS AND UNCERTAINTIES

This prospectus contains certain statements that are, or may be deemed to be, “forward-looking statements”, and information relating to us and our subsidiaries that are based on the beliefs of our management as well as assumptions made by and information currently available to our management. When used in this prospectus, the words “aim”, “anticipate”, “believe”, “consider”, “continue”, “could”, “estimate”, “expect”, “going forward”, “intend”, “may”, “ought to”, “plan”, “predict”, “project”, “seek”, “should”, “will”, “would” and similar expressions, as they relate to our Company or our management, are intended to identify forward-looking statements. Such statements reflect the current views of our Company’s management with respect to future events, operations, liquidity and capital resources, some of which may not materialize or may change. These statements are subject to certain risks, uncertainties and assumptions, including the other risk factors as described in this prospectus. You are strongly cautioned that reliance on any forward-looking statements involves known and unknown risks and uncertainties. The risks and uncertainties facing our Company which could affect the accuracy of forward-looking statements include, but are not limited to, the following:

- supply and demand changes in copper and cobalt;
- changes in prices for copper and cobalt;
- our production capabilities;
- our plans and objectives for future operations and expansion or consolidation;
- our relationship with, and other conditions affecting, our customers;
- risks inherent to our mining and production;
- competition;
- environmental laws and regulations;
- health, safety and labor laws and regulations;
- regulatory and court decisions;
- future legislation, including regulations and rules as well as changes in enforcement policies;
- changes in general political, economic, legal and social conditions in Zambia, China, the DRC or elsewhere;
- economic growth, inflation, foreign exchanges and the availability of credit;
- weather conditions or catastrophic weather-related damage;
- our liquidity and financial condition; and
- the other risk factors discussed in this prospectus as well as other factors beyond our control.

Our Directors confirm that these forward-looking statements are made after due and careful consideration. Although our Directors believe these forward-looking statements reflect our current views with respect to future events, they are not a guarantee of future performance and are subject to risks, uncertainties and assumptions, including the risk factors as disclosed in this prospectus.

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## FORWARD-LOOKING STATEMENTS

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Subject to the requirements of the Listing Rules, we do not intend to publicly update or otherwise revise the forward-looking statements in this prospectus, whether as a result of new information, future events or otherwise. As a result of these and other risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus might not occur in the way we expect, or at all. Accordingly, you should not place undue reliance on any forward-looking information. All forward-looking statements in this prospectus are qualified by reference to this cautionary statement.

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## RISK FACTORS

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Investing in the Shares involves certain risks. You should carefully consider each of the risks described below and all of the other information contained in this prospectus before deciding to purchase the Shares.

If any of the following risks materialize, our business, financial condition and results of operations could be materially and adversely affected. In that case, the trading price of the Shares could decline, and you may lose all or part of your investment.

Additional risks not currently known to us or that we now deem immaterial would also harm us and affect your investment.

We believe that there are certain risks and uncertainties involved in our operations, some of which are beyond our control. We have categorized these risks and uncertainties into: (i) risks relating to conducting our operations in Zambia and the DRC; (ii) risks relating to our business and industry; (iii) risks relating to the PRC; and (iv) risks relating to the Global Offering.

### **RISKS RELATING TO CONDUCTING OUR OPERATIONS IN ZAMBIA AND THE DRC**

**Political, economic, regulatory, legal and social risks associated with investments in Zambia and the DRC could have an adverse effect on our business.**

Similar to other emerging markets, Zambia and the DRC are subject to certain political, economic, regulatory, legal and social developments that may, individually or in combination, create risks for investors that may be more difficult to predict or measure than in certain developed economies. Any political instability could have an adverse impact on the economy as a whole. Political disruptions and civil unrest that may occur in any neighboring countries could potentially have an adverse effect on Zambian and the DRC exports and consequently, on our business. In addition, changes in the interpretation or enforcement of the laws and regulations currently in effect in Zambia and the DRC could adversely affect our business, financial condition and results of operations.

The general election in Zambia held in September 2011 has led to a change in the ruling political party and the government, and as a result may affect the policies adopted in Zambia in relation to foreign investment. The newly elected President of Zambia has in the past campaigned to restrict foreign ownership in mines, tighten currency control, limit numbers of foreign workers, and increase tax rates and/or introduce new tax. Although the newly elected President of Zambia has publicly expressed the government's intention to maintain the long-term political and economic relationship between Zambia and the PRC and, in particular, our investments and operations in Zambia, there is no assurance that the new Zambian government will not implement more restrictive policies in the future. Also, the Zambian government has issued a policy statement to the effect that all exports of minerals are now required to be routed through the Bank of Zambia (the Zambian Central Bank) for verification purposes, and has yet to issue guidelines by way of a statutory instrument that will prescribe how the verification process is to be undertaken. Also there have been recent news reports that the Zambian government may propose a ban on exporting raw copper, which, if adopted, may have an adverse effect on our business. In addition, the Zambian government has increased the mineral royalty rate applicable to base metals, such as copper, from 3% to 6% with effect from April 1, 2012. The increase in mineral royalties will cause us to pay more mineral royalties and thus have an adverse impact on our business, financial conditions and results of operations.

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## RISK FACTORS

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The general election in the DRC held in November 2011 has not led to a change in the ruling political party. However, general elections in the DRC to be held in the future may similarly lead to a change in the ruling political party and governmental policy relating to foreign investment may also be affected.

Shifts in governmental policy and regulation in Zambia and the DRC could adversely affect the economic and political environment of Zambia and the DRC in the near term and could materially and adversely affect our business, financial condition and results of operations.

### **The Zambian government could intervene in certain material business decisions on our projects in Zambia based on the right of the special share.**

The Minister of Finance and National Planning of Zambia holds a “special share” in both Luanshya and NFCA, which entitles the Minister to intervene in certain material business decisions in relation to Luanshya and NFCA. According to the articles of association of Luanshya, the written consent of the Minister is required for (1) the amendment, removal or alteration of certain terms in the articles of association, (2) voluntary winding up, and (3) material change in the nature of business. The affirmative vote should also be obtained in advance for change of locus of incorporation of Luanshya. According to the articles of association of NFCA, the written consent of the Minister is required for (1) the amendment, removal or alteration of certain terms in the articles of association, (2) voluntary winding up, (3) change of control, (4) material change in the nature of business, and (5) sale, transfer, assignment, lease or disposal of a significant portion of the undertaking, property and/or assets of NFCA. The affirmative vote should also be obtained in advance for change of locus of incorporation of NFCA. In the event we cannot obtain the written consent of the Minister in these circumstances when required, our business, financial condition and results of operations may be materially and adversely affected. The rights of the Minister in the special share under the articles of association of both Luanshya and NFCA do not extend to the Shares of our Company, which are to be listed. For additional details, see “Our History and Reorganization — Our Joint Venture Arrangements — Special Share.”

### **Changes to the political and economic relationship between Zambia and the PRC could materially and adversely affect our business, financial condition and results of operations.**

China has developed long-term political and economic relationships with Zambia. Since the establishment of diplomatic relations between China and Zambia in 1964, leaders of both countries have visited each other from time to time over the years. During the 1960s and 1970s, China provided financial and technical assistance in the construction of the Tanzania-Zambia Railway, one of the largest foreign-aid projects ever undertaken by China, which spans 1,860 kilometers, connecting Dar es Salaam, the capital of Tanzania, and Kapri Mposhi in Zambia. China has also constructed highways, food processing plants, textile mills and wells in Zambia. China and Zambia have entered into various economic and technical cooperation treaties, as well as investment, tax and bilateral free trade treaties. In recent years, Chinese companies have invested in copper mining, textile milling and agriculture projects and opened bank branches in Zambia. During his visit to China in 2011, the former President of Zambia Dr. Kenneth Kaunda praised that CNMC’s investments in Zambia have demonstrated the all-weather friendship between China and Zambia.

The long-term political and economic relationship between China and Zambia has resulted in the establishment of the Zambia-China Economic & Trade Cooperation Zone which was initiated by



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## RISK FACTORS

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China and Zambia and operated and managed by CNMC, and where two of our Zambian subsidiaries are located, as well as various economic and technical cooperation treaties, investment treaties and tax treaties. As a subsidiary of CNMC, we have historically benefited from the long-term political and economic relationship between Zambia and the PRC. However there is no assurance that such relationship or benefits will continue in future. There are numerous political parties in Zambia and historically some of these parties have held an unfavorable view of China. The general election in Zambia held in September 2011 has led to a change in the ruling political party and the government. There is no assurance that the newly elected President of Zambia and the new Zambian government will not adopt policies detrimental to the relationship between Zambia and the PRC or the interests of Chinese companies in Zambia. In the event that there were a material change to the political and economic relationship between Zambia and the PRC, this may affect our ability to continue to operate in Zambia and may have a material adverse effect on our business, financial condition and results of operations.

**High rates of inflation in Zambia and the DRC could have a material adverse effect upon our business, financial condition and results of operations.**

Our operations are located in Zambia and the DRC which have historically experienced relatively high rates of inflation. Since we are unable to control the market price at which we purchase our raw materials and auxiliary materials, it is possible that significantly higher inflation in the future in Zambia and the DRC, without a concurrent devaluation of the local currency against US dollar or an increase in the prices of our products, could have a material adverse effect upon our business, financial condition and results of operations.

**HIV/AIDS, malaria and other diseases may adversely affect our ability to maintain a skilled workforce in the Copperbelt region in Zambia and the DRC.**

HIV/AIDS, malaria and other diseases pose a serious threat to maintain a skilled workforce in the mining industry of the Copperbelt region in Zambia and the DRC. The per capita incidences of the HIV/AIDS virus in Zambia and the DRC have been estimated as being among the highest in the world. As such, HIV/AIDS remains a major healthcare challenge faced by our operations in these countries. There can be no assurance that we will not incur the loss of a significant number of members of our workforce or workforce man-hours or incur increased medical costs, which may have a material adverse effect on our business, financial condition and results of operations.

**RISKS RELATING TO OUR BUSINESS AND INDUSTRY**

**Our business and results of operations are susceptible to economic cycles and volatility and are highly dependent upon the global prices of copper and cobalt.**

Fluctuations of global and domestic prices for our copper products, and in the future, our cobalt products, are affected by a number of factors which are beyond our control. Such factors include, but are not limited to, interest rates, exchange rates, inflation or deflation, fluctuation in the value of US dollar and foreign currencies, global and regional supply and demand, the global economic outlook and the political and economic conditions of major copper and cobalt-producing countries throughout the world. According to the Wood Mackenzie Report, the global demand for copper exceeded its supply in 2011, resulting in a 17% increase in the average price of copper from US\$7,540 per tonne in 2010 to US\$8,818 per tonne in 2011. In 2011, the price of copper has been fluctuating between approximately US\$7,000 per tonne and approximately US\$10,000 per tonne. The price of copper ranged between US\$7,252 per tonne and US\$8,658 per tonne in the period from January 1, 2012 to the Latest Practicable Date, and may remain volatile due to uncertainty in the global economy. There is no assurance that the prices of copper will increase from or stay at the

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## RISK FACTORS

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current level. We price our nonferrous metal products with reference to international market prices and changes in global demand and supply of such products. Any significant decrease in the prices of copper and cobalt could have a material adverse effect on our business, financial condition and results of operations.

Moreover, declining commodity prices may impact our operations by requiring a reassessment of the feasibility of a particular project. Such a reassessment may be the result of a management decision or may be required under financing arrangements relating to a particular project. Even if a particular project is ultimately determined to be commercially viable, the need to conduct such a reassessment may cause substantial delays or may interrupt operations until the reassessment can be completed and this may have a material adverse effect on our business, financial condition and results of operations. In addition, we currently plan to expand into the cobalt industry, which may not be economically viable if cobalt prices decline in future, and such expansion plan may be aborted.

In the event that the prices of copper, and in the future, the prices of cobalt after we commence cobalt production, increase significantly, our customers may reduce the volume of their consumption or seek alternative products or commodities as a substitute for copper and cobalt, leading to reduced consumption of our products. Any reduced consumption or shift to alternative products by our customers could materially and adversely affect our business, financial condition and results of operations. In addition, we have not entered into any long-term fixed price contracts for our products, which contributes to our vulnerability to short- to medium-term variations in the spot price market.

**A downturn in the global or Chinese economy or disruptions to financial markets could materially and adversely affect our results of operations and business prospects.**

The global economy and financial markets have experienced significant disruptions in recent years. Economic growth in many countries, particularly in the European Union member states, continues to be adversely affected. China's economy has also faced challenges. There is considerable uncertainty over the long-term effects of the expansionary monetary and fiscal policies adopted by the central banks and financial authorities of the world's leading economies, including China's. More recently, there have been concerns over the solvency of certain European Union member states and unrest in the Middle East, which have resulted in significant market volatility. There have also been concerns about the economic effect of the earthquake, tsunami and nuclear crisis in Japan. Any prolonged slowdown in the global or Chinese economy would have a negative impact on our business, financial condition and results of operations.

**A substantial portion of our copper products are sold to China, and a decrease in demand for copper worldwide or in China, or a decrease in import of copper by China, could materially and adversely affect our business, financial condition and results of operations.**

Worldwide demand for copper products is affected by a number of factors including global and regional supply and demand and the political, economic and other conditions of major copper producing countries that are beyond our control. We cannot provide any assurance that the demand for copper products throughout the world will not decrease in the future. A decrease in the worldwide demand for copper products may have material adverse effect on our business, financial condition and results of operations.

We sell a substantial portion of our copper products to copper refineries and processing plants in China. In 2009, 2010 and 2011, our sales of products to external customers in China (including Hong Kong), which included the Retained Group, accounted for 28.8%, 55.3% and 66.0% of our total revenues, respectively. As a substantial portion of our copper products are exported to China, a

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decrease in demand for blister copper and copper cathode in China may adversely affect the price of our products exported to China and thus materially and adversely affect our business, financial condition and results of operations. In addition, if domestic production of copper products in China increases significantly in the future, the demand for imports of copper products in China might decrease accordingly even if the demand for copper products in China remains at the same level or increases which could materially and adversely affect our business, financial condition and results of operations.

**We are subject to the uncertainty surrounding our resources and reserves estimates and the volume and grade of the ore we produce may not conform to current expectations.**

Our resources and reserves estimates are based on a number of assumptions in accordance with the JORC Code. There can be no assurance that our resources and reserves will be recovered in the quantities, qualities or yields presented in this prospectus. Mineral resources and reserves estimates are inherently prone to variability. They involve expressions of judgment with regard to the presence and grade of ore bodies and the ability to extract and process the ores economically. These judgments are based on a variety of factors, such as knowledge, experience and industry practice. The accuracy of these estimates may be affected by many factors, including the quality of the drilling and sampling results of the ore bodies, analysis of the ore samples, the procedures adopted, and experience of the persons making the estimates. There are risks associated with such estimates, including that ore mined may be different from the resource estimates in quality, volume, overburden strip ratio or stripping cost. In addition, ores may not ultimately be extracted at a profit.

If we encounter mineralization or geological or mining conditions different from those predicted by historical drilling, sampling and similar examinations, we may have to adjust our mining plans in a way that could materially and adversely affect our business, financial condition and results of operations and reduce the estimated amount of resources and reserves available for production and expansion plans.

In addition, our portfolio of mineral resources and reserves contained in the Competent Person's Report includes inferred mineral resources. As of December 31, 2011, our inferred mineral resources were 210.2 Mt according to the Competent Person's Report. Inferred mineral resources have a great amount of uncertainty as to their existence and physical properties and their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. You are cautioned not to assume that all or any part of the inferred mineral resources will ever be upgraded to a measured or indicated mineral resource category.

The inclusion of resources estimates should not be regarded as a representation that these amounts could be exploited economically. You should not assume that the resources estimated are capable of being directly reclassified as reserves under the JORC Code nor assume that all or any part of the inferred mineral resources will ever be upgraded to a measured or indicated mineral resource category. You are cautioned not to place undue reliance on resources and reserves estimates. See the section headed "Appendix III — Competent Person's Report" for further information.

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### **Failure to achieve our production estimates could have a material adverse effect on our business, financial condition and results of operations.**

Estimates of future production for our mining, ore processing, leaching and smelting operations are subject to changes and are based on, among other things, reserve estimates, assumptions regarding ground conditions and physical characteristics of ores, utilization of production facilities, costs of production and conditions of the industry and general economy. Actual production figures from our mining, ore processing, leaching and smelting operations may vary from estimates for a variety of reasons, including risks and hazards of the types discussed elsewhere in this prospectus, and as set out below:

- actual ore mined varying from estimates in grade, tonnage, and metallurgical and other characteristics;
- unusual or unexpected geological conditions;
- mining dilution;
- lower than estimated recovery rate;
- industrial accidents;
- equipment failures;
- severe weather conditions and natural disasters;
- changes in power costs and potential power shortages;
- shortages of principal supplies needed for operation, including but not limited to copper concentrates, explosives, fuels, sulfuric acid and equipment parts; and
- restrictions imposed by government authorities.

Such occurrences could result in damage to mineral properties, mines or processing facilities, interruptions in production, injury or death to persons, damage to our property or the property of others, monetary losses and legal liabilities. These factors may cause an operation that has been profitable in the past to become unprofitable. Estimates of production from mines or processing facilities not yet in production or from operations that are to be expanded are based on similar factors (including, in some instances, feasibility studies prepared by our personnel and/or external consultants), but it is possible that actual cash operating costs and economic returns will differ significantly from those currently estimated. We cannot assure you that we will achieve our production estimates. Our failure to achieve our production estimates could have a material and adverse effect on our business, financial condition and results of operations.

### **Our mining operations have a limited life and these operations will entail costs and risks regarding monitoring, rehabilitation and compliance with environmental standards.**

Our existing mining operations have a limited life. We need to perform certain procedures to remedy and rehabilitate the environmental and social impact our mining operations have had on local communities. Remediation, rehabilitation, closure and removal of our facilities will incur various costs and are subject to various risks. The key costs and risks for mine closures are: (i) long-term management of permanent engineered structures; (ii) achievement of environmental closure

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standards (such as rehabilitation requirements); (iii) orderly retrenchment of employees and third-party contractors; and (iv) relinquishment of the sites with associated permanent structures and community development infrastructure and programs to new owners. There is no assurance that such closure of mines will be successful and without delays or additional costs. As described in more detail in the Competent Person's Report, we have developed conceptual closure plans including cost estimates and are required to make cash contribution to the EPF in line with the legal requirements in Zambia. However, we may experience a difficult closure, the consequences of which range from increased closure costs, handover delays and conflicts with local communities in relation to ongoing monitoring and environmental rehabilitation costs and damage to our reputation if desired outcomes cannot be achieved. In the event of a difficult closure, our business, financial condition and results of operations could be materially and adversely affected.

In an effort to address mine closure and other geological environment issues, a mining company operating in Zambia is required to make ongoing cash contribution to the EPF on an annual basis based on the results of an EPF audit undertaken annually as required under the Mines Act of Zambia and as a condition to the grant of a mining right. We have fulfilled or undertaken to fulfill our obligations to make cash contribution to the EPF. However, failure to make cash contribution to the EPF in the future would be a breach of the conditions of our mining licenses and constitutes a ground upon which a mining license can be cancelled under certain circumstances. Mining companies are also required to provide a bank guarantee to the Zambian government for the amount difference between the estimated costs of the ARO and the EPF. SML has not yet paid the cash contribution or issued such letter of guarantee as it has not received a demand notice. SML is aware of its current obligation to pay cash contribution and lodge such letter of guarantee in the amount as ascertained by EPF in a letter to our legal counsel and will pay cash contribution and lodge such letter of guarantee as soon as practicable and in any event by the deadline specified in any relevant demand notice. If we fail to do so, this may be deemed to be breach of the requirement to make a contribution to the EPF and result in fine and/or imprisonment of our Directors or cancellation of our mining rights.

In the event of non-compliance with applicable rehabilitation obligations, we could be subject to a variety of penalties and other administrative actions, including inability to proceed with certain administrative procedures relating to mining permits (including annual inspection, renewal, alteration and mortgage registration), suspension and cancellation of mining permits or ceasing of operations.

**Failure to discover new reserves, maintain or enhance existing reserves, develop new mining operations or expand our current mining operations could negatively affect our business and results of operations.**

Mining exploration is unpredictable in nature. The success of any mining exploration program depends on various factors including, among other things: (i) whether ore bodies can be located; (ii) whether the location of ore bodies are economically feasible to mine; (iii) whether appropriate metallurgical processes can be developed and appropriate mining and processing facilities can be economically constructed; and (iv) whether necessary governmental permits, licenses and consents can be obtained.

In order to maintain copper and cobalt production beyond the life of the current proved and probable reserves, we must identify further reserves capable of economical production. However, due to the unpredictable and speculative nature of our industry, there is no assurance that any exploration program we are currently undertaking or may undertake in the future will result in the discovery of valuable resources. There is no assurance that reported resources can be converted into

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reserves, either. Furthermore, actual results upon production may differ from those anticipated at the time of discovery.

To access additional reserves in explored areas, we will need to successfully complete development projects, including extending existing mines and developing new mines. There are a number of uncertainties inherent in the development and construction of any new mine or an extension to an existing mine, including: (i) the availability and timing of necessary governmental approvals; (ii) the timing and cost necessary to construct mining and processing facilities; (iii) the availability and cost of leaching and smelting arrangements; (iv) the availability and cost of labor, utilities, auxiliary materials and other supplies and the accessibility of transportation and other infrastructure; and (v) the availability of funds to finance construction and production activities.

Accordingly, there is no assurance that any future exploration activities or development projects will extend the life of our existing mining operations or result in any new economic mining operations and such failure may have a material adverse effect on our business, financial condition and results of operations.

**The major capital expenditure projects under our expansion program may not be completed within the expected time frame and budget, or at all, and may not achieve the intended economic results. Our expenditure may not be fully recovered and our depleted ore reserves may not be replaced.**

We intend to invest in projects at our existing operations to increase our production efficiency, as well as to expand and develop our mining and processing capacities. We are also currently in the process of making significant capital expenditures in connection with the expansion of our operations. Capital expenditure projects we are currently undertaking include the exploration and development of the Chambishi Southeast Mine, the Chambishi Copper Smelter's expansion, the Muliashi Project, the DRC Project, the Mabende Project and the Kakoso Tailings Development Project. We typically conduct feasibility studies to determine whether to undertake significant construction projects. Actual results may differ significantly from those anticipated by our feasibility studies. In addition, if a valuable resource is discovered, it could take several years and require significant capital expenditure to complete the initial phases of exploration and mine development before production commences, and during this period, the capital cost and economic feasibility may change.

Our capital expenditure projects may also be delayed or adversely affected by a variety of factors, including the failure to obtain the necessary regulatory approvals or sufficient funding, construction difficulties, technical difficulties and manpower or other resource constraints. In particular, the disruptions, uncertainty or volatility in the capital and credit markets resulting from the global financial crisis may limit our ability to obtain financing to meet our funding requirements and we may postpone certain construction projects if our Directors determine that doing so would be in the interest of our Group after taking into consideration the current market conditions, our financial performance and other relevant factors. Costs of these projects may also exceed our planned investment budget. Even if we are able to complete the projects without any delay and within our budget, as a consequence of changes in market circumstances or other factors, we may not achieve the intended economic benefits of these projects. As a consequence of any delay in completing our capital expenditure projects, cost overruns, changes in market circumstances or other factors, the intended economic benefits from these capital expenditure projects may not materialize, and our business, financial condition and results of operations may be materially and adversely affected.



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**We may not achieve optimal results in future acquisitions or may encounter difficulties in integrating and developing the acquired assets or businesses successfully.**

As part of our expansion plan, we plan to increase our mineral resources through acquisitions of companies with existing exploration rights and additional mining assets. In addition, if we are presented with strategically attractive opportunities, we may acquire downstream processing plants, leaching plants, smelters or other businesses or assets that are complementary to our business. We do not have specific timetables for these plans and we cannot be certain that we will be able to identify additional suitable acquisition candidates available for sale at reasonable prices to consummate any acquisition. We may encounter intense competition during the expansion process and we may fail to select or value targets appropriately. In addition, we must receive various governmental and regulatory approvals and/or permits in order to develop new reserves or undertake new downstream processing operations, which approval may not be forthcoming or which may cause significant delay.

Further, acquisitions may involve a number of risks, undisclosed issues or legal liabilities. For example, future acquisitions may expose us to potential risks such as failure to integrate any acquired business into our operations successfully; diversion of management attention from our existing business; potential loss of our key employees or the key employees of any business that we acquire; unanticipated changes in business, industry or general economic conditions that affect the assumptions underlying the acquisition; and decline in the value of acquired assets, companies or assets. These and other risks related to acquiring, integrating and operating acquired assets and companies could cause us not to realize the benefits anticipated to result from the acquisition of assets or companies, and could have a material adverse effect on our ability to grow and on our business, financial condition and results of operations.

**We own our projects through joint venture companies and such joint venture arrangements may not be successful.**

Our Zambian subsidiaries are joint ventures together with different joint venture partners. In addition, we may enter into further joint ventures in the future along with the expansion of our operations. Joint ventures necessarily involve certain risks. Such risks include the possibilities that our joint venture partners may have disputes with us in connection with the performance of each party's obligations and the scope of each party's responsibilities under the joint venture agreements, have economic or business interests or goals that are inconsistent with or opposed to ours, exercise veto rights and block actions that we believe to be in our or the joint venture's best interests, be unable or unwilling to fulfill their obligations under the joint venture or other agreements or require capital contributions to the joint venture or the funding of their portion of the joint venture which may be beyond our scope.

For example, according to the articles of association and shareholders' agreement of NFCA, without the prior written approval of directors representing the interests of shareholders of 86% of the shares, NFCA cannot: (i) reduce the authorized or issued share capital or consolidate, subdivide, purchase, redeem or cancel any of such share capital or alter any rights pertaining to any share or class of shares in such capital or capitalize, or pay or otherwise distribute, any amount standing to the credit of any reserve of NFCA or otherwise reorganize the share capital; (ii) issue any share or security other than the issued ordinary shares in the capital of NFCA; (iii) take or permit the taking of any step to have NFCA voluntarily wound up; (iv) make any material change in the nature of the business; (v) consolidate, merge or amalgamate with any other person; (vi) acquire any subsidiary or otherwise acquire (whether by a single transaction or a series of related transactions) any shares, securities or other interests in any company or business where in each case, the cost of such acquisition exceeds US\$10 million, other than acquisitions or investments required to rehabilitate,

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develop or expand the mine and associated treatment and infrastructure facilities at the Chambishi Copper Mine; (vii) make any loan or advance or extend credit out of the normal course of business; (viii) give any guarantee or indemnity or create any encumbrance over all or any of the undertaking, property, assets or uncalled share capital of NFCA save for the purposes of financing the rehabilitation, development or expansion of the business; or (ix) sell, transfer, lease, assign or otherwise dispose of the relevant mining licenses alone or in aggregate with any other disposal, or a material part of the undertaking, property and/or assets of NFCA (other than in the ordinary course of business).

According to the shareholders' agreement of Luanshya, Luanshya cannot, without the prior written consent of each of the directors appointed by ZCCM-IH, its minority shareholder: (i) issue any shares or create or grant any rights or options entitling the holders thereof to acquire shares or reduce the share capital of Luanshya; (ii) sell, lease, assign or otherwise dispose of all or a substantial part of the undertaking, property, inventory, work in progress and/or assets of Luanshya (or any interest therein) or contract so to do, other than in the normal course of the business or by way of or pursuant to a mortgage or charge (provided that 30 days' notice has been provided to the directors by the mortgagee or chargee of its intention to exercise its right to sell); (iii) make payment of any dividends to the shareholders; or (iv) take any action or procure, facilitate or assist any person to take any action, relating to any acquisition by or issue to a third party of shares including by way of general offer for shares or scheme of arrangement or to the joint venturing of any of Luanshya's operations with a third party or the sale, transfer or disposal of all or a substantial part of the business or assets of Luanshya to a third party.

Further, the financial and operating policies of Huachin (a subsidiary of SML) are governed by its shareholders' meeting (the highest authority) and all resolutions require simple majority voting according to its articles of association and shareholders' agreement, except for the following resolutions require two-thirds of votes in its shareholders' meeting: (i) amendment of articles of association; (ii) increase or decrease of capital; and (iii) merger, division and liquidation of the company.

Any of these issues may have a material adverse effect on our business, financial condition and results of operations through disruption to the joint venture's business or the delay or non-completion of the relevant development projects. In addition, the termination of these joint ventures, if not replaced on similar terms, could have a material adverse effect on our business, financial condition and results of operations.

**We purchase a substantial portion of raw materials for our copper smelting operations, such as copper concentrate, from third parties and the unavailability or increase in price of such raw materials could materially and adversely affect our business, financial condition and results of operations.**

We currently purchase a substantial proportion of copper concentrate from a number of local copper concentrate producers, including Equinox Minerals Limited, to maximize the throughput and efficiency of the copper smelting operations at CCS. In 2009, 2010 and 2011, we purchased copper concentrates in the amount of US\$590.1 million, US\$915.6 million and US\$807.6 million, respectively, from external suppliers, which accounted for 85.5%, 80.6% and 73.9% of CCS' demand. Our average unit purchase prices of copper concentrate were US\$5,307, US\$7,223, and US\$7,235 per tonne in 2009, 2010 and 2011, respectively. If we are unable to purchase sufficient amounts of copper concentrate from third parties, or the grade of available copper concentrates decreases, or could only purchase concentrates at a premium (low TC/RC terms), the overall productivity and profitability of the copper smelting operations at CCS would be materially and



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adversely affected, and therefore our business, financial condition and results of operations could be materially and adversely affected.

**An increase in our production costs including costs of raw materials and auxiliary materials and wages could materially and adversely affect our business, financial condition and results of operations.**

Changes in our production costs have a major impact on our profitability. Our main production expenses are cost of raw materials and auxiliary materials, salaries and overheads. Changes in costs of our mining and processing operations can occur as a result of unforeseen events, and could result in changes in profitability or reserve estimates. Many of these changes may be beyond our control. We cannot assure you that our production costs would not increase in the future, which could materially and adversely affect our business, financial condition and results of operations.

**We rely on third-party contractors for some parts of our operations, and in the case of any failure by such contractors in performing their tasks or by us to maintain long-term and stable working relationships with such contractors, our business, financial condition and results of operations may be materially and adversely affected.**

We outsource a significant part of our mining and exploration engineering work (such as drilling) as well as our mine and plant construction work to third-party contractors. Our operations are affected by the performance of these contractors. Failure to maintain a cooperative relationship with these contractors or to renew the outsourcing service contracts on similar terms, or at all, when they expire may affect our mining activities and thus, materially and adversely affect our business, financial condition and results of operations. If we are unable to carry out the work ourselves or engage replacement third party contractors to carry out the outsourced work in a timely manner on acceptable terms, or at all, our business, financial condition and results of operations may be materially and adversely affected.

We maintain supervision over these contractors and amend the outsourcing agreements from time to time to better address cost and quality controls. However, notwithstanding our efforts, we may not be able to control the quality, safety and environmental standards of the work done by these contractors to the same extent as when the work is performed by our own employees. Any failure by these contractors to meet our quality, safety and environmental standards may have a material adverse effect on our business, financial condition and results of operations. In addition, we may have disputes with our contractors, which could lead to additional expense, management time and attention, potential loss of production time and additional costs, any of which could materially and adversely affect our business, financial condition and results of operations.

In addition, if any claim in respect of the outsourced activities is made by third parties against us directly, we may have to incur costs and devote resources to defend ourselves against such claims. Any such claims could damage our reputation and lead to loss of customers and revenue and have a material adverse effect on our business, financial condition and results of operations.

**Our operations are energy-intensive and we may face increased prices and/or insufficient supply of utilities such as electricity which could negatively affect our operating costs or disrupt or delay production.**

We consume a substantial amount of electricity, water and fuel in connection with our mining, ore processing, leaching and smelting operations. We expect our demand for electricity, water and fuel to increase as our production capacities increase and our business grows. Any shortages or

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disruption in electricity, water or fuel supply could lead to lengthy production shutdowns and increased costs related to recommencement of operations.

We have not experienced any major shortage or disruption in water or fuel supply in the past. There can be no assurance, however, that adequate supplies of water and fuel will be available to us in the future. Insufficient water or fuel supply may force us to limit or delay our production, which could have a material adverse effect on our business, financial condition and results of operations. Any significant increase in water or fuel prices will increase our production costs and could materially and adversely affect our business, financial condition and results of operations if we are not able to pass the increased costs on to our customers.

Electricity shortages interrupt our mining, leaching and smelting operations and may also jeopardize the safety of our mining personnel working underground and cause damage to the mining equipment. While we have taken steps to deal with electricity shortages, there can be no assurance that we will be able to find sufficient alternative supplies for emergency operations during such shortages and it is uncertain how long such shortages would last. In the event we experience electricity shortages and we are unable to find sufficient alternative sources of energy to sustain emergency operations, there could be negative impact on our operations and our business, financial condition and results of operations may be materially and adversely affected.

**We may experience a shortage of reliable and adequate inland or seaborne transport capacity for our products and raw materials. Any disruption in transportation of our products and raw materials or any material increase in transportation costs could have a material adverse effect on our business, financial condition and results of operations.**

We use roadway transportation and cargo ship systems to transport our products from Zambia to our customers in China or other regions. We also use roadway transportation for raw materials purchased locally. We have not experienced any roadway transportation or shipping disruptions that had a material adverse effect on our business, financial condition and results of operations. However, we cannot assure you that we will not experience any material delay in transporting our products as a result of insufficient road and sea capacity in the future. Furthermore, natural disasters may cause interruption to the transportation system which could in turn affect the transportation of our products. If we are unable to secure the required transportation capacity on terms and conditions acceptable to us or at all, our business, financial condition and results of operations could be materially and adversely affected.

**We derive a substantial portion of our sales from a small number of customers.**

During the Track Record Period, we sold a substantial portion of our products to a small number of customers, including entities within the Retained Group. In 2009, 2010 and 2011, sales to our top five customers accounted for 86.2%, 97.2% and 92.8% of our revenue, respectively, and sales to our largest customer accounted for 28.8%, 55.3% and 51.0%, respectively, of our revenue. We may not be able to successfully expand our customer base. Furthermore, none of our customers enters into exclusive purchase contracts with us. We sell our products to the Retained Group which was among our top five customers during the Track Record Period. In 2009, 2010 and 2011, sales to the Retained Group accounted for 28.8%, 55.3% and 51.0% of our total revenue. We do not enter into long-term agreements with our customers and they may switch suppliers without incurring significant costs. There is no assurance that we will be able to retain these customers on mutually acceptable terms or at all or that they will maintain their current level of business with us. If there is a reduction or cessation of orders from these customers for whatever reasons and we are unable to obtain, in substitution, suitable orders of a comparable volume, our business, financial condition and results of operations may be materially and adversely affected.

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**We sell a substantial portion of our products to the Retained Group, which also provides us with certain services.**

We sell a substantial portion of our products to the Retained Group, which also provides us with certain services ranging from the procurement of machinery and equipment to the provision of logistics transportation of our raw materials and products. See the section headed “Connected Transactions” for further information. There is no assurance that the Retained Group will continue to purchase our products or provide services to us on current terms or at all after the Listing. The Retained Group has no obligations to purchase our products or provide such services to us following the Listing, except pursuant to those agreements described in the section headed “Connected Transactions” in this prospectus. We cannot assure you that we will continue to be able to sell our products to the Retained Group or that the services currently provided by the Retained Group will continue to be provided at the standards required by us or be available to us on acceptable terms. We cannot assure you that our relationship with the Retained Group will not change significantly in the future. In the event the Retained Group ceases or significantly reduces their purchase of our products or terminates or reduces the quality or level of services provided to us, and we are unable to find replacement customers or third party service providers of the same quality and on acceptable terms, our business, financial condition and results of operations may be materially and adversely affected.

**Nonferrous metal markets are highly competitive and we face competition from international and Chinese competitors.**

We face increasing competition from both Chinese and international copper and other nonferrous metal producers. Our major competitors are international copper and nonferrous metals producers. Our competitors may have certain advantages, including greater financial, technical and raw materials resources, greater economies of scale, more well-known brand names and more established relationships in certain markets. Increased competition may prevent us from acquiring new assets and ultimately may have a material adverse effect on our business, financial condition and results of operations.

**We may not be able to obtain sufficient funding for our ongoing operations, existing and future capital expenditure requirements, acquisition and investment plans and other funding requirements on acceptable terms, or at all, which could limit our ability to develop our business.**

The exploration, mining and processing of mineral resources is very capital intensive. To fund our current and future operations, capital expenditure requirements, acquisition and investment plans and other funding requirements, we need sufficient internal sources of liquidity or access to financing from external sources. We currently fund our capital expenditures with short-term and long-term bank loans, cash flow from our operating activities and capital contributions and shareholder loans from our shareholders. Our future liquidity, payment of trade and other payables and repayment of our outstanding debt obligations as and when they become due will primarily depend on our ability to maintain adequate cash inflows from our operating activities and adequate external financing. Our ability to generate adequate cash inflows from operating activities may be affected by decreasing sales or downward movements in prices for copper products. Our ability to obtain external financing in the future is subject to a variety of uncertainties, including: our future financial condition, results of operations and cash flows, the condition of the global and domestic financial markets, changes in bank interest rates and lending practices and conditions, ability to renew or refinance our existing short-term bank loans or secure additional external financing, and, after the Listing we may not be able to continue obtaining shareholder loans or bank loans with

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parent guarantees increasing the cost of our future borrowings. See the section headed “Connected Transactions” for further information. The occurrence of any of these events may cause us not to have sufficient cash flow to fund our operating costs and, in that event, our business, financial condition and results of operations may be materially and adversely affected.

Further, the disruptions, uncertainty or volatility in the capital and credit markets resulting from the recent global financial crisis which have resulted in tighter lending policies may limit our ability to obtain financing to meet our funding requirements. If adequate funding is not available to us on favorable terms, in time, or at all, it could materially and adversely affect our ability to fund our existing operations, or develop or expand our business. Additionally, if we decide to raise additional funds through the incurrence of debt, our interest and debt repayment obligations will increase, and we may be subject to additional covenants, which could limit our ability to access cash flows from operations. If we decide to raise additional funds through the issuance of our Shares or other securities, the interests of our Shareholders may be substantially diluted.

### **The risk to our business may increase with higher leverage.**

We monitor our capital structure using the net debt to total equity gearing ratio, which is calculated by dividing net debt by total equity attributable to the owners of our Company. As of December 31, 2009, 2010 and 2011, we had total bank and other borrowings of US\$426.6 million, US\$581.4 million and US\$711.2 million, respectively, and our net debt to total equity attributable to owners of the Company was 86.0%, 70.4% and 127.9%, respectively. The level of our indebtedness could limit our ability to obtain the financing required to fund future capital expenditure and working capital. A shortage of such funds could in turn impose limitations on our ability to plan for, or react effectively to, changing market conditions or to expand through organic and acquisitive growth, thereby reducing our competitiveness. See the section headed “Financial Information — Financial Ratios — Gearing Ratios” for further information.

### **Fluctuations in currencies could materially and adversely affect our business, financial condition and results of operations.**

We conduct operations primarily in Zambia and sell a substantial portion of our final products to customers in China. In 2010 and 2011, our export sales accounted for the majority of our total revenue derived from external customers. We principally produce copper products, which are commodities that are typically priced by reference to the LME prices in US dollars. Our exposure to exchange rate fluctuations results primarily from the value of US dollar against that portion of our costs denominated in ZMK and CDF.

In addition, our monetary assets, loans and transactions are principally denominated in US dollars. We also purchase certain raw materials and auxiliary materials, sell certain products and make salary payments to local employees, all of which are settled in ZMK or CDF. The proceeds from the Offering will be received in Hong Kong dollars. Therefore, our exposure to exchange rate fluctuations also results from the value of ZMK and CDF against Hong Kong dollars. Moreover, we may acquire international mining assets to expand our business in the future. As a result, we may be subject to greater risk in foreign exchange fluctuations.

We have not entered, and may not enter, into any foreign exchange contracts or derivatives transactions to hedge against foreign exchange fluctuations. Any fluctuation in exchange rates could materially and adversely affect our revenue derived from overseas sales, our ability to pay dividends, and our business, financial condition and results of operations.

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**We may experience delays in receiving progress payments and trade receivables from our customers, which could materially and adversely affect our cash flow and working capital, our business, financial condition and results of operations.**

We may receive progress payments from our customers on a delayed basis from time to time. Delays for progress payments and final payments may result in a large amount of trade receivables and may affect our cash flow. In 2009, 2010 and 2011, our trade receivables turnover days (being the sum of trade receivables at the beginning of the period and trade receivables at the end of the period, divided by two, and then divided by revenue and multiplied by the numbers of days for the period generating the sales) were 33.8 days, 28.8 days and 32.5 days, respectively. As of December 31, 2011, our trade receivables amounted to US\$95.8 million, which accounted for 7.5% of our total revenue during 2011. In the event that we encounter delays or defaults in the payments of our trade receivables or progress payments by customers, we may be required to obtain additional working capital to continue with our daily operations. We cannot assure you that the trade receivables or progress payments will be remitted to us by our customers on a timely basis or that delays or defaults in payment will not materially and adversely affect our business, financial condition and results of operations.

**Our risk management and internal control systems may not be adequate or effective.**

Our Directors together with our senior management are responsible for overseeing our internal control policies and procedures. We have established risk management and internal control systems consisting of relevant organizational framework policies, procedures and risk management methods that we believe are appropriate for our business operations. However, we cannot assure you that our systems will be sufficiently effective in identifying and preventing all such risks. In addition, as some of our risk management and internal control systems and procedures are relatively new, we may need to establish and implement additional policies and procedures to further improve our systems from time to time. Since our risk management and internal control systems depend on the implementation by our employees, we cannot assure you that such implementation will not involve any human errors or mistakes. If we fail to implement our policies and procedures in a timely manner, or fail to identify risks that affect our business with sufficient time to plan for contingencies for such events, our business, financial condition and results of operations could be materially and adversely affected, particularly with respect to the maintenance of our mining and prospecting licenses.

**Hedging activities may limit our participation in commodity price increases and increase our exposure to counterparty credit risk.**

We periodically enter into hedging activities with respect to a portion of our production to manage our exposure to copper price volatility. To the extent that we engage in price risk management activities to protect ourselves from commodity price declines, we may be prevented from fully realizing the benefits of commodity price increases above the prices established by our hedging contracts. For instance, in 2009 and 2010, we had unrealized loss on change in fair value of copper futures contracts due to price fluctuations of copper. In addition, our hedging arrangements may expose us to the risk of financial loss in certain circumstances, including instances in which the counterparties to our hedging contracts fail to perform under the contracts.

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**The discontinuation or change of any preferential tax or customs treatment currently available to us and the increase in the applicable tax or customs regime could decrease our future net income and materially and adversely affect our business, financial condition and results of operations.**

The corporate income tax rate generally applicable in Zambia is 35%, except for assessable income arising from mining activities which is 30%. During the Track Record Period, some of our subsidiaries, such as CCS and SML, enjoyed preferential tax treatments, in the form of reduced tax rates and tax holidays, provided by the Zambian government or its local authorities or bureaus. Primarily as a result of this preferential tax treatment, our effective income tax rates for 2009, 2010 and 2011 were 10.8%, 15.8% and 12.7%, respectively. See the section headed “Financial Information — Principal Components of Consolidated Statements of Comprehensive Income — Income Tax Expense” for further information. However, enterprises which are currently entitled to exemptions or reductions from the standard income tax rate for a fixed term may only continue to enjoy such treatment until the fixed term expires. In addition, we may also be subject to any future adverse changes in Zambian tax laws, the applicable tax rate or the interpretations or enforcements of Zambian tax laws. For example, in 2008 the Zambian government introduced changes to its tax regime relating to mining companies, including the introduction of windfall tax. Though the windfall tax in the mining industry has been abolished, we cannot assure you that our tax liabilities will not significantly increase in the future if this windfall tax is reintroduced or if other additional taxes are imposed on us due to the uncertainties in relation to the taxation laws and regulations in Zambia. The reduction or elimination of the preferential tax treatments we currently enjoy or the imposition of additional levies or taxes, whether in existing or new forms, on us or our subsidiaries in Zambia may significantly increase our income tax expense and materially reduce our net income, thereby have a material adverse effect on our business, financial condition and result of operations.

**Our business, financial condition and results of operations may be materially and adversely affected by labor disputes, labor conflicts and disruptions.**

As of December 31, 2011, we had a total of 5,137 employees in Zambia and 5,579 persons working in our operations who were our contractors’ employees. A substantial portion of these employees of ours and our contractors’ are members of trade unions. Current collective agreements at our operations in Zambia are typically one year in duration and are subject to expiration at various times in the future. Our employees who are members of trade unions usually start to strike each year after the then-existing collective agreement expires to negotiate wage increase. Such strikes usually end when our management and the trade union conclude renegotiating collective agreements within a reasonable timeframe, resulting in wage increases that are more modest than the unions’ initial requests. If the renegotiation of collective agreements cannot be concluded within a reasonable timeframe or the trade unions hold prolonged strikes concurrently with their renegotiation with us, it could result in work stoppages and other labor disturbances (including civil disturbances or riots) that could have a material adverse effect on our business, financial condition and results of operations.

We have in the past experienced short-term suspensions of mining and processing operations as a result of both legal and illegal strike actions by employees over disputes relating to wage increases, collective agreements, employment contracts or other matters. Such strike actions have on occasion resulted in civil disturbances at our subsidiaries. Such disputes have in the past been resolved and strikes ended following our negotiations with the relevant labor unions. Civil disturbances and riots have resulted in some personal injuries and property damage. In July 2006, due to a disagreement with NFCA in interpreting the collective agreement, approximately 300 workers at NFCA engaged in civil disturbance, which resulted in work stoppage, property damage and worker injuries; the civil



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disturbance ended after NFCA agreed to improve its communications with unions, reaffirmed the workers of their benefits under the collective agreement, established a labor relation department to address labor disputes and complaints, and implemented rules and procedures for addressing labor complaints. In March 2008, due to delay in communication with workers by the newly established unions, approximately 400 workers at CCS engaged in a strike, which did not result in significant loss to CCS as its facilities was still under construction; the strike ended after CCS and the union concluded negotiating the annual collective agreement. In January and February 2011, due to a misunderstanding of the changes in the labor relationship arrangement of a new mining contractor with NFCA, approximately 500 workers at NFCA engaged in civil disturbance, which resulted in work stoppage, property damages and worker injuries caused by police intervention; the civil disturbance ended after NFCA agreed to improve the communication between the mining contractor and the unions, as well as to further improve the rules and procedures for addressing labor complaints. In March 2011, after CCS rejected the workers' demand for a significant wage increase shortly before signing the new annual collective agreement, approximately 300 workers at CCS engaged in a strike, which resulted in a two-day work stoppage; the strike ended after CCS agreed to provide additional fringe benefits to the workers and to further improve communication with its labor force, but it maintained the major terms of the collective agreements that were negotiated before the strike. In October 2011, workers at NFCA and CCS went on strike without support from the labor unions, demanding an immediate and significant wage increase, which was the newly elected President's campaign promise. The strike at NFCA involved as many as approximately 1,000 workers, most of whom were employees of Jinchengxin Mining & Construction Zambia Ltd. ("Jinchengxin"), a third-party contractor, and resulted in a total of 11 days of work stoppage; the strike ended after NFCA and Jinchengxin agreed to accept part of the workers' demands and also agreed to immediately commence wage negotiation with the labor unions. As SML's facilities are located within NFCA's premises, approximately 130 workers at SML, not on strike themselves, were unable to work for the three days that the striking workers of NFCA blocked access to SML's facilities; SML did not increase its workers' wages, and the workers at SML voluntarily returned to work after the striking workers of NFCA stopped blocking the access to SML's facilities. The strike at CCS involved approximately 600 workers and resulted in a 5-day work stoppage; even though CCS did not increase its workers' wages, the strike ended as the workers voluntarily returned to work after CCS convinced the workers that both sides should collaborate with each other constructively to resolve their disputes and persuaded the workers to return to work and rely on labor unions as the proper channel to conduct negotiations with CCS. In December 2011, due to a dispute over compensation structure and personnel issues, as many as approximately 500 workers at Luanshya engaged in a strike, which resulted in a four-day work stoppage. The strike ended after Luanshya management and the workers agreed to continue the annual compensation structure negotiation while work is resumed. However, if unionized employees were to engage in a concerted strike or other work stoppage, whether legal or illegal, we could experience a disruption of operations, destruction of property, potential loss of life and higher labor costs. A lengthy strike, labor conflict or other labor disruption could have a material adverse effect on our business, financial condition and results of operations.

The labor disputes prior to January 2011 (including the disputes in July 2006) were between the Group and its employees. All other disputes since January 2011 were between the Group, on the one hand, and employees of the Group and employees of the Group's contractor, on the other hand.

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**Our business depends substantially on the continuing efforts of our executive officers and our ability to attract, retain and train key qualified technical personnel, key senior management and other personnel for our operations.**

Our business depends substantially on the continued services of our executive officers and, to a significant extent, on our ability to attract, train and retain qualified technical personnel, particularly those with expertise in copper mining and production. We do not carry key person insurance on any of our personnel, and there can be no assurance that we will be able to attract or retain qualified technical personnel. If one or more of our executive officers or key employees are unable or unwilling to continue their service with us, we might not be able to replace them with persons of equivalent expertise and experience within a reasonable period of time or at all. If any of our executive officers or key employees joins a competitor or forms a competing company, we may lose customers, suppliers, know-how and key personnel and staff members. As a result, our business may be severely disrupted, our business, financial condition and results of operations may be materially and adversely affected, and we may incur additional expenses to recruit, train and retain personnel. Furthermore, local supply of highly skilled personnel for mining operations in Zambia and the DRC is relatively limited. As our business has grown and is expected to continue to grow rapidly, our ability to train and integrate new employees into our operations may not meet the growing demands of our business.

**Our Zambian subsidiaries have historically been managed separately and may not be integrated successfully, and our operating history may not serve as an adequate measure of our future prospects and results of operations.**

We were incorporated in Hong Kong on July 18, 2011 and historically have not operated our key subsidiaries as integrated entities. We have only limited historical operating data and financial information available as an independently operating company upon which you can base your evaluation of our business and prospects. As a result, we may not have sufficient experience to address the risks frequently encountered by companies with a limited independent operating history, including the risks of failure to increase our mining and processing capacity significantly beyond current levels; maintain profitability; acquire and retain customers; appropriately manage legal, compliance and other internal control issues; attract, train, motivate and retain qualified personnel; keep up with evolving industry standards and market developments; manage our expanding operations, including the integration of any future acquisitions; anticipate and adapt to any changes in government regulation, mergers and acquisitions involving our competitors and other significant competitive and market dynamics; manage the logistics, utility and supply needs of our expanded operations; or maintain adequate control over our costs and expenses. If we fail to address any of these risks, our business, financial condition and results of operations would be materially and adversely affected. In addition, our operating results for the Track Record Period may not be indicative of future operating results and prospects.

**CNMC will continue to be our Controlling Shareholder, whose interests may differ from or conflict with those of our other Shareholders.**

Immediately after completion of the Global Offering (assuming that the Over-allotment Option is not exercised), CNMC will beneficially own in aggregate approximately 74.93% of our issued share capital, and will continue to be our ultimate Controlling Shareholder pursuant to the Listing Rules. In addition, following the completion of the Global Offering two of our directors, namely Tao Luo and Xinghu Tao, will remain members of the senior management of CNMC.

Accordingly, CNMC, being our single largest shareholder, will for the foreseeable future through its voting power at shareholders' meetings and through the persons they appoint to our Board, be able



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to exercise influence over our operations and business strategy, such as matters related to composition of our Board of Directors, selection of our senior management, amount and timing of dividends and other distributions, formulation and implementation of our business expansion plans as well as other strategic and investment decisions, issuance of securities and adjustment to our capital structure, amendment to the Memorandum of Association, and other corporate actions requiring approval of our shareholders, including merger, consolidation or sale of our assets, or any other change of control event that may benefit our other shareholders generally.

The interests of CNMC may not be the same as, and may conflict with, those of our public shareholders. See the sections headed “Relationship with Our Controlling Shareholder” and “Connected Transactions” in this prospectus for further information. Although CNMC has agreed to offer a right of first refusal to our Group to acquire any copper and cobalt mining company or business outside of the PRC, we cannot assure you that CNMC will not in the future acquire interests in companies or businesses which compete with us. CNMC may take direct or indirect actions, including exercising its influence over us as our Controlling Shareholder, to favor itself and its other subsidiaries and associated companies that are detrimental to our interests and those of our public Shareholders. If this occurs, it may have an adverse effect on the value of your investment and/or the interests of our public Shareholders.

**Our operations involve extensive environmental risks and the possibility of mishandling dangerous or hazardous materials, which could expose us to material liabilities.**

Our current and future operations are subject to the extensive environmental risks inherent in the mining and processing industries, such as risks of accidental spills, leaks or overflows and discharges from tailing dams or other facilities or other unforeseen circumstances, which could subject us to considerable liability. One of the main environmental issues in the mining industry is waste water and tailings management. Waste water and tailings can contain substances that are potentially harmful to people and the environment, especially in large quantities. We may be subject to claims for injury to persons or damage to property and the environment resulting from waste disposal, improper waste management or other events, such as water or tailings residue being released or overflowing from our operations into the environment, particularly any discharge or overflow into rivers, and the inappropriate and uncontrolled disposal of hazardous waste alongside domestic waste.

In addition, our operations involve handling and storage of explosive, toxic and other dangerous materials, particularly in the unlikely event of the discovery of radioactive materials or hazardous fibrous minerals during exploration or mining. Accidents arising from the mishandling of dangerous materials may occur in the future. The occurrence of any of these risks and hazards could result in damage to or destruction of production facilities, personal injury, environmental damage, business interruption, delay in production, increased production costs, monetary losses and possible legal liability (including compensatory claims, fines and penalties) to us, which could materially and adversely affect our business, financial condition and results of operations. Furthermore, the Zambian government may impose higher environmental protection standards in the future, which could increase our costs of compliance. In either event, the costs and liabilities associated with hazardous materials could have a material adverse effect on our business, financial condition and results of operations.

In preparation for the Global Offering, we have appointed SRK as our independent technical consultant to, among other things, assess our facilities’ compliance with Zambian national legislative requirements covering environmental, health, safety and social matters. According to the Competent Person’s Report, the current operations of our facilities are generally managed in compliance with

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applicable national environmental, health, safety and social requirements. SRK has also recommended that we comply with a number of international industry best practices. We cannot assure you that we will not be subject to environmental non-compliance penalties in the future.

**We are subject to a significant number of laws and regulations, the compliance with which requires ongoing expenditure and considerable capital commitments from us, and non-compliance may subject us to significant penalties.**

Our exploration, development, mining and production activities are subject to various laws and regulations governing environmental protection, occupational health, site safety, exploration, mining, development, production taxes, labor standards, toxic substances and other matters. The costs associated with compliance with these laws and regulations are substantial and no assurance can be given that new rules and regulations will not be applied in a manner which could limit or curtail exploration, development, mining or production. Amendments to current laws and regulations governing operations and activities of exploration for and extraction of mineral resources could have a material adverse effect on our business, financial condition and results of operations.

Moreover, we cannot assure you that we will be able to comply with all relevant laws and regulations that are adopted or amended in the future. Failure to comply with, or any change or difference in the interpretation or enforcement policy of, such laws and regulations, or the occurrence of any unanticipated effects from our operations, in particular those relating to environmental, health and safety issues, could subject us to punitive governmental measures, including forced suspension or closure of operations or revocation of our mining licenses, which may have a material adverse effect on our business, financial condition and results of operations. For example, we are subject to Zambian environmental protection laws and regulations on matters such as chemical runoff into watersheds, deforestation, soil erosion and desertification and health and safety laws relating to operations of mines. We are also required to comply with the laws, regulations and conditions which govern our mining and prospecting licenses, breach of which could ultimately result in termination of these rights. A violation of environmental laws as well as health and safety laws relating to a mine or other operating facilities, or failure to comply with the instructions of the relevant health, safety or environmental authorities, could lead to, among other things, a temporary shutdown of all or a portion of the mine or relevant facility; a loss of the right to mine or operate the relevant facility; the imposition of costly compliance procedures and fines; or serious reputational damage to us.

Our Zambian counsel is of the view that the likelihood of any penalties being imposed on us is remote if any past breaches as disclosed in this prospectus have been rectified and any applicable penalties paid prior to a conviction or the lapse of the cure period specified in a notice of default, as applicable. As of the Latest Practicable Date, to the best of our knowledge having made due inquiry we had not received any notice of default. Except as disclosed below with respect to certain outstanding cash contribution payable by SML and a letter of guarantee to be lodged by SML, we and our Zambian legal advisor are of the view that we are in compliance with applicable Zambian laws and regulations in all material respects. We have paid all outstanding cash contributions except for SML which has been informed by the relevant authority that its outstanding cash contribution is still subject to further assessment and may only be paid after a demand notice has been issued by the relevant authority. SML will pay the outstanding cash contribution by the deadline specified in such demand notice. Our Zambian counsel is of the view that SML will not be deemed to be in breach because the amount payable cannot be ascertained in the absence of assessment. SML has not

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obtained a letter of guarantee as it has not received a demand notice. SML is aware of its current obligation to lodge such letter of guarantee in the amount as ascertained by EPF in a letter to our legal counsel and will obtain such letter of guarantee as soon as practicable and in any event by the deadline specified in any relevant demand notice. See “Business — Legal and Compliance” for more details. However, the relevant authorities in Zambia has not provided us with any confirmation in writing that they will not impose any penalty for past failure to comply with any applicable laws and regulations. There cannot be assurance that the relevant authorities in Zambia will not impose any penalties in the future.

### **Our operations are exposed to safety risks and the occurrence of industrial accidents.**

Certain of our operations are carried out under potentially hazardous conditions, and in the past have led to accidents. Underground mining operations at NFCA have particularly challenging conditions in relation to safety due to a higher water content in the ore body compared to other mine sites. Liabilities might arise in the future as a result of accidents, fatalities or other workforce-related misfortunes, some of which may be beyond our control. Any such events could lead to significant expenditure by us in respect of compensation claims or payments, and insurance may be unavailable or prohibitively expensive. The occurrence of accidents could delay production, increase production costs and result in liability and adverse publicity for us. These factors could have a material adverse effect on our business, financial condition and results of operations.

### **We may be subject to adverse publicity which could materially and adversely affect our reputation and our business, financial condition and results of operations.**

There is an increasing level of community awareness relating to the effect of mining production on communities and the environment in Zambia. Consumer and environmental groups encourage participants in the mining industry to employ practices which minimize any adverse impact that mining may have on communities, workers and the environment. Adverse publicity generated by such groups, whether related to the copper mining industry as a whole or to us in particular, could have an adverse effect on our reputation. We may also be subject to actions by environmental protection groups or other interested parties who object to the actual or perceived environmental impact of our mines or other actual or perceived condition at our mines. These actions may delay or halt production or may create negative publicity related to our mines.

In 2011, Human Rights Watch sent us a letter in September and published a report in November alleging abuses of labor rights by our subsidiaries in Zambia in relation to health and safety measures, work shift systems and union activities, including insufficient protection to employees from health and safety hazards, failure to replace defective personal protective equipment, imposing long working shifts and long working weeks for employees without overtime pay, and denial of employees’ access to certain miners’ union. We responded to Human Rights Watch’s letter that we believe the allegations do not accurately reflect either our relevant policies and procedures or our overall working environment in Zambia. See the section headed “Business — Corporate Social Responsibility — Health and Safety Standards” for additional measures we have implemented or plan to implement to provide appropriate and sufficient resources for our employees to work safely. While we do not believe the publication of this report has had a material adverse effect on our business, financial condition or results of operations to date, we cannot assure you that in the future Human Rights Watch or other organizations will not make or repeat similar allegations (whether by publishing similar reports or otherwise), which may generate adverse publicity against us and have a material adverse effect on our reputation, business, financial condition or results of operations.

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### **We may be subject to risks associated with litigation.**

Legal proceedings arise from time to time in the ordinary course of our business and we cannot prevent litigation being brought against us in the future. See the section headed “Business — Legal and Compliance” for more information. Litigation brought against us could prove costly and time consuming, requiring the attention of senior management, which could have a material adverse effect on our business, financial condition and results of operations.

### **We may be unable to obtain, retain or renew governmental concessions, permits, authorizations, licenses and other approvals required in connection with our operations.**

We are required under applicable laws and regulations to seek governmental concessions, permits, authorizations, mining and prospecting licenses and other approvals, including in connection with our operating, producing, exploration and development activities. See the sections headed “Business” and “Regulatory Overview” in this prospectus for further information. Obtaining, retaining or renewing the necessary governmental concessions, permits, authorizations, licenses (including with respect to mining, environment and water use) or approvals can be a complex and time-consuming process and may involve substantial costs or the imposition of unfavorable conditions. There can be considerable delay in obtaining the necessary permits and other authorizations and, in certain cases, the relevant government agency may be unable to issue a permit or other authorization which is required in a timely manner.

In addition, the duration and success of license applications are contingent on many factors that are beyond our control (including pressure from local communities, non-governmental organizations or media). Certain of the concessions, permits, authorizations, licenses or approvals held by us in respect of our mining operations, production and development projects and exploration prospects may be terminated under certain circumstances, which include the following: (i) failure to comply with any of the material, general or special license conditions (including provision of regular reports and the taking out of appropriate insurance) or gain an extension to the time period required for compliance with such conditions; (ii) minimum expenditure levels or minimum work commitments are not achieved by us (or a corresponding penalty is not paid to the appropriate state authority); (iii) environmental, health and safety standards (including payment of contributions and establishment of environmental performance bonds) are not met; (iv) operating in the licensed areas in a manner that violates the laws of Zambia and the DRC; (v) failure to provide information required or requested by authorities; (vi) liquidation of the immediate license holder; (vii) failure to comply with any requirement under the mining legislation relating to the mining or prospecting license; and (viii) not providing or giving false information on recovery of ores and mineral products, production costs or sales. We may not be able to continue to comply with such laws and regulations due to factors that are beyond our control, and under those circumstances, our licenses and permits may be revoked and we may be subject to penalty. Our operational income derived under such licenses or permits may also be forfeited. To the extent that these laws, regulations and legal requirements are evolving, additional licenses and permits may be required or we may be required to adjust our activities in order to comply with such regulations and in doing so, may incur substantial costs.

Failure to obtain or renew a necessary concession, permit, authorization, license or approval or termination by any relevant governmental authority of any one or more of our mining, production and development, exploration or other concessions, permits, authorizations, licenses, property rights or approvals could result in us being unable to proceed with the development or continued operation of a mine, facility or project which, in turn, may have a material adverse effect on our business, financial condition and results of operations.

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### **We do not possess land use rights certificates for certain parcels of land we occupy.**

We have not obtained land use rights certificates for certain parcels of land we occupy. These parcels consist of a tailings storage facility, an office and several residential areas. We are in the course of applying for the relevant certificates. However, we cannot predict how our rights as owner of those land and our operations carried out on or from the land may be adversely affected as a result of the absence of vested legal title. We may be required to relocate our operations from those parcels of land without valid land use rights certificates and such relocation may adversely affect our business, financial condition and results of operations.

### **Our title to properties may be challenged or terminated.**

Our title to some of the properties may be challenged or impugned. We do not hold any title insurance for our properties and insurance for these title rights may not be available or sufficient. In addition, some of the properties that we have acquired may be subject to prior claims, and our rights to the properties may be affected by, among other things, undetected title defects.

If our title to our properties are challenged or impugned, rectification of title may require us to be involved in costly and lengthy legal proceedings and we may also be prevented from accessing the properties, which would result in us being unable to proceed with the development, exploration or continued operation of the relevant mine or project and have a material adverse effect on our business, financial condition and results of operations.

### **We do not own certain intellectual property rights we are using for our operations.**

We do not own certain of the intellectual property we are using in our operations. We have been licensed to use the trademarks under application as set out in the section headed “Statutory and General Information — Further Information about Our Business — Intellectual Property Rights of the Group — Trademarks” in Appendix V in this prospectus. There is no guarantee that these pending applications for trademarks will be granted to our licensor, namely CNMC who is our Controlling Shareholder, or that they will be granted for a specification of products or services that protects all of our normal business activities. If CNMC is unsuccessful in applying for the registration of these trademarks or revokes its licenses to us, our business, financial condition and results of operations could be materially and adversely affected. We may use in the future, certain technologies (such as the bioleaching technology) in our operations which are the intellectual property of third parties. Difficulties with, or failure to, obtain or renew the necessary intellectual property licenses, or infringement of the intellectual property of third parties (whether actual or allegedly) may result in us being unable to utilize technologies we rely on, which could have a material adverse effect on our business, financial condition and results of operations.

### **We are subject to various operational risks and hazards, and do not insure against certain risks, and our insurance coverage may be insufficient to cover potential liabilities and losses.**

We face various operational risks in connection with our businesses, including production interruptions caused by operational errors, electricity outages, the failure of equipment and other risks; operating limitations imposed by environmental or other regulatory requirements; social, political and labor unrest; environmental or industrial accidents; catastrophic events such as fires, earthquakes, explosions, floods or other natural disasters; and risks related to the complicated geological structure of our mine and geological disasters that occur during the mining process such as mine collapses. These risks can result in, among other things, damage to, and destruction of, mineral properties or production facilities; personal injury or loss of life; environmental damage;

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delays in mining; monetary losses; and legal liability. The occurrence of any of these events may result in the interruption of our operations and subject us to significant losses or liabilities. See the section headed “Business — Insurance” for further information.

We may not have adequate or any insurance coverage on the above operational risks. We do not maintain business interruption insurance or third-party liability insurance against claims for property damage, personal injury or environmental liabilities. There can be no assurance that our insurance coverage would be sufficient in case of such major accidents. In the event that we incur substantial losses or liabilities and our insurance is unavailable or inadequate to cover such losses or liabilities, our business, financial condition and results of operations could be materially and adversely affected.

### **Natural disasters, acts of war and terrorism, riots, epidemics and other disasters could affect our business.**

Our business is subject to general and social conditions. Natural disasters, acts of war and terrorism, riots, epidemics and other disasters that are beyond our control could materially and adversely affect the economy, infrastructure and livelihoods of the people of Zambia, the DRC, China or elsewhere. If any of these natural disasters happens in the regions where we operate, our operations may be disrupted and as a result, our business, financial condition and results of operations may be materially and adversely affected. In addition, acts of war and terrorism may cause damage or disruption to us or our employees, facilities, markets, suppliers or customers, any of which may have a material adverse effect on our business, financial condition and results of operations or our Share price. Potential riots, war or terrorist attacks may also cause uncertainty and cause our business to suffer in ways that we cannot currently predict. Further, epidemics threaten people’s lives and could materially and adversely affect their livelihood as well as their living and consumption patterns. The occurrence of an epidemic is beyond our control, and there is no assurance that the outbreak of severe acute respiratory syndrome, the H5N1 strain of avian influenza, the H1N1 strain of swine flu or any other epidemics or pandemics will not happen. Any epidemic or pandemic occurring in areas in which we operate, or even in areas in which we do not operate, could materially and adversely affect our business, financial condition and results of operations.

### **RISKS RELATING TO THE PRC**

#### **The economic conditions in the PRC, as well as governmental policies, could affect our business and prospects.**

China’s economy differs from the economies of most developed countries in many respects, including the degree of government involvement, control of capital investment and foreign currency exchange, growth rate, overall level of development and access to financing. While China’s economy has experienced significant growth in the past decades, growth has been uneven both geographically and among various economic sectors. Although the PRC government has implemented a range of measures to encourage economic growth and development, any changes in China’s social conditions may have a material and adverse effect on our business, financial condition and results of operations. In addition, the PRC government has implemented certain measures, including interest rate increases, to tame the inflation. These measures may cause a contraction of economic activity in China, which could in turn reduce the demand for our products and have a material adverse effect on our business, financial condition and results of operations.

Any adverse change in the economic conditions or government policies in China could have a negative impact on the overall economic growth, the results of operations of CNMC and the



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demand for copper in China, which in turn could materially and adversely affect our business, financial condition and results of operations.

**Changes in PRC laws, regulations and policies could materially and adversely affect CNMC and in turn affect our business, financial condition and results of operations.**

The operations of CNMC, our Controlling Shareholder, like those of other PRC nonferrous metals companies, are subject to regulations imposed by the PRC government. These regulations affect many aspects of its operations, including the pricing of its main products, export quotas, export duty reimbursement, utility expense, industry-specific taxes and fees, business qualifications, capital investment and environmental and safety standards. In addition, as some of the PRC laws and regulations, in particular those relating to offshore investment, company organization and management, business, tax and trade, are currently still evolving, and due to the limited number and non-binding nature of published cases, there exist uncertainties about their interpretation and enforcement. As a result, CNMC may face significant constraints on its ability to implement its business strategies, to develop or expand its business operations or to maximize its profitability. CNMC's business, financial condition and results of operations may also be materially and adversely affected by future changes in policies of the PRC government applicable to its industry. Any policy reforms promulgated by the PRC government in respect of nonferrous metals resources may also have an impact on CNMC's future operations. Besides factors arising from the copper industry itself, the macroeconomic control measures implemented by the PRC government may have an impact on the demand and supply of copper. As CNMC is our Controlling Shareholder, if any of the foregoing impact on CNMC's shareholding in us or result in the termination or reduction of support given to us by CNMC, our business, financial condition and results of operations may be materially and adversely affected.

**Government control of currency conversion could materially and adversely affect our business, financial condition and results of operations.**

Current foreign exchange laws and regulations in the PRC permit domestic enterprises in the PRC to carry out their current account foreign exchange transactions, including dividend distributions, without obtaining the SAFE's prior approvals, by complying with certain procedural requirements. However, foreign exchange transactions for capital account purposes, including direct overseas investment and various international loans, may require the prior approval or registration with the SAFE. We cannot assure you that the PRC government will not restrict access in the future to foreign currencies for current account transactions. In addition, if the PRC government tightens its policies by restricting or preventing domestic enterprises from obtaining sufficient foreign currencies to satisfy their foreign currency demands, our trading partners in the PRC may not be able to fund their overseas purchases of our products and our joint venture partners in the PRC may be unable to make capital contributions to the relevant Zambian subsidiaries when required and this could materially and adversely affect our business, financial condition and results of operations.

**Our Shareholders may not be able to enforce their rights as there may be difficulties in seeking recognition and enforcement of foreign judgments in the PRC.**

A majority of our Directors and senior management are Chinese citizens who reside within Zambia. It may not be possible for investors in other jurisdictions to serve summons upon those individuals in China or to enforce against them before PRC courts any judgments obtained from non-PRC courts. In order to effect service of process on the Directors residing outside Hong Kong, Hong Kong investors will have to apply to the High Court in Hong Kong for leave to serve process outside Hong Kong. As a result, it may be difficult for Hong Kong investors to enforce any judgment of the

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## RISK FACTORS

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Hong Kong courts against those of our Directors resident outside Hong Kong. The PRC does not have treaties providing for the reciprocal recognition and enforcement of judgments of courts with many developed countries, including the United States, the United Kingdom and Japan. Therefore, recognition and enforcement in the PRC of judgments of a court of any other jurisdiction in relation to any matter not subject to a binding arbitration provision may be difficult or impossible.

### **RISKS RELATING TO THE GLOBAL OFFERING**

**There has been no prior public market for our Shares, and the liquidity and market price of our Shares may be volatile.**

Prior to the Global Offering, there was no public market for our Shares. The Offer Price for our Shares will be determined by us and the Underwriters based on, among other things, market and economic conditions on the date the Offer Price is determined, our results of operations, market valuations of other companies engaged in similar activities, the present state of our business operations, our management, indications of interest from potential investors in the Shares and other factors deemed relevant, and may differ from the market prices for the Shares after the Global Offering. We have applied to list and deal in our Shares on the Hong Kong Stock Exchange. There is no assurance that the Global Offering will result in the development of an active and liquid public trading market for our Shares. In addition, the price and trading volume of our Shares may be volatile. Factors such as variations in our revenue, earnings and cash flows may affect the volume and price at which our Shares will be traded.

**Volatility in the global financial markets could cause significant fluctuations in the price of our Shares.**

Financial markets around the world have been experiencing heightened volatility and turmoil since 2008 and may still be vulnerable if the global economy deteriorates again. Upon the Listing, the price and trading of our Shares will likely be exposed to the similar market fluctuations and risk which are irrelevant to our operating performance or prospects. Factors that may significantly impact the volatility of our stock price include:

- developments in our business or in the financial sector generally, including the effect of direct governmental actions in the financial markets;
- the operating and share price performance of companies that investors consider to be comparable to us;
- announcements of strategic developments, acquisitions and other material events by us or our competitors; and
- changes in global financial markets, global economies and general market conditions, such as interest or foreign exchange rates as well as stock and commodity valuations and volatility.

Given the potential market fluctuations described above, the price of our Shares may decline significantly, and you may incur losses on your investments.

**Future issuances or sales, or perceived possible issuances or sales, of substantial amounts of our Shares in the public market could materially and adversely affect the prevailing market price of the Shares and our ability to raise capital in the future.**

Sales of our Shares in the public markets after the Global Offering, or the perception that these sales may occur, could adversely affect market prices prevailing from time to time. For more information



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## RISK FACTORS

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on the restrictions that may apply to future sales of our Shares, see “Underwriting — Underwriting Arrangements and Expenses — Hong Kong Public Offering”. After any of these restrictions lapse, the market price of our Shares may decline as a result of future sales of substantial amounts of our Shares or other securities relating to our Shares in the public market, the issuance of new Shares or other securities relating to our Shares, or the perception that such sales or issuances may occur. This could also materially and adversely affect our ability to raise capital in the future at a time and at a price acceptable to us and have a material adverse effect on our business, financial condition and results of operations.

**Purchasers of our Shares will experience immediate dilution and may experience further dilution if we issue additional Shares in the future.**

The Offer Price is higher than the net tangible assets value per Share immediately prior to the Global offering. Therefore, purchasers of our Shares in the Global Offering will experience an immediate dilution in pro forma consolidated net tangible assets value of HK\$1.32 per Share, based on the maximum Offer Price of HK\$2.80, assuming that the Over-allotment Option is not exercised.

Furthermore, in order to expand our business, we may consider issuing additional equity interests in the future. Purchasers of our Shares may experience further dilution in the net tangible asset book value per Share of their Shares if we issue additional Shares in the future at a price which is lower than the net tangible assets book value per Share.

**The market price of our Shares when trading begins could be lower than the Offer Price as a result of, among other things, adverse market conditions or other adverse developments that could occur between the Price Determination Date and the time trading begins.**

The Offer Price will be determined on the Price Determination Date. However, the Shares will not commence trading on the Hong Kong Stock Exchange until they are delivered, which is expected to be the fourth Business Day after the Price Determination Date. As a result, investors may not be able to sell or otherwise deal in the Shares during that period. Accordingly, holders of the Shares are subject to the risk that the price of the Shares when trading begins could be lower than the Offer Price as a result of adverse market conditions or other adverse developments that may occur between the time of sale and the time trading begins.

**We are primarily a holding company and our ability to pay dividends depends principally upon the ability of our subsidiaries to pay dividends and to advance funds.**

Because we are primarily a holding company, our ability to pay dividends depends principally upon receipt of dividends, if any, from our subsidiaries, in particular our operating subsidiaries in Zambia. In particular, our operating subsidiaries in Zambia are all joint ventures. Pursuant to the joint venture agreements with our joint venture partners, any declaration and payment of dividends are subject to the approvals of our joint venture partners. There is no assurance our joint venture partners will agree to declare and pay dividends as and when proposed by us. Other contractual and legal restrictions applicable to our subsidiaries could also limit our ability to obtain cash from them. Our rights to participate in any distribution of our subsidiaries’ assets upon their liquidation, reorganization or insolvency would generally be subject to prior claims of the subsidiaries’ creditors, including any trade creditors and preferred shareholders.

Future dividends, if any, will be declared at the discretion of our Board of Directors and in certain circumstances will be subject to shareholders’ approval at general meetings, and will depend upon our future results of operations and general financial condition, capital requirements, our ability to receive dividends and other distributions and payments from our subsidiaries, foreign exchange

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## RISK FACTORS

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rates, legal, regulatory and contractual restrictions and other factors the Board may deem relevant. See the section headed “Financial Information — Dividends” in this prospectus for further information.

### **An investment in the Shares is subject to risks relating to taxation.**

The tax rules and their interpretation relating to an investment in us may change during our life. The levels of, and reliefs from, taxation may also change. The tax reliefs referred to in this prospectus are those currently available and their value depends on the individual circumstances of the investors. Any change in our tax status or the tax applicable to holding Shares or in taxation legislation or its interpretation, could affect the value of investments held by us, affect our ability to provide returns to Shareholders and/or alter the post-tax returns to Shareholders. Statements in this prospectus concerning the taxation of us and our investors are based upon current tax law and practice which is subject to change.

### **Certain facts and statistics contained in this prospectus have come from official government sources or other industry publications, the reliability of which cannot be assumed or assured.**

We have derived certain facts and other statistics in this prospectus relating to the PRC, Zambia and the DRC, their respective economies, as well as copper and cobalt industries from various government publications and other publicly available sources. However, we cannot guarantee the quality or reliability of such source materials. While our Directors have taken reasonable care in the reproduction of the information, they have not been prepared or independently verified by us, each of the Sponsors, the Underwriters or any of our or their respective affiliates or advisors and, therefore, we make no representation as to the accuracy of such facts and statistics, which may not be consistent with other information compiled within or outside of the PRC, Zambia, or the DRC, as applicable. Collection methods of such information may be flawed or ineffective, or there may be discrepancies between published information and market practice, which may result in the statistics included in this prospectus being inaccurate or not comparable to statistics produced for other economies. You should therefore not place undue reliance on such information. In addition, we cannot assure you that such information is stated or compiled on the same basis or with the same degree of accuracy as similar statistics presented elsewhere. In any event, you should consider carefully the importance placed on such facts or statistics.

### **Information in this prospectus regarding future plans reflects current intentions and is subject to change.**

Whether we ultimately implement the business plans described in this prospectus, and whether we achieve the objectives described in this prospectus, will depend on a number of factors including, but not limited to: the availability and cost of capital; current and projected copper prices; copper markets; availability of heavy equipment, supplies and personnel; success or failure of activities in similar areas to those in which our projects are situated; and changes in estimates of project completion costs. We will continue to gather information about our projects, and it is possible that additional information will cause us to alter our schedule or determine that a project should not be pursued at all. Accordingly, our plans and objectives may change from those described in this prospectus.

### **We strongly caution you not to place any reliance on any information contained in press articles or other media coverage regarding our Global Offering.**

We strongly caution you not to place any reliance on any information contained in press articles or other media regarding us and the Global Offering. We have not authorized the disclosure of any

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## RISK FACTORS

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information in the press or media regarding us and the Global Offering. We will not accept any responsibility for any such information. We will make no representation as to the appropriateness, accuracy, completeness or reliability of any such information which may be included in or referred to by the press or other media, nor the fairness or appropriateness of any forecasts, views or opinions expressed by the press or other media regarding us or the Global Offering. To the extent that any such information is inconsistent or conflicts with the information contained in this prospectus, we would not accept any responsibility for it and you should not rely on any such information. Accordingly, you are cautioned that, in making your decisions as to whether to purchase our Shares, you should rely only on the financial, operational and other information included in this prospectus and the Application Forms. By applying to purchase our Shares in this Global Offering, you will be deemed to have agreed that you will not rely on any information other than the information contained in this prospectus and the Application Forms.

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## INFORMATION ABOUT THIS PROSPECTUS AND THE GLOBAL OFFERING

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### DIRECTORS' RESPONSIBILITY FOR THE CONTENTS OF THIS PROSPECTUS

This prospectus, for which the Directors collectively and individually accept full responsibility, includes particulars given in compliance with the Companies Ordinance, the Securities and Futures (Stock Market Listing) Rules (Chapter 571V of the Laws of Hong Kong) (as amended) and the Listing Rules for the purpose of giving our information to the public. Our Directors, having made all reasonable enquiries confirm that, to the best of their knowledge and belief, the information contained in this prospectus is accurate and complete in all material respects and not misleading or deceptive, and there are no other matters the omission of which would make any statement herein or this prospectus misleading.

### INFORMATION ON THE GLOBAL OFFERING

This prospectus is published solely in connection with the Hong Kong Public Offering. For applications under the Hong Kong Public Offering, this prospectus and the Application Forms set out the terms and conditions of the Hong Kong Public Offering.

The Offer Shares are offered solely on the basis of the information contained and representations made in this prospectus and the Application Forms and on the terms and subject to the conditions set out herein and therein. No person is authorized to give any information in connection with the Global Offering or to make any representation not contained in this prospectus, and any information or representation not contained herein must not be relied upon as having been authorized by our Company, the Joint Global Coordinators, the Joint Bookrunners, the Joint Sponsors, the Joint Lead Managers, the Underwriters, any of their respective directors, agents, employees or advisers or any other party involved in the Global Offering. Neither the delivery of this prospectus nor any subscription or acquisition made under it shall, under any circumstances, create any implication that there has been no change in our affairs since the date of this prospectus or that the information in this prospectus is correct as of any subsequent time.

Details of the structure of the Global Offering, including its conditions, are set out in the section headed "Structure of the Global Offering", and the procedures for applying for Hong Kong Offer Shares are set out in the section headed "How to Apply for Hong Kong Offer Shares" and in the relevant Application Forms.

### RESTRICTIONS ON OFFER AND SALE OF THE OFFER SHARES

Each person acquiring the Hong Kong Offer Shares under the Hong Kong Public Offering will be required to, or be deemed by his acquisition of Offer Shares to, confirm that he is aware of the restrictions on offers of the Offer Shares described in this prospectus.

No action has been taken to permit a public offering of the Offer Shares in any jurisdiction other than in Hong Kong, or the distribution of this prospectus in any jurisdiction other than Hong Kong. Accordingly, this prospectus may not be used for the purpose of, and does not constitute an offer or invitation in any jurisdiction or in any circumstances in which such an offer or invitation is not authorized or to any person to whom it is unlawful to make such an offer or invitation. The distribution of this prospectus and the offering and sales of the Offer Shares in other jurisdictions are subject to restrictions and may not be made except as permitted under the applicable securities laws of such jurisdictions pursuant to registration with or authorization by the relevant securities regulatory authorities or an exemption therefrom.

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## **INFORMATION ABOUT THIS PROSPECTUS AND THE GLOBAL OFFERING**

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### **APPLICATION FOR LISTING OF THE SHARES ON THE HONG KONG STOCK EXCHANGE**

We have applied to the Listing Committee of the Hong Kong Stock Exchange for the granting of listing of, and permission to deal in, our Shares in issue and to be issued pursuant to the Global Offering (including any Shares which may be issued pursuant to the exercise of the Over-allotment Option).

No part of our Shares is listed on or dealt in on any other stock exchange and no such listing or permission to list is being or proposed to be sought in the near future.

### **PROFESSIONAL TAX ADVICE RECOMMENDED**

Potential investors in the Global Offering are recommended to consult their professional advisers as to the taxation implications of subscribing for, purchasing, holding or disposal of, and dealing in our Shares (or exercising rights attached to them). None of us, the Joint Global Coordinators, the Joint Bookrunners, the Joint Sponsors, the Joint Lead Managers, the Underwriters, any of their respective directors or any other person or party involved in the Global Offering accepts responsibility for any tax effects on, or liabilities of, any person resulting from the subscription, purchase, holding or disposal of, dealing in, or the exercise of any rights in relation to, our Shares.

### **STAMP DUTY**

Dealings in the Shares will be subject to Hong Kong stamp duty.

### **PROCEDURE FOR APPLICATION FOR THE HONG KONG OFFER SHARES**

The procedures for applying for the Hong Kong Offer Shares are set forth under the section headed “How to Apply for Hong Kong Offer Shares” in this prospectus and on the relevant Application Forms.

### **STRUCTURE OF THE GLOBAL OFFERING**

Details of the structure of the Global Offering, including its conditions, are set forth in the section headed “Structure of the Global offering” in this prospectus.

### **SHARES WILL BE ELIGIBLE FOR ADMISSION INTO CCASS**

Subject to the granting of the listing of, and permission to deal in, the Shares on the Hong Kong Stock Exchange and compliance with the stock admission requirements of HKSCC, the Shares will be accepted as eligible securities by HKSCC for deposit, clearance and settlement in CCASS with effect from the date of commencement of dealings in the Shares on the Hong Kong Stock Exchange or on any other date HKSCC chooses. Settlement of transactions between participants of the Hong Kong Stock Exchange is required to take place in CCASS on the second Business Day after any trading day. All activities under CCASS are subject to the General Rules of CCASS and CCASS Operational Procedures in effect from time to time. Investors should seek the advice of their stockbroker or other professional adviser for details of the settlement arrangements as such arrangements may affect their rights and interests. All necessary arrangements have been made enabling the Shares to be admitted into CCASS.

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## INFORMATION ABOUT THIS PROSPECTUS AND THE GLOBAL OFFERING

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### COMMENCEMENT OF DEALINGS IN THE SHARES

Assuming that the Hong Kong Public Offering becomes unconditional at or before 8:00 a.m. in Hong Kong on Friday, June 29, 2012, it is expected that dealings in our Shares on the Hong Kong Stock Exchange will commence on Friday, June 29, 2012. The Shares will be traded in board lots of 1,000 Shares each, the stock code of the Shares will be 1258.

### CONSEQUENCES OF HOLDING AN INTEREST IN SHARES

Holders and beneficial owners of our Shares should be aware that they may be subject to certain legal requirements under Hong Kong law and the Listing Rules, including, for example, reporting obligations upon reaching certain specified ownership thresholds. You should consult your own legal adviser as to the Hong Kong legal consequences of investing in the Shares.

### EXCHANGE RATE CONVERSION

Unless otherwise specified, amounts denominated in US\$ have been translated, for the purpose of illustration only, into HK\$ (and vice versa) in this prospectus at the following rate:

US\$1.00: HK\$7.80

No representation is made that any amounts in US\$, or HK\$ can be or could at the relevant dates have been converted at the above rate or any other rates or at all.

Unless otherwise specified, amounts denominated in ZMK have been translated, for the purpose of illustration only, into US\$ (and vice versa) in this prospectus at the following rate:

ZMK4,890: US\$1.00

No representation is made that any amounts in ZMK, or US\$ can be or could at the relevant dates have been converted at the above rate or any other rates or at all.

Unless otherwise specified, amounts denominated in ZMK have been translated, for the purpose of illustration only, into RMB (and vice versa) in this prospectus at the following rate:

ZMK756.56: RMB1.00

No representation is made that any amounts in ZMK, or RMB can be or could at the relevant dates have been converted at the above rate or any other rates or at all.

Unless otherwise specified, amounts denominated in RMB have been translated, for the purpose of illustration only, into HK\$ (and vice versa) in this prospectus at the following rate:

RMB0.8287: HK\$1.00

No representation is made that any amounts in RMB, or HK\$ can be or could at the relevant dates have been converted at the above rate or any other rates or at all.

Unless otherwise specified, amounts denominated in RMB have been translated, for the purpose of illustration only, into US\$ (and vice versa) in this prospectus at the following rate:

RMB6.4635: US\$1.00

No representation is made that any amounts in RMB or US\$ can be or could at the relevant dates have been converted at the above rate or any other rates or at all.

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## INFORMATION ABOUT THIS PROSPECTUS AND THE GLOBAL OFFERING

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### LANGUAGE

If there is any inconsistency between this prospectus and the Chinese translation of this prospectus, this prospectus shall prevail. If there is any inconsistency between the names of any of the entities mentioned in this prospectus which are not in the English language and their English translations, the names in their respective original languages shall prevail.

### ROUNDING

Any discrepancies in any table between totals and sums of amounts listed therein are due to rounding.



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## WAIVERS FROM STRICT COMPLIANCE WITH THE LISTING RULES

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In preparation for the Global Offering, the Company has sought the following waivers from strict compliance with the relevant provisions of the Listing Rules:

### WAIVER IN RESPECT OF MANAGEMENT PRESENCE IN HONG KONG

Pursuant to Rule 8.12 of the Listing Rules, we must have sufficient management presence in Hong Kong. This normally means that at least two of the executive Directors must be ordinarily resident in Hong Kong. Our business operations are managed and conducted outside of Hong Kong, and substantially all of the Directors ordinarily reside in Zambia. We acknowledge that personnel should be ordinarily resident in Hong Kong to be available contact persons to the Stock Exchange and also to handle all on-going compliance matters relating to the Listing Rules subsequent to our Listing. However, we consider that it would be practically difficult and commercially unreasonable for our Company to arrange two executive Directors to be ordinarily resident in Hong Kong, either by means of relocation of existing executive Directors or appointment of additional executive Directors, as each of the Directors has a vital role in the Group's operations and it is crucial for a majority to remain in close proximity to the Group's central management located in Zambia. Furthermore, as the management and operation of our Group under the supervision of the Directors during the Track Record Period has proven to be effective, hence to arrange two executive Directors to be ordinarily resident in Hong Kong would not only increase the administrative expenses of our Group, but would also reduce the effectiveness and responsiveness of the decision making process of the Board. We do not have and do not contemplate in the foreseeable future that we will have sufficient management presence in Hong Kong for the purpose of satisfying the requirement under Rule 8.12 of the Listing Rules.

Accordingly, we have applied to the Hong Kong Stock Exchange for, and the Hong Kong Stock Exchange has granted, a waiver from strict compliance with the requirements under Rule 8.12 of the Listing Rules, subject to us putting in place certain measures in order to ensure that regular communication is maintained between the Stock Exchange and us. Further details of such waiver are set out in "Directors and Senior Management — Management Presence in Hong Kong".

### WAIVER IN RELATION TO JOINT COMPANY SECRETARIES

Pursuant to Rule 3.28 of the Listing Rules, a new applicant for primary listing on the Hong Kong Stock Exchange must have a company secretary who is an individual and who, by virtue of his academic or professional qualifications or relevant experience, is, in the opinion of the Hong Kong Stock Exchange, capable of discharging the functions of company secretary.

The Hong Kong Stock Exchange considers the following academic or professional qualifications to be acceptable:

- (a) a Member of The Hong Kong Institute of Chartered Secretaries;
- (b) a solicitor or barrister (as defined in the Legal Practitioners Ordinance); and
- (c) a certified public accountant (as defined in the Professional Accountants Ordinance).

In assessing "relevant experience", the Hong Kong Stock Exchange will consider the individual's:

- (a) length of employment with the issuer and other issuers and the roles he played;
- (b) familiarity with the Listing Rules and other relevant law and regulations including the SFO, Companies Ordinance, and the Takeovers Code;

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## WAIVERS FROM STRICT COMPLIANCE WITH THE LISTING RULES

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- (c) relevant training taken and/or to be taken in addition to the minimum requirement under Rule 3.29 of the Listing Rules which require an issuer's company secretary to take no less than 15 hours of relevant professional training in each financial year; and
- (d) professional qualifications in other jurisdictions.

Under Rule 8.17, an issuer must appoint a company secretary who satisfies Rule 3.28 of the Listing Rules.

We have appointed Mr. Aibin Hu and Ms. Man Yi Wong as joint company secretaries.

We have appointed Mr. Aibin Hu as joint company secretary. Mr. Hu joined Luanshya in November 2009 and currently serves as the board secretary and assistant to the general manager of Luanshya. He served as the deputy manager of the department of general affairs of NFCA from January 2007 to October 2009. Although Mr. Hu does not possess the qualifications set out in Rule 3.28 of the Listing Rules, we would like to appoint him as joint company secretary due to his past management experience within our Group and his thorough understanding of the internal administration and business operations of our Group. Mr. Hu has also been appointed as an authorized representative of our Company. Mr. Hu, together with Mr. Xinghu Tao, an executive Director and the other authorized representative of our Company, will act as our principal communication channel with the Hong Kong Stock Exchange. We have also appointed Ms. Hong Han and Mr. Xinguo Yang as alternates to Mr. Xinghu Tao and Mr. Hu, respectively, to communicate on our behalf with the Hong Kong Stock Exchange. Ms. Hong Han is our Group's chief financial officer. She currently resides in Beijing and will move to Hong Kong shortly before or after the Listing. Mr. Xinguo Yang is a vice president of our Company and is resident in Zambia. Please refer to the section headed "Directors and Senior Management" for biographical details of Mr. Tao, Mr. Hu, Ms. Han and Mr. Yang. Each of Mr. Tao, Mr. Hu, Ms. Han and Mr. Yang will be able to meet with the Hong Kong Stock Exchange within a reasonable time frame, upon request by the Hong Kong Stock Exchange and will be readily contactable by mobile or office telephone, facsimile or email. Each of them is authorized to communicate on our behalf with the Hong Kong Stock Exchange.

We have appointed Ms. Man Yi Wong as our joint company secretary. Ms. Wong is qualified to act as the Company's secretary as required in Rule 3.28 of the Listing Rules. Ms. Wong is ordinarily resident in Hong Kong and will be able to meet with the Hong Kong Stock Exchange within a reasonable time frame, upon request by the Hong Kong Stock Exchange, and will be readily contactable by mobile or office telephone, facsimile or email. Ms. Wong is an associate member of The Hong Kong Institute of Chartered Secretaries, The Institute of Chartered Secretaries and Administrators and The Taxation Institute of Hong Kong, and a member of Certified Tax Adviser of Hong Kong. Ms. Wong has over 10 years of experience in company secretarial services. Ms. Wong is currently the Senior Manager of a local secretarial firm. Further biographical details of Ms. Wong are set out in the section headed "Directors and Senior Management — Joint Company Secretaries" in the prospectus.

As Mr. Hu does not possess the formal qualifications required of a company secretary under Rule 3.28 of the Listing Rules, we have applied to the Hong Kong Stock Exchange for, and the Hong Kong Stock Exchange has granted, a waiver from strict compliance with the requirements under Rules 3.28 and 8.17 such that Mr. Hu may be appointed as joint company secretary. The waiver was granted for a period of three years during which period Ms. Wong, as joint company

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## **WAIVERS FROM STRICT COMPLIANCE WITH THE LISTING RULES**

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secretary, will work closely with, and provide guidance and assistance to, Mr. Hu in the discharge of his duties as a company secretary. At the end of the three-year period, we will liaise with the Hong Kong Stock Exchange to enable it to assess whether Mr. Hu, having benefited from the guidance and assistance of Ms. Wong for the preceding three years, has acquired the skills necessary to carry out the duties of company secretary and the relevant experience (within the meaning of Rule 3.28 of the Listing Rules) so that a further waiver is not necessary.

### **WAIVER IN RESPECT OF NON-EXEMPT CONTINUING CONNECTED TRANSACTIONS**

We have entered into certain transactions which would constitute continuing connected transactions of the Company under Chapter 14A of the Listing Rules following the completion of the Global Offering. We have applied to the Hong Kong Stock Exchange for, and the Hong Kong Stock Exchange has granted, waivers in respect of certain non-exempt continuing connected transactions. Further details of such non-exempt continuing connected transactions and the waiver are set out in the section headed “Connected Transactions”.

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## DIRECTORS AND PARTIES INVOLVED IN THE GLOBAL OFFERING

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### DIRECTORS

<u>Name</u>	<u>Address</u>	<u>Nationality</u>
<b>Non-Executive Director</b>		
Tao Luo (羅濤) (Chairman)	RM 2, 10/F, Block 9, No. 43, North 3 Ring Central Road Haidian District Beijing, PRC	Chinese
<b>Executive Directors</b>		
Xinghu Tao (陶星虎) (Vice Chairman, and President)	P.O. Box 22592, Plot 32 Enos Chomba Road Parkland Kitwe, Zambia	Chinese
Chunlai Wang (王春來) (Vice President)	P.O. Box 22592, Plot 32 Enos Chomba Road Parkland Kitwe, Zambia	Chinese
Xingeng Luo (駱新耿) (Vice President)	House 67 Datura Avenue Luanshya, Zambia	Chinese
Xinguo Yang (楊新國) (Vice President)	CCS House Complex 512 Kwacha Road, Itimpi Garneton Kitwe, Zambia	Chinese
Kaishou Xie (謝開壽) (Vice President)	No. 1 Buntungwa Drive West Chambishi, Zambia	Chinese
<b>Independent Non-Executive Directors</b>		
Chuanyao Sun (孫傳堯)	Room 707, Block 1 No. 16, Zeng Guang Road Haidian District Beijing, PRC	Chinese
Jingwei Liu (劉景偉)	2004, Block 69, Yuanyang Tiandi Chaoyang District Beijing, PRC	Chinese
Shuang Chen (陳爽)	Flat A, 11/F, Block 8 Leighton Hill Happy Valley Hong Kong	Chinese

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## DIRECTORS AND PARTIES INVOLVED IN THE GLOBAL OFFERING

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### PARTIES INVOLVED IN THE GLOBAL OFFERING

#### Joint Global Coordinators

UBS AG, Hong Kong Branch  
52/F Two International Finance Centre  
8 Finance Street  
Central, Hong Kong

China International Capital Corporation  
Hong Kong Securities Limited  
29/F One International Finance Centre  
1 Harbour View Street  
Central, Hong Kong

J.P. Morgan Securities (Asia Pacific) Limited  
28/F Chater House  
8 Connaught Road  
Central, Hong Kong

#### Joint Sponsors

UBS AG, Hong Kong Branch  
52/F Two International Finance Centre  
8 Finance Street  
Central, Hong Kong

China International Capital Corporation  
Hong Kong Securities Limited  
29/F One International Finance Centre  
1 Harbour View Street  
Central, Hong Kong

J.P. Morgan Securities (Asia Pacific) Limited  
28/F Chater House  
8 Connaught Road  
Central, Hong Kong

#### Joint Bookrunners

UBS AG, Hong Kong Branch  
52/F Two International Finance Centre  
8 Finance Street  
Central, Hong Kong

China International Capital Corporation  
Hong Kong Securities Limited  
29/F One International Finance Centre  
1 Harbour View Street  
Central, Hong Kong

J.P. Morgan Securities Ltd.  
125 London Wall  
London EC2Y 5AJ  
United Kingdom

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## DIRECTORS AND PARTIES INVOLVED IN THE GLOBAL OFFERING

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Joint Lead Managers	<i>Hong Kong Public Offering</i>	<i>International Offering</i>
	UBS AG, Hong Kong Branch 52/F Two International Finance Centre 8 Finance Street Central, Hong Kong	UBS AG, Hong Kong Branch 52/F Two International Finance Centre 8 Finance Street Central, Hong Kong
	China International Capital Corporation Hong Kong Securities Limited 29/F One International Finance Centre 1 Harbour View Street Central, Hong Kong	China International Capital Corporation Hong Kong Securities Limited 29/F One International Finance Centre 1 Harbour View Street Central, Hong Kong
	J.P. Morgan Securities (Asia Pacific) Limited 28/F Chater House 8 Connaught Road Central, Hong Kong	J.P. Morgan Securities Ltd. 125 London Wall London EC2Y 5AJ United Kingdom

### Legal Advisers to Our Company

*As to Hong Kong and United States law:*  
Davis Polk & Wardwell  
18<sup>th</sup> Floor, The Hong Kong Club Building  
3A Chater Road  
Hong Kong

*As to PRC law:*  
JunZeJun Law Offices  
6/F South Tower, Financial Street Center  
A9 Financial Street  
Xicheng District  
Beijing, PRC

*As to Zambia law:*  
Corpus Legal Practitioners  
Elunda Office Park  
Stand No. 4645  
Addis Ababa Roundabout  
Rhodespark  
P O Box 32115  
Lusaka, Zambia

*As to BVI law:*  
Walkers  
Suite 1501-1507, Alexandra House  
18 Chater Road  
Central, Hong Kong

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## DIRECTORS AND PARTIES INVOLVED IN THE GLOBAL OFFERING

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	<p><i>As to Irish law:</i> Walkers The Anchorage 17/19 Sir John Rogerson's Quay Dublin 2 Republic of Ireland</p>
<b>Legal Advisers to the Underwriters</b>	<p><i>As to Hong Kong and United States law:</i> Norton Rose Hong Kong 38/F Jardine House 1 Connaught Place Central, Hong Kong</p> <p><i>As to PRC law:</i> Jia Yuan Law Offices F408, Ocean Plaza 158 Fuxing Men Nei Street Xicheng District Beijing, PRC</p>
<b>Reporting Accountants</b>	<p>Deloitte Touche Tohmatsu Certified Public Accountants 35/F One Pacific Place 88 Queensway Hong Kong</p>
<b>Property Valuer and Consultant</b>	<p>Jones Lang LaSalle Corporate Appraisal and Advisory Limited 6/F Three Pacific Place 1 Queen's Road East Hong Kong</p>
<b>Competent Person</b>	<p>SRK Consulting (China) Ltd 81317 COFCO Plaza No. 8 Jianguomennei Dajie Dongcheng District Beijing, PRC</p>
<b>Industry Consultant</b>	<p>Wood Mackenzie (Australia) Pty Ltd. Level 13 50 Pitt Street Sydney NSW 2000 Australia</p>
<b>Receiving Bankers</b>	<p>Bank of China (Hong Kong) Limited 1 Garden Road Hong Kong</p>



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## DIRECTORS AND PARTIES INVOLVED IN THE GLOBAL OFFERING

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China Construction Bank (Asia) Corporation  
Limited  
Suite 2101, 21/F Devon House  
979 King's Road, Quarry Bay  
Hong Kong

Wing Lung Bank Limited  
16/F, Wing Lung Bank Building  
45 Des Voeux Road Central  
Hong Kong

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## CORPORATE INFORMATION

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Registered office	Room 1201, Allied Kajima Building 138 Gloucester Road Wanchai, Hong Kong
Principal place of business in Zambia	32 Enos Chomba Road Kitwe, Zambia
Company's website	<a href="http://www.cnmcl.net">www.cnmcl.net</a> (The contents on this website do not form part of this prospectus)
Joint Company Secretaries	Aibin Hu (胡愛斌) Man Yi Wong (黃敏儀) ACIS, ACS
Audit Committee	Jingwei Liu (劉景偉) (Chairman) Tao Luo (羅濤) Shuang Chen (陳爽)
Nomination Committee	Chuanyao Sun (孫傳堯) (Chairman) Tao Luo (羅濤) Jingwei Liu (劉景偉)
Remuneration Committee	Shuang Chen (陳爽) (Chairman) Tao Luo (羅濤) Chuanyao Sun (孫傳堯)
Compliance Committee	Tao Luo (羅濤) (Chairman) Shuang Chen (陳爽) Chuanyao Sun (孫傳堯)
Principal bankers	Bank of China China Construction Bank The Export-Import Bank of China
Authorized representatives	Xinghu Tao (陶星虎) P.O. Box 22592, Plot 32 Enos Chomba Road Parkland Kitwe, Zambia  Aibin Hu (胡愛斌) 90456 – No. 867 Independence Avenue Luanshya, Zambia
Hong Kong Share Registrar	Computershare Hong Kong Investor Services Limited Shops 1712-1716, 17th Floor Hopewell Centre, 183 Queen's Road East Wanchai, Hong Kong
Compliance advisor	Guotai Junan Capital Limited 27th Floor, Low Block Grand Millennium Plaza 181 Queen's Road Central Hong Kong

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## INDUSTRY OVERVIEW

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Wood Mackenzie, an industry consultant, was engaged by our Company to prepare the Wood Mackenzie Report, for use in whole or in part in this prospectus. Wood Mackenzie prepared its report based on its in-house database, independent third-party reports and publicly available data from reputable industry organizations. Where necessary, Wood Mackenzie contacts companies operating in the industry to gather and synthesize information about the market, prices and other relevant information. Wood Mackenzie has assumed that the information and data which it relied on are complete and accurate.

Wood Mackenzie has advised that (i) some information in its database is derived from estimates from industry sources or subjective adjustments; and (ii) the information in the database of other metals and mining data collection agencies or of other industry consultants may differ from information in Wood Mackenzie's database. The information contained herein has been obtained from sources believed by Wood Mackenzie to be reliable, but there can be no assurance as to the accuracy or completeness of any such information.

Unless otherwise specified, all references in this section to copper content are to contained copper.

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### GLOBAL COPPER MARKET OVERVIEW

#### Introduction

Since 2000, the copper industry has experienced significant growth. This growth has been largely driven by China's rapid economic growth and urbanization, resulting in a nearly fourfold increase in China's copper demand over the course of the decade. China's rapid growth and increased demand from other emerging economies have more than offset the recent trend of slowly declining demand from developed countries. The increased investor interest in commodities, including copper, has further fuelled demand. This resulted in nearly 35% growth for the copper industry over the decade.

Over the same period, copper production has failed to keep pace with demand, particularly the increased demand from China, despite rapid annual production growth rates in a number of countries: 29.9% in the DRC, 20.7% in Brazil, 9.0% in China, 7.8% in Zambia and 7.5% in Iran. Copper reserves are geographically concentrated. The Latin American countries of Chile, Peru and Mexico accounted for approximately 52% of the global reserves in 2010, dominated by Chile with 31% of the global reserves. In sub-Saharan Africa, Zambia and the DRC, which lie in the Copperbelt region, have the largest reserves, accounting for 3% and 2% of identified global reserves in 2010, respectively.

This deficit of supply has been caused by both underperformance from existing mines and a slower than expected development of new mines. The high geographical concentration of copper reserves,

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## INDUSTRY OVERVIEW

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the trend towards larger scale operations and the migration of copper production away from politically stable countries towards developing countries with higher political risks have increased the vulnerability of supply to disruptions, resulting in sustained underperformance.

Additionally, the number of firmly committed mine expansions has also been less than expected. This reflects the fact that support and equipment industries are presently experiencing a shortage of skilled labor and are unable to keep up with demand, increasing lead times and capital costs that have increased significantly since the original feasibility studies were carried out. In this way, skills shortages and cost inflation have acted as barriers of entry.

The declining quality of recently discovered ore bodies has also acted as a significant barrier to entry to the copper industry. New entrants are increasingly required to possess not only significant capital, but technological proficiency. Increasingly, discovered ore bodies suffer from complex mineralogy, increasing depth and lower quality (head grade). These trends necessitate increasingly large-scale and underground developments and the use of innovative technologies (such as SxEw and bacterial leaching).

The structural supply deficit brought about by these factors has resulted in a steady rise in copper prices over the decade, punctuated by the global financial crisis. Prices on the LME (which other exchanges such as the Shanghai Futures Exchange and the New York's Commodity Exchange tend broadly to track) increased over 400% from an average of around US\$1,800 per tonne in 2000 to over US\$8,000 per tonne in 2008. The global financial crisis led investors to liquidate copper positions due to the anticipated effects of the recession on key copper consuming industries, such as construction, consumer goods and automotive vehicles. Copper prices briefly fell over 50%, to approximately US\$3,000 per tonne, but soon increased to levels above their 2008 peak mainly due to the increased market demand for "hard" assets. By early 2011, copper prices were close to US\$10,000 per tonne. Prices remained above US\$9,000 per tonne for most of the first half of 2011 and dropped in the second half of the year as a result of the negative outlook related to the Eurozone debt crisis and more broadly, the global economy. Prices soon recovered from lower levels around US\$7,000 per tonne and have been ranging between US\$7,252 and US\$8,600 per tonne for the majority of the year to date.

The copper industry will continue to benefit from the development of many of the world's emerging economies where rapid industrialization and urbanization is occurring. Structural changes in these countries are driving a sustained increase in the world's demand for copper. Consequently, copper prices are likely to remain elevated above historic levels. The development of operations in jurisdictions which are perceived to have higher political risks is another key opportunity for the copper industry. Discoveries of high quality copper resources have been increasingly located in countries perceived as more risky. These resources offer potentially attractive returns and represent an opportunity for companies who can operate efficiently in such environments.

### ***Production Process***

Copper is a reddish-brown metal that is malleable and ductile. It also possesses high thermal and electrical conductivity and is widely used in building and electrical products as a result. Copper minerals are extracted from underground or open-pit mines, depending on the depth and geometry of the ore deposit. Mined ore, containing valuable minerals intermixed with waste, has to be processed and upgraded to allow economic recovery of the valuable constituents. The processing method chosen depends on the characteristics of the ore.

## INDUSTRY OVERVIEW

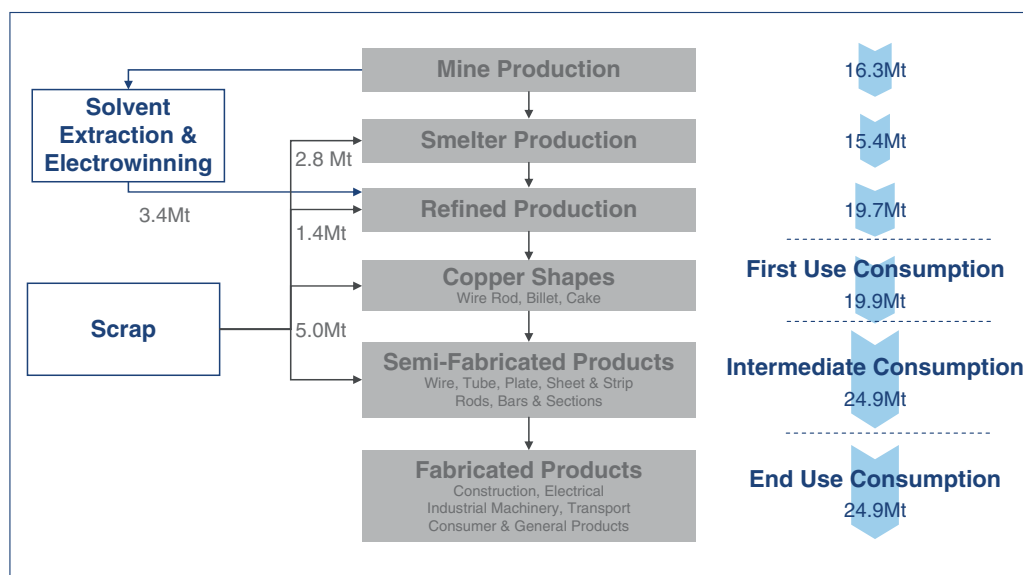
Copper ore minerals are generally classified as either oxides or sulfides. Copper oxide minerals, which account for around 19% of global copper mine production, can be readily leached and copper can be recovered from the resultant pregnant leach solution by a solvent extraction/electrowinning process to produce marketable cathodes. Sulfide minerals such as chalcopyrite ( $\text{CuFeS}_2$ ), bornite ( $\text{Cu}_5\text{FeS}_4$ ) and chalcocite ( $\text{Cu}_2\text{S}$ ) are separated from the waste at the ore processing plant to form a copper concentrate which is then transferred to a copper smelter which can be local to the mine or in a different region or country.

In the smelting process, copper is separated from associated iron and sulfur in two stages, primary smelting and converting. When heated in the prime smelting unit the major minerals break down to give copper sulfide and iron sulfide which form a liquid known as matte. The liquid matte is transferred to converters where the addition of oxygen first eliminates iron sulfide in the form of fayalite and magnetite and then blister copper is formed as oxygen combines with the sulfur to form sulfur dioxide.

Blister copper, containing approximately 99% copper, is transferred to an anode furnace for final sulfur and oxygen removal prior to anode casting. The anodes produced are then transferred to an electrolytic refinery for production of cathodes of 99.9% purity for industrial usage.

The evolution of copper products is provided in the figure below.

**Breakdown of Global Copper Production (2011)**



Source: Wood Mackenzie Report

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## INDUSTRY OVERVIEW

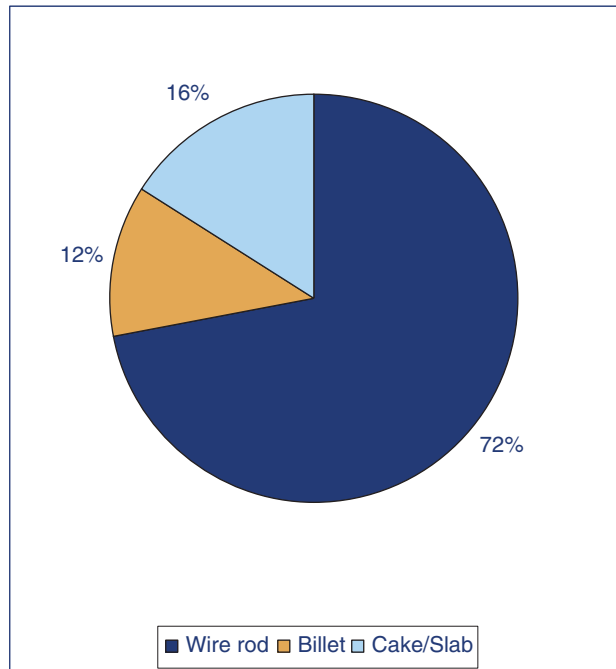
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### **Copper Consumption**

#### *Consumption by First Use*

First use consumption of copper can be divided into three main product groups: copper wire rod, billets and cake/slab products. With the exception of silver, copper has the highest electrical conductivity of all metals. As a result, copper wire rod, accounting for an estimated 72% of primary consumption in 2010, is copper's main first use. Billets and cake/slab products made up the remaining 12% and 16%, respectively, in 2010.

**Global Copper Consumption  
by First Use in 2010**



*Source: Wood Mackenzie Report*

#### *Consumption by End Use*

In general, end use consumption of wire and cable and other copper products occurs in five broad sectors, namely construction, electrical and electronic products, industrial machinery and equipment, transportation equipment, as well as consumer and general products.

**Construction** accounted for 32% of total copper consumption in 2010. The main wire and cable and copper products consumed in the construction industry include building wire, power cable, copper plumbing and air conditioning tube, copper sheet, and alloy products.

**Electrical and electronic products** accounted for 34% of total copper consumption in 2010. Copper containing electrical and electronic products include telecommunication cable, power cable, transformer windings, semiconductors, and motors for heavy appliances.

**Industrial machinery and equipment** accounted for 13% of total copper consumption in 2010. Both copper wire and cable and semi products supply this sector, which includes equipment and machinery, industrial valves and fittings, off-highway vehicles, and heat exchangers.

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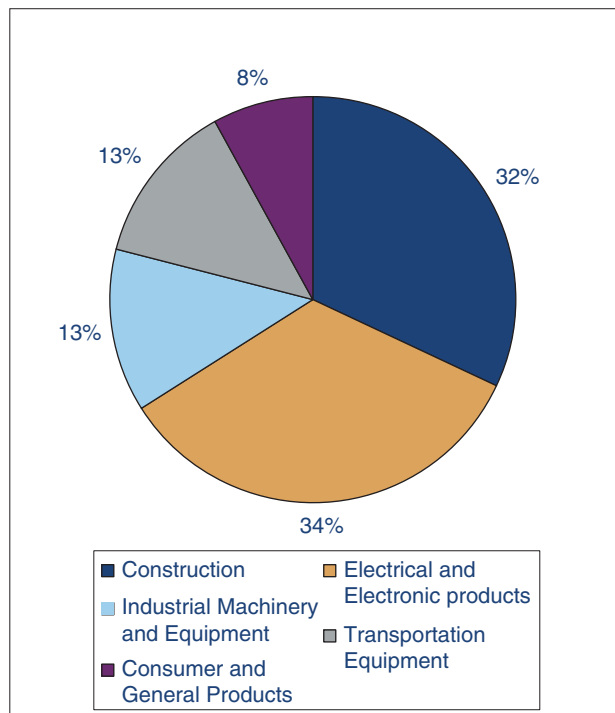
## INDUSTRY OVERVIEW

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**Transportation equipment** accounted for 13% of total copper consumption in 2010. This includes the automotive, marine and aircraft/aerospace sectors.

**Consumer and general products** accounted for 8% of total copper consumption in 2010. The three main uses are electrical appliances, military ordnance and coinage.

**Global Copper Consumption  
by End Use in 2010**



*Source: Wood Mackenzie Report*



## INDUSTRY OVERVIEW

### Copper Demand Analysis

#### Refined Copper Consumption

##### Historical Overview

Over the past decade, the copper industry has experienced strong growth. From 2001 to 2011, refined copper consumption grew from 14.8 Mt to 19.9 Mt per year, equivalent to an annual growth rate of 3.0%. This growth was largely driven by a significant increase in China's copper demand which grew at an average rate of 13.3% per annum and was primarily attributable to China's rapid economic growth and urbanization. This increase was partly offset by a decrease in North American, European Union and Japanese consumption which fell from 8.5 Mt in 2001 to 7.0 Mt in 2011 and was largely a result of the substitution of copper by other materials (driven by higher prices of copper) in certain applications and the ongoing impact of the global financial crisis.

#### Historic Refined Copper Consumption by Region

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011 vs 2001	
	(kt)											(kt) (CAGR)	
China	2,230	2,425	3,020	3,565	3,815	3,967	4,670	5,100	6,375	7,204	7,780	5,550	13.3%
Europe	4,539	4,437	4,498	4,736	4,607	5,023	4,787	4,482	3,536	3,861	3,994	-545	-1.3%
North America	2,859	2,644	2,497	2,712	2,549	2,395	2,307	2,188	1,764	1,897	1,957	-902	-3.7%
Japan	1,145	1,164	1,202	1,279	1,256	1,307	1,268	1,199	876	1,060	1,038	-106	-1.0%
Asia (excl. China & Japan)	2,286	2,572	2,597	2,829	2,744	2,838	2,948	2,884	2,784	3,005	2,910	624	2.4%
Latin America	960	758	847	932	955	895	864	889	768	903	889	-71	-0.8%
Others	764	893	913	969	1,032	1,058	1,137	1,187	1,199	1,333	1,363	598	6.0%
<b>Global Total</b>	<b>14,783</b>	<b>14,894</b>	<b>15,575</b>	<b>17,021</b>	<b>16,957</b>	<b>17,484</b>	<b>17,981</b>	<b>17,929</b>	<b>17,301</b>	<b>19,264</b>	<b>19,931</b>	<b>5,148</b>	<b>3.0%</b>
Change y-o-y (%)	-2.5%	0.7%	4.6%	9.3%	-0.4%	3.1%	2.8%	-0.3%	-3.5%	11.3%	3.5%		

Source: Wood Mackenzie Report

##### Outlook

According to the Wood Mackenzie Report, copper demand increased by 11.3% to 19.3 Mt in 2010, marking a strong recovery from the contraction in 2009 and surpassing the previous peak level of 2008. This growth was largely driven by China, with other developed countries also contributing to the significant growth rate. Following the strong growth of 2010, global demand grew moderately by 3.5% in 2011. China accounted for over 85% of this demand growth with ongoing uncertainty related to the Eurozone debt crisis impacting copper demand around the globe. Global copper demand is expected to increase by 3.7% to 20.7 Mt in 2012. It is anticipated that North America and Europe will see lower copper demand, which will be offset by the continued strength in China and India and an upturn in Japanese demand following the tsunami and nuclear crisis.

#### Forecast Refined Copper Consumption by Region

	2012F	2013F	2014F	2015F	2015F vs. 2011		
	(kt)					(kt)	(CAGR)
China	8,402	8,965	9,503	10,007	2,227	6.5%	
Europe	3,980	4,064	4,250	4,380	386	2.3%	
North America	1,929	1,917	1,904	1,879	-78	-1.0%	
Japan	1,067	1,095	1,122	1,130	92	2.1%	
Asia (excl. China & Japan)	2,968	3,100	3,293	3,466	556	4.5%	
Latin America	908	941	983	1,026	137	3.7%	
Others	1,416	1,497	1,575	1,653	290	4.9%	
<b>Global total</b>	<b>20,670</b>	<b>21,578</b>	<b>22,630</b>	<b>23,541</b>	<b>3,610</b>	<b>4.2%</b>	
Change y-o-y (%)	3.7%	4.4%	4.9%	4.0%			

Source: Wood Mackenzie Report

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## INDUSTRY OVERVIEW

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### *China*

According to the Wood Mackenzie Report, Chinese demand for refined copper grew at an average rate of approximately 13.3% per annum from 2001 to 2011 to 7.8 Mt. In 2011, China's copper demand grew by 8.0% despite weaker conditions in the fourth quarter. For the period from 2011 to 2015, average annual growth is expected to be 6.5%, which will result in Chinese consumption of refined copper reaching 10.0 Mt by 2015. The expected 2.2 Mt gain from 2011 to 2015 in refined consumption would result in China's share of global refined copper consumption rising from 37% in 2011 to 43% in 2015. The average growth rate for Chinese demand over the forecast period is expected to be lower than that in the last decade, mainly due to two factors: (1) a great deal of demand was brought forward following many recent consumer purchasing incentive schemes, and (2) China is moving into a more consumer driven economy after a period of very strong growth driven largely by infrastructure spending.

### *Asia (Excluding China)*

According to the Wood Mackenzie Report, Asian demand outside of China decreased by 2.9% in 2011 to 3.9 Mt. Japanese demand for copper declined by 2.0% in 2011 due to the disruption to manufacturing as a result of the earthquake and tsunami that hit the northeast coast of Japan in March 2011. Over the longer term, Japanese refined copper demand is forecast to increase by 2.1% per annum during the forecast period to reach 1.1 Mt by 2015. Indian consumption is expected to grow at 8.3% per annum over the forecast period. Other Southeast Asian countries such as Thailand, Vietnam and Cambodia are expected to become increasingly important markets for refined copper demand through the forecast period. South Korea is also expected to remain a significant market throughout the forecast period. The demand for Asia (excluding China) is expected to reach 4.6 Mt by 2015.

### *North America, Latin America & Europe*

According to the Wood Mackenzie Report, U.S. copper demand increased in 2010 as the economy grew stronger across all sectors and recovered from significantly lower demand in 2009. In 2011, copper demand in North America continued to grow by 3.2% to 2.0 Mt. Over the forecast period, the demand in North America is expected to decrease by 1.0% per annum to reach 1.9 Mt by 2015. The demand for Latin America is expected to grow from 0.9 Mt in 2011 to 1.0 Mt in 2015 at a CAGR of 3.7% over the forecast period. In 2010 and 2011, European demand grew by 9.2% and 3.4%, respectively. In 2012, the demand is expected to decrease slightly as a result of the ongoing Eurozone debt crisis. However, refined copper consumption is forecast to grow at 2.3% per annum over the forecast period to 4.4 Mt by 2015. This growth will be driven by faster growing Eastern European economies, offset by falling demand from Western European nations.

### **Copper Concentrate Consumption**

According to the Wood Mackenzie Report, China and Africa are the areas of historic and forecast growth in copper concentrate consumption, with expected incremental demand of 1.3 Mt and 0.3 Mt by 2015, representing CAGRs of 9.7% and 8.5% from 2011 to 2015, respectively. Africa's concentrate demand increased by 0.4 Mt from 2001 to 2011 and is expected to contribute an additional 0.3 Mt growth by 2015 due to smelter expansions, including the expansion of our Chambishi Copper Smelter. Asian countries other than China are also expected to provide growth in concentrate demand rising from 3.2 Mt in 2011 to 4.1 Mt in 2015, primarily driven by expanded smelter capacity in India.

## INDUSTRY OVERVIEW

The tables below provide historic and forecast regional concentrate consumption.

### Historic Concentrate Consumption by Major Countries/Regions

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011 vs. 2001	
												(kt)	(CAGR)
Africa . . . . .	442	433	451	487	462	477	583	599	648	822	865	423	6.9%
Asia (excl. China) . . . . .	2,969	3,024	3,053	3,043	3,226	3,349	3,503	3,378	3,384	3,350	3,217	248	0.8%
China . . . . .	1,224	1,194	1,348	1,468	1,808	2,012	2,220	2,457	2,512	2,578	2,941	1,718	9.2%
Europe . . . . .	2,306	2,403	2,339	2,316	2,423	2,454	2,325	2,343	2,329	2,234	2,332	26	0.1%
Latin America . . . . .	2,412	2,208	2,312	2,455	2,526	2,521	2,264	2,199	2,271	2,202	2,197	-215	-0.9%
Middle East . . . . .	201	189	184	163	234	251	247	250	202	201	230	30	1.4%
North America . . . . .	1,408	1,190	961	1,029	1,003	1,023	1,090	984	886	866	785	-624	-5.7%
Oceania . . . . .	496	523	430	427	435	407	386	419	374	354	418	-77	-1.7%
<b>Global total . . . . .</b>	<b>11,458</b>	<b>11,164</b>	<b>11,078</b>	<b>11,388</b>	<b>12,116</b>	<b>12,494</b>	<b>12,619</b>	<b>12,628</b>	<b>12,605</b>	<b>12,608</b>	<b>12,987</b>	<b>1,529</b>	<b>1.3%</b>
Change y-o-y (%) . . . . .	6.2%	-2.6%	-0.8%	2.8%	6.4%	3.1%	1.0%	0.1%	-0.2%	0.0%	3.0%		

Source: Wood Mackenzie Report

### Forecast Concentrate Consumption by Major Countries/Regions

	2012F	2013F	2014F	2015F	2015F vs. 2011	
					(kt)	(CAGR)
Africa . . . . .	1,004	1,176	1,205	1,202	336	8.5%
Asia (excl. China) . . . . .	3,509	3,638	3,987	4,110	892	6.3%
China . . . . .	3,493	3,985	4,099	4,262	1,320	9.7%
Europe . . . . .	2,439	2,538	2,553	2,559	227	2.3%
Latin America . . . . .	2,443	2,439	2,492	2,508	310	3.4%
Middle East . . . . .	251	240	240	240	10	1.0%
North America . . . . .	816	843	844	844	59	1.8%
Oceania . . . . .	430	435	435	435	16	1.0%
<b>Global total . . . . .</b>	<b>14,384</b>	<b>15,294</b>	<b>15,855</b>	<b>16,158</b>	<b>3,171</b>	<b>5.6%</b>
Change y-o-y (%) . . . . .	10.8%	6.3%	3.7%	1.9%		

Source: Wood Mackenzie Report

### Investment Demand

Investment demand for copper has risen significantly in recent years as part of a broader commodity uptrend. This recent interest has been underpinned by a market outlook that favors many commodities: a structurally constrained supply scenario in the context of rapidly industrializing emerging markets. In addition, according to the Wood Mackenzie Report, the monetary policies employed by certain central banks around the world have increased the demand for metals, which have come to be viewed by investors as a safe haven from inflation. Evidence of this “non-traditional” investment demand factor that has been buoying the copper market is the application from two large finance companies to establish physical-copper backed exchange-traded funds (ETFs).

## INDUSTRY OVERVIEW

### Supply Analysis

#### *Historical Overview*

The global mine production of copper has grown by 2.6 Mt on a copper contained basis between 2001 and 2011, which is equivalent to a CAGR of 1.7%. Zambia, China, DRC and Brazil experienced significant rates of growth during this period with 7.8%, 9.0%, 29.9% and 20.7%, respectively. Despite this growth, supply has failed to keep pace with copper demand. This deficit of supply has been caused by both underperformances from existing mines and a slower than expected development of new mines.

With the average grade of ores steadily declining, there has also been a pronounced tendency to increase the scale of operations in order to take advantage of economies of scale. While this has allowed copper output levels to be maintained while grades have fallen, it has also increased the vulnerability of supply to disruptions which partly stems from the trend for copper production to migrate away from mature countries towards developing countries with higher political risks. In recent years, disruptions have remained high at around 5% of total production, with over half of this figure accounted for by strikes and slower than expected ramp-ups.

The number of firmly committed project expansions has also been less than expected given the substantial increase in copper prices. This is in part due to the lead times for many of these expansions being much longer now than has been the case previously for a number of reasons. First, delivery times for equipment (trucks, shovels, mills etc.) have been greatly extended compared with recent years due to significantly higher demand, with the suppliers not having the capacity to meet this demand in a timely fashion. Second, there has been a general shortage of skilled operators and engineers. Third, capital costs have increased significantly since original feasibility studies were carried out and as a result much of this work now has to be reappraised.

#### *Global Copper Reserves and Resources*

The geographic distribution of copper reserves and resources in operating mines and funded projects for 2010 is shown in the table below.

#### 2010 Global Reserves and Resources

	Sulfide Reserves	Oxide Reserves	Total Reserves	Sulfide Resources	Oxide Resources	Total Resources
	(kt of contained copper)					
Chile . . . . .	116,814	18,379	135,193	243,269	27,687	270,956
Peru . . . . .	55,034	6,981	62,015	80,572	7,022	87,594
Australia . . . . .	22,465	123	22,588	107,171	234	107,404
USA . . . . .	24,735	5,005	29,740	37,649	9,139	46,788
Indonesia . . . . .	28,742	—	28,742	44,543	—	44,543
Zambia . . . . .	14,449	862	15,301	41,371	1,366	42,737
Mexico . . . . .	27,353	8,033	35,385	28,643	8,033	36,676
Mongolia . . . . .	17,571	—	17,571	17,772	—	17,772
Russian Federation . . . . .	14,330	—	14,330	41,360	—	41,360
DRC . . . . .	2,684	7,333	10,017	9,382	15,275	24,657
Rest of World . . . . .	86,944	1,981	88,925	145,622	2,994	148,616
<b>Total identified . . . . .</b>	<b>411,120</b>	<b>48,688</b>	<b>459,808</b>	<b>797,354</b>	<b>71,750</b>	<b>869,103</b>

Source: Wood Mackenzie Report

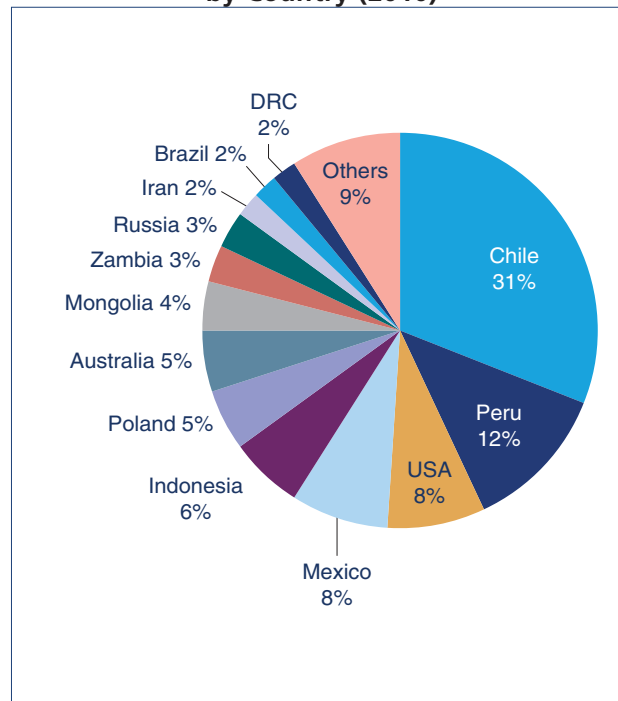
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## INDUSTRY OVERVIEW

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The following chart shows global copper reserves as at the end of 2010 by location.

**Contained Copper in Reserves  
by Country (2010)**



Source: Wood Mackenzie Report

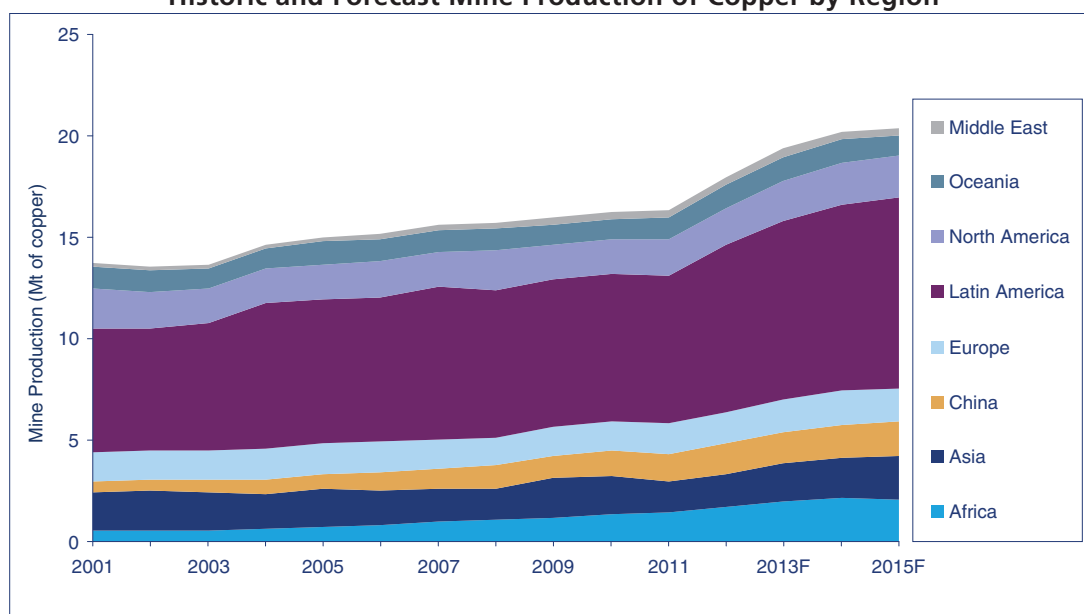
### **Mine Production**

Estimated global copper mine production totaled 16.3 Mt during 2011, of which 79.0% was derived from operations using conventional milling and flotation techniques and the remaining 21.0% was derived from the leaching of ores to produce copper cathode. Mine production in 2011 increased by 0.5% from 16.2 Mt in 2010. According to the Wood Mackenzie Report, the overall net loss in copper mine production in 2011 was 6.2% relative to initial expectations, equivalent to over 800 kt, which was higher than the average loss in recent years of 5.0%.

The global mine production of copper increased by 2.6 Mt of contained copper between 2001 and 2011, equivalent to a CAGR of 1.7%. The DRC, Brazil, China, Zambia and Iran had the highest rates of growth during this period at 29.9%, 20.7%, 9.0%, 7.8% and 7.5%, respectively. Despite a more modest growth rate of 1.0%, 509 kt was added to Chile's production, surpassed only by China's 787 kt and DRC's 514 kt increase.

## INDUSTRY OVERVIEW

### Historic and Forecast Mine Production of Copper by Region



Source: Wood Mackenzie Report

### Historic Mine Production of Copper by Key Country

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011 vs 2001	
												(kt)	(CAGR)
Chile	4,804	4,645	4,935	5,504	5,363	5,458	5,599	5,402	5,453	5,473	5,314	509	1.0%
China	575	578	613	752	772	892	992	1,157	1,056	1,258	1,363	787	9.0%
Peru	714	820	810	1,012	984	1,027	1,160	1,229	1,225	1,204	1,207	493	5.4%
USA	1,356	1,153	1,125	1,186	1,159	1,216	1,185	1,340	1,209	1,145	1,143	-213	-1.7%
Australia	878	868	814	800	914	885	858	875	845	861	920	42	0.5%
Zambia	330	353	393	448	489	510	565	546	654	695	699	369	7.8%
Russia	623	628	627	625	656	670	677	682	692	670	666	43	0.7%
Indonesia	1,047	1,163	1,003	842	1,064	817	789	650	995	871	540	-507	-6.4%
Canada	620	596	543	567	582	595	586	612	486	497	597	-23	-0.4%
DRC	40	28	40	51	69	155	214	286	348	456	554	514	29.9%
Others	2,737	2,695	2,724	2,851	2,906	2,944	3,000	2,924	2,995	3,063	3,275	538	1.8%
<b>Global Total</b>	<b>13,726</b>	<b>13,528</b>	<b>13,628</b>	<b>14,637</b>	<b>14,962</b>	<b>15,169</b>	<b>15,624</b>	<b>15,705</b>	<b>15,958</b>	<b>16,194</b>	<b>16,279</b>	<b>2,553</b>	<b>1.7%</b>

Source: Wood Mackenzie Report

### Forecast Mine Production of Copper by Key Country

	2012F	2013F	2014F	2015F	2015F vs 2011	
					(kt)	(CAGR)
Chile	6,030	6,348	6,585	6,445	1,131	4.9%
China	1,503	1,570	1,605	1,655	292	5.0%
Peru	1,268	1,382	1,460	1,822	615	10.8%
USA	1,227	1,388	1,425	1,431	288	5.8%
Australia	975	1,000	1,003	982	62	1.6%
Zambia	805	946	990	973	274	8.6%
Russia	694	700	747	777	111	3.9%
Indonesia	590	675	790	940	400	14.9%
Canada	635	634	656	616	19	0.8%
DRC	687	760	824	811	257	10.0%
Others	3,515	3,934	4,111	3,939	662	4.7%
<b>Global Total</b>	<b>17,930</b>	<b>19,338</b>	<b>20,194</b>	<b>20,389</b>	<b>4,110</b>	<b>5.8%</b>

Source: Wood Mackenzie Report

## INDUSTRY OVERVIEW

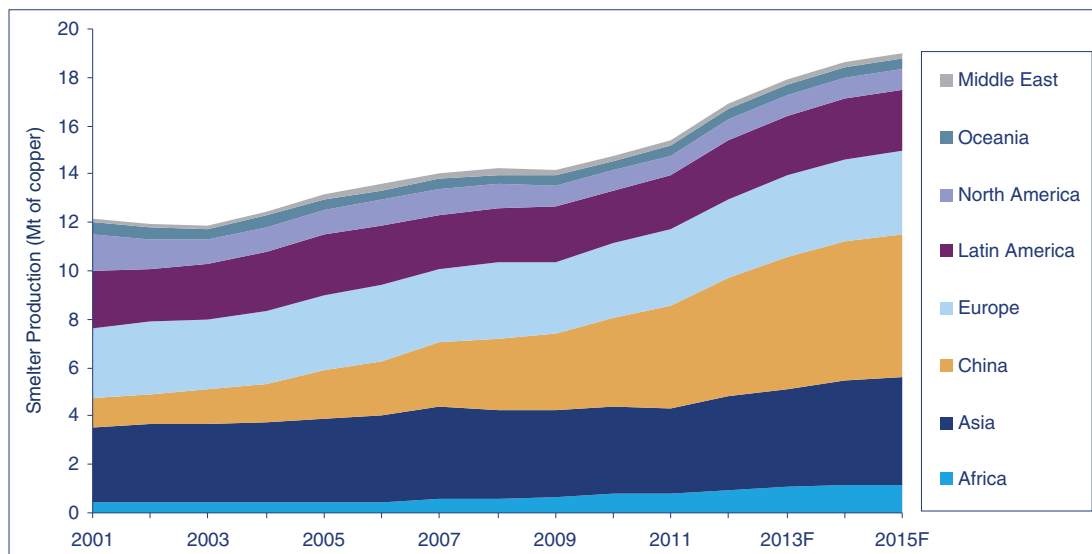
According to the Wood Mackenzie Report, overall base case mine production capacity is expected to increase at a CAGR of 5.8% from 2011 and 2015 with output reaching 20.4 Mt in 2015 (base case refers to current operations and funded projects). Zambia is expected to continue to expand production through the forecast period, increasing at a CAGR of 8.6% by adding a further 274 kt. Indonesia, Peru and the United States are also expected to maintain their growth, as is Brazil, from 209 kt in 2011 to 422 kt in 2015.

According to the Wood Mackenzie Report, demand for mine production in 2011 exceeded available supply by a considerable margin of 400 kt. The deficit is expected to reach 237 kt in 2012.

### Smelter Production

According to the Wood Mackenzie Report, global smelter production of copper in blister and anode forms increased by 4.3% in 2011 to reach 15.4 Mt. Base case global copper smelter production capacity is forecast to increase at a CAGR of 5.4% from 2011 to 2015. Smelter production is forecast to increase by 10.0% from 2011 to reach 16.9 Mt in 2012.

**Historic and Forecast Copper Smelter Capacity by Region**



Source: Wood Mackenzie Report

It is expected that an additional 3.6 Mt per annum of smelting capacity is to be commissioned from 2011 and 2015. Base case Chinese smelter production capacity is forecast to increase by 8.7% per annum, rising from 4.3 Mt in 2011 to 5.9 Mt in 2015. Smelter production capacities in Zambia and India are also expected to expand at 10.0% (from 541 kt to 792 kt) and 15.3% (660 kt to 1,167 kt), respectively, during the same period.

### Refinery Production

Refined copper is derived from three sources: blister copper and copper anode from concentrates consumed at smelters, SxEw copper cathode from mines, and, to a much lesser extent, concentrate leach and scrap. According to the Wood Mackenzie Report, in 2011, global refined copper production amounted to 19.7 Mt, including 1.4 Mt from scrap, and 3.4 Mt from SxEw copper cathode, representing a 3.8% year-on-year increase.



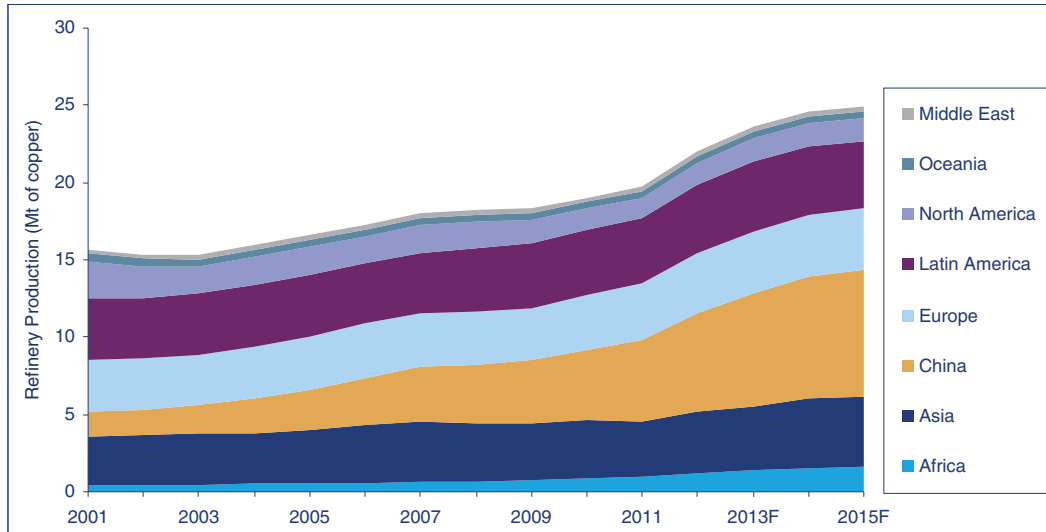
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## INDUSTRY OVERVIEW

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Base case global copper refined production capacity is expected to reach 22.0 Mt in 2012 and to continue to increase in 2013 and 2014. Overall global capacity is expected to increase at a CAGR of 6.0% from 2011 to 2015.

### Historic and Forecast Copper Refining Capacity by Region



Source: Wood Mackenzie Report

### Overview of Key Copper Producers

The copper market is diverse geographically in terms of production and the ownership concentration in the industry is relatively low. According to the Wood Mackenzie Report, during 2011, the ten largest copper producers accounted for 50.0% of total world mine production with the next ten largest companies accounting for approximately a further 13.0%. In 2011, Codelco remained the world's largest copper producer, followed by Freeport-McMoRan, BHP Billiton, Xstrata, Rio Tinto, Anglo American and Southern Copper.

According to the Wood Mackenzie Report, the total consolidated copper mine production for 2011 by equity share of Chinese firms from overseas assets was 190 kt, or 1.0%, of global copper mine production. According to the Wood Mackenzie Report, we were the largest PRC enterprise in terms of overseas copper production in 2011 (including copper concentrate, blister copper and copper cathode).

## INDUSTRY OVERVIEW

The following table sets forth the top ten copper producers in terms of mining production and smelting production, respectively, in 2011.

### Top Ten Copper Producers by Mining Production and Smelting Production (2011)

Mining Production			Smelting Production		
Company	kt	% of global	Company	kt	% of global
Codelco . . . . .	1,767	10.9	Codelco . . . . .	1,017	6.6
F-McM Copper & Gold . . . . .	1,412	8.7	Jiangxi Copper Company . . . . .	932	6.1
BHP Billiton . . . . .	1,060	6.5	Xstrata AG . . . . .	717	4.7
Xstrata AG . . . . .	884	5.4	Aurubis . . . . .	703	4.6
Anglo American plc . . . . .	645	4.0	Nippon Mining and Metals . . . . .	582	3.8
Southern Copper (ex SPCC) . . . . .	586	3.6	KGHM Polska Miedz . . . . .	560	3.6
Rio Tinto . . . . .	525	3.2	F-McM Copper & Gold . . . . .	508	3.3
KGHM Polska Miedz . . . . .	434	2.7	Jinchuan . . . . .	475	3.1
Antofagasta plc . . . . .	409	2.5	Mitsubishi Materials . . . . .	471	3.1
RAO Norilsk . . . . .	386	2.4	Sumitomo Metal Mining . . . . .	464	3.0

*Source: Wood Mackenzie Report*

### Copper Cost Analysis

#### **Overview of Copper Cost Development**

The copper industry has experienced increasing cost pressures in recent years. The main drivers of cost increases were stronger domestic currencies in producing countries and higher costs of raw material inputs, labor and energy. Stronger prices in by-product metals including gold, molybdenum and cobalt partly offset the cost increases. Some producers continued to reduce costs via productivity improvements.

The other recent copper cost trend has been a steepening of the cost curve. This steepening was due in part to higher prices for by-product metals. The operations with significant production from gold and molybdenum generally occupy the lower end of the cost curve. Those mines higher up the curve with only minor by-product metal revenue benefitted less from these higher prices. In addition, there was a significant recovery in the copper price since 2009, encouraging a number of higher cost mines to restart production, which in the environment of late 2008 and early 2009 may have been considered uneconomical.

#### **Zambia Copper Mine and Smelter Costs**

Historically, Zambia has been a major copper producer, with the first commercial production from Kansanshi in 1908. Throughout the 1960s, Zambia and Chile alternated for the position of largest copper producing nation. However, following the nationalization of the copper industry, Zambia was devastated by the oil crises of 1974 and 1979 and corresponding collapse in copper prices. The result was a debt crisis in Zambia and consequently, state-owned Zambia Consolidated Copper Mines Limited (“ZCCM”, the predecessor of ZCCM-IH) suffered from a lack of reinvestment. No new mines were opened after 1979 for over 20 years and production at ZCCM decreased significantly from 750 kt in 1973 to 257 kt in 2000. Zambia’s mining industry was privatized in the late 1990s and following extensive liberalization and structural reform, sustained growth in Zambia’s economy began. According to the Wood Mackenzie Report, CNMC was the first Chinese firm to invest in Zambia’s copper assets after the privatization of the copper industry.

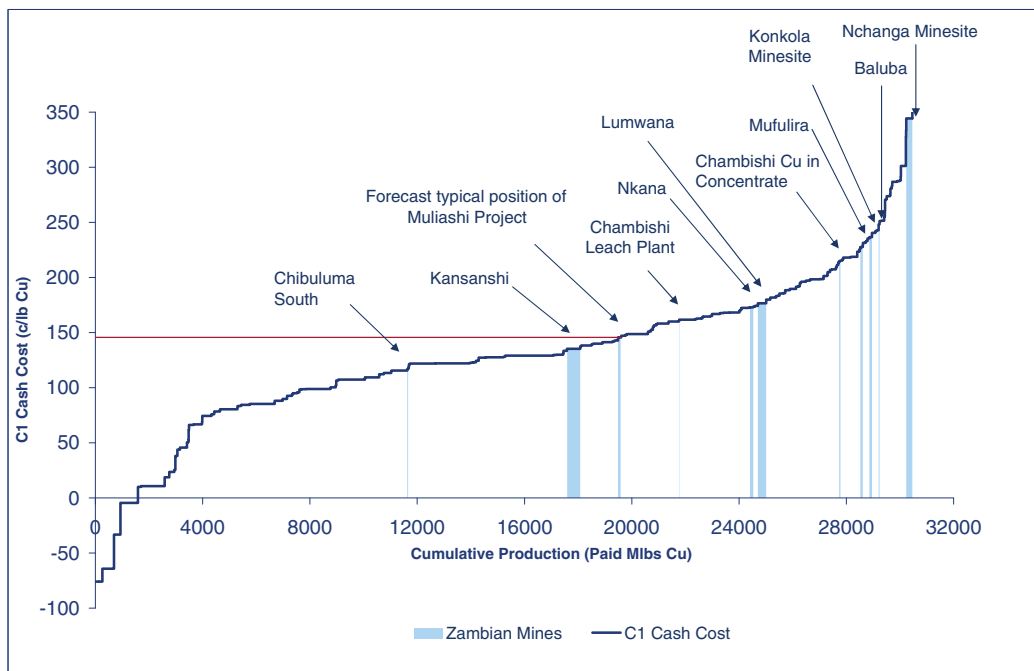
## INDUSTRY OVERVIEW

The Copperbelt province in Zambia, neighboring the DRC, contains abundant high-quality copper reserves and resources. According to the Wood Mackenzie Report, copper and cobalt constitute over 80% of Zambia’s exports and contribute almost 30% to its total GDP. As compared to the new mines, Zambia’s older copper mines are at the relative high end of the cost curve, as most older copper mines are underground operations with old concentrators and therefore low production capacity.

Our Muliashi Project commenced production in March 2012. According to the Wood Mackenzie Report and for illustrative purposes only, if it were in operation at its nameplate capacity, the project would occupy a position between the 60<sup>th</sup> and 65<sup>th</sup> percentile of the global cost curve.

The three major Zambian copper smelters, the Chambishi Copper Smelter (owned by our Company), Mufulira Smelter and Nchanga Smelter, benefit from relatively low power and labor costs and occupy positions in the lowest quartile of the global direct cash cost curve, with costs of the Chambishi Copper Smelter that started production in 2009 being the lowest of the three.

### C1 Cash Cost Curve for 2011 Global Copper Mine Production



Source: Wood Mackenzie Report

Notes:

- (1) The C1 cash cost curves are a measure of all direct costs, expressed in US cents per pound (“c/lb”) on a “paid copper” basis. Direct costs include mining, ore processing, leaching, solution pumping, solvent extraction/electrowinning, on-site administration and general expenses, any off-site services which are essential to the operation, smelting and refining (including toll charges if applicable), concentrate freight costs, marketing costs and property and severance taxes paid that are not profit related.
- (2) Competitive cost position shown for the Chambishi Leach Plant, the Chambishi Copper Mine, the Baluba Center Mine and the Muliashi Project are based on data provided by CNMC and adjusted by Wood Mackenzie to reflect standardized C1 costing methodology. Muliashi Project’s original cost data is based on designed nameplate cost adjusted for inflation and effect of exchange rate changes to reflect cost in 2011 US dollars.
- (3) The production costs were relatively high for Chambishi Leach Plant in 2011 as higher proportion of externally purchased oxide ore was used in production than in the past years.

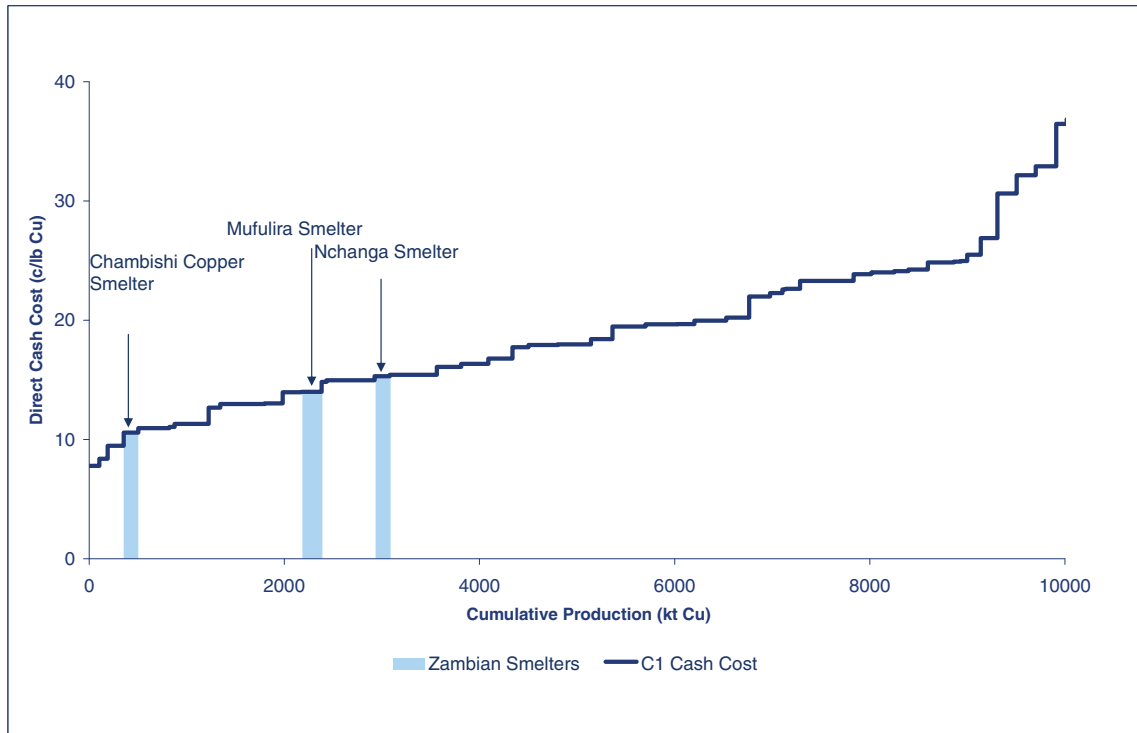
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## INDUSTRY OVERVIEW

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The average monthly LME copper price in 2011 was 400.4 c/lb. According to Wood Mackenzie, the median C1 cash cost was 127.5 c/lb, equivalent to 32% of the average copper price. The 90th percentile C1 cash cost was 207.1 c/lb, equivalent to 52% of the average copper price.

### C1 Cash Cost Curve for 2011 Copper Smelter Production



Source: Wood Mackenzie Report

Note:

- (1) Competitive cost position shown for the Chambishi Copper Smelter is based on data provided by CNMC and adjusted by Wood Mackenzie to reflect standardized C1 costing methodology.

## Copper Pricing

### Concentrate Market Introduction

According to the Wood Mackenzie Report, global copper mine production totaled 16.3 Mt during 2011, of which 79% was derived from operations using conventional milling and flotation techniques to produce copper in the form of concentrates, with the remaining 21% from facilities recovering market-ready copper cathode using the leaching and solvent extraction/electrowinning method. Approximately 56% of copper produced in concentrate form in 2011 were sold to third parties for smelting and refining with the balance being consumed in integrated facilities. Measured on a copper content basis, the third-party concentrate market has grown at a CAGR of 4.5% over the past 20 years while there has been no net growth in the integrated sector since the mid-1990s. As a consequence, sales of copper concentrates into the third-party market have gained considerable market share over this time period, with the size of the third-party market exceeding that of the integrated sector since 2003. Approximately 70% of third party concentrates were bought and sold internationally in 2011 with the remainder consumed domestically by smelters within the same country. Traders accounted for approximately 31% of the third-party market and 17% of the overall market in 2011.

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## INDUSTRY OVERVIEW

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### ***Market Operation***

The London Metal Exchange (LME) acts as a guarantor of the product quality and sets a governing standard of Grade A copper cathode conforming to BS EN 1978:1998 (Cu-CATH-1). Metal producers apply for product quality approvals from the LME once they are confident that their sources of supply can meet the specifications on a consistent basis.

The LME is a transparent and terminal market for the buying and selling of refined metal. The metal stocks to be delivered at closing are stored in LME designated warehouses and are branded by the LME to ensure that it meets the prescribed criteria for shape, weight and quality. Prices are set among producers, consumers, funds and speculators on the exchange and are traded in the spot market or futures market.

### ***Copper Concentrate Pricing***

There is no terminal market where copper concentrate can be traded at a precise known price, and since there is no market of last resort for concentrates, it is common for miners to sell their concentrate on the public market to a number of different smelters, often in different regions of the world as a means of minimizing the risks of non-performance by buyers. These long-term contracts can have a delivery period of between one and fifteen years. Spot sales usually involve small tonnages (5-10 kt of concentrate) and are awarded to merchants or smelting companies via a process of tendering.

Although the published metal prices (e.g., the cash settlement price for Grade A copper cathode determined by one of the metal exchanges) form part of the calculation of the gross price of copper concentrates, there are other more significant components, including the treatment charges (TC) and refining charges (RC), which are applied in order to arrive at the net price of the copper concentrates.

The components required to calculate the net value of copper concentrates are established through a process of negotiation between buyer and seller. These negotiations are carried out within what is known as the “third-party copper concentrate market”. The participants in this market are miners, smelters and traders. Miners are sellers of copper concentrates and smelters are buyers. Traders (also known as merchants) act as intermediaries that both buy and sell copper concentrates.

Buyers and sellers draw up a copper concentrate smelting contract to provide a framework covering a whole range of terms and conditions. These include TC and RC, price participation (PP) (if any), payables for copper, payables for other by-products, penalties for impurities, quotation periods for payable metals and payment terms that the miner or trader will pay to the smelter or trader for smelting and refining services. The main aspects of the contract that are subject to regular negotiation are the TC/RCs that are expressed in US dollars per dry metric tonne of concentrate and in cents per pound of payable copper and PP.

Originally, TCs and RCs were reflective of the individual costs associated with the smelting and refining process. However, over time this concept was phased out in favor of the price setting TC/RC mechanism (i.e., a price setting mechanism based on the demand and supply of third-party copper concentrates) that is common in copper contracts.

With respect to long-term contracts, the annually negotiated terms (the TC, RC and PP) are usually universally valid for a period of one year or spread over two years (where the terms apply to 50% of the annual quantity for each of the two years). Exceptionally, there are some contracts where the TC

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## INDUSTRY OVERVIEW

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and RC apply for a period longer than two years. The significant TC and RC negotiations typically commence at the start of every September, prior to the “LME Week” (the annual metals and mining industry event in London), and can continue to April in the following year. While the great majority of contracts are negotiated during that period, some contracts are also negotiated at other times of the year. For producers who have a large number of contracts, there are clear benefits in spreading out the negotiation period. Mid-year settlements also serve to increase the frequency of establishing terms in the long-term market to twice yearly.

PP clauses in long-term contracts enable smelters/buyers to participate, subject to negotiation, in price movements above and below a trigger LME price (only in Asia). During 2006, the very high prevailing copper price enabled smelters/buyers to capture unprecedented levels of PP. Many sellers deemed this level of PP inappropriate or unreasonable in the context of the ongoing over-capacity within the custom concentrate market. Consequently, the PP component of many long-term contracts was removed or delayed by mutual consent, albeit reluctantly in the case of smelters/buyers. In recent years, processing contracts have rarely included PP, which is unlikely to return until the balance of concentrate supply and demand moves in favor of the third-party concentrate smelters/buyers.

A freight credit, or allowance, can be negotiated between the miner and trader for concentrates sold on an FOB basis. This credit is based in part upon prevailing or anticipated market rates to a given destination point. These rates are usually determined through discussions with freight brokers and also with reference to indices such as the Baltic Dry Index (BDI). The actual rate negotiated is not necessarily fully representative of the actual costs since it also depends on whether the buyer or seller is in a stronger or weaker position vis-à-vis the copper concentrate market.

The spot market differs from the long-term market in that virtually any tonnage can be offered for sale at any time of the year and there is normally no PP. The seller contacts interested parties, which are usually traders, inviting them to submit bids to purchase the concentrate. The seller will indicate the expected month(s) of shipment(s) and will ask the prospective buyers to submit their purchase terms. Sometimes the seller stipulates most or all of these terms, leaving the buyer to offer just the TC/RC. Spot treatment and refining charges are, therefore, determined through competitive bidding on a one-off, transparent basis.

Variations in spot terms tend to be much greater than in the long-term market, which is to be expected given the high frequency of spot sales into an ever-changing market. Low spot terms always reflect a tight concentrate market and vice versa. Furthermore, given that the spot market reflects the marginal tonne of concentrate, in a deficit market traders will pay a premium (low TC/RC) for the material and in surplus years they will impose a discount (high TC/RC) on the material.

### ***Price Outlook***

Historically, copper prices have largely reflected the factors that drive the prices of many commodities, including supply-demand relationship and monetary supply. In nominal terms, copper prices have been steadily increasing since the 1960s, with periods of rapid increases and falls largely tracking global economic performance. The 1960s and early 1970s experienced volatile and high real prices reflecting sustained structural deficits and increasing world demand. Copper prices then declined significantly following the Organization of Petroleum Exporting Countries energy crisis in 1973. There were intermittent price increases in the 1980s and 1990s as stocks tightened following a muted supply response to strong demand.

Copper prices have risen significantly since 2000, largely driven by a failure of supply to keep pace with increased demand from emerging markets, in particular China. Prices on the LME (which

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## INDUSTRY OVERVIEW

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other exchanges such as the Shanghai Futures Exchange and the New York's Commodity Exchange tend broadly to track) increased over 400% from an average of around US\$1,800 per tonne in 2000 to over US\$8,000 per tonne in 2008. Demand was stalled by the global financial crisis and decreased by 3.5% in 2009. This fall in demand, combined with increased risk aversion saw prices briefly fall over 50% towards US\$3,000 per tonne. According to Wood Mackenzie, copper's strong fundamentals and a demand for "hard" assets pushed copper prices to average US\$7,540 per tonne in 2010, increasing by 46% from US\$5,159 per tonne in 2009 (both in nominal terms).

According to the Wood Mackenzie Report, refined copper production during 2010 increased by 4% to 19.7 Mt, which was insufficient to meet the stronger end-products demand growth. The global copper market ended the year with a small deficit of 237 kt. Copper prices were particularly volatile during 2011, with a low of under US\$7,000 per tonne and a high of over US\$10,000 per tonne resulting from great uncertainty surrounding the economic outlook. Despite this, prices averaged US\$8,818 per tonne in 2011, representing a 17% increase from the average of US\$7,540 per tonne in 2010 (both in nominal terms).

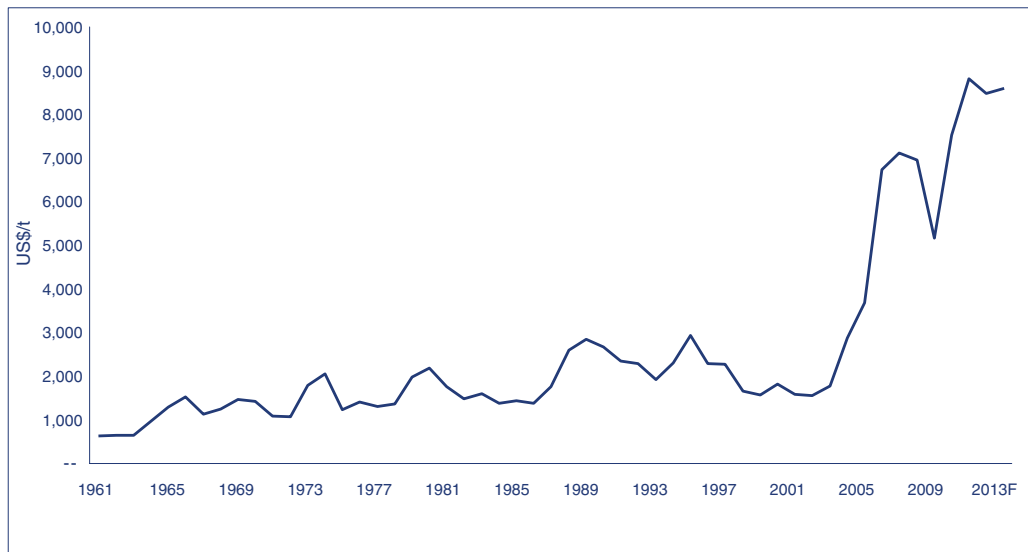
Although 2011's metal deficit was small compared to the overall size of the market, its importance is more directly related to how 2012 will unfold. According to the Wood Mackenzie Report, the supply side is expected to continue to underperform in 2012, leading to a deficit of approximately 207 kt. It is expected that 2012 and 2013 metal stock days of consumption will remain below the levels in 2011. During 2007 to 2008 producers were reluctant to invest as capital costs were high. This was followed by a significant decrease in the availability of funding in late 2008 and 2009. The combination of supply shortages coupled with high demand from China and increased fund appetite has resulted in prices moving in excess of levels that would ordinarily be expected. Therefore, market is expected to remain tight and continued higher momentum on prices is expected to average US\$8,488 per tonne in 2012 and US\$8,600 per tonne in 2013, respectively (both in nominal terms).

For industries such as copper that are in structural deficit, that is, with long-term demand significantly in excess of base case production intentions, incentive pricing is used to establish long-term cycle average prices. This system examines the price required to provide a given rate of return for each project and calculates the price required in theory to incentivize investment in a project. The rate of return required to warrant an investment is formulated. The incentive price is then calculated such that cumulative global capacity is sufficient to meet potential demand. In this context long-term can be considered the cycle average price over the next cycle, i.e. the decade over which a project would expect to see payback. In terms of long-term cycle average prices, these are critically dependant upon the metal demand outlook and on capital and operating costs. The incentive price methodology starts by estimating the demand for additional mine capacity after allowing for scrap usage and base case mine production changes. Critically, in a demand growth scenario involving depleting mines, the demand for additional capacity increases with time and care must be exercised in precisely defining the forecast period over which the cycle average price is to be estimated. Note that while the forecast is in constant dollar terms, no allowance has been made for specific inflation which could further increase the forecast.



## INDUSTRY OVERVIEW

### Historic and Forecast LME Copper Cash Prices



Source: Wood Mackenzie Report

### Historic and Forecast LME Copper Cash Prices

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012F</u>	<u>2013F</u>
Copper (US\$/tonne) . . . .	1,587	1,565	1,786	2,866	3,682	6,724	7,121	6,945	5,159	7,540	8,818	8,488	8,600
Copper (c/lb) . . . . .	72	71	81	130	167	305	323	315	234	342	400	385	390

Source: Wood Mackenzie Report

## INDUSTRY OVERVIEW

### Copper Trade — Regional Balance

The Asian region has a greater shortfall in supply of copper compared to other regions, partly as a result of the strong consumption in the region. China's supply shortfall is greater than any other country and has been steadily growing for the past decade. According to Wood Mackenzie, this shortfall is forecast to continue to grow rapidly through to 2015. Latin America, Africa and Oceania are the key export regions which have a significant oversupply of mined copper relative to demand expectations. The tables below show the balance between refined copper production and refined copper demand within China and Asia (excluding China).

#### China Implied Concentrate and Refined Copper Balance

	2001	2005	2010	2011	2012F	2013F	2014F	2015F	2015F vs. 2011	
	(kt)								(kt)	(CAGR)
Concentrate production . . .	569	762	1,156	1,255	1,378	1,433	1,461	1,505	250	4.6%
Concentrate demand . . . . .	1,224	1,808	2,578	2,941	3,493	3,985	4,099	4,262	1,320	9.7%
Implied concentrate balance . . . . .	-654	-1,046	-1,422	-1,687	-2,115	-2,553	-2,639	-2,757	-1,070	13.1%
Refined production . . . . .	1,523	2,600	4,575	5,267	6,386	7,355	7,887	8,153	2,885	11.5%
Refined consumption . . . . .	2,230	3,815	7,204	7,780	8,402	8,965	9,503	10,007	2,227	6.5%
Implied refined balance . . .	-707	-1,214	-2,629	-2,513	-2,017	-1,611	-1,617	-1,855	658	-7.3%

Source: Wood Mackenzie Report

#### Asia (excl. China) Implied Mine and Refined Copper Balance

	2001	2005	2010	2011	2012F	2013F	2014F	2015F	2015F vs. 2011	
	(kt)								(kt)	(CAGR)
Mine production . . . . .	1,864	1,859	1,827	1,495	1,591	1,814	2,016	2,118	623	9.1%
Refined consumption . . .	3,431	4,000	4,065	3,949	4,035	4,195	4,415	4,596	647	3.9%
Implied balance . . . . .	-1,567	-2,142	-2,238	-2,454	-2,444	-2,381	-2,399	-2,478	-25	0.2%

Source: Wood Mackenzie Report

### ZAMBIA COPPER MARKET OVERVIEW

#### Introduction

According to the Wood Mackenzie Report, Zambia's real GDP has increased at a CAGR of over 6% since 2005. In 2010, Zambia's economy expanded by 7.6%, with over 80% of exports comprising copper and cobalt, equating to almost 30% of its total GDP. After factoring in the importance of copper for mining royalties, income taxes and excise duties, the copper industry is an important source of Zambian Government revenue and economic growth.

## INDUSTRY OVERVIEW

The high-quality copper deposits in the Zambian Copperbelt region are situated along the border with the DRC. In Zambia, the Copperbelt extends 100 kilometers from the Konkola deposit in the northwest to Ndola and Luanshya in the southeast. This area is one of the largest metallogenic provinces in the world with significant deposits of copper and large accumulations of cobalt.

### Major Zambian Copper Assets

	<u>Resources</u> (kt)
CNMC <sup>(1)</sup> .....	7,198
Konkola .....	7,965
Konkola North .....	7,710
Kansanshi .....	5,126
Lumwana .....	4,463
Nchanga .....	4,333
Nkana .....	3,856

*Source: Wood Mackenzie Report*

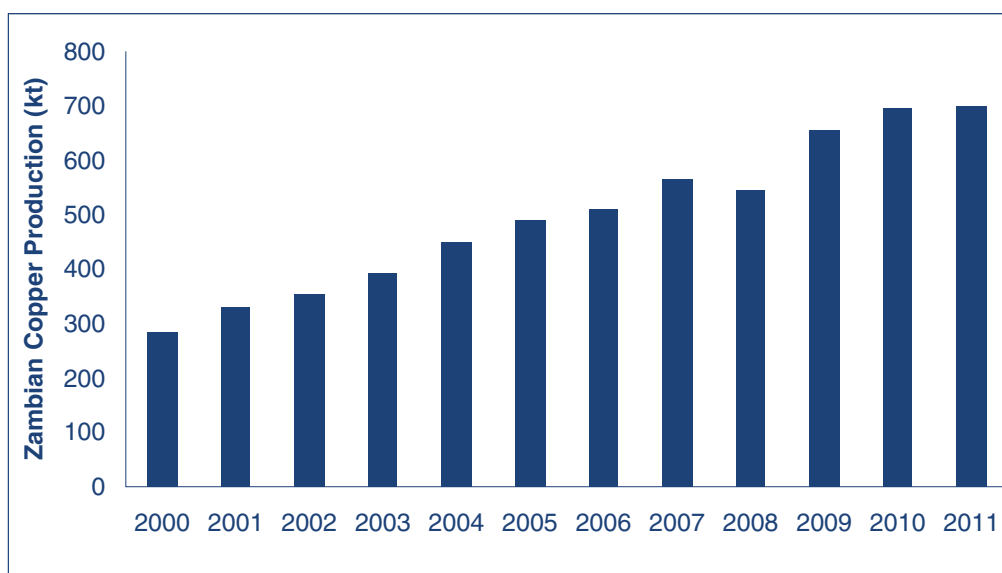
*Note:*

(1) Represents the copper resources controlled by CNMC in Zambia in aggregate, calculated on a 100% ownership basis for each asset. CNMC's copper assets include the Chambishi Main Mine, the Chambishi West Mine, the Chambishi Southeast Mine, the Baluba Center Mine, the Muliashi North Mine and other assets.

### Zambian Copper Supply

Zambian copper supply has experienced sustained growth since the privatization of the copper industry in the late 1990s. The Mines and Minerals Act of 1972 was repealed and replaced by the Mines and Minerals Act of 1995, which provides incentives for investors in the mining sector. From 2000 to 2011, production has increased at an average rate of 8.5% per annum.

### Zambia — Historic Copper Production



*Source: Wood Mackenzie Report*

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## INDUSTRY OVERVIEW

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According to the Wood Mackenzie Report, the Zambian copper mining industry is estimated to produce 805 kt of copper during 2012 with 74% of this originating from concentrates and the balance from copper cathode produced from SxEw facilities. The Zambian government is keen to improve self-sufficiency of the country's copper smelting and refining asset base and has introduced a concentrate export tax of 15% to discourage sales to smelters in other countries.

According to the Wood Mackenzie Report, Zambian mine production is forecast to rise in the short to mid term as Chambishi continues its expansion and the Lumwana and Konkola Deep projects ramp up production.

In 2012, CNMC, through its control of the Chambishi Copper Mine, the Muliashi North Mine and the Baluba Center Mine, is expected to contribute approximately 65 kt of contained copper mine production, making it the largest PRC copper mining enterprise in Zambia.

Three smelters, namely the Chambishi Copper Smelter, Mufulira Smelter and Nchanga Smelter, provided approximately 95% of the national capacity in 2011, with leach facilities providing the balance.

The commissioning of the 150 kt per annum Chambishi Copper Smelter in 2009 represented a significant development in the Zambian copper industry. The Chambishi Copper Smelter is a joint venture between CNMC and Yunnan Copper Group and is the only large-scale overseas copper smelter owned by a PRC enterprise. In 2009, the joint venture partners announced plans for a smelter expansion, the construction of which commenced in 2010 and is expected to be completed in late 2012. The annual production capacity of the smelter is expected to increase to 250 kt of blister copper by 2013.

In addition to domestic concentrates, Zambian smelter feed is currently supplemented with imported concentrates from the DRC. The majority of these imports came from First Quantum's Frontier mine.

## INDUSTRY OVERVIEW

The following table shows historic and forecast copper mine production in Zambia.

### Zambian Copper Mine Production

	Current Ownership	2010	2011	2012F	2013F	2014F	2015F
		(kt)					
<b>Base case</b>							
Baluba Center Mine <sup>(1)</sup>	CNMC 80%, ZCCM-IH 20%	10	16	19	20	20	20
Bwana Mkubwa SxEw	First Quantum 100%	7	—	—	—	—	—
Chambishi Copper Mine <sup>(1)</sup>	CNMC 85%, ZCCM-IH 15%	22	23	27	31	34	37
SML's Chambishi leach plants <sup>(1)</sup>	CNMC 55%, NFCA 15%, Hainan Sino-Africa Mining 30%	7	7	15	19	30	40
Chibuluma South	Vale 85%, ZCCM-IH 15%	18	17	15	15	15	15
Jifumpa/Kalengwa	Hetero Mining Company	2	2	2	2	2	2
Kansanshi	First Quantum 80%, ZCCM-IH 20%	147	135	155	185	180	170
Kansanshi SxEw	First Quantum 80%, ZCCM-IH 20%	87	100	100	100	100	95
Konkola	Vedanta 79.4%, ZCCM-IH 20.6%	38	40	40	40	30	—
Konkola Deep	Vedanta 79.4%, ZCCM-IH 20.6%	—	—	60	125	150	170
Konkola North	Vale 50%, African Rainbow Minerals 50%	—	—	—	10	42	46
Lumwana	Barrick Gold 100%	147	145	140	140	135	145
Mindola North SxEw	First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10%	10	10	2	9	12	20
Mufulira	First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10%	36	41	29	28	28	26
Mufulira SxEw	First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10%	—	—	12	15	19	6
Muliashi Project <sup>(1)</sup>	CNMC 80%, ZCCM-IH 20%	—	—	19	33	40	40
Munali Restart	Albidon 100%	2	2	2	2	2	2
Nchanga	Vedanta 79.4%, ZCCM-IH 20.6%	54	53	50	50	50	50
Nchanga SxEw	Vedanta 79.4%, ZCCM-IH 20.6%	56	55	55	60	20	—
Nchanga Refractory Ore SxEw	Vedanta 79.4%, ZCCM-IH 20.6%	—	—	—	—	30	50
Nkana/Chibuluma	First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10%	40	41	41	35	35	36
Nkana/Chibuluma RLE Feed	First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10%	12	9	15	18	18	19
<b>Total base case Zambia</b>		<b>694</b>	<b>696</b>	<b>798</b>	<b>937</b>	<b>992</b>	<b>979</b>
<b>Total highly probable Zambia</b>						<b>10</b>	<b>30</b>
<b>Total probable Zambia</b>						<b>125</b>	<b>395</b>
<b>Total possible Zambia</b>						<b>3</b>	<b>35</b>

Source: Wood Mackenzie Report

Note:

(1) Data provided by CNMC. Chambishi Copper Mine data includes mine production from the Chambishi Main Mine, the Chambishi West Mine, the Chambishi Southeast Mine and the SML Chambishi Processing Plant.

## INDUSTRY OVERVIEW

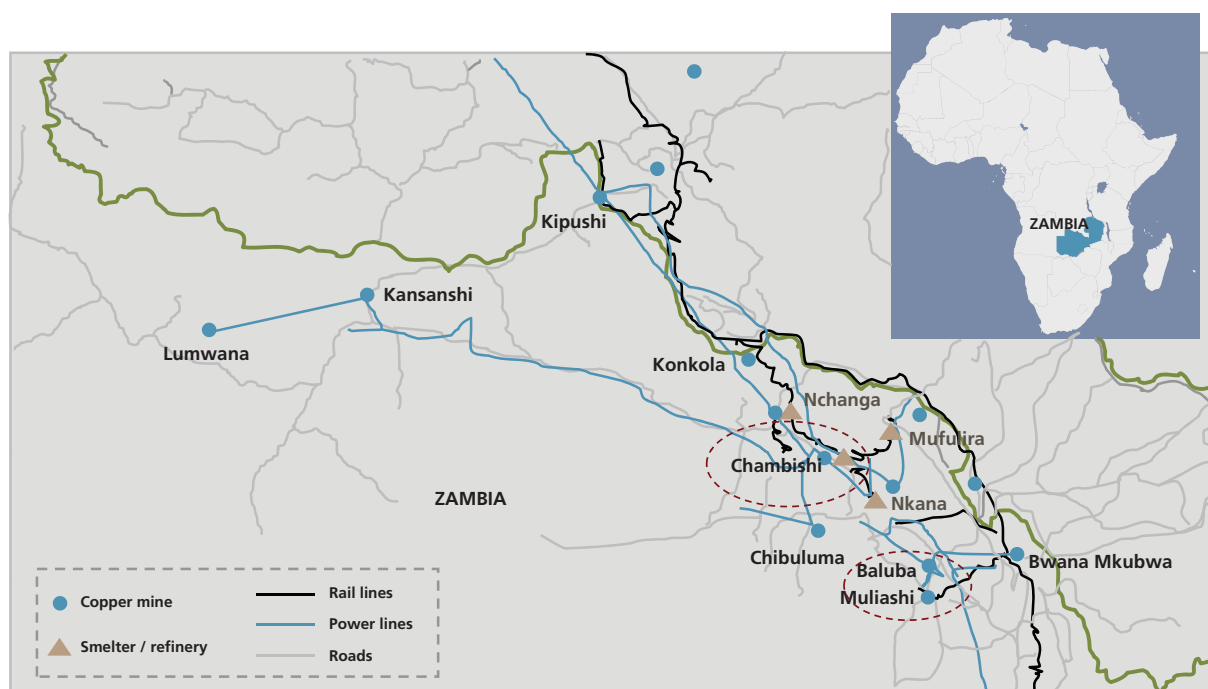
According to Wood Mackenzie, the Company's market share of Zambian copper mine production is expected to increase from approximately 5% in 2011 to 11% by 2015.

The following table sets forth the ownership and production capacity of major smelters in Zambia as of 2011.

Smelter	Ownership	Product Type	Capacity per annum (kt)
Nchanga Smelter	Konkola Copper Mines (Vedanta 79.4%, ZCCM-IH 20.6%)	Anode	300
Mufulira Smelter	Mopani Copper Mines (First Quantum 16.9%, Glencore 73.1%, ZCCM-IH 10.0%)	Anode	200 (rising to 220 by 2013)
Chambishi Copper Smelter	CNMC 60%, Yunnan Copper Group 40%	Blister	150 (rising to 250 by 2013)

*Source: Wood Mackenzie Report*

The following map shows the location of major mines and smelters/refineries in Zambia.



*Source: Wood Mackenzie Report*

### Zambian Copper Exports

Zambia has been a traditional supplier to the copper markets in mature Asian economies, including Japan and South Korea, the Middle East and North Africa, where some additional growth is expected to occur in the future, for example, in Egypt. China has been the largest source of export growth since 2009, increasing as a result of the production from Chambishi Copper Smelter.

## INDUSTRY OVERVIEW

### CHINA COPPER MARKET OVERVIEW

#### Introduction

China is the world's largest consumer of copper and is expected to remain so for the foreseeable future. Although its domestic mining industry is expected to be able to meet a proportion of the country's demand, a considerable shortfall between domestic supply and demand is still expected. This shortfall will have to be met through imports of raw materials and refined metal.

#### Consumption Outlook

According to the Wood Mackenzie Report, Chinese demand for refined copper grew by 8.0% in 2011 to 7.8 Mt as continued strong economic growth underpinned an expansion in the metal's consumption. In particular, infrastructure spending continues to form the major part of end use demand.

According to the Wood Mackenzie Report, the pace of growth in Chinese demand for refined copper is expected to remain strong in 2012, increasing by 8.0% to reach 8.4 Mt. Infrastructure and construction spending will continue to underpin growth in demand, with the expansion in low cost social housing expected to offset the slowdown in commercial real estate development.

Through the forecast period as a whole, the rate of expansion is expected to be moderate as the economy begins the transition from being infrastructure led to consumer driven, which will reduce the relative size of the construction and infrastructure market in the end use demand mix. This decline is expected to be partly offset by the growing transportation market and further developments in the power sector in a bid to harness green energy.

Pursuant to the Wood Mackenzie Report, for the period from 2011 to 2015, the average annual growth in refined copper consumption in China is expected to be 6.5%, which will result in Chinese consumption of refined copper reaching 10.0 Mt by 2015. The 2.2 Mt gain in refined copper consumption during this period will result in China's share of global refined copper consumption rising from 39% in 2011 to 43% in 2015.

#### Chinese Refined Copper Demand by Sector

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011 vs 2001	
	(kt)											(kt) (CAGR)	
Building and													
Construction . . . . .	684	755	944	1,047	1,162	1,232	1,440	1,554	1,865	2,175	2,439	1,755	13.6%
Electrical and Electronic													
Products . . . . .	644	724	905	1,227	1,363	1,489	1,739	2,022	2,524	2,821	3,101	2,457	17.0%
Industrial													
Machinery and													
Equipment . . . . .	208	234	266	301	327	331	385	418	501	540	560	352	10.4%
Transportation													
Equipment . . . . .	116	136	175	210	213	237	292	343	482	601	594	478	17.7%
Consumer and General													
Products . . . . .	577	575	731	780	750	677	814	762	1,004	1,067	1,086	508	6.5%
<b>Total . . . . .</b>	<b>2,230</b>	<b>2,425</b>	<b>3,020</b>	<b>3,565</b>	<b>3,815</b>	<b>3,967</b>	<b>4,670</b>	<b>5,100</b>	<b>6,375</b>	<b>7,204</b>	<b>7,780</b>	<b>5,550</b>	<b>13.3%</b>
Change y-o-y(%) . . . . .	20.5%	8.7%	24.5%	18.0%	7.0%	4.0%	17.7%	9.2%	25.0%	13.0%	8.0%		

Source: Wood Mackenzie Report

## INDUSTRY OVERVIEW

### Chinese Refined Copper Demand by Sector Forecast

	2012F	2013F	2014F	2015F	2015F vs. 2011	
					(kt)	(CAGR)
Building and Construction . . . . .	2,607	2,760	2,936	3,108	669	6.2%
Electrical and Electronic Products . . . . .	3,440	3,726	4,040	4,296	1,196	8.5%
Industrial Machinery and Equipment . . . . .	589	638	690	733	173	7.0%
Transportation Equipment . . . . .	632	665	707	738	144	5.6%
Consumer and General Products . . . . .	1,133	1,202	1,291	1,369	283	6.0%
<b>Total . . . . .</b>	<b>8,402</b>	<b>8,990</b>	<b>9,664</b>	<b>10,244</b>	<b>2,464</b>	<b>7.1%</b>
Change y-o-y(%) . . . . .	8.0%	7.0%	7.5%	6.0%		

Source: Wood Mackenzie Report

Although China is the world's largest consumer of copper, it does not have significant copper resources and lacks world-class high grade copper projects. Moreover, after decades of significant production, the production and grade of the existing copper mines are declining. Despite strong support from the PRC government for the development of the PRC copper industry and a number of newly commissioned mines expected to provide an increase in copper mine production, overall growth in copper mine production is not significant and is lagging behind the growth of demand for copper concentrate. According to the Wood Mackenzie Report, China's domestic concentrate production is expected to grow at a CAGR of 4.6% from 2011 to 2015, compared to 9.7% for demand as China continues to construct smelter capacity. This supply deficit is expected to increase from 1.7 Mt in 2011 to 2.8 Mt in 2015. The growing deficiency is a key driver for the low TC/RCS in the current market and has also led to growth in the capacity of Chinese secondary smelters processing scrap.

In order to reduce the pressure of demand for copper concentrate, Chinese companies have generally been seeking interests in overseas assets to secure concentrate supply and engaging in long term contracts with suppliers to reduce exposure to price fluctuations in the custom concentrate market.

### Chinese Copper Concentrate Balance

	2011	2012F	2013F	2014F	2015F	2015F vs. 2011	
						(kt)	(CAGR)
Concentrate production . . . . .	1,255	1,378	1,433	1,461	1,505	250	4.6%
Demand for concentrate . . . . .	2,941	3,493	3,985	4,099	4,262	1,320	9.7%
<b>Implied balance . . . . .</b>	<b>-1,687</b>	<b>-2,115</b>	<b>-2,553</b>	<b>-2,639</b>	<b>-2,757</b>	<b>-1,070</b>	<b>13.1%</b>

Source: Wood Mackenzie Report

### China Copper Pricing

Copper has been traded on the Shanghai Metals Exchange in China since 1992. In 1999, the Shanghai Futures Exchange (SHFE) was formed from an amalgamation of various Shanghai commodity exchanges. Since its inception, the SHFE has grown rapidly and with the 2010 futures volume of 245 Mt has overtaken the New York Mercantile Exchange (117 Mt) as the world's second largest copper exchange behind the LME (749 Mt).



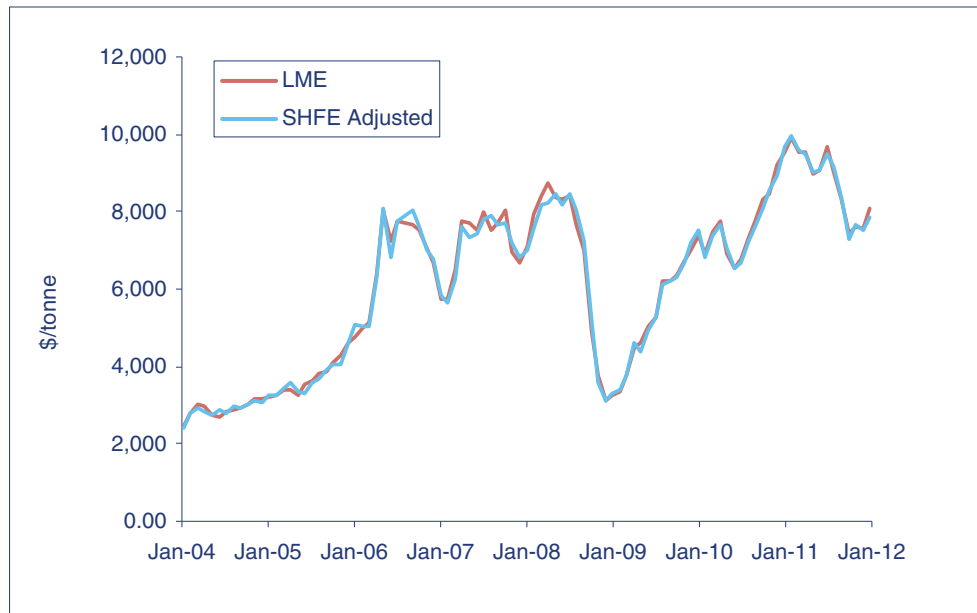
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## INDUSTRY OVERVIEW

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The chart below shows the correlation between the LME cash copper price and the SHFE price.

**LME and Shanghai Copper Price**



Source: Wood Mackenzie Report

## COBALT MARKET OVERVIEW

### Introduction

Cobalt is a silvery-white metal, present in the earth's crust at about 25-50 parts per million. Cobalt occurs in nature in a variety of minerals, including cobaltite, smaltite, erythrite and linnaeite, and is associated with nickel, copper, iron, silver and lead ores. Cobalt, iron and nickel are the only three naturally occurring magnetic metals.

### Cobalt Demand Analysis

Cobalt has several uses based on its functional properties, including: batteries for vehicles (including nickel batteries and lithium-ion batteries) and consumer electronics; superalloys for aerospace, jet and gas turbine engines and other uses; catalysts, carbides, pigments, magnets, hardfacing alloys and other alloys.

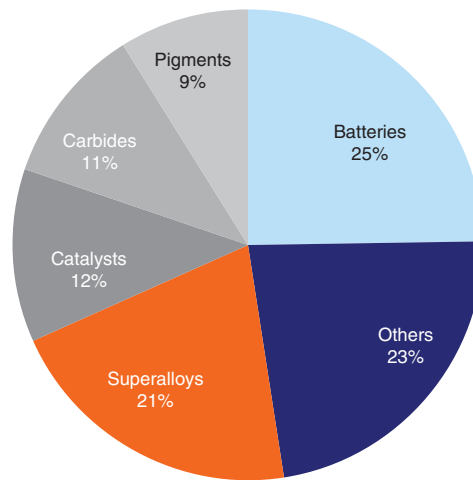
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## INDUSTRY OVERVIEW

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The following graph shows the cobalt demand by sector in 2011.

**2011 Cobalt Demand by Sector**



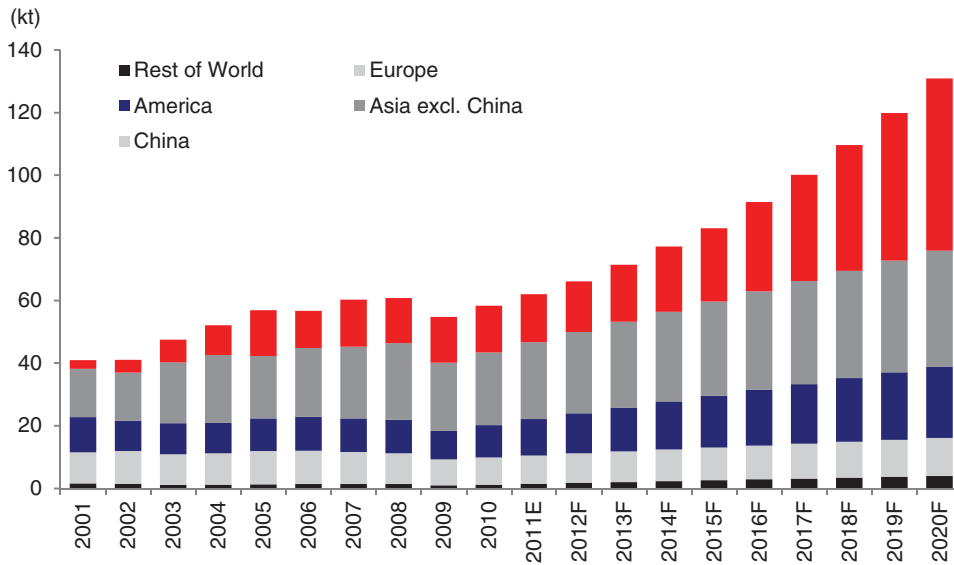
*Source: Wood Mackenzie Report*

Demand for cobalt has grown substantially since the 1990s with the battery and superalloys industries being responsible for a significant part of this growth. Wood Mackenzie estimates that total current cobalt demand is more than 50% higher than it was in the early 2000s, when demand was more evenly split between regions.

In the early 2000s, cobalt demand was negatively impacted by adverse economic conditions, which resulted in lower demand from the battery and superalloys sectors. However, consumer stockpiling combined with rapid demand growth in Asia, particularly from China, Japan and South Korea, allowed cobalt demand to recover by mid-2000s, with lithium-ion batteries emerging as a key demand driver. In particular, China has emerged as a main demand contributor during the 2000s. China's share of global cobalt demand increased from less than 10% in the early 2000s to around 25% in 2008. On the other hand, cobalt demand from Europe and the Americas decreased during the same period. During this period, China became one of the world's largest manufacturers of lithium-ion batteries. The global financial crisis saw global cobalt demand drop by close to 10% in 2009. Wood Mackenzie expects the global cobalt market to recover to peak 2008 levels in 2012.

# INDUSTRY OVERVIEW

## Historical and Forecast Cobalt Demand by Region



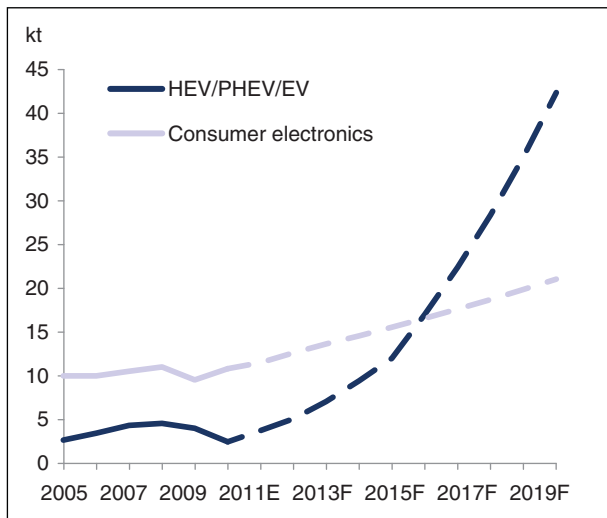
Source: Wood Mackenzie Report

## Batteries Sector

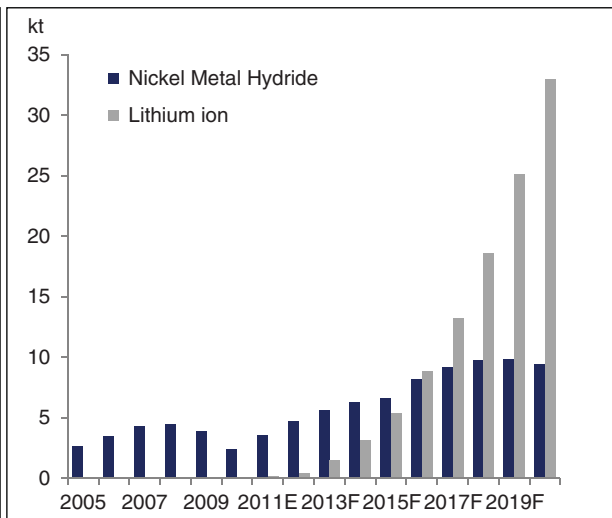
Rechargeable batteries are an important end-use sector for cobalt, accounting for close to 20% of total cobalt demand. Nickel-metal hydride batteries have historically dominated cobalt use in vehicle batteries, but within the next decade cobalt use in lithium-ion batteries is expected to surpass nickel-metal hydride batteries as electric vehicle technology becomes more popular.

According to the Wood Mackenzie Report, hybrid and electric vehicle production could account for 4.2% of global light vehicle output by 2017. About 4.3 million electric vehicles (including plug-in hybrid electric vehicles) are estimated to be on the road by 2017.

### Cobalt Use in Batteries



### Cobalt Use by Vehicle Battery Type



Source: Wood Mackenzie Report

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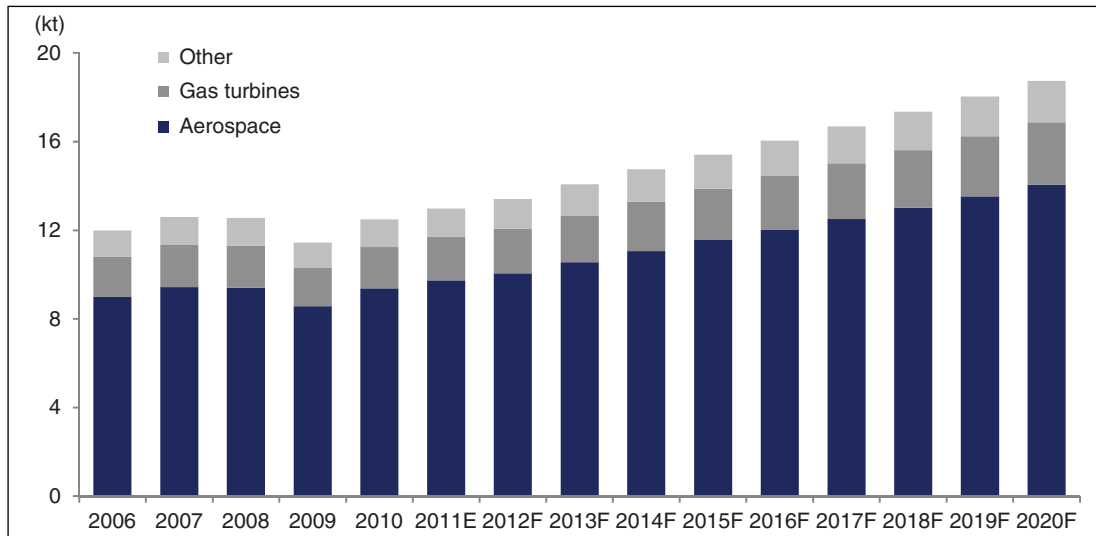
## INDUSTRY OVERVIEW

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### Superalloys

Cobalt's use in the superalloys market encompasses the aerospace industry (75%), the automotive and other land-based industries (21%), and the oil, gas and tools industries (4%). Europe and the United States account for more than 80% of cobalt demand in superalloys. According to the Wood Mackenzie Report, cobalt demand in the superalloys market is expected to grow by 3.3% in 2012. According to Wood Mackenzie, demand is estimated to rise at an average annual rate of 4.2% until 2020, with the aerospace industry retaining the largest market share.

**Historic and Forecast Cobalt Use in Superalloys**



Source: Wood Mackenzie Report

### Catalysts

Cobalt is used as a catalyst in the petrochemical and plastics industries. Cobalt, in the form of cobalt oxide (3-5%) combined with molybdenum trioxide and alumina, rapidly converts organic sulfur to hydrogen sulfide in the treatment of hydrocarbons. This CoMOX catalyst accounts for the greatest use of cobalt in the catalyst sector. In addition, cobalt is also used in the manufacture of resins for plastic bottles and ultra-strong plastics.

### Carbides

Cobalt is also used to increase metal hardness to varying degrees, depending on the end use, and helps to retain metal strength at higher temperatures. Fine cuts (approximately 3% cobalt) are used for precision boring, while coarser/rougher cuts (up to 15% cobalt) are suitable for more heavy impact use, such as for dies, tooling and for rock drills in the mining industry. This sector represents close to 7 kt of cobalt demand.

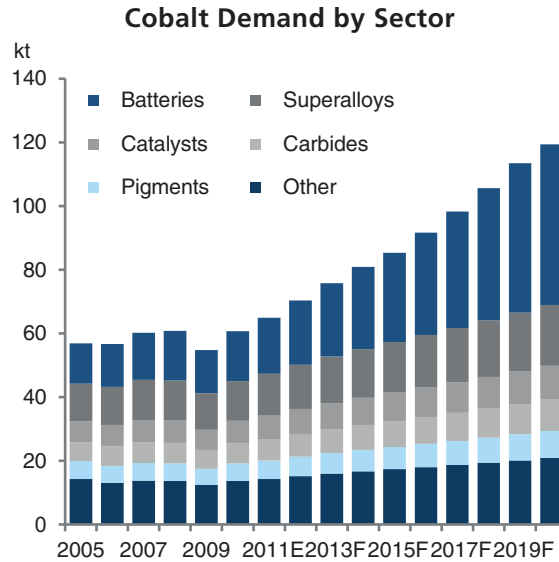
### Other Uses

Cobalt has a variety of other applications, including specialist alloys. Cobalt is commonly alloyed with chromium and tungsten to make high-speed cutting tools, it is added to steel to make maraging steels used in the aerospace and military industries, it can be used in electronic alloys, and cobalt-chrome alloys are used for prosthetics. Alloys of alumina, nickel, cobalt and iron, and samarium-cobalt are used in permanent magnets. Cobalt is also used as a pigment in the glass, ceramics, paint and varnish industries. These end uses account for more than 30% of the total cobalt demand.

## INDUSTRY OVERVIEW

The long-term major upside for cobalt demand is the battery sector for hybrid and electric vehicles. According to the Wood Mackenzie Report, this sector will grow from approximately 10% of the total demand in 2011 to over 30% by 2020, primarily taking away the market share from superalloys.

The following diagram shows Wood Mackenzie’s forecasted cobalt demand by sector.

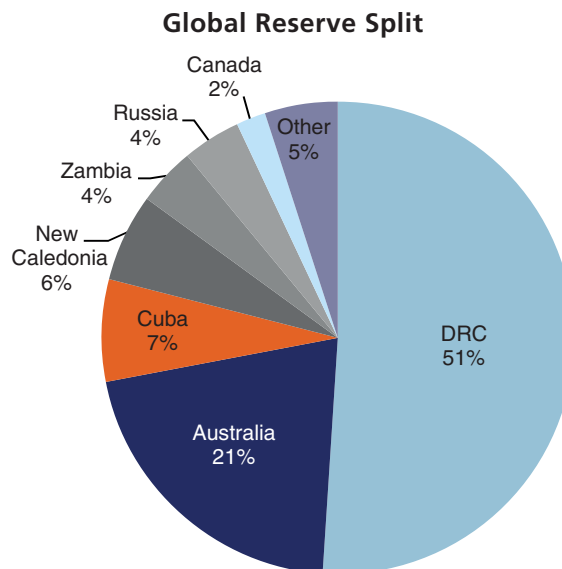


Source: Wood Mackenzie Report

### Cobalt Supply Analysis

There are four types of cobalt deposit: nickel-bearing laterites, nickel-copper sulfide deposits, strata-bound copper deposits and silver-cobalt sulfarsenide deposits.

Global reserves of cobalt total approximately 7.5 Mt. The DRC ranks first and accounts for 51% of global reserves. Other countries with major cobalt reserves are Australia, Cuba, New Caledonia (France) and Zambia.

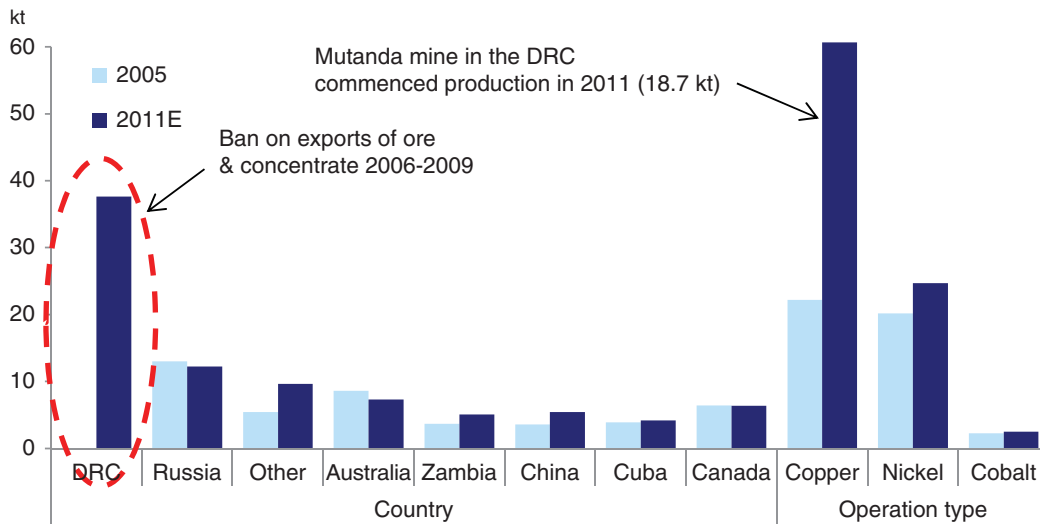


Source: Wood Mackenzie Report

## INDUSTRY OVERVIEW

Cobalt is primarily mined as a by-product in the extraction of nickel and copper ores. Mines that extract cobalt as the primary mineral currently account for only 2% of total supply. Copper ores are the main source of cobalt, contributing approximately 70% to the global supply in 2011, and primarily come from the DRC, Russia and Zambia. Nickel ores, which provided about 28% of total cobalt supply, are located primarily in Russia, Cuba and Australia.

### Cobalt Production by Region and Ore Type



Source: Wood Mackenzie Report

Cobalt mine production has been cyclical over the past 20 years and has typically posted strong growth except during periods of economic recession. Zaire (the DRC) had been the largest producer of cobalt until the 1980s, but the economic crisis it suffered resulted in the decline of its mining industry and the significant decrease in cobalt production. La Générale des Carrières et des Mines (Gécamines) contributed substantially to government revenues, producing more than 10 kt of cobalt in 1990. However, production decreased by approximately two-thirds within the following three years.

Copper-cobalt mining has also historically played an important role in the Zambian economy. Cobalt production was increasingly promoted in the 1980s as copper output peaked.

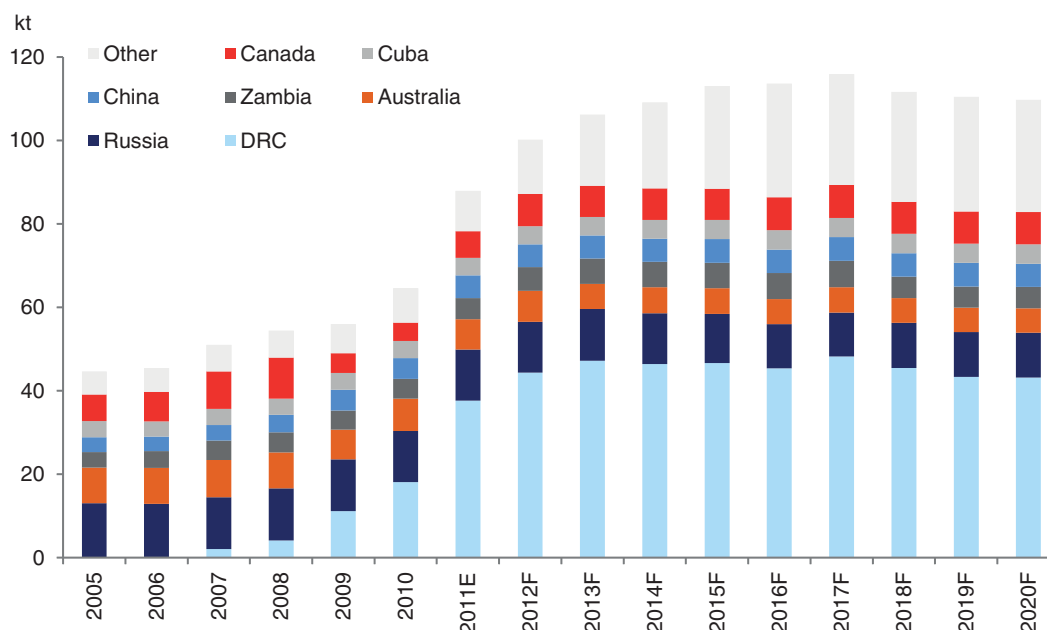
The DRC accounted for 44% of the global cobalt supply in 2011, increasing substantially since the early 2000s. The start-up of Mutanda mine in 2011 is estimated to have produced over 18 kt of cobalt, while the start-up of Tenke Fungurume accounted for 17% of production growth from this region in 2011.

China has the largest cobalt refining capacity, with more than 100 companies that process cobalt in various forms. In response to growing domestic demand for cobalt from battery manufacturers, cobalt refining capacity in China expanded rapidly in the early 2000s. Jinchuan Nonferrous Metals is currently the largest cobalt refiner, with an annual production capacity of 6 kt of cobalt.

It is estimated that global mine production increased by over 30% in 2011. New mines and the re-start of existing mines in the DRC are primarily responsible for this step-up in output compared to the 2010 levels. According to the Wood Mackenzie Report, global production is forecast to increase by an annual average of about 5% to 2017.

## INDUSTRY OVERVIEW

### Forecast Mine Production by Country



Source: Wood Mackenzie Report

### Cobalt Market Balance and Pricing

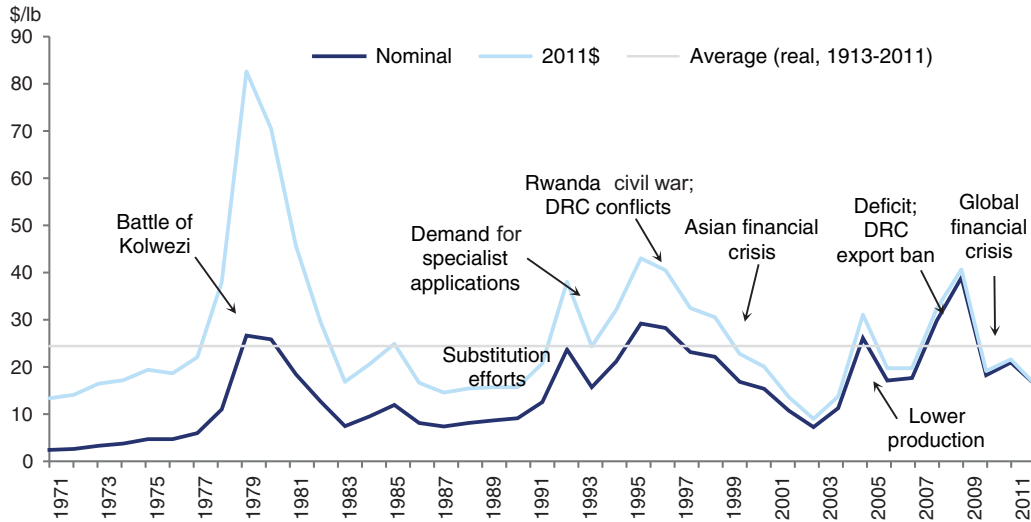
Until the late 1970s the cobalt price was relatively stable at around US\$2/lb. Since then, political instability or other developments in the DRC and neighboring countries have been the key driver of price volatility.

In 1978, the Front for the National Liberation of the Congo invaded Zaire (the DRC), which culminated in the Battle of Kolwezi. Political unrest in the country hosting the largest cobalt reserves pushed up the nominal price to almost US\$27/lb. In the late 1990s, civil war in neighboring Rwanda and further conflict within the DRC lifted the price up to US\$29/lb before the Asian financial crisis unfolded. The export ban on unprocessed cobalt imposed by the DRC government in 2006 resulted in a price of close to US\$40/lb by 2008, as mine production in the DRC and refined production in China dropped at the same time.

In 2011, cobalt prices were lagging behind those of copper and nickel as the fall-off in demand during the global financial crisis was greater than cobalt's production losses, but the recovery in output at nickel and copper mines pulled cobalt supply up faster than demand has recovered.

## INDUSTRY OVERVIEW

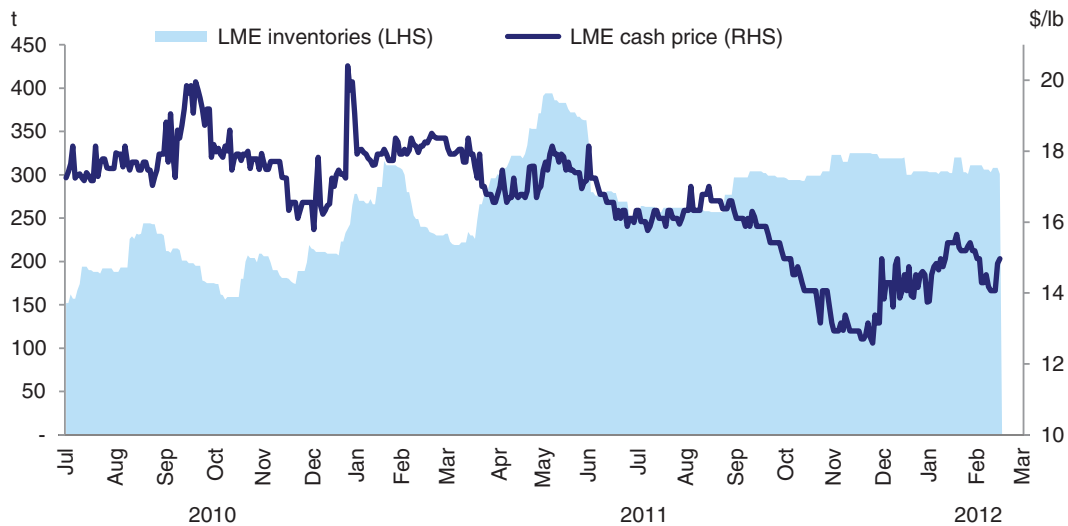
### Historical Cobalt Price



Source: Wood Mackenzie Report

The LME began trading cobalt futures in February 2010 and producers have since then been referencing LME prices in contract negotiations.

### LME Cobalt Inventories and Price



Source: Wood Mackenzie Report

It is anticipated that the LME may serve as a platform for risk management given the inherent volatility in the cobalt price. Cobalt LME inventories accumulated to a peak of 394 tonnes of cobalt in May 2011.

Clearly, historical volatility, the by-product nature of supply and its reliance on the DRC mean that the cobalt market is subject to several different influences. Overall, as the market is expected to remain undersupplied, the widening supply gap over the next ten years is likely to lift prices above the historical long-term average.



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## INDUSTRY OVERVIEW

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### FEE PAID AND ASSUMPTIONS AND PARAMETERS FOR WOOD MACKENZIE REPORT

We commissioned Wood Mackenzie to produce the Wood Mackenzie Report for use in whole or in part in this prospectus. Wood Mackenzie is a leading independent research house that specializes in producing detailed analytical and strategic research on the global metals and energy industries. Wood Mackenzie has served mining, energy, engineering, financial and government sector clients around the world for over 40 years. We paid Wood Mackenzie a total of US\$101,900 in fees for the preparation and update of the Wood Mackenzie Report.

Wood Mackenzie provides comprehensive sources of knowledge about the world's energy and metals industries. Wood Mackenzie analyzes and advises on every stage along the value chain — from discovery to delivery, and beyond — to provide clients with the commercial insights. Wood Mackenzie assesses, and places a value on, thousands of individual assets and companies around the world. Alongside this Wood Mackenzie evaluates economic indicators as well as market supply, demand and price trends. Wood Mackenzie has in-house teams dedicated to all major sectors of the energy and metals and mining industries.

Wood Mackenzie prepared its report based on its in-house database, independent third-party reports and publicly available data from reputable industry organizations. Where necessary, Wood Mackenzie contacts companies operating in the industry to gather and synthesize information about the market, prices and other relevant information. Wood Mackenzie has assumed that the information and data which it relied on are complete and accurate. Wood Mackenzie has advised that (i) some information in its database is derived from estimates from industry sources or subjective adjustments; and (ii) the information in the database of other metals and mining data collection agencies or of other industry consultants may differ from information in Wood Mackenzie's database. The information contained herein has been obtained from sources believed by Wood Mackenzie to be reliable, but there can be no assurance as to the accuracy or completeness of any such information.

The key assumptions and parameters used in the Wood Mackenzie Report are set forth below.

#### **Global Economic Growth**

Wood Mackenzie assumed that the global economy will grow at a rate of 2.4% in 2012 and 3.1% in 2013. Wood Mackenzie expects the global economy to maintain moderate growth, driven by the economic growth of emerging economies.

#### **Demand**

Wood Mackenzie regards demand as the key variable driving supply. Wood Mackenzie's demand analysis is guided by historic and expected future trends within individual industry sectors, such as construction, electrical, industrial machinery, transportation and consumer and other general products. Wood Mackenzie also considers various influences on demand, such as changes in inventory, infrastructure capacity and regulations. Additionally, the growth pattern of developing countries was considered in light of other recently developed and more developed countries in various regions.

#### **Supply**

Wood Mackenzie's supply analysis takes into account various factors affecting suppliers as they attempt to meet demand requirements. Wood Mackenzie considers material flow from the majority

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## INDUSTRY OVERVIEW

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of the world's large mines through the beneficiation process and then to buyers. Wood Mackenzie's supply forecast is built on an asset by asset basis, identifying base case production capabilities and probable projects. Wood Mackenzie also considers any additional production that may be required over and above this base case and probable output in order to fill supply gaps. Wood Mackenzie also considers the effect of price levels, scrap and concentrate availability and industry cost structures and on industry output.

### Prices

Recognizing the inherent uncertainty present in any forecast, Wood Mackenzie forecasts average period prices based on its expert analysis of industry fundamentals. Wood Mackenzie balances supply and demand to verify any potential shortfalls or stockpile buildups, towards the end of providing a view on likely price movement pressures. Wood Mackenzie's analysis on prices included an assessment of the relative negotiating power of buyers and sellers and the framework within which these negotiations are conducted. Wood Mackenzie publishes a short-term copper price outlook every month and its long-term price outlook on a quarterly basis (or more often should this be required by material industry developments).

For industries such as copper that are in structural deficit, that is, with long-term demand significantly in excess of base case production intentions, Wood Mackenzie uses incentive pricing to establish long-term cycle average prices. The incentive price methodology starts by estimating the demand for additional mine capacity after allowing for scrap usage and base case mine production changes. This system then examines the price required to provide a given rate of return for each project and calculates the price required in theory to incentivize investment in a project. The rate of return required to warrant an investment is formulated to reflect the different sovereign and technical risks applicable to different projects. The incentive price is then calculated such that cumulative global capacity is sufficient to meet potential demand. In this context long-term can be considered the cycle average price over the next cycle, i.e. the decade over which a project would expect to see payback. In relation to short term pricing, Wood Mackenzie forecasts prices by reconciling supply and demand to establish a market balance, then estimating metal stocks and using historic trends as a basis for market responses. Primary copper demand is forecasted using estimates for consumption by sector and country and scrap availability. The copper supply chain considers production of concentrates/precipitates, output from smelters/refineries and SxEw from existing operations and projects.

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## REGULATORY OVERVIEW

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This section sets forth a summary of the most significant laws and regulations that affect our business operations. Information contained in this section should not be construed as a comprehensive summary of laws and regulations applicable to us.

### ZAMBIA

#### INTRODUCTION

The Zambian legal system is based on the common law tradition. Most of its private and public law has followed the English legal system or has been heavily influenced by it. Zambian civil procedure is influenced by English law and is reliant upon many of the English civil procedures and practices.

Zambia's mining industry is principally regulated by the government by the Mines and Minerals Development Act No. 7 of 2008 (the "Mines Act") which repealed and replaced the Mines and Minerals Act. The Mines Act established the office of the Director of Mines, who is the chief administrator and is responsible for issuing and renewing large and small-scale mining licenses and plays a general supervisory role, and the office of the Director of Geological Survey, who is responsible for issuing and renewing prospecting licenses and prospecting permits. Matters relating to mine safety are supervised by a Director of Mines Safety. The Mines Act also established a Mining Advisory Committee, which advises the minister on the general administration of the Act.

The principal laws regulating the mining industry are the Mines Act and the Environmental Management Act No. 12 of 2011 (the "Environment Act"). The primary regulatory body for the mining sector is the Ministry of Mines and Minerals Development. The Ministry has several departments that supervise activities within the sector. The Environment Act is administered by the Zambia Environmental Management Agency ("ZEMA").

All rights of ownership in searching for, mining and disposing minerals wheresoever located are vested in the president on behalf of Zambia. Any right, title or interest which any person may possess in or over the soil in, on or under which minerals are found is subject to the authority of the president.

#### GENERAL

Mining rights are acquired upon application in the prescribed form and following payment of a prescribed fee by either an individual or a company. Rights are granted on a first-come, first-serve basis to any applicant who is eligible to hold a mining right. The following persons are ineligible to hold mining rights in Zambia:

- (a) a person that is under the age of 18 years;
- (b) a person that is or becomes an undischarged bankrupt, having been adjudged or otherwise declared bankrupt under any written law, or enters into any agreement or scheme of composition with creditors, or takes advantage of any legal process for the relief of bankrupt or insolvent debtors; or
- (c) a person that has been convicted, within the previous ten years, of an offense involving fraud or dishonesty, or of any offense under the Mines Act or any other law within or outside Zambia, and been sentenced therefore to imprisonment without the option of a fine or to a fine exceeding ZMK9,000,000 (equivalent of US\$1,840).

A mining right or non-mining right cannot be granted to or held by a company:

- (a) which is in liquidation, other than liquidation which forms part of a scheme for the reconstruction of the company or for its amalgamation with another company;

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## REGULATORY OVERVIEW

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- (b) unless the company is incorporated under the Companies Act of Zambia;
- (c) which has not established an office in Zambia; or
- (d) which has among its directors or shareholders any person who are undiscouraged bankrupts or have been convicted, within the previous ten years, of an offense involving fraud or dishonesty, or of any offense under the Mines Act or any other law within or outside Zambia, and been sentenced therefore to imprisonment without the option of a fine.

### REGULATION OF EXPLORATION

A person may only prospect for minerals upon obtaining a large-scale prospecting license or small-scale prospecting permit which grant the right of exclusive exploration for various minerals as indicated on the license or permit within the prospecting area.

A prospecting permit, small-scale mining license, small-scale gemstone license and an artisan's mining right cannot be granted to a person who is not a citizen of Zambia or a company which is not a citizen-owned company. A "citizen-owned company" is defined as being a company in which at least 51% of its equity is owned by Zambian citizens and in which Zambian citizens have significant control of the management of the company.

A prospecting permit cannot be granted over an area in excess of 300 cadastre units (approximately 9 sq km) while a person or company cannot hold large-scale prospecting licenses with an accumulated total area of more than 149,700 cadastre units (approximately 4,491 sq km).

Further, the holder of a prospecting license is obliged by statute to comply with the following statutory requirements which are conditions attached to the license:

- (a) commence prospecting operations within 90 days, or such further period as the Director of Geological Survey may allow, after the date of the grant of the license;
- (b) give notice to the Director of Geological Survey of the discovery of any mineral deposit of possible commercial value within 30 days of the discovery;
- (c) expend on prospecting operations not less than the amount prescribed or required by the terms and conditions of the license to be so expended;
- (d) carry on prospecting operations in accordance with the program of prospecting operations;
- (e) notify the Director of Geological Survey of the discovery of the mineral to which the prospecting license relates within a period of 30 days of such discovery;
- (f) backfill or otherwise make safe any excavation made during the course of the prospecting operations, as the Director of Geological Survey may specify;
- (g) permanently preserve and safeguard any borehole in a manner directed by the Director of Geological Survey, and to surrender to government without compensation, the drill cores, mineral samples, the boreholes and any water rights in respect therefore, on termination;
- (h) unless the Director of Geological Survey stipulates otherwise, remove within 60 days of the expiry of the prospecting license, any camp, temporary buildings or machinery installed or erected, or make good any damage occasioned to the ground on account of such removal; and

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- (i) keep full and accurate records of the prospecting operations which should indicate:
  - (i) the boreholes drilled;
  - (ii) the strata penetrated;
  - (iii) the minerals discovered;
  - (iv) the results of any seismic survey or geo-chemical, geo-physical and remote sensing data analysis;
  - (v) the result of any analysis or identification of minerals removed;
  - (vi) the geological interpretations of records maintained on the above matters;
  - (vii) the number of persons employed by the individual or company;
  - (viii) any other prospecting work;
  - (ix) the costs incurred; and
  - (x) such other matters as may be prescribed by the Minister of Mines and Minerals Development (the “Minister”) in a Statutory Instrument.

### **Duration and tenure**

Large-scale prospecting licenses and small-scale prospecting permits are granted for periods of two years and five years respectively. While small-scale prospecting permits are non-renewable, large-scale prospecting licenses may be renewed for a further period of two years, provided that the license holder has complied with the provisions of the Mines Act and the conditions of the license, and has agreed to relinquish at least 50% of the initial prospecting area at first renewal and at least 50% of the balance at second renewal.

The Director of Geological Survey may renew the license for a further period not exceeding one year to enable the holder to complete a feasibility study into the prospects of mineral exploitation, however a large-scale prospecting license cannot be held for a period exceeding seven years.

In the event that the holder of a large-scale prospecting license applies for a mining license over a prospecting area, the prospecting license continues to be effective until the date of renewal of the prospecting license or grant of the mining license, or the date on which such application is refused.

### **Transfer**

A holder of a prospecting license who intends to transfer a large-scale prospecting license or any interest therein is required to notify the Minister, not less than thirty days before the intended transfer.

The holder of a prospecting license is required to provide in the notification to the Minister, details regarding the transferee as would be required in the case of an application for a mining right and the transferee is required to complete an application for a mining right as if the proposed transferee were applying for a mining right. Where the Minister is satisfied that the proposed transferee is not disqualified from holding a prospecting license under the Mines Act, the Minister may approve the transfer of the large-scale prospecting license and notify the applicant accordingly. Upon transfer of a prospecting license, the transferee assumes and becomes responsible for all the rights, liabilities and duties of the transferor under the prospecting license for the unexpired period of the license.

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A holder of a small-scale prospecting permit who intends to transfer, assign, encumber or deal with the permit in any manner, is required to apply to the Director of Geological Survey for approval therefore, providing prescribed particulars concerning the proposed transferee, assignee, or other party concerned.

If the application and proposed transferee meet the requirements of the Mines Act, the Director of Geological Survey may grant approval for the transfer, assignment, encumbrance or other dealing with the exploration permit for the unexpired period of the permit.

### REGULATION OF MINING OPERATIONS

Mining operations can only be undertaken under the authority of a large or small-scale mining license granted pursuant to the Mines Act.

Mining rights are granted on a first-come, first-served basis following successful application by a holder of a prospecting license and following payment of a prescribed fee.

A mining license grants wide and exclusive rights to mine, exploit and dispose of various minerals in a mining area as indicated on the license. The area covered by a large-scale mining license cannot exceed 7,485 cadastre units (approximately 225 sq km).

A holder of a large-scale mining license holder is required to comply with the following statutory obligations:

- (a) develop the mining area and carry on mining operations with due diligence and in compliance with the holder's program of mining operations and environmental management plan;
- (b) take all reasonable measures on or under the surface to mine the mineral to which the license relates;
- (c) implement the local business development proposals attached to the license;
- (d) employ and train citizens of Zambia in accordance with the proposals attached to the license;
- (e) to comply with the proposed forecast of capital investment attached to the license;
- (f) demarcate the mining area and keep it demarcated in the prescribed manner;
- (g) maintain at the holder's office:
  - (i) complete and accurate technical records of the operations in the mining area;
  - (ii) copies of all maps and geological reports, including interpretations, mineral analysis, aerial photographs, core logs, analysis and test results obtained and compiled by the holder in respect of the mining area;
  - (iii) drill cores in respect of the mining area;
  - (iv) accurate financial records of the operations in the mining area and such other books of account and financial records as the Director of Mines may require; and

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- (v) where the holder is engaged in any other activity not connected with the operations under the mining license, separate books of account from the operations under the license;
- (h) permit an authorized officer at any time to inspect the books and records maintained in pursuance of (g) above and deliver to the Director of Mines, without charge, copies of any part of the books and records as the Director of Mines may require;
- (i) keep and preserve, as the Minister may prescribe, records in relation to the protection of the environment; and
- (j) furnish the Director of Mines with a copy of the annual audited financial statements within three months of the end of the financial year showing the profit or loss for the year and the state of the financial affairs of the holder at the end of each financial year.

A small-scale license may be upgraded to a large-scale mining license at the discretion of the Minister.

### **Duration and tenure**

Large-scale and small-scale mining licenses are granted for a term not exceeding twenty-five years and ten years respectively, and are renewable for similar terms. Holders of mining licenses are further required to obtain an operating permit annually in order to conduct mining operations.

The Director of Mines may reject an application for renewal on any of the grounds specified by the Mines Act which may include instances where the applicant is in breach of any condition of its license or the Mines Act.

### **Transfer**

A large-scale mining license or any interest therein may not be transferred, assigned, encumbered or dealt with in any other manner without the approval of the Director of Mines.

If a license holder wishes to transfer, assign, encumber or deal in any manner with a large-scale mining license, the license holder is required to apply to the Minister giving prescribed particulars concerning the proposed transferee, assignee, or other party concerned. However, the right or interest transferred is only for the unexpired period of the license.

Where an application and proposed transferee meet the requirements of the Mines Act, the Minister is required to grant approval to the transfer, assignment, encumbrance or other dealing with the large-scale mining license or interest therein.

A small-scale mining license or any interest therein may not be transferred, assigned, encumbered or dealt with in any other manner without the approval of the Director of Mines, to whom an application to transfer the license should be made giving the prescribed particulars concerning the proposed transferee, assignee, or other party concerned.

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Where an application and transferee meet the requirements of the Mines Act, the Director should grant approval to the transfer, assignment, encumbrance or other dealing with the small-scale mining license or interest therein for the unexpired period of the license.

### PRE-EMPTION RIGHTS

The State does not have pre-emption rights over areas that are subject to a mining right.

Therefore, as long as a person obtains the necessary consent, they are free to transfer, assign, encumber or deal with their mining rights in any other manner they deem fit, subject to the requisite regulatory approvals.

### ENVIRONMENT

#### Regulatory Framework

Environmental protection is governed by the Environment Act which repealed the Environmental Protection and Pollution Control Act (the “Repealed Act”). The Environment Act provides for integrated environmental management and the protection and conservation and the sustainable management and use of natural resources.

The Environment Act also provides for the continued existence of the Environmental Council of Zambia (“ECZ”) which was established under the Repealed Act and has since been renamed as ZEMA which is mandated to among others, administer, monitor and enforce measures for the protection of the environment and the prevention of pollution under the Environment Act.

Any developer seeking to undertake any project that may have an effect on the environment is required to obtain the written approval of ZEMA. The implementation of such project must be in accordance with any conditions attached in granting such approval.

A developer seeking to undertake prospecting, exploration or mining operations is required to prepare and submit an environmental project brief.

Where ZEMA in consultation with the Ministry of Mines, is satisfied that a project is unlikely to have significant impact on the environment or that the project brief discloses sufficient mitigation measures, ZEMA will issue their approval subject to certain conditions, where applicable.

If, however, ZEMA considers that the project is likely to have an adverse impact on the environment, it may direct that an Environmental Impact Statement (“EIA”) should be prepared by the developer. The EIA would be required, even if the developer is undertaking any project as part of a previously approved project. Failure to submit a project brief or EIA or to comply in any way constitutes an offense that is punishable either by way of fines or imprisonment.

The approved project brief is referred forms the basis of the Environmental Management Plan. Holders of mining rights are, as a condition to the license, required to execute the environmental management plan and conduct mining operations only upon meeting the requirements of the Environment Act and obtaining an annual operating permit.

The holder of the mining right (meaning the entity in whose name a mining right is registered) is strictly liable for any harm or damage caused to the environment by mining operations or mineral processing operations. This entails that the mining right holder is liable for the harm regardless of any absence of intent or causation on their part. Liability also attaches to the person who directly



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contributes to the act which results in the harm or damage where there is more than one person responsible for the harm or damage, liability is joint and several. This means that a plaintiff has the option of suing both the holder of the mining right and the person directly causing the damage or either of the two.

### Environmental Protection Fund

It is a requirement under the Mines Act and a condition to the grant of a mining right for mining right holders to make cash contributions to the Environmental Protection Fund (“EPF”) on an annual basis based on the results of an EPF audit undertaken every year.

The rehabilitation cost estimate is required to be lodged with the EPF as a cash contribution over a period of five years.

There are certain concessions that may be granted against the lodgment of the full cash contribution. The concession applicable depends on the developer’s environmental performance and classification. The concessions applicable are as follows:

- (a) category 1 - 95% of the full rehabilitation cost;
- (b) category 2 - 90% of the full rehabilitation cost; and
- (c) category 3 - 80% of the full rehabilitation cost,

Instead of lodging the full assessed cost in cash over a period of five years, a mine developer is, depending on its performance, entitled to the concessions set out in (a) to (c) above such that only 5% in the case of category 1, 10% in the case of category 2 and 20% in the case of category 3, of the full assessed cost is payable in cash.

The table below sets out the cash contributions payable as result of the concessions:

	<u>Category 1</u>	<u>Category 2</u>	<u>Category 3</u>
Concession .....	95%	90%	80%
Cash contribution (of which 20% is to be lodged every year over a period of 5 years) .....	5%	10%	20%

In order to grant a concession against lodgment of the full assessed cost in cash, the Ministry of Mines and Mineral Development requires that mine developers lodge a bank guarantee or bond to secure the payment of the balance of the assessed cost (i.e. the concession amount). The concession amount may be secured by way of standby letters of credit or bank guarantee.

The amount payable in cash depends on the category under which the mine is classified. The developer is required to lodge 20% of the cash amount each year.

However the cash contribution must be deposited with the EPF over a period of five years. In the case of new projects, the cash contributions must be lodged beginning from the year the mining operation is commissioned, while in the case of existing mines, upon the submission of an acceptable environmental management plan.

Proof of financial capability to complete the rehabilitation of the mining area is a pre-requisite for classification under category 3. Although new projects are generally supposed to be classified under category 3, they can upon demonstration of capability be rated as category 2.

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Our Zambian legal adviser has advised that the classifications of NFCA, SML, Luanshya and CCS are Category 2, except for Luanshya's decommissioned and closed area which is Category 3. The aggregate amount of cash contribution paid by the Group for each of 2008, 2009 and 2010 was US\$825,811, US\$153,146 and US\$910,219, respectively, while the amount for 2011 is still under review and evaluation by the relevant competent authorities, and will be paid once it is fixed.

Notwithstanding the establishment of the EPF, the responsibility of land rehabilitation works, mine closure works and the costs associated with such works rests with the mining company and not the government. Rehabilitation works must be undertaken upon closure of the mine, the mining company is entitled to a refund from the EPF contributions less any monies owed to the government.

The EPF is designed to protect the government against the risk of having to expend its own resources on the rehabilitation of a mining area in the event a holder of a mining license fails to do so. The EPF also serves as assurance to the Director of Mines Safety that a mining right holder will execute the environmental impact statement in line with the Environmental Management Plan.

### HEALTH AND SAFETY

In Zambia, matters relating to health and safety in the mines are regulated by the Mines Act and the Occupational Health and Safety Act 2010 (the "OHS Act"). The provisions of the Acts are supplemented by the provisions of Mining Amendment Regulations 1973 (the "Mining Regulations") which provide guidelines for officials and employees in the mining industry in respect of health and safety.

The regulatory bodies responsible for mine safety and health are the Occupational Health and Safety Institute established under the OHS Act and the Mines Safety Department under the Ministry Mines and Natural Resources. These institutions administer, monitor and enforce measures relating to health and safety contained in the OHS Act and the Mines Act and the Mining Regulations.

Under the OHS Act, the mines are under a duty to ensure the health, safety and welfare of the employees and place and maintain employees in environments adapted to the employee's physical, physiological and psychological ability. A breach of the provisions of the OHS Act will attract a fine or a term of imprisonment.

In respect of the Mines Act and Mining Regulations, the Director of Mines or the Director of Geological Survey is required, in deciding whether or not to grant any mining right or mineral processing license, takes into account that there is no harm to human health. The grant of such mining right or mineral processing license is required to include such conditions as may be prescribed, by way of statutory instrument, in relation to the protection of human health.

The holder of the mining right (meaning the entity in whose name a mining right is registered) is strictly liable for any harm caused to human health by mining operations or mineral processing operations. This entails that the mining right holder is liable for the harm regardless of any absence of intent or causation on its part. Liability also attaches to the person who directly contributes to the act which results in the harm or damage where there is more than one person responsible for the harm or damage, liability is joint and several. This means that a plaintiff has the option of suing both the holder of the mining right and the person directly causing the damage or either of them.

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### PROPERTY RIGHTS

#### Expropriation

Under the Zambian Constitution, property of any description cannot be compulsorily acquired unless under the authority of an Act of the Parliament which provides for payment of adequate compensation. One exception to this provision allows for the possession or acquisition of any mineral, mineral oil or natural gas, or any right accruing by virtue of any title or license for the purpose of searching for or mining any mineral, mineral oil or natural gas. Where however, there is a failure to comply with any provision of the law relating to such title or license, the exercise of such rights or the development or exploitation of any mineral, such property may be compulsorily repossessed without payment of adequate compensation. The repossession must nevertheless be in accordance with the provisions of the Mines Act, failing which the repossession may be deemed unconstitutional and subject to challenge in the courts of law.

#### Cancellation/ suspension of a mining right

The Directors of Mines or Geological Survey may cancel a mining license on the grounds that the license holder:

- (a) contravenes a condition of the mining right;
- (b) fails to comply with any requirements of the Mines Act relating to the mining right;
- (c) fails to comply with a direction lawfully given under the Mines Act;
- (d) fails to comply with a condition on which any certificate of abandonment of the mining area is issued or on which any exemption or consent is given under the Mines Act;
- (e) is convicted on account of safety, health or environmental matters;
- (f) in the case of large-scale mining license, has failed to carry on mining operations in accordance with its proposed plan of mining operations and the gross proceeds of sale of minerals from the mining area in each of any three successive years are less than a half of the deemed turnover applicable to that license in each of those years;
- (g) is convicted for giving false information on recovery of ores and mineral products, production costs or sale; or
- (h) is considered by the Director to be using wasteful mining practices and fails to cease such practices or remedy any damage causes thereby within the time specified by the Director.

The Director cannot cancel a mining right on any of the grounds in (a) to (c) above unless notice of default has been issued to the mining right holder and such mining right holder has failed to remedy the default following the expiration of a period of 60 days.

Before the Director can exercise his power to cancel or terminate a mining right, he is required to refer the matter to the Mining Advisory Committee (the “MAC”) for consideration. The MAC is

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under the obligation to consult any person who is likely to be affected by the termination or cancellation of the license. The Director is not, however, bound the advice of the MAC.

A mining right holder aggrieved by the decision of the Director with respect to the cancellation of a mining right can appeal to the Minister and, subsequently, the High Court of Zambia. The Mines Act does not provide guidance as to the status of the mining right during the period that the appeal is pending determination nor the stage at which a mining license is finally deemed to be cancelled.

### **Surface rights and access**

There is a distinction under Zambian law between a surface right and a mining right, which distinction may affect how a mining right is exercised.

Surface rights and mining rights are clearly distinct concepts administered under separate and distinct legal frameworks. Surface rights may only be granted under the Lands Act (the “Lands Act”), under which the term ‘land’ is defined to exclude any mining right as defined in the Mines Act and include any interest in land whether virgin, bare or with improvements. All land (as defined under the Lands Act) is vested perpetually in the President of Zambia in trust for the people of Zambia who are generally granted a leasehold tenure of up to 99 years.

A mining right on the other hand, may only be granted under the Mines Act which vests all such rights in the President on behalf of the people of Zambia.

Where surface rights independent of the mining right pre-date the mining right, the mining right holder is entitled to exercise such rights with the consent of the surface right holder. The mining right may not be exercised on any land which is the site of, or which is within 180 metres of, any inhabited, occupied or temporarily uninhabited house or building unless the consent of the owner of such land is obtained. We hold surface rights to land on which our material operating areas are located and our mining rights are exercised, and do not require consent from a third-party surface right holder to exercise our mining rights at our currently operating and producing mines. For further details, see the section entitled “Business — Land and Buildings”.

In the event of the owner of such land unreasonably withholding consent to access the area as a result of which a dispute arises, the Director of Mines may require that the matter be settled by arbitration.

The surface right holder is entitled on demand, to fair and reasonable compensation from the mining right holder for any disturbance of such surface right referred to above and failure to pay such compensation by the mining right holder has to be referred to arbitration. A demand for compensation does not, however, entitle the surface right holder to prevent or hinder the exercise by the mining right holder of access to the area pending the determination of the compensation to be paid. A claim for compensation is statute barred if not made by the surface right holder within three years from the date such claim accrued.

The holder of a surface right or occupier thereof which is subject to a mining right can only retain, in a case where there is no building or structure on a pre-existing surface right, the following rights unless an access agreement between the mining right holder and the surface right holder provides otherwise:

- (a) the right to use and access water;

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- (b) the right to graze stock; and
- (c) the right to cultivate the surface of the land.

Such rights cannot, however, be exercised in such a way by the surface right holder that interferes with the proper working of the mining right and any buildings or structures on such surface right can only be erected by the surface right holder with the consent of the mining right holder.

### **Mineral exports, sales and processing**

In the case of a holder of a mining license, the right to undertake mineral processing is an incident of the right to carry on mining operations.

In the absence of a mining license, a person intending to undertake mineral processing must apply to the Director of Geological Survey for a mineral processing license. Once granted, the mineral processing license entitles its holder to exclusive rights to carry on mineral processing operations over the area covered by the license.

The sale of minerals recovered in the process of mining operations is a right incidental to a mining license. However, an export permit is required for all exports of minerals, ores or mineral products.

The government has the right to check actual volumes of minerals declared by mining companies before exportation.

### **IMMIGRATION**

Foreign employees working in mining and other sectors in Zambia must hold a valid employment permit. Employment permit applications must be completed and approved before arrival into the country. Other permits of importance include a temporary employment permit, investors permit and business permit.

### **INVESTMENT**

Investment in Zambia is largely promoted by the Zambia Development Agency (the “ZDA”) created pursuant to the Zambia Development Agency Act (the “ZDA Act”). There are various incentives available to investors who hold investment licenses, permits or certificates of registration issued by the ZDA under the ZDA Act.

Incentives under the ZDA Act are largely limited to priority products, priority sectors, rural enterprises and businesses operating in Multi-Facility Economic Zones, which do not include mining. Thus, investment licenses in theory are not granted to mining companies.

Notwithstanding the foregoing, an investor in the mining sector may in practice enter into an Investment Promotion and Protection Agreement (“IPPA”) with the government, under which various incentives may be provided through the ZDA’s declaration of its investment as an identified sector under the ZDA Act.

The ZDA board screens all investment applications for which incentives are requested and usually makes its decision within 30 days of submission. Applicants have the right to appeal investment board decisions.

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### TAX

Taxation in Zambia is governed by the Income Tax Act, Customs and Excise Duty Act, the Property Transfer Tax Act and the Value Added Tax Act.

#### Income Tax Act

Under the Income Tax Act, corporate tax on mining companies holding a large-scale mining license and carrying on mining of base metals is generally charged at 30% per annum. In addition to income tax, there is a variable profit tax payable which is intended to capture any windfall gains that may arise in the mining sector (and which replaced the windfall tax) payable at a rate not exceeding 15%. Companies that do not hold large-scale mining licenses and do not carry out mining activities are charged the usual corporate tax at 35% per annum. Withholding tax at a rate of 15% is also charged on dividends, rentals, royalties, bank interest, and management and consultancy fees.

#### Customs and Excise Duty Act

Exports of copper and cobalt are levied at 35% of income under the Customs and Excise Duty Act, while other mineral and “non-traditional” commodities attract a levy of 15%. Further, exports of companies listed on the Lusaka Stock Exchange are levied at 30% of taxable income.

#### Value Added Tax Act

Export of goods from Zambia is considered to be a zero-rated supply. The tax authorities may require evidence that the export of goods from Zambia is by or on behalf of a taxable supplier.

#### Royalties

Mineral royalties are payable at the rate of 3% of the gross value of industrial and energy minerals produced and 3% of the norm value of base metals produced. Mineral royalties for precious metals and gemstones is payable at the rate of 6% of norm value and gross value respectively.

#### Tax relief

Investment in mining and prospecting attract the following income tax deductions:

- (a) capital expenditure allowances of 25% on plant, machinery and commercial vehicles, 20% on non-commercial vehicles, and 5% on industrial buildings;
- (b) prospecting expenditure deductions, under special circumstances;
- (c) mining expenditure deductions, under special circumstances;
- (d) mining expenditure on a non-producing mine; and
- (e) mining expenses incurred by a mine or irregular production close to the end of its life.

A holder of a mining right is exempt from customs and excise duties and VAT in respect of all machinery and equipment required for exploration or mining activities.

#### Remission

There is no restriction in respect of the amount of profits, dividends, or royalties that may be externalized by mining companies, although a withholding tax of 15% is levied as noted above. Our

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Zambian subsidiaries are entitled freely to repatriate to Ireland any dividends and any other distributions subject to Zambian withholding tax deductions currently at the rate of 15%. However, in the opinion of our Zambian counsel, pursuant to the Convention between the Republic of Zambia and Ireland for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to Tax on Income, distribution of dividends to CNMH, an investment holding company incorporated under the laws of the Republic of Ireland, from its Zambian subsidiaries are exempt from such withholding tax save for instances where CNMH has a permanent establishment in Zambia. Our Directors confirm that CNMH has no permanent establishment in Zambia, and therefore are of the view that no provision for withholding tax on the Group's undistributed profit in Zambia is required to be made in the preparation of our financial information.

### **Tax stability agreements**

Prior to the enactment of the Mines Act, investors were able to enter into Development Agreements with the Government under which concessions were provided generally in the form of suspensions or reductions of all applicable taxes and tax stability periods. Following the enactment of the Mines Act, however, the Development Agreements ceased to be binding on the Republic and the Minister of Mines and Minerals Development could no longer enter into any agreement relating to the grant of mining rights. The Zambian Government is currently in discussions with previous holders of Development Agreements in order to resolve disputes precipitated by their abolishment.

### **CURRENCY EXCHANGE, EXCHANGE CONTROLS AND REPATRIATION OF PROFITS**

Following the liberalization of Zambia's economy in the early 1990s, the Exchange Control Act and ancillary regulations were suspended in January 1994. As a result, there are no exchange control restrictions in Zambia, and consequently there is no requirement to obtain approvals for the purpose of transferring funds. There is equally no restriction against repatriation of profits.

There is a restriction, however, on 'over-the-counter' cash transactions of foreign currencies in bureau de changes, which limits such transactions to US\$5,000 (or equivalent) per person per Business Day. This directive, however, does not affect normal bank transactions or transfers.

### **EMPLOYMENT**

The Employment Act is the principal law governing employment in Zambia but there are specific laws governing various aspects of employment law, such as the Minimum Wages and Conditions of Employment Act which sets minimum conditions applicable to certain categories of employees, Industrial and Labor Relations Act, the Workers Compensation Act and the National Pension Scheme Act.

Zambia also applies common law principles and doctrines of equity to employment matters, subject to statutory law.

### **Employment contracts**

The terms of an employment contract are principally determined by the agreement of the parties, which must comply with the minimum terms and condition prescribed by statute.

The law recognizes oral and written contracts, as well as collective agreements in the case of unionized employees.



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## REGULATORY OVERVIEW

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### Oral contracts

Oral contracts, which include daily, weekly and monthly contracts, are recognized under the Employment Act and may not exceed a period of six months. They may be terminated by either party through verbal or written notice, such notice period depending on the length of the contract. A party to an oral contract may also terminate the contract by payment of a sum equal to an employee's wages. Thus, for example, one month's salary would be paid in lieu of notice for a monthly contract.

All employers who engage employees on oral contracts are required by law to maintain a register containing vital information such as employees' name, sex, nationality, date of engagement and type of contract, failing which the employer will have committed an offense under the Employment Act. Further, where a dispute arises pertaining to the conditions of the oral contract, an employee's statement as to the nature of the terms and conditions shall be receivable as evidence of such terms and conditions where the employer fails to produce such a register.

### Written contracts

Every contract exceeding a period of six months must be in writing and executed by the parties signing or affixing a thumb or fingerprint thereto. Contracts of Foreign Service and any contract for the performance of specific work which cannot be completed within six months are also required to be in writing.

A written contract must contain the full names of the employer and employee, the name of the business and place of engagement, date of engagement, date of commencement, wages payable under that contract, and the nature of employment. Written contracts can be terminated by expiry of the term, death of the employee, or in any other manner in which a contract may be lawfully terminated, for instance by giving notice of termination or payment of salary in lieu of notice.

Written contracts can either be for a fixed period or permanent, i.e. until an employee reaches retirement age.

### Obligations of employers in relation to statutory deductions

An employer is under an obligation to make deductions from the wages payable to employees in respect of pension contributions to the National Pension Scheme Authority ("NAPSA"). Under the National Pension Scheme Act (the "NAPSA Act"), every person, firm, institution or association registered as a taxpayer with employment contracts must register as a contributing employer.

Contributions must be accompanied by supporting documentation showing an employee's identity, length of employment and earnings. It is an offense under the NAPSA Act for an employer to fail to remit contributions to NAPSA, the penalty for which is a fine and/ or imprisonment.

Similarly, employers have an obligation to subscribe to and make contributions to the Workers Compensation Fund, which was established to provide for the compensation of workers disabled by accidents occurring or diseases contracted in the course of employment, as well as to dependants of workers who die as a result thereof.

An employer may also deduct a reasonable amount from an employee's wages to cover any amount in repayment of a loan made by the employer to the employee or in such instances where loss of property has been occasioned by the employee's wilful neglect.



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## REGULATORY OVERVIEW

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### Union Membership

Under the Industrial and Labor Relations Act, every employee has the right to be a member of a trade union within the sector, trade, undertaking, establishment or industry in which that employee is engaged.

Employees also have the right to take part in the activities of a trade union and are entitled to leave of absence for the purpose of attending union meetings, which should not be unreasonably withheld by the employer. The only employees exempted from union membership are members of the armed and security forces and judiciary.

According to the law, every person employing 25 or more employees eligible to be members of a trade union must register with the Commissioner of Labor within three months from the commencement of operations. Furthermore, it is the obligation of the employer to enter into a recognition agreement with a trade union within three months of registration with the Commissioner of Labor.

The law places a limitation on the formation of new trade unions in industries where trade unions are already in existence, thereby ensuring that each industry will be represented by the most representative trade union in the industry concerned. At industry level, the most representative trade union is the body which constitutes the majority of members.

However, where there are employees who offer specialized services requiring specific representation by a trade union, the most representative body shall be considered to be between the competing representations.

### PRC

#### Laws and Regulations Related to Overseas Investment by PRC Enterprises

In China, we are, indirectly through CNMC, subject to governmental supervision and regulation of the following four agencies of the PRC government:

The State-Owned Assets Supervision and Administration Commission of the State Council (國務院國有資產監督管理委員會) (“SASAC”) is responsible for monitoring the PRC government’s investment in state-owned enterprises and supervising the preservation and increment in value of state-owned assets.

The National Development and Reform Commission (國家發展和改革委員會) (“NDRC”) is responsible for setting and implementing the major policies concerning China’s economic and social development policies and approving investments exceeding certain capital expenditure amounts.

The Ministry of Commerce (商務部) (“MOFCOM”) is responsible for supervising and monitoring foreign trade (import and export) and foreign investment, examining and approving the establishment of foreign invested enterprises, setting up qualification criteria for all kinds of Chinese enterprise to obtain foreign trade rights or to be engaged in international forwarding business and approving Chinese companies to acquire ownership right, controlling right or to participate in the management of an overseas non-financial enterprise by setting up new overseas establishments, or by mergers and acquisition.

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## REGULATORY OVERVIEW

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The State Administration of Foreign Exchange (國家外匯管理局) (“SAFE”) is responsible for supervising and management of foreign exchange income and expenditure and registration in relation to foreign and overseas investment.

### Regulation of SASAC in Relation to Investment by Central Enterprises

The Interim Measures for Supervision and Administration of Investment by Central Enterprises (《中央企業投資監督管理暫行辦法》) promulgated by SASAC on June 28, 2006 (the “Interim Measures”) and its implementing rules stipulate that SASAC has the authority to supervise and administer the investment activities of central enterprises, including fixed-assets investments, property acquisitions and long-term equity investments. Under the Interim Measures and its implementing rules, a central enterprise meaning an enterprise in which the State Council contributes to the registered capital and SASAC acts on behalf of the State Council to perform the contributor’s duties, shall incorporate its primary investment activities in its annual investment plans which shall be submitted to SASAC within the prescribed time limit for filing or approval. With respect to the wholly state-owned companies that have established a board of directors according to the relevant provisions of SASAC, SASAC will implement the filing for their investment projects according to the annual investment plans of the enterprises, and with respect to the wholly state-owned enterprises and the wholly state-owned companies that have not yet established a board of directors, SASAC will implement the filing for investment projects in the main industry according to the annual investment plans of the enterprises, and will implement the assessment and approval for the investment projects in the minor industry by making assessment decisions within 20 working days. Additionally, if an enterprise adds any project other than those in its annual investment plans, it shall promptly submit a report to SASAC with regard to such supplemental investment project. It shall also promptly report any significant investment matters to SASAC.

On December 31, 2008, SASAC issued the Notice of SASAC Regarding Strengthening the Administration of Overseas Investment by Central Enterprises (《國務院國有資產監督管理委員會關於加強中央企業境外投資管理有關事項的通知》), further specifying that overseas acquisition projects shall be officially reported to SASAC at least twelve working days prior to execution of legal documents. Relevant information relating to overseas investment projects shall be copied to SASAC simultaneously when it is submitted to State Council or competent agencies thereof for approval, assessment or filing.

On June 14, 2011, SASAC published the Interim Measures for Supervision and Administration of Overseas State-owned Assets of Central Enterprise (“Notice 26”) (《中央企業境外國有資產監督管理暫行辦法》) and the Interim Measures for Administration of Overseas State-owned Property Right of Central Enterprise (“Notice 27”) (《中央企業境外國有產權管理暫行辦法》), both of which simultaneously became effective on July 1, 2011. Notice 26 stipulates the specific duties and responsibilities of SASAC and central enterprise and the relevant requirements for administration of overseas enterprises with respect to their capital injection and continuing operation. It also provides for the reporting procedures, content and time limit for overseas enterprise to observe in case of any material events. Notice 27 concentrates on administration by SASAC and the central enterprises of registration and transfer of overseas state-owned property right, specifically setting forth the basic procedures, transfer price, transfer method, and consideration payment with respect to such transfer of property right. In accordance with provisions of Notice 27, in the event that the central enterprise or any of its subsidiaries needs to establish an offshore company for the purpose of listing, reorganization, transfer or business operation, it shall be approved by the central enterprise and be reported to SASAC in written form. In addition, if an overseas enterprise wholly owned or controlled by a central enterprise or any subsidiary thereof plans to list on a foreign stock exchange,

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it should be approved by the central enterprise in accordance with relevant securities regulatory laws and be reported to SASAC in written form. Under Notice 27, in the event that the central enterprise conducts an asset reorganization within its group entities, with the transferor being the central enterprise and its directly or indirectly owned overseas enterprise, and with the transferee being the central enterprise and its directly or indirectly owned domestic or overseas enterprise, the bottom price for the transfer could be determined either by the assessed or the audited net asset value.

### **Regulation of NDRC in Relation to the Overseas Investment Project**

In accordance with the Interim Measures for the Administration of Examination and Approval of the Overseas Investment Projects (《境外投資項目核准暫行管理辦法》) promulgated by NDRC and effective on October 9, 2004, overseas investment projects involving resource development or use of large amount of foreign exchange shall be subject to the examination and approval of the State. Resource development projects such as exploitation of crude oil and mines, in which a Chinese party's investment exceeds 30 million dollars, shall be subject to approval of NDRC, or be submitted to the State Council for approval on basis of NDRC's examination in cases where a Chinese party's investment is in excess of 200 million dollars. For a resource development project invested by a central enterprise with an investment less than 30 million dollars and other overseas investment project with an investment less than 10 million dollars, the central enterprise will make investment decisions in its sole discretion and shall then file its decisions with NDRC. An approval for the application of change shall be obtained if, after the overseas investment project is approved by NDRC or its provincial-level counterpart, any of the construction scale, main construction contents, main products, construction sites, investors or equity interests held by investors changes, or the amounts invested by the Chinese party exceeds 20% of the amounts originally approved.

On February 14, 2011, NDRC published the Notice of NDRC on Delegating Powers on Examination and Approval of Overseas Investment Projects to Authorities at Lower Levels (《國家發改委關於做好境外投資項目下放核准權限工作的通知》), which regulates that resource development projects with a Chinese party's investment exceeding 300 million dollars and other overseas projects with Chinese party's investment exceeding 100 million dollars, which are both implemented by a central enterprise, shall be subject to examination and approval from NDRC, while other overseas investment projects (excluding special projects) implemented by a central enterprise can be decided by the enterprise itself independently and shall then be submitted to NDRC for archival filing.

### **Regulation of MOFCOM in Relation to Overseas Investment**

On March 16, 2009, MOFCOM published the Measures for Administration of Overseas Investment (the "Measures") (《境外投資管理辦法》) which took effect on May 1, 2009 and stipulates the examination and approval procedures of MOFCOM for Chinese enterprises to make overseas investment. Under the Measures, a Chinese enterprise shall submit a set of required application documents to MOFCOM for its approval, and when the application for setting up overseas establishment is approved, the applying enterprise will obtain a license for overseas investment from MOFCOM or its provincial-level counterpart and shall subsequently go through procedures of foreign exchange, banking, customs and foreign affairs in accordance with requirements of competent agencies, and shall inform its approved overseas enterprise to register with the local Economic and Commercial Section of China Embassy or Consulate. If any of the application matters relating to the overseas enterprise as registered that has been approved changes, the applying PRC enterprise shall go through registration procedures with competent commercial authorities in light of such changes. It shall also handle filing procedures if its approved overseas enterprise makes further investments.

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## REGULATORY OVERVIEW

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### **Regulation of SAFE in Relation to Overseas Direct Investment**

Regulations on Foreign Exchange Administration of the Overseas Direct Investment of Domestic Institutions (the “Regulations”) (《境內機構境外直接投資外匯管理規定》) promulgated by SAFE on July 13, 2009 and effective on August 1, 2009 stipulates the foreign exchange administration and the relevant procedures for outward remittances of funds, outward remittances of upfront expenses relating to a proposed investment project, inward remittances of funds and foreign exchange settlement in relation to overseas direct investment. In accordance with the Regulations, PRC institutions can make overseas direct investments with their self-owned foreign exchange funds, domestic foreign exchange loans consistent with relevant regulations, foreign exchange purchased with RMB, tangible or intangible assets, and other foreign exchange assets examined and approved by the competent foreign exchange administrations, and profits generated from the overseas direct investments of PRC institutions may also be retained overseas for the purpose of overseas direct investment. Under the Regulations, a domestic institution is required to register or file with the local foreign exchange administration for its overseas direct investments and for the assets and relevant rights and interests generated from such investments. It will handle the procedures for outward remittances of overseas direct investment funds at the designated foreign exchange banks by producing to the banks the approval document and the foreign exchange registration certificate for overseas direct investment issued by the competent foreign exchange authorities. Additionally, in cases where a domestic institution sets up, or acquires the equity interest in, an overseas enterprise which is not yet registered with the local counterparts of SAFE with the profits or revenues retained abroad generated from its overseas direct investment or from capital reduction, equity interest transfer, liquidation of its registered overseas enterprise, it shall complete the foreign exchange registration procedures for the said direct investment activities. If any of the basic information of the registered overseas enterprises changes, such as any modification of the corporate name, terms of business, cooperative partners, methods of cooperation, or any capital increase or reduction, equity transfer or exchange, or merger or split, the domestic institution shall go through foreign exchange registration procedures for such overseas direct investment in light of the said changes; if any significant matters occur such as making long-term equity or debt investment, or providing external guarantees which do not involve a change in the capital of the overseas enterprise, the domestic institutions shall go through filing procedures for the overseas direct investment with regard to the said significant matters.

### **Laws and Regulations Related to PRC Enterprise Income Tax**

#### ***Resident Enterprise Treatment***

On March 16, 2007, the Fifth Session of the Tenth National People’s Congress (中華人民共和國第十屆全國人民代表大會第五次會議) passed the Enterprise Income Tax Law of the PRC (“EIT Law”) (《中華人民共和國企業所得稅法》), which became effective on January 1, 2008. Under the EIT Law, enterprises are classified as “resident enterprises” and “non-resident enterprises.” Pursuant to the EIT Law and its implementing rules, enterprises established outside China whose “de facto management bodies” are located in the PRC are considered “resident enterprises” and subject to the uniform 25% enterprise income tax rate on their worldwide taxable income. According to the implementing rules of the EIT Law, “de facto management body” refers to a managing body that in practice exercises overall management control over the production and business, personnel, accounting and assets of an enterprise.

On April 22, 2009, the State Administration of Taxation (“SAT”) (國家稅務總局) issued the Notice on the Issues Regarding Recognition of Chinese-Controlled Enterprises Registered Abroad as PRC Resident Enterprises Based on the De Facto Management Body Criteria (《關於境外註冊中資控股企業

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## REGULATORY OVERVIEW

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依據實際管理機構標準認定為居民企業有關問題的通知》), which was retroactively effective from January 1, 2008. This notice provides that an overseas incorporated enterprise that is controlled domestically will be recognized as a “tax-resident enterprise” if it satisfies all of the following conditions: (i) the senior management responsible for daily production and business operations are primarily located in the PRC, and the locations where such senior management execute their responsibilities are primarily in the PRC; (ii) strategic financial and personnel decisions are made or approved by organizations or personnel located in the PRC; (iii) major properties, accounting ledgers, company seals and minutes of board meetings and stockholder meetings, etc., are maintained in the PRC; and (iv) 50% or more of the board members with voting rights or senior management habitually reside in the PRC. An overseas incorporated enterprise that is controlled domestically may apply for recognition as a tax resident enterprise by itself, or in cases where such an enterprise does not apply for the recognition, the principal taxation administration governing the major investor of such enterprise may primarily determine whether such enterprise is a tax resident enterprise or not, in accordance with information it acquires, and then report to the SAT for confirmation. Any stock dividend, bonus dividend and other equity investment gains received by a domestically controlled overseas incorporated enterprise that is recognized as a tax resident enterprise, from other tax resident enterprises in the PRC shall be exempted from income tax.

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## OUR HISTORY AND REORGANIZATION

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### INTRODUCTION

Our Company was incorporated in Hong Kong on July 18, 2011 in anticipation of the Global Offering.

Our Group is a leading, fast growing and vertically integrated copper producer, focusing on the mining, ore processing, leaching, smelting and sale of copper, based in Zambia. We ventured into the copper mining industry in Zambia in 1998. According to Wood Mackenzie, we were the first Chinese firm to invest in Zambia's copper assets since the privatization of the industry in the late 1990s. We initially focused on the development of Chambishi Copper Mine. In the past 14 years we have developed into a vertically integrated copper producer with mining, ore processing, leaching and smelting operations producing copper concentrate, copper cathode and blister copper. Our business is carried out through our four subsidiaries in Zambia: NFCA, Luanshya, CCS and SML. NFCA and Luanshya operate our mining assets, while CCS operates our copper smelter and SML operates our copper leaching plants.

NFCA owns the Chambishi Copper Mine comprising the Chambishi Main Mine, the Chambishi West Mine and the Chambishi Southeast Mine, as well as the Chambishi Processing Plant.

Luanshya owns the Baluba Center Mine, the Muliashi North Mine, the Baluba Center Processing Plant and the Muliashi Leach Plant.

CCS operates the Chambishi Copper Smelter, which produces blister copper and is the only large-scale overseas copper smelter owned by a PRC enterprise according to the Wood Mackenzie Report.

Our copper leaching operations are carried out through SML. SML operates the Chambishi Leach Plant and the DRC Project which produce copper cathode.

See “Business — Our Operations” for details of our operations.

### HISTORY

#### *Establishment of NFCA*

Our Group traces its history to 1998 when NFCA was established in March 1998 to hold the Chambishi Copper Mine. The GRZ started privatizing its national economy in 1991 and invited international bids for the Chambishi Copper Mine in 1996. The mine originally commenced production in 1965 (initially as an open-pit mine) and had been operational for 22 years before production was suspended in 1987 due to the lack of profitability. CNMC successfully bid for the Chambishi Copper Mine for US\$20 million. Thereafter, CNMC and ZCCM incorporated NFCA at a shareholding interest of 85% and 15%, respectively, to hold the Chambishi Copper Mine. The GRZ through the Minister of Finance and National Planning holds a special share of US\$1 each in NFCA.

In July 2000, NFCA commenced reconstruction work to resume production in the Chambishi Main Mine with a total investment of approximately US\$157 million. The reconstruction work was completed and the mine was put into production in July 2003. As a follow-up development project, the development of the west orebody commenced in July 2007. The infrastructure construction was completed in July 2007 and the Chambishi West Mine started production in July 2010. In addition, the development of the Chambishi Southeast Mine commenced in December 2010 and is expected to be completed by 2016.



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## OUR HISTORY AND REORGANIZATION

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The copper product produced by NFCA is copper concentrate. Before CCS was established in 2009 to undertake the production of blister copper, NFCA sold its copper concentrate to international trading companies and local copper processing plants in Zambia. Since 2010, CCS has consumed the entire production of NFCA's copper concentrate.

### ***Establishment of SML***

Following the resumption of operations at the Chambishi Copper Mine, SML was incorporated in December 2004 by CNMC, NFCA and Hainan Sino-Africa Mining to undertake the leaching of tailings to produce copper cathode. The shareholdings interest of CNMC, NFCA and Hainan Sino-Africa in SML at the time of SML's incorporation was 55%, 15% and 30%, respectively.

SML owns the Chambishi Leach Plant. The construction of the Chambishi Leach Plant started in November 2004 and was completed in June 2006. The plant commenced commercial production of copper cathode in 2006.

SML established two joint venture subsidiaries, namely Huachin and Kakoso Company, in 2010. Huachin was established to undertake the processing and refining of copper oxide, cobalt and other minerals in the DRC while the Kakoso Company was established to explore and develop the tailings resource in Kakoso, Zambia. SML also entered into a joint venture agreement dated March 20, 2012 with Huachin SPRL pursuant to which the parties shall establish a joint venture in the DRC, CNMC-Mabende, to undertake mining, mineral processing and hydrometallurgy operations. As at the Latest Practicable Date, CNMC-Mabende has not been established.

### ***Establishment of CCS***

The product offering of our Group was expanded to include blister copper when CCS was established in 2006. CCS was incorporated in July 2006 by CNMC and Yunnan Copper Group at a shareholding interest of 60% and 40%, respectively.

CCS owns the Chambishi Copper Smelter. The construction of the Chambishi Copper Smelter began in 2007 and was completed in 2009. The Chambishi Copper Smelter commenced commercial production of blister copper in 2009. In 2010, we commenced the expansion of the smelter in order to increase its capacity.

### ***Establishment of Luanshya***

Luanshya was owned 85% by Enya Holdings BV and 15% by ZCCM-IH before it was acquired by CNMC in 2009. Luanshya operates the Baluba Center Mine and the Muliashi Project.

The Baluba Mine commenced production in 1978, but operations were suspended in 2008 due to the global financial crisis when its then owner petitioned to court for the approval of a scheme of arrangement with its creditors to facilitate a possible sale. CNMC successfully acquired 85% interest in Luanshya from Enya Holdings BV in 2009 for US\$50 million in an international bid. It was agreed between CNMC and ZCCM-IH that CNMC shall transfer 5% of its interest in Luanshya to ZCCM-IH such that their shareholdings proportion in Luanshya shall be 80% and 20%, respectively. The legal transfer of the 5% interest has yet to be completed and CNMC holds such 5% interest in Luanshya on trust for ZCCM-IH. After the acquisition by CNMC the Baluba Center Mine's equipment was upgraded and the mine resumed production in December 2009.

The Muliashi Project is an integrated project for mining and leaching of copper oxide ores comprising the Muliashi North Mine, the Muliashi Leach Plant and the planned Baluba East Mine.

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## OUR HISTORY AND REORGANIZATION

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The Muliashi Leach Plant commenced production in March 2012 and currently processes oxide ore from the Muliashi North Mine. In the future, it will also process ores from the Baluba East Mine, which is expected to commence production in 2017.

The copper product produced by Luanshya is copper concentrate and since 2010 all of such copper concentrate has been sold to CCS for the production of blister copper. Since the completion of the Muliashi Project, Luanshya's product offering also includes copper cathode.

### BUSINESS MILESTONES

The following table summarizes various key milestones in the development of our business:

<u>Year</u>	<u>Event</u>
1998	NFCA was incorporated and acquired the Chambishi Copper Mine
2003	NFCA resumed the operation of the Chambishi Main Mine
2004	SML was incorporated
2006	CCS was incorporated
2006	SML commenced commercial production
2008	SML was granted the status of enterprises within the Zambia-China Economic & Trade Cooperation Zone
2009	CNMC acquired Luanshya and changed its name to CNMC Luanshya Copper Mines PLC
2009	CCS commenced commercial production
2009	Luanshya resumed the operation of the Baluba Center Mine
2010	Luanshya commenced construction of the Muliashi Project
2010	CCS commenced the expansion of the Chambishi Copper Smelter
2010	NFCA commenced commercial production of the Chambishi West Mine
2010	SML established a joint venture, Huachin, in the DRC with Huachin SPRL to undertake the processing and refining of copper oxide, cobalt and other minerals
2010	SML established a joint venture, the Kakoso Company, in Zambia with Shenzhen Resources Limited to explore the tailings deposit in Kakoso, Zambia
2010	SML started collaboration with Chinese research institutions for research and development of bioleaching technology
2011	SML completed the construction of the SML Chambishi Processing Plant
2012	Huachin completed the construction of the DRC Project and commenced production in February 2012
2012	Muliashi Project commenced production



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## OUR HISTORY AND REORGANIZATION

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### SHAREHOLDING HISTORY OF OUR ZAMBIAN SUBSIDIARIES

We operate our business mainly through four subsidiaries in Zambia, namely NFCA, Luanshya, CCS and SML.

#### NFCA

NFCA was our first operating subsidiary in Zambia and was incorporated on March 5, 1998. The initial authorized and issued share capital of NFCA was US\$1,001 divided into 1,000 ordinary shares of US\$1 each and a special share of US\$1 each. CNMC and ZCCM held 850 and 150, respectively, ordinary shares of US\$1 each in NFCA while the GRZ through the Minister of Finance and National Planning held one special share of US\$1 each.

In May 2000, NFCA increased its authorized share capital to US\$33,000,001, divided into 33,000,001 shares of US\$1 each of which 9,000,001 shares were issued. The change in share capital structure stemmed from the shareholders' decision to convert 30% of the total investment of US\$110 million made by CNMC at that time into share capital. Following the increase in authorized share capital, CNMC's stake in NFCA was increased to 7,650,000 ordinary shares of US\$1 each, and ZCCM's stake in NFCA was increased to 1,350,000 ordinary shares of US\$1 each. The GRZ through the Minister of Finance and National Planning held one special share of US\$1 each.

The total investment made by CNMC in the Chambishi Main Mine and the Chambishi West Mine was US\$157.25 million and US\$126.39 million, respectively. NFCA is currently developing the Chambishi Southeast Mine.

Pursuant to a series of share swaps in November 2011, the details of which are more fully set out under the paragraph “— Reorganization” below, we acquired 7,650,000 ordinary shares of US\$1 each in NFCA from CNMC.

Currently, the issued share capital of NFCA is US\$9,000,001, of which we hold 7,650,000 ordinary shares of US\$1 each, representing 85% of the issued share capital of NFCA. ZCCM-IH holds 1,350,000 ordinary shares of US\$1 each, representing 15% of the issued share capital of NFCA while the GRZ through the Minister of Finance and National Planning holds a special share of US\$1 each. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders' Agreement — ZCCM-IH” for more information about ZCCM-IH and the shareholders' agreement in relation to NFCA.

#### Luanshya

Luanshya was initially incorporated as a private company limited by shares under the name Luanshya Copper Mines Limited and was converted to a public company in December 2003. Luanshya was acquired by CNMC on June 23, 2009 when CNMC acquired 8,500,000 ordinary shares of US\$1 each in Luanshya for US\$50 million from Enya Holdings BV. The other shareholders of Luanshya at that time were ZCCM-IH and the GRZ as represented by the Minister of Finance and National Planning. ZCCM-IH held another 1,500,000 ordinary shares of US\$1 each in Luanshya while the GRZ held a special share of US\$1 each in Luanshya.

Pursuant to the Agreement Relating to Investments and Concessions for the Luanshya Copper Mines Plc dated July 13, 2009, the shareholdings proportion between CNMC and ZCCM-IH shall be 80% and 20%, respectively. The 20% interest in Luanshya to be held by ZCCM-IH consists of a 5% interest to be transferred from CNMC to ZCCM-IH. The legal transfer in respect of the 5% interest

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## OUR HISTORY AND REORGANIZATION

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has yet to be completed and CNMC holds 500,000 ordinary shares of US\$1 each, representing 5% interest in Luanshya, on trust for ZCCM-IH pursuant to a declaration of trust settled in favor of ZCCM-IH.

Pursuant to a series of share swaps in November 2011, the details of which are more fully set out under the paragraph “— Reorganization” below, we acquired 8,000,000 ordinary shares of US\$1 each in Luanshya from CNMC.

Currently, the issued share capital of Luanshya is US\$10,000,001, of which we hold 8,000,000 ordinary shares of US\$1 each, representing 80% of the issued share capital of Luanshya. CNMC holds another 500,000 ordinary shares of US\$1 each, representing 5% interest in Luanshya, on trust for ZCCM-IH. ZCCM-IH holds 1,500,000 ordinary shares of US\$1 each, representing 15% of the issued share capital of Luanshya, while the GRZ holds a special share of US\$1 each in Luanshya. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — ZCCM-IH” for more information about ZCCM-IH and the shareholders’ agreement in relation to Luanshya.

### CCS

CCS was incorporated by CNMC and Yunnan Copper Group on July 19, 2006. At incorporation, CNMC held 600 ordinary shares of US\$2 each in CCS while Yunnan Copper Group held the other 400 ordinary shares of US\$2 each in CCS. The total investment in CCS was approximately US\$300 million, of which approximately US\$180 million was contributed by CNMC while approximately US\$120 million was contributed by Yunnan Copper Group.

Pursuant to a series of share swaps in November 2011, the details of which are more fully set out under the paragraph “— Reorganization” below, we acquired 600 ordinary shares of US\$2 each in CCS from CNMC.

Currently, the issued share capital of CCS is US\$2,000, of which we hold 600 ordinary shares of US\$2 each, representing 60% of the issued share capital of CCS, while Yunnan Copper Group holds 400 ordinary shares of US\$2 each, representing 40% of the issued share capital of CCS. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — Yunnan Copper Group” for more information about Yunnan Copper Group and the shareholders’ agreement in relation to CCS.

### SML

SML was incorporated by CNMC, NFCA and Hainan Sino-Africa Mining on December 3, 2004. At incorporation, CNMC, NFCA and Hainan Sino-Africa Mining held 550, 150 and 300 ordinary shares of US\$1 each, respectively, in the issued share capital of SML. The total investment in SML was approximately US\$13.36 million, of which US\$2.52 million and US\$1.08 million was contributed by CNMC and Hainan Sino-Africa Mining, respectively, and the balance was financed by bank loans. NFCA’s investment in SML was an asset contribution of its tailings resources.

Pursuant to a series of share swaps in November 2011, the details of which are more fully set out under the paragraph “— Reorganization” below, we acquired 550 ordinary shares of US\$1 each in SML from CNMC directly.

Currently, the issued share capital of SML is US\$1,000, of which we hold 550 ordinary shares of US\$1 each, representing 55% of the issued share capital of SML. NFCA and Hainan Sino-Africa Mining each holds 15% and 30% interest, respectively, in the issued share capital of SML. Please

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## OUR HISTORY AND REORGANIZATION

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refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — Hainan Sino-Africa Mining” for more information about Hainan Sino-Africa Mining and the shareholders’ agreement in relation to SML.

In May 2010, SML entered into a shareholders’ agreement with Shenzen Resources Limited to establish Kakoso Company and to explore and develop the tailing deposit in Kakoso, Zambia. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — Shenzen Resources Limited” for more information about Shenzen Resources Limited and the shareholders’ agreement in relation to Kakoso Company.

SML established Huachin, a joint venture in the DRC with Huachin SPRL in December 2010, to jointly process and leach copper oxide ore, cobalt oxide ore and other mineral resources. SML holds 62.5% and Huachin SPRL holds the remaining 37.5% interest in Huachin. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — Huachin SPRL” for more information about Huachin SPRL and the shareholders’ agreement in relation to Huachin.

SML entered into a joint venture agreement dated March 20, 2012 with Huachin SPRL pursuant to which the parties shall establish a joint venture in the DRC, CNMC-Mabende, to undertake mining, mineral processing and hydrometallurgy operations. As at the Latest Practicable Date, CNMC-Mabende has not been established. Please refer to the paragraph headed “— Our Joint Venture Arrangements — Joint Venture Partners and Shareholders’ Agreement — Huachin SPRL” for more information about Huachin SPRL and the shareholders’ agreement in relation to CNMC-Mabende.

### OUR JOINT VENTURE ARRANGEMENTS

Our joint venture partners include ZCCM-IH, Yunnan Copper Group, Hainan Sino-Africa Mining, Huachin SPRL, and Shenzen Resources Limited. Please refer to the paragraph headed “— Shareholding History of our Zambian Subsidiaries” above for information relating to the shareholding interests of these joint venture partners in our subsidiaries. Save for their respective shareholdings in our subsidiaries, our joint venture partners are Independent Third Parties.

#### Joint Venture Partners and Shareholders’ Agreements

Set out below is a brief description of our joint venture partners and the major terms of the relevant shareholders agreements.

- **ZCCM-IH**

ZCCM-IH is an investment holdings company quoted on the Lusaka, London and Euronext stock exchanges and has the majority of its investments held in the copper mining sector of Zambia. Its shareholders are the GRZ with 87.6% shareholding and private equity holders with 12.4% shareholding. ZCCM-IH is a successor company to ZCCM.

#### ***NFCA shareholders’ agreement***

The major terms of the shareholders agreement dated March 1998 among CNMC, ZCCM and NFCA are, *inter alia*, as follows:

- (a) CNMC and ZCCM are the beneficial owners of 850 shares and 150 shares of NFCA, respectively; the GRZ through the Minister of Finance and National Planning holds a “special share”;

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## OUR HISTORY AND REORGANIZATION

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- (b) the board shall comprise no more than 11 directors with each shareholder having the right to appoint, remove or replace one director for each 10% of the then issued shares; the special shareholder has the exclusive right to appoint, remove and replace one director; and
- (c) without the prior written approval of directors representing the interests of shareholders of 86% of the shares, NFCA cannot: (i) reduce the authorized or issued share capital or consolidate, subdivide, purchase, redeem or cancel any of such share capital or alter any rights pertaining to any share or class of shares in such capital or capitalize, or pay or otherwise distribute, any amount standing to the credit of any reserve of NFCA or otherwise reorganize the share capital; (ii) issue any share or security other than the issued ordinary shares in the capital of NFCA; (iii) take or permit the taking of any step to have NFCA voluntarily wound up; (iv) make any material change in the nature of the business; (v) consolidate, merge or amalgamate with any other person; (vi) acquire any subsidiary or otherwise acquire (whether by a single transaction or a series of related transactions) any shares, securities or other interests in any company or business where in each case, the cost of such acquisition exceeds US\$10 million, other than acquisitions or investments required to rehabilitate, develop or expand the mine and associated treatment and infrastructure facilities at Chambishi Copper Mine; (vii) make any loan or advance or extend credit out of the normal course of business; (viii) give any guarantee or indemnity or create any encumbrance over all or any of the undertaking, property, assets or uncalled share capital of NFCA save for the purposes of financing the rehabilitation, development or expansion of the business; or (ix) sell, transfer, lease, assign or otherwise dispose of the relevant mining licenses alone or in aggregate with any other disposal, or a material part of the undertaking, property and/or assets of NFCA (other than in the ordinary course of business).

Pursuant to the terms of the shareholders agreement in respect of NFCA, our subsidiary, CNMH, executed a deed of adherence dated December 2, 2011 and acceded to the terms of such shareholders agreement.

### ***Luanshya shareholders' agreement***

The major terms of the shareholders agreement dated July 2009 among CNMC, ZCCM-IH, the GRZ represented by the Minister of Finance and National Planning and Luanshya are, *inter alia*, as follows:

- (a) CNMC and ZCCM-IH would be the registered owner of 80% and 20%, respectively of the issued ordinary shares of Luanshya. The GRZ is the legal and beneficial owner of one special share;
- (b) the 20% ZCCM-IH shareholding includes 5% shares which shall be acquired and allotted by Luanshya to ZCCM-IH free of any obligations and encumbrances. Before ZCCM-IH acquires the 5% shares in Luanshya, neither its entitlement to dividends nor the ability of Luanshya to pay dividends shall be affected; ZCCM-IH shall not be required to contribute towards the investment commitment in Luanshya but shall have the full rights to any distributions that may be made to shareholders from time to time; ZCCM-IH has not assumed any liabilities of the company whatsoever pursuant to or subsequent to CNMC's acquiring of its interest in Luanshya;
- (c) the board shall comprise no more than ten directors, with CNMC, ZCCM-IH and the GRZ having the right to appoint seven, two and one directors, respectively; and
- (d) Luanshya cannot, without the prior written consent of each of the directors appointed by ZCCM-IH: (i) issue any shares or create or grant any rights or options entitling the holders

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thereof to acquire shares or reduce the share capital of Luanshya; (ii) sell, lease, assign or otherwise dispose of all or a substantial part of the undertaking, property, inventory, work in progress and/or assets of Luanshya (or any interest therein) or contract so to do, other than in the normal course of the business or by way of or pursuant to a mortgage or charge (provided that 30 days' notice has been provided to the directors by the mortgagee or chargee of its intention to exercise its right to sell); (iii) make payment of any dividends to the shareholders; or (iv) take any action or procure, facilitate or assist any person to take any action, relating to any acquisition by or issue to a third party of shares including by way of general offer for shares or scheme of arrangement or to the joint venturing of any of Luanshya's operations with a third party or the sale, transfer or disposal of all or a substantial part of the business or assets of Luanshya to a third party.

The shareholders agreement in respect of Luanshya provides that ZCCM-IH shall be the owner of 20% interest of the issued share capital of Luanshya. Currently, ZCCM-IH holds 15% interest in the issued share capital of Luanshya. CNMC holds another 5% interest in Luanshya on trust for ZCCM-IH. The 15% interest in Luanshya held by ZCCM-IH has been fully paid. ZCCM-IH is not required to pay any consideration for the additional 5% interest in Luanshya upon transfer of the 5% interest by CNMC to ZCCM-IH. Pursuant to the terms of the shareholders agreement in respect of Luanshya, our subsidiary, CNMH, executed a deed of adherence dated December 2, 2011 and acceded to the terms of such shareholders agreement.

- **Yunnan Copper Group**

Yunnan Copper Group is the parent company of Yunnan Copper, a company listed on the Shenzhen Stock Exchange (SZSE 000878) and the third largest copper producer in the PRC. Yunnan Copper Group is a subsidiary of Aluminum Corporation of China (中國鋁業公司), the parent company of Aluminum Corporation of China Limited (中國鋁業股份有限公司), a company listed on the Hong Kong Stock Exchange (SEHK 2600).

### ***CCS shareholders' agreement***

The major terms of the shareholders agreement dated June 2, 2006 between CNMC and Yunnan Copper Group in relation to CCS are, *inter alia*, as follows:

- (a) CNMC and Yunnan Copper Group hold 60% and 40% of the equity interest of CCS, respectively;
- (b) CNMC and Yunnan Copper Group undertake the responsibilities to provide financing or guarantee in relation to any loans obtained by CCS from third parties based on the proportion of investment; if any party is unable or unwilling to do so, it shall pledge shares of CCS held by it to the other party;
- (c) all blister copper shall be sold to Yunnan Copper Group while side products produced by CCS shall be sold by CCS;
- (d) the board of CCS shall comprise five members, with three to be appointed by CNMC (including the chairman) and two to be appointed by Yunnan Copper Group;
- (e) responsibilities of CNMC include: (i) obtaining approvals and business licenses and completing registration in Zambia and China; (ii) obtaining land use rights from relevant authorities; (iii) arranging the design and construction of workshops and other facilities; (iv) construction of

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## OUR HISTORY AND REORGANIZATION

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infrastructures such as water, power and transportation facilities; (v) applying for tariff and tax reduction and exemption and other preferential treatment that CCS is entitled to; and (vi) arranging visa and work permit application for Chinese staff; and

- (f) responsibilities of Yunnan Copper Group include: (i) making the equipment procurement plan; (ii) recommending technicians and management members; (iii) providing technology and management support for the construction of copper smelter project; and (iv) providing technical trainings for employees.

While it was provided in the CCS shareholders' agreement that all blister copper produced by CCS shall be sold to the Yunnan Copper Group, at the request of Yunnan Copper Group in a letter dated November 11, 2008, CCS was not obliged to sell all the blister copper it produced to Yunnan Copper Group after it commenced production of blister copper in 2009. The sales arrangement between CCS and Yunnan Copper Group in 2009 and 2010 was that Yunnan Copper Group would place individual orders for blister copper with the Retained Group, the Retained Group would purchase such blister copper from CCS which it would then sell to Yunnan Copper Group. Pursuant to a shareholders' resolution of CCS dated March 13, 2011, CCS was required to sell 40% of its blister copper produced after the first quarter of 2011 to Yunnan Copper Group, directly. Upon further discussion with Yunnan Copper Group, it was subsequently provided in the Yunnan Copper Supply Framework Agreement, the details of which are set out in the "Connected Transactions" section of this prospectus, that we shall sell 40% of the balance of copper products produced by CCS that is not sold to Independent Third Parties to Yunnan Copper Group. Please refer to "Relationship with Our Controlling Shareholder — Independence from the Retained Group — Customer Independence — Sales to Yunnan Copper Group" and "Connected Transactions — Non-exempt Continuing Connected Transactions — 2. Yunnan Copper Supply Framework Agreement" for more information.

- **Hainan Sino-Africa Mining**

Hainan Sino-Africa Mining is a company that focuses on investment in nonferrous metal resources. It was established in 2004 by a group of individuals who are Independent Third Parties.

***SML shareholders' agreement***

The major terms of the shareholders agreement dated February 2005 among CNMC, NFCA and Hainan Sino-Africa Mining in relation to SML are, *inter alia*, as follows:

- (a) CNMC, Hainan Sino-Africa Mining and NFCA shall hold 55%, 30% and 15% equity interest of SML, respectively;
- (b) the board shall comprise seven directors, with CNMC and Hainan Sino-Africa Mining each having the right to appoint three directors while NFCA shall have the right to appoint one director;
- (c) any subsequent increase in registered capital and shareholder loans (if necessary) shall be allocated proportionately between CNMC and Hainan Sino-Africa Mining; and
- (d) NFCA shall be responsible for relevant land leasing and power and water supply arrangement.

- **Huachin SPRL**

Huachin SPRL is a limited liability company incorporated in the DRC by Mr. Ng Siu Kam, an individual who is an Independent Third Party save for his connection to our Group as disclosed in



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this prospectus. Huachin SPRL holds a small copper smelting plant and various mines in the DRC, such as Shamitunba.

### ***Huachin's shareholders' agreement***

The major terms of the shareholders' agreement dated September 9, 2010 between SML and Huachin SPRL in relation to Huachin are as follows:

- (a) SML and Huachin SPRL hold 62.5% and 37.5% equity interest of Huachin, respectively;
- (b) SML is responsible for financing the project through shareholder loans for an amount not exceeding US\$22 million; Huachin SPRL shall issue a notarized commitment to explicitly declare that all of its credits and debts shall have nothing to do with the joint venture and guarantees the sufficient supply of oxide ore of the joint venture; and
- (c) the board shall comprise seven directors, with four to be appointed by SML (including the chairman) and three to be appointed by Huachin SPRL.

### ***CNMC-Mabende Metal Leach SPRL's shareholders' agreement***

SML entered into a joint venture agreement with Huachin SPRL dated March 20, 2012 in relation to the establishment of CNMC-Mabende. As at the Latest Practicable Date, CNMC-Mabende is yet to be established. The major terms of the shareholders' agreement between SML and Huachin SPRL in relation to CNMC-Mabende are as follows:

- (a) SML and Huachin SPRL shall contribute US\$6,000 and US\$4,000 in cash, respectively, towards the capital of the joint venture and shall hold 60% and 40% equity interest of the joint venture, respectively;
- (b) each shareholder shall contribute towards the capital of the joint venture in accordance with its shareholdings proportion. The financing of the joint venture's project shall be by way of shareholders' loans provided by SML or such other financing methods as may be agreed by the shareholders;
- (c) transfer of shares by any shareholder is subject to pre-emptive rights of the other shareholder;
- (d) major resolutions such as amendment of articles of association, increase or decrease of capital, merger, division, dissolution and liquidation of the joint venture shall be approved by more than two-thirds of the shareholders with voting rights. Other resolutions shall be approved by more than half of the shareholders with voting rights;
- (e) the board shall comprise seven board directors, with four to be appointed by SML (including the chairman) and three to be appointed by Huachin SPRL;
- (f) quorum for board meeting shall be over two-thirds of the directors. Every director shall have one vote. The resolutions of the board shall be approved by over two-thirds of the total number of directors;
- (g) Huachin SPRL shall supply all ores in the Mabende mine to CNMC-Mabende and shall not supply the ore to any third party unless permitted by the shareholders' agreement or with the express written permission from SML. If Huachin SPRL sells any such ore to other parties, all

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the proceeds from the sale shall be paid to SML as compensation. In the event that the construction of CNMC-Mabende is not completed within three years after the signing of the shareholders' agreement, Huachin SPRL shall have the right to supply ore not exceeding 1,500 tons of copper metal in the form of concentrate per month to third parties until the construction of CNMC-Mabende is completed and put into production; and

- (h) Huachin SPRL shall, at the expiry of the mining outsourcing contract involving the Mabende mine, transfer the resources of the mine (including but not limited to the surface right and mining right) to CNMC-Mabende according to valuation conducted by independent organization appointed by both shareholders.

- **Shenzen Resources Limited**

Kakoso Company is 88% held by SML while the remaining 12% is held by Shenzen Resources Limited. Shenzen Resources Limited is a limited liability company incorporated in Zambia by an individual who is an Independent Third Party. Shenzen Resources Limited was the original holder of the tailings under the Kakoso Tailings Development Project.

### ***Kakoso Company's shareholders' agreement***

The major terms of the shareholders agreement dated May 21, 2010 between SML and Shenzen Resources Limited in relation to Kakoso Company are as follows:

- (a) SML and Shenzen Resources Limited shall hold 88% and 12% equity interest of Kakoso Company, respectively;
- (b) SML shall start the project construction and make investment in time; Shenzen Resources Limited shall begin to transfer the mineral processing license of the Kakoso Tailing Dam in Chililabombwe to the joint venture within 15 days after the registration of the joint venture and be responsible for obtaining the consents from Konkola Copper Mines Plc, the water rights from the government, the power supply quotation and agreement to the plant and the title deed of the land; and
- (c) the board shall comprise seven members, with five to be appointed by SML (including the chairman) and two to be appointed by Shenzen Resources Limited.

### **Special Share**

A "special share" is a share with special rights that enables the GRZ, in the national interest, to intervene in the operations of a company where specific actions are undertaken by the company.

As advised by our Zambian legal adviser, the concept of a "special share" has been recognized in Zambian jurisprudence for the past eighteen years and was enshrined in the repealed Privatization Act and retained in the Zambia Development Act (the "ZDA Act"). The ZDA Act gives the Minister of Finance and National Planning the authority to retain a share in a state owned enterprise which is privatized and convert such share into a "special share".

The Chambishi Copper Mine and the Luanshya Mine were assets held by companies that were sold following the privatization of the mining conglomerate ZCCM in the 1990s. It is therefore common practice for the GRZ to retain such a "special share" in the former ZCCM companies.



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The “special share” is contained in the articles of association of both Luanshya and NFCA. The “special share” in both instances can only be held by and transferred to the Minister responsible for finance or any other Minister or other person acting on behalf of the GRZ. However, the consent of CNMC is required to transfer the “special share” to anyone other than the Minister of Finance and such consent cannot be unreasonably withheld. The “special share” gives the GRZ the right of decisive vote in relation to certain matters. As set out in the articles of association of NFCA, there is a requirement to obtain the prior written consent of the Minister of Finance in the following circumstances:

- (a) the amendment, removal or alteration of certain terms in the articles of association;
- (b) to effect the taking of any step to have the company voluntary winding up;
- (c) on a change of control;
- (d) for any material change in the nature of business; and
- (e) the sale, transfer, assignment, lease or disposal of a significant portion of its undertaking, property and/or assets.

In the articles of association of Luanshya, there is a requirement to obtain the prior written consent of the Minister of Finance in the following circumstances:

- (a) the amendment, removal or alteration of certain terms in the articles of association;
- (b) to effect the taking of any step to have the company voluntary winding up; and
- (c) for any material change in the nature of business.

In addition, the change of locus of incorporation of NFCA and Luanshya is subject to the GRZ’s affirmative vote as well.

### **Control over our subsidiaries**

While some of the joint venture partners of our subsidiaries may exercise veto rights and block actions that we believe to be in our or the joint venture’s best interests and as a result may have a material adverse impact on the Group, our Directors consider such veto rights represent only protective rights and do not have any impact on our ability to exercise control over the financial policies (which pertain to decision on capital expenditures, budget approvals, credit terms, issue of debt, cash management and accounting policies) and operating policies (which pertain to activities such as sales, marketing, manufacturing and human resources) of the relevant subsidiaries.

For example, according to the articles of association and shareholders’ agreement of NFCA, without the prior written approval of directors representing the interests of shareholders of 86% of the shares, NFCA cannot: (i) reduce the authorized or issued share capital or consolidate, subdivide, purchase, redeem or cancel any of such share capital or alter any rights pertaining to any share or class of shares in such capital or capitalize, or pay or otherwise distribute, any amount standing to the credit of any reserve of NFCA or otherwise reorganize the share capital; (ii) issue any share or security other than the issued ordinary shares in the capital of NFCA; (iii) take or permit the taking of any step to have NFCA voluntarily wound up; (iv) make any material change in the nature of the business; (v) consolidate, merge or amalgamate with any other person; (vi) acquire any subsidiary or

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otherwise acquire (whether by a single transaction or a series of related transactions) any shares, securities or other interests in any company or business where in each case, the cost of such acquisition exceeds US\$10 million, other than acquisitions or investments required to rehabilitate, develop or expand the mine and associated treatment and infrastructure facilities at Chambishi Copper Mine; (vii) make any loan or advance or extend credit out of the normal course of business; (viii) give any guarantee or indemnity or create any encumbrance over all or any of the undertaking, property, assets or uncalled share capital of NFCA save for the purposes of financing the rehabilitation, development or expansion of the business; or (ix) sell, transfer, lease, assign or otherwise dispose of the relevant mining licenses alone or in aggregate with any other disposal, or a material part of the undertaking, property and/or assets of NFCA (other than in the ordinary course of business).

According to the shareholders' agreement of Luanshya, Luanshya cannot, without the prior written consent of each of the directors appointed by ZCCM-IH, its minority shareholder: (i) issue any shares or create or grant any rights or options entitling the holders thereof to acquire shares or reduce the share capital of Luanshya; (ii) sell, lease, assign or otherwise dispose of all or a substantial part of the undertaking, property, inventory, work in progress and/or assets of Luanshya (or any interest therein) or contract so to do, other than in the normal course of the business or by way of or pursuant to a mortgage or charge (provided that 30 days' notice has been provided to the directors by the mortgagee or chargee of its intention to exercise its right to sell); (iii) make payment of any dividends to the shareholders; or (iv) take any action or procure, facilitate or assist any person to take any action, relating to any acquisition by or issue to a third party of shares including by way of general offer for shares or scheme of arrangement or to the joint venturing of any of Luanshya's operations with a third party or the sale, transfer or disposal of all or a substantial part of the business or assets of Luanshya to a third party.

Further, SML's subsidiary, Huachin's financial and operating policies are governed by its shareholders' meeting (the highest authority) and all resolutions require simple majority voting according to its articles of association and shareholders' agreement, except for the following resolutions requiring two-third of voting in its shareholders' meeting: (i) amendment of articles of association; (ii) increase or decrease of capital; and (iii) merger, division and liquidation of the company.

The articles of association of both NFCA and Luanshya also provide that the written consent of the GRZ is required in relation to (i) the amendment, removal or alteration of certain terms in the articles of association; (ii) voluntary winding up; and (iii) material change in the nature of business. In addition, the change of locus of incorporation of NFCA and Luanshya is subject to the GRZ's affirmative vote. Under the articles of association of NFCA, the consent of the GRZ is also required for sale, transfer, assignment, lease or disposal of a significant portion of the undertaking, property and/or assets of NFCA.

For CCS, SML and Kakoso, operating and financial decisions are made in shareholders or board meeting where a resolution is passed with simple majority. There is no other arrangement between the shareholders or in the respective articles of association of CCS, SML and Kakoso that affects our rights to make such decision, in particular since we hold more than 50% of the issued share capital of CCS, SML and Kakoso and also control more than a majority of the board composition of these subsidiaries.

Considering all the above factors, our Directors are of the view that we are able to govern the financial and operating policies of our joint venture subsidiaries so as to obtain benefits from their activities. Accordingly, our joint venture subsidiaries are accounted for as subsidiaries and are consolidated according to the applicable accounting policies. As such, even though our operations

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## OUR HISTORY AND REORGANIZATION

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are undertaken through joint venture arrangements, we have both (a) control over a majority (by value) of the assets in which we have invested together with adequate rights over the exploration for and extraction of minerals, as well as (b) rights through shareholding control and board control to exercise all key decisions over the extraction of the natural resources, in compliance with Rule 18.03(1) of the Listing Rules.

### REORGANIZATION

In anticipation of the Global Offering, we underwent a pre-listing reorganization in 2011 pursuant to which our Company became the ultimate holding company of our subsidiaries.

Pursuant to a share swap agreement dated November 21, 2011 entered into between CNMC and CNMD, CNMD acquired the 85%, 80%, 60% and 55% interests in the issued share capital of NFCA, Luanshya, CCS and SML, respectively, from CNMC for an aggregate consideration of US\$349,620,000. The consideration was satisfied by the allotment and issue of 349,620,000 ordinary shares of US\$1.00 each in CNMD to CNMC.

Upon the completion of the above share swap, CNMC held 100% of CNMD which in turn held 85%, 80%, 60% and 55% of NFCA, Luanshya, CCS and SML, respectively.

Pursuant to a share swap agreement dated November 22, 2011 entered into between CNMD and our Company, our Company acquired the 85%, 80%, 60% and 55% interests in the issued share capital of NFCA, Luanshya, CCS and SML, respectively, from CNMD for an aggregate consideration of HK\$2,599,999,999 (the equivalent of approximately US\$333,333,333). The consideration was satisfied by the allotment and issue of 2,599,999,999 ordinary shares of HK\$1.00 each in our Company to CNMD. Pursuant to a deed of assignment dated November 22, 2011, CNMC assigned its receivable of US\$106,058,061 due from Luanshya to our Company at nil consideration.

Upon the completion of the above share swap, CNMC held 100% of CNMD which held 100% of our Company. Our Company in turn held 85%, 80%, 60% and 55% of NFCA, Luanshya, CCS and SML, respectively.

Pursuant to a share swap agreement dated December 2, 2011 entered into between our Company and CNMH, CNMH acquired the 85%, 80%, 60% and 55% interests in the issued share capital of NFCA, Luanshya, CCS and SML, respectively, from our Company for an aggregate consideration of €171,152,000 (the equivalent of approximately US\$243,562,000). The consideration was satisfied by the allotment and issue of 171,152,000 ordinary shares of €1.00 each in CNMH to our Company.

Upon the completion of the above share swap, CNMC held 100% of CNMD which held 100% of our Company. Our Company held 100% of CNMH which in turn held 85%, 80%, 60% and 55%, of NFCA, Luanshya, CCS and SML, respectively.

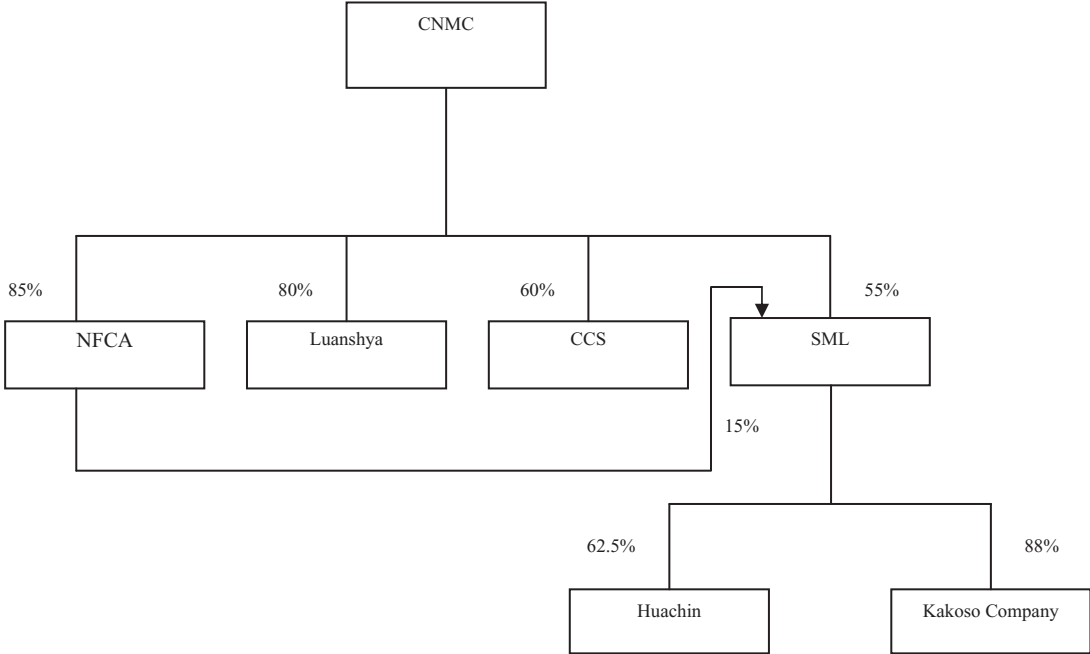
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## OUR HISTORY AND REORGANIZATION

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### CORPORATE STRUCTURE

The diagram below sets forth our shareholding and corporate structure immediately before the Reorganization:

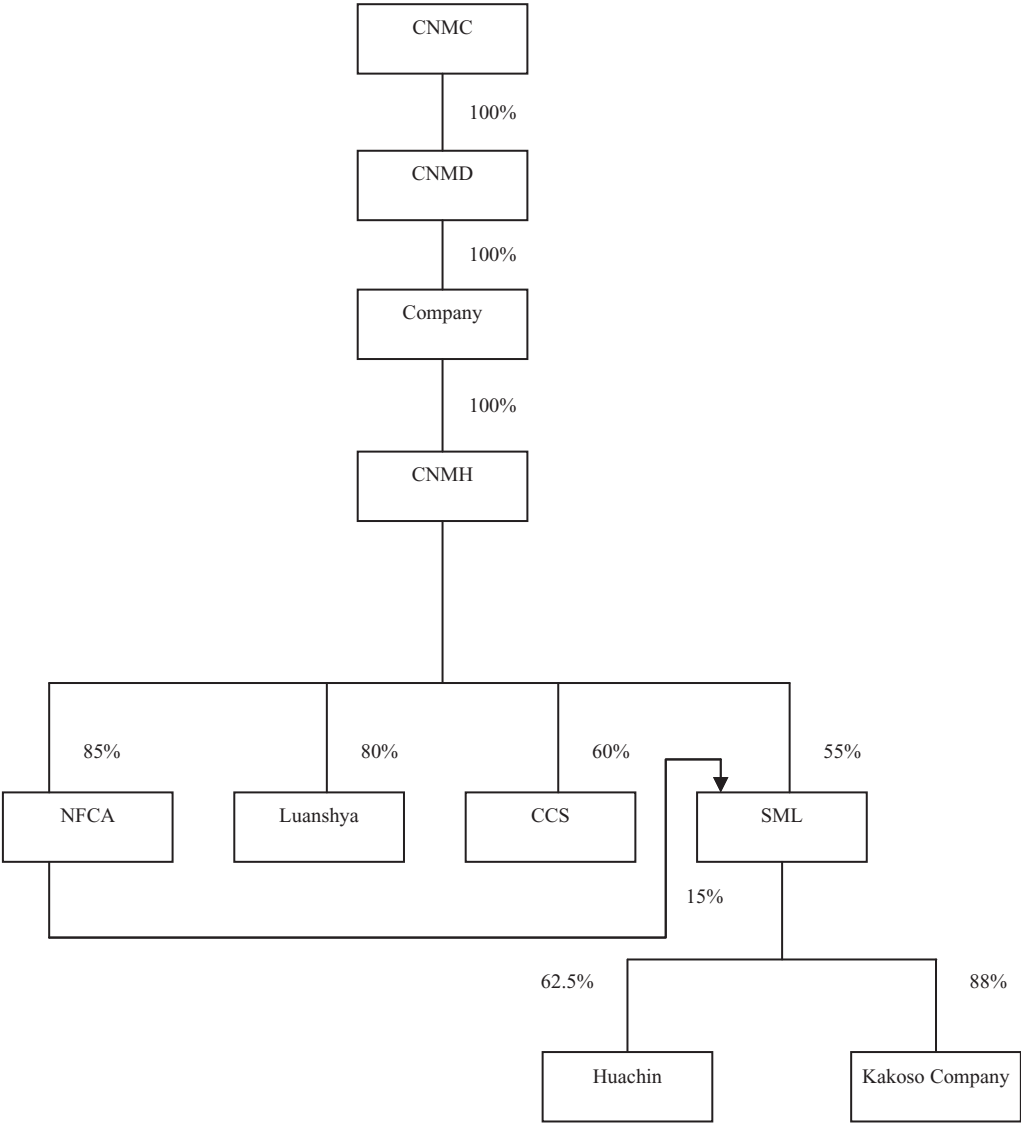


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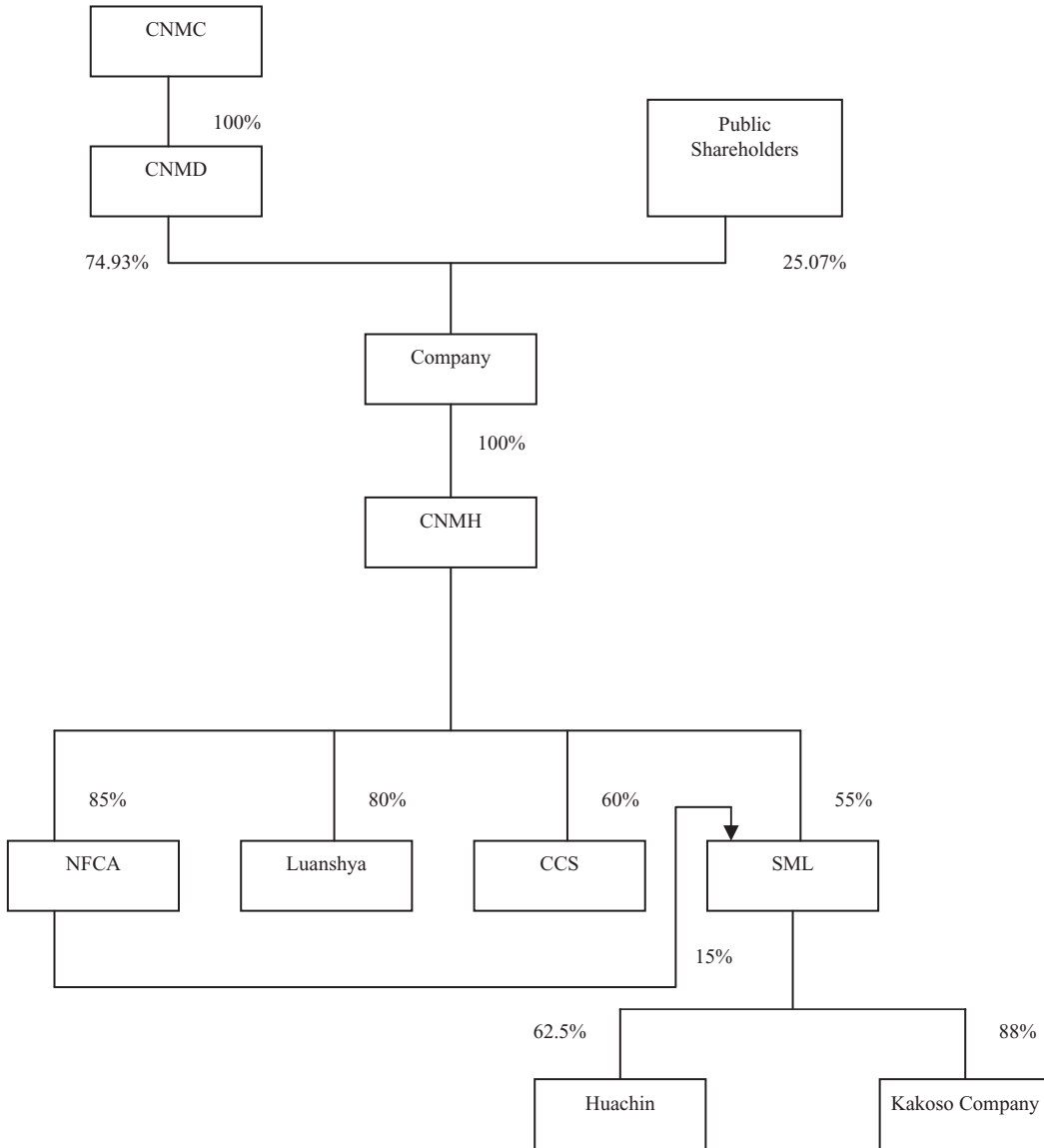
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The diagram below sets forth our shareholding and corporate structure following completion of the Reorganization but before the completion of the Global Offering:



## OUR HISTORY AND REORGANIZATION

The diagram below sets forth our shareholding and corporate structure following the completion of the Reorganization and the Global Offering, assuming the Over-allotment Option is not exercised



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## BUSINESS

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### OVERVIEW

We are a leading, fast growing and vertically integrated copper producer, focusing on the mining, ore processing, leaching, smelting and sale of copper, based in Zambia. According to Wood Mackenzie, we were the first Chinese firm to invest in Zambia's copper assets since the privatization of its copper industry in the late 1990s and we were the largest PRC enterprise in terms of total overseas copper production in 2011 (including copper concentrate, blister copper and copper cathode). Our main products are copper concentrate, blister copper and copper cathode. We also produce sulfuric acid, a by-product generated during the blister copper smelting process. In 2011, we produced 39.3 kt of contained copper in concentrate, 150.9 kt of blister copper, 7.0 kt of copper cathode and 328.8 kt of sulfuric acid. Our ultimate Controlling Shareholder is CNMC, a PRC state-owned enterprise directly administered by the SASAC and engaged in the development of nonferrous metal resources, construction and engineering, as well as related trade and services, both in the PRC and overseas. We are the overseas platform for the CNMC Group in terms of copper and cobalt resources development.

Our business is carried out through our four subsidiaries in Zambia: NFCA, Luanshya, CCS and SML. NFCA and Luanshya operate our mining assets, while CCS operates our copper smelter and SML operates our copper leaching plants. We currently have four producing mines: the Chambishi Main Mine, the Chambishi West Mine, the Baluba Center Mine and the Muliashi North Mine. We have also recently begun production at two new projects: the Muliashi Leach Plant and the DRC Project. In addition, we are undertaking various other projects to increase our mine, leaching and smelting production. Our major development projects include the exploration and development of the Chambishi Southeast Mine, the expansion of the Chambishi Copper Smelter, and SML's development projects. We are also conducting various research projects with an aim to start cobalt production in the future. See “— Research and Development — Cobalt Development Plans”.

According to the Competent Person's Report, as of December 31, 2011, our JORC compliant proved and probable ore reserves were 57.6 Mt at an average grade of 1.29% copper and 122.2 Mt at an average grade of 1.36% copper, respectively. Our measured, indicated and inferred mineral resources were 61.3 Mt at an average grade of 1.48% copper, 155.6 Mt at an average grade of 1.69% copper and 210.2 Mt at an average grade of 1.75% copper, respectively. Our JORC compliant total contained metal reserves were approximately 2,404.1 kt of copper and 92.7 kt of cobalt. Our JORC compliant total contained metal resources were approximately 7,197.8 kt of copper and 261.6 kt of cobalt.

During the Track Record Period, we sold a substantial portion of our products to a small number of customers. In 2009, 2010 and 2011, sales to our top five customers accounted for 86.2%, 97.2% and 92.8%, respectively, of our total revenue. The Retained Group was our single largest customer in each of these years and accounted for 28.8%, 55.3% and 51.0% of our total revenue in 2009, 2010 and 2011, respectively. For additional details, see “Risk Factors — Risks Relating to Our Business and Industry — We derive a substantial portion of our sales from a small number of customers” and “— Sales, Distribution and Marketing”.

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The following table sets forth a breakdown of our revenue by geographical location in the periods indicated:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
China <sup>(1)</sup> .....	200,275	750,744	847,976
Europe <sup>(2)</sup> .....	461,673	584,074	397,090
Africa <sup>(3)</sup> .....	34,342	22,467	38,840
<b>Total</b> .....	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>

Notes:

(1) Including Hong Kong.

(2) During the Track Record Period, our major sales markets in Europe included Switzerland, the United Kingdom and Luxembourg.

(3) During the Track Record Period, our major sales markets in Africa included Zambia and South Africa.

### Summary of Operations

Our mining and ore processing operations are carried out through NFCA and Luanshya. NFCA, in which we have an 85% equity interest, holds three mining licenses covering an area of approximately 107 sq km. NFCA owns the Chambishi Main Mine, the Chambishi West Mine, the Chambishi Southeast Mine and the Chambishi Processing Plant. The Chambishi Main Mine produces sulfide ores and produced 1,028.3 kt of ore in 2011. The Chambishi West Mine commenced the production of mixed and sulfide ores in late 2010 and produced 487.1 kt of ore in 2011. We are currently undertaking the exploration and development of the Chambishi Southeast Mine, which is expected to commence production in 2016 and which, based on our current plans, will have an annual production capacity of 3,300 kt of ore upon its completion.

Luanshya, in which we have an 80% equity interest, owns the Baluba Center Mine, the Muliashi North Mine, the Baluba East Mine, the Mashiba Mine and the Baluba Center Processing Plant. The Baluba Center Mine produced 1,224.1 kt of sulfide ores in 2011. We have recently commenced production at the Muliashi Project, an integrated project for mining and leaching of copper oxide ores, which comprises the Muliashi North Mine, the Muliashi Leach Plant and the planned Baluba East Mine. See “— Our Mining Rights” and “— Mining and Ore Processing Operations — Life-of-Mine Plans” for additional details on our mining and exploration licenses and Life-of-Mine plans.

Our copper smelting operations are carried out through CCS, in which we hold a 60% equity interest. CCS operates the Chambishi Copper Smelter, which produced 150.9 kt of blister copper in 2011 and is the only large-scale overseas copper smelter owned by a PRC enterprise according to the Wood Mackenzie Report. We are currently expanding the facilities of the smelter to increase its annual production capacity to 250 kt of blister copper by 2013.

Our copper leaching operations are carried out through SML, in which we have a 67.75% equity interest. SML operates the Chambishi Leach Plant, which produced 7.0 kt of copper cathode in 2011, and the DRC Project, which commenced production in February 2012 and has a designed annual production capacity of 10 kt of copper cathode. In order to increase our production of copper cathode, we are currently developing a number of leaching projects, including the Mabende Project with a designed annual production capacity of 20 kt of copper cathode and the Kakoso Tailings Development Project with a planned annual production capacity of 3 kt of copper cathode.



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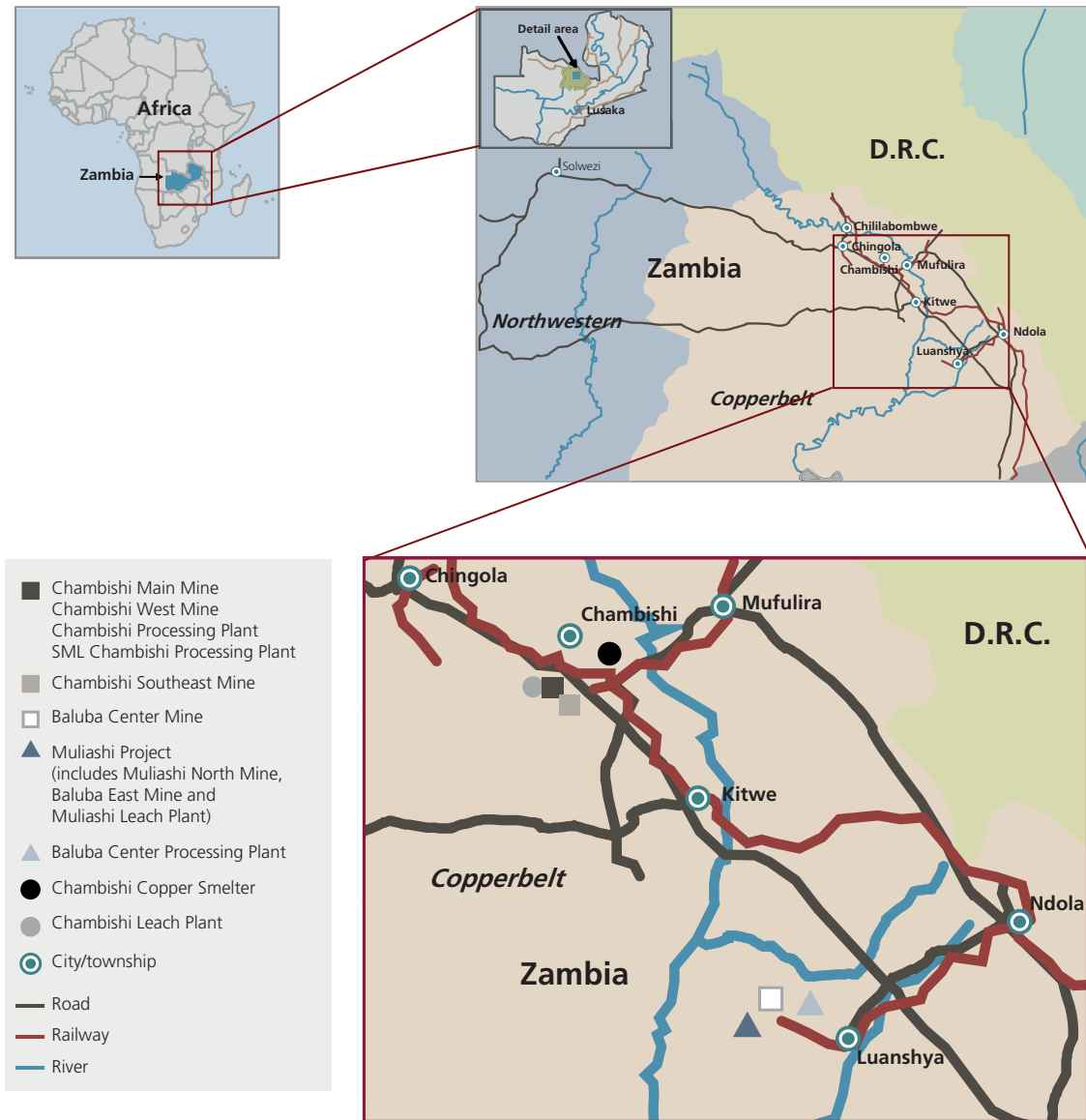
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SML also operates the SML Chambishi Processing Plant, which was completed in 2011 and has an annual processing capacity of 330 kt of ore.

### Asset Locations

The following map shows the locations of our principal mining, ore processing, leaching and smelting operations:



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### OUR COMPETITIVE STRENGTHS

We are a leading, fast growing and vertically integrated copper producer, focusing on the mining, ore processing, leaching, smelting and sale of copper, based in Zambia. We believe that the following competitive strengths contribute to our success and distinguish us from our competitors:

**We were the first PRC firm to invest in Zambia's copper assets since the privatization of the industry in the late 1990s and the largest PRC enterprise in terms of total overseas copper production in 2011**

According to Wood Mackenzie, we were the first PRC firm to invest in Zambia's copper assets since the privatization of the industry in the late 1990s. We ventured into the copper mining industry in Zambia in 1998 focusing on the development of the Chambishi Copper Mine. In the past 14 years we have developed into a vertically integrated copper producer with mining, ore processing, leaching and smelting operations producing copper concentrate, copper cathode and blister copper. We were the largest PRC copper producer in terms of total overseas copper production in 2011 (including copper concentrate, copper cathode and blister copper) according to Wood Mackenzie. We have accumulated ample experience, knowledge and understanding of the local copper mining industry in Zambia over years, which is vital to our continued growth and success in Zambia.

Furthermore, we have gained substantial experience in overseas project development as well as mergers and acquisitions, and we believe we enjoy first-mover advantage in pursuing additional expansion opportunities and acquisitions in Africa due to the strong relationships we have developed with the African business community and local governments, as well as market knowledge we have accumulated since our entry into Zambia in 1998. Our acquisition and development of the Chambishi Copper Mine and the Luanshya Mine demonstrate our ability to identify high-quality acquisition targets and effectively integrate them into our operations. With our history of successful overseas investments and acquisitions, our management track record, our experience in operating upstream and downstream copper operations, we believe we are well positioned to take advantage of acquisition opportunities in the copper industry in Zambia and other countries.

**We possess abundant high-quality copper and cobalt reserves and resources in Zambia, a major copper and cobalt producing country rich in minerals**

We benefit from our abundant copper and cobalt reserves and resources. According to the Competent Person's Report, as of December 31, 2011, our JORC compliant proved and probable ore reserves were 57.6 Mt at an average grade of 1.29% copper and 122.2 Mt at an average grade of 1.36% copper, respectively. Our measured, indicated and inferred mineral resources were 61.3 Mt at an average grade of 1.48% copper, 155.6 Mt at an average grade of 1.69% copper and 210.2 Mt at an average grade of 1.75% copper, respectively. Our JORC compliant total contained metal reserves were approximately 2,404.1 kt of copper and 92.7 kt of cobalt. Our JORC compliant total contained metal resources were approximately 7,197.8 kt of copper and 261.6 kt of cobalt. As of December 31, 2011, the ore reserves at the Chambishi Main Mine were expected to support its production for another 8.5 years, assuming a production rate of 1,000 kt of ore per year. As of the same date, the ore reserves at the Chambishi West Mine, the Baluba Center Mine and the Muliashi North Mine were expected to support mining for another 24, 11 and 12.5 years, respectively, according to the Competent Person's Report. In addition, ore reserves of the Chambishi Southeast Mine and the Baluba East Mine are expected to support 20 and seven years of mining following the commencement of operations. We believe our access to abundant high-quality copper and cobalt resources gives us a long-term competitive advantage to support our existing and future copper production operations, as well as potential cobalt production in the future.

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Our copper and cobalt reserves and resources are located in Zambia, an African country ranked sixth in the world in terms of copper resources and fifth in the world in terms of cobalt reserves, according to Wood Mackenzie. According to the same source, Zambia produced 699 kt of contained copper and 5 kt of contained cobalt, respectively, contributing to 4% and 6% of the world's copper output and cobalt output, respectively, in 2011. The abundant mineral resources, relatively stable political environment, comprehensive infrastructure, steady supply of electricity and water and investor-friendly environment make Zambia an attractive destination for mineral companies, in particular those focusing on copper and cobalt, like ourselves.

We are determined to leverage our abundant copper and cobalt reserves and resources in Zambia and further develop our mining and processing operations. In addition to our existing producing mines and tailings, we have several development and exploration projects, which have the potential to increase further our ore reserves and mineral resources base. We are currently undertaking further exploration at the Chambishi Southeast Mine, as well as undertaking other development and exploration projects, including the Mwambashi, Mashiba and Lufubu deposits. We are also conducting various research projects with an aim to start cobalt production in the future.

### **Our copper production possesses significant growth potential, which should assist us in taking advantage of any opportunities that arise from the growth in the global copper industry, particularly in China**

Copper is a ductile metal with versatile applications and is sourced by end-users in a wide range of industries for the manufacture of a diverse range of products, including electrical and electronic products, industrial machinery and equipment, transportation products and consumer and general products. The copper industry has experienced strong growth over the last decade. According to Wood Mackenzie, from 2001 to 2011, refined copper consumption increased from 14.8 Mt to 19.9 Mt, equivalent to an annual growth rate of 3.0%. According to the same source, the price of copper averaged US\$8,818 per tonne in 2011, representing an increase of 17% over the average copper price in 2010. The global demand for copper is expected to continue to increase by 4.2% per annum in the five years from 2011 to 2015, according to the Wood Mackenzie Report.

China is our main market with sales of our copper products in China (including Hong Kong) accounting for 66.0% of our revenue in 2011. The strong growth in the Chinese economy in the past three decades, in particular the continuously growing consumption in the infrastructure sector, has fueled strong demand for copper in China. According to Wood Mackenzie, the demand for refined copper in China has topped all other regions, accounting for 39% of the total world demand in 2011. From 2001 to 2011, China's demand for copper increased at a CAGR of 13.3% and is expected to continue to grow in the next five years. In order to capitalize on the strong demand for copper worldwide, including in China, and with the current favorable copper price, we have started and will continue with our expansion efforts to increase our copper mine production by expanding our mining and ore processing facilities on the back of our substantial reserves and resources.

In 2011, we produced 39.3 kt of contained copper in concentrate, 150.8 kt of blister copper and 7.0 kt of copper cathode. Our current plan is to increase our production volume to reach 57 kt of contained copper in concentrate, 270 kt of blister copper and 80 kt of copper cathode, by 2015. There are no caps on production in respect of our mining licenses.

As part of our expansion efforts, we are currently undertaking several projects. The expansion of the Chambishi Copper Smelter is scheduled to be completed in late 2012, bringing our designed blister copper production capacity from 150 kt to 250 kt per year by 2013. We also aim to increase our total annual copper cathode production to 80 kt in 2015. We expect to achieve this through

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increasing production at the Muliashi Project and the DRC Project, both of which commenced production in the first quarter of 2012, and the development of the Mabende Project and the Kakoso Tailings Development Project.

In addition, we are undertaking the exploration and development of the Chambishi Southeast Mine, which is currently expected to commence production in 2016, increasing the annual ore processing capacity of the Chambishi Copper Mine by 3,300 kt and our annual contained copper in concentrate production capacity by 63 kt.

### **Industry leading business model and technical expertise for our copper leaching business operations**

Our copper leaching operations use heap leaching, agitation leaching and solvent extraction/electrowinning technology to produce copper cathode. To differentiate ourselves from our competitors, we focus on treatment of copper tailings and processing of oxide ore and mixed ores. The business model we use in our copper leaching operations results in high profitability and short investment pay-back period due to the low level of capital expenditure and low cost of production arising from the low cost of raw materials. We believe our business model is unique as, to our knowledge, there are few, if any, copper leaching plants in Zambia or the PRC operating in a similar manner. We have collected and analyzed data in respect of tailings from a large number of mines in Zambia and are able to identify tailings that are economically feasible. We therefore enjoy first-mover advantage in utilizing copper tailings, oxide ore and mixed ores for our copper leaching operations and are well-placed to better utilize the abundant copper tailings resources in Zambia and the DRC.

We are also collaborating with Chinese research institutions to undertake research and development of bioleaching technology, which, if successful, may improve the adaptability of copper leaching to different ore inputs in order to enable us to more effectively utilize the abundant copper tailings resources in Zambia and the DRC and to process mixed ores.

### **We benefit from the long-term political and economic relationship between China and Zambia and thus the favorable policies of the Zambian government**

China has developed long-term political and economic relationships with Zambia. Since the establishment of diplomatic relations between China and Zambia in 1964, leaders of both countries have visited each other from time to time over the years. During the 1960s and 1970s, China provided financial and technical assistance in the construction of the Tanzania-Zambia Railway, one of the largest foreign-aid projects ever undertaken by China, which spans 1,860 kilometers, connecting Dar es Salaam, the capital of Tanzania, and Kapiri Mposhi in Zambia. China has also constructed highways, food processing plants, textile mills and wells in Zambia. China and Zambia have entered into various economic and technical cooperation treaties, as well as investment, tax and bilateral free trade treaties. In recent years, Chinese companies have invested in copper mining, textile milling and agriculture projects and opened bank branch in Zambia. During his 2011 visit to China, the former President of Zambia Dr. Kenneth Kaunda praised that CNMC's investments in Zambia have demonstrated the all-weather friendship between China and Zambia.

China and Zambia have established the Zambia-China Economic & Trade Cooperation Zone where two of our subsidiaries, CCS and SML, are located. CNMC Group has been appointed to construct the infrastructure and operate the zone. As a subsidiary of CNMC, we have historically benefited from the long-term political and economic relationship between Zambia and the PRC in our operating history and expect to continue benefiting from it in the future.

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In addition, we believe that to sustain our growth in Zambia, we should strive to achieve mutual benefit with the local community in Zambia through contributions toward its social and economic environment. We have undertaken initiatives such as the construction of a hospital, clinic and other community services facilities, and sponsored various sports activities in Zambia. Our operations in Zambia have also created new job opportunities. As a result of such continuous contributions, we have built a positive relationship with, and gained broad recognition and support from, the local community in Zambia.

The governmental and local community support that we have received and expect to continue to receive in Zambia has laid a solid foundation for our growth and success in Zambia, and we may continue to benefit from it in the future. Our subsidiaries in Zambia which are located within the Zambia-China Economic & Trade Cooperation Zone enjoy preferential tax treatment extended by the Zambian government. CCS and SML are exempted from the payment of income tax for five years starting from the first year of profitability; for the subsequent three years they are entitled to a 50% tax reduction, followed by a 25% tax reduction for the two years thereafter. Certain of our subsidiaries have also enjoyed preferential tax treatment in respect of VAT payable for our raw materials, withholding tax and tax holidays.

### **We benefit from our relationship with CNMC and the “go-abroad” policies promulgated by the PRC government**

As of the Latest Practicable Date, CNMC was our Controlling Shareholder and will continue to be our Controlling Shareholder immediately after the completion of the Global Offering. CNMC is a state-owned enterprise established in 1997, with operating history dating back to 1983, which is directly administered by the SASAC. Its main businesses include the development of nonferrous metal resources, construction and engineering as well as related trade and services, and it operates globally, including in the PRC, Africa, Middle East, Central and Southeast Asia and Australia.

We operate our business independently from CNMC and we believe our continuing relationship with CNMC will enhance our brand recognition in the PRC and worldwide. We sell the majority of our blister copper and copper cathode to copper refineries and processing plants through members of the CNMC Group, such as CNMC International Trade. We believe we will benefit from CNMC’s strong reputation and long-term relationships with its customers. We also benefit from the high-quality services provided by members of the CNMC Group as contractors in our exploitation, design and research, construction work, facilities repair and maintenance, and sales and trading.

As a PRC-owned overseas nonferrous metals mining company, we also benefit from the “go-abroad” policies promulgated by the PRC government to encourage PRC enterprises to invest in the natural resources industry overseas. For example, we enjoy governmental support and preferential treatment in credit borrowing from the PRC banks and tax payment, which is important for our operations as the mining industry is capital intensive in nature.

### **We have a strong and experienced management team with extensive industry and management expertise, and a strong local workforce**

Experienced mining technicians and personnel with established industry expertise are critical to the success of copper mining activities and operations. We have a team of professionals who are equipped with a deep understanding of and rich experience in the various aspects of our businesses, including exploration, mine design and construction, mining, processing, leaching, smelting, and sales and marketing of copper products.

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Our management team is led by five executive Directors and three other management members, most of whom have over 20 years of mining experience and management expertise, and who have been instrumental to our development. Many of our senior management and operations personnel and members of our Board of Directors have extensive experience in the copper mining industry in Zambia and the PRC. In addition, many of our key personnel have been working in Zambia since the establishment of NFCA in 1998. We believe that the high level of experience and expertise of our key management and operational personnel is crucial for us to operate in a highly effective manner. Their substantial overseas experience will allow us to identify expansion opportunities in other parts of the world. Our Directors and senior management also possess extensive experience derived from their direct involvement in our operations and, prior to joining our Group, other mineral, natural resources or infrastructure projects in Zambia and the PRC. In the future, we expect that our management team will be able to leverage its operational expertise in copper production for use in our planned cobalt operations as well.

As of December 31, 2011, we had 5,137 employees in Zambia, of which approximately 94% were local employees hired by us in Zambia. In addition, as of the same date we had 5,579 persons working in our operations who were our contractors' employees. Our strong local workforce also assists us with our understanding of the local culture and thus allows us to have a competitive advantage over new entrants to this market.

### **OUR BUSINESS STRATEGIES**

As the overseas platform of the CNMC Group for the development of copper and cobalt resources, we plan to accomplish our goal of being a leading nonferrous metals producer through the following strategies:

#### **Increase our copper and cobalt reserves and resources through further exploration and development**

We believe the amount of our copper and cobalt reserves and resources we possess is fundamental to the long-term sustainable growth of our business. We continuously aim to expand our current mineral reserves and resources base through further exploration. Through the increase of our mineral reserves and resources we will be able to extend the lives of our mines and secure a reliable supply of mineral raw materials for the copper smelting and leaching operations.

As of December 31, 2011, we had ten large-scale mining licenses in Zambia covering an aggregate area of approximately 237 sq km and one exploration license covering an area of approximately 339 sq km. We are currently undertaking exploration within the Chambishi and Luanshya mining areas for the purpose of further expanding our existing mining operations. This includes the exploration and development of the Chambishi Southeast Mine, which is currently expected to commence production in 2016, as well as several other development and exploration projects, including the Mwambashi Project, the Mashiba deposit and the Lufubu deposit.

In addition, we will continue to look for expansion opportunities in the DRC, which will allow us to tap into its rich mineral resources and further increase our mineral reserves and resources base.

#### **Further expand the production capacity of our mining operations to improve the vertical integration of our operations**

We seek to expand production capacity at our Chambishi Copper Mine and Baluba Center Mine to improve the level of self-sufficiency of our downstream smelting operations at CCS. With a larger



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scale of production, we will be able to increase the certainty of copper concentrate supply to the Chambishi Copper Smelter and further improve the vertical integration of our operations.

The Chambishi West Mine commenced production in November 2010 and is expected to increase the annual combined production of the Chambishi Copper Mine to 32 kt of contained copper in concentrate by 2014. We also aim to commence construction of the production facilities at the Chambishi Southeast Mine in 2012 with a view to achieving production in 2016. At the Baluba Center Mine, we commenced the first full year of production in 2010 and expect to reach annual production of 20 kt of contained copper in concentrate by 2013.

### **Further expand the production capacity of our copper leaching and copper smelting operations**

In order to achieve economies of scale and effectively reduce production unit cost, we aim to expand our total copper cathode production to 52 kt by 2013 and to 80 kt by 2015.

In March 2012, we commenced production at the Muliashi Project which has a designed annual production capacity of 40 kt of copper cathode. We also intend to expand the production of SML's leaching operations from 7 kt of copper cathode in 2011 to 40 kt of copper cathode in 2015. We aim to achieve this by increasing production at the DRC Project and through the development of the Mabende Project and the Kakoso Tailings Development Project. In addition, the DRC Project is expected to produce cobalt contained in cobalt salt in the future.

The heavy export duty that the Zambian government levies on copper concentrate coupled with a shortage in copper smelting capacity in Zambia has presented strong growth opportunities for the smelting industry in Zambia. In order to take advantage of such opportunities, in 2010 we commenced the expansion of our Chambishi Copper Smelter which, upon completion in late 2012, is expected to increase our annual production capacity of blister copper by 100 kt to reach 250 kt.

### **Focus on the research and development of copper mining, processing, smelting and leaching technologies, especially the separation of copper and cobalt, and bioleaching technology**

We will continue to leverage our technical expertise in copper mining, processing, leaching and smelting operations to develop advanced technologies aiming to further expand our production capacity, diversify our product portfolio, reduce our production costs and enhance our production efficiency and profitability. Taking into consideration our abundant cobalt reserves and resources and the significant market value and prospective market of cobalt, we will continue to focus on developing technology for the separation of copper and cobalt from copper-cobalt ores, including undertaking further research on recycling methods for the extraction of cobalt from copper concentrate, and copper and cobalt from smelting slag. See “— Research and Development — Cobalt Development Plans”. We believe the improved recycling methods will help us maximize the value of our resources and our production output, and will also make our operations more environmentally friendly.

We are also collaborating with Chinese research institutions on the research and development of bioleaching technology. If successfully developed, bioleaching technology may improve our copper leaching process by enabling us to utilize different ore inputs more effectively, which in turn will result in higher copper cathode production. See “— Research and Development — Bioleaching”.

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### **Continue pursuing suitable acquisition opportunities**

We will consider strategic opportunities to acquire other mining assets in Zambia and other African countries, and suitable downstream copper and cobalt leaching and smelting facilities with a view to further expanding our copper and cobalt reserves and resources and diversifying our downstream production platform. In assessing acquisition opportunities, we will carefully consider and seek to balance a variety of factors, such as whether the cost and benefit of the acquisitions satisfy our internal financial requirements taking into consideration our corporate strategy and long-term plan; the synergy between our existing operations and potential targets in terms of technology and know-how, management expertise and business compatibility; the geographical proximity to our existing operations; and the acquisition's ability to enhance the overall competitiveness and sustainability of our existing and future businesses.

For example, we intend to leverage on our size, regional presence and operating experience to acquire attractive value-enhancing opportunities in the DRC. The DRC is rich in minerals and, as of the end of 2010, had the most abundant reserves of cobalt in the world, while its copper resources were ranked thirteenth in the world, according to Wood Mackenzie. In February 2012, we commenced production at a copper leaching plant in the DRC owned by Huachin, a joint venture subsidiary of SML, which has an annual production capacity of 10 kt of copper cathode. See “— Leaching Operations — DRC Project”. Leveraging on the DRC Project, we intend to continue preparation work for operations in the DRC, including research of acquisition opportunities, exploration of mineral resources and establishment of copper leaching operations.

### **Continue to grow and train our workforce and improve our corporate social responsibility practices to meet the demands of our future development in Zambia and other countries in Africa**

Along with the expansion of our current production scale as well as planned expansion in Zambia and other African countries, we intend to further grow our workforce to meet our expansion needs. We will further optimize our workforce selection system in order to attract qualified and experienced management and technical personnel in our industry and maintain existing skill sets. We will also seek to improve the incentive mechanisms for our management and key employees to provide them with better incentives and align their interest with ours and that of our Shareholders. Furthermore, we plan to continue to enhance our in-house training for employees to provide them with cutting-edge technologies and industry know-how, as well as knowledge of environmental, social, health and safety issues.

We consider that operating in a safe and responsible manner is essential to ensuring that our business is respected at a local, regional and national level and by the investment community worldwide and we intend to continue to implement the relevant safety standards in our operations. We are also committed to contributing to the local community in Zambia and helping to improve social and economic environment, local infrastructure and living conditions, as well as creating local job opportunities by increasing the percentage of local employees in our workforce.

### **OUR PRODUCTS**

Our main products are blister copper, copper cathode and copper concentrate. We also produce sulfuric acid as a by-product generated during the copper smelting process.



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The following table sets out our production of blister copper, copper cathode, copper concentrate and contained copper in concentrate for the periods indicated:

<u>Product</u>	<u>Year ended December 31,</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
		(kt)	
Blister copper <sup>(1)</sup> . . . . .	108.4	165.1	150.9
Copper cathode . . . . .	6.5	7.1	7.0
Copper concentrate <sup>(2)</sup> . . . . .	53.9	99.7	124.1
Contained copper in concentrate <sup>(2)</sup> . . . . .	23.6	32.0	39.3

*Notes:*

- (1) Chambishi Copper Smelter's designed capacity of 150 kt is calculated on the basis of a year consisting of 330 working days. In 2010, the actual blister copper production exceeded the designed production capacity because the smelter performed no maintenance and operated at full capacity for more than 330 days.
- (2) All of the copper concentrate produced in 2010 and 2011 was sold internally to the Chambishi Copper Smelter for copper smelting. Currently, we do not plan to sell copper concentrate to external parties in the ordinary course of our business.

The following table sets forth the breakdown of our sales volume and revenue by product category for the periods indicated:

<u>Product</u>	<u>Year ended December 31,</u>								
	<u>2009</u>			<u>2010</u>			<u>2011</u>		
	<u>Sales Volume</u>	<u>Revenue</u>	<u>% of Revenue</u>	<u>Sales Volume</u>	<u>Revenue</u>	<u>% of Revenue</u>	<u>Sales Volume</u>	<u>Revenue</u>	<u>% of Revenue</u>
	(kt)	(US\$ '000)	(%)	(kt)	(US\$ '000)	(%)	(kt)	(US\$ '000)	(%)
Blister copper . . . . .	105.2	624,185	89.6	163.0	1,278,483	94.2	147.8	1,186,840	92.5
Copper cathode . . . . .	6.2	33,848	4.9	7.4	56,336	4.2	7.0	58,223	4.5
Contained copper in concentrate <sup>(1)</sup> . . . . .	5.1	28,218	4.1	—	—	—	—	—	—
Sulfuric acid . . . . .	196.7	10,039	1.4	313.6	22,466	1.6	338.2	38,843	3.0
<b>Total</b> . . . . .		<u>696,290</u>	<u>100.0</u>		<u>1,357,285</u>	<u>100.0</u>		<u>1,283,906</u>	<u>100.0</u>

*Note:*

- (1) All of the copper concentrate produced in 2010 and 2011 was sold internally to the Chambishi Copper Smelter for copper smelting. Currently, we do not plan to sell copper concentrate to external parties in the ordinary course of our business.

### Blister Copper

We produce blister copper at our Chambishi Copper Smelter and, according to Wood Mackenzie, we are the only PRC enterprise with large-scale overseas copper smelter production. Blister copper generally contains approximately 99% copper. We produce blister copper using copper concentrate from our Chambishi Copper Mine and Baluba Center Mine, as well as copper concentrate from other mine producers in Zambia. In 2009, 2010 and 2011, we produced 108.4 kt, 165.1 kt and 150.9 kt, respectively, of blister copper. The designed annual production capacity of our smelting operations is 150 kt of blister copper and is expected to increase to 250 kt of blister copper upon completion of the expansion in late 2012.

We currently sell the majority of our blister copper to members of the CNMC Group, such as CNMC International Trade, for onward sale to refineries in China. We sell the rest of our blister copper to international commodity traders, such as Trafigura AG Switzerland, for onward sale to customers around the world, and to Yunnan Copper Group, a minority shareholder of CCS.

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### **Copper Cathode**

We produce copper cathode at our Chambishi Leach Plant using a leaching process that involves heap leaching, agitation leaching and solvent extraction/electrowinning. The copper cathode we produced in 2011 contained on average 99.95% copper.

In 2009, 2010 and 2011, we produced 6.5 kt, 7.1 kt and 7.0 kt, respectively, of copper cathode. We plan to increase our total copper cathode production volume significantly to 52 kt by 2013 and 80 kt by 2015. Our expansion plans include increasing production at the Muliashi Leach Plant and the DRC Project, both of which commenced production in the first quarter of 2012 and the development of the Mabende Project and the Kakoso Tailings Development Project.

The majority of our copper cathode production is sold to members of the CNMC Group, such as CNMC International Trade, for onward sale to copper processing plants. We sell the rest of the copper cathode to international commodity traders, such as Trafigura AG Switzerland, for onward sale to end customers around the world.

### **Copper Concentrate**

We produce copper concentrate at the Chambishi Processing Plant, the Baluba Center Processing Plant and the SML Chambishi Processing Plant.

In 2009, 2010 and 2011, the Chambishi Processing Plant produced 53.3 kt, 50.3 kt and 61.1 kt of copper concentrate, equivalent to 23.6 kt, 22.0 kt and 23.2 kt of contained copper in concentrate, respectively. The Baluba Processing Plant resumed production in 2009 and produced 0.6 kt, 49.3 kt and 63.0 kt of copper concentrate, equivalent to 0.1 kt, 10.0 kt and 16.0 kt of contained copper in concentrate, in 2009, 2010 and 2011, respectively. The SML Chambishi Processing Plant completed construction in 2011 and has an annual processing capacity of 330 kt of ore.

We currently sell all of our copper concentrate to our subsidiary, CCS, for smelting into blister copper at our Chambishi Copper Smelter. After the Chambishi Copper Smelter commenced operations, we stopped selling copper concentrate to external customers. We believe that selling our entire production of copper concentrate to our smelter for further processing into blister copper is consistent with our business strategy of achieving vertical integration in order to generate higher economic value.

### **Sulfuric Acid**

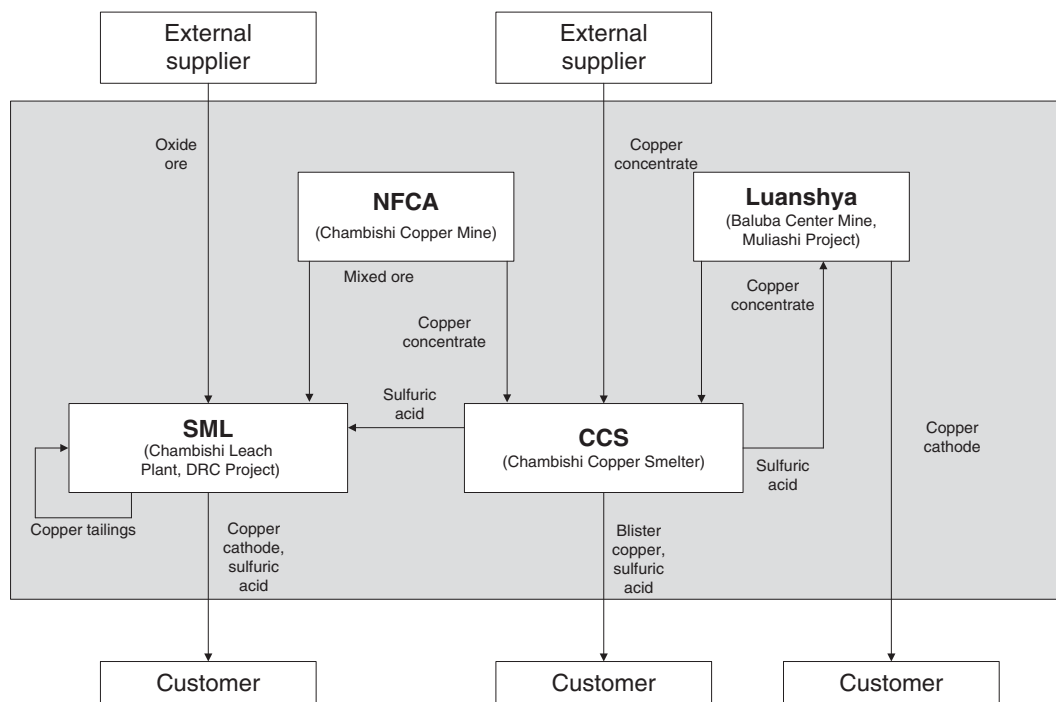
We produce sulfuric acid as a by-product generated during the copper smelting process at our Chambishi Copper Smelter. The sulfuric acid produced at the Chambishi Copper Smelter is sold to third-party customers and our leaching operations.

## **OUR OPERATIONS**

As a vertically integrated copper producer, our operations incorporate all aspects of copper production, including the mining, ore processing, leaching and smelting, as well as sales of copper. All the copper ore we mine is used in our smelting and leaching operations to produce blister copper and copper cathode. Our smelter, the Chambishi Copper Smelter, also utilizes copper concentrate purchased from third-parties to produce blister copper. Our Chambishi Leach Plant produces copper cathode using a leaching process involving heap leaching, agitation leaching and solvent extraction/electrowinning utilizing copper tailings, oxide ore and mixed ores.

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The diagram below shows our integrated supply/production chain and the respective functions and inter-relationship of our mines, concentrators and smelting and leaching plants.



NFCA is 85% owned by us and holds three large-scale mining licenses covering an area of approximately 107 sq km, including the Chambishi Main Mine, the Chambishi West Mine and the Chambishi Southeast Mine. Of these deposits, the Chambishi Main Mine and the Chambishi West Mine are currently in production, while the Chambishi Southeast Mine is in the exploration and development stage. We expect that the Chambishi Southeast Mine will commence production in 2016.

Luanshya is 80% owned by us and holds seven large-scale mining licenses covering a combined area of approximately 130 sq km, which includes Luanshya-Baluba, Muliashi, Roan Basin, Roan Extension East, Roan Extension West, Baluba East and Muva Hill deposits. Of these deposits, the Baluba Center Mine and the Muliashi North Mine are currently in production.

We also hold a 60% equity interest in CCS, which owns the Chambishi Copper Smelter and conducts our smelting operations, and a 67.75% equity interest in SML, which owns the Chambishi Leach Plant, the DRC Project and the SML Chambishi Processing Plant, and primarily conducts our leaching operations.

### MINING AND ORE PROCESSING OPERATIONS

#### Overview

Our mining operations typically include the excavation, transportation and beneficiation of copper ores. We are also engaged in several mining exploration and development projects, the completion of which is expected to increase our future production capacity and revenue. Our ore processing operations consist of crushing and grinding the ores and separating the copper ores from waste materials by a flotation process, classification and dehydration, resulting in copper concentrate.

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### Ore Reserves and Resources

We report our ore reserves and mineral resources in accordance with the JORC Code. All reserves and resources figures in this section have been extracted without material adjustment from the Competent Person's Report set out in Appendix III to this prospectus. Our Directors confirm that no material changes have occurred since the effective date of the Competent Person's Report. Unless otherwise indicated, all reserves and resources information in this prospectus is stated on a 100% ownership basis.

As of December 31, 2011, our proved and probable ore reserves were 57.6 Mt at an average grade of 1.29% copper and 122.2 Mt at an average grade of 1.36% copper, respectively. Our measured, indicated and inferred mineral resources were 61.3 Mt at an average grade of 1.48% copper, 155.6 Mt at an average grade of 1.69% copper and 210.2 Mt at an average grade of 1.75% copper, respectively.

The following table sets out the ore reserves of our subsidiaries, together with the ownership percentage, as of December 31, 2011:

<u>Company</u>	<u>Ownership percentage</u>	<u>JORC category</u>	<u>Ore (Mt)</u>	<u>Average grade<sup>(1)</sup> Total copper (%)</u>
NFC A .....	85%	<b>Reserves</b>		
		Proved .....	9.1	1.64
		Probable .....	<u>54.6</u>	<u>1.78</u>
		<b>Total</b> .....	<u>63.7</u>	<u>1.76</u>
Luanshya .....	80%	<b>Reserves</b>		
		Proved .....	48.5	1.22
		Probable .....	<u>67.6</u>	<u>1.07</u>
		<b>Total</b> .....	<u>116.1</u>	<u>1.11</u>

*Note:*

- (1) As only some of our deposits contain cobalt reserves, it would not be meaningful to include average cobalt grades in the table above. For information on our cobalt reserves, see the description of individual mining assets under "— Mining and Ore Processing Operations".

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The following table sets out the mineral resources of our subsidiaries, together with the ownership percentage, as of December 31, 2011:

Company	Ownership percentage	JORC category	Ore (Mt)	Average grade <sup>(1)</sup>	
				Total copper (%)	Oxide copper (%)
NFCA .....	85%	<b>Resources</b>			
		Measured .....	11.3	2.13	—
		Indicated .....	66.3	2.16	—
		<b>Subtotal<sup>(2)</sup></b> .....	<b>77.6</b>	<b>2.16</b>	<b>—</b>
		Inferred .....	151.0	1.88	—
Luanshya .....	80%	<b>Resources</b>			
		Measured .....	49.1	1.30	0.68
		Indicated .....	78.5	1.30	0.40
		<b>Subtotal<sup>(2)</sup></b> .....	<b>127.7</b>	<b>1.30</b>	<b>0.51</b>
		Inferred .....	46.0	1.55	0.59
SML .....	67.75%	<b>Resources</b>			
		Measured .....	0.8	2.18	0.34
		Indicated .....	10.8	1.63	0.63
		<b>Subtotal<sup>(2)</sup></b> .....	<b>11.6</b>	<b>1.68</b>	<b>0.61</b>
		Inferred .....	13.1	0.88	0.50

*Notes:*

- (1) As only some of our deposits contain cobalt resources, it would not be meaningful to include average cobalt grades in the table above. For information on our cobalt resources, see the description of individual mining assets under “— Mining and Ore Processing Operations”.
- (2) Only measured and indicated mineral resources can be used for ore reserve estimation and mine planning.

### Life-of-Mine Plans

The following table sets out the details of the Life-of-Mine plans for our producing mines and development projects, according to the Competent Person’s Report, as of December 31, 2011:

Mine	Designed capacity	2011 production	Life-of-Mine <sup>(1)</sup>
	(Mtpa)	(Mt)	(years)
Chambishi Main <sup>(2)</sup> .....	2.145	1.028	8.5
Chambishi West <sup>(3)</sup> .....	0.99	0.487	24
Chambishi Southeast <sup>(4)</sup> .....	3.3	n/a	20
Baluba Center <sup>(5)</sup> .....	1.5	1.224	11
Muliashi North <sup>(6)</sup> .....	4.5	n/a	12.5
Baluba East <sup>(7)</sup> .....	0.9	n/a	7

*Notes:*

- (1) For Chambishi West and Baluba Center, Life-of-Mine represents the remaining mine life of the respective mine as of December 31, 2011 according to the Competent Person’s Report. For development projects, Life-of-Mine represents the estimated mine life of each project following commencement of operations according to the Competent Person’s Report. SRK’s Life-of-Mine estimates are based on respective projects’ mine designs, which take into account the mineable reserves and the projected mining schedule. The designed maximum production capacity of each mine is disclosed in the table above.

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- (2) Production re-commenced in 2003. Remaining mine life of 8.5 years was calculated based on ore reserves at the Chambishi Main Mine as of December 31, 2011 divided by an assumed production rate of 1,000 kt of ore per year.
- (3) Production commenced in 2010.
- (4) Production is expected to commence in 2016.
- (5) Production re-commenced in 2010.
- (6) Production commenced in December 2011.
- (7) Production is expected to commence in 2017.

### **Producing Mines**

We currently own and operate four producing mines: the Chambishi Main Mine, the Chambishi West Mine, the Baluba Center Mine and the Muliashi North Mine.

#### ***Chambishi Main Mine***

The Chambishi Main Mine is situated at the northeast edge of the Chambishi Basin, approximately 360 kilometers north of Lusaka and 28 kilometers northwest of Kitwe. The mine's mineralized body extends more than 2,280 meters from east to west, with an average thickness of 8 meters. The deposit contains mostly sulfide ore, and ore minerals are mostly bornite and chalcopyrite.

The Chambishi Main Mine commenced production as an open-pit mine in 1965 and switched to underground mining in 1978. The mine suspended production in August 1987 due to the lack of profitability as a result of the low market price for copper, exacerbated by other factors including inefficient mining technologies and management issues. We are not aware of any regulatory non-compliance by the previous mine owners/operators, structural problems or environmental or labor issues arising from the operations of the mine by the previous operators that may have contributed to its closure. In 1998, NFCA acquired the mine and reconstruction work commenced in July 2000, followed by the commissioning of the mine in 2003. We currently own 85% of NFCA, with the remaining 15% held by ZCCM-IH.

The Chambishi Main Mine is an underground mine accessed by back-fill mining using trackless equipment. The ore is dumped into an internal orepass by a load-haul-dump unit and is then loaded into ore cars driven by electric locomotive and transported to the surface through the main shaft. Except for the main level, all underground and mining haulage in the Chambishi Main Mine is trackless. Starting from 2011, we have been using a third-party contractor, Jinchengxin, which is responsible for the development of tunnels, mining preparation and production, underground haulage, back-filling and maintenance of the ventilation system.

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The following table sets out the ore reserves and mineral resources at the Chambishi Main Mine as of December 31, 2011.

	Ore (Mt)	Average grade Total copper (%)
<b>Reserves</b>		
Proved .....	4.1	1.92
Probable .....	4.5	1.92
<b>Total</b> .....	<u>8.7</u>	<u>1.92</u>
<b>Resources</b>		
Measured .....	5.1	2.50
Indicated .....	5.6	2.49
<b>Subtotal</b> .....	10.7	2.50
Inferred .....	8.1	2.42

In 2009, 2010 and 2011, the Chambishi Main Mine produced 1,358.0 kt, 1,288.1 kt and 1,028.3 kt of ore, respectively. As of December 31, 2011, the ore reserves at the Chambishi Main Mine were expected to support mine production for another 8.5 years assuming a production rate of 1,000 kt of ore per year.

### ***Chambishi West Mine***

The Chambishi West Mine is situated to the west of the Chambishi Main Mine, at the northwest edge of the Chambishi Basin. The mine's orebody has an average thickness of 8 meters, with the eastern part of the body being relatively thicker. Ore minerals of this deposit contain mostly chalcopyrite and bornite with some chalcocite. The Chambishi West Mine produces mixed ores and sulfide ore.

The Chambishi West Mine was explored and developed after NFCA acquired the Chambishi deposit. The construction of infrastructure commenced in 2007 and mining in the Chambishi West Mine commenced in November 2010.

The Chambishi West Mine is an underground mine accessed by vertical shafts. Main shaft development combined with ramps is used and the mine employs the cut-and-fill extraction method. The ore is dumped into an internal orepass by a load-haul-dump unit and then hauled by self-dumping cars before being transported to the surface through the main shaft. Except for the main level, all the underground and mining haulage in the Chambishi West Mine is trackless. Since 2011, we have been using a third-party contractor, Jinchengxin, which is responsible for the development of tunnels, mining preparation and production, underground haulage, back-filling and maintenance of the ventilation system.

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The following table sets out the ore reserves and mineral resources of the Chambishi West Mine as of December 31, 2011.

	Ore (Mt)	Average grade Total copper (%)
<b>Reserves</b>		
Proved .....	5.0	1.41
Probable .....	<u>20.4</u>	<u>1.45</u>
<b>Total</b> .....	<u><u>25.3</u></u>	<u><u>1.44</u></u>
<b>Resources</b>		
Measured .....	6.2	1.83
Indicated .....	<u>25.3</u>	<u>1.88</u>
<b>Subtotal</b> .....	<u>31.4</u>	<u>1.87</u>
Inferred .....	17.3	2.09

The annual designed ore processing capacity at the Chambishi West Mine is 990 kt. The mine produced 50.0 kt and 487.1 kt of ore in 2010 and 2011, respectively. According to the Competent Person's Report, the Chambishi West Mine's ore reserves as of December 31, 2011 were expected to support another 24 years of mine production.

### ***Baluba Center Mine***

The Baluba Center Mine is situated on the northeast flank of the Muliashi Basin, approximately 320 kilometers north of Lusaka and 12 kilometers west of the city of Luanshya. The mine covers an area of approximately 46 sq km. The deposit contains both oxide and sulfide ores. The oxide mineral content increases upwards toward the surface, while the sulfide content increases with depth and becomes predominant approximately 60 meters below the surface. The sulfide deposit is approximately 3,600 meters long and has an average thickness of 10 meters. The oxidized cap extends approximately 3,000 meters from east to west at an average depth of 110 meters and is approximately 10 meters thick. The main copper-bearing mineral is chalcopyrite and the main cobalt-bearing mineral is carrolite.

The Baluba Center deposit was discovered in 1928, but was only developed in the late 1960s, coming into full production in 1973. Five years later, mining was suspended due to the lack of profitability as a result of the low market price for copper, exacerbated by other factors including inefficient mining technologies and management issues. The mine was subsequently taken over by ZCCM, the predecessor of ZCCM-IH. In 2004, the Luanshya Mine was acquired by ENYA Holdings BV and production was resumed, but it was suspended again in 2008 due to the global financial crisis. We are not aware of any regulatory non-compliance by the previous mine owners/operators, structural problems or environmental or labor issues arising from the operations of the mine by the previous operators that may have contributed to its closure. We currently own an 80% interest in Luanshya, with the remaining 20% held by ZCCM-IH.

The Baluba Center Mine is an underground mine. Shaft development combined with decline access is used and the mine employs the sublevel caving extraction method. The mine has two main shafts: B1, which is used primarily for ore and waste rock hoisting, and B2, which is used primarily for the hoisting of workers, materials and equipment. Trackless equipment is used for underground drilling,



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loading and haulage. The ore and waste rock are dumped to the orepass and then loaded into mine cars and transferred to dumping stations prior to primary crushing and hoisting to surface. Excavated ore is then sent by a conveyor belt to the Baluba Processing Plant situated approximately 11 kilometers from the mine. All mining work is independently operated by Luanshya.

The Baluba Center Mine is divided into the eastern and western zones. Except for several portions, the mining operation in the western zone is almost finished. Level development is progressing in the eastern zone.

The following table sets out the sulfide ore reserves and mineral resources of the Baluba Center Mine as of December 31, 2011:

	Ore (Mt)	Average grade	
		Total copper (%)	Total cobalt (%)
<b>Reserves</b>			
Proved .....	0.6	1.69	0.12
Probable .....	13.2	1.63	0.11
<b>Total .....</b>	<b>13.8</b>	<b>1.63</b>	<b>0.11</b>
<b>Resources</b>			
Measured .....	0.7	2.33	0.17
Indicated .....	15.9	2.25	0.15
<b>Subtotal .....</b>	<b>16.6</b>	<b>2.25</b>	<b>0.15</b>
Inferred .....	3.9	1.91	0.12

The following table sets out the oxide ore mineral resources of the Baluba Center Mine as of December 31, 2011:

	Ore (Mt)	Average grade		
		Total copper (%)	Oxide copper (%)	Total cobalt (%)
<b>Resources<sup>(1)</sup></b>				
Indicated .....	6.6	1.65	1.14	0.12
Inferred .....	1.6	1.70	0.93	0.10

*Note:*

(1) According to the Competent Person's Report, the oxide ore resources at the Baluba Center Mine are unlikely to be mined due to subsidence near the surface.

The annual designed capacity of the Baluba Center Mine is approximately 1,500 kt of ore. Production was resumed in 2009 and reached 765.4 kt of ore in 2010 and 1,224.1 kt in 2011. According to the Competent Person's Report, the mine's ore reserves as of December 31, 2011 were expected to support another 11 years of mine production.

### **Muliashi North Mine**

The Muliashi North Mine is part of the Muliashi Project, which is an integrated project for mining and leaching of copper oxide ores. The mine is located at the eastern edge of Muliashi Basin, approximately 3 kilometers south of the Baluba Center Mine.

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The Muliashi North deposit predominantly contains oxide ores, with malachite as the main copper-bearing mineral. Exploration of the deposit commenced in 1963, when the first boreholes were drilled, and additional drillings were carried out in the following years. As the deposit proved to contain mostly oxide ores and the required technology did not exist at the time, the site was not developed. In January 2007, a feasibility study was commissioned, followed by additional drilling and stripping of the overburden, and facilities and infrastructure construction. The mine commenced operations in late 2011.

The Muliashi North Mine is an open-pit mine with a designed capacity of 4,500 kt of oxide ore per year and has a projected mine life of 12.5 years, according to the Competent Person's Report. The 2012 ore production at the Muliashi North Mine is expected to be 4,700 kt. All of the mine's production is processed by the Muliashi Leach Plant. See “— Leaching Operations — Muliashi Leach Plant”.

The following table sets out the ore reserves and mineral resources of the Muliashi North Mine as of December 31, 2011.

	Ore (Mt)	Average grade		
		Total copper (%)	Oxide copper (%)	Total cobalt (%)
<b>Reserves</b>				
Proved	38.8	1.11	0.65	0.06
Probable	22.1	0.95	0.57	0.07
<b>Total</b>	<b>61.0</b>	<b>1.05</b>	<b>0.62</b>	<b>0.06</b>
<b>Resources</b>				
Measured	38.9	1.14	0.67	0.06
Indicated	22.1	0.98	0.59	0.07
<b>Subtotal</b>	<b>61.0</b>	<b>1.08</b>	<b>0.64</b>	<b>0.06</b>
Inferred	20.0	1.18	0.41	0.05

### Development Projects

In addition to the producing mines outlined above, we are currently engaged in the exploration and development of the Chambishi Southeast Mine, which is expected to commence production in 2016. In order to provide alternative ore resources for the Muliashi Leach Plant, we also plan to develop the Baluba East Mine.

### *Chambishi Southeast Mine*

The Chambishi Southeast Mine is situated on the northeast edge of the Chambishi Basin, approximately 7 kilometers southeast of the Chambishi Main Mine. The exploration of the Chambishi Southeast deposit commenced in 1903 and, starting in the early 1930s, a number of drilling campaigns were carried out. The deposit has two ore bodies, each containing both copper and cobalt. The north orebody is approximately 4,500 meters long, with an average thickness of 10 meters, and extends in a southeast/northwest direction. The south orebody is approximately 3,540 meters long and extends in a southeast/northwest direction. The main sulfide ore minerals are chalcopyrite, pyrite, pyrrhotite and carrolite. The cobalt-bearing minerals include carrolite, skutterudite and linnaeite.

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Based on resource estimates, we currently plan to conduct mining operations in the north orebody only. According to the Competent Person's Report, the south orebody is currently not mineable. We expect to commence the development of the Chambishi Southeast Mine in 2012. The Chambishi Southeast Mine will be an underground mine and, similar to the Chambishi Main Mine and Chambishi West Mine, main shaft development combined with decline access will be used. Our current expectation is that the mine will commence production in 2016. The expected capital expenditure from 2012 to 2016 is approximately US\$780 million.

The following table sets out the ore reserves and mineral resources of the Chambishi Southeast Mine as of December 31, 2011:

	Ore (Mt)	Average Grade	
		Total copper (%)	Total cobalt (%)
<b>Reserves</b>			
Probable .....	29.7	1.98	0.10
<b>Resources</b>			
Indicated .....	35.4	2.30	0.12
Inferred .....	125.6	1.82	0.10

The annual designed production capacity of the mine is 3,300 kt of ore and 63 kt of contained copper in concentrate. The mine is expected to produce 29.5 kt of contained copper in concentrate in 2016. According to the Competent Person's Report, the projected mine life of the Chambishi Southeast Mine is 20 years following the commencement of operations.

### **Baluba East Mine**

The Baluba East Mine is part of the Muliashi Project, which is an integrated project for mining and leaching of copper oxide ores. The Baluba East Mine is located at the eastern end of the Baluba Syncline, approximately 2 kilometers southeast of the Baluba Center Mine. The Baluba East deposit contains both oxide and sulfide ores, with oxide mineralization overlaying sulfide mineralization. The main oxide minerals are malachite, cuprite and chrysocolla, and the main sulfide minerals are chalcocite, bornite and chalcopyrite.

As part of the Baluba East deposit was mined out in the past, additional drillings were carried out in 2007 to determine the mined-out area, the remaining ore in the oxide part and its grade. The Baluba East Mine is planned as an open-pit mining area with a designed annual capacity of 900 kt and a projected Life-of-Mine of 7 years, according to the Competent Person's Report. The basic design for the south part of the mine, where we plan to mine oxide ore, has been finished. The construction is expected to be completed and the mine is expected to commence production in 2017. Ore from the Baluba East Mine will be processed by the Muliashi Leach Plant.

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The following table sets out the ore reserves and mineral resources of the Baluba East Mine as of December 31, 2011.

	Ore (Mt)	Average grade		
		Total copper (%)	Oxide copper (%)	Total cobalt (%)
<b>Reserves</b>				
Proved .....	6.4	1.81	0.95	0.02
Probable .....	27.6	0.73	0.30	0.03
<b>Total</b> .....	<b>34.0</b>	<b>0.93</b>	<b>0.42</b>	<b>0.03</b>
<b>Resources</b>				
Measured .....	6.4	1.90	1.00	0.02
Indicated .....	27.6	0.77	0.31	0.03
<b>Subtotal</b> .....	<b>34.0</b>	<b>0.98</b>	<b>0.44</b>	<b>0.03</b>
Inferred .....	3.3	1.03	0.37	0.04

### Other Development and Exploration Projects

We have additional deposits where we are currently undertaking development or exploration, or which provide us with potential to undertake further exploration in the future.

#### *Mwambashi Project*

The Mwambashi deposit is located on the western flank of the Chambishi Basin, approximately 8 kilometers southwest of the Chambishi Copper Mine. It is approximately 600 meters long and continues approximately 250 meters below the surface. The deposit contains both oxide and sulfide ores, with oxide mineralization overlaying sulfide mineralization, and has an average thickness of 15 meters. The main oxide minerals are malachite and chrysocolla, and the main sulfide minerals are chalcopyrite, bornite and chalcocite.

The exploration work at the Mwambashi deposit was first conducted in the 1920s, when geological mapping and pitting were carried out. This was followed by a number of drilling campaigns between 1951 and 2006. In 2006, a feasibility study for the Mwambashi Copper Project was completed by TEAL Exploration & Mining Inc.

SML acquired the Mwambashi deposit in January 2011 from Edgeway Business Solutions Limited (an Independent Third Party) for a purchase consideration of US\$3 million. SML conducted its own due diligence investigation on the Mwambashi deposit without obtaining an independent valuation report, and negotiated with the seller to reach the final price. At the time of acquisition, the deposit was at an exploration stage. We currently expect to commence the development of the Mwambashi deposit in 2012.

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The following table sets out the mineral resources of the Mwambashi deposit as of December 31, 2011, estimated at a cut-off grade of 0.50%, and additional mineral resources at a cut-off grade of 0.30%.

	Ore (Mt)	Average grade	
		Total copper (%)	Acid soluble copper (%)
<b>Resources – Cut-off grade of 0.50%</b>			
Measured .....	0.8	2.22	0.91
Indicated .....	8.4	2.00	0.75
<b>Subtotal .....</b>	<b>9.2</b>	<b>2.02</b>	<b>0.76</b>
Inferred .....	1.8	2.10	0.26
<b>Additional resources – Cut-off grade of 0.30%</b>			
Measured .....	0.02	0.40	0.26
Indicated .....	2.4	0.35	0.21
<b>Subtotal .....</b>	<b>2.4</b>	<b>0.35</b>	<b>0.21</b>
Inferred .....	0.7	0.35	0.21

### ***Mashiba Deposit***

Mashiba deposit is an isolated deposit located approximately 6 kilometers south of the Baluba Center Mine. It is approximately 600 meters long and is characterized by relative thickness (up to 41 meters) compared to our other deposits and a relatively high copper oxide content. The initial drillings were carried out in the 1930s, with additional drilling campaigns carried out between 1950 and 2007.

The following table sets out the ore reserves and mineral resources of the Mashiba deposit as of December 31, 2011.

	Ore (Mt)	Average grade	
		Total copper (%)	Oxide copper (%)
<b>Reserves</b>			
Proved .....	2.7	1.35	—
Probable .....	4.8	1.40	—
<b>Total .....</b>	<b>7.4</b>	<b>1.38</b>	<b>—</b>
<b>Resources</b>			
Measured .....	3.2	1.89	0.24
Indicated .....	5.7	1.96	0.22
<b>Subtotal .....</b>	<b>8.8</b>	<b>1.93</b>	<b>0.23</b>
Inferred .....	5.0	1.67	0.43

### ***Muliashi South Deposit***

Muliashi South deposit is located approximately 3 kilometers south of the Muliashi North Mine and borders the Mashiba deposit to the west. The deposit's oxide cap extends approximately 800 meters on the surface and continues underground to the upper mining limit of the former underground

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mine. Most of the sulfide ores in this deposit have been extracted by the previous owner. Underground mining was resumed in 2008, but only lasted several months before the mine was shut down again in November 2008.

The following table sets out the oxide ore resources of the Muliashi South deposit as of December 31, 2011.

	Ore (Mt)	Average grade
		Total copper (%)
<b>Resources</b>		
Inferred .....	4.4	1.73

The following table sets out the sulfide ore resources of the Muliashi South deposit as of December 31, 2011.

	Ore (Mt)	Average grade	
		Total copper (%)	Oxide copper (%)
<b>Resources<sup>(1)</sup></b>			
Indicated .....	0.6	2.48	0.07
Inferred .....	0.1	2.50	0.01

*Note:*

(1) According to the Competent Person's Report, the sulfide ore resources of the Muliashi South deposit are unlikely to be mined due to subsidence near the surface.

### **Lufubu**

The Lufubu deposit is situated in the western part of the Muliashi license area (license number 8393-HQ-ML). Initial geological investigation was conducted in the area during the period from the 1930s to 1970s, followed by preliminary exploration of Lufubu North and Lufubu South. We plan to undertake further exploration in this area.

### **Ore Processing Operations**

We own a number of ore processing facilities, including the Chambishi Processing Plant, the Baluba Center Processing Plant and the SML Chambishi Processing Plant. We are also upgrading and expanding our existing plants and supporting infrastructure, and constructing new facilities.

#### ***Chambishi Processing Plant***

##### *Overview*

Chambishi Processing Plant started operations in 1965, initially using trench leaching to process oxide ores and mixed ores from open-pit and underground mining operations. In 1987, the plant was shut down and production ceased. NFCA took over the plant in 1998 and, following extensive reconstruction and upgrading works, the Chambishi Processing Plant commenced operations again in 2003.

In 2009, 2010 and 2011, the Chambishi Processing Plant produced 53.3 kt, 50.3 kt and 61.1 kt of copper concentrate, equivalent to 23.5 kt, 22.0 kt and 23.2 kt of contained copper in concentrate,

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respectively. The following table sets forth the details of the Chambishi Processing Plant's copper concentrate production for the periods indicated.

	Year ended December 31,		
	2009	2010	2011
Ore processing capacity <sup>(1)</sup> (kt) . . . . .	2,145.0	2,145.0	2,145.0
Treated ore (kt) . . . . .	1,358.7	1,330.5	1,569.2
Head grade (Cu %) . . . . .	1.81	1.75	1.67
Concentrate (kt) . . . . .	53.34	50.33	61.12
Concentrate grade (Cu %) . . . . .	44.06	43.78	38.03
Contained copper in concentrate (kt) . . . . .	23.5	22.0	23.2
Copper recovery rate (%) . . . . .	95.57	94.61	88.69

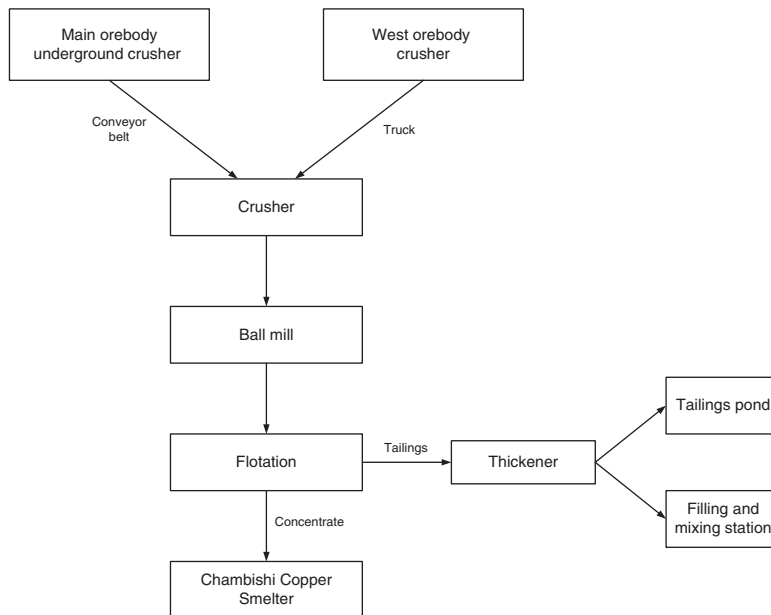
*Note:*

(1) Processing capacity relates to the annual processing capacity at the end of the year.

### *Concentration Process*

Concentrating is the first major stage of our processing operations. It is a process through which raw ores are reduced to smaller particles that can be separated into minerals and waste. Concentrating consists of crushing and milling the ores and separating the copper ores from waste materials by a flotation process, followed by classification and dewatering, resulting in a copper concentrate.

The diagram below briefly illustrates the concentration process employed by the Chambishi Processing Plant:



The Chambishi Processing Plant processes sulfide ores from the Chambishi Main Mine and the Chambishi West Mine. The ores are crushed in three stages into sizes no larger than 14 mm and transported to vibrating screens for pre-screening. Ore grains larger than 14 mm are fed to crushers again, and those of a smaller size are transferred to ore bins.

The ores are then transported to a ball mill, which grinds them to the consistency of powder. The finely ground ores are blended with a flotation reagent and pumped to flotation cells, which separate

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copper and waste materials, producing rough concentrates and tailings. The rough concentrates are then pumped to a flotation column for cleansing and to a thickener for condensation prior to being filtered by a frame filter press.

The final copper concentrate is sold to the Chambishi Copper Smelter. Tailings from flotation are pumped to a tailings pond for storage.

### *Tailings Storage Facility*

The tailings storage facility of the Chambishi Processing Plant is situated in the Musakashi River valley, approximately 7 kilometers from the plant. NFCA has made a series of improvements to the storage facility, which was originally designed in 1989, heightening and reinforcing the tailing dam and expanding the storage capacity to 5.73 million cubic meters. New tailings storage facilities are planned to be built in 2018 approximately 2 kilometers from the current facility, in case additional storage capacity is needed.

### **Baluba Center Processing Plant**

#### *Overview*

The Baluba Center Processing Plant was constructed in the early 1930s as part of the Roan Antelope Mining Complex. Following the acquisition of the plant by Luanshya in 2009, we have carried out extensive upgrading of the plant's equipment in order to resume production. The plant processes sulfide ore from the Baluba Center Mine and produces copper concentrate using a process similar to that of the Chambishi Processing Plant. The copper concentrate produced by the plant is sold to CCS for smelting, while tailings are dewatered prior to being pumped to tailings storage facilities.

As of December 31, 2011, the production capacity of the Baluba Center Processing Plant was 86 kt of copper concentrate. In 2009, 2010 and 2011, the Baluba Center Processing Plant produced 0.6 kt, 49.3 kt and 63.0 kt of copper concentrate equivalent to 0.1 kt, 10.0 kt and 16.0 kt of contained copper in concentrate, respectively. The following table sets forth the details of the copper concentrate production at the Baluba Center Processing Plant for the periods indicated.

	Year ended December 31,		
	2009	2010	2011
Ore processing capacity <sup>(1)</sup> (kt) . . . . .	1,500.00	1,500.00	1,500.00
Treated ore (kt) . . . . .	6.58	765.45	1,247.16
Head grade (Cu %) . . . . .	1.42	1.40	1.36
Head grade (Co %) . . . . .	0.13	0.10	0.11
Concentrate (kt) . . . . .	0.61	49.34	63.02
Concentrate grade (Cu %) . . . . .	14.57	20.30	25.42
Concentrate grade (Co %) . . . . .	1.07	1.09	0.90
Contained copper in concentrate (kt) . . . . .	0.10	10.0	16.0
Copper recovery rate (%) . . . . .	94.81	93.48	94.43
Cobalt recovery rate (%) . . . . .	76.05	67.56	40.14

*Note:*

(1) Processing capacity relates to the annual processing capacity at the end of the year.

### *Tailings Storage Facilities*

The tailings storage facilities of the Baluba Center Processing Plant are located in the Musiyakupatwa River valley, approximately 7 kilometers northwest of the plant, and currently store



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115.3 Mt of tailings. We are in the process of upgrading the storage facilities to increase their capacity.

### ***SML Chambishi Processing Plant***

In May 2011, we completed the construction of the SML Chambishi Processing Plant with an annual processing capacity of 330 kt of ore. The plant is located at the Chambishi West Mine and uses flotation to process mixed ores. The flotation process is substantially the same as the flotation process used by the Chambishi Processing Plant. Tailings are pumped to the existing leaching agitation plant for copper extraction using the leaching method. The flotation process is expected to produce 2 kt contained copper in concentrate per year. Copper concentrate from the SML Chambishi Processing Plant is treated at the Chambishi Copper Smelter and tailings are utilized by the Chambishi Leach Plant.

### ***Chambishi Southeast Processing Plant***

We are currently planning to construct the Chambishi Southeast Processing Plant, which will process raw ores from the Chambishi Southeast Mine. The plant will use flotation method to process sulfide ores and produce copper concentrate, which will be sold to Chambishi Copper Smelter. The expected annual production capacity of copper concentrate and contained copper in concentrate is 261 kt and 63 kt, respectively. We expect to complete the construction and commence production in 2016, with targeted output of 29.5 kt in 2016.

## **LEACHING OPERATIONS**

### **Chambishi Leach Plant**

#### ***Overview***

We conduct our copper leaching operations through SML which is 67.75% owned by us (55% direct interest plus 15% indirect interest through NFCA, in which we hold an 85% stake) and 30% owned by Hainan Sino-Africa Mining. SML owns the Chambishi Leach Plant which is located within the Chambishi mining area and uses a leaching process that involves heap leaching, agitation leaching and solvent extraction/electrowinning to produce copper cathode.

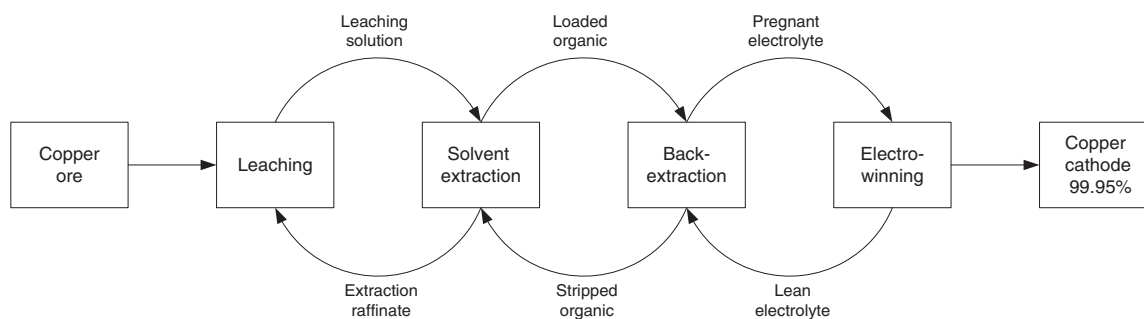
We completed the construction of the SML plant facilities in mid-2006 and production commenced in late 2006. The Chambishi Leach Plant had an initial annual design production capacity of 5 kt of copper cathode, which has been significantly enhanced through technology upgrading. Raw materials processed at the Chambishi Leach Plant include tailings from the Chambishi mining area, as well as oxide ore and mixed ores.

In 2009, 2010 and 2011, the Chambishi Leach Plant produced 6.5 kt, 7.1 kt and 7.0 kt, respectively, of copper cathode.

#### ***Leaching Process***

The Chambishi Leach Plant uses the hydrometallurgical method, which includes agitation leaching of tailings, heap leaching of oxide ore, leaching solution extraction and back-extraction, and the resultant solution's electrowinning.

The diagram below briefly illustrates the leaching process employed by the Chambishi Leach Plant:



### *Agitation Leaching*

In agitation leaching, tailings are first transported by trucks to a place near the agitation leaching plant where they are sprayed with a raffinate solution. The resulting slurry is pumped to an agitation leaching tank, where sulfuric acid is added and solid copper minerals are turned into copper sulfate solution. After the leaching, the slurry is pumped to a thickener, from which the copper-containing solution is transferred to a sedimentation tank for further clarification. The resulting solution is then transferred to an extraction plant.

### *Heap Leaching*

In the first step of the heap leaching process, a crusher is used to crush the oxide ore to grain size no larger than 50 mm. Oxide ore is then transported to a heap, where it is sprayed with an extraction raffinate from the extraction plant. When the solution flows from the top to the bottom of the heap, sulfuric acid in the raffinate reacts with copper minerals, producing dissoluble copper sulfate, which is collected in a liquid storage container next to the heap. After sedimentation and clarification, the copper-containing solution is transferred to the extraction plant.

### *Solvent Extraction/Electrowinning*

At the extraction plant, extraction and back-extraction/recycling processes are used to purify the copper leach solution. The copper-containing solution is then pumped to electrolytic cells, where electrical current is passed through the solution to deposit clean copper on pure copper plates. Copper content of the resulting refined cathodes is above 99.95%.

### **Tailings Storage Facilities**

The tailings storage facilities of the Chambishi Leach Plant are situated close to the agitation leaching plant and cell leaching tailings pile, and consist of a tailings pond surrounded by dams. The pond has been in service since 2006 and has gradually expanded to the current size of 450,000 sq m.

### **Muliashi Leach Plant**

The Muliashi Leach Plant is part of the Muliashi Project and uses leaching process involving heap leaching, agitation leaching and electrowinning for production of copper cathode. The plant processes oxide ores from the Muliashi North Mine and in the future will also process ores from the planned Baluba East Mine.

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The plant's annual ore processing capacity and copper cathode production capacity is 4,500 kt and 40 kt, respectively. The plant commenced production in March 2012 and is expected to produce approximately 19 kt, 33 kt and 40 kt of copper cathode in 2012, 2013 and 2014, respectively.

The following table sets forth the designed annual production capacity and technical specifications of the Muliashi Leach Plant.

	<u>Technical specifications</u>
Heap leaching	
Feed ore (kt) .....	3,060
Ore grade (Cu%) .....	1.23
Copper leaching rate (%) .....	72.0
Agitation leaching	
Feed ore (kt) .....	1,440
Ore grade (Cu%) .....	1.36
Copper leaching rate (%) .....	82.0
Copper recovery rate from SxEw	
Copper extraction recovery rate (%) .....	98.0
Copper electrowinning recovery rate (%) .....	99.5
Copper cathode output (kt) .....	40.0

### **DRC Project**

The DRC Project is a leaching plant in the DRC owned by Huachin, a joint-venture subsidiary of SML, in which SML holds a 62.5% interest. The construction of this project was completed in late 2011 and production commenced in February 2012. The DRC Project is expected to produce 9 kt of copper cathode in 2012 and is expected to reach full capacity of 10 kt of copper cathode by 2013. The DRC Project is also expected to produce cobalt contained in cobalt salt in the future. We expect to further invest approximately US\$14 million in this project in 2012 and 2013.

### **Other SML Projects**

We are currently also undertaking other development projects intended at expanding the production capacity of our copper leaching operations, including the Mabende Project and the Kakoso Tailings Development Project.

#### ***Mabende Project***

The Mabende Project is a leaching project in the DRC, with a designed annual production capacity of 20 kt of copper cathode. The Mabende Project is under development and is expected to commence production in 2014. We expect the total investment for this project to be approximately US\$95 million from 2012 to 2014.

#### ***Kakoso Tailings Development Project***

The Kakoso Tailings Development Project is located approximately 25 kilometers north of Chingola and has resources of tailings of approximately 54.7 kt of contained copper. SML and Shenzen Resources Limited formed a joint venture for its development, in which SML holds an 88% equity interest. In 2010, SML conducted drilling in the Kakoso Tailing Dam. We expect the total investment for this project to be US\$17 million in 2012 and 2013. We expect the operation of this project to increase our annual copper cathode production capacity by 3 kt.

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The following table sets out the mineral resources of tailings of the Kakoso Tailings Development Project as of December 31, 2011.

Resources	Ore (Mt)	Average grade	
		Total copper (%)	Acid soluble copper (%)
Inferred .....	9.1	0.60	0.47

### SMELTING OPERATIONS

#### Chambishi Copper Smelter

##### Overview

We conduct our smelting operations through CCS which is 60% owned by us and 40% by Yunnan Copper Group. CCS owns the Chambishi Copper Smelter which is located approximately 4 kilometers east of the town of Chambishi and produces blister copper from copper concentrate using the ISA smelting technology.

CCS commenced the construction of main facilities in November 2006. In 2009, construction was completed and commercial production began. The Chambishi Copper Smelter has an annual design production capacity of 150 kt of blister copper and 300 kt of sulfuric acid. According to Wood Mackenzie, the Chambishi Copper Smelter is the only large-scale overseas copper smelter owned by a PRC enterprise.

In 2009, 2010 and 2011, the Chambishi Copper Smelter produced 108.4 kt, 165.1 kt and 150.9 kt, respectively, of blister copper, and 217.1 kt, 330.0 kt and 328.8 kt, respectively, of sulfuric acid.

##### Raw Materials for Smelting at CCS

Copper concentrate is the main raw material for the smelting operations at CCS. CCS procures the copper concentrate internally from our subsidiaries (including NFCA and Luanshya) as well as from Independent Third-Party suppliers. The table below sets forth the amount and percentage of copper concentrate procured from various suppliers in the periods indicated:

	Year ended December 31,					
	2009		2010		2011	
	Amount (US\$ million)	Percentage (%)	Amount (US\$ million)	Percentage (%)	Amount (US\$ million)	Percentage (%)
Our subsidiaries .....	100.3	14.5	219.8	19.4	285.9	26.1
Independent Third Parties .....	590.1	85.5	915.6	80.6	807.6	73.9
<b>Total .....</b>	<b>690.4</b>	<b>100.0</b>	<b>1,135.4</b>	<b>100.0</b>	<b>1,093.5</b>	<b>100.0</b>

##### Smelting Process

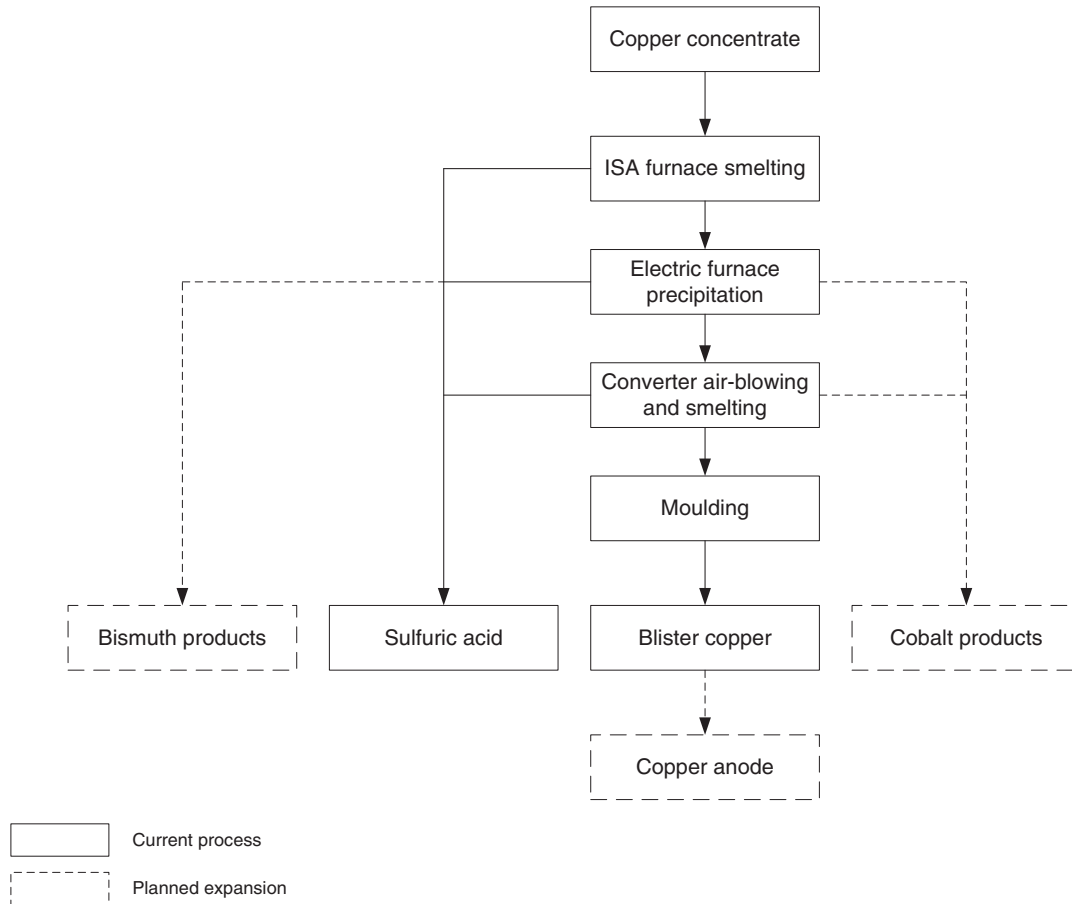
The Chambishi Copper Smelter uses the *ISA furnace oxygen injection and rich oxygen bath smelting — electric furnace precipitation — converter blow* technology and smelts copper concentrate from our mining operations, including the Chambishi Copper Mine and the Baluba Center Mine, as well as copper concentrate purchased from Independent Third Parties.

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The diagram below briefly illustrates the smelting process employed by the Chambishi Copper Smelter:



### *ISA Smelting*

Pyrometallurgical copper smelting uses copper concentrates as raw materials and quartz and limestone as fluxes. The concentrates are blended with fluxes and fed by a conveyor belt into the ISA smelting furnace, where they are melted, producing matte and slag. Matte is a mixture of metals and sulfides produced by smelting the sulfide ore of copper. Slag is a residue of the smelting process containing iron and other impurities.

The production of CCS's ISA furnace is designed to be suspended for maintenance once in a period during which the ISA furnace can be maintained at the normal operational condition. Since commencing operation in February 2009, the ISA furnace was suspended only once, in June 2011, in accordance with its maintenance schedule. The furnace was maintained at the normal operational condition between February 2009 and June 2011 and after the one-month suspension in June 2011.

### *Electric Furnace Precipitation*

The next step in the smelting process is separation of matte and slag in an electric furnace. Matte with copper content between 50% and 65% is then sent to a converter for further processing. Slag is cooled and transferred to a slag dump for storage.

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### *Converter Air-Blowing and Moulding*

In the converter, oxygen-enriched air is blown through the matte to remove impurities and produce blister copper which contains approximately 99% copper, along with converter slag and gas. The blister copper is then sent to a moulding workshop and poured into mould-forming copper plate.

### *Sulfuric Acid Production*

The gas generated in the smelting process is sent to a heat recovery boiler for cooling and dedusting, and then to the dust catcher for purifying prior to the production of sulfuric acid.

### **Expansion Plans**

We are currently undertaking the expansion of the Chambishi Copper Smelter to improve our production capacity of blister copper and sulfuric acid. The expected investment in 2012 is US\$69 million. The expansion is expected to be completed in late 2012 and is expected to increase our blister copper production capacity to 250 kt per year and sulfuric acid production capacity to 560 kt per year.

We have also commissioned research studies on the recovery of bismuth from smelting slag and smelting gas, and the recovery of cobalt from smelting slag. Tests are currently underway and we will consider further expansion plans based on their outcome. See “— Research and Development — Cobalt Development Plans”.

### **OUR MINING RIGHTS**

As of December 31, 2011, we had ten large-scale mining licenses in Zambia covering an aggregate area of approximately 218 sq km and one prospecting license covering an area of approximately 339 sq km. The following table sets out the details of our mining and prospecting licenses:

<b>Mining license No.</b>	<b>License type</b>	<b>Current license holder</b>	<b>Commencement date</b>	<b>Expiration date</b>	<b>Minerals granted</b>
7068-HQ-LML <sup>(1)</sup>	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
7069-HQ-LML	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
7070-HQ-LML <sup>(1)</sup>	Large-scale mining license	NFCA	June 29, 1998	June 29, 2023	Copper, cobalt and other minerals
8097-HQ-LML	Large-scale mining license	Luanshya	January 23, 2004	January 23, 2024	Copper, cobalt and other minerals
8396-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8394-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8393-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8395-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
8404-HQ-LML	Large-scale mining license	Luanshya	November 9, 2006	November 9, 2031	Copper and cobalt
8392-HQ-LML	Large-scale mining license	Luanshya	October 19, 2006	October 19, 2031	Copper and cobalt
15201-HQ-LPL	Prospecting license	SML	December 20, 2011	December 20, 2013	Copper

*Note:*

- (1) Mining licenses No. 7068-HQ-LML and 7070-HQ-LML have been merged and form a single license with license No. 7069-HQ-LML.

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Mining licenses in Zambia are usually granted for a period of 25 years and can be renewed for another 25 years if an application is made within one year prior to the expiration date. We paid ZMK5,400,000 (equivalent of US\$1,104) in license fees in respect of the three mining licenses owned by NFCA and ZMK15,120,000 (equivalent of US\$3,092) in license fees in respect of the seven mining licenses owned by Luanshya in March 2010. There are no caps on production in respect of our mining licenses.

### TRANSPORTATION

We use different transportation methods during different stages of our mining, processing, leaching and smelting operations and the sales of our copper products.

Copper ore is transported by conveyor belt from the Chambishi Main Mine to the Chambishi Processing Plant and from the Baluba Center Mine to the Baluba Center Processing Plant. Copper ore from the Chambishi West Mine and the Muliashi North Mine is transferred to the Chambishi Processing Plant and the Muliashi Leach Plant, respectively, by truck.

We use trucks to transport copper concentrate from both the Chambishi Processing Plant and the Baluba Center Processing Plant to the Chambishi Copper Smelter for smelting. We also use trucks to transport copper tailings, oxide ore and mixed ores to the Chambishi Leach Plant for processing into copper cathode.

Blister copper and copper cathode are transported by truck from the Chambishi Copper Smelter, Chambishi Leach Plant and Muliashi Leach Plant to ports in Durban (South Africa), Dar es Salaam (Tanzania) and Walvis Bay (Namibia) for shipment to China and other parts of the world. Major ports in China we have been using for shipping our copper products include Zhangjiagang, Shanghai, Zhanjiang and Tianjin.

Sulfuric acid, a by-product of our copper smelting operations, is transported from the Chambishi Copper Smelter to our customers, who are located in Zambia, the DRC and Malawi, by truck.

Our logistics providers include our related companies, who are members of the Retained Group, such as Sinotra, as well as Independent Third Parties, such as Cargo Management & Logistics and Maynard Eng Ltd. We generally conclude yearly contracts with our logistics providers. The transportation rates are set to reflect factors such as statutory port tariffs, surcharges incurred at time of transportation and major fluctuations in exchange rates. Charges on each shipment are calculated by reference to the weight of the cargo and the destination.

### ENERGY

#### Electricity

We consume a substantial amount of electricity in our mining, ore processing, leaching and smelting operations. As our production capabilities increase and our business grows, our consumption of electricity is expected to grow accordingly. We purchase electricity primarily from local power suppliers. During the Track Record Period, we did not experience any material power supply shortages that resulted in prolonged suspension of our production operations.

#### Water

We consume a substantial amount of water in our mines and processing facilities, primarily in ore processing and for dust suppression. Our Chambishi Processing Plant sources its water supply from

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groundwater, while the Baluba Processing Plant sources its water supply from the Luanshya water reservoir. Water for Chambishi Copper Smelter is provided by the Kafue River, one of Zambia's principal rivers and a tributary of the Zambezi. Water for the Chambishi Leach Plant is provided by NFCA.

### CAPITAL EXPENDITURE

The table below sets forth our capital expenditure during 2009, 2010 and 2011 and the estimated capital expenditure in the years ending December 31, 2012 and 2013:

Capital expenditure	Year ended December 31,						Year ending December 31,			
	2009		2010		2011		2012		2013	
	(US\$ '000)	(%)	(US\$ '000)	(%)	(US\$ '000)	(%)	(US\$ '000)	(%)	(US\$ '000)	(%)
NFCA . . . . .	61,176	53.4	66,078	42.1	87,109	21.8	153,000	35.2	168,000	52.0
Luanshya . . .	40,899	35.7	72,180	46.0	229,170	57.4	109,002	25.1	5,585	1.7
CCS . . . . .	9,709	8.5	14,496	9.2	37,672	9.4	68,678	15.8	88,535	27.4
SML . . . . .	2,669	2.4	4,157	2.7	45,307	11.4	103,650	23.9	61,000	18.9
<b>Total . . . . .</b>	<b>114,453</b>	<b>100.0</b>	<b>156,911</b>	<b>100.0</b>	<b>399,258</b>	<b>100.0</b>	<b>434,330</b>	<b>100.0</b>	<b>323,120</b>	<b>100.0</b>

### AWARDS

NFCA has received the following awards:

- recognized by the Chinese Embassy in Zambia as the Advanced Unit of China-Zambia Cooperation for 2010; and
- First-class Award for Industrial Science and Technology Award for 2011 from the China Nonferrous Metals Industry Association.

Luanshya has received the following awards:

- recognized by the Zambian National AIDS Council for contribution to the prevention of AIDS in 2010;
- recognized by the Rotary Foundation with a Certificate of Appreciation in 2011; and
- recognized by the PRC Embassy in Zambia in 2010 as an Excellent Chinese Enterprise in Zambia.

CCS has received the following awards:

- Luban Award for 2009 for overseas projects; and
- First-class and Second-class Awards for Science and Technology Advancement Award for 2010 from the China Nonferrous Metals Industry Association.

SML has been recognized as an Outstanding Taxpayer for 2010 by the Zambia Revenue Authority and our Executive Director, Mr. Xie Kaishou, has been recognized as an "Outstanding Chinese Entrepreneur" in 2009 by the PRC Embassy in Zambia.



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### RESEARCH AND DEVELOPMENT

As of December 31, 2011, we had a research and development team consisting of 111 members. In 2009, 2010 and 2011, we incurred expenses for research and development of approximately RMB100.7 million (equivalent to approximately US\$15.6 million), RMB97.4 million (equivalent to approximately US\$15.1 million) and RMB144.2 million (equivalent to approximately US\$22.3 million), respectively.

We believe we have strong research and development capabilities. We also possess core technologies, such as double swirl spray gun technique and combustion control technique, which are applied in our smelting process.

In addition, we are actively collaborating with research institutions as we believe this provides us with insight into industry trends and emerging new technologies, enabling us to focus our current and future research and development efforts more effectively. We plan to continue to focus on, independently or jointly with other research institutions, research and development of copper mining, processing, smelting and leaching technologies, such as bioleaching, and the technology for separation of copper and cobalt from copper-cobalt ores, including undertaking further research on recycling methods for the extraction of cobalt from copper concentrate and smelting slag.

### Bioleaching

In order to better utilize the abundant low-grade tailings in Zambia, we are collaborating with Chinese research institutions for the research and development of bioleaching technology. If successfully developed, bioleaching technology will improve our copper leaching process by enabling us to utilize different ore inputs more effectively. Bioleaching technology may also be able to increase oxide ore heap leaching recovery rate, which would lead to improved heap leaching productivity. Moreover, bioleaching technology may improve the rate of extraction of copper from low-grade tailings as well as sulfide copper ores, which we are currently unable to utilize in leaching operations. This technology may also be able to improve the physical hardness and granulation of the heap and therefore improve the overall productivity of the leaching process. Our total research and development expenditure for this technology in 2012 is expected to be approximately US\$3.5 million.

### Cobalt Development Plans

As part of our strategy to develop our abundant cobalt resources, we are currently pursuing several projects with an aim to start cobalt production in the future, including further research on recycling methods for the extraction of cobalt from smelting slag and copper concentrate. Tests are currently underway and we will consider further expansion plans based on their outcome. We currently expect to complete the research relating to cobalt development and commence industrial production in three to five years.

In April 2011, CCS entered into a cooperation agreement with Shijiyintian to jointly carry out semi-industrial tests on the recovery of cobalt from Chambishi Copper Smelter's smelting slag, which, according to SRK, has a cobalt content of 0.8%-1.2%. Under the agreement, Shijiyintian agreed to build testing facilities at CCS at its own cost and CCS agreed to supply utilities and raw materials as well as participate in the tests and take possession of all products produced during the testing period. The parties agreed to jointly establish a bioleaching plant for cobalt recovery after the semi-industrial tests are completed with satisfactory results, and only then negotiate the shareholding ratio and other arrangements in detail. The plant is expected to be commissioned in late 2013 and

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have an annual production capacity of 0.5 kt to 0.7 kt of contained cobalt. CCS currently expects to invest US\$51 million over 2014 and 2015 in cobalt recovery projects.

We are also actively working on the technology to separate copper and cobalt from copper concentrate produced by the Baluba Center Processing Plant (which contains approximately 1% of cobalt) and produce cobalt concentrate. We have also engaged research institutions with respect to the processing of cobalt concentrate into cobalt hydroxide.

The financing for cobalt development will primarily include proceeds of the Global Offering, our own funds and, if necessary, additional financing.

In addition to these projects, the DRC Project is expected to produce cobalt contained in cobalt salt in the future. See “— Leaching Operations — DRC Project”.

### **RAW MATERIALS, EQUIPMENT PROCUREMENT AND SOURCING**

#### **Raw Materials and Auxiliary Materials**

The raw material for the copper smelting operations at the Chambishi Copper Smelter is copper concentrate purchased from our mining operations, including the Chambishi Copper Mine and the Baluba Center Mine, and from Independent Third Parties. The raw materials for the copper leaching operation at the Chambishi Leach Plant are copper tailings, oxide ore and mixed ores from the Chambishi mining area and from Independent Third Parties.

Our mining, ore processing, leaching and smelting operations consume many types of auxiliary materials including oxygen, diesel and other fuel. The diesel fuel we consume in our transportation and production facilities is primarily supplied by Puma Energy Zambia PLC. In addition, gasoline is consumed in the Chambishi Copper Mine and Baluba Center Mine, and coal and kerosene are consumed in the Chambishi Copper Smelter and Chambishi Leach Plant. These are primarily purchased from local suppliers that are Independent Third Parties. Oxygen for our Chambishi Copper Smelter is supplied by our own oxygen station.

#### **Machinery and Equipment**

We purchase major machinery and equipment used in our operations through related entities within the Retained Group, such as CNMC International Trade, which in turn procures it from certain suppliers in China, such as China National Heavy Duty Truck Group Co., Ltd., HuaiBei Mining Machinery Produce Co., Ltd. and Beijing General Research Institute of Mining and Metallurgy. We set out the technical requirements of machinery and equipment we need to purchase and our budget and CNMC International Trade obtains fee quotes from the Chinese market and then purchases such machinery and equipment on our behalf. We carry out regular inspections, maintenance and repairs of the machinery and equipment used in our operations.

#### **Suppliers**

Our major suppliers mainly consist of suppliers of copper concentrate, chemical products, explosives, lubricating oil, electric wires and cables, pipes, rubber products, steel, wood, fuel, equipment installation, mining and exploration services and accessories. In the selection of our suppliers, we consider factors such as price, quality, reliability of supply, lead time, business scale, production capability and commercial reputation. During the Track Record Period we did not experience any shortages in supplies that resulted in prolonged suspension of our production operations.

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Our five largest suppliers during the Track Record Period included suppliers of copper concentrate and other raw materials and equipment suppliers. In 2009, 2010 and 2011, purchases from our five largest suppliers accounted for 90.4%, 74.7% and 63.4% of our total purchases, respectively. During the same periods, purchases from our largest supplier accounted for 46.3%, 41.4% and 34.4% of our total purchases, respectively. Save for CNMC International Trade which was our fourth largest supplier in 2011, none of our Directors or any of their respective associates (as defined in the Listing Rules) or, so far as our Directors are aware, any Shareholder who owned 5% or more of our issued Share capital as at the Latest Practicable Date, has any interest in any of our five largest suppliers during the Track Record Period.

The principal terms of our contracts with suppliers are the terms of payment, delay penalties, testing and commissioning and acceptance of the completion. In general, we require a minimum performance security from the supplier prior to the commencement of the contract.

In 2009, 2010 and 2011, 14.5%, 19.4% and 26.1%, respectively, of the amount of copper concentrate used in the Chambishi Copper Smelter was supplied by our subsidiaries (including NFCA and Luanshya), while the remainder was purchased from Independent Third Parties. See “— Smelting Operations — Chambishi Copper Smelter — Raw Materials for Smelting at CCS”.

Except as disclosed in this prospectus, all of the suppliers are Independent Third Parties in which none of our Directors, Supervisors and their respective associates or shareholders who, to the knowledge of our Directors, hold more than 5% of our issued share capital, have any interest.

### **Third-Party Contractors**

In line with industry practice, we outsource most of our mining and exploration work (such as drilling) and most of our mine construction work to Independent Third Party contractors, such as Zambian Nonferrous Metals Exploration & Construction Limited, as well as to members of the CNMC Group, such as Fifteen MCC Africa. In 2011, NFCA entered into a mining contract with Jinchengxin in respect of the Chambishi Copper Mine, which provides for the development of tunnels, mining preparation and production, underground haulage, back-filling and maintenance of the ventilation system. The contract will expire in 2013.

Our Directors believe that outsourcing arrangements, if managed properly, can lower our operational costs and reduce our capital expenditures for machinery and equipment. For instance, in 2009, 2010 and 2011, NFCA paid aggregate fees of US\$42.7 million, US\$44.6 million and US\$56.0 million, respectively, to Jinchengxin (including its predecessor) for copper ores mining.

We typically select contractors through a tendering process taking into account the contractors' skills and experience. The Group does not have any review system or policy with respect to its contractors' safety record before engaging such contractors. All of our contractors must possess the requisite qualifications and capabilities for undertaking the work for which they are commissioned. We generally retain control over project design, production planning, on-site work monitoring and quality inspection and require third-party contractors to carry out their work according to the design and plan of the relevant assignment and in accordance with our quality standards and safety requirements. Pursuant to the agreements we entered into with our third-party contractors, third-party contractors are required to maintain insurance covering the safety and casualty of their employees that perform work for us. We are not responsible for and do not carry any insurance for the employees of third-party contractors. We have not experienced any material disputes with our contractors during the Track Record Period.

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In the Baluba Center Mine, all mining operations are undertaken by Luanshya's employees. All mining operations in the Muliashi North Mine are carried out by a contractor, Fifteen MCC Africa.

### SALES, DISTRIBUTION AND MARKETING

Our main products are blister copper, copper cathode and copper concentrate, of which blister copper and copper cathode are sold both to the PRC and other international markets, and copper concentrate is mainly sold to our Chambishi Copper Smelter for smelting into blister copper.

In 2009, we sold the majority of our copper cathode and blister copper to Independent Third Parties and the rest was sold to trading companies within the Retained Group. In 2010 and 2011, we sold the majority of our blister copper and copper cathode production to trading companies within the Retained Group. See "Connected Transactions — Non-exempt Continuing Connected Transactions — 1. CNMC Copper Supply Framework Agreement". Since we started commercial production of blister copper in March 2009, all of the copper concentrate produced by us is sold to the Chambishi Copper Smelter and currently we do not plan to sell any copper concentrate to third-party customers in the ordinary course of our business.

#### Sales Agreements

The agreements in respect of the sales of copper products to the Retained Group and customers who are Independent Third Parties typically include terms such as commodity and quality, quantity, delivery, shipment, price, payments and insurance. Under these sales agreements, the price of copper is generally determined with reference to the LME official cash settlement for Copper Grade A averaged over the quotational period which is generally one month determined with reference to the month of shipment. Depending on individual sales arrangements, payment may either be settled in full against presentation of specified documents including full set of bill of lading, or in stages whereby advance payment, provisional payment, supplementary payment and final payment are made in accordance with the terms of the contracts.

The following table sets forth the revenues and gross profit margins of our transactions with the Retained Group during the periods indicated.

	Year ended December 31,		
	2009	2010	2011
	(US\$ '000)	(US\$ '000)	(US\$ '000)
<b>Revenue:</b>			
Blister copper .....	181,631	726,335	626,874
Copper cathode .....	18,644	24,409	28,007
<b>Total</b> .....	<u>200,275</u>	<u>750,744</u>	<u>654,881</u>
<b>Gross profit margin:</b>			
Blister copper .....	17.0%	16.2%	11.9%
Copper cathode .....	64.7%	66.4%	50.9%
<b>Total</b> .....	21.4%	17.8%	13.6%

Our copper products are priced by reference to the LME-quoted price of copper during the Track Record Period. The terms of the sales contracts with the Retained Group provided that the selling price is determined on a Cost, Insurance and Freight (CIF) basis, which is higher than the average selling prices to our other customers determined on an Ex Works (EXW) basis. Under EXW basis, as we are not required to incur the freight charges to the port of destination, we usually provide a

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discount from the LME-quoted prices ranging from US\$200 to US\$260 per tonne to other customers. Under CIF basis, pursuant to which we are required to bear shipping and insurance costs, no such discount is provided to the Retained Group, which led to higher average selling price. The average freight and insurance charges incurred during the Track Record Period ranged from US\$196 to US\$264 per tonne. Our Directors are of the view that the different methods in determining the selling prices do not distort our historical performance.

### Major Customers

Our major customers during the Track Record Period included Trafigura AG Switzerland, LN Metals International Ltd, the Retained Group, Yunnan Copper Group, Transamine Trading SA (Swiss) and two other European trading companies, the principal business locations of which are the United Kingdom, Switzerland, and the PRC. Save for the Retained Group and Yunnan Copper Group, the rest of the above customers are Independent Third Parties. We commenced selling our products to our major independent customers between 2004 to 2009. We commenced sales to the Retained Group in 2006 and direct sales to Yunnan Copper Group in the second quarter of 2011. Before that, the Yunnan Copper Group purchased our products from the Retained Group and was not our direct customer. During the Track Record Period, our major sales markets included the PRC, Switzerland, the United Kingdom, Zambia, South Africa and Luxembourg. Our independent major customers, including those in Switzerland, are commodity traders whose business is to resell our copper products to third parties. We believe that each of our independent major customers, or a combination of a few of them, has the capacity to purchase at least a very significant portion of our production output as they are international trading companies and there have been instances in the past when we had to turn down part of their orders as their demand was greater than our supply capacity. Nevertheless, to minimize customer concentration risk, we diversify our sales to these few major customers, which were carefully selected with regard to their demand, creditworthiness, financial ability and reputation. We may selectively diversify our sales to other additional high quality customers in future should the need arise. However, we do not see the commercial need to overly diversify our customer base at this stage, which would bring additional administrative burdens.

Even though the Retained Group has copper production operations in the PRC and the copper products produced by us and the Retained Group are both sold in the PRC market, we believe that it is unlikely that there will be extreme competition between the copper products of our Group and that of the Retained Group in the PRC in view of the shortfall in copper supply in the PRC. The PRC, which is our major market, has severe supply shortfalls in both refined copper and copper concentrate. According to Wood Mackenzie, the refined copper supply shortage was 2,513 kt and copper concentrate supply shortage was 1,687 kt in 2011 on a contained copper basis. In the near future, a considerable shortfall between domestic supply and demand for copper in the PRC is also expected. For example, the supply deficit of copper concentrate in the PRC is expected to increase from 1.7 Mt in 2011 to 2.8 Mt in 2015. According to Wood Mackenzie, this shortfall will have to be met through imports of raw materials and refined metal. See “Industry Overview — China Copper Market Overview”. We maintain close commercial relationships with various copper refiners in the PRC, which are customers for blister copper, and downstream copper processing plants, which are customers for copper cathode. We believe that we will be able to sell our products directly to these refiners and copper processing plants upon needs in the unlikely event that we are unable to conduct sales via trading companies. In addition, copper cathode is actively traded on the LME, Shanghai Futures Exchange and COMEX, which can provide additional means of distribution for our Group’s copper cathode products.

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Accordingly, we are of the view that we do not rely on any of our major customers, including the Retained Group, in view of the following:

- (a) copper is a commodity and can be sold on public markets at a transparent market price;
- (b) our Group may easily find other replacement customers given the demand for copper exceeds its supply globally and in the PRC, our major market; and
- (c) the loss of any one major customer will not affect the financial performance of our Group materially as our other existing or past customers can absorb more of our Group's supply on no less favorable terms.

Even though we believe each of our independent major customers, or a combination of a few of them, has the capacity to purchase at least a very significant portion of our production and we are able to sell our copper products directly or indirectly in any relevant trading platforms such as the LME, we still sell to the Retained Group and have no intention to cease doing so in view of the more flexible payment settlement terms and the reduced counterparty risks offered by the Retained Group. Due to our affiliation with the Retained Group, the Retained Group is more ready to, at our request, make advance payments instead of issuing letters of credit to us, which allows us to better manage our working capital. The letters of credit that we have with independent customers usually have a 45-day settlement period. The advance payment made by the Retained Group thus allows us to save on the interest on bank loans which we may otherwise have to pay. However, in the event that the Retained Group ceases to make advance payments to our Group and issues only letters of credit to our Group, our Directors believe that there will be no material impact on the financial performance of our Group. In addition, due to the nature of commodity transactions, the settlement amount is usually relatively high. Consequently, settlement risk is an important consideration for us. While our independent major customers were carefully selected based on a number of factors including their creditworthiness, we believe that the risk of default by the Retained Group is even lesser as the Retained Group is a state-owned enterprise in the PRC. The more flexible payment settlement terms and the reduced counterparty risks offered by the Retained Group together with its increasing demand for our products fueled by the shortage of copper supply in the PRC are the primary reasons that led to the Retained Group having been our single largest customer since 2009.

### Hedging

Depending on market conditions and copper price movements, from time to time we enter into short-term copper futures contracts to hedge our net exposure to copper price fluctuations due to the difference between the amount of copper concentrate we expect to procure from external suppliers and the amount of blister copper we expect to sell to external customers. Forward sales contracts establish a selling price for future production at the time they are entered into, thereby reducing the impact of declining prices but also eliminating potential gains on price increases. We have strict internal control procedures in respect of hedging activities and regularly examine our hedging strategy. In addition, we closely monitor our hedging activities and do not hold or issue financial instruments or derivative financial instruments for trading purposes. We expect to continue to hedge our exposure to copper price fluctuations in the future through the use of copper futures contracts.

Currently only CCS engages in hedging activities. CCS has set up a futures trading group headed by the general manager of CCS and its members include the Assistant General Manager, Finance Manager and Sales Manager of CCS. All major hedging activities are subject to the approval of the futures trading group, such as the execution of hedging transactions and formulation of annual



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hedging plans. Pursuant to the hedging policies of CCS, the general manager of CCS, who is held accountable by and reports to the board of CCS, is responsible for approving the hedging plans that have been approved by the majority of the futures trading group members. The futures trading group may establish various posts such as trading, settlement, market analysis, audit and risk management if required to help to monitor the hedging transactions undertaken by CCS. Regular reports must also be prepared and the risk management post is required to monitor the risks daily, submit monthly report and alert any major events such as unusual or sudden price volatility to the futures trading group as soon as possible so that the necessary remedial actions may be taken. CCS's main objective in undertaking hedging activities is to minimize risks and it has never been engaged in speculative activities before. We conduct our hedging transactions on the futures exchange in London on which the clearing house serves as the central counterparty. The risk management post of the futures trading group of CCS sets cut-loss limits for hedging activities based on our outstanding futures positions, amount of unrealized gains or losses, credit limits, amount of deposits in futures margin account and prevalent market conditions.

### **Marketing Activities**

Due to our sales and distribution model, we have not engaged in any marketing activities during the Track Record Period.

### **QUALITY CONTROL**

Recognizing that a long-term and stable supply of copper products with consistent physical characteristics is crucial to our customers, we have implemented a quality control system to ensure that the characteristics and specifications of our copper products are able to meet the requirements of our customers.

We have a quality control team at each subsidiary responsible for quality supervision, examination and management. Our quality control team regularly prepares quality control reports for our management to review. A coordination meeting is held approximately once a month and our quality control department reports the result of its weekly examination and inspection in the meeting. Our operations have been certified as being in compliance with our own corporate standards.

We have also implemented internal production rules to ensure product quality. These rules are equally applicable to our employees and the employees of our third-party contractors. All the employees of our third-party contractors are under our management and supervision, and are required to follow the safety rules in our mining and exploration operations and conduct work in strict compliance with our technical standards. We hold meetings with the third-party contractors to solve technical problems. We also conduct regular internal appraisals in accordance with the requirements under Zambian and our own standard quality-management systems every month and have implemented preventive measures to reduce production risks.

### **STORAGE AND INVENTORY CONTROL**

Our inventory is comprised of raw materials, work-in-progress and finished products. Our inventory control policy is to maintain sufficient inventories for our production and sales while minimizing inventory levels. We have designated staff responsible for maintaining suitable storage conditions for all our inventories stored in our facilities.

In 2009, 2010 and 2011, our inventory turnover days, calculated as average inventory at the beginning and end of period divided by cost of sales and multiplied by the number of days for the

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period generating sales, were 62.3 days, 56.4 days and 56.9 days, respectively. See “Financial Information — Financial Ratios — Turnover Ratios — Inventory Turnover Days”.

### **CORPORATE SOCIAL RESPONSIBILITY**

We believe that conducting our operations in a way that promotes sustainable corporate and social development is essential to our success. Our goal is to operate transparently and ethically, promoting regional development and maintaining positive relationship with the local government, community and suppliers.

We guide, coordinate and assess corporate social responsibility (“CSR”) planning, practice and performance of our subsidiaries. Our top management is responsible for developing and planning CSR strategies. We have implemented a number of internal policies to take responsibility for the impact of our business activities on the environment, employees and local communities.

#### **Community and Public Awareness**

We maintain an ongoing dialogue with the public, government agencies and regulators. We believe directly engaging in the communities in which we operate is important. We are committed to communities near our mining operations, our employees and their families, the investment community, local and central governments, our suppliers, contractors and consultants and interested non-governmental organizations.

#### **Compliance with Environmental Laws and Regulations**

In order to minimize any damage to the environment caused by our operations, we carefully design mine and plant plans, implement pollution control recommendations from internal and external sources, monitor the effects of mining on mining areas and carefully design mine closure plans. We have also conducted several environmental impact studies relating to our assets and community infrastructure development projects and closely monitor the continuing impact of our operations. We employ a full time environmental manager tasked with monitoring and implementing environmental compliance. In addition, our entire workforce is charged with complying with our environmental policies. All employees receive environmental training at orientation and annual refresher training on environmental compliance.

In complying with environmental laws and regulations, we incurred US\$0.3 million, US\$0.9 million and US\$1.2 million for 2009, 2010 and 2011, respectively. Based on our experience, we expect that the future costs of compliance with environmental laws and regulations will remain similar to historic levels on a per unit of copper product basis.

#### **Environmental Policy**

We are committed to conducting our operations in a manner that complies with environmental laws and regulations, and endeavor to mitigate the adverse impact of our operations on the environment. Mining, ore processing, leaching and smelting operations inherently generate surface subsidence, solid waste, dust, waste matter and other industrial pollution and require disposal of waste and hazardous materials. We have obtained all requisite environmental permits and approvals to conduct our business, and our mining and production facilities, construction, operation, processes and equipment are in compliance with relevant national environmental and safety standards. We are committed to performing all of our mining and exploration activities in an environmentally conscious manner and returning the environment to a natural state as required by Zambian laws. We believe that conducting our activities in an environmentally responsible manner is integral to



good business management. All our employees and contractors are encouraged to accept, as their shared responsibility, that minimizing environmental harm is a priority when performing all activities.

### **Health and Safety Standards**

We believe that our most important assets are our employees. We consider injuries to our employees and/or damage to our physical assets a threat to our reputation and success. We will continue to provide effective training and appropriate and sufficient resources for people to work safely and effectively.

We insist that all employees and contractors must accept as their shared responsibility that zero harm and loss is a priority when performing all work-related activities. To achieve this target it is essential that our employees and contractors believe that all loss is preventable and accept responsibility for their personal safety and the safety of others and to protect the integrity of our physical assets at all times.

Each of our subsidiaries has a Safety Monitoring Division, which is responsible for the safety of our mining operations, processing plants and tailing dams, and which performs regular reviews of safety responsibilities for each plant. In addition, we have a number of safety-related training programs for our employees, including training programs, which new employees are required to complete before they start working, as well as special training programs for employees with roles that require obtaining certificates or licenses (such as the use of explosives). All our employees are provided with personal protective equipment adequate to the tasks they perform and areas where they work, such as anti-acid overalls and work shoes for employees who engage in the treatment of corrosive waste acid and transportation and storage of finished acid, hearing protection equipment for operators and high-temperature protective clothing and masks for employees exposed to high temperatures. We also provide our employees with dustproof equipment, even though not required under Zambian law. Employees without adequate personal protective equipment are prohibited from entering any work areas and are subject to penalties. We have also promulgated our internal Rules on Distribution of Personal Protection Equipment, which include detailed types of equipment required for various positions and areas as well their replacement cycles and clear procedures with respect to applying for personal protective equipment if the old one is lost or damaged. In addition, we organize regular examination of silicosis for our employees and offer first aid training.

We have policies and programs in place to ensure compliance with applicable Zambian laws and regulations as well as to track and improve overall performance, including our Health and Safety Policy and Plan, Emergency Response Plans and various hazard registers. Our health and safety policies, programs and reporting schemes seek to identify areas of non-compliance or areas for general improvement. These measures are also used to identify deficiencies by providing appropriate information and specialist advice to determine appropriate corrective actions.

We are in the process of implementing certain internal control measures, one of which is a bi-weekly review of our compliance with the relevant laws and regulations by the Chief Compliance Officer. Please refer to the paragraph “— Legal and Compliance” below and the section entitled “Directors and Senior Management” for more information about our Chief Compliance Officer, Compliance Committee and internal control measures. In addition, our Mine Manager, who is required under relevant Zambian mining safety laws to have the requisite mining and engineering qualifications, is entitled to carry out inspections at any time and suspend production due to a potential hazard. See the section headed “— Employees — Injuries” for additional information on our Mine Managers, our continuous improvements to reduce the number of accidents in our operations and our other measures to improve the safety condition of our working place.

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We have engaged SRK to review and improve certain aspects of our health and safety standards and have implemented their recommendations in order to ensure our health and safety policies are in line with international standards. These recommendations include improving accident response equipment, housekeeping procedures for entrance areas, safety procedures for visitors, signage at hazard points, waste management and ensuring that all employees are equipped with sufficient personal protective equipment. Based on SRK's recommendations and the Company's corrective action plans, and having made reasonable enquiries, the Sponsors have reasonable grounds to believe that, upon full implementation of those measures and monitoring by SRK and/or the external expert to be appointed in 2012, the Group will have occupational health and safety measures that are adequate, effective and fit for the Group's current operations.

In a letter dated March 9, 2012, the Mines Safety Department of Zambia has confirmed that we are in compliance with the general Zambian safety, health and environmental requirements. Our total health and safety compliance costs in 2009, 2010 and 2011 were US\$1.9 million, US\$3.6 million and US\$3.4 million, respectively.

### **Community Development**

We are committed to developing long-term and positive relationships with the communities in which we operate. Since entering Zambia in 1998, we have invested in a number of infrastructure projects, including a road between Chambishi and Kitwe, a transportation center in Kitwe, bus shelters in Chambishi and Kalulushi, a farmers' market for the Garneton community, and power facilities in Chambishi, as well as other public facilities. We have also made a number of social contributions over the same period.

We have planned and implemented a number of community development programs focusing on employment, education and health. Our goal is to generate employment in the areas in which we operate, thereby directly contributing to the development of the communities surrounding our mines. We believe that, besides all the accompanying programs and projects, creating employment opportunities for the community is one of the major contributions to local development and wealth. As of December 31, 2011, we employed approximately 94% of our workforce locally. Our remuneration system covers a wide range of welfare aspects and includes, among other benefits, housing subsidies, meal subsidies, education allowances, overtime pay, annual leave and transportation subsidies. In addition, our employees and their families can enjoy free medical care and ambulance emergency services. Each year we organize physical examinations and occupational diseases checks for our employees and also take steps to prevent occupational diseases.

We have participated in improving the local education system, providing support to educational programs at all levels. We have provided funding for local secondary schools and technical schools, and established scholarships for outstanding university students majoring in mining, mineral processing and electrical engineering. We also select outstanding employees and university graduates to go to China for advanced studies.

We are supporting prevention of AIDS, malaria, polio and other serious diseases in the local communities. Each year, we carry out activities to raise awareness of disease prevention and promote healthy lifestyles. These included, among others, donating computers and other office equipment to the *Organization of African First Ladies against HIV/AIDS*, contributions to Kalulushi Hospital's AIDS-prevention program and donating spraying equipment to the local government in support of the anti-malaria program of Zambia's Ministry of Health. In April 2011, we participated in an eye care event *Brightness Mission 2011*, in which we sponsored 109 free cataract surgeries for members of the local community.

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We promote the growth of local suppliers, giving them preferential treatment in the procurement process, thereby creating a large number of new employment opportunities, although we are not obligated to provide such preferential treatments and we have not entered into any agreement with the Zambian government for the provision of the preferential treatment. We intend to, as part of our community development efforts and on a voluntary basis, prefer to procure from local suppliers rather than other suppliers if the terms and conditions offered by the local suppliers are at least as favorable as those offered by other suppliers. These local suppliers, owned and operated by local Zambian citizens, are of various scales and provide various auxiliary materials, such as gasoline, coal and kerosene. Our gross profit margin or results of operation are not expected to be materially affected since there should be no material differences between the prices and other terms offered by these local suppliers and those offered by other suppliers.

While the above initiatives are generally voluntary, Luanshya also has certain obligations arising from the Agreement Relating to Investments and Concessions for the Luanshya Copper Mines Plc, such as the improvement of medical services in the community, construction of infrastructure, running a trust school and the Luanshya Craft School, as well as ensuring the availability of basic sports and recreational services to our employees and their families. See “Our History and Reorganization — Shareholding History of Our Zambian Subsidiaries — Luanshya”.

### INSURANCE

We have obtained property all risks insurance covering material damage, machinery breakdown and employers liability for the period from January 1, 2012 to December 31, 2012. We have also obtained motor vehicle insurance. It is the market practice in Zambia that the insurance contract is signed on an annual basis and we intend to renew all of our insurance policies upon their expiry.

During the Track Record Period, we did not make any material claims under our insurance policies. We will continue to assess our risk portfolio and make necessary and appropriate adjustments.

### COMPETITION

Our primary products for external sale are copper products, including blister copper and copper cathode. We compete on the basis of product quality, stability of supplies and reliable and timely delivery. We believe that our vertically-integrated business model provides us with significant competitive advantages, enabling us to better control our production costs, shorten the supply and inventory cycle in our production process and effectively allocate our product mix. In addition, as a general legal requirement worldwide, mining enterprises must obtain exploration and mining licenses to conduct exploration and mining activities. We believe that these governmental measures and industry barriers to entry are beneficial to us and have the effect of strengthening our competitiveness against smaller copper producers.

While we believe that we have a unique position in the copper market, as a supplier of copper we are still subject to the same competitive dynamics as other participants in the industry. Since substantially all of our operations are located in Zambia, we face competition in Zambia. We believe that the major copper producers operating in Zambia include Vedanta Resources plc, First Quantum, Glencore International plc and Equinox Minerals Limited. If more copper mining companies enter into Zambia or existing copper mining companies in Zambia expand their operations and production capacity, we will face strong competition in terms of acquiring copper resources, recruiting local employees and purchasing raw materials and ancillary materials. Since we sell and intend to continue selling a majority of the copper we produce in China, we also face competition in the Chinese market. Competition in the Chinese copper industry is based on many

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factors including, among others, price, production, capacity, copper quality and characteristics, transportation capability and costs. Due to their location, some of our Chinese competitors may have lower transportation costs than we do. We also face competition in the international market. The international market for copper products is an open market, and the prices of copper products are principally dependent on supply and demand in the marketplace. Some of our international competitors may have greater copper production capacity as well as greater financial, marketing, distribution and other resources than we do, and may benefit from more established brand names in the international market.

### EMPLOYEES

As of December 31, 2011, we had 5,137 employees, of whom 324 were Chinese citizens and the remaining 4,813 employees were from Zambia.

The positions occupied by our local Zambian employees mostly include machine operator, truck driver, construction worker and other labor-intensive positions. Our local Zambian employees are employed under employment contracts negotiated between us and local labor unions in Zambia which set out fully, among other things, the employee's responsibilities, remuneration, benefits and grounds for termination of employment.

In addition, as of December 31, 2011, we had 5,579 persons working in our operations employed by our contractors. These workers are employees of the third-party contractors and we have no employment relationships with them according to our Zambian counsel. The positions occupied by such workers are generally the same as the positions occupied by our local Zambian employees.

The Group's Zambian legal adviser is of the view that, based on the standard contracts and collective agreements reviewed, the Group is in compliance with the minimum requirements under all relevant Zambian laws and regulations relating to the Group's employment of its employees.

### Employee Remuneration Policy

Our remuneration policy is designed to attract, retain and motivate highly talented individuals to ensure the capability of our workforce to implement our business strategies. Key principles of our remuneration policy are to:

- set competitive rewards to attract, retain and motivate highly skilled people;
- establish short and long-term incentive programs, including, but not limited to, the equity incentive plan;
- ensure that remuneration planning continues to be integrated within our business planning process; and
- ensure that total reward levels and performance targets are set at appropriate levels to reflect the competitive market in which we operate, the prevailing economic environment and the relevant performance of similar companies.

We seek to accomplish the above goals by conducting annual remuneration reviews which take into account individual performance, the economic environment, the need for certain employees to travel and spend time in Zambia in general and at mine sites in Zambia in particular, as well as the industry standard for comparable job positions. For each of our subsidiaries, we have established a remuneration system which meets the requirements prescribed by applicable Zambian laws and

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regulations. In Zambia, the Minimum Wages and Conditions of Employment Act sets minimum wages and other conditions applicable to certain categories of employees. To our best knowledge, we are not aware of any instances of allegations against us that our subsidiaries have not complied with these minimum wage requirements. The wages at our subsidiaries have been negotiated with trade unions. We also provide other benefits to our employees, such as free medical care, housing subsidies, meal subsidies, transportation subsidies and education allowances.

### **Employee Retirement Benefit Schemes**

We maintain employee retirement benefit schemes for our seconded Chinese employees and for our local Zambian employees as required by relevant laws in the PRC and Zambia, as applicable. In 2009, 2010 and 2011, our employee retirement benefit schemes contributions were approximately US\$3.1 million, US\$7.1 million and US\$9.5 million, respectively. We have not experienced any default in making employee retirement benefit scheme payments nor received penalties from the PRC and Zambian governments for any violation of the social security related regulations.

### **Collective Agreements**

A substantial portion of our employees are members of trade unions. We negotiate collective agreements with representatives of the unions on a regular basis. These agreements primarily cover employees' responsibilities, remuneration, benefits and grounds for termination of employment. Current collective agreements at our operations in Zambia are typically one year in duration and are subject to expiration at various times in the future.

NFCA currently has collective agreements with NUMAW and MUZ. These agreements cover the period from January 1, 2012 to December 31, 2012.

Luanshya has collective agreements with MUZ and NUMAW covering the period from January 1, 2012 to December 31, 2012.

CCS has a collective agreement with NUMAW covering the period from April 1, 2012 to March 31, 2013.

SML has a collective agreement with NUMAW covering the period from January 1, 2012 to December 31, 2012.

For each of our subsidiaries, the terms of the collective agreements apply to all of its members. The collective agreement should be interpreted in conjunction with the individual fixed-term contract signed between each company and its employees.

We plan to commence negotiating with the labor unions about the renewal of these collective agreements before they expire. We endeavor to conduct such renegotiations with the labor unions in an orderly manner and, to the best of our knowledge, there has been no disturbances or disputes in connection with the renegotiations. However, there can be no assurance that the trade unions and the workers would not engage in prolonged work stoppages concurrently with their renegotiations with us, which could result in labor disputes or disturbances (including civil disturbances or riots) that could have a material adverse effect on our business, financial condition and results of operations. For additional details, see the section entitled "Risk Factors — Risks Relating to Our Business and Industry — Our business, financial condition and results of operations may be materially and adversely affected by labor disputes, labor conflicts and disruptions" in this prospectus.

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### Training

We continue to provide training for our employees with respect to business, market position, workplace safety standards, environmental protection, technical and product knowledge, quality control and management.

### Injuries

We are committed to the health and safety of our employees and contractors and surrounding communities. Our operations developed, implemented and maintained health and safety management systems tailored to the specific needs of our operations and activities. Performance is regularly monitored by tracking first aid injuries, lost time injuries, MSD reportable accidents and fatalities.

Under Zambia's strict safety regulations, an accident is reportable to the Mines Safety Department of Zambia (the "MSD") if it either caused a fatality or caused an accident due to which the injured worker took a leave of more than three working days (an "MSD reportable accident"), or is alternatively referred to as a "minor injury" if it is a lost-time injury causing the injured worker to take a leave of no more than three working days. During the Track Record Period, we have not experienced any accidents at any of our subsidiaries having a material adverse effect on our production, financial condition or results of operations.

In order to avoid future accidents, we have been improving, and will continue to improve, our safety procedures and conditions, including additional training for our employees and contractors' employees, better workplace safety facilities and personal protection equipment. Each site where a fatal accident has happened is immediately closed and the accident is reported to the MSD, which starts investigation of the accident and inspects the site. The cause of each fatal accident is also investigated and reported internally. After investigating each fatality, the MSD would issue an investigation report, identifying the accident's cause and the individuals at fault. If an accident was caused by human error, the MSD would impose fines on the individuals at fault, not the relevant employer. If an accident was caused by inadequate safety measures, the MSD would require the company to make improvements. Once the MSD becomes satisfied (or, depending on the circumstances, the company's self-assessment is satisfactory) with the improvements, operations at the accident site may be resumed. Pursuant to the MSD investigation reports, none of the fatal accidents during the Track Record Period were attributable to us and all of them were attributable to the negligence of our employees and contractors' employees in failing to follow relevant safety procedures in mining and production operations, as determined by the MSD investigation reports. For each MSD reportable accident, we are required to carry out a self-investigation and report to the MSD in the following month. The MSD will decide whether to conduct an on-site investigation or issue a written confirmation only. Pursuant to the MSD's confirmations, none of our MSD reportable accidents during the Track Record Period were attributable to us and all of them were attributable to the negligence of our employees and contractors' employees. Our Zambian legal adviser has advised that our subsidiaries have complied with all relevant laws and regulations relating to health and safety, and the Company confirms that it has not been penalized by any relevant governmental authority in respect of the above mentioned incidents. We endeavor to continuously improve these measures, which we believe to be adequate, and provide better training to our employees and contractors' employees. Chunlai Wang, who is an Executive Director and the Vice President of our Company, will monitor and oversee safety measures.

In 2011, there were four fatalities, 20 MSD reportable accidents and 127 minor injuries in our operations, involving three, 10 and 35, respectively, employees of our contractors; the fatalities were



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caused by contractor employees' negligence in operation and non-compliance with relevant rules and procedures. In 2010, there were four fatalities, 21 MSD reportable accidents and 77 minor injuries in our operations, involving one, eight and 16, respectively, employees of our contractors; the causes of the fatalities included rockfall, a traffic accident and an electric shock. In 2009, there were five fatalities, 33 MSD reportable accidents and 112 minor injuries in our operations, involving three, 23 and 52, respectively, employees of our contractors; the causes of fatalities included rockfall and a conveyor belt accident resulting from an employee's negligence. We have settled compensation claims in respect of all of the above accidents, except for six claims, which are currently being litigated. All of these claims relate to injuries sustained in mine accidents (including one fatal accident) and, according to our Zambian legal adviser, our estimated aggregate maximum potential liability is ZMK640 million (equivalent to approximately US\$130,879). We have been advised by our Zambian legal adviser that, to the best of its knowledge having made due enquiry at the relevant High Court Registry, we are not subject to any outstanding liabilities in relation to mine accidents, fatalities or injuries save for the claims disclosed above.

There have been no instances of under-reporting of MSD reportable incidents by the Group. In accordance with the relevant laws and regulations relating to health and safety in Zambia, the Group has implemented comprehensive safety rules and procedures, which include the procedures for reporting accidents and personnel overseeing the measures, to ensure that workers and safety officers have full access to these procedures and are able to use them, and are not hindered in any way. The Group's Mine Managers, who are full-time designated safety officers in each subsidiary and whose appointment are required to be approved by the MSD, are entitled to directly report to the MSD on safety issues, including accidents. The working-level operation manager that is responsible for supervising the work site and workers involved in an accident is required to report the accident to the Mine Manager of the relevant subsidiary, who is required to report the accident to the general manager of that subsidiary and, if the accident is MSD reportable, is also required to report such accident directly to the MSD. The Group's Zambian legal advisor is of the view that the Group has complied with all relevant laws and regulations relating to health and safety in Zambia.

In 2005, BGRIMM Explosive (Zambia) Ltd., Co. ("BGRIMM Zambia"), an explosive manufacturing company owned and controlled as to 60% by Beijing General Research Institute of Mining and Metallurgy (an Independent Third Party), which operated on land owned by NFCA, experienced an industrial accident causing an explosion reportedly resulting in the death of 45 employees of BGRIMM Zambia. Our subsidiary NFCA held a 40% stake in BGRIMM Zambia and did not have any management or operational control over BGRIMM Zambia. While this accident resulted in adverse media reports and harm to our reputation, it did not have any material adverse effect on our financial condition and results of operations. Our Zambian legal adviser is of the view that all compensation claims arising out of the 2005 accident at BGRIMM Zambia have been settled.

NFCA was also sued by its former employees claiming compensation for personal injuries sustained in connection with two incidents arising from riots and disturbances that took place over two days in July 2006. In July 2006, some employees of NFCA rioted due to some misunderstanding between the management of NFCA and the trade union relating to interpretation of the collective agreement. According to the judgment of the High Court, during the riot, the rioting employees damaged NFCA property and assaulted members of staff. Given the rioting workers, in order to ensure staff safety and protect company property, the Head of Mine Police at NFCA, who was a Zambian citizen on duty, fired at the gate of the plant, and subsequently, gave an order to a Mr. Que, who was at a residential area on NFCA property, to open fire to defend that area. NFCA had the proper license of gun possession for authorized employees. Mr. Que, who was a deputy equipment manager in the mining department and was not authorized to possess a gun, was ordered by the Head of Mine Police to take possession of a gun under the circumstances. Certain then-employees (who are the

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plaintiffs in the claim) were injured. On March 30, 2011, the court delivered judgment in favor of the plaintiffs on the ground that the shootings in both incidents were unjustified and amounted to excessive use of force, and also found the order by the Head of Mine Police to Mr. Que was unjustified and amounted to an abuse of power, and found NFCA to be vicariously liable for the actions of the Head of Mine Police and Mr. Que, who were employees of NFCA. We have decided not to appeal the court's judgment after considering the potential distraction of management from business operations, related costs and the adverse publicity that may arise during a prolonged appellate review process. The court held a hearing on April 26, 2012 to assess the amount of damages to be paid by NFCA. According to the court's assessment, NFCA is required to pay the damages in the amount of approximately ZMK209,480,000 (approximately US\$42,838.45) and NFCA's total liability, including payment of relevant interests on the determined damages and legal costs incurred by the plaintiffs, is estimated to be ZMK717,430,000 (approximately US\$146,714). While we do not expect the foregoing will have a material adverse effect on our condition and results of operations and our Zambian legal adviser is of the same view, this accident may result in adverse publicity and harm to our reputation. Please refer to the section headed "— Labor Disruptions" below for details of measures we have implemented to improve our relationship with the employees, which we believe should help prevent such incidents from occurring again in the future.

To our best knowledge, no one was killed during the July 2006 riots. We are unable to provide the exact figure for the number of people injured during the July 2006 riots because (1) the court's judgment is only limited to the six plaintiffs who have brought claims against us, and (2) we have not counted the number of other people injured during the riots. The claims in relation to the July 2006 riots mentioned above relate only to claims which have been brought against us. Our Zambian legal adviser is of the view that the lapse of time would render any claim arising from the shooting incident in 2006 statute barred since under Zambian law claims arising from personal injuries must be taken to court within three years from the date the cause of action arose. Therefore, we are of the view that the risk is remote that any claim may be brought by other persons against NFCA or the Group after Listing.

During the Track Record Period, we have been making continuous improvements to reduce the number of accidents in our operations, including (i) repairing and maintaining in good condition all facilities and equipment regularly, (ii) establishing a safety inspection system, including a designated officer in each subsidiary overseeing the general safety matters and working-level operation managers, for whom there are no special requisite qualifications under the relevant Zambian mining safety laws, in each workshop responsible for inspecting working areas, correcting violations against safety rules, reporting potential safety hazard as well as suspending production when necessary in accordance with the relevant rules, (iii) implementing a safety accountability system which includes assigning the responsibility of ensuring safety of each subsidiary to the senior management of that subsidiary, who are supported by (a) the subsidiary's safety department, (b) managerial personnel at each mine, workshop and operation area who are held responsible for the safety at their respective posts, and (c) other departments and employees, whose safety records are all monitored, evaluated, reported, and rewarded or penalized in accordance with the Group's internal safety rules, and increasing the significance of safety in performance reviews, (iv) providing continuing safety training sessions to our employees, (v) ensuring that there is sufficient safety administration personnel in our operations, members of which are adequately trained and/or qualified as certified safety engineers and review the adequacy of our safety conditions daily, (vi) establishing a system to manage dangerous and hazardous substances and (vii) further enhancing our risk management concerning safety supervision and emergency rescue by (1) improving our emergency response procedures, for both general and various specific scenarios, including failure of main ventilation fans, underground flooding, underground fire, surface fire, power outage and fatal accident, among others,



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(2) installing additional protective equipment in our underground mining facilities and providing additional personal protective equipment, (3) enhancing the experience and strengthening the expertise of its underground mining rescue team, and (4) improving the safety education and training system for all mine site visitors and employees. We also require our contractor companies to ensure that their employees brought onto site are suitably skilled and experienced to execute their task safely. We believe these measures will help us improve the safety of our workplace.

The person responsible for implementation of these new measures is the Mine Manager, who reports to the general manager. The Mine Manager is a full-time designated safety officer in each subsidiary, whose appointment must be approved by the MSD. The Mine Manager is entitled to directly report to the MSD on safety issues and is required under relevant Zambian mining safety laws to have the requisite mining and engineering qualifications, as well as sufficient mining experience. Other responsible personnel include working-level operation managers who are primarily responsible for supervising the operations and are also responsible for supervising safety matters. There are no special requisite qualifications for these working-level operation managers. The Mine Manager and the responsible personnel at working-level are supervised by the general manager and the board of directors. The general manager is responsible for the safety accountability system and report to the board of directors of each respective subsidiary.

We provide safety trainings for new employees when they join us. In addition, pursuant to our operation plan for each year, we may schedule one or more training sessions in that year. Furthermore, our working-level operation managers provide brief safety training to workers each day before they start working, primarily reminding them of the relevant safety procedures.

We also have our own clinic to deal with emergency patients and an ambulance to transfer patients in serious condition and we have procured occupational health and safety insurance for our employees, the scope of which we believe is adequate.

In order to further reduce the occurrence of accidents and improve our overall health and safety performance, we are in the process of engaging, and expect to finish in 2012 the appointment of, an external expert to conduct a comprehensive review of our health and safety management and practices, to make recommendations for further improvement, to provide corrective action plans and to monitor implementation of these plans as needed. We expect the implementation of recommendations and corrective action plans to further improve our health and safety performance and reduce the number of accidents. The Sponsors are of the view that the implementation of recommendations and corrective action plans provided and monitored by SRK and/or the external expert to be appointed in 2012 should improve our health and safety performance and minimize accidents. We currently have no plans to engage such safety expert to conduct review on an annual basis due to the following: (a) we currently conduct self-review of safety conditions regularly; (b) the Mining Safety Department of Zambia reviews our safety conditions regularly; (c) CNMC Group is capable of providing adequate safety expertise upon our request; (d) we have been continuously improving our overall safety conditions, which have contributed to the decline in the number of accidents in our operations over time; and (e) after 2012, we may continue to appoint external safety expert to review our safety conditions on an as-needed basis after the expert review is conducted in 2012.

### **Labor Disruptions**

We have in the past experienced short-term suspensions of mining and processing operations as a result of both legal and illegal strike actions, which have all taken place in Zambia, by employees over disputes relating to wage increases, collective agreements, employment contracts or other

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matters. Such strike actions have on occasion resulted in civil disturbances at our subsidiaries. Such disputes have in the past been resolved and strikes ended following negotiations with the relevant labor unions. Civil disturbances and riots have resulted in some personal injuries and property damage. We have not purchased any insurance policy to cover incidents of labor disruptions.

In July 2006, due to some misunderstanding between the management of NFCA and the trade union relating to interpretation of the collective agreement, approximately 300 workers at NFCA engaged in civil disturbance, which resulted in work stoppage, property damages and worker injuries; the civil disturbance ended after NFCA agreed to improve its communication with unions, reaffirmed the workers of their benefits under the collective agreement, established a labor relation department to address labor disputes and complaints, and implemented rules and procedures for addressing labor complaints.

In March 2008, due to a delay in communication with workers by the newly established unions, approximately 400 workers at CCS engaged in a strike, which did not result in significant loss to CCS as its facilities were still under construction. The strike ended after CCS and the union concluded negotiating the annual collective agreement.

In January and February 2011, due to a misunderstanding of the changes in the labor relationship arrangement of a new mining contractor with NFCA, approximately 500 workers at NFCA engaged in civil disturbance, which resulted in work stoppage, property damages and worker injuries caused by police intervention. The civil disturbance ended after NFCA agreed to improve the communication between the mining contractor and the unions, as well as further improve the rules and procedures for addressing labor complaints.

In March 2011, after CCS rejected the workers' demand for a significant wage increase shortly before signing the new annual collective agreement, approximately 300 workers at CCS engaged in a strike, which resulted in a two-day work stoppage. The strike ended after CCS agreed to provide additional fringe benefits to the workers and to further improve communication with its labor force, but it maintained the major terms of the collective agreements that were negotiated before the strike.

In October 2011, there were widespread strikes in Zambia which affected numerous companies and not just our Group. Workers went on strike to demand wage increases as an aftermath of the successful election of the current President, who had proposed to increase workers' wages during his presidential campaign. The widespread strikes subsided after the Zambian government began to intervene by persuading the workers to return to work and rely on labor unions and the ordinary wage negotiation mechanism. The workers at NFCA and CCS went on strike without support from the labor unions, demanding an immediate and significant wage increase, which was the newly elected Zambian President's campaign promise. The strike at NFCA involved as many as approximately 1,000 workers, most of whom were employed by Jinchengxin, a third-party contractor, and resulted in a total of 11 days of work stoppage. The strike ended after NFCA and Jinchengxin agreed to accept part of the workers' demands and also agreed to immediately commence wage negotiation with the labor unions. As SML's facilities are located within NFCA's premises, approximately 130 workers at SML, not on strike themselves, were unable to work for the three days that the striking workers at NFCA blocked access to SML's facilities; SML did not increase its workers' wages, and the workers at SML voluntarily returned to work after the striking workers at NFCA stopped blocking the access to SML's facilities. The strike at CCS involved approximately 600 workers and resulted in a 5-day work stoppage; even though CCS did not increase its workers' wages, the strike ended as the workers voluntarily returned to work after CCS convinced the workers that both sides should collaborate with each other constructively to resolve their disputes and persuaded the workers to return to work and rely on labor unions as the proper channel to conduct negotiations with CCS.

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In December 2011, due to a dispute over compensation structure and personnel issues, as many as approximately 500 workers at Luanshya engaged in a strike, which resulted in a four-day work stoppage. The strike ended after Luanshya management and the workers agreed to continue the annual compensation structure negotiation while work is resumed.

The labor disputes prior to January 2011 (including the disputes in July 2006) were between the Group and its employees. All other disputes since January 2011 were between the Group, on the one hand, and employees of the Group and employees of the Group's contractor, on the other hand.

For additional details, see the section headed "Risk Factor — Risks Relating to Our Business and Industry — Our business, financial condition and results of operations may be materially and adversely affected by labor disputes, labor conflicts and disruptions" in this prospectus.

We have implemented a number of measures to improve our relationship with the employees with the goal of reducing the possibility of recurrence of strike actions or other labor disruptions in the future. Such measures include increasing wages and other compensations, enhancing benefits (such as organizing health examinations), improving our communications with employees and our effectiveness in addressing employee complaints, as well as further improving the workplace safety conditions. The general manager of each of our subsidiaries, who reports to the board of directors of the respective subsidiary, oversees the implementation of these measures. We believe that these measures have been, and expect that they will be, effective and adequate in reducing the possibility of recurrence of strike actions or other labor disruptions. The mines' management has improved its communication and strengthened the connection with labor unions. The workers' benefits under the collective agreements have been reaffirmed and we ensure they are implemented. A functional department has been established to coordinate the resolution and settlement of labor disputes and complaints. The general manager of each of our subsidiaries, who reports to the board of directors of the respective subsidiary, oversees the functional department. The senior management team, including the general manager, controls the functional department through appointing its personnel, supervising their duties, reviewing their performance and replacing them if necessary. The functional department has introduced special procedures for addressing labor complaints to further facilitate resolution of any disputes, which include: (1) the general manager and the deputy general managers hold monthly meetings with employees to understand and discuss their complaints and suggestions, (2) the general manager and the deputy general managers give access of their mailbox to employees to convey their complaints and suggestions in writing, (3) the general administrative department, the head of which reports to the general manager, reviews and processes mails from employees as well as reports them to the senior management, and (4) the human resources department, the head of which reports to the general manager, solves issues raised by employees in their complaints and suggestions. Taking into consideration the above mentioned measures and their implementation by the Group, and having made reasonable enquiries, the Sponsors have reasonable grounds to believe that such measures will be adequate and effective in improving the Group's relationships with its employees. The Company has recently worked with an external specialist labor consultant to better understand how the Group can improve its management of labor-related risks. The specialist labor consultant has recommended the Group (i) to continue to build more robust communication channels and worker grievance mechanism, including the communication of national legislation, safety, work shift policies and expectations to all workers and contractors, (ii) to consider establishing better central human resource/labor relations coordination, further improve current human resource system and personnel, (iii) together with the health and safety expert, to conduct safety review, including underground and personal protection equipment procedures, and (iv) to review competitors' compensation, devise strategy for worker skill retention and transfer. The Group expects to implement the recommendations provided by the labor consultant within the next approximately 12 months from the Listing Date.

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We are involved in disputes with our employees (former or current) in the ordinary course of business and most of such ongoing disputes relate to alleged unfair/unlawful termination or breach of employment contracts, wrongful calculation of wages/benefits, compensation for injuries and false imprisonment and defamation. None of such disputes, individually or in the aggregate, is material to us. As far as we are aware, the largest amount of potential exposure is related to a claim for unfair and unlawful termination of an employment contract raised by a former employee, which is approximately US\$60,000. We have filed the reply to the statement of claim denying the plaintiff's claims and this case is currently in progress.

### LEGAL AND COMPLIANCE

As of the Latest Practicable Date, we were not involved in any actual or pending legal or arbitration proceedings that we believe would have a material adverse impact on our financial condition or results of operations.

A mining company operating in Zambia is required to make ongoing cash contributions to the EPF on an annual basis based on the results of an EPF audit undertaken annually as required under the Mines Act of Zambia and as a condition to the grant of a mining right. Mining companies are also required to provide a bank guarantee to the Zambian government for the amount difference between the cash portion of the estimated closure costs and the total estimated closure costs. Such non-compliance may result in nonrenewal or cancellation of mining and exploration licenses if a notice of default is issued and the subject of the notice of default is not remedied within 60 days of receipt. The contravention of the requirement to contribute to the EPF may result in a fine of up to ZMK3.6 million (equivalent of US\$736) or imprisonment for a term of up to two years, or both. In addition, each person who is a director of the mining right holder or is in charge of the mine and who is aware of the breach, is deemed to have committed the offence and liable for the same penalties.

We have paid all outstanding cash contributions except for SML which has been informed by the relevant authority that its outstanding cash contribution is still subject to further assessment and may only be paid after a demand notice has been issued by the relevant authority. SML will pay the outstanding cash contribution by the deadline specified in such demand notice. Our Zambian counsel is of the view that SML will not be deemed to be in breach because the amount payable cannot be ascertained in the absence of assessment.

Luanshya, CCS and NFCA have issued associated guarantees with respect to estimated mine closure costs in accordance with the deadline specified in the relevant demand notice and have provided these to the EPF. SML has not obtained a letter of guarantee as it has not received a demand notice. SML is aware of its current obligation to lodge such letter of guarantee in the amount as ascertained by EPF in a letter to our legal counsel and will obtain such letter of guarantee as soon as practicable and in any event by the deadline specified in any relevant demand notice.

As of the Latest Practicable Date, to the best of our knowledge having made due inquiry, we had not received any notice of default.

CCS is currently in dispute with Kalulushi Municipal Council ("KMC") regarding the property rate applied by KMC to CCS for 2012, which is higher than the rate stipulated in an agreement between CCS and KMC. Our Zambian legal adviser is of the view that the agreement may not be enforceable due to the lack of the resolution of KMC and the lack of approval of the Rating Valuation Tribunal. CCS has referred the matter to the Ministry of Local Government and Housing of Zambia, and has undertaken to pay all outstanding property rates as determined by the relevant authority.

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During the Track Record Period and as of the Latest Practicable Date, our material non-compliance matters and the rectification actions taken or to be taken by us are set forth below.

<u>Material non-compliance matters</u>	<u>Description</u>	<u>Rectification actions taken/to be taken by us</u>
<ul style="list-style-type: none"> <li>● Lack of the required appropriate insurance coverage</li> </ul>	<p>We had not obtained the required appropriate insurance coverage for certain of our mining and prospecting licenses.</p>	<p>We have purchased and maintained appropriate insurance as required.</p>
<ul style="list-style-type: none"> <li>● Failure to pay area charges</li> </ul>	<p>We had been requested by the relevant Zambian authorities to pay area charges for certain of our mining and prospecting licenses at certain intervals for ease of administration.</p>	<p>We have paid all outstanding area charges as requested by the relevant Zambian authorities.</p>
<ul style="list-style-type: none"> <li>● Failure to pay license fees</li> </ul>	<p>We had been requested by the relevant Zambian authorities to pay the license fees for certain of our mining and prospecting licenses at certain intervals for ease of administration.</p>	<p>We have paid all outstanding license fees as requested by the relevant Zambian authorities.</p>
<ul style="list-style-type: none"> <li>● Failure to make full cash contribution to EPF and lodge associated guarantees</li> </ul>	<p>We had not paid the cash contributions to EPF in full, nor had we lodged guarantees of EPF with relevant Zambian authorities.</p>	<p>Except for SML, we have paid all outstanding cash contributions to EPF and have lodged associated guarantees.</p> <p>The amounts of cash contribution and guarantee of SML are subject to further assessment by the relevant Zambian authority and SML has not received any demand notice yet. SML will pay the cash contribution and obtain a guarantee letter as soon as practicable and in any event by the deadline specified in the relevant demand notice.</p>

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<u>Material non-compliance matters</u>	<u>Description</u>	<u>Rectification actions taken/to be taken by us</u>
<ul style="list-style-type: none"> <li>Lack of statutory periodical reports at the Mining Cadastre Office (the “MCO”)</li> </ul>	<p>We had been required to file statutory reports periodically to the MSD and the Mines Development Department (“MDD”). Our filed reports cannot be located at the MCO, which maintains a public registry for all mining records.</p>	<p>We have filed these statutory periodical reports as required. Both the MSD and the MDD issued letters to confirm that we are in compliance with such filing requirements.</p> <p>We are currently consulting with the MCO as to why our filed reports could not be located, and have undertaken to procure the MCO to update its records and to file such statutory periodical reports in a manner and form acceptable to the relevant Zambian authority.</p>
<ul style="list-style-type: none"> <li>Outstanding payment to NAPSA and the Workers Compensation Fund</li> </ul>	<p>NFCA and SML had not made all statutory deductions and contributions for their employees to the NAPSA and the Workers Compensation Fund as required by Zambian laws.</p> <p>CCS had not made all statutory deductions and contributions for its employees to the Workers Compensation Fund as required by Zambian laws.</p>	<p>Each of NFCA and SML has made all outstanding payment to the NAPSA and the Workers Compensation Fund for its employees.</p> <p>CCS has made all outstanding payment to the Workers Compensation Fund for its employees.</p>
<ul style="list-style-type: none"> <li>Failure to comply with all environmental protection legislation and regulations</li> </ul>	<p>We had not complied with all legislation and regulations relating to environmental protection as required by Zambian law, including failing to fulfill all conditions relating to a decision letter issued by ZEMA.</p>	<p>We have fulfilled all outstanding conditions as required in the decision letter issued by ZEMA and have rectified the other non-compliance in the time and manner satisfactory to relevant Zambian authorities.</p>

We have taken the following steps to rectify our non-compliance matters:

- Consulting with local counsels to clarify the relevant requirements under applicable laws and regulations.
- Consulting with regulatory authorities to confirm our compliance status with respect to applicable laws and regulations.
- Taking appropriate steps to rectify identified non-compliance matters, including, among others, procuring appropriate insurance coverage, paying outstanding area charges and license fees,



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and lodging outstanding cash contributions and issuing associated guarantees with respect to estimated mine closure costs. Except as disclosed above with respect to certain outstanding cash contributions payable and a letter of guarantee to be lodged by SML, these instances of past non-compliance have since been rectified.

We are in the process of implementing the following internal control measures to prevent reoccurrence of non-compliances and certain internal control measures are expected to be completed by June 2012. The implementation of the measures are expected to be ongoing:

- *Compliance Policy.* We are formulating a comprehensive compliance policy setting out the Company's policies on legal and regulatory compliance matters. The policy will require the Company to maintain a compliance register which contains an index of all licenses, permits, approvals and certificates held or required by our Group, the conditions attaching to such licenses, permits, approvals and certificates and the various times by which such conditions are to be fulfilled. Further, the compliance policy will also state that our Group shall obtain all necessary licenses and approvals from government authorities, operate in full compliance with local laws and regulations and maintain proper records of documents. All subsidiaries and departments are required to comply with such policy.
- *Compliance Committee.* We have established a Compliance Committee of the Board comprising two independent non-executive directors, namely Mr. Chuanyao Sun and Mr. Shuang Chen, and a non-executive director, namely Mr. Tao Luo. Our Board will specify the duties of the committee. The committee will submit monthly compliance reports to the Board to keep the Board informed of the Group's compliance status and also make recommendations to resolve any compliance issues identified.
- *Designated Compliance Principal.* Mr. Aibin Hu, our joint company secretary, will act as our chief compliance officer and be in charge of our overall compliance management. The chief compliance officer will report to the Compliance Committee on a bi-weekly basis. There will also be a designated compliance principal in each subsidiary responsible for compliance matters of that entity. Such compliance principals will report to the chief compliance officer on a weekly basis and will be independent of the management of the subsidiaries.

Mr. Aibin Hu has been employed by the Group in Zambia since 2007. He has extensive knowledge of the copper mining industry and is familiar with the legal and regulatory environment applicable to the Group in Zambia. He is currently the company secretary of Luanshya and has been employed at Luanshya since its acquisition in June 2009. In preparation for the Listing, Mr. Hu has been in charge of Luanshya's preparation work and regularly liaises with and assists Zambian legal counsel. In his role as team leader for the post-acquisition integration of Luanshya into the CNMC Group, he was involved in most aspects of the integration, with legal and compliance matters being one of the areas in which he was most critically involved. For instance, he helped Luanshya in the renewal/re-issuance of its mining licenses and operating permits and re-application for title certificates for land owned by the company in the new name of Luanshya and oversees the on-going litigation cases which originated prior to CNMC's acquisition of Luanshya. He also assisted CNMC with the transition of ownership of Luanshya from the previous owners ENYA to CNMC, including assisting with the change of name of the company and the issuance of shares to the new shareholders. Mr. Hu liaises with external legal counsels as and when required. In addition, Mr. Hu attended his MBA degree from Beijing Jiaotong University in 2008, and, as part of his MBA, has taken courses in accountancy.

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The four nominated compliance principals (who will report to the CCO on a weekly basis) are each currently employed in Zambia by the Group and are familiar with the operations of the subsidiaries by which they are employed. The nominated compliance principals have experience in liaising with governmental and regulatory authorities in Zambia and assisting the respective subsidiaries in applying for and obtaining various permits, licenses and authorizations required for such subsidiary's operations.

The Sponsors are of the view that, based on Mr. Hu's qualifications and extensive experience in the copper industry in Zambia, his familiarity with the legal and regulatory environment and experience in the administration of legal and compliance matters resulting from his roles within Luanshya and the assistance to be given to him by the four compliance principals, and taking into consideration the further compliance training on Zambian laws and regulations to be held, the CCO and the compliance principals have sufficient experience and qualification to monitor and handle compliance matters.

- *Compliance Training.* Our Directors and senior management have received compliance training in respect of the Listing Rules, the Takeovers Code, the SFO, the Companies Ordinance and the Business Registration Ordinance. We will also conduct regular compliance training for our employees to enhance their understanding of the current laws and regulations applicable to our Group, the obligations of each subsidiary to fulfill the conditions of its licenses, permits, approvals and certificates held or required, the importance of compliance and consequences of non-compliance, the methods to improve compliance and ensure that the relevant rules are implemented in practice, including proper record-keeping. We will arrange for compliance training in respect of Zambian laws and regulations to be given to the Compliance Committee, the Chief Compliance Officer, the management, compliance principals and relevant employees of our subsidiaries before the Listing and subsequently on an annual basis, with ad hoc training to be held if there are any material changes to the laws or regulations which apply. Training will also be given to new compliance personnel at the time of being appointed.
- *Consulting with Local Counsels.* We will from time to time consult with local counsels in relation to the latest legislative developments in the locations where we operate, the potential impact such developments may have on our business and consider the recommendations or advice of such local counsels.
- *Compliance Culture.* We will endeavor to establish an effective compliance culture and ensure that our subsidiaries and employees understand the relevant rules and regulations and take the initiative to comply.

Our Directors believe that the non-compliances we have experienced in the past largely stemmed from our imprecise interpretations of the relevant local rules and regulations, the significant amount of time taken by certain local authorities to respond to our inquiries to clarify certain local rules and regulations as well as the changes in the political situation in Zambia. To prepare for our listing, our Zambian legal adviser had helped to clarify the applicability and applications of these rules and regulations and advised us on compliance with regard to the same. To prevent the reoccurrence of non-compliances, the internal control measures outlined above have been designed to enhance our understanding of the local rules and regulations applicable to our Group and keep ourselves updated as to changes in these rules and regulations. The establishment of the compliance principals, Compliance Committee and the appointment of Chief Compliance Officer also ensure that there will be constant monitoring for compliance. Accordingly, our Directors believe that the above internal control measures are adequate, effective and fit for our current operation environment under Rule 3A.15(5) of the Listing Rules. The Group's internal control measures have also been reviewed



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by an internal controls consultant, Deloitte Touche Tohmatsu CPA Ltd., who is an Independent Third Party. The internal controls consultant has made recommendations to the Group in respect of certain improvements that may be made. These improvements are being implemented and are expected to be completed by June 2012. Based on the internal controls consultant's recommendations, and having made reasonable enquiries, the Sponsors have reasonable grounds to believe that, upon full implementation of the internal controls consultant's recommendations, the Group will have internal controls measures that are adequate, effective and fit for the Group's current operations.

Save as disclosed above, we believe and our Zambian legal adviser is of the view that we are in compliance with applicable Zambian laws and regulations in all material respects. Furthermore, we believe, and our Zambian legal adviser is of the view, that we have obtained all necessary licenses, approvals and permits that are required for our business operations in Zambia, and paid all compensation. We believe that we have obtained permits from ZEMA regarding environmental protection and other licenses required before the commencement of our projects. Based on the legal opinion of our Zambian legal counsel, we have obtained and maintained all necessary licenses, authorities, approvals and permits as required by Zambian law or any governmental authority in Zambia with regard to environmental protection, and we have complied with all relevant laws and regulations relating to health and safety and environmental protection up to December 31, 2011. We are in the process of renewing these licenses, authorities, approvals and permits for 2012 in accordance with Zambian laws and regulations.

Currently there are no sanctions imposed by the European Union, the United States or other governments or organizations against Zambia that may adversely impact our operations and there are no money laundering or other corruption accusations against us or, to our knowledge, any of our employees.

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### LAND AND BUILDINGS

#### Owned Properties

According to a due diligence report issued by Jones Lang LaSalle Corporate Appraisal and Advisory Limited, an independent property valuer and consultant, as of December 31, 2011, the properties we owned in Zambia and the DRC consisted of 68 parcels of land with a total site area of approximately 193,138,245.04 sq.m and 429 buildings or units with a total gross floor area (“GFA”) of approximately 322,216.28 sq.m. The properties the Group owned also consist of 34 buildings and various structures with a total planned GFA of approximately 89,540.83 sq.m which are currently under construction. Based on the aforesaid criterion, we have divided the owned properties into 8 property interests, the details of which are set forth below:

Property No.	City/Province/ Country	Description	Site Area (sq.m)	GFA (sq.m)	Size Range of GFA (sq.m)	Usage	Carry amount (US\$'000)	Percentage*
1.	Luanshya/ Copperbelt/ Zambia	27 parcels of land, 138 buildings and various structures together with the Muliashi Leach Plant under construction erected thereon	126,468,940	170,437.63	4 to 16,890.72	Production/ Ancillary/ Residential/ Administration	179,441	12.2%
2.	Kalulushi/ Copperbelt/ Zambia	2 parcels of land, 42 buildings and various structures together with 19 buildings and various structures under construction erected thereon	4,817,503	51,568.79	30 to 11,420	Office/ Production/ Ancillary	81,027	5.5%
3.	Kitwe/ Copperbelt/ Zambia	a parcel of land	60,930	N/A	N/A	Residential	N/A	N/A
4.	Chambishi/ Copperbelt/ Zambia	31 buildings and various structures together with 3 buildings and various structures under construction erected on the land of property no.6	N/A	14,961	38 to 2,537	Office/ Production/ Ancillary	13,887	0.9%
5.	Kalulushi/ Copperbelt/ Zambia	a parcel of land and an office building erected thereon	6,020	651.75	N/A	Office	included in above property no.4	included in above property no.4
6.	Chambishi/ Copperbelt/ Zambia	27 parcels of land, 182 buildings and various structures erected thereon	61,686,209.74	77,394.56	3 to 13,175	Office/ Production/ Ancillary	30,464	2.1%
7.	Kitwe/ Copperbelt/ Zambia	9 parcels of land, 22 buildings and various structures together with a residential building under construction erected thereon	19,740.30	4,426.20	2.2 to 652	Residential/ Ancillary	included in above property no.6	included in above property no.6
8.	Likasi/ Katanga/Congo	a parcel of land, 13 buildings and various structures together with 10 buildings and structures under construction erected thereon	78,902	2,776.35	36 to 314	Residential/ Ancillary	4,573	0.3%
<b>Total:</b>			<b>193,138,245.04</b>	<b>322,216.28</b>	<b>N/A</b>		<b>309,392</b>	<b>21%</b>

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Aforesaid properties nos. 1, 2 and 6 are the main production sites of the Company or its subsidiaries and contribute an important portion of revenue to the Group. No property is identified to be subject to any encumbrances, liens, pledges, mortgages impacting the operations of the Group. Jones Lang LaSalle Corporate Appraisal and Advisory Limited is of the view that properties nos. 1, 2 and 6 are material properties of the Group.

As at December 31, 2011, portions of property no. 1 above with a carrying amount of US\$164,511.25 (equals to approximately 0.01% of the total assets\*) were leased to third parties. These buildings are classified as property interest relating to “property activities”, the remaining properties are classified as “non-property activities”. As at December 31, 2011, the aggregate carrying amount of the property interest that forms part of the Group’s property activities did not exceed 1% of its total assets, and the calculated percentage of each property interest that form part of the Group’s non-property activities did not exceed 15% of its total assets.

According to section 6(1) of the Companies Ordinance (Exemption of Companies and Prospectuses from Compliance with Provisions) Notice, this prospectus is exempted from compliance with the requirements of section 38(1) of the Companies Ordinance in relation to paragraph 34(2) of the Third Schedule to the Companies Ordinance, which require a valuation report with respect to all our company’s interests in land or buildings, since no single property interest that forms part of our property activities has a carrying amount of 1% or more of total assets, and no single property interest that forms part of our non-property activities has a carrying amount of 15% or more of total assets.

We have not received the relevant land title certificates for 21 of 68 parcels of land with a total site area of approximately 9,011,422.74 sq. m, comprising approximately 5% of the total site area the Group occupied. The relevant parcels of land without land use rights consist of a tailings storage facility, an office, a parcel of industrial land and several residential areas, which we do not believe are crucial to our operations. We have submitted applications for the relevant land use rights certificates but owing to the administrative efficiency of the relevant governmental departments in Zambia, we have yet to receive such certificates. We currently expect to receive such certificates by December 2012. Please refer to “Risk Factors — Risks Relating to Our Business and Industry — We do not possess land use rights certificates for certain parcels of land we occupy”.

### Leased Properties

As of May 21, 2012, which is the latest practicable date as of which such information is available, we leased 15 buildings and various structures with an aggregate gross floor area of approximately 20,888 sq. m located in the city of Kitwe and the town of Chambishi in Zambia, comprising approximately 6.5% of the total gross floor area of buildings used by us. These properties are leased from a connected party and most of them are used for administration, support and other miscellaneous purposes. As of the same date, the Group also leased 5 parcels of land with a total site area of approximately 139,450 sq. m located in the DRC from an Independent Third Party. These properties are used for production and ancillary purposes.

As of May 21, 2012, which is the latest practicable date as of which such information is available, we leased 8 office units with a total gross floor area of approximately 790.08 sq. m located in the PRC from two connected parties, which are used as our offices, comprising approximately 0.2% of the total gross floor area of buildings used by us.

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\* According to the combined balance sheet set out in Appendix I to this prospectus, the carrying amount of our total assets as at December 31, 2011 was US\$1,473 million.

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According to section 6(1) of the Companies Ordinance (Exemption of Companies and Prospectuses from Compliance with Provisions) Notice, this prospectus is exempted from compliance with the requirements of section 38(1) of the Companies Ordinance in relation to paragraph 34(2) of the Third Schedule to the Companies Ordinance, which require a valuation report with respect to all our company's interests in land or buildings, since no single property interest that forms part of our property activities has a carrying amount of 1% or more of total assets, and no single property interest that forms part of our non-property activities has a carrying amount of 15% or more of total assets.

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## RELATIONSHIP WITH OUR CONTROLLING SHAREHOLDER

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### OVERVIEW

As at the Latest Practicable Date, CNMC, through its wholly owned subsidiary, CNMD, owned 100% of our issued share capital. Immediately after completion of the Global Offering (assuming that the Over-allotment Option is not exercised), CNMC is expected to beneficially own in aggregate approximately 74.93% of the issued share capital of our Company. As such, CNMC will continue to be the Controlling Shareholder of our Company.

### CNMC AND THE RETAINED OPERATIONS

CNMC is a PRC state-owned enterprise directly administered by the SASAC and traces its operating history to 1983. It operates globally and has operations in the PRC, Africa, Middle East, Central and Southeast Asia and Australia. Its main businesses include the development of nonferrous metal resources, construction engineering and related trade and services. As part of the Reorganization, our Group was separated from the Retained Group and focuses on the mining, ore processing, leaching and smelting of copper and cobalt outside of the PRC and sale of copper products (and in future, cobalt products) internationally. The Retained Group continues to engage in the Retained Operations which mainly include the businesses set out below.

#### Development of Nonferrous Metal Resources

The Retained Group currently owns and operates mining assets in the PRC, Myanmar, Mongolia and through its non-controlling stake in companies listed on the London Stock Exchange and Australian Securities Exchange, also holds interests in mining assets located in countries such as Tajikistan, Australia, Algeria, Kyrgyzstan and Laos. The mining assets of the Retained Group consist of mines as well metallurgical and processing plants for metals such as copper, zinc and nickel.

The copper assets of the Retained Group are mainly located in the PRC and include, among others, the Hongtoushan copper mine and smelting facilities in Liaoning province, the Dajingzi mine in Inner Mongolia autonomous region, as well as copper smelting and processing plants located in various parts of the PRC such as the Tianjin and Shandong provinces. CNMC entered into a non-legally binding agreement with the Hubei Province State Assets Supervision and Administration Commission (“Hubei SASAC”) in January 2011 pursuant to which CNMC shall acquire 49% interest in Daye Nonferrous Metals Corporation Holdings Limited (大冶有色金属集团控股有限公司) (“Daye Corporation”) through capital injection (the “Capital Injection”) while Hubei SASAC shall hold the remaining 51%. CNMC and Hubei SASAC entered into a legally binding agreement on March 20, 2012 in respect of the Capital Injection. Following the completion of the Capital Injection, CNMC currently holds 49% in Daye Corporation while Hubei SASAC currently holds the remaining 51%. Daye Corporation is principally engaged in the mining, ore processing, smelting and processing of copper and other nonferrous metals.

The non-copper assets of the Retained Group include, among others, the Tagaung Taung nickel mine and ferronickel refinery facilities in Myanmar, the Tumurtin-Ovoo zinc mine in Mongolia, the Baiyinnuoer lead-zinc mine in Inner Mongolia autonomous region, certain tantalum and niobium processing plants in Ningxia autonomous region, and certain aluminum and zinc processing plants in the PRC.

Our Group was separated from the Retained Group to focus on the mining, ore processing, leaching and smelting of copper and cobalt outside of the PRC and sale of copper products (and in future,

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cobalt products) internationally. The Retained Group did not inject its PRC copper assets into our Group as our Group is based in Zambia and the DRC and has no current intention to venture into production operations in the PRC.

The excluded businesses retained by the Retained Group that are located in Africa and which are involved in mining-related activities are two subsidiaries, MPongwe and Zhongrui. Both MPongwe and Zhongrui currently undertake early stage exploration work. MPongwe was incorporated in 2010 to undertake exploration of minerals and held three prospecting licenses which allowed it to explore for copper, gold and uranium in the Copperbelt Province in Zambia. The licenses, which covered an aggregate area of approximately 2,046 sq km, expired in April 2012. MPongwe has filed an application to renew these licenses. Its registered capital is ZMK5 million (equivalent of US\$1,022). Zhongrui was incorporated in 2010 to undertake exploration of minerals and held a prospecting license which allowed it to explore for copper, cobalt, gold and manganese in the Kabwe region in Zambia. The prospecting license covered an area of approximately 491 sq km and expired in April 2012. Zhongrui has filed an application to renew this license. Its registered capital is ZMK5 million (equivalent of US\$1,022). While our Group undertakes some exploration activities, such activities are undertaken at our existing mine areas, relate to our current mining operations and are carried out mainly to secure a reliable supply of raw materials for our copper smelting and leaching operations. As exploration is not the main focus of our Group, the Retained Group did not inject MPongwe and Zhongrui into our Group. However, any copper and cobalt mining opportunities discovered by MPongwe and Zhongrui will be subject to certain right of first refusal set out under the paragraph “— Non-Competition Undertaking” below.

### **Construction and Engineering**

The Retained Group conducts its construction and engineering services in the PRC and international markets such as the Middle East, Asia and Africa. Entities within the Retained Group that are engaged in this line of business are qualified to undertake various types of construction and engineering projects including mine construction, infrastructure construction and mechanical and electrical equipment installation. The Retained Group provided construction and engineering services to us during the Track Record Period and we expect to continue to enter into such transactions with them in the future. Please refer to the section “Connected Transactions” in this prospectus for more information.

### **Related Trade and Services**

The Retained Group is also engaged in import and export business, trading of mineral products and purchase and sales of ancillary electrical and mechanical products for mining operations.

### **The Retained Operations in Zambia**

In addition to MPongwe and Zhongrui which are engaged in early stage exploration in Zambia, the Retained Group has three additional subsidiaries which have operations in Zambia, none of which is engaged in copper-related businesses or which undertake mining activities. These three subsidiaries are ZCCZ, Fifteen MCC Africa and Sinotra. ZCCZ was incorporated in 2007 and is engaged in the development and operation of the Zambia-China Economic & Trade Cooperation Zone, real estate development, trading and the provision of consultation services. Fifteen MCC Africa was incorporated in 2007 and is engaged in project construction, processing and installation of

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construction materials, trading and import and export of related materials and equipment. Sinotra was incorporated in 2009 and is engaged in the provision of international logistic transportation, storage, custom clearance services and trading of nonferrous and processed products equipment for smelting and mining companies. Sinotra is mainly engaged in the provision of logistic services. The nonferrous products trading business undertaken by Sinotra constitutes only a small part of its business and does not compete with the business of our Group. As of April 30, 2012, which is the latest practicable date as of which such information is available, Sinotra has only been involved in the purchase of approximately 525 tonnes of tin concentrate from the DRC for sale to the PRC market. Sinotra is currently not engaged in the trading of copper and cobalt. However, should it venture into any copper and cobalt trading business in the future, similar to other trading companies within the Retained Group such as CNMC International Trade, we anticipate such business to include the trading of our Group's products and Sinotra will thereby become one of our customers instead of our competitor. During the Track Record Period, we have entered into connected transactions with these entities within the Retained Group. Please refer to the section "Connected Transactions" in this prospectus for more information.

### **INDEPENDENCE FROM THE RETAINED GROUP**

Our Directors confirm that, for the reasons set out below, we will be able to operate independently of the Retained Group after Listing.

#### **Delineation of Business**

We are principally engaged in the mining, ore processing, leaching, smelting and sale of copper. All of our current copper production operations are carried out in Zambia and the DRC. During the Track Record Period, we sold our copper products to certain entities within the Retained Group which are trading companies for onward sale to the PRC, Europe and other international markets. We may enter into cobalt mining, processing and sale in the future.

The businesses of our Group and the Retained Group may be delineated by geographical delineation, business line delineation and customer delineation. The delineation is further reinforced by the CNMC's Non-Competition Undertaking set out under the paragraph "— Non-Competition Undertaking" below.

#### ***Geographical Delineation***

The copper assets of the Retained Group are mainly located in the PRC, where our Group has no production operations. Our Group has no current intention to establish production operations in the PRC and there is no competition in terms of copper production with the Retained Group in the PRC. The Retained Group has no copper production operations in Zambia or the DRC where our Group's operations are based. Accordingly, there is no competition in terms of copper production with the Retained Group in Zambia and the DRC.

#### ***Business Line Delineation***

Our Group focuses on the mining, ore processing, leaching, smelting and sale of copper while the Retained Group's operations in Zambia mainly relate to exploration, development and operation of the Zambia-China Economic & Trade Cooperation Zone, project construction and provision of international logistic transportation services. The exploration activities of the Retained Group in Zambia are undertaken through MPongwe and Zhongrui. Both MPongwe and Zhongrui are engaged in early stage exploration which involve them searching, identifying and proving the location,



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volume and quality of an ore body. While we undertake some exploration activities, such activities are undertaken at our existing mine areas, relate to our current mining operations and are carried out mainly to secure a reliable supply of raw materials for our copper smelting and leaching operations. We only have one prospecting license and are in the process of converting it into a mining license. We do not view exploration as an area of competition since exploration is not our business focus.

### ***Customer Delineation***

During the Track Record Period, save for Yunnan Copper Group which is a minority shareholder of our subsidiary, CCS, and to whom we commenced direct sales of copper products in the second quarter of 2011 as per the terms of the shareholders' agreement and shareholders' resolutions in respect of CCS, our major customers were trading companies which included Trafigura AG, LN Metals International Ltd, Transamine Trading SA (Swiss), two other European companies which are Independent Third Parties and entities within the Retained Group which are trading companies. On the other hand, the customers of the Retained Group to which the Retained Group sell copper products are copper refiners and downstream copper processing plants located in the PRC. Accordingly, there is delineation in terms of the nature of customers' business with the Retained Group.

In addition, save for the Retained Group and Yunnan Copper Group, the headquarters of both of which are located in the PRC, the rest of our major customers are Independent Third Parties located in Switzerland and the United Kingdom. We will continue to focus on such international sales after the Listing, except for the sales to the Retained Group and Yunnan Copper Group. To minimize competition with our Group after the Listing, pursuant to the Non-Competition Undertaking, CNMC will procure that after the Listing, the Retained Group will not conduct any sales of blister copper and copper cathode outside the PRC, and the Retained Group will also discontinue its sales of copper products to the Yunnan Copper Group. Accordingly, there is customers' geographical delineation with the Retained Group.

Even though the Retained Group has copper production operations in the PRC and the copper products produced by us and the Retained Group are both sold in the PRC market, we believe that it is unlikely that there will be extreme competition between the copper products of our Group and that of the Retained Group in the PRC in view of the shortfall in copper supply in the PRC. According to Wood Mackenzie, a considerable shortfall between domestic supply and demand for copper in the PRC is expected. For example, the supply deficit of copper concentrate in the PRC is expected to grow from 1.7 Mt in 2011 to 2.8 Mt in 2015. This shortfall will have to be met through imports of raw materials and refined metal. For more details, see "Industry Overview". As copper is a commodity and is fungible, and in view of the shortage of copper supply in the PRC, our Directors believe the Retained Group does not differentiate between the copper products produced by itself and by our Group and does not set any priority of the sales order for its and our Group's products.

### ***Non-Competition Undertaking by CNMC***

Any copper and cobalt mining opportunities discovered by the Retained Group (including those by MPongwe and Zhongrui) outside of the PRC will be subject to certain right of first refusal as described under the paragraph "— Non-Competition Undertaking" below. The Retained Group is obliged under the Deed of Non-Competition Undertaking to offer such mining opportunities to our Group first and may pursue such mining opportunities only in the event our Group declines to pursue such opportunities. As our Group is the overseas platform of the CNMC Group in terms of copper and cobalt resources development and we have no intention to expand our copper and cobalt mining and production operations into the PRC (where the Retained Group retains certain copper

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## RELATIONSHIP WITH OUR CONTROLLING SHAREHOLDER

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assets and operations) in the near future, the Deed of Non-Competition Undertaking is limited to the copper and cobalt operations and assets outside the PRC. While the Retained Group purchases our copper products for sale to copper refiners and downstream copper processing plants located in the PRC, some of which may also be purchasing the copper products produced by the Retained Group in the PRC, we believe that it is unlikely that there will be extreme competition between the copper products of our Group and that of the Retained Group in the PRC in view of the shortfall in copper supply in the PRC. In addition, save for Yunnan Copper Group, which is a minority shareholder of our subsidiary, CCS, and to whom we commenced direct sales of copper products in the second quarter of 2011 as per the terms of the shareholders agreement and shareholders resolutions in respect of CCS, we do not sell directly to copper refiners and copper processing plants located in the PRC. Accordingly, the scope of the Deed of Non-Competition Undertaking does not extend to non-competition with customers including those located in the PRC.

In addition, we believe that customers competition with the Retained Group is limited given copper is a commodity and has a readily available market. Our Group is not confined to selling our products to the PRC market as copper may be traded on any of the relevant international trading platforms such as the LME. The LME is the world's major nonferrous base metals market and the center of physical copper trading. Copper is traded at a prevailing market price reflected in the average daily trading prices on the LME. We are able to sell our products on these trading platforms instead of to the Retained Group. In addition, we have independent major customers which are able to replace the Retained Group should the Retained Group cease to be our customer or our single largest customer. Please refer to the paragraph “— Customer Independence” below for more information.

For the reasons set out above, we believe that there will be no direct material competition between the business of our Group and that of the Retained Group.

### **Operational Independence**

We have established our own centralized administrative structure comprising individual departments, each with specific areas of responsibility, such as business development and operations, human resources, finance, investor relations and general administration. All the essential operational and administrative functions of our Group are handled locally at each plant and facility. We will be administratively independent of the Retained Group.

We are able to procure, and during the Track Record Period have procured, machinery, equipment and services required for our operations from local and international suppliers who are Independent Third Parties, in addition to procuring such supplies from the Retained Group. However, due to the scale of our operations, we consider it more efficient and cost effective to procure such machinery, equipment and services through the centralized platform of the Retained Group. It is administratively more efficient for our Group to have a centralized procurement platform, i.e. the Retained Group, to assist our Group in sourcing and procuring the necessary machinery, equipment and services. The Retained Group has more ready access to international suppliers, in particular those located in the PRC, and thus it is able to assist our Group in procuring the necessary machinery, equipment and services from more channels. Moreover, as the relevant entities within the Retained Group procure supplies for the CNMC Group (including our Group) and third parties on a regular basis, they enjoy greater bargaining power in bulk procurement of supplies, thus allowing our Group to obtain supplies at more competitive prices. We believe the procurement service fee charged by the Retained Group is in the lower range of service fees charged by similar procurement companies in the PRC. Such transactions with the Retained Group also allow us to obtain better payment settlement terms since compared to independent supplier who may require us to make advance payment before delivery, the Retained Group generally requires us to make payment only

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## RELATIONSHIP WITH OUR CONTROLLING SHAREHOLDER

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after delivery of supplies to our premises. During the Track Record Period, certain entities within the Retained Group entered into related party transactions with our Group in relation to the procurement of such machinery, equipment and services. Such related party transactions entered into by us during the Track Record Period are disclosed in Note 36 of Section B to the Accountants' Report set out in Appendix I to this prospectus. Please also refer to the section "Connected Transactions" in this prospectus for more information.

As we have been procuring machinery, equipment and services required for our operations from local and international suppliers who are Independent Third Parties since the commencement of our operations, we believe we will not encounter any difficulty in obtaining any or all of the supplies and services we need for our operations from such Independent Third Parties in the future. While the Retained Group has been providing various types of materials and services to our Group, there are other independent trading companies in the PRC such as China National Complete Plant Import & Export Corporation (Group) (中國成套設備進出口(集團)總公司) and China MCC International Economic & Trade Co., Ltd (中冶集團國際經濟貿易有限公司) that are able to provide similar types of materials and services as those provided by the Retained Group. We believe that we are able to obtain from these independent trading companies in the PRC similar materials and services at prices and payment settlement terms similar to those provided by the Retained Group, in view of the size of our operations. Further, as the Retained Group has disclosed to us the list of suppliers from which it procured supplies for our Group, we believe that we will be able to procure our required supplies from these suppliers directly at prices similar to that obtained by the Retained Group, in view of our prior transactions with them through the Retained Group. Accordingly, we are not dependent on the Retained Group for sourcing our supplies. Nevertheless, administratively it may be more cumbersome for our Group to source and procure all of our machinery, equipment and services directly from independent trading companies and suppliers as we may have to expend considerable amounts of time and efforts to negotiate and compare the prices of each of these trading companies and suppliers, activities which the relevant entities in the Retained Group undertake as part of their day-to-day operations.

### Customer Independence

During the Track Record Period, we produced copper concentrate, blister copper and copper cathode which were sold to China, Europe and other parts of the world. As copper is a commodity product, it has a readily available market and may be traded on any of the relevant international trading platforms. All copper products have relatively transparent pricing mechanisms, with their prices determined with reference to the prices published by relevant international trading platforms such as the LME. They are fungible and easily marketable. Accordingly, the nature of our products allows us to source customers easily.

We have been selling our products to independent customers since we commenced commercial sales of our products in 2003. From 2003 to 2006, we sold copper concentrate, our only product at that time, to independent customers which were international trading companies and domestic customers in Zambia which were copper producers. In 2006, our product offering expanded to include copper cathode. The Retained Group became our customer in the same year. From 2006 to 2009, we sold copper concentrate and copper cathode to independent customers and the Retained Group. In 2009, CCS commenced commercial production of blister copper. The copper concentrate we produced were supplied to CCS for the production of blister copper. Since 2010, CCS has consumed all the copper concentrate we produce and we have stopped selling copper concentrate to independent customers and the Retained Group. Thereafter, we have been selling blister copper and copper cathode to independent customers and the Retained Group. A majority of the blister copper we produced in 2009 and the first half of 2010 was sold to independent customers. Since the second

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half of 2010, we have been selling a majority of the blister copper we produced to the Retained Group due to the increasing demand of the Retained Group fueled by the growing demand in the PRC market. A majority of the copper cathode we produced during the Track Record Period was sold to independent customers.

As copper is a commodity, it may be traded on international trading platforms and its prices are therefore relatively transparent. For example, copper is traded at a prevailing market price reflected in the average daily trading prices on the LME. We sell our products to the Retained Group and our other customers at prices based on LME prices averaged over the relevant quotational period. After taking into consideration factors such as transportation costs, sales expenses and insurance costs, the prices at which we sell to the Retained Group and independent customers are equivalent. As such, selling our products to the Retained Group or to independent customers does not make a material difference to our profit margins.

### ***Sales to the Retained Group***

The Retained Group is one of our major customers and has been our single largest customer since 2009. The Retained Group accounted for 28.8%, 55.3% and 51.0% of our total revenue in 2009, 2010 and 2011, respectively.

Since we commenced sales of copper products to the Retained Group in 2006, the Retained Group has gradually become our single largest customer primarily due to its increasing demand for our products fueled by the shortage of copper supply in the PRC, the more flexible payment settlement terms and the reduced counterparty risks offered by the Retained Group. In view of the shortage of copper supply in the PRC, the Retained Group has been increasing its orders for our products as we increased our production volume over the years. In addition, due to our affiliation with the Retained Group, the Retained Group is more willing to, at our request, make advance payments instead of issuing letters of credit to us which allows us to better manage our working capital. The letters of credit that we have with independent customers usually have a 45-day settlement period. The advance payment made by the Retained Group thus allows us to save on the interest on bank loans which we may otherwise have to pay. However, in the event that the Retained Group ceases to make advance payments and issues only letters of credit to our Group, our Directors believe that there will be no material impact on the financial performance of our Group. Further, due to the nature of commodity transactions, the settlement amount is usually relatively high. Consequently, settlement risk is an important consideration for us. While our independent major customers were carefully selected based on a number of factors including their creditworthiness, we believe that the risk of default by the Retained Group is even lesser as the Retained Group is a state-owned enterprise in the PRC. Accordingly, we have no intention to cease selling our products to the Retained Group.

Even though the Retained Group has been our single largest customer since 2009, we believe we have other available independent customers to replace the Retained Group should the Retained Group cease to be our customer or our single largest customer. The Retained Group only constituted one of the top five customers of our Group during the Track Record Period, and the other major customers of our Group during the Track Record Period were all Independent Third Parties, save for Yunnan Copper Group which is a minority shareholder of our subsidiary, CCS, and to whom we commenced direct sales in the second quarter of 2011. These major customers which were Independent Third Parties included Trafigura AG, LN Metals International Ltd, Transamine Trading SA (Swiss) and two other European trading companies. We believe that each of our independent major customers, or a combination of a few of them, has the capacity to purchase at least a very significant portion of our production outputs as they are international trading companies and there have been instances in the past when we had to turn down part of their orders due to their demand

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being greater than our supply capacity. For more information, please refer to the section entitled “Business — Sales, Distribution and Marketing — Major Customers”.

Even though the Retained Group has copper production operations in the PRC and the copper products produced by us and the Retained Group are both sold in the PRC market, we believe that it is unlikely that there will be extreme competition between the copper products of our Group and that of the Retained Group in the PRC in view of the shortfall in copper supply in the PRC. According to Wood Mackenzie, there are severe supply shortfalls in both refined copper and copper concentrate in the PRC. The refined copper supply shortage is 2,513 kt and copper concentrate supply shortage is 1,687 kt in 2011 on a contained copper basis. In the near future, a considerable shortfall between domestic supply and demand for copper in the PRC is also expected. For example, the supply deficit of copper concentrate in the PRC is expected to grow from 1.7 Mt in 2011 to 2.8 Mt in 2015. According to Wood Mackenzie, this shortfall will have to be met through imports of raw materials and refined metal. See “Industry Overview — China Copper Market Overview”. In addition, we maintain close commercial relationships with various copper refiners in the PRC, which are customers for blister copper, and downstream copper processing plants, which are customers for copper cathode. We believe that we will be able to sell our products directly to these refiners and copper processing plants upon needs in the unlikely event that we are unable to conduct sales via trading companies. In addition, copper cathode is actively traded on the LME, Shanghai Futures Exchange and COMEX, which can provide additional means of distribution for our Group’s copper cathode products. Accordingly, we do not rely on entities within the Retained Group as our customer source.

As such, we are of the view that we do not rely on the Retained Group in view of the following:

- (a) copper is a commodity and can be sold on public markets at a transparent market price;
- (b) our Group may easily find other replacement customers given the demand for copper exceeds its supply globally and in the PRC, our major market; and
- (c) the loss of the Retained Group as a customer will not affect the financial performance of our Group materially as our other existing or past customers are able to absorb more of our Group’s supply on no less favorable terms.

We have demonstrated in our operating history that we are able to sell our products without the assistance of the Retained Group. Before the Retained Group became our customer in 2006, we sold our products to independent customers. After the Retained Group became one of our customers in 2006, we continued to sell our products to independent customers. Our production volume is expected to increase significantly after we have completed our expansion projects in the next few years. The Retained Group has the capability to absorb all of our products in order to satisfy the demand in China. According to the Wood Mackenzie Report, China is the world’s largest consumer of copper and is expected to remain so for the foreseeable future. The Retained Group is made up of, among others, a few trading companies. Consequently, the Retained Group provides a ready trading platform. By selling to the Retained Group, we are able to capitalize on the distribution channels of the Retained Group and save on sales expenses. We are also able to sell into a growing market and we believe such sales strategy is more beneficial to the long term prospects of our Group. The other benefits of selling to the Retained Group include the more flexible payment settlement terms and the reduced counterparty risk offered by the Retained Group set out above. Nevertheless, even though administratively it will be easier for us to sell our products solely to the Retained Group, we continue to maintain a few of our independent customers which commenced trading relationship with us at various points in time during our operating history, so as to minimize



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customer concentration risk. These independent customers were developed by the sales teams of our operating subsidiaries. Each of our operating subsidiaries has a sales team which is responsible for the sale of our products. Our management also has extensive experience in the mining industry and is capable of developing our customer base due to their wide network. We may selectively diversify our sales to other additional high quality customers in future should the need arise. However, we do not see the commercial need to overly diversify our customer base at this stage, which would bring additional administrative burdens.

### ***Sales to Yunnan Copper Group***

During the Track Record Period, we had no common customers with the Retained Group, save for Yunnan Copper Group. Such sales to Yunnan Copper Group by our Group and the Retained Group did not happen concurrently. During the two years ended December 31, 2010 and the first quarter of 2011, we did not sell copper products directly to Yunnan Copper Group and the Retained Group purchased blister copper from our Group for sale to Yunnan Copper Group. During 2009, 2010 and the first quarter of 2011, we sold 8,870.48 tonnes, 58,688.04 tonnes and 11,713.07 tonnes, respectively, of blister copper to the Retained Group which was further sold to Yunnan Copper Group. The amounts of revenue we generated from such sales were RMB504.8 million (equivalent of US\$78.1 million), RMB3,296.9 million (equivalent of US\$510.1 million) and RMB819.2 million (equivalent of US\$126.7 million), respectively. We started selling blister copper directly to Yunnan Copper Group in the second quarter of 2011. In 2011, we sold 21,421 tonnes of blister copper to Yunnan Copper Group directly and such sales amounted to US\$171.0 million.

Pursuant to the terms of the shareholders' agreement dated June 2, 2006 in respect of CCS, more details of which are set out under "Our History and Reorganization — Our Joint Venture Arrangements — Joint Venture Partners and Shareholders' Agreements — CCS shareholders' agreement", all blister copper produced by CCS shall be sold to Yunnan Copper Group. It was the intention of Yunnan Copper Group to purchase the entire quantity of blister copper produced by CCS for use in its copper processing plants in the PRC. However, due to the global financial crisis that started in September 2008, Yunnan Copper Group changed its production plans. At the request of Yunnan Copper Group in a letter dated November 11, 2008, CCS was not obliged to sell all the blister copper it produced to Yunnan Copper Group after it commenced production of blister copper in 2009.

The sales arrangement between CCS and Yunnan Copper Group in 2009 and 2010 was that Yunnan Copper Group would place individual orders for blister copper with the Retained Group, and the Retained Group would purchase such blister copper from CCS which it would then sell to Yunnan Copper Group. The Retained Group did not provide any value added services in the procurement chain and received no consideration, benefit or advantage from CCS or Yunnan Copper Group in 2009 and 2010. Since CCS generally entered into annual contracts with its customers with indicative yearly quantity set out in such contracts, Yunnan Copper Group requested for such a sales arrangement so that it was not obliged to purchase any minimum or fixed quantity of blister copper from CCS, and thus had greater flexibility in its procurement plan amidst the global financial crisis. With the recovery of the economy in 2010, the production plans of Yunnan Copper Group at its copper processing plants became more stable and Yunnan Copper Group wanted to secure a steady supply of blister copper for its operations. Accordingly, in end 2010, Yunnan Copper Group indicated that it intended to purchase the entire quantity of blister copper produced by CCS. After discussion with Yunnan Copper Group, it was agreed that all the blister copper produced by CCS in the first quarter of 2011 would be sold to Yunnan Copper Group and subsequent to that, 40% of the blister copper produced by CCS would be to Yunnan Copper Group, having regard to Yunnan Copper Group's shareholding interest in CCS. Such agreement was recorded in the shareholders' resolutions of CCS dated March 13, 2011. As a transitional arrangement, the entire quantity of

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blister copper produced by CCS in the first quarter of 2011 was sold to the Retained Group for onwards sales to Yunnan Copper Group. The direct sales of blister copper to Yunnan Copper Group commenced in the second quarter of 2011. Upon further discussion with Yunnan Copper Group, it was subsequently agreed in the Yunnan Copper Supply Framework Agreement that we will sell 40% of the balance of copper products produced by CCS that is not sold to Independent Third Parties to Yunnan Copper Group. See “Connected Transactions — Non-exempt Continuing Connected Transactions —2. Yunnan Copper Supply Framework Agreement”.

### **Supplier Independence**

Our raw materials include copper concentrate, copper tailings, oxide ore, mixed ores and other ancillary raw materials such as explosives and fuels. During the Track Record Period, the copper concentrate we used for the production of blister copper and copper tailings, oxide ore and mixed ores we used for production of copper cathode, were obtained from our own mines or purchased from other mining companies which are Independent Third Parties. We source other raw materials mainly from local Zambian suppliers or other international suppliers who are Independent Third Parties. We also procure certain auxiliary materials and related trade and services from entities within the Retained Group. Such arrangement is intended to receive better payment settlement terms as the Retained Group generally requires us to make payment only after delivery of supplies to our premises, as compared to independent supplies who may require us to make advance payment before delivery. Accordingly, our Group is not dependent on the Retained Group for the supply of our principal raw materials.

### **Financial Independence**

We have established an independent finance department with a team of independent financial staff, as well as a standardized financial and accounting system. We make financial decisions according to our own business needs. We have opened basic accounts with banks independent of the Retained Group and the Retained Group does not share any bank account with us. We have made independent tax registrations and paid tax independently pursuant to applicable laws.

During the Track Record Period, CNMC had provided certain financial assistance to our Group in the form of shareholders’ loans and guarantee.



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The following table presents the details of the financial assistance provided by CNMC to our Group as of April 30, 2012, which is the latest practicable date as of which such information is available:

Borrower	Lender	Date of loan agreement	Purpose	Duration	Outstanding loan amount as at April 30, 2012 (US\$)	Guarantor	Security provided by our Group
<b>Loans provided by CNMC</b>							
Luanshya	CNMC	November 2, 2009	General funding requirement	November 2009- November 2014	8,000,000	Nil	Nil
Luanshya	CNMC	October 26, 2011	Financing the Muliashi Project	2011 to 2018	30,000,000	Nil	Nil
Luanshya	CNMC	November 18, 2011	Financing the Muliashi Project	November 18, 2011 to November 17, 2018	44,068,092	Nil	Nil
<b>Bank loans guaranteed by CNMC without security from our Group</b>							
NFCA	The Export-Import Bank of China	January 11, 2008	Construction of Chambishi West Mine	84 months from date of first drawdown and expiring on January 15, 2015	37,000,000	CNMC	Nil
	Bank of China, Cayman Branch	October 5, 2009	General working capital	36 months from date of first drawdown	50,000,000	CNMC	Nil
Luanshya	BOC Finance (Ireland) Limited	August 31, 2010	US\$197,450,000 for fixed assets investment and US\$12,550,000 for general working capital	US\$197,450,000 — 9 years from date of first drawdown US\$12,550,000 — 3 years from date of first drawdown	197,450,000	CNMC	Nil
CCS	Bank of China, Cayman Branch	June 10, 2009	General working capital	36 months from the date of first drawdown	60,000,000	CNMC	Nil
	BOC Finance (Ireland) Limited	October 11, 2010	US\$98,570,000 for fixed assets investment and US\$51,430,000 for general working capital	US\$98,570,000 — 8 years from first drawdown date US\$51,430,000 — 3 years from first drawdown date	80,000,000	60% of the loan (i.e. US\$48,000,000) by CNMC and 40% of the loan (i.e. US\$32,000,000) by Yunnan Copper Group	Nil

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Borrower	Lender	Date of loan agreement	Purpose	Duration	Outstanding loan amount as at April 30, 2012 (US\$)	Guarantor	Security provided by our Group
<b>Bank loans guaranteed by CNMC with security from our Group</b>							
CCS	China Construction Bank, Johannesburg Branch	August 12, 2009	General working capital	3 years, expiring on August 17, 2012	70,000,000	CNMC	1. Unconditional irrevocable letter of guarantee from China Construction Bank, Beijing Branch 2. Security deposit of US\$2,000,000 provided by CCS
Luanshya	China Construction Bank, Johannesburg Branch	February 11, 2010	General working capital funding facility	5 years, expiring on February 15, 2015	100,000,000	CNMC	1. Unconditional irrevocable letter of guarantee from China Construction Bank, Beijing Branch 2. Security deposit of not less than the higher amount of 2% of the facility utilization amount, from time to time or the equivalent of three months interest calculated on the utilization amount, from time to time, provided by Luanshya

With respect to the financial assistance provided by CNMC to our Group as set forth in the table above, as of April 30, 2012, which is the latest practicable date as of which such information is available:

- the total amount of guarantees provided by CNMC to our Group amounted to approximately US\$562.45 million, representing approximately 80.8% of the total borrowings of our Group; and
- the total amount of loans provided by CNMC to our Group amounted to US\$82.07 million, representing approximately 11.8% of the total borrowings of our Group.

The shareholders' loan of US\$8 million extended by CNMC to Luanshya has an interest of LIBOR+200BPs and will expire in 2014. We took out a shareholders' loan of US\$30 million in October 2011 and another shareholders' loan of US\$44.07 million in November 2011 to finance the Muliashi Project. The US\$30 million shareholders' loan has an interest rate of six month LIBOR+400BPs and the interest rate for the other US\$44.07 million shareholders' loan is based on the PBOC base lending rate, currently at 7.05% (approximately LIBOR+600BPs) for loans over five years. The interest rates for the two loans were different because the sources for the two loans provided by CNMC were different. The US\$30 million loan was extended by CNMC in US dollars

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using its own capital, whereas the US\$44.07 million loan was extended by CNMC using Renminbi borrowed from financial institutions in the PRC. Accordingly, the interest rate for the US\$30 million loan was determined with reference to market interest rate for loans in US dollars while the interest rate for the US\$44.07 million loan was determined with reference to the PBOC base lending rate. Both of these loans will expire in 2018.

In addition to the shareholders' loans extended by CNMC, the minority shareholder of CCS, Yunnan Copper Group, also extended a shareholders' loan to CCS. As of April 30, 2012, which is the latest practicable date such information is available, the outstanding shareholders' loan extended to CCS amounted to US\$19,660,500 with an interest rate at LIBOR+150BPs and will expire in 2014. Such loan extended by Yunnan Copper Group constitutes approximately 2.8% of the total borrowings of our Group.

We intend to repay the above outstanding shareholders' loans as soon as possible, in any event no later than six months from the Listing Date, using a combination of working capital, proceeds from the Global Offering and/or securing new bank loans.

As of April 30, 2012, which is the latest practicable date such information is available, the aggregate bank loans of US\$562.45 million guaranteed by CNMC have interest rates ranging from LIBOR+75BPs-200BPs and years of expiry ranging from 2012 to 2019.

The shareholders and bank loan proceeds drawn down by our Group within one year before the initial date of our listing application in July 2011 were mostly applied to our development projects and expansion plans, including US\$80 million for the expansion of the Chambishi Copper Smelter, US\$48 million for the construction of the Chambishi West Mine and US\$130 million for the Muliashi Project.

### ***The BOC Letter and the CCB Letter***

With respect to all loans provided or guaranteed by CNMC, we believe our Group is able to obtain replacement financing from independent financial institutions without guarantee being provided by CNMC on terms no more favorable than the terms of the loans provided or guaranteed by CNMC. While we have no past records of fund raising on a stand-alone basis without any credit or financial support from CNMC, our ultimate Controlling Shareholder, we have obtained a commitment letter from the Bank of China (the "BOC") dated October 9, 2011 (the "BOC Letter") pursuant to which the BOC agreed to extend a loan of up to US\$1.4 billion to our Group for a term of up to five years without guarantee from CNMC, or any other third party, at a rate of interest of LIBOR+450BPs-550BPs. The amount agreed to be extended by the BOC is higher than the aggregate of the existing shareholders loan of US\$82.07 million extended by CNMC and bank loans of approximately US\$562.45 million guaranteed by CNMC, as at April 30, 2012, which is the latest practicable date such information is available. The shareholders' loans of US\$8 million and US\$30 million extended by CNMC to Luanshya respectively, have interest rates ranging from LIBOR+200BPs-400BPs and the bank loans which have been guaranteed by CNMC have interest rates ranging from LIBOR+75BPs-200BPs, which are lower than the interest rate stated in the BOC Letter. Accordingly, as the rate of interest offered in the BOC Letter is higher than the rate offered by CNMC or by the banks whose loans have been guaranteed by CNMC, we believe that entering into such replacement loans would not be cost-effective and it is in the commercial interest of the Group to retain these loans provided or guaranteed by CNMC. As for the US\$44.07 million loan extended by CNMC to Luanshya in November 2011, the interest rate is higher than that offered in the BOC Letter. However, we did not proceed to obtain a loan pursuant to the BOC Letter because it was provided in the BOC Letter that the commitment of BOC was subject to the completion of the Reorganization. As Luanshya

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required capital for the Muliashi Project before the completion of the Reorganization, we were unable to obtain a loan pursuant to the BOC Letter. The BOC Letter was renewed on March 9, 2012.

In addition to the BOC Letter, we have also obtained a commitment letter from China Construction Bank (“CCB”) dated October 14, 2011 (the “CCB Letter”) pursuant to which CCB agreed to extend a loan of up to US\$500 million to our Group for a term of up to five years without guarantee from our Controlling Shareholder or any third party. The CCB Letter provides that the other main terms of the loan from CCB will be negotiated with reference to market terms. We did not proceed to obtain a loan pursuant to the CCB Letter before obtaining the aggregate new shareholders’ loans of US\$74.07 million in October 2011 and November 2011 because the commitment of CCB was also subject to the completion of the Reorganization.

We believe that both the BOC Letter and the CCB Letter demonstrate that we are able to obtain new financing and extend existing financing from commercial banks on market terms without guarantee or security from CNMC following the Listing. To the extent that we took out shareholders’ loan of US\$44.07 million in November 2011 at interest rate higher than that set out in the BOC Letter, it was due to the limitation imposed in the BOC Letter relating to completion of Reorganization. We intend to repay all of our shareholders’ loans as soon as practicable but, in any event no later than six months after Listing by using a combination of working capital, proceeds from the Global Offering and/or securing new bank loans. We have set aside 15% of the proceeds from the Global Offering for the repayment of certain existing loans. In the event that our shareholders’ loans are not discharged immediately upon Listing, our Directors will monitor and promptly announce the progress of any repayment of such loans within the abovementioned six months period upon Listing. Accordingly, we believe that our financial independence as demonstrated by the BOC Letter and the CCB Letter should not be affected by the special circumstances surrounding the US\$44.07 million shareholders’ loan taken out by us in November 2011 to finance the Muliashi Project.

Considering the aforesaid factors, we believe that we have demonstrated financial independence.

### **Management Independence**

CNMC and its subsidiaries and our Company have boards of directors or equivalent decision making bodies that function independently of each other. While CNMC will remain our Controlling Shareholder after completion of the Global Offering and the Listing, the management of our Group will be independent from the management of the Retained Group. In addition, we intend to implement comprehensive corporate governance procedures, put in place measures to manage potential conflicts of interest and safeguard the interests of our Shareholders as a whole.

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The following table sets forth details of the directorships of our Company and the senior management positions held by our Directors in CNMC:

Name	Director Position in Our Company	Management Position in CNMC
Tao Luo . . . . .	Chairman and Non-executive Director	General Manager
Xinghu Tao . . . . .	Vice Chairman, President and Executive Director	Deputy General Manager
Chunlai Wang . . . . .	Executive Director and Vice President	N/A
Xingeng Luo . . . . .	Executive Director and Vice President	N/A
Xinguo Yang . . . . .	Executive Director and Vice President	N/A
Kaishou Xie . . . . .	Executive Director and Vice President	N/A
Chuanyao Sun . . . . .	Independent non-executive Director	N/A
Jingwei Liu . . . . .	Independent non-executive Director	N/A
Shuang Chen . . . . .	Independent non-executive Director	N/A

We have nine Directors, two of whom, namely Tao Luo and Xinghu Tao, hold management positions in CNMC. Tao Luo and Xinghu Tao have, respectively, 35 years and 30 years of experience in the mining industry. We believe their extensive experience and knowledge in the mining industry contribute significantly towards the development of our business.

Each of our Directors is aware of his fiduciary duties as a Director of our Company which require, among other things, that he acts for the benefit and in the best interests of our Company and avoids any conflict between his duties as a Director of our Company and his personal interest. In the event that there is a potential conflict of interest arising out of any transaction to be entered into between our Group and our Directors or their respective associates, the interested Director(s) shall abstain from voting at the relevant board meetings of our Company in respect of such transactions and shall not be counted in the quorum. In the event that our Board is required to consider whether or not to acquire a competing business opportunity, or otherwise, such that the overlapping Directors are required to abstain from attending our Board meetings, our Board can function effectively given the qualifications, expertise and experience of the independent Directors in the copper and cobalt mining business.

Considering all the foregoing factors, we are satisfied that our Board will operate independently and resolve all actual or potential conflicting matters of our Group's business with that of the CNMC Group and is capable of properly discharging its duties and acting in the best interest of our Shareholders as a whole, and not in the interests of the CNMC Group only.

### NON-COMPETITION UNDERTAKING

Each of our Directors confirms that he is not interested in any business which competes or is likely to compete, either directly or indirectly, with our Group.

On May 14, 2012, CNMC executed the Deed of Non-Competition Undertaking in favor of our Group setting out its undertakings (the "Non-Competition Undertaking") in respect of its conduct of the following activities outside the PRC:

- (a) acquiring, holding, developing, transferring, disposing or otherwise dealing in, whether directly or indirectly, copper and cobalt (excluding copper and cobalt in the form of associated ores) mining, ore processing, leaching and smelting operations, assets or projects; or

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- (b) acquiring, holding, transferring, disposing or otherwise dealing in, directly or indirectly, shares or units of any company, joint venture, corporation or entity of any nature, whether or not incorporated, with any interest in the matters set out in paragraph (a) above,

(together, the “Copper and Cobalt International Mining Business”).

We have excluded copper and cobalt in the form of associated ores from the scope of Non-Competition Undertaking as technically and economically they have no mining value of their own. To include them in the Non-Competition Undertaking may cause the Non-Competition Undertaking to become overly restrictive.

Under the Non-Competition Undertaking, CNMC undertook, among other things, that it will not, and will procure that none of its associates (excluding our Group) will, at any time, either on its own behalf or as agent of any person, firm or company, directly or indirectly, be engaged in the Copper and Cobalt International Mining Business or be interested in companies or entities that carry out the Copper and Cobalt International Mining Business during the validity of the Non-Competition Undertaking except that:

- (a) CNMC and/or any of its associates (excluding our Group) may continue to hold, transfer and/or dispose of its existing interests in the Copper and Cobalt International Mining Business; or
- (b) CNMC and/or any of its associates (excluding our Group) may acquire or hold any investment in units or shares of any company, investment trust, joint venture or other entity which engages in the Copper and Cobalt International Mining Business where such investment does not exceed 10% of the outstanding voting rights of such company, investment trust, joint venture or other entity and provided such investment does not grant any right to control the composition of the board of directors or managers of such company, investment trust, joint venture or other entity or any right to be involved, directly or indirectly, in managing the operations of such company, investment trust, joint venture or other entity.

Pursuant to the Non-Competition Undertaking, CNMC will also procure that after the Listing, the Retained Group will not conduct any sales of blister copper and copper cathode outside the PRC, and that the Retained Group will discontinue its sales of copper products to the Yunnan Copper Group.

Under the Deed of Non-Competition Undertaking, CNMC has also granted us a right of first refusal (the “Right of First Refusal”) in relation to any opportunity relating to the Copper and Cobalt International Mining Business (the “New Opportunity”) that the Retained Group identifies or that is offered to them by a third party. Under the terms of the Right of First Refusal, the Retained Group will notify us of any New Opportunity before the signing of any definitive agreement in relation to the New Opportunity. We will have the right to request the Retained Group to allow us to participate in the New Opportunity within two months from the receipt of the notification or five working days before tender deadline or such other date specified by the party offering the New Opportunity, whichever is earlier. We are deemed to have given up the Right of First Refusal in respect of a particular New Opportunity if we fail to inform the Retained Group of our decision to pursue the New Opportunity within the applicable timeline, and the Retained Group will be entitled to pursue the particular New Opportunity thereafter. In deciding whether to pursue a particular New Opportunity, we will promptly seek approval from our independent non-executive Directors. The investment structure and other material terms relating to our participation in a particular New Opportunity will also be subject to the review and examination of these independent non-executive Directors. We will disclose in our annual report any decision by the independent non-executive Directors to decline a New Opportunity and the basis thereof or any lapse of our Right of First

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## RELATIONSHIP WITH OUR CONTROLLING SHAREHOLDER

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Refusal if we fail to inform the Retained Group of our decision to pursue the New Opportunity within two months from the receipt of the notification or five working days before tender deadline or such other date specified by the party offering the New Opportunity, whichever is earlier.

The Non-Competition Undertaking will take effect from the Listing Date and will terminate upon the earlier of:

- the date when CNMC and/or its associates (excluding our Group) taken together cease to control 30% or more of our Shares or when CNMC and/or its associates (excluding our Group) taken together cease to be regarded as our Controlling Shareholder;
- the date when CNMC and/or its associates (excluding our Group) taken together cease to be our largest single shareholder; or
- the date when our Shares cease to be listed on any stock exchange.

### DEED OF INDEMNITY

For the purpose of the Listing, on May 14, 2012, CNMC (the “Indemnifier”) entered into the Deed of Indemnity with our Company (for itself and as trustee for our subsidiaries) to provide the following indemnities in favor of our Group, effective from the Listing Date.

Under the Deed of Indemnity, the Indemnifier agrees and undertakes with our Company that it will indemnify our Group against any losses arising from any claims, fines, penalties or other civil or administrative liabilities which may be imposed or levied on our Group by any government authorities in any jurisdictions where our Group operates, including the PRC and Zambia, in respect of any failure to comply with the applicable law and regulations of the relevant jurisdictions, including but not limited to those relating to the operations of our Group or ownership and/or control of land or assets, to the extent that such losses relate to acts or omissions or transactions entered into by our Group prior to the Listing.

The Indemnifier will not be liable in respect of any loss mentioned above: (i) to the extent that specific provision or reserve has been made in our audited consolidated financial information as set out in the Accountants’ Report in Appendix I to this prospectus; (ii) to the extent such loss would not have arisen but for any act or omission of, or transactions entered into by, our Company or any member of our Group (other than pursuant to a legally binding commitment created on or before the Listing Date) otherwise than in the course of normal day-to-day operations after the Listing Date; and (iii) to the extent such loss arises or is incurred only as a result of a retrospective change in law or regulations or the interpretation or practice thereof by any relevant authority coming into force after the Listing Date.

In addition, the Indemnifier agrees and undertakes with our Company that it will indemnify our Company against any loss or liability or diminution in value of assets suffered by our Company or any member of our Group as a result of or in connection with any tax liability (including estate duty) in any jurisdiction arising: (i) in respect of or in consequence of any act, omission or event which occurred or is deemed to occur on or before the Listing Date; (ii) from any income, profits or gains earned, accrued or received or deemed to have been earned, accrued or received on or before the Listing Date; or (iii) as a result of our Company or any member of our Group receiving or being entitled to receive any payment under the Deed of Indemnity, whether alone or in conjunction with other circumstances and whether or not such taxation is chargeable against or attributable to any other person.



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## RELATIONSHIP WITH OUR CONTROLLING SHAREHOLDER

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The Indemnifier will not be liable in respect of any taxation liability: (i) to the extent that specific provision or reserve has been made for such taxation liability in our audited consolidated financial statements as set out in the Accountants' Report in Appendix I to this prospectus; (ii) to the extent such taxation liability would not have arisen but for any act or omission, or transactions entered into by, our Company or any member of our Group (other than pursuant to a legally binding commitment created on or before the Listing Date) otherwise than in the course of normal day-to-day operations after the Listing Date; or (iii) to the extent such taxation liability arises or is incurred only as a result of a retrospective change in law or regulations, a retrospective increase in tax rates or a retrospective change in administrative interpretation of law or regulations, coming into force after the Listing Date.

### CORPORATE GOVERNANCE

We are committed to the view that our Board should include a balanced composition of executive and non-executive Directors (including independent non-executive Directors) so that there is a strong element on the Board which can effectively exercise independent judgment. We are also committed to the view that our independent non-executive Directors should be of sufficient caliber and number for their views to carry weight. Our independent non-executive Directors, details of whom are set forth in the section headed "Directors and Senior Management" in this prospectus, are free of any business or other relationships which could interfere in any material manner with the exercise of their independent judgment.

In addition to the measures taken to ensure that our Directors avoid potential conflicts of interests and our Board operates independently and in the interest of our Company and its Shareholders generally (as described in the sub-section headed "— Management Independence" above), pursuant to our Articles of Association, matters which involve transactions between our Group, on the one part, and CNMC and/or any of its associates (excluding our Group), on the other part, will be decided by majority vote by our independent non-executive Directors and any other Director who does not hold any management position in CNMC. Such Directors will appoint among themselves a chairman of the meeting who will have a second or casting vote in case of equality of votes at the meeting. Directors with positions in the management committee of CNMC, namely Tao Luo and Xinghu Tao, will not be counted in the quorum and will abstain from voting on such matters. In addition, the overlapping Directors will excuse themselves from our Board meetings when such matters are discussed unless expressly requested to attend by a majority of our independent non-executive Directors.

In addition, the following measures will be adopted by us in respect of the enforceability of the Non-competition Undertaking:

- the independent non-executive Directors will review, on an annual basis, the Retained Group's compliance with the Non-competition Undertaking;
- we will disclose decisions on matters reviewed by the independent non-executive Directors relating to the enforcement of the Non-Competition Undertaking (if any) in our annual report or, where the Board considers it appropriate, by way of an announcement;
- CNMC has undertaken to our Company that it will provide all information necessary for the annual review by our independent non-executive Directors and the enforcement of the Non-Competition Undertaking; and
- CNMC has undertaken to our Company that it will make an annual confirmation as to compliance with the Non-Competition Undertaking in our annual report.

Further, any transaction that is proposed between us and the Retained Group will be required to comply with the then requirements of the Listing Rules, including, where applicable, the announcement, reporting and independent shareholders' approval requirements.

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## CONNECTED TRANSACTIONS

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### RELEVANT CONNECTED PERSONS

The table below sets forth the connected persons of our Company who conduct or will conduct connected transactions with our Group upon Listing and the nature of their connection with our Group:

<u>Name</u>	<u>Connected relationship</u>
CNMC	CNMC indirectly holds 100% of our issued share capital immediately prior to the Global Offering. Immediately following the Global Offering, assuming the Over-allotment Option is not exercised, CNMC indirectly holds 74.93% of our issued share capital. It is our ultimate Controlling Shareholder and constitutes our connected person pursuant to Rule 14A.11(1) of the Listing Rules.
Retained Group	The Retained Group consists of CNMC and its subsidiaries other than our Group. Each of the subsidiaries of CNMC, including but not limited to CNMC International Trade, ZCCZ, Fifteen MCC Africa and Sinotra, constitutes our connected person pursuant to Rule 14A.11(4) of the Listing Rules.
Yunnan Copper Group	Yunnan Copper Group is a Controlling Shareholder of CCS holding 40% of the issued share capital of CCS. It is our connected person pursuant to Rule 14A.11(1) of the Listing Rules.
Subsidiaries of Yunnan Copper Group	The subsidiaries of Yunnan Copper Group, including but not limited to Yunnan Copper and Yunnan Copper Technology, constitute our connected person pursuant to Rule 14A.11(4) of the Listing Rules.
Huachin Minerals	Huachin Minerals is 70% owned by Mr. Ng Siu Kam, who holds the entire interest in Huachin SPRL. Huachin SPRL holds 37.5% of our subsidiary, Huachin. Accordingly Huachin Minerals constitutes our connected person pursuant to Rule 14A.11(4) of the Listing Rules. Save for Mr. Ng Siu Kam's connection to our Group as disclosed in this prospectus, Mr. Ng is an Independent Third Party.

### EXEMPT ONE-OFF CONNECTED TRANSACTIONS

#### Deed of Non-Competition Undertaking

The Deed of Non-Competition Undertaking was entered into between CNMC and our Company on May 14, 2012. A description of the Deed of Non-Competition Undertaking is contained in the section headed "Relationship with Our Controlling Shareholder — Non-Competition Undertaking" in this prospectus. No consideration is payable by either party under the Deed of Non-Competition Undertaking. Accordingly, the Deed of Non-Competition Undertaking is a connected transaction

## CONNECTED TRANSACTIONS

that is exempt from the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.31(2) of the Listing Rules.

### Deed of Indemnity

We entered into the Deed of Indemnity with CNMC on May 14, 2012. A description of the Deed of Indemnity is contained in the section headed "Relationship with Our Controlling Shareholder — Deed of Indemnity" in this prospectus. No consideration is payable by either party under the Deed of Indemnity. Accordingly, the Deed of Indemnity is a connected transaction that is exempt from the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.31(2) of the Listing Rules.

### CONTINUING CONNECTED TRANSACTIONS

#### Summary Table of Our Continuing Connected Transactions

Nature of transaction	Applicable Listing Rules	Waiver sought	Annual cap for the year ending December 31,		
			2012 (US\$)	2013 (US\$)	2014 (US\$)
<b>Exempt continuing connected transactions</b>					
(1) Trademark License Agreement . . . .	14A.33(3)	N/A	N/A	N/A	N/A
(2) Loans from CNMC . . . . .	14A.65(4)	N/A	N/A	N/A	N/A
(3) Guarantees from CNMC . . . . .	14A.65(4)	N/A	N/A	N/A	N/A
(4) Loans from Yunnan Copper Group . . . . .	14A.65(4)	N/A	N/A	N/A	N/A
(5) Guarantee from Yunnan Copper Group . . . . .	14A.65(4)	N/A	N/A	N/A	N/A
(6) Fifteen MCC Africa Agreement . . .	14A.33(3)	N/A	N/A	N/A	N/A
(7) Yunnan Copper Technology Agreement . . . . .	14A.33(3)	N/A	N/A	N/A	N/A
(8) Guarantee fees to CNMC . . . . .	14A.33(3)	N/A	1,150,000	800,000	800,000
<b>Non-exempt continuing connected transactions</b>					
(1) CNMC Copper Supply Framework Agreement . . . . .	14A.35	Yes	961,721,000	1,443,390,000	1,413,588,000
(2) Yunnan Copper Supply Framework Agreement . . . . .	14A.35	Yes	526,256,000	774,000,000	725,400,000
(3) Huachin Ore Supply Framework Agreement . . . . .	14A.35	Yes	12,692,000	14,288,000	13,391,000
(4) Mutual Supply Framework Agreement . . . . .					
— procurement of raw materials, products and services . . . . .	14A.35	Yes	267,188,000	266,399,000	258,610,000
— supply of raw materials, products and services . . . . .	14A.35	Yes	12,460,000	7,640,000	4,906,000
(5) Properties Leasing Framework Agreement . . . . .	14A.35	Yes	7,096,200	7,096,200	7,096,200
(6) Guarantees from CNMC . . . . .	14A.35	Yes	170,000,000	100,000,000	100,000,000

### EXEMPT CONTINUING CONNECTED TRANSACTIONS

#### 1. Trademark License Agreement

We entered into a trademark license agreement (the "Trademark License Agreement") with CNMC on May 14, 2012, pursuant to which CNMC had agreed to license certain trademarks for our use in

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## CONNECTED TRANSACTIONS

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connection with our copper and cobalt mining operations, assets or projects outside the PRC for a perpetual term on a non-exclusive and royalty-free basis for a term commencing from the date of the Trademark License Agreement to the date of expiry of registration of such trademarks.

As the grant of rights to use certain trademarks by CNMC to our Group is on a royalty-free basis, each of the applicable percentage ratios (other than the profits ratio) calculated for the purpose of Chapter 14A of the Listing Rules will not exceed 0.1% on an annual basis. Accordingly, the Trademark License Agreement falls within the *de minimis* threshold as stipulated under Rule 14A.33(3) of the Listing Rules and the transactions under the Trademark License Agreement are exempt from the reporting, annual review, announcement and independent shareholders' approval requirements.

### 2. Loans from CNMC

CNMC has provided us with certain loans to fund certain of our capital expenditures and working capital in the past. The table below sets forth the information in respect of loans provided by CNMC to us and the outstanding amounts of such loans as of April 30, 2012, which is the latest practicable date as of which such information is available:

<u>Borrower</u>	<u>Lender</u>	<u>Date of loan agreement</u>	<u>Purpose</u>	<u>Duration</u>	<u>Outstanding loan amount as at April 30, 2012 (US\$)</u>	<u>Security</u>
Luanshya . . . . .	CNMC	November 2, 2009	General working capital	November 2009 – November 2014	8,000,000	Nil
Luanshya . . . . .	CNMC	October 26, 2011	Financing the Muliashi Project	2011 to 2018	30,000,000	Nil
Luanshya . . . . .	CNMC	November 18, 2011	Financing the Muliashi Project	November 18, 2011 to November 17, 2018	44,068,092	Nil

Our Directors are of the view that the above loans, being a form of financial assistance (as defined in the Listing Rules) provided by CNMC for our benefit, were on normal commercial terms where no security over our Company's assets was granted in respect of such financial assistance. As such, the above loans granted by CNMC are exempt from reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.65(4) of the Listing Rules.

## CONNECTED TRANSACTIONS

### 3. Guarantees from CNMC

CNMC has guaranteed certain of our external borrowings from Independent Third Party financial institutions. Such guarantees have enabled us to obtain more favorable financing terms from such financial institutions. The following table sets out the information in respect of unsecured bank loans procured by us which are guaranteed by CNMC and the outstanding amounts of such bank loans as of April 30, 2012, which is the latest practicable date such information is available:

Borrower	Lender	Date of loan agreement	Maximum loan amount (US\$)	Purpose	Duration of loan amount	Outstanding loan amount as at April 30, 2012 (US\$)	Guarantor
NFCA . . . .	The Export-Import Bank of China, Beijing Branch	January 11, 2008	70,000,000	Construction of Chambishi West Mine	84 months from date of first drawdown and expiring on January 15, 2015	37,000,000	CNMC
	Bank of China, Cayman Branch	October 5, 2009	50,000,000	General working capital	36 months from date of first drawdown	50,000,000	CNMC
Luanshya . .	BOC Finance (Ireland) Limited	August 31, 2010	210,000,000	US\$197,450,000 for fixed assets investment and US\$12,550,000 for general working capital	US\$197,450,000 — 9 years from first drawdown date US\$12,550,000 — 3 years from first drawdown date	197,450,000	CNMC
CCS . . . . .	Bank of China, Cayman Branch	June 10, 2009	60,000,000	General working capital	36 months from the date of first drawdown	60,000,000	CNMC
	BOC Finance (Ireland) Limited	October 11, 2010	150,000,000	US\$98,570,000 for fixed assets investment and US\$51,430,000 for general working capital	US\$98,570,000 — 8 years from first drawdown date US\$51,430,000 — 3 years from first drawdown date	80,000,000	60% of the loan (i.e. US\$48,000,000) by CNMC and 40% of the loan (i.e. US\$32,000,000) by Yunnan Copper Group
<b>Total . . . . .</b>			<b>540,000,000</b>			<b>424,450,000</b>	

Our Directors are of the view that the guarantees, being a form of financial assistance (as defined in the Listing Rules) provided by CNMC for our benefit, were on normal commercial terms where no security over our assets was granted in respect of such financial assistance provided by CNMC. Accordingly, such guarantees are exempt from all reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.65(4) of the Listing Rules.

## CONNECTED TRANSACTIONS

### 4. Loans from Yunnan Copper Group

Yunnan Copper Group has provided certain shareholder loans to our subsidiary, CCS (of which Yunnan Copper Group holds 40% interest), to fund certain of the capital expenditure of CCS. The table below sets forth the information in respect of the loan provided by Yunnan Copper Group to CCS and the outstanding amount of such loan as of April 30, 2012, which is the latest practicable date as of which such information is available:

<u>Borrower</u>	<u>Lender</u>	<u>Date of loan agreement</u>	<u>Purpose</u>	<u>Duration</u>	<u>Outstanding loan amount as at April 30, 2012 (US\$)</u>	<u>Security</u>
CCS . . .	Yunnan Copper Group	May 8, 2007	Construction of Chambishi Copper Smelter	From the date CCS drew down on bank loans for specific projects until June 30, 2014	19,660,500	Nil

Our Directors are of the view that the above loan, being a form of financial assistance (as defined in the Listing Rules) provided by Yunnan Copper Group for our benefit, was on normal commercial terms where no security over our assets was granted in respect of such financial assistance. As such, the above loan is exempt from reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.65(4) of the Listing Rules.

### 5. Guarantee from Yunnan Copper Group

Yunnan Copper Group has guaranteed certain of our external borrowings from Independent Third Party financial institution. Such guarantee has enabled us to obtain more favorable financing terms from such financial institution. The following table sets out the information in respect of unsecured bank loan procured by us which is guaranteed by Yunnan Copper Group and the outstanding amount of such bank loan as of April 30, 2012, which is the latest practicable date as of which such information is available:

<u>Borrower</u>	<u>Lender</u>	<u>Date of loan agreement</u>	<u>Maximum loan amount (US\$)</u>	<u>Purpose</u>	<u>Duration</u>	<u>Outstanding loan amount as at April 30, 2012 (US\$)</u>	<u>Security</u>
CCS . . . .	BOC Finance (Ireland) Limited	October 11, 2010	150,000,000	US\$98,570,000 for fixed assets investment and US\$51,430,000 for general working capital	US\$98,570,000 — 8 years from first drawdown date US\$51,430,000 — 3 years from first drawdown date	80,000,000	60% of the loan (i.e. US\$48,000,000) by CNMC and 40% of the loan (i.e. US\$32,000,000) by Yunnan Copper Group

Our Directors are of the view that the guarantee, being a form of financial assistance (as defined in the Listing Rules) provided by Yunnan Copper Group for the benefit of CCS, was on normal commercial terms where no security over our assets was granted in respect of such financial assistance provided by Yunnan Copper Group. Accordingly, such guarantee is exempt from all reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.65(4) of the Listing Rules.

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## CONNECTED TRANSACTIONS

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### 6. Fifteen MCC Africa Agreement

On July 1, 2009, our subsidiary, CCS, entered into an agreement with Fifteen MCC Africa (the “Fifteen MCC Africa Agreement”) pursuant to which CCS agreed to provide certain living quarters to Fifteen MCC Africa on a free of charge basis. Fifteen MCC Africa shall pay for the use of water and electricity and other expenses such as repair and any applicable tax in Zambia. The Fifteen MCC Africa Agreement shall remain in effect for as long as CCS is in existence. As Fifteen MCC Africa provides construction as well as equipment repair and maintenance services to CCS on an ongoing basis, it requires accommodation for its staff based in Zambia, the costs of which would ordinarily be borne by us. Our Directors are of the view that the Fifteen MCC Africa Agreement was negotiated at arm’s length on normal commercial terms since by providing living quarters to the relevant staff of Fifteen MCC Africa, we will not have to incur accommodation expenditure for such staff.

As the provision of living quarters by CCS to Fifteen MCC Africa is on a free of charge basis, each of the applicable percentage ratios (other than the profits ratio) calculated for the purpose of Chapter 14A of the Listing Rules will not exceed 0.1% on an annual basis. Accordingly, the Fifteen MCC Africa Agreement falls within the *de minimis* threshold as stipulated under Rule 14A.33(3) of the Listing Rules is exempt from the reporting, annual review, announcement and independent shareholders’ approval requirements.

### 7. Yunnan Copper Technology Agreement

On December 8, 2010, our subsidiary, CCS, entered into a technical service agreement with Yunnan Copper Technology (the “Yunnan Copper Technology Agreement”) pursuant to which Yunnan Copper Technology agreed to provide certain technical services in CCS’ production process. The Yunnan Copper Technology Agreement commenced on December 9, 2010 and shall terminate upon certain specified targets set out in the Yunnan Copper Technology Agreement being achieved. The total consideration payable by CCS under the Yunnan Copper Technology Agreement is RMB1,000,000 (equivalent of US\$154,715).

As each of the applicable percentage ratios (other than the profits ratio) calculated in accordance with Rule 14.07 of the Listing Rules will not exceed 0.1% on an annual basis, such transactions fall within the *de minimis* threshold as stipulated under Rule 14A.33(3) of the Listing Rules and are exempt from the reporting, annual review, announcement and independent shareholders’ approval requirements.

### 8. Guarantee fees to CNMC

CNMC has guaranteed certain of our external borrowings from China Construction Bank, Johannesburg Branch through providing back to back guarantees to China Construction Bank, Beijing Branch which guaranteed these borrowings directly. Please refer to “— Non-exempt Continuing Connected Transactions — 6. Guarantees from CNMC” below for more information.

As China Construction Bank, Beijing Branch charged CNMC certain guarantee fees in respect of the unconditional irrevocable letter of guarantee it issued to China Construction Bank, Johannesburg Branch pertaining to loans granted by China Construction Bank, Johannesburg Branch to CCS and Luanshya (the details of which are set out in “— Non-exempt Continuing Connected Transactions — 6. Guarantees from CNMC” below), CNMC entered into guarantee contracts with CCS and Luanshya, respectively, pursuant to which CCS and Luanshya agreed to reimburse CNMC for any



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## CONNECTED TRANSACTIONS

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guarantee fees it paid to China Construction Bank, Beijing Branch. The guarantee contracts entered into between CCS and Luanshya, respectively, with CNMC in respect of such loans were dated July 20, 2009 and February 2, 2010, respectively. The following table sets forth the amount of guarantee fees paid by us to CNMC during the three years ended December 31, 2009, 2010 and 2011:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Guarantee fees . . . . .	1,737,000	2,733,000	2,135,000

Our Directors estimate that the annual amount of guarantee fees to be paid by us to CNMC will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Guarantee fees . . . . .	1,150,000	800,000	800,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) the historical amount of bank loans and corresponding guarantee fees paid by us; (ii) the amount of future bank loans to be guaranteed by CNMC; and (iii) the sources of our capital.

As of April 30, 2012, which is the latest practicable date as of which such information is available, our existing secured bank loans guaranteed by CNMC amounted to US\$170 million, of which US\$70 million will expire in 2012 while the remaining US\$100 million will expire in 2015. We have calculated the above annual caps based on fixed percentages of the guaranteed amounts in accordance with the terms of the relevant contracts. The guarantee fees for the outstanding secured bank loans guaranteed by CNMC were calculated at 0.75% and 0.80% of the guaranteed amounts, respectively, in respect of the US\$70 million loan which will expire in 2012 and the US\$100 million loan which will expire in 2015, respectively. We do not intend to renew such loans upon their expiry.

As each of the applicable percentage ratios (other than profits ratio) calculated in accordance with Rule 14.07 of the Listing Rules is less than 0.1% on an annual basis, such transactions fall within the *de minimis* threshold as stipulated under Rule 14A.33(3) of the Listing Rules and are exempt from the reporting, annual review, announcement and independent shareholders' approval requirements.

### NON-EXEMPT CONTINUING CONNECTED TRANSACTIONS

#### 1. CNMC Copper Supply Framework Agreement

We entered into a copper supply agreement (the "CNMC Copper Supply Framework Agreement") with CNMC on May 14, 2012, pursuant to which we agreed to sell, or procure our subsidiaries to sell, copper products including blister copper and copper cathode to the Retained Group. The CNMC Copper Supply Framework Agreement is for a term of three years commencing on the Listing Date. The term of the CNMC Copper Supply Framework Agreement may be renewed upon agreement provided that the requirements of the Listing Rules in relation to connected transactions are complied with. Either party may terminate any specific agreement entered into pursuant to the CNMC Copper Supply Framework Agreement (but excluding the CNMC Copper Supply Framework Agreement) by giving the other party no less than one month's prior written notice.

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## CONNECTED TRANSACTIONS

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Under the terms of the CNMC Copper Supply Framework Agreement, the quantity of each type of copper products to be sold to the Retained Group is not fixed but is to be determined and agreed between the relevant parties from time to time, with pricing referenced to the prevailing market price at the time of each specific agreement to be entered into pursuant to the CNMC Copper Supply Framework Agreement. We are not required to sell a minimum amount or any particular type of copper products to the Retained Group during the term of this agreement.

Our revenue from the sale of copper products to the Retained Group during the three years ended December 31, 2009, 2010 and 2011, was as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Sale of copper products . . . . .	200,275,000	750,744,000	654,881,000

Our Directors estimate that the annual amount to be paid by the Retained Group to us for the purchase of copper products will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Sale of copper products . . . . .	961,721,000	1,443,390,000	1,413,588,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) historical transaction values and volume; (ii) estimated growth in our copper production capacity and volume; (iii) estimated growth in the demand for copper products by the Retained Group from us; and (iv) reasonable expected price range for the copper products provided by us for the three years ending December 31, 2014.

We have, in particular, taken into consideration the increase in our production output brought about by our development and expansion projects, the details of which are set out in the “Business” section of this prospectus. We expect our production volume for copper cathode to reach approximately 33.8 kt, 51.9 kt and 59.8 kt and blister copper to reach approximately 180.0 kt, 250.0 kt and 250.0 kt in the three years ending December 31, 2014, respectively. In view of the shortage of copper supply in the PRC and the expected order from the Retained Group which is calculated with reference to the percentage of shareholdings our Group has in our subsidiaries producing blister copper and copper cathode, we expect to sell approximately 20.3 kt, 32.8 kt and 40.4 kt of copper cathode and 93.0 kt, 135.0 kt and 135.0 kt of blister copper to the Retained Group in the three years ending December 31, 2014, respectively.

The percentage of increase in the production volume of our copper cathode in 2013 and 2014 is expected to be 53.5% and 15.3%, respectively, and the corresponding increase in the sales volume of our copper cathode to the Retained Group is 61.7% and 23.0%. The percentage of increase in the production volume of blister copper in 2013 and 2014 is expected to be 38.9% and nil, respectively, and the corresponding increase in the sales volume of our blister copper to the Retained Group is 45.2% and nil. In aggregate, for the three years ending December 31, 2014, we expect to increase the production volume of our copper products to 213.8 kt, 301.9 kt and 309.8 kt, respectively, and we expect to sell approximately 113.3 kt, 167.8 kt and 175.4 kt of such copper products to the Retained Group, respectively.

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## CONNECTED TRANSACTIONS

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According to Wood Mackenzie, the market supply of copper is expected to remain tight and continued support of high prices is expected over the medium-term, with forecast nominal cash prices for copper to be around US\$8,488/t in 2012 and US\$8,600/t in 2013. However, by 2014, considerable supply-side increases from new projects will outweigh average demand growth projections. Wood Mackenzie expects nominal cash price for copper to be around US\$8,060/t in 2014. In accordance with the projections of Wood Mackenzie, we have calculated the annual caps above on the basis that copper is priced at US\$8,488/t in 2012, US\$8,600/t in 2013 and US\$8,060/t in 2014. Please refer to “Industry Overview — Fee Paid and Assumptions and Parameters for Wood Mackenzie Report — Prices” for more information about the bases for the price forecasts provided by Wood Mackenzie. The increase in annual caps for the sales of copper to the Retained Group is broadly commensurate with the increase in production volume of our Group following the completion of certain of our expansion projects in the near future.

Since the highest of all applicable percentage ratios for the CNMC Copper Supply Framework Agreement calculated in accordance with Rule 14.07 of the Listing Rules are more than 5% and the annual consideration is more than HK\$10,000,000, the transactions under the CNMC Copper Supply Framework Agreement are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders’ approval requirements pursuant to Rule 14A.35 of the Listing Rules.

### 2. Yunnan Copper Supply Framework Agreement

We entered into a copper supply agreement (the “Yunnan Copper Supply Framework Agreement”) with Yunnan Copper Group on May 14, 2012 pursuant to which we agreed to sell, or procure our subsidiaries to sell, our copper products to Yunnan Copper Group and its subsidiaries, including Yunnan Copper. The Yunnan Copper Supply Framework Agreement is for a term of three years commencing on the Listing Date. The term of the Yunnan Copper Supply Framework Agreement may be renewed upon agreement provided that the requirements of the Listing Rules in relation to connected transactions are complied with. Either party may terminate any specific agreement entered into pursuant to the Yunnan Copper Supply Framework Agreement (but excluding the Yunnan Copper Supply Framework Agreement) by giving the other party no less than one month’s prior written notice.

Under the terms of the Yunnan Copper Supply Framework Agreement, the quantity of each type of copper product to be sold to Yunnan Copper Group and its subsidiaries is to be determined and agreed between the relevant parties from time to time, with pricing referenced to the prevailing market price at the time of each specific agreement entered into pursuant to the Yunnan Copper Supply Framework Agreement. We are required to sell 40% of the balance of copper products produced by CCS that is not sold to Independent Third Parties to Yunnan Copper Group.

Our revenue from the sale of copper products to Yunnan Copper Group during the three years ended December 31, 2009, 2010 and 2011, was as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Sale of copper products . . . . .	—	—	170,960,000

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## CONNECTED TRANSACTIONS

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Our Directors estimate that the annual amount to be paid by the Yunnan Copper Group and its subsidiaries to us for the purchase of copper products will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Sale of copper products . . . . .	526,256,000	774,000,000	725,400,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) estimated growth in our copper production capacity and volume; (ii) estimated growth in the demand for copper products by the Yunnan Copper Group and its subsidiaries from us; and (iii) reasonable expected price range for the copper products provided by us for the three years ending December 31, 2014.

We have in particular, taken into consideration the expansion of the Chambishi Copper Smelter which is expected to complete in 2012. We expect our production volume for blister copper to reach approximately 180.0 kt, 250.0 kt and 250.0 kt in the three years ending December 31, 2014, respectively, after the expansion of the Chambishi Copper Smelter. In view of the shortage of copper supply in the PRC and the expected order from Yunnan Copper Group, which is calculated with reference to the percentage of shareholdings Yunnan Copper Group has in our subsidiary, CCS, we expect to sell approximately 62.0 kt, 90.0 kt and 90.0 kt of blister copper to Yunnan Copper Group in the three years ending December 31, 2014, respectively. The percentage of increase in the production volume of blister copper in 2013 and 2014 is expected to be 38.9% and nil, respectively, and the corresponding increase in the sales volume of our blister copper to Yunnan Copper Group is 45.2% and nil. We expect the orders from Yunnan Copper Group to relate only to blister copper as Yunnan Copper Group requires blister copper for its copper processing operations.

In accordance with the projections of Wood Mackenzie, we have calculated the annual caps above on the basis that copper is priced at US\$8,488/t in 2012, US\$8,600/t in 2013 and US\$8,060/t in 2014. Please refer to “Industry Overview — Fee Paid and Assumptions and Parameters for Wood Mackenzie Report — Prices” for more information about the bases for the price forecasts provided by Wood Mackenzie. The increase in annual caps for the sales of copper to Yunnan Copper Group is broadly commensurate with the increase in production volume of our Group following the completion of certain of our expansion projects in the near future.

Since the highest of all applicable percentage ratios for the Yunnan Copper Supply Framework Agreement calculated in accordance with Rule 14.07 of the Listing Rules are more than 5% and the annual consideration is more than HK\$10,000,000, the transactions under the Yunnan Copper Supply Framework Agreement are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders’ approval requirements pursuant to Rule 14A.35 of the Listing Rules.

### 3. Huachin Ore Supply Framework Agreement

We entered into an ore supply framework agreement (the “Huachin Ore Supply Framework Agreement”) with Huachin Minerals on May 14, 2012, pursuant to which we agreed to buy, or procure our subsidiaries to buy, ores mined by Huachin Minerals. The Huachin Ore Supply Framework Agreement is for a term of three years commencing on the Listing Date. The term of the Huachin Ore Supply Framework Agreement may be renewed upon agreement provided that the

## CONNECTED TRANSACTIONS

requirements of the Listing Rules in relation to connected transactions are complied with. Unless the parties have reached new agreement, the renewed framework agreement shall, to the extent applicable, have the same terms as the Huachin Ore Supply Framework Agreement. Either party may terminate any specific agreement entered into pursuant to the Huachin Ore Supply Framework Agreement (but excluding the Huachin Ore Supply Framework Agreement) by giving the other party no less than one month's prior written notice.

Under the terms of the Huachin Ore Supply Framework Agreement, Huachin Minerals is required to sell all, and we are required to purchase all of the ores mined by Huachin Minerals, except that with our consent, Huachin Minerals may sell ores in excess of our demand to third parties. The prices of ores shall be subject to annual negotiation and a pricing coefficient shall be applied to copper prices in different price range. In respect of 2012, a coefficient of 0.25 shall be applied to copper prices above US\$8,000/t. The minimum average copper content for monthly settlement shall be 3.5%. If the monthly average copper content is below 3.5%, such copper shall not be valued. If the copper content is 5% or above for a single delivery, the parties shall negotiate adjustment to the prices and implement the negotiated prices after approval by the shareholders' meeting of our relevant subsidiary. For cobalt ores with cobalt content reaching 2% or above, the prices of the ores shall be determined with reference to market price. If the cobalt content is below 2%, the parties shall refer to the market price of cobalt ores with 2% cobalt content, and negotiate a downward adjustment. Copper in cobalt ores shall not be valued and cobalt in copper ores shall not be valued.

As Huachin Minerals only commenced operations in 2012, we had no transactions with Huachin Minerals during the Track Record Period. The ores supplied by Huachin Minerals will mainly be used for the DRC Project held by Huachin, our subsidiary in the DRC. The DRC Project commenced production in February 2012 using the ores supplied by Huachin Minerals. We entered into the Huachin Ore Supply Framework Agreement to ensure a steady supply of ores for the operation of Huachin in the DRC. Huachin is 37.5% indirectly owned by Mr. Ng Siu Kam, who also owns 70% interest in Huachin Minerals. It was a commercial arrangement between our Group and Mr. Ng Siu Kam that Huachin (in which we hold 62.5% interest) will be controlled by us focusing on leaching operations using ores supplied by Huachin Minerals, while Huachin Minerals (in which we hold 30% interest) will be controlled by Mr. Ng Siu Kam focusing on ore mining to supply ores for the leaching operations undertaken by Huachin.

Our Directors estimate that the annual amount to be paid by us for the purchase of ores from Huachin Minerals will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Purchase of ores .....	12,692,000	14,288,000	13,391,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) the estimate ore production capacity of Huachin Minerals; (ii) the grade of the ores; (iii) the reasonable expected price range for copper for the three years ending December 31, 2014; and (iv) the coefficient to be applied for the different price range for copper which coefficient shall be determined by the parties after commercial negotiation, having regard to prevailing coefficient factors applied by ore purchasers in the local markets. As the value of copper ores is intrinsically less than the value of copper, a coefficient is applied to the price of copper to obtain the price of copper ores satisfactory to both parties.

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## CONNECTED TRANSACTIONS

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It is expected that the copper content in the ores mined by Huachin Minerals will amount to approximately 5,981, 6,645 and 6,645 tonnes, respectively, for the three years ending December 31, 2014. According to Wood Mackenzie, the nominal cash prices of copper are expected to be around US\$8,488/t in 2012, US\$8,600/t in 2013 and US\$8,060/t in 2014. The annual caps above are derived by applying a coefficient of 0.25 in respect of copper prices above US\$8,000, having regard to prevailing coefficient factors applied by copper ore purchasers in the local markets.

Since the highest of all applicable percentage ratios for the Huachin Ore Supply Framework Agreement calculated in accordance with Rule 14.07 of the Listing Rules are less than 5% but the annual consideration is more than HK\$10,000,000, the transactions under the Huachin Ore Supply Framework Agreement are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.35 of the Listing Rules.

#### 4. Mutual Supply Framework Agreement

As part of the Reorganization, CNMC retained certain assets and businesses through the Retained Group which will continue to provide certain comprehensive raw materials, products and services to our businesses. We will also provide certain raw materials, products and services to the Retained Group in the ordinary course of our business.

In this connection, on May 14, 2012 we entered into a comprehensive mutual supply of raw materials, products and services framework agreement with CNMC ("Mutual Supply Framework Agreement"), pursuant to which:

- (a) both parties agreed to provide, or procure its respective subsidiaries to provide the following to each other:
- Raw material and products supplies, such as raw materials, construction materials, ancillary materials, spare parts, tools, equipment, fuels, water, electricity, gas and steam, and lease of equipment and vehicles;
  - social and support services, such as public security, employee training, sharing of service, other non-business services, school, medical and emergency service, telecommunication, property management and other similar services; and
  - technical services, such as consultation, design, construction, technical and engineering services, testing and equipment repair, construction and engineering projects supervision; and
- (b) CNMC agreed to provide, or procure its subsidiaries to provide transportation and logistic services to us.

Pursuant to the Mutual Supply Framework Agreement, CNMC has undertaken that it will not, and will procure its subsidiaries not to, provide raw materials, products and services to us on terms which are less favorable than those offered to third parties. Each party is entitled to obtain the relevant raw materials, products and services from Independent Third Parties if the other party cannot satisfy its requirements for such raw materials, products and services or the terms offered by Independent Third Parties are more favorable. Each party will provide to the other party on an



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## CONNECTED TRANSACTIONS

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annual basis an assessment of the raw materials, products and services that it requires in the coming year.

The amount payable for the raw materials, products and services will be determined based on market price. Such market price is determined by reference to the price at which the same or similar type of raw materials, products and services are provided by Independent Third Parties in the ordinary course of business. In the event a market price is unavailable, the fees will be determined by negotiation between the relevant parties, taking into account the reasonable costs and reasonable profits of the relevant parties.

The Mutual Supply Framework Agreement is for a term of three years commencing on the Listing Date. The Mutual Supply Framework Agreement may be renewed upon agreement provided that the requirements of the Listing Rules in relation to connected transactions are complied with. Either party may terminate any specific agreement entered into pursuant to the Mutual Supply Framework Agreement (but excluding the Mutual Supply Framework Agreement) by giving the other party no less than one month's prior written notice, provided that if we cannot conveniently obtain such raw materials, products and services from a third party, CNMC will not be permitted to terminate and will continue to provide such raw materials, products and services under any circumstances.

Our expenditure for the raw materials, products and services provided by the Retained Group during the three years ended December 31, 2009, 2010 and 2011, was as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Procurement of raw materials, products and services . . .	45,074,000	67,894,000	247,291,000

Our revenue from the raw materials, products and services provided to the Retained Group during the three years ended December 31, 2009, 2010 and 2011, was as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Supply of raw materials, products and services . . . . .	2,188,000	1,373,000	4,611,000

Our Directors estimate that the annual aggregated amount to be paid by us to the Retained Group for the supply of raw materials, products and services will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Procurement of raw materials, products and services . . .	267,188,000	266,399,000	258,610,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) historical transaction values and volume; (ii) estimated growth in the demand for raw materials, products and services by us from the Retained Group; and (iii) reasonable expected price range for the raw materials, products and services provided by the Retained Group for the three years ending December 31, 2014.



## CONNECTED TRANSACTIONS

We have, in particular, considered the capital expenditure of our various development and expansion projects for which we plan to procure raw materials, products and services from the Retained Group. In this regard, we have taken into consideration factors such as the progress, nature, products and services as well as types of service providers required for each project. The expected capital expenditure in respect of our major development and expansion projects is set out below:

<u>Development and Expansion Projects</u>	<u>Expected Capital Expenditure in the three years ended December 31,</u>		
	<u>2012</u> (US\$)	<u>2013</u> (US\$)	<u>2014</u> (US\$)
Exploration and development of the Chambishi			
Southeast Mine . . . . .	116,000,000	150,000,000	180,000,000
Luanshya's development and expansion projects . . . . .	109,002,000	5,585,000	21,367,000
Expansion of the Chambishi Copper Smelter . . . . .	68,678,000	88,535,000	30,000,000
SML's development projects . . . . .	103,650,000	61,000,000	21,000,000
Total . . . . .	397,330,000	305,120,000	252,367,000

Among our development and expansion projects, the Muliashi Project and the expansion at the Chambishi Copper Smelter are expected to commence production in 2012. The increase in production capacity and volume will lead to us requiring more equipment and services for our operations, and we expect to procure a majority of such additional equipment and services from the Retained Group. Consequently, while the amount of capital expenditure is expected to decrease in 2013 and 2014, the annual caps for procurement of raw materials, products and services from the Retained Group are expected to decrease to a lesser extent.

The annual caps were also calculated by reference to the transaction amounts that are expected to be incurred with certain entities within the Retained Group from which we will procure raw materials, products and services. In particular, we intend to outsource the mining operations of the Muliashi Project to the Retained Group. The estimated outsourcing fee for 2012, 2013 and 2014 is US\$33 million, US\$64.5 million and US\$64.5 million, respectively, calculated by reference to the estimated volume of ores mined at 11 Mt, 21.5 Mt and 21.5 Mt, respectively, multiplied by a unit price of US\$3 per tonne mined.

Our Directors estimate that the annual aggregate amount to be paid by the Retained Group to us for the supply of raw materials, products and services will not exceed the following caps for the years ending December 31, 2012, 2013 and 2014:

	<u>Year ended December 31,</u>		
	<u>2012</u> (US\$)	<u>2013</u> (US\$)	<u>2014</u> (US\$)
Supply of raw materials, products and services . . . . .	12,460,000	7,640,000	4,906,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) historical transaction values and volume; (ii) estimated growth in the demand for raw materials, products and services by the Retained Group from us; and (iii) reasonable expected price range for the raw materials, products and services provided by us for the three years ending December 31, 2014.

Certain entities within the Retained Group located in Zambia, in particular Fifteen MCC Africa, are involved in our development projects and expansion plans and expect to purchase or lease certain

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## CONNECTED TRANSACTIONS

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ancillary materials or equipment from our Group. Fifteen MCC Africa entered into certain financial lease arrangements with Luanshya in Zambia in December 2010 pursuant to which Fifteen MCC Africa will lease certain equipment from Luanshya at a fee for a fixed period of time. At the end of the relevant period, the ownership of the equipment will be transferred to Fifteen MCC Africa. The current financial lease arrangements will terminate in 2017. The leasing fees payable pursuant to such financial lease arrangements will gradually decrease over the terms of the leases. The equipment subject to the financial lease arrangements are used for the construction of the Muliashi Project and included refueling truck, bull dozer, loader and excavator. Pursuant to the commercial arrangements between Luanshya and Fifteen MCC Africa, Luanshya would provide Fifteen MCC Africa with the machinery and equipment to be used for the construction of the Muliashi Project. In order to better incentivize Fifteen MCC Africa to maintain the machinery and equipment in good condition and thereby facilitate the construction of the Muliashi Project, Luanshya entered into the finance lease arrangements so that Fifteen MCC Africa would retain the residual value of the machinery and equipment after the expiry of the leases. The financial lease arrangements were entered into for the benefit of the Muliashi Project and our Directors are of the view that the financial lease arrangements were wholly necessary for the principal activities of Luanshya and were entered into in the ordinary and usual course of business of the Group pursuant to Rule 14A.10(9) of the Listing Rules. Our Zambian legal adviser is of the view that it is legal for Luanshya to provide the finance lease service to MCC Fifteen Africa in Zambia because the lease is an one-off transaction, and no approvals or permits from any Zambian governmental authorities are required in connection therewith. In addition to the financial lease arrangements, Fifteen MCC Africa is expected to purchase more ancillary products from our Group in 2012 to commence pits drilling for the construction of the Chambishi Southeast Mine. It is expected that such amount incurred will gradually decrease in the next few years with the completion of the drilling in stages. Consequently, the annual cap in 2012 is significantly higher than the amount incurred in 2011 and the cap for 2013. As our development projects and expansion plans are expected to be completed in stages in the next few years, we expect the annual caps for sales or lease of ancillary materials or equipment to the Retained Group to gradually decrease in the three years ending December 31, 2014.

Since the highest of all applicable percentage ratios for the Mutual Supply Framework Agreement calculated in accordance with Rule 14.07 of the Listing Rules is more than 5% and the annual consideration is more than HK\$10,000,000, the transactions under the Mutual Supply Framework Agreement are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.35 of the Listing Rules.

### **5. Properties Leasing Framework Agreement**

On May 14, 2012 we entered into a properties leasing framework agreement with CNMC ("Properties Leasing Framework Agreement"), pursuant to which CNMC has agreed to lease certain buildings and properties (the "Leased Properties") to us for general business and ancillary purposes.

The Properties Leasing Framework Agreement will be for a term of 3 years commencing on the Listing Date. The Properties Leasing Framework Agreement may be renewed upon agreement provided that the requirements of the Listing Rules in relation to connected transactions are complied with.

The Leased Properties consisted of properties leased in Zambia and the PRC which are used for administration, support and other miscellaneous purposes. As of May 21, 2012, which is the latest practicable date as of which such information is available, such properties leased in Zambia

## CONNECTED TRANSACTIONS

consisted of an aggregate gross floor area of approximately 20,888 sq.m, comprising approximately 6.5% of the total gross floor area of buildings used by us. As of May 21, 2012, which is the latest practicable date as of which such information is available, such properties leased in the PRC consisted of an aggregate gross floor area of approximately 790.08 sq.m, comprising approximately 0.2% of the total gross floor area of buildings used by us. We believe that the activities carried out on these Leased Properties can be relocated if necessary and therefore the Leased Properties are not significant or crucial to our independent operation.

The total annual rental payable under the Properties Leasing Framework Agreement will be payable every 12 months in arrears and be reviewed every three years. The new amount of rent payable will not be higher than the then prevailing market rent as confirmed by an independent valuer.

We may require the Retained Group to renew the term of the lease by giving six months' notice before the expiry of the lease. We may, at any time before the Properties Leasing Framework Agreement expires, terminate the lease of all or some of the Leased Properties by giving six months' written notice. If the lease of a Leased Property is terminated, the rent payable by us shall be reduced accordingly. According to the Properties Leasing Framework Agreement, the Retained Group cannot terminate a lease unilaterally without our consent unless we have changed the use of the relevant Leased Property without the consent of the Retained Group.

The Retained Group has agreed to pay properties taxes, fees and other statutory charges relating to the Leased Properties.

The rentals paid by us to the Retained Group for the Leased Properties during the three years ended December 31, 2009, 2010 and 2011, was as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$)	(US\$)	(US\$)
Rentals .....	3,478,000	4,150,000	5,047,000

Our Directors estimate that the annual rentals to be paid by us to the Retained Group for the Leased Properties will not exceed the following caps for the three years ending December 31, 2012, 2013 and 2014:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Rentals .....	7,096,200	7,096,200	7,096,200

In arriving at the above annual caps, our Directors have considered the following factors: (i) historical rental value; (ii) the prevailing market rentals of the Leased Properties; and (iii) we are not expecting a substantial rental increments of the Leased Properties.

The historical rentals of the Leased Properties in Zambia were determined by reference to the amortization rate of properties which were lower than the then market rentals of approximately US\$317,000 per month. We started paying the prevailing market rentals of approximately US\$557,200 per month from July 1, 2011 and the annual caps reflect the prevailing market rentals of the Leased Properties in Zambia. The historical rentals of the Leased Properties in the PRC were determined by reference to market rentals. Jones Lang LaSalle Corporate Appraisal and Advisory Limited, an independent property valuer and consultant, has confirmed that the rentals payable by

## CONNECTED TRANSACTIONS

us pursuant to the Properties Leasing Framework Agreement reflect the prevailing market rates in the vicinity of the relevant property and the terms of the Properties Leasing Framework Agreement are fair and reasonable to us.

Since the highest of all applicable percentage ratios for the Properties Leasing Framework Agreement calculated in accordance with Rule 14.07 of the Listing Rules is less than 5% but the annual consideration is more than HK\$10,000,000, the transactions under the Properties Leasing Framework Agreement are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.35 of the Listing Rules.

### 6. Guarantees from CNMC

CNMC has guaranteed certain of our external borrowings from Independent Third Party financial institutions which involved us giving security deposit. The following table sets forth the information in respect of such secured bank loans procured by us which are guaranteed by CNMC and the outstanding amounts of such bank loans as of April 30, 2012, which is the latest practicable date as of which such information is available:

Borrower	Lender	Date of loan agreement	Maximum loan amount (US\$)	Purpose	Duration of loan amount	Outstanding loan amount as at April 30, 2012 (US\$)	Security
CCS . . . . .	China Construction Bank, Johannesburg Branch	August 12, 2009	70,000,000	General working capital	3 years, expiring on August 17, 2012	70,000,000	1. Unconditional irrevocable letter of guarantee from China Construction Bank, Beijing Branch  2. Security deposit of US\$2,000,000 provided by CCS
Luanshya . . . . .	China Construction Bank, Johannesburg Branch	February 11, 2010	100,000,000	General working capital	5 years, expiring on February 15, 2015	100,000,000	1. Unconditional irrevocable letter of guarantee from China Construction Bank, Beijing Branch  2. Security deposit of not less than the higher amount of 2% of the facility utilization amount, from time to time or the equivalent of three months interest calculated on the utilization amount, from time to time, provided by Luanshya

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## CONNECTED TRANSACTIONS

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All the above loans are guaranteed by unconditional irrevocable letter of guarantee granted by China Construction Bank, Beijing Branch, pursuant to back to back guarantees provided by CNMC dated July 20, 2009 and February 2, 2010, respectively.

Our Directors estimate that the aggregate outstanding secured bank loans guaranteed by CNMC as at December 31, 2012 and 2013 and 2014 will not exceed the following amounts:

	Year ended December 31,		
	2012	2013	2014
	(US\$)	(US\$)	(US\$)
Loan amounts .....	170,000,000	100,000,000	100,000,000

In arriving at the above annual caps, our Directors have considered the following factors: (i) our capital needs after taking into account our various development and expansion projects; (ii) the sources of our capital; (iii) our existing secured bank loans guaranteed by CNMC; and (iv) additional secured bank loans to be guaranteed by CNMC, if any.

As of April 30, 2012, which is the latest practicable date as of which such information is available, our existing secured bank loans guaranteed by CNMC amounted to US\$170 million. We do not intend to take out further secured loans to be guaranteed by CNMC after the expiration of the two loans in accordance with their terms in 2012 and 2015, respectively. Accordingly, the annual cap will drop to US\$100 million in 2013 and remain the same in 2014. We do not intend to discharge the guarantees prior to the expiration of the loans as it will not be in our commercial interest to do so since we will be subject to additional charges such as breakage fees, additional interest costs and refinancing costs imposed by the relevant banks. Should we intend to enter into secured loans guaranteed by CNMC for amount exceeding the annual caps, we will comply with the applicable Listing Rules and seek the approvals of the independent shareholders where applicable.

Since the highest of all applicable percentage ratios for the aggregate of the above facilities calculated in accordance with Rule 14.07 of the Listing Rules are more than 5% and the annual consideration is more than HK\$10,000,000, the transactions under the above facilities are non-exempt continuing connected transactions subject to the reporting, announcement and independent shareholders' approval requirements pursuant to Rule 14A.35 of the Listing Rules.

### WRITTEN AGREEMENTS

Our Company, our relevant subsidiaries and relevant connected person(s) will enter into written agreements in respect of each individual continuing connected transaction between the parties in relation to the continuing connected transactions as disclosed above.

### WAIVERS

#### Application for waiver

We will continue to enter into or carry out the transactions set out in the sections headed “— Exempt Continuing Connected Transactions” and “— Non-exempt Continuing Connected Transactions” following the Global Offering and these transactions will constitute continuing connected transactions for our Company under the Listing Rules once our Shares are listed on the Hong Kong Stock Exchange. According to the Listing Rules, such transactions may, depending on the nature and value of the transactions, require full disclosure and prior approval by our independent shareholders.

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## CONNECTED TRANSACTIONS

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### Scope of waiver

Under the Listing Rules, the continuing connected transactions under the CNMC Copper Supply Framework Agreement, the Yunnan Copper Supply Framework Agreement, the Huachin Ore Supply Framework Agreement, the Mutual Supply Framework Agreement, the Properties Leasing Framework Agreement and the secured guarantees provided by CNMC set out under the section “—Non-exempt Continuing Connected Transactions” above are considered to be non-exempt continuing connected transactions under Rule 14A.35 of the Listing Rules and would require compliance with the reporting and announcement requirements set out in Rules 14A.45 to 14A.47 of the Listing Rules, and the prior independent shareholders’ approval requirement set out in Rule 14A.48 of the Listing Rules.

As these connected transactions are expected to be carried out on a continuing and recurring basis and are expected to extend over a period of time, our Directors consider that strict compliance with the announcement and the independent shareholders’ approval requirements under the Hong Kong Listing Rules would be unduly burdensome, impractical and would add unnecessary administrative costs to our Company. Accordingly, our Directors have applied to and received from the Hong Kong Stock Exchange a waiver from strict compliance with the announcement and independent shareholders’ approval requirements relating to continuing connected transactions under Chapter 14A of the Listing Rules. In addition, we will comply with the applicable provisions under Rules 14A.35(1), 14A.35(2), 14A.36, 14A.37, 14A.38, 14A.39 and 14A.40 of the Listing Rules.

In the event of any future amendments to the Listing Rules imposing more stringent requirements than those as of the date of this prospectus on the continuing connected transactions referred to in this section including, but not limited to, a requirement that these transactions be made conditional on approval by our independent shareholders, we will take immediate steps to ensure compliance with such requirements.

### No waivers applied for certain category of continuing connected transactions

No waivers have been applied for the continuing connected transactions set out under the section “— Exempt Continuing Connected Transactions” as they either constitute *de minimis* transactions under Rule 14A.33(3) of the Listing Rules that are exempt from reporting, annual review, announcement and independent shareholders’ approval requirements or exempt financial assistance under Rule 14A.65(4) of the Listing Rules that are exempt from reporting, announcement and independent shareholders’ approval requirements.

### Opinion of our Directors

Our Directors (including the independent non-executive Directors) are of the opinion that (1) each of these continuing connected transactions disclosed above has been entered into, and will be carried out in the ordinary and usual course of business and on normal commercial terms, (2) each of these continuing connected transactions disclosed above is fair and reasonable and in the interest of the Company’s Shareholders as a whole, and (3) the maximum aggregate annual value for such continuing connected transactions (where applicable) are fair and reasonable as far as the Company’s Shareholders as a whole are concerned.

### Confirmation from the Joint Sponsors

The Joint Sponsors are of the view that (1) the continuing connected transactions described above for which waivers are sought are in the ordinary and usual course of our business, on normal

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## CONNECTED TRANSACTIONS

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commercial terms, fair and reasonable and interest of our Shareholders as a whole, and (2) the maximum aggregate annual value for such continuing connected transactions (where applicable) are fair and reasonable as far as our Shareholders as a whole are concerned.



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## DIRECTORS AND SENIOR MANAGEMENT

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### BOARD OF DIRECTORS

Our Board of Directors is responsible for the management and conduct of our business and consists of nine Directors, of whom one is a non-executive Director, five are executive Directors and the remaining three are independent non-executive Directors. The table below sets forth certain information in respect of the members of the Board of Directors of our Company:

<u>Name</u>	<u>Age</u>	<u>Position/Title</u>
Tao Luo . . . . .	59	Chairman and Non-executive Director
Xinghu Tao . . . . .	54	Vice Chairman, Executive Director and President
Chunlai Wang . . . . .	51	Executive Director and Vice President
Xingeng Luo . . . . .	49	Executive Director and Vice President
Xinguo Yang . . . . .	38	Executive Director and Vice President
Kaishou Xie . . . . .	56	Executive Director and Vice President
Chuanyao Sun . . . . .	67	Independent Non-executive Director
Jingwei Liu . . . . .	44	Independent Non-executive Director
Shuang Chen . . . . .	44	Independent Non-executive Director

**Tao Luo (羅濤)**, 59, is the chairman and non-executive Director of our Company and was appointed to our Board on April 12, 2012. He has been the general manager of CNMC since July 2005. He currently also serves as the chairman of China Nonferrous Metal Industry’s Foreign Engineering and Construction Co., Ltd. (中國有色金屬建設股份有限公司) (a company listed on the Shenzhen Stock Exchange, SZ000758), ZCCZ and China Nonferrous Metals International Mining Co., Ltd. (中色國際礦業股份有限公司), the non-executive deputy chairman of Chaarat Gold Holdings Limited (a company listed on the Alternative Investment Market of the London Stock Exchange (“AIM”), CGH.L), the non-executive chairman of Kryso Resources Plc (a company listed on AIM, KYS) and the non-executive chairman of Ord River Resources Limited (a company listed on the Australian Stock Exchange, ORD). Mr. Luo has 35 years of experience in the nonferrous metal industry. He was the vice president of Aluminum Corporation of China (中國鋁業公司) from 2001 to July 2005. Prior to that, Mr. Luo also served as the vice dean of General Research Institute for Nonferrous Metals (北京有色金屬研究總院), the deputy supervisor of the Human Resources and Training Department of China National Nonferrous Metals Industry Corporation (中國有色金屬工業總公司) and the director general of Human Resources Department of the State Nonferrous Metals Industry Bureau of the PRC (中國國家有色金屬工業局). Mr. Luo graduated from Beijing Open University (北京廣播電視大學) in 1990. He was recognized as a State Council Special Allowance Expert in 2010. Save as disclosed herein, Mr. Luo is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Xinghu Tao (陶星虎)**, 54, is the vice chairman, executive Director and president of our Company and was appointed to our Board on July 18, 2011. He has been the vice president of CNMC since November 2007. Mr. Tao currently also serves as the chairman of NFCA, CCS, SML, Luanshya and MPongwe and the vice chairman of ZCCZ. Mr. Tao has 30 years of experience in the mining industry. He became the general manager of ZCCZ and NFCA in June 2006 and September 2002, respectively. Mr. Tao worked in Zhongtiaoshan Nonferrous Metals Group Co., Ltd. (中條山有色金屬集團有限公司) (“Zhongtiaoshan”) from 1982 to 2002 during which time he held various posts such as the mine manager of Tongkuangyu Mine, and the general manager and director of Zhongtiaoshan. Mr. Tao graduated from the Beijing Steel and Iron Institute (北京鋼鐵學院) (currently the University of Science and Technology Beijing) (北京科技大學) in 1982 with a major in mining engineering. He completed graduate studies in economic management from the Party School of the Central Committee of the Communist Party of China in January 2005.

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## DIRECTORS AND SENIOR MANAGEMENT

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Mr. Tao was recognized as a State Council Special Allowance Expert in 2004 and was recognized as a Senior Mining Engineer (professor level) in 1999. Mr. Tao is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Chunlai Wang** (王春來), 51, is an executive Director and the vice president of our Company primarily in charge of NFCA. He was appointed to our Board on April 12, 2012. Mr. Wang is also responsible for the human resources department of our Company. Mr. Wang has 31 years of experience in the mining industry. He currently is the general manager and an executive director of NFCA. He is also a director of SML. He served as the deputy general manager of NFCA from 2005 to 2009 and became its executive director in 2007. From 1981 to 2005, Mr. Wang worked in the Dongguashan Copper Mine of Tongling Nonferrous Metals Group Co., Ltd. (銅陵有色金屬集團股份有限公司) (a company listed on the Shenzhen Stock Exchange, SZ000630) during which period he served as a mining engineer, assistant to the mine manager, deputy mine manager and mine manager. Mr. Wang graduated from Anhui Metallurgy College (安徽冶金專科學校) in 1981 with a major in mining and obtained a Master of Business Administration degree from the School of Business of Nanjing University (南京大學工商管理學院) in 2005. Mr. Wang was recognized as a State Council Special Allowance Expert in 2002 and was recognized as a Senior Mining Engineer (professor level) in 2007. Save as disclosed herein, Mr. Wang is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Xingeng Luo** (駱新耿), 49, is an executive Director and the vice president of our Company primarily in charge of Luanshya. He was appointed to our Board on April 12, 2012. Mr. Luo is also responsible for the operations and development as well as investor relations departments of our Company. Mr. Luo has 27 years of experience in the mining industry. He has been the general manager and a director of Luanshya, a director of SML and the general manager of NFCA since September 2009, May 2008 and May 2007, respectively. Prior to joining NFCA in April 2004, Mr. Luo worked at Zhongtiaoshan from July 1984 and became the mine manager of the Hujiayu Mine in August 1998 and chief engineer in May 2001. Mr. Luo received a bachelor's degree in mining from Jiangxi University of Science and Technology (江西理工大學) in 1984. He was recognized as a State Council Special Allowance Expert in 2005 and was recognized as a Senior Mining Engineer (professor level) in 2002. Mr. Luo is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Xinguo Yang** (楊新國), 38, is an executive Director and the vice president of our Company primarily in charge of CCS. He was appointed to our Board on April 12, 2012. Mr. Yang is also responsible for the administrative department of our Company. Mr. Yang has 17 years of experience in the copper smelting industry. He has been a director and the general manager of CCS since November 2010. Mr. Yang joined CCS in 2006 as the deputy general manager, prior to which he worked as the supervisor of the production department in Yunnan Copper and the supervisor of logistics department in Yunnan Copper Group. Mr. Yang graduated from Kunming Institute of Technology (昆明工學院) (currently the Kunming University of Science and Technology) in 1994 with a major in nonferrous metals metallurgy. Mr. Yang is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Kaishou Xie** (謝開壽), 56, is an executive Director and the vice president of our Company primarily in charge of SML. He was appointed to our Board on April 12, 2012. He has been an executive director and the general manager of SML since 2008 and 2006, respectively. He is also a director of Huachin. From 2003 to 2006, Mr. Xie served as the general manager of Kunming Jinsharen Chemical Co., Ltd. (昆明金沙人化工有限公司). From 1991 to 2003, Mr. Xie was the workshop director, assistant to the factory director, vice factory director, chief engineer and deputy general manager of Dongchuan Aluminum Co., Ltd. (東川鋁廠). He worked in the Tangdan Mine of Dongchuan Copper

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## DIRECTORS AND SENIOR MANAGEMENT

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Mines Administration from 1972 to 1990. Mr. Xie graduated from the Southwest University of Science and Technology with a degree in law. Mr. Xie is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Chuanyao Sun (孫傳堯)**, 67, is an independent non-executive Director of our Company and was appointed to our Board on April 27, 2012. He has 44 years of experience in the mining industry. Mr. Sun currently serves as an independent director of Sinotech Mineral Exploration Co., Ltd. (中色地科礦產勘查股份有限公司) and Advanced Technology & Materials Co., Ltd. (安泰科技股份有限公司) (a company listed on the Shenzhen Stock Exchange, SZ000969). Mr. Sun joined the Beijing General Research Institute of Mining and Metallurgy (北京礦冶研究總院) (“BGRIMM”) in 1981 and served as its dean from February 1988 to February 2007. He worked at the Xinjiang Keketuohai Ore Processing Plant from December 1968 and became its deputy factory director in October 1976. Mr. Sun graduated from Northeastern University (東北大學) with a major in ore processing in 1968 and completed his graduate study in BGRIMM with a major in ore processing in October 1981. He was recognized as a member of Chinese Academy of Engineering in 2003 and awarded with the second prize of the National Science and Technology Advancement Awards (國家科技進步獎). Mr. Sun is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Jingwei Liu (劉景偉)**, 44, is an independent non-executive Director of our Company and was appointed to our Board on April 27, 2012. He currently serves as a partner and the deputy general manager of Shinewing Certified Public Accountants (信永中和會計師事務所). Mr. Liu previously served as a director and the general manager of Beijing Jincheng Gardening Co., Ltd. (北京金城園林公司). He has also served as an independent director of Jinxi Axle Co., Ltd. (晉西車軸股份有限公司) (a company listed on the Shanghai Stock Exchange, SH600495) since 2010 and of Chongqing Fuling Zhacai Group Co., Ltd. (重慶市涪陵榨菜集團股份有限公司) (a company listed on the Shenzhen Stock Exchange, SZ002507) since 2008. Mr. Liu was previously an independent director of Ningxia Orient Tantalum Industry Co., Ltd. (寧夏東方鉬業股份有限公司) (a company listed on the Shenzhen Stock Exchange, SZ000962) from 2005 to April 2011. Mr. Liu graduated from the School of Economics of Beijing Forestry University (北京林業大學經濟管理學院) in 1989 and is a PRC Certified Public Accountant. Save as disclosed herein, Mr. Liu is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Shuang Chen (陳爽)**, 44, is an independent non-executive Director of our Company and was appointed to our Board on April 27, 2012. Mr. Chen has been an executive director and the chief executive officer of China Everbright Limited (中國光大控股有限公司) (SEHK 0165) and a director of Everbright Securities Co., Ltd. (光大證券股份有限公司) (a company listed on the Shanghai Stock Exchange, SH601788) since August 2007. He is also an independent director of Noah Holdings Limited (a company listed on the New York Stock Exchange, NOAH.N) since November 2010. He has been the supervisor of the Legal Department of China Everbright Group since February 2001, and its director since 2002. Mr. Chen was an executive director and the vice general manager of China Everbright Limited from September 2004 to August 2007. He worked in the Research and Development, Treaty and Law and Legal Departments of Bank of Communications from July 1992 to February 2001. Mr. Chen obtained a master’s degree in civil and commercial law from East China University of Political Science (華東政法學院) in 1992 and was awarded a diploma of law from Hong Kong University School of Professional and Continuing Education (香港大學專業進修學院) in 2003. Save as disclosed herein, Mr. Chen is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

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## DIRECTORS AND SENIOR MANAGEMENT

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### SENIOR MANAGEMENT

**Xinghu Tao** (陶星虎) is the president of our Company. Please refer to the paragraph headed “Board of Directors” for his biographical background.

**Chunlai Wang** (王春來) is a vice president of our Company primarily in charge of NFCA. Please refer to the paragraph headed “Board of Directors” for his biographical background.

**Xingeng Luo** (駱新耿) is a vice president of our Company primarily in charge of Luanshya. Please refer to the paragraph headed “Board of Directors” for his biographical background.

**Xinguo Yang** (楊新國) is a vice president of our Company primarily in charge of CCS. Please refer to the paragraph headed “Board of Directors” for his biographical background.

**Kaishou Xie** (謝開壽) is a vice president of our Company primarily in charge of SML. Please refer to the paragraph headed “Board of Directors” for his biographical background.

**Hong Han** (韓紅), 40, is the chief financial officer of our Company. Ms. Han has 14 years of experience in financial management. She joined CNMC in 1998 and has been the deputy supervisor of the Financial Department since 2003. In 2010, she was appointed as the financial and quality supervisor of phase I of the enterprise resource planning construction project of CNMC. Ms. Han received a bachelor’s degree in auditing and a master’s degree in accounting from Xi’an Jiaotong University (西安交通大學) in 1995 and 1998, respectively. Ms. Han has been a PRC Certified Public Accountant since 1996 and became a Senior Accountant in 2005. Ms. Han is a member of the Chinese Institute of Certified Public Accountants. Ms. Han is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

**Aibin Hu** (胡愛斌), 43, is the chief compliance officer and joint company secretary of our Company. He joined Luanshya in November 2009 and currently serves as the board secretary and assistant to the general manager of Luanshya. Mr. Hu has 18 years of experience in the mining industry. He served as the deputy manager of the Administrative Department of NFCA from January 2007 to October 2009. Mr. Hu served as the office secretary of Tongling Nonferrous Metals Group Holdings Co., Ltd. (安徽銅陵有色金屬集團控股公司) from June 2001 to October 2003 and was seconded to the reorganization group of the SASAC from November 2003 to December 2006. Mr. Hu graduated from Anhui Normal University (安徽師範大學) with a bachelor’s degree in science in 1994 and received a Master of Business Administration degree from Beijing Jiaotong University (北京交通大學) in 2008. Mr. Hu is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

### JOINT COMPANY SECRETARIES

**Aibin Hu** (胡愛斌), 43, is the joint company secretary and chief compliance officer of our Company. Please refer to the paragraph headed “Senior Management” above for his biographical background.

**Man Yi Wong** (黃敏儀), 37, was appointed as our joint company secretary on April 27, 2012. Ms. Wong has over 10 years of experience in company secretarial services and served as the company secretary in various companies in Hong Kong since 1995. Since 2011, Ms. Wong has been the Senior Manager of Cheng & Cheng Corporate Services Limited. Ms. Wong graduated from the City University of Hong Kong (香港城市大學) with a Bachelor degree of Business Administration (Honours) in Business Management in 2006 and a Master of Science in Professional Accounting and Corporate Governance in 2009. Ms. Wong has been an associate member of The Hong Kong

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## DIRECTORS AND SENIOR MANAGEMENT

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Institute of Chartered Secretaries and The Institute of Chartered Secretaries and Administrators since 2009 and an associate member of The Taxation Institute of Hong Kong and a member of Certified Tax Adviser of Hong Kong since 2010. Ms. Wong is not and has not been a director of any other listed companies in Hong Kong or overseas in the past three years.

### MANAGEMENT PRESENCE IN HONG KONG

Pursuant to Rule 8.12 of the Listing Rules, we must have a sufficient management presence in Hong Kong. This normally means that at least two of our executive Directors must be ordinarily resident in Hong Kong. Since our principal business operations are located, managed and conducted in Zambia, members of our senior management are and will therefore be expected to continue to be based in Zambia. At present, none of our executive Directors are ordinarily resident in Hong Kong or are based in Hong Kong. We do not and, in the foreseeable future, will not have any management presence in Hong Kong.

Accordingly, we have applied to the Hong Kong Stock Exchange for a waiver from strict compliance with the requirements under Rule 8.12 of the Listing Rules. We have received from the Hong Kong Stock Exchange a waiver from compliance with Rule 8.12 of the Listing Rules subject to the following conditions:

- (a) our authorized representatives will act as our principal channel of communication with the Hong Kong Stock Exchange and will be readily contactable by telephone, fax or email;
- (b) both authorized representatives have means of contacting all of our Directors promptly at all times as and when the Hong Kong Stock Exchange wishes to contact the Directors on any matters;
- (c) all of our Directors who are not ordinarily resident in Hong Kong possess valid travel documents to visit Hong Kong and can meet with the Hong Kong Stock Exchange within a reasonable period of time;
- (d) we will appoint Guotai Junan Capital Limited as our compliance advisor under Rule 3A.19 of the Listing Rules who will act as additional communication channel with the Hong Kong Stock Exchange; and
- (e) all of our Directors will provide their respective mobile phone numbers, office phone numbers, e-mail addresses and fax numbers to the Hong Kong Stock Exchange.

We have appointed two authorized representatives pursuant to Rule 3.05 of the Listing Rules who will act as our principal communication channel with the Hong Kong Stock Exchange. The two authorized representatives appointed are Xinghu Tao and Aibin Hu. Each of the authorized representatives will be available to meet with the Hong Kong Stock Exchange to discuss any matters on short notice and will be readily contactable by telephone, facsimile and e-mail to deal promptly with enquiries from the Hong Kong Stock Exchange. Each of the two authorized representatives has been duly authorized to communicate on our behalf with the Hong Kong Stock Exchange.

We will implement such measures whereby (i) each Director will provide phone number or the place of his accommodation to the authorized representatives when a Director expects to travel or otherwise be out of office and (ii) each Director will provide his or her mobile phone number, office phone number, e-mail address and fax number to the authorized representatives. The contact details of all of our Directors have also been provided to the Hong Kong Stock Exchange.



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## DIRECTORS AND SENIOR MANAGEMENT

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### COMPLIANCE ADVISOR

We have appointed Guotai Junan Capital Limited as our compliance adviser pursuant to Rule 3A.19 of the Listing Rules. Pursuant to Rule 3A.23 of the Listing Rules, the compliance adviser will advise us on the following circumstances:

- before the publication of any regulatory announcement, circular or financial report;
- where a transaction, which might be a notifiable or connected transaction, is contemplated, including share issues and share repurchases;
- where we propose to use the proceeds of the Global Offering in a manner different from that disclosed in this prospectus or where our business activities, developments or results deviate from any forecast, estimate or other information in this prospectus; and
- where the Hong Kong Stock Exchange makes an inquiry of us regarding unusual movements in the price or trading volume of our Shares.

The terms of the appointment shall commence on the Listing Date and end on the date which we distribute our annual report of our financial results for the financial year ending December 31, 2013 and such appointment may be extended by mutual agreement based on our Directors' review of the corporate governance status of our Group at that time.

### BOARD COMMITTEES

We have established the following committees in our Board of Directors: an Audit Committee, a Nomination Committee, a Remuneration Committee and a Compliance Committee. The committees operate in accordance with terms of reference established by our Board of Directors.

#### Audit Committee

We established an Audit Committee on April 27, 2012 with written terms of reference in compliance with Rule 3.21 of the Listing Rules and paragraph C3 of the Corporate Governance Code and Corporate Governance Report as set out in Appendix 14 to the Listing Rules. The Audit Committee consists of three members being Jingwei Liu, Tao Luo and Shuang Chen. The chairman of the Audit Committee is Jingwei Liu, who holds the appropriate professional qualifications as required under Rules 3.10(2) and 3.21 of the Listing Rules. The primary duties of the Audit Committee are to assist our Board by providing an independent view of the effectiveness of the financial reporting process, internal control and risk management systems of our Group, overseeing the audit process and performing other duties and responsibilities as assigned by our Board.

#### Nomination Committee

We established a Nomination Committee on April 27, 2012 with written terms of reference in compliance with paragraph A5 of the Corporate Governance Code and Corporate Governance Report. The Nomination Committee consists of three members, comprising Chuanyao Sun, Tao Luo and Jingwei Liu. The chairman of the Nomination Committee is Chuanyao Sun. The primary functions of the Nomination Committee include, without limitation, reviewing the structure, size and composition of the Board of Directors, assessing the independence of independent non-executive Directors and making recommendations to the Board on matters relating to the appointment of Directors.

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## DIRECTORS AND SENIOR MANAGEMENT

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### Remuneration Committee

The Company established a Remuneration Committee on April 27, 2012 with written terms of reference in compliance with paragraph B1 of the Corporate Governance Code and Corporate Governance Report as set out in Appendix 14 to the Listing Rules. The Remuneration Committee consists of two independent non-executive Directors being Shuang Chen and Chuanyao Sun, and a non-executive Director being Tao Luo. The Remuneration Committee is chaired by Shuang Chen, an independent non-executive Director. The primary duties of the Remuneration Committee include, but are not limited to, the following: (i) making recommendations to the Board on our policy and structure for all remuneration of Directors and senior management and on the establishment of a formal and transparent procedure for developing policy on such remuneration; (ii) determining the specific remuneration packages of all Directors and senior management; and (iii) reviewing and approving performance-based remuneration by reference to corporate goals and objectives resolved by the Board from time to time.

### Compliance Committee

We have established a Compliance Committee on April 27, 2012 with written terms of reference. The Compliance Committee consists of three members, being Tao Luo, Shuang Chen and Chuanyao Sun. The chairman of the Compliance Committee is Tao Luo. The primary functions of the Compliance Committee include, without limitation, overseeing and monitoring the compliance status of our business and operations based on the applicable legal and regulatory requirements as well as our own internal control policies and procedures; reviewing regular and special reports submitted by the compliance principal in each subsidiary and requiring such compliance principals to prepare specific reports dealing with particular internal control or compliance issues for review; holding regular meetings to discuss, investigate and make plans for our legal and compliance matters; developing and reviewing our policies and practices on corporate governance and making recommendations to the Board; and reviewing our compliance with the Corporate Governance Code set out in the Listing Rules and disclosure in the corporate governance report section of our financial statements.

## COMPENSATION OF DIRECTORS AND MANAGEMENT

Our Directors and senior management receive compensation in the form of salaries, allowances, bonuses and other benefits-in-kind, including our Company's contribution to the pension schemes on their behalf. We determine the salaries of our Directors based on each Director's qualification, position and seniority.

The aggregate amount of remuneration (including salaries, allowances, discretionary bonuses, other benefits and contributions to pension schemes) which were paid to our Directors for 2009, 2010 and 2011 were approximately US\$613,000, US\$792,000 and US\$829,000, respectively.

The aggregate amount of remuneration (including salaries, allowances, discretionary bonuses, other benefits and contributions to pension schemes), which were paid by our Group to our five highest paid individuals (which included four directors and one employee in 2009, four directors and one employee in 2010, and four directors and one employee in 2011) for 2009, 2010 and 2011 were approximately US\$733,000, US\$952,000 and US\$1,042,000, respectively. See Note 12 to Section B of the Accountants' Report, set out in Appendix I to this prospectus.

It is estimated that initial annual salary of approximately RMB4.72 million (equivalent of approximately US\$730,255) (excluding any discretionary bonus) in aggregate will be paid and granted to our Directors by us in 2012 under arrangements in force at the date of this prospectus.



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## DIRECTORS AND SENIOR MANAGEMENT

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No remuneration was paid to our Directors or the five highest paid individuals as an inducement to join, or upon joining, our Group. No compensation was paid to, or receivable by, our Directors or past Directors during the Track Record Period for the loss of office as director of any member of our Group or of any other office in connection with the management of the affairs of any member of our Group. None of our Directors waived any emoluments during the same period.

### DIRECTOR'S INTEREST

Save as disclosed in this prospectus, each of our Directors (i) did not hold other positions in our Company or other members of our Group as of the Latest Practicable Date; (ii) had no other relationship with any Directors, senior management or substantial or Controlling Shareholders of our Company as of the Latest Practicable Date; and (iii) did not hold any other directorships in listed public companies in the three years prior to the Latest Practicable Date. As of the Latest Practicable Date, each of our Directors did not have any interest in the Shares within the meaning of Part XV of the SFO.

Save as disclosed herein, to the best of the knowledge, information and belief of our Directors having made all reasonable enquiries, there was no other matter with respect to the appointment of our Directors that needs to be brought to the attention of the Shareholders and there was no information relating to our Directors that is required to be disclosed pursuant to Rules 13.51(2)(h) to (v) of the Listing Rules as of the Latest Practicable Date.

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## SUBSTANTIAL SHAREHOLDERS

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### SUBSTANTIAL SHAREHOLDERS

Information on the persons who will, immediately following completion of the Global Offering (taking no account of any shares which may be taken up under the Global Offering or which may be allotted and issued pursuant to the exercise of the Over-allotment Option), directly or indirectly, be interested in 10% or more of the nominal value of any class of share capital carrying rights to vote in all circumstances at general meetings of our Company will be as follows:

<u>Name</u>	<u>Ordinary Shares owned immediately prior to the Global Offering</u>		<u>Ordinary Shares owned immediately after the Global Offering</u>	
	Number	Percentage	Number	Percentage
CNMC .....	2,600,000,000	100%	2,600,000,000	74.93%
CNMD <sup>(1)</sup> .....	2,600,000,000	100%	2,600,000,000	74.93%

*Note:*

(1) CNMD is a wholly-owned subsidiary of CNMC.

Assuming the Over-allotment Option is exercised in full, information on the persons who will, immediately following completion of the Global Offering, directly or indirectly, be interested in 10% or more of the nominal value of any class of share capital carrying rights to vote in all circumstances at general meetings of our Company will be as follows:

<u>Name</u>	<u>Ordinary Shares owned immediately prior to the Global Offering</u>		<u>Ordinary Shares owned immediately after the Global Offering and the exercise of the Over-allotment Option</u>	
	Number	Percentage	Number	Percentage
CNMC .....	2,600,000,000	100%	2,600,000,000	72.21%
CNMD <sup>(1)</sup> .....	2,600,000,000	100%	2,600,000,000	72.21%

*Note:*

(1) CNMD is a wholly-owned subsidiary of CNMC.

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## SHARE CAPITAL

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	<u>HK\$</u>
<b>Authorized share capital:</b>	
5,000,000,000 .....	5,000,000,000
<b>Issued Shares:</b>	
2,600,000,000 .....	2,600,000,000
<b>Shares to be issued in the Global Offering:</b>	
870,000,000 .....	870,000,000
<b>Total issued share capital:</b>	
3,470,000,000 .....	3,470,000,000

### **Assumption**

The above table assumes that the Global Offering becomes unconditional and does not take into account any Shares which may be issued pursuant to any exercise of the Over-allotment Option, or which may be issued or repurchased pursuant to the general mandate referred to in the paragraph headed “General Mandate” below or the repurchase mandate referred to in the paragraph headed “Repurchase Mandate” below, as the case may be. If the Over-allotment Option is exercised in full, then 130,500,000 additional Shares will be issued resulting in a total enlarged issued share capital of 3,600,500,000 Shares with a nominal value of HK\$1 each.

### **Ranking**

The Offer Shares are ordinary shares in the share capital of our Company and rank equally with all Shares currently in issue or to be issued, in particular, will rank in full for all dividends or other distributions declared, made or paid on the Shares in respect of a record date which falls after the date of this prospectus.

### **General Mandate**

Conditional on the conditions as stated in the section headed “Structure of the Global Offering — Conditions of the Hong Kong Public Offering”, our Directors have been granted a general unconditional mandate to allot, issue and deal with Shares (otherwise than pursuant to, a rights issue or pursuant to any scrip dividend scheme or similar arrangements providing for the allotment and issue of Shares in lieu of the whole or part of a dividend on Shares in accordance with the Articles or pursuant to, a special authority granted by our Shareholders in general meeting) with an aggregate nominal value of not more than the sum of:

- (a) 20% of the aggregate nominal value of the share capital of our Company in issue immediately following the completion of the Global Offering before any exercise of the Over-allotment Option; and
- (b) the aggregate nominal value of the share capital of our Company repurchased by our Company (if any).

This general mandate to issue Shares will remain in effect until the earliest of:

- (i) the conclusion of our Company’s next annual general meeting unless by ordinary resolution passed at that meeting, the authority is renewed, either unconditionally or subject to conditions;
- (ii) the expiration of the period within which our Company’s next annual general meeting is required by any applicable law or the Articles of Association to be held; or
- (iii) it is varied or revoked by an ordinary resolution of our Shareholders in general meeting.

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## SHARE CAPITAL

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For further details of this general mandate, please refer to the section headed “Statutory and General Information — A. Further Information About Us and Our Subsidiaries — 3. Written Resolutions of the Sole Shareholder Passed on April 27, 2012” in Appendix V to this prospectus.

### **Repurchase Mandate**

Conditional on the conditions as stated in the section headed “Structure of the Global Offering — Conditions of the Hong Kong Public Offering”, the Directors have been granted a general unconditional mandate to exercise all our powers to repurchase on the Hong Kong Stock Exchange or on any other approved stock exchange on which our securities may be listed and which is recognized by the Securities and Futures Commission and the Hong Kong Stock Exchange for this purpose) with a total nominal value of not more than 10% of the aggregate nominal value of our Company’s share capital in issue immediately following the completion of the Global Offering before any exercise the Over-allotment Option.

This mandate only relates to repurchases made on the Hong Kong Stock Exchange, or on any other stock exchange on which the Shares are listed (and which is recognized by the Securities and Futures Commission and the Hong Kong Stock Exchange for this purpose), and made in accordance with all applicable laws and the requirements of the Listing Rules. A summary of the relevant Listing Rules is set out in the section headed “Repurchase of Our Own Securities” in Appendix V to this prospectus.

The general mandate to repurchase Shares will remain in effect until the earliest of:

- (i) the conclusion of our Company’s next annual general meeting unless by ordinary resolution passed at that meeting, the authority is renewed, either unconditionally or subject to conditions;
- (ii) the expiration of the period within which our Company’s next annual general meeting is required by any applicable law or the Articles of Association to be held; and
- (iii) it is varied or revoked by an ordinary resolution of our Company’s Shareholders in general meeting.

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## CORNERSTONE INVESTORS

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### OUR CORNERSTONE INVESTORS

We have entered into three placing agreements with the following investors (each a “Cornerstone Investor” and, collectively, the “Cornerstone Investors”) who in aggregate have agreed to subscribe for approximately HK\$545,300,000 worth of our Offer Shares at the Offer Price (collectively, the Cornerstone Placing”). Assuming an Offer Price of HK\$2.45, being the mid-point of the indicative Offer Price range of HK\$2.10 to HK\$2.80 per Share, the total number of Shares subscribed by the Cornerstone Investors will be approximately 222,570,000, which is approximately 6.41% of the Shares outstanding upon completion of the Global Offering and 25.58% of the Offer Shares (assuming the Over-allotment Option is not exercised), respectively. Each of the Cornerstone Investors and their respective beneficial owners is an Independent Third Party not connected with us and will not be a substantial shareholder of our Company upon Listing or during the Lock-up Period (as defined below). Each of the Cornerstone Investors is independent of each other.

The Cornerstone Placing forms part of the International Offering. None of the Cornerstone Investors nor their associates will subscribe for any Offer Shares under the Global Offering other than pursuant to the respective cornerstone investor agreements. The Offer Shares to be subscribed for by the Cornerstone Investors will rank *pari passu* in all respects with the fully paid Shares in issue and will be counted towards the public float of our Company. None of the Cornerstone Investors has a representative on our Board. The Offer Shares to be subscribed for by the Cornerstone Investors will not be affected by any reallocation of the Offer Shares between the International Offering and the Hong Kong Public Offering in the event of over-subscription under the Hong Kong Public Offering as described in the section headed “Structure of the Global Offering — The Hong Kong Public Offering” in this prospectus. Each of the Cornerstone Investors has agreed that, without the prior written consent of the Company and the Joint Global Coordinators, it will not, directly or indirectly, at any time during the period of six months from the Listing Date (the “Lock-up Period”), dispose of any Shares subscribed for pursuant to the respective cornerstone investor agreement or any Shares or other securities of the Company deriving from such Shares pursuant to any rights issue or other form of capital reorganization, or enter into any swap or other arrangement that transfers to another person any beneficial ownership of the acquired Shares. Each Cornerstone Investor may transfer the Shares so subscribed for in certain limited circumstances, such as a transfer to a wholly owned subsidiary of such Cornerstone Investor, and any such transfer can only be made when the transferee agrees to be subject to the restrictions on disposal imposed on the Cornerstone Investor. Each of the Joint Global Coordinators confirmed that it will not exercise its discretion to release the Cornerstone Investors from the above lock-up arrangements. Details of the allocation to Cornerstone Investors will be disclosed in the allotment results announcement for the Hong Kong Public Offering to be published on Thursday, June 28, 2012.

### **COSCO (Cayman) Venus Co. Ltd.**

COSCO (Cayman) Venus Co. Ltd. (“COSCO Venus”) has agreed to subscribe for such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$232,500,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80. Assuming an Offer Price of HK\$2.45, being the mid-point of the indicative Offer Price range of HK\$2.10 to HK\$2.80 per Share, COSCO Venus will be subscribing for 94,897,000 Shares, which would represent approximately (i) 2.73% of the Shares issued and outstanding upon completion of the Global Offering, and (ii) 10.91% of the total number of Offer Shares, in each case assuming the Over-allotment Option is not exercised.

COSCO Venus is a company incorporated with limited liability in the Cayman Islands. COSCO Venus primarily focuses on investing in global financial and capital markets. It is wholly owned by

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## CORNERSTONE INVESTORS

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China Ocean Shipping (Group) Company (“COSCO”). COSCO, one of the major multinational enterprises in the world, is a leading company specializing in global shipping, modern logistics and ship building and repairing.

### **CRCC China-Africa Construction (HK) Limited**

CRCC China-Africa Construction (HK) Limited (“CRCC China-Africa”) has agreed to subscribe for such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$80,000,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80. Assuming an Offer Price of HK\$2.45, being the mid-point of the indicative Offer Price range of HK\$2.10 to HK\$2.80 per Share, CRCC China-Africa will be subscribing for 32,653,000 Shares, which would represent approximately (i) 0.94% of the Shares issued and outstanding upon completion of the Global Offering, and (ii) 3.75% of the total number of Offer Shares, in each case assuming the Over-allotment Option is not exercised.

CRCC China-Africa is a wholly-owned subsidiary of CRCC China-Africa Construction Limited, (“CRCCCAC”). CRCCCAC is a wholly-owned subsidiary of China Railway Construction Corporation Limited (“CRCC”). CRCC is a large construction corporation supervised by the SASAC. CRCC is listed on the Shanghai Stock Exchange (SH 601186) and the Hong Kong Stock Exchange (SEHK 1186) and is one of the largest construction enterprises in both China and abroad. CRCC operates business in many countries and regions in the world. The business of CRCC covers construction, survey, design, consultancy, manufacturing, real estate development, logistics and trading as well as capital investment.

CRCCCAC with the registered capital of RMB1 billion (equivalent to approximately US\$146 million) was incorporated and established primarily for the purpose of implementing and realizing CRCC’s strategy of “Overseas Business Expansion” to further develop the African construction market.

### **Wise Pine Investment Limited**

Wise Pine Investment Limited (“Wise Pine”) has agreed to subscribe for such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$232,800,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80. Assuming an Offer Price of HK\$2.45, being the mid-point of the indicative Offer Price range of HK\$2.10 to HK\$2.80 per Share, Wise Pine will be subscribing for 95,020,000 Shares, which would represent approximately (i) 2.74% of the Shares issued and outstanding upon completion of the Global Offering, and (ii) 10.92% of the total number of Offer Shares, in each case assuming the Over-allotment Option is not exercised.

Wise Pine is an investment company incorporated in Hong Kong that engages in venture capital investment, equity investment, asset mergers and acquisitions. Wise Pine is ultimately controlled by Mr. Ding Rongmao and Mr. Chen Luming.

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## FINANCIAL INFORMATION

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You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial information, including the notes thereto, all included in the Accountants' Report attached as Appendix I of this prospectus. The consolidated financial information in the Accountants' Report has been prepared in accordance with HKFRS and the unaudited pro forma financial information included in Appendix II to this prospectus, in each case together with the accompanying notes.

This discussion contains forward-looking statements that involve risks and uncertainties. We caution you that our business and financial performance are subject to substantial risks and uncertainties. In evaluating our business, you should carefully consider the information provided under the section headed "Risk Factors" in this prospectus.

### OVERVIEW

We are a leading, fast growing and vertically integrated copper producer, focusing on the mining, ore processing, leaching, smelting and sale of copper, based in Zambia. According to Wood Mackenzie, we were the first Chinese firm to invest in Zambia's copper assets since the privatization of its copper industry in the late 1990s and we were the largest PRC enterprise in terms of total overseas copper production in 2011 (including copper concentrate, blister copper and copper cathode). Our main products are copper concentrate, blister copper and copper cathode. We also produce sulfuric acid, a by-product generated during the blister copper smelting process. In 2011, we produced 39.3 kt of contained copper in concentrate, 150.9 kt of blister copper, 7.0 kt of copper cathode and 328.8 kt of sulfuric acid. Our ultimate Controlling Shareholder is CNMC, a PRC state-owned enterprise directly administered by the SASAC and engaged in the development of nonferrous metal resources, construction and engineering, as well as related trade and services, both in the PRC and overseas. We are the overseas platform for the CNMC Group in terms of copper and cobalt resources development.

During 2009, 2010 and 2011, the sales of blister copper accounted for 89.6%, 94.2% and 92.5%, respectively, of our revenue; the sales of copper cathode accounted for 4.9%, 4.2% and 4.5%, respectively, of our revenue; the sales of copper concentrate accounted for 4.1%, 0.0% and 0.0%, respectively, of our revenue; and the sales of sulfuric acid accounted for 1.4%, 1.6% and 3.0%, respectively, of our revenue.



## FINANCIAL INFORMATION

The following table sets out, for the periods indicated, certain items derived from our consolidated statements of comprehensive income and their respective percentages of our total revenue.

	Year ended December 31,					
	2009		2010		2011	
	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)
Revenue . . . . .	696,290	100.0	1,357,285	100.0	1,283,906	100.0
Cost of sales . . . . .	(604,550)	(86.8)	(1,141,146)	(84.1)	(1,095,648)	(85.3)
Gross profit . . . . .	91,740	13.2	216,139	15.9	188,258	14.7
Other income . . . . .	2,081	0.3	1,240	0.1	4,835	0.4
Distribution and selling expenses . . . . .	(6,236)	(0.9)	(21,863)	(1.6)	(27,917)	(2.2)
Administrative expenses . . . . .	(20,865)	(3.1)	(29,016)	(2.1)	(36,983)	(2.9)
Finance costs . . . . .	(5,330)	(0.8)	(8,232)	(0.6)	(9,248)	(0.7)
(Loss)/gain arising on change in fair value of derivatives . . . . .	(134)	—	(25,538)	(1.9)	10,369	0.8
Gain on bargain purchase . . . . .	48,945	7.0	—	—	—	—
Other expenses . . . . .	(4,374)	(0.6)	(5,146)	(0.4)	(11,004)	(0.9)
Profit before tax . . . . .	105,827	15.1	127,584	9.4	118,310	9.2
Income tax expense . . . . .	(11,480)	(1.6)	(20,202)	(1.5)	(15,020)	(1.2)
Profit for the year . . . . .	<u>94,347</u>	<u>13.5</u>	<u>107,382</u>	<u>7.9</u>	<u>103,290</u>	<u>8.0</u>
Profit and total comprehensive income attributable to:						
Owners of the Company . . . . .	81,674	11.7	73,911	5.4	70,014	5.5
Non-controlling interests . . . . .	12,673	1.8	33,471	2.5	33,276	2.5
	<u>94,347</u>	<u>13.5</u>	<u>107,382</u>	<u>7.9</u>	<u>103,290</u>	<u>8.0</u>

### SEGMENTAL INFORMATION

We operate our business in the following three segments:

- Mining, which produces copper concentrate;
- Leaching, which produces copper cathodes; and
- Smelting, which produces blister copper and sulfuric acid.

## FINANCIAL INFORMATION

The following table sets out, for the periods indicated, an analysis of our revenue and results by reportable segment:

	Year ended December 31,		
	2009 (US\$'000)	2010 (US\$'000)	2011 (US\$'000)
Revenue (including inter-segment sales)			
— Mining <sup>(1)</sup>	127,215	218,965	285,835
— Leaching <sup>(2)</sup>	35,138	57,149	58,223
— Smelting <sup>(3)(4)</sup>	634,656	1,301,459	1,227,359
	<u>797,009</u>	<u>1,577,573</u>	<u>1,571,417</u>
Elimination*	(100,719)	(220,288)	(287,511)
Revenue for the year	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>
Segment profit			
— Mining <sup>(1)</sup>	22,763	34,684	28,751
— Leaching <sup>(2)</sup>	17,556	36,723	28,020
— Smelting <sup>(3)(4)</sup>	9,733	41,119	49,190
	<u>50,052</u>	<u>112,526</u>	<u>105,961</u>
Unallocated expenses <sup>(5)</sup>	—	—	(2,281)
Elimination	(4,650)	(5,144)	(390)
Gain on bargain purchase	48,945	—	—
Profit for the year	<u>94,347</u>	<u>107,382</u>	<u>103,290</u>

*Notes:*

- (1) Mining refers to mining and exploration of copper and production of copper concentrate.
- (2) Leaching refers to production and sale of copper cathodes which are produced using the solvent extraction-electrowinning technology.
- (3) Smelting refers to production and sale of blister copper and sulfuric acid which are produced using ISA smelting technology.
- (4) Includes sulfuric acid as a by-product.
- (5) The unallocated expenses mainly represent expenses of our Company.

### BASIS OF PRESENTATION

Our Company was incorporated in Hong Kong on July 18, 2011 with limited liability. Our parent company is CNMD, incorporated in the BVI, and our ultimate holding company is CNMC, incorporated in the PRC. Accordingly, for purposes of preparing the consolidated financial information of our Group, our Company has been considered as the holding company of the companies now comprising our Group throughout the Track Record Period. Our Group comprising our Company and its subsidiaries resulting from the Reorganization is regarded as a continuing entity. Our Group has been under the control of CNMC prior to and after the Reorganization.

The consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flow for the Track Record Period which include the results, changes in equity and cash flows of the companies comprising our Group have been prepared as if the current group structure had been in existence throughout the Track Record Period (other than the acquisition of Luanshya), or since the respective dates of incorporation where it is a shorter period.

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## FINANCIAL INFORMATION

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The consolidated statements of financial position as at the respective reporting dates have been prepared to present the assets and liabilities of the companies comprising our Group as if our Group structure had been in existence at those dates (other than the acquisition of Luanshya). All of the intra-group transactions and balances have been eliminated upon consolidation.

The principal activity of our Company is investment holding. Our Group's subsidiaries are principally engaged in the mining, exploration, ore processing, leaching, smelting and sale of copper concentrate, copper cathode, blister copper and sulfuric acid.

For additional details of the basis of presentation of our Group's consolidated financial information, see Note 1 of Section B to the Accountants' Report, set out in Appendix I and the section headed "Our History and Reorganization" in this prospectus.

### **KEY FACTORS AFFECTING RESULTS OF OPERATIONS AND FINANCIAL CONDITION**

Our business and historical financial condition and results of operations have been affected by a number of important factors which we believe will continue to affect our financial condition and results of operations in the future. Our results are primarily affected by the following factors:

#### **Prices of Our Copper Products**

The price of our copper products has a material impact on our results of operations. Copper prices are significantly affected by changes in global economic conditions and related industry cycles and are established with reference to international commodity market prices. Copper prices are also significantly affected by certain force majeure events, such as the earthquakes in Chile, a major copper producing country, in February 2010 and February 2011. Generally, copper producers are unable to influence market commodity prices directly; however, events such as changes in production capacity, temporary price reductions or other actions by participants in the market may have an effect on market prices. Additionally, the prices realized by producers on sales of their products may be affected by contractual arrangements, production levels, product quality and hedging strategies.

In line with industry practice, the pricing mechanism for our copper products is set out in our annual contracts, and, according to our annual contracts, our copper products are priced by reference to the LME-quoted price for the relevant period. For information on the historical annual market prices for copper on the LME, see the section headed "Industry Overview" in this prospectus. Since we are contractually required to deliver our copper products to CNMC International Trade on a CIF basis, therefore, our average selling price to CNMC International Trade is higher than the market price to cover the transportation and freight expenses as well as insurance expenses for the blister copper we sell to CNMC International Trade.

Price variations have historically influenced our results of operations and are expected to continue to do so. To minimize this risk, we enter into copper futures contracts and provisional price arrangement to manage our exposure in relation to forecasted sales of copper products, forecasted purchases of copper concentrate, inventories and firm commitments to sell our copper products. We do not generally alter our production levels or the ore grade we produce in response to short-term fluctuations in commodity prices.

#### **Production Capacity and Sales Volume of Products**

Sales volume of our copper products has a substantial effect on our results of operations. We are generally able to sell all of the products we produce, so our revenue generally fluctuates as a result of changes in the production volume of our products, which depends on our production capacity.

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## FINANCIAL INFORMATION

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We have been increasing our production capacity in recent years. For instance, CCS, which has an annual designed production capacity of 150 kt of blister copper, commenced smelting operations in February 2009. We also acquired Luanshya in 2009, which has significantly increased our production volume of copper concentrate. We have also recently begun production at two new projects: the Muliashi Leach Plant and the DRC Project. In addition, we are undertaking various other projects to increase our leaching and smelting capacities, including the expansion of the Chambishi Copper Smelter, which is expected to further increase our production capacity of blister copper, and the Mabende Project and the Kakoso Tailings Development Project, which are expected to increase our copper cathode production capacity. In addition, as higher volumes of production generally reduce unit production costs, our production levels are a key factor in determining our overall cost competitiveness. We have benefited from economies of scale as we have increased production volumes over the Track Record Period.

Although our production volumes of major products are the main factor affecting our sales volumes for such products, our sales volumes may include products stored in inventory.

### **Production Costs and Efficiency**

Same as our competitors, we are unable to influence market commodity prices directly. As a result, our competitiveness and long-term profitability are significantly dependent upon our ability to control the costs and maintain efficient operations. Our production costs are affected by both production volume and average production cost. Our average production cost is affected by the unit costs of raw material, direct labor, subcontracting work, and utilities, among others.

Copper concentrate is the major raw material used in CCS' production. During the Track Record Period, a minority percentage of copper concentrate used in the smelting operation at CCS was supplied by our own mining and ore processing operations. We procured the majority of copper concentrate we needed from external suppliers to meet the designed capacities of our copper production facilities at CCS. Changes in the market price of copper concentrate, which generally fluctuates with the international copper price, or the sufficiency of copper concentrate supply may have material impact on our overall production costs.

Major raw materials used in SML's production primarily include copper tailings, oxide ore and mixed ores. During the Track Record Period, a significant portion of raw materials used in the leaching operation at SML were supplied by our own mining and ore processing operations. We paid no cost for these copper tailings because they were waste previously disposed by NFCA. We also procured a minority percentage of oxide ore and mixed ores from external suppliers to meet the designed capacities of our copper production facilities at SML. The fluctuations of the market price of oxide ore and mixed ores may have material impact on our overall production costs.

In our copper production at CCS and SML, we also use various auxiliary materials, including water, oxygen and diesel and other fuel, among others. In addition, our mining operations at NFCA and Luanshya use many types of auxiliary materials such as chemical products, explosives, lubricating oil, electric wires and cables, pipes, rubber products, steel and wood, among others. Most of these auxiliary materials are sourced from Independent Third Parties in Zambia.

Labor costs are principally a function of the number of employees and changes in compensation from time to time. Improvement in labor productivity would result in a decrease in our per-unit labor costs. In recent years, we have had periodic negotiations with the local labor unions to minimize the increases in our average labor compensation.

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Prior to 2011, NFCA subcontracted the management of its mining operations to a third-party contractor by paying to the third-party contractor an amount that included the raw materials costs purchased by the contractor for NFCA, labor costs for NFCA's workers, and management fee related to the mining operations, which were determined at the beginning of each year. In 2011, in order to improve its cost efficiencies, NFCA amended such arrangement to subcontract the entire mining operations to this same third-party contractor, who purchases raw materials for itself and employs its own workers.

We consume a substantial amount of electricity in our operations. We purchase electricity from the local power grid at market prices. The unit prices of the electricity consumed by our various subsidiaries ranged between US\$0.048 and US\$0.079 per kWh in 2009 and ranged between US\$0.056 and US\$0.103 per kWh in 2011. However, future changes in electricity price may have an adverse impact on our results of operations if we are unable to shift such costs increases to our customers. Electricity accounted for 1.5%, 1.2% and 1.9% of our total cost of sales for 2009, 2010 and 2011, respectively.

### **Economic Growth in China and Globally**

Copper and related products have diverse industrial uses and their market demand depends on, among others, the state of the global economy and stability of international trade. In recent years, China has become an important market and its influence on the global copper industry has been increasing. The economic growth in China has been accompanied by growth in demand for refined copper at a CAGR of 13.3% from 2001 to 2011. In 2011, 66.0% of our revenue was derived from sales to China (including Hong Kong). We expect demand for copper and related products to increase as the Chinese economy continues to grow.

### **Zambian Government Control and Policies**

The Zambian Government exercises a substantial degree of influence over the mining and smelting of nonferrous metals in the country. Certain existing laws and regulations potentially impacting our business involve barriers to entry, tax, setting, amending or abolishing import tariffs and limitations and duties on the export of copper and related products.

Future changes in the level of Zambian Government control may have a direct impact on our business, financial condition and results of operations. However, we believe the regulatory trends will be favorable for large entities, such as our Company. We have adjusted and will continue to adjust our business strategies and operations to respond to the evolving Zambian Government policies. For instance, CCS, which commenced operations in February 2009, enabled us to produce blister copper, for which Zambia levies no export duty. In contrast, Zambia levies a 15% export duty on copper concentrate, which had been our main product before then. We have taken the differences in export duties between blister copper and copper concentrate, among other business rationales, into consideration in deciding to add smelting operations to integrate with our existing mining operations in Zambia and to increase our production of blister copper substantially even though the gross profit margin of blister copper was substantially lower than that of our other products. The Zambian Government also has the discretion to grant income tax incentives to mining companies. For instance, both CCS and SML have been granted ten-year income tax incentives for zero rate of income tax for the first five profitable years; 50% of income tax relief for the next three years thereafter; and 25% of income tax relief for the remaining two years. For details of preferential policies from which we benefit, see "Business — Our Competitive Strengths — We benefit from the long-term political and economic relationship between China and Zambia and thus the favorable policies of the Zambian government" in this prospectus and Note 10 of Section B to the Accountants' Report, set out in Appendix I of this prospectus.

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### Implementation of Our Plan to Increase Ore Reserves and Resources

Our future growth will be significantly affected by our ability to increase our ore reserves and resources. We plan to increase our ore reserves and resources through a combination of acquiring, or consolidating with, other mines in the region and extending mining activities to areas adjacent to the boundary limits of our existing mines as set forth in our current mining rights. Mineral exploration and development involves substantial expense and a high degree of risk, which may not be completely avoided through any combination of experience, knowledge and careful evaluation. In addition, exploration expenses are not capitalized until the mineral property is determined to contain economically recoverable reserves.

### CRITICAL ACCOUNTING POLICIES

In the process of applying our accounting policies, which are described in Note 3 of Section B to the Accountants' Report, set out in Appendix I to this prospectus, our Directors have identified the following judgment and key sources of estimation uncertainty that have significant effect on the amounts recognized in the financial information.

The key assumptions concerning the future and other key sources of estimation uncertainty at the end of each reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next twelve months, are discussed below.

#### Revenue Recognition

Our Group produces blister copper, copper cathode, copper concentrate and sulfuric acid. Copper products are sold under provisional pricing arrangements where final grades of copper, gold and silver in copper products are agreed based on third-party examination and final prices are set at a specified date based on market prices. Revenues are recognized when title and risk pass to the customer using history of grades of copper, gold and silver in copper products based on internal examination statistics and forward prices for the expected date of final settlement. Besides, changes between the prices recorded upon recognition of revenue and the final price due to fluctuations in copper market prices result in the existence of an embedded derivative in the trade receivables. This embedded derivative is recorded at fair value, with changes in fair value classified as a component of revenue. Sulfuric acid revenue is recorded when title and risk have passed to the customer.

#### Depreciation of Mining Properties and Leases

Mining properties and leases costs are depreciated using the UOP. The calculation of the UOP rate of depreciation, and therefore the annual depreciation charge to operations, can fluctuate from initial estimates. This could generally result when there are significant changes in any of the factors or assumptions used in estimating mineral reserves, notably changes in the geology of the reserves and assumptions used in determining the economic feasibility of the reserves. Such changes in reserves could similarly impact the useful lives of assets depreciated on a straight-line basis, where those lives are limited to the life of the project, which, in turn is, limited to the life of the proved and probable mineral reserves. Estimates of proved and probable reserves are prepared by experts in extraction, geology and reserve determination. Assessments of UOP rates against the estimated reserve base and the operating and development plan are performed regularly.

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### **Income Taxes**

Current income taxes are recorded based on estimated income taxes payable for the current year and significant judgment is required in determining the provision for income tax. There are many transactions and calculations for which the ultimate determination is uncertain during the ordinary course of business. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such difference will impact the income tax and deferred tax provision in the period in which such determination is made. Deferred income tax assets and liabilities are recognized for temporary differences between the tax and accounting bases of assets and liabilities using substantively enacted tax rates for the period in which the differences are expected to reverse. Deferred tax assets relating to tax losses are recognized when management considers to be probable that tax losses can be utilized. The outcome of their actual utilization may be different.

### **Restoration, Rehabilitation and Environmental Costs**

Provision is made for costs associated with restoration and rehabilitation of mining sites and certain production facilities of our Group as soon as the obligation to incur such costs arises. Such restoration and closure costs are typical of mining, leaching and smelting industries and they are normally incurred at the end of the life of the mine and production facilities. The costs are estimated on the basis of mine/plant closure plans and the estimated discounted costs of dismantling and removing these facilities and the costs of restoration are capitalized when incurred reflecting our obligations at that time. A corresponding provision is created on the liability side.

The capitalized asset is charged to profit or loss over the life of the asset through depreciation over the life of the operation and the provision is increased each period via unwinding the discount on the provision. Management estimates are based on local legislation. The actual costs and cash outflows may differ from estimates because of changes in laws and regulations, changes in prices, analysis of site conditions and changes in restoration technology.

The Group provides for such costs in accordance with statutory requirements.

### **Valuation of Derivative Instruments**

Derivative instruments are carried at fair value and our Group evaluates the quality and reliability of the assumptions and data used to measure fair value in the three hierarchy levels, Level 1, 2 and 3, as prescribed by HKFRS 7. Fair values are determined in the following ways: externally verified via comparison to quoted market prices in active markets (“Level 1”); by using models with externally verifiable inputs (“Level 2”); or by using alternative procedures such as comparison to comparable instruments and/or using models with unobservable market inputs requiring our Group to make market-based assumptions (“Level 3”). Details of the hierarchy of fair value measurement of the financial instruments of our Group are set out in Note 33 of Section B to the Accountants’ Report, set out in Appendix I of this prospectus.

### **Estimated Impairment of Trade Receivables**

Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortized cost using the effective interest method. Appropriate allowances for estimated irrecoverable amounts are recognized in profit and loss when there is objective evidence that the asset is impaired.

In making the estimates, management considered that detailed procedures have been in place to monitor this risk. In estimating whether allowance for bad and doubtful debts is required, our Group takes into consideration the ageing status and the likelihood of collection. Following the



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identification of doubtful debts, the responsible sales personnel discuss with the relevant customers and report on the recoverability. When there is objective evidence of impairment loss, our Group takes into consideration the estimation of future cash flows. The amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. Where the actual future cash flows are less than expected, a material impairment loss may arise.

Details of movements of allowance for trade receivables and other receivables are disclosed in Note 18 of Section B to the Accountants' Report, set out in Appendix I of this prospectus.

### PRINCIPAL COMPONENTS OF CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

#### Revenue

We generate revenue from the sale of our products to external customers. Our revenue is affected by our total sales volume which is in turn subject to, among other things, our production capacity and market conditions. Revenue is also affected by our product sales mix as average selling prices vary among our different product segments as well as within a product segment and between periods.

The following table sets forth the production and sales volumes of each product segment during the periods indicated.

	Year ended December 31,					
	2009		2010		2011	
	Production volume (tonnes)	Sales volume	Production volume (tonnes)	Sales volume	Production volume (tonnes)	Sales volume
Blister copper <sup>(1)</sup> . . . . .	108,413	105,156	165,119	163,026	150,863	147,794
Copper cathode <sup>(1)</sup> . . . . .	6,513	6,214	7,103	7,423	7,003	7,004
Copper concentrate <sup>(1)</sup> . . . . .	23,590	5,071	32,047	—	39,265	—
Sulfuric acid . . . . .	217,117	196,746	330,034	313,614	328,842	338,208

Note:

(1) The production volumes and the sales volumes are on a contained-copper basis.

The following table sets forth a breakdown of our revenue by product segments and the percentage revenue contribution by each product segment during the periods indicated.

	Year ended December 31,					
	2009		2010		2011	
	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)
Blister copper . . . . .	624,185	89.6	1,278,483	94.2	1,186,840	92.5
Copper cathode . . . . .	33,848	4.9	56,336	4.2	58,223	4.5
Copper concentrate . . . . .	28,218	4.1	—	—	—	—
Sulfuric acid . . . . .	10,039	1.4	22,466	1.6	38,843	3.0
<b>Total . . . . .</b>	<b>696,290</b>	<b>100.0</b>	<b>1,357,285</b>	<b>100.0</b>	<b>1,283,906</b>	<b>100.0</b>

#### Cost of Sales

Cost of sales primarily includes raw material costs, direct labor costs, subcontracting work, utilities, depreciation, among others. The major raw material used in our production is copper concentrate. During 2009, 2010 and 2011, our own mining and ore processing operations supplied 14.5%, 19.4% and 26.1%, respectively, of copper concentrate used in the smelting operations at CCS. See "Business — Smelting Operations — Chambishi Copper Smelter — Raw Materials for Smelting at CCS".

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The following table sets forth a breakdown of our cost by product segments during the periods indicated:

	Year ended December 31,					
	2009		2010		2011	
	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)	(US\$ '000)	(% of revenue)
Blister copper	567,532	81.5	1,114,543	82.1	1,059,694	82.5
Copper cathode	13,532	1.9	18,378	1.4	25,974	2.0
Copper concentrate	17,671	2.5	—	—	—	—
Sulfuric acid	5,815	0.9	8,225	0.6	9,980	0.8
<b>Total</b>	<b>604,550</b>	<b>86.8</b>	<b>1,141,146</b>	<b>84.1</b>	<b>1,095,648</b>	<b>85.3</b>

The following table sets forth the components of our cost of sales and the percentage of cost of sales represented by such component during the periods indicated.

	For the year ended December 31,					
	2009		2010		2011	
	(US\$ '000)	(% of total cost of sales)	(US\$ '000)	(% of total cost of sales)	(US\$ '000)	(% of total cost of sales)
Raw materials	492,604	81.5	973,258	85.3	875,953	79.9
Direct labor	13,988	2.3	40,286	3.5	58,540	5.3
Subcontracting work	42,726	7.1	44,647	3.9	58,950	5.4
Utilities <sup>(1)</sup>	11,440	1.9	18,867	1.6	25,034	2.3
Depreciation	27,463	4.5	43,021	3.8	49,931	4.6
Others	16,329	2.7	21,067	1.9	27,240	2.5
<b>Total cost of sales</b>	<b>604,550</b>	<b>100.0</b>	<b>1,141,146</b>	<b>100.0</b>	<b>1,095,648</b>	<b>100.0</b>

*Note:*

(1) Utilities include electricity, water and oxygen.

### Other Income

Other income primarily consists of interest income, finance income earned under finance leases, net revenue from construction contracts; net income from sale of spare parts and other materials, and others.

### Distribution and Selling Expenses

Distribution and selling expenses primarily consist of transportation and freight expenses, insurance expenses, salaries for employees of our sales force, packaging costs, among others. Distribution and selling expenses of different product lines may vary as our product mix changes.

### Administrative Expenses

Administrative expenses primarily consist of salary and benefits paid to our administrative staff, depreciation, travel costs, office expenses, among others.

### Finance Costs

Finance costs consist of interest expenses on bank and other borrowings and the unwinding of discount relating to the passage of time in respect of the provision for restoration, rehabilitation and

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environmental costs, reduced by borrowing costs capitalized in construction in progress associated with (1) our investment in the mining and ore processing facilities for NFCA and Luanshya, and (2) our investment in the smelting facilities for CCS. For additional details regarding the unwinding of discount relating to the passage of time in respect of the provision for restoration, rehabilitation and environmental costs, see Note 27 of Section B to the Accountants' Report, set out in Appendix I of this prospectus.

### **Loss/Gain Arising on Change in Fair Value of Derivatives**

Loss/gain arising on change in fair value of derivatives consists of losses/gains relating to decreases or increases in fair value of our short-term copper futures contracts. We entered into these contracts during the Track Record Period to hedge our net exposure to the copper price fluctuations due to the timing difference between when we expect to procure copper concentrate from external suppliers and when we expect to sell blister copper to external customers but these transactions did not qualify for hedge accounting. Because we have long (or buying) positions on copper concentrate in our operations, we need to maintain short (or selling) positions on copper futures. For instance, in 2010, we had an aggregate hedging amount of 10,750 tonnes (which accounted for 7.2% of our annual sales volume), all at short (or selling) positions. Because we hold the 3-month futures contracts traded on the LME, which have better liquidity than those of the 6-month contracts, we need to periodically close our outstanding short (or selling) positions when the relevant futures contracts expire and then re-establish short (or selling) positions with the same amounts and price terms. Although we incurred losses in 2009 and 2010 on the short (or selling) positions of our copper futures trading due to the copper price increases on the LME in 2009 and 2010, the derivative transactions realized our hedging goal to reduce our net exposure to the copper price fluctuations and was not due to incorrect hedging decisions we made. In contrast, our gain in 2011 on the short (or selling) positions of our copper futures trading was attributable to the copper price decrease on the LME in the second half of 2011 and the derivative transactions realized our hedging goal to reduce our net exposure to the copper price fluctuations.

We have adopted various internal hedging policies and have been implementing our hedging activities strictly in accordance with such policies. Such policies provide, among others, that futures trading may only be undertaken at the trading platforms of recognized exchanges, the commodities traded must relate to our products, futures trading must be approved by our Board of Directors or relevant decision-making bodies, the transactions amounts must be commensurate with our financial capability, speculative futures trading is strictly prohibited and monthly reports in relation to such futures trading activities must be submitted. The futures trading group of CCS is the decision-making body that approves CCS' futures trading activities. Its members include the General Manager, Assistant General Manager, Finance Manager and Sales Manager of CCS, who have various backgrounds in copper production and sales, futures trading, accounting and finance, as well as risk management. The relevant Directors and the futures trading group of CCS have sufficient experience to approve the futures trading. The risk management post of the futures trading group of CCS sets cut-loss limits for hedging activities based on our outstanding futures positions, amount of unrealized gains or losses, credit limits, amount of deposits in futures margin account and prevalent market conditions. The futures trading group, the sales department and the finance department of CCS are responsible for reviewing the monthly reports in relation to futures trading activities submitted by the risk management post. See the section headed "Business—Sales, Distribution and Marketing" in this prospectus for further information.

### **Gain on Bargain Purchase**

Gain on bargain purchase represents gain recognized for acquiring Luanshya at a consideration lower than the recognized amount of identified assets acquired and liabilities assumed of Luanshya.

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### Other Expenses

Other expenses primarily consist of foreign exchange gains and losses, net expenses for operating hospitals, schools and recreational facilities, loss or gain on disposal of property, plant and equipment, depreciation of property, plant and machinery under suspension of production, listing expenses, among others.

### Income Tax Expense

No provision for Hong Kong profits tax has been made as our Company had no assessable profit arising in Hong Kong during the Track Record Period.

Income tax in Zambia is calculated at 35% on the assessable income, except for that arising from mining activities which is 30% on the relevant assessable income, for the Track Record Period. Therefore, during the Track Record Period, the provision for income tax in Zambia is calculated at 30% of the estimated assessable income of NFCA and Luanshya derived from mining activities, and 35% of the estimated assessable income of NFCA and Luanshya for their income derived from non-mining activities for the Track Record Period.

During the Track Record Period, SML and CCS enjoyed the following income tax incentives:

- On June 10, 2011, SML was granted ten-year income tax incentives for zero rate of income tax for the first five profitable years; 50% of income tax relief for the next three years thereafter; and 25% of income tax relief for the remaining two years. SML first became profitable in 2008.
- On June 10, 2010, SML was granted a rebate of the income tax payable in respect of its operations for the charge years covering the period from April 1, 2005 to March 31, 2009 according to Statutory Instrument No. 43 of 2010. Accordingly, we reversed the accrued tax of SML for the period from December 3, 2004 (date of incorporation) to December 31, 2007 amounting to US\$4.4 million in June 2010.
- On April 3, 2009, CCS was granted ten-year income tax incentives for zero rate of income tax for the first five profitable years; 50% of income tax relief for the next three years thereafter; and 25% of income tax relief for the remaining two years. CCS first became profitable in 2010.

We are also subject to VAT at 16% on purchases and sales in Zambia whereas VAT is exempted on export, and relevant input VAT paid for purchases supported by valid VAT invoices could be refunded by Zambia Revenue Authority to the extent that total input VAT paid on purchases exceeds total output VAT payable on domestic sales.

In addition, NFCA and Luanshya are also subject to mineral royalty at 3% on sale of taxable mining products. On September 25, 2009, according to Statutory Instrument No. 66 of 2009, the Commissioner of Zambia Revenue Authority shall remit the whole or part of the mineral royalties payable by Luanshya not exceeding US\$9 million. For the period from July 7, 2009, the date on which CNMC acquired Luanshya, to December 31, 2011, Luanshya had not made any payment for such mineral royalty as the mineral royalty payable by Luanshya has not exceeded US\$9 million as of December 31, 2011.

For the period from April 1, 2008 to March 31, 2009, NFCA was also subject to Windfall Tax based on the amount by which the monthly average selling prices of copper and cobalt exceed certain “Trigger Prices” as stipulated in the Tenth Schedule of the Income Tax (Amendment) Act

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2008. The rates applicable were 0%, 25%, 50% or 75% depending on the average copper or cobalt price. The tax was payable quarterly. The Windfall Tax was abolished in 2009.

Prior to 2011, NFCA received certain management services rendered by certain third-party overseas suppliers with management fees paid to them being subject to withholding tax (“WHT”) and reverse value added tax (“RVAT”). RVAT is a charge to transfer of liability to account for and pay Value Added Tax on imported services from the person making the supply to the person receiving the supply according to the Value Added Tax Act in Zambia. On August 5, 2011, NFCA received the assessments for the assessment years 2004 to 2009 which indicated among other things, the outstanding WHT and RVAT be the equivalents of US\$1.5 million and US\$1.6 million, respectively. Such amounts have been included in “other payables and accrued expenses” as at December 31, 2009 and 2010 set out in Note 23 of Section B to the Accountants’ Report, set out in Appendix I to this prospectus. On September 9, 2011, the outstanding taxes payable had been fully settled.

In the opinion of our Company’s Zambian counsel, pursuant to the Convention between the Republic of Zambia and Ireland for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to Tax on Income, distribution of dividends to CNMH, an investment holding company incorporated under the laws of the Republic of Ireland, from its Zambian subsidiaries would be exempt from such withholding tax save for instances where CNMH has a permanent establishment in Zambia. Our directors confirm that CNMH has no permanent establishment in Zambia, and therefore are of the view that no provision for withholding tax on the Group’s undistributed profit is required to be made during the Track Record Period.

See Note 10 of Section B to the Accountants’ Report, set out in Appendix I of this prospectus for further information.

### RESULTS OF OPERATIONS

The following discussion addresses the principal trends that have affected our results of operations during the periods under review.

#### The Year Ended December 31, 2011 Compared to the Year Ended December 31, 2010

The following table sets forth sales volume, average selling prices, revenue, and percentage contribution to total revenue of our products during the period indicated.

	Year ended December 31,							
	2010				2011			
	Sales Volume <sup>(1)</sup> (tonnes)	Average Selling Price (US\$ per tonne)	Revenue (US\$ '000)	% of Total Revenue (%)	Sales Volume <sup>(1)</sup> (tonnes)	Average Selling Price (US\$ per tonne)	Revenue (US\$ '000)	% of Total Revenue (%)
Blister copper . . . . .	163,026	7,842	1,278,483	94.2	147,794	8,030	1,186,840	92.5
Copper cathode . . . . .	7,423	7,589	56,336	4.2	7,004	8,313	58,223	4.5
Sulfuric acid . . . . .	313,614	72	22,466	1.6	338,208	115	38,843	3.0
<b>Total . . . . .</b>			<u>1,357,285</u>	<u>100.0</u>			<u>1,283,906</u>	<u>100.0</u>

Note:

(1) The sales volumes are on the contained-copper basis for all products, except sulfuric acid.

#### Revenue

Revenue decreased by 5.4% from US\$1,357.3 million in 2010 to US\$1,283.9 million in 2011. This decrease in revenue was primarily due to the decreases in the sales volume of copper products

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mainly because CCS halted production for one month in June 2011 due to the periodic maintenance of the ISA furnace, partially offset by the increases in the average selling prices of copper products as a result of the increase in international copper prices in 2011 as compared to 2010. The design of CCS's ISA furnace does not require its operation to be suspended for maintenance for at least 18 months since its previous maintenance and until such time when it can no longer be maintained at its normal operation condition.

Revenue from blister copper decreased by 7.2% from US\$1,278.5 million in 2010 to US\$1,186.8 million in 2011, reflecting a 9.3% decrease in sales volume, partially offset by a 2.4% increase in average selling price. The decrease in the sales volume was primarily due to the one-month production halt at CCS in June 2011, which was due to the periodic maintenance of its ISA furnace. The average selling price increased primarily because the market benchmark prices we referenced increased in 2011 as compared to 2010.

Revenue from copper cathode increased by 3.3% from US\$56.3 million in 2010 to US\$58.2 million in 2011, reflecting a 9.5% increase in average selling price, partially offset by a 5.7% decrease in sales volume. The average selling price increased primarily because the market benchmark prices we referenced increased in 2011 as compared to 2010. The sales volume decreased primarily because we sold more prior year's inventory in 2010 as compared to 2011.

The following table sets forth the cost of sales, unit cost of sales, gross profits and gross profit margins of our products during the period indicated.

	Year ended December 31,							
	2010				2011			
	Cost of sales (US\$'000)	Unit cost of sales (US\$ per tonne)	Gross Profit (US\$'000)	Gross profit margin (%)	Cost of sales (US\$'000)	Unit cost of sales (US\$ per tonne)	Gross Profit (US\$'000)	Gross profit margin (%)
Blister copper . . . . .	1,114,543	6,837	163,940	12.8	1,059,694	7,170	127,146	10.7
Copper cathode . . .	18,378	2,476	37,958	67.4	25,974	3,709	32,249	55.4
Sulfuric acid . . . . .	8,225	26	14,241	63.4	9,980	30	28,863	74.3
<b>Total . . . . .</b>	<b><u>1,141,146</u></b>		<b><u>216,139</u></b>	<b>15.9</b>	<b><u>1,095,648</u></b>		<b><u>188,258</u></b>	<b>14.7</b>

### **Cost of sales**

Cost of sales decreased by 4.0% from US\$1,141.1 million in 2010 to US\$1,095.7 million in 2011. This decrease in cost of sales was primarily due to the decrease in the sales volumes of blister copper.

Cost of sales of blister copper decreased by 4.9% from US\$1,114.5 million in 2010 to US\$1,059.7 million in 2011, reflecting a 9.3% decrease in sales volume, partially offset by a 4.9% increase in unit cost of sales. The increase in unit cost of sales was primarily attributable to the increase in raw material costs, which was primarily due to (1) the increase in the price of the copper concentrate we purchased from external suppliers from 2010 to 2011 due to the increase in international benchmark copper price, (2) the increase in the cost of mining and processing operations at NFCA and Luanshya, which supplied copper concentrate to CCS, and (3) the depreciation costs of the smelting facilities of CCS during the one-month production halt at CCS in June 2011 due to the periodic maintenance of the ISA furnace.

Cost of sales of copper cathode increased by 41.3% from US\$18.4 million in 2010 to US\$26.0 million in 2011, reflecting a 49.8% increase in unit cost of sales, partially offset by a 5.6%

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decrease in sales volume. The increase in unit cost of sales was primarily attributable to the increase in raw material costs and labor costs. The increase in raw material costs was primarily because we purchased more tailings, the raw materials for producing copper cathode, from external suppliers in 2011 as compared to 2010.

### ***Gross profit and gross profit margin***

As a result of the foregoing, our gross profit decreased by 12.9% from US\$216.1 million in 2010 to US\$188.3 million in 2011. Our gross profit margin decreased from 15.9% in 2010 to 14.7% in 2011.

The gross profit margin of blister copper decreased from 12.8% in 2010 to 10.7% in 2011 primarily due to the increase in the unit cost of sales of blister copper, partially offset by the increase in international copper price and the higher average selling price to CNMC International Trade and Yunnan Copper Group (to whom we commenced our sales in 2011), which covered transportation, freight and insurance expenses.

The gross profit margin of copper cathode decreased from 67.4% in 2010 to 55.4% in 2011 primarily because we purchased a greater proportion of tailings from external suppliers in 2011 as compared to 2010 in order to optimize the mix of our tailings procured internally and externally by considering the stock level of our own tailings resources and the international copper price. The average cost of our tailings procured externally was higher than the average cost of those procured internally, and due to the higher proportion of tailings being procured externally, our gross profit margin of copper cathode decreased. The gross profit margin of copper cathode was significantly higher than that of blister copper because we use tailings to produce copper cathode and use copper concentrate to produce blister copper. The costs of tailings are significantly lower than that of copper concentrate.

### ***Other income***

Other income increased from US\$1.2 million in 2010 to US\$4.8 million in 2011. This increase was primarily due to a US\$1.7 million net income from construction contracts and a US\$1.0 million increase in finance income earned under finance leases, among others.

### ***Distribution and selling expenses***

Our distribution and selling expenses increased by 27.7% from US\$21.9 million in 2010 to US\$27.9 million in 2011. This increase in distribution and selling expenses was primarily due to the increase in transportation and freight expenses as well as insurance expenses as a result of the increase in the aggregate proportion of blister copper we sold to CNMC International Trade and Yunnan Copper Group (to whom we commenced our sales in 2011). The terms of our sales of blister copper to CNMC International Trade and Yunnan Copper Group require us to pay the transportation, freight and insurance expenses, which are covered by the higher average selling price of our sales to CNMC International Trade and Yunnan Copper Group. In contrast, under our other product sales contracts, we are not required to pay transportation, freight or insurance expenses.

### ***Administrative expenses***

Our administrative expenses increased by 27.5% from US\$29.0 million in 2010 to US\$37.0 million in 2011. The increase in administration expenses was primarily due to (1) a US\$3.4 million increase in salary expenses as a result of increased headcount relating to the continuing expansion of our



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operations at Luanshya, including Muliashi Project, and, to a lesser extent, the operations at our other subsidiaries, as well as increased average compensation for administrative employees, and (2) a US\$0.8 million increase in depreciation.

### ***Finance costs***

Our finance costs increased by 12.3% from US\$8.2 million in 2010 to US\$9.2 million in 2011. This increase was primarily due to an increase in interest expenses on bank and other borrowings resulting from the increase in interest-bearing borrowings from US\$581.4 million as at December 31, 2010 to US\$711.2 million as at December 31, 2011, partially offset by (1) a decrease in the weighted average interest rate on our interest-bearing borrowings from 1.9% per annum as at December 31, 2010 to 1.4% per annum as at December 31, 2011, and (2) the increase in the borrowing costs that Luanshya capitalized during 2011 as compared to 2010.

### ***Gain/Loss arising on change in fair value of derivatives***

Our loss arising on change in fair value of derivatives was US\$25.5 million in 2010 compared to a US\$10.4 million gain in 2011, primarily due to the gain relating to change in fair value of copper futures contracts we entered into in 2011 as compared to the loss relating to change in fair value of copper futures contracts we entered into in 2010. We entered into these contracts to hedge our net exposure to the copper price fluctuations due to the timing difference between when we expect to procure copper concentrate from external suppliers and when we expect to sell blister copper to external customers. See Note 25 of Section B to the Accountants' Report set out in Appendix I of this prospectus.

### ***Other expenses***

Our other expenses increased by 113.8% from US\$5.1 million in 2010 to US\$11.0 million in 2011, primarily due to (1) the fact that we recognized bad debt allowance of US\$1.2 million in 2011 for uncollectible accounts as compared to a reversal of bad debt allowance of US\$1.6 million in 2010 for accounts collected that were previously categorized as bad debt, (2) an increase in foreign exchange loss by US\$1.3 million, (3) an increase in the net expense for operating hospitals, schools and recreational facilities relating to our operations in Zambia by US\$0.8 million, and (4) the US\$2.3 million expenses incurred in 2011 related to the Listing, partially offset by a net gain of US\$0.6 million on disposal of property, plant and equipment in 2011 whereas we have a loss of US\$0.1 million in 2010.

### ***Income tax expense***

Our income tax expense decreased by 25.7% from US\$20.2 million in 2010 to US\$15.0 million in 2011. The effective tax rate decreased from 15.8% in 2010 to 12.7% in 2011, primarily because the proportion of our deductible expenses increased in 2011. In 2011, we commenced to engage a Zambian local contractor to provide mining services to us, and as a result, a greater proportion of our mining expenses were deductible.

### ***Profit for the year and net profit margin attributable to owners of the Company***

As a result of the foregoing, our profit attributable to owners of the Company decreased by 5.3% from US\$73.9 million in 2010 to US\$70.0 million in 2011. Net profit margin attributable to owners of the Company (being the profit attributable to the owners of the Company as a percentage of revenue) was 5.4% in 2010 and 5.5% in 2011.

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### The Year Ended December 31, 2010 Compared to the Year Ended December 31, 2009

The following table sets forth sales volume, average selling prices, revenue, and percentage contribution to total revenue of our products during the period indicated.

	Year ended December 31,							
	2009				2010			
	Sales volume (tonnes)	Average selling price (US\$ per tonne)	Revenue (US\$'000)	% of Total revenue (%)	Sales volume (tonnes)	Average selling price (US\$ per tonne)	Revenue (US\$'000)	% of Total revenue (%)
Blister copper <sup>(1)</sup> . . . . .	105,156	5,936	624,185	89.6	163,026	7,842	1,278,483	94.2
Copper cathode <sup>(1)</sup> . . . . .	6,214	5,447	33,848	4.9	7,423	7,589	56,336	4.2
Copper concentrate <sup>(1)</sup> . . . . .	5,071	5,565	28,218	4.1	—	—	—	—
Sulfuric acid . . . . .	196,746	51	10,039	1.4	313,614	72	22,466	1.6
<b>Total</b> . . . . .			<u>696,290</u>	<u>100.0</u>			<u>1,357,285</u>	<u>100.0</u>

Note:

(1) The sales volumes are on a contained-copper basis.

### Revenue

Revenue increased by 94.9% from US\$696.3 million in 2009 to US\$1,357.3 million in 2010. This increase in revenue was primarily due to increases in the sales volume and average selling price of copper products, which was the result of the increases in our production volume and international copper prices in 2010.

Revenue from blister copper increased by 104.8% from US\$624.2 million in 2009 to US\$1,278.5 million in 2010, reflecting a 55.0% increase in sales volume and a 32.1% increase in average selling price. The sales volume increased primarily because CCS commenced operations in March 2009 and only reached full production capacity in June 2009 while it operated at full production capacity throughout 2010. The average selling price increased primarily because (1) the market benchmark prices we referenced increased in 2010, and (2) we derived a greater proportion of revenues from sales to CNMC International Trade, for which our average selling price was calculated on the CIF basis which was higher than the average selling price on the EXW basis for our sales to other customers.

Revenue from copper cathode increased by 66.4% from US\$33.8 million in 2009 to US\$56.3 million in 2010, reflecting a 19.5% increase in sales volume and a 39.3% increase in average selling price. The sales volume increased primarily because our production volume increased in 2010 and because we sold more prior year's inventory in 2010. The average selling price increased primarily because the market benchmark prices we referenced increased in 2010.

Revenue from copper concentrate decreased from US\$28.2 million in 2009 to nil in 2010 because in March 2009 we stopped selling copper concentrate as the end-product to external customers and began selling it as an intermediate product to our smelter for further processing into blister copper in accordance with our business strategy to achieve integration along the copper production chain that generates higher economic value.

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The following table sets forth the cost of sales, unit cost of sales, gross profits and gross profit margins of our products during the year indicated.

	Year ended December 31,							
	2009				2010			
	Cost of sales (US\$ '000)	Unit cost of sales (US\$ per tonne)	Gross profit (US\$ '000)	Gross profit margin (%)	Cost of sales (US\$ '000)	Unit cost of sales (US\$ per tonne)	Gross profit (US\$ '000)	Gross profit margin (%)
Blister copper . . . . .	567,532	5,397	56,653	9.1	1,114,543	6,837	163,940	12.8
Copper cathode . . . . .	13,532	2,178	20,316	60.0	18,378	2,476	37,958	67.4
Copper concentrate . . .	17,671	3,485	10,547	37.4	—	—	—	—
Sulfuric acid . . . . .	5,815	30	4,224	42.1	8,225	26	14,241	63.4
<b>Total . . . . .</b>	<b>604,550</b>		<b>91,740</b>	<b>13.2</b>	<b>1,141,146</b>		<b>216,139</b>	<b>15.9</b>

### **Cost of Sales**

Cost of sales increased by 88.8% from US\$604.6 million in 2009 to US\$1,141.1 million in 2010. This increase in cost of sales was primarily due to the increases in the sales volume and unit cost of sales of blister copper.

Cost of sales of blister copper increased by 96.4% from US\$567.5 million in 2009 to US\$1,114.5 million in 2010, reflecting a 55.0% increase in sales volume and a 26.7% increase in unit cost of sales. The increase in unit cost of sales was primarily attributable to the increase in raw material costs, which was primarily because (1) the copper concentrate we purchased from external suppliers had a higher price in 2010 due to the increase in international benchmark copper price, and (2) the copper concentrate provided by Luanshya had a higher unit cost due to its lower grade.

Cost of sales of copper cathode increased by 35.8% from US\$13.5 million in 2009 to US\$18.4 million in 2010, reflecting a 19.5% increase in sales volume and a 13.7% increase in unit cost of sales. The increase in unit cost of sales was primarily attributable to the increase in raw material costs and labor costs. The increase in raw material costs was primarily because we purchased more copper oxide ores from external suppliers in 2010. In contrast, in 2009 we used our own tailings more.

The cost of sales of copper concentrate decreased to nil from 2009 to 2010 because we stopped selling copper concentrate as the end-product to external customers and began selling it as an intermediate product to our smelter for further processing into blister copper in accordance with our business strategy to achieve integration along the copper production chain that generates higher economic value.

### **Gross profit and gross profit margin**

As a result of the foregoing, our gross profit increased by 135.6% from US\$91.7 million in 2009 to US\$216.1 million in 2010. Our gross profit margin increased from 13.2% in 2009 to 15.9% in 2010.

The gross profit margin of blister copper increased from 9.1% in 2009 to 12.8% in 2010 primarily due to the increase in (1) our average selling price, which referenced the international copper price, and (2) the higher selling price to CNMC International Trade, which covered transportation, freight and insurance expenses, partially offset by the increase in the costs of copper concentrate we purchased from external suppliers, which also referenced the international copper price.

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The gross profit margin of copper cathode increased from 60.0% in 2009 to 67.4% in 2010 primarily due to the increase in our average selling price, which referenced the international copper price, partially offset by the increase in the costs of copper oxide ores we purchased from external suppliers, which also referenced the international copper price. The gross profit margin of copper cathode was significantly higher than that of blister copper because we use tailings to produce copper cathode and use copper concentrate to produce blister copper. The costs of tailings are significantly lower than that of copper concentrate. We increased our production of blister copper notwithstanding that the gross profit margin of blister copper was substantially lower than that of our other products because (1) blister copper production is part of our business strategy to achieve integration along the copper production chain, (2) Zambia levies no export duty on blister copper, and (3) we intended to increase our total profit even if such decision may reduce our overall gross profit margin.

### ***Other income***

Other income decreased from US\$2.1 million in 2009 to US\$1.2 million in 2010. This decrease was primarily due to a decrease in interest income by US\$1.1 million resulting from a greater proportion of our bank deposits as demand deposits, the interest rate of which was significantly lower than time deposits.

### ***Distribution and selling expenses***

Our distribution and selling expenses increased by 2.5 times from US\$6.2 million in 2009 to US\$21.9 million in 2010. This increase in distribution and selling expenses was primarily due to the increase in transportation and freight expenses as well as insurance expenses as a result of the increase in the sales volume of blister copper to CNMC International Trade. The terms of our sales of blister copper to CNMC International Trade require us to pay the transportation, freight and insurance expenses, which are covered by the higher average selling price of our sales to CNMC International Trade. In contrast, under our other product sales contracts, we are not required to pay transportation, freight or insurance expenses. The increase in distribution and selling expenses was also due to the increase in the sales volumes of copper cathode and sulfuric acid.

### ***Administrative expenses***

Our administrative expenses increased by 39.1% from US\$20.9 million in 2009 to US\$29.0 million in 2010. The increase in administration expenses was primarily due to (1) a US\$3.7 million increase in salary expenses as a result of increased headcount relating to the acquisition of Luanshya, as well as increased average compensation for administrative employees, and (2) a US\$0.7 million increase in travel and lodging expenses primarily due to increase in our administrative headcounts.

### ***Finance costs***

Our finance costs increased by 54.4% from US\$5.3 million in 2009 to US\$8.2 million in 2010. This increase was primarily due to (1) an increase in interest expenses on bank and other borrowings resulting from the increase in interest-bearing borrowings from US\$426.6 million as at December 31, 2009 to US\$581.4 million as at December 31, 2010, partially offset by a decrease in the weighted average interest rate on our interest-bearing borrowings from 2.0% per annum as at December 31, 2009 to 1.9% per annum as at December 31, 2010, and (2) the fact that CCS capitalized no borrowing costs during the full year of 2010, while in 2009 it capitalized the borrowing costs of US\$2.4 million before it commenced operations in March 2009.

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### ***Loss arising on change in fair value of derivatives***

Our loss arising on change in fair value of derivatives increased from US\$0.1 million in 2009 to US\$25.5 million in 2010, primarily due to loss relating to change in fair value of copper futures contracts we entered into in 2010 to hedge our net exposure to the copper price fluctuations due to the timing difference between when we expect to procure copper concentrate from external suppliers and when we expect to sell blister copper to external customers. See Note 25 of Section B to the Accountants' Report set out in Appendix I of this prospectus.

### ***Gain on bargain purchase***

We had no gain on bargain purchase in 2010. Our gain on bargain purchase was US\$48.9 million in 2009 as a result of our gain recognized for acquiring Luanshya at a consideration lower than the recognized amount of identified assets acquired and liabilities assumed of Luanshya.

### ***Other expenses***

Our other expenses increased from US\$4.4 million in 2009 to US\$5.1 million in 2010, primarily due to (1) a decrease in depreciation by US\$2.4 million because the depreciation of Luanshya's assets was categorized as other expenses in 2009 because Luanshya was not in production in 2009, while we recognized the depreciation as cost of sales in 2010 because Luanshya commenced production in 2010, and (2) the fact that we recognized the bad debt allowance of US\$1.2 million in 2009 for uncollectible accounts as compared to a reversal of bad debt allowance of US\$1.6 million in 2010 for accounts collected that were previously categorized as bad debt. The decrease in other expenses from 2009 to 2010 was partially offset by, among others, (1) an increase in exchange loss by US\$4.6 million, and (2) an increase in the net expense for operating hospitals, schools and recreational facilities relating to our operations in Zambia by US\$1.1 million.

### ***Income tax expense***

Our income tax expense increased by 76.0% from US\$11.5 million in 2009 to US\$20.2 million in 2010. The effective tax rate increased from 10.8% in 2009 to 15.8% in 2010, primarily due to the gain on bargain purchase recognized in 2009 was not taxable in 2009. Without considering the one-time gain on bargain purchase in 2009, our effective tax rate would have decreased from 20.2% in 2009 to 15.8% in 2010, primarily because CCS firstly had taxable profit (after utilizing previous tax losses in previous years) in 2010 and started to benefit from its ten-year income tax incentives.

### ***Profit for the year and net profit margin attributable to the owners of the Company***

As a result of the foregoing, our profit attributable to owners of the Company decreased by 9.5% from US\$81.7 million in 2009 to US\$73.9 million in 2010. Net profit margin attributable to the owners of the Company (being the profit attributable to owners of the Company as a percentage of revenue) decreased from 11.7% in 2009 to 5.4% in 2010, primarily due to the one-time gain on purchase bargain associated with the acquisition of Luanshya in 2009. Without considering the one-time gain on bargain purchase, our profit attributable to owners of the Company would have increased by 125.8% from US\$32.7 million in 2009 to US\$73.9 million in 2010 and our net profit margin attributable to the owners of the Company (being the profit attributable to owners of the Company as a percentage of revenue) would have been 4.7% in 2009 as compared to 5.4% in 2010.

## **LIQUIDITY AND CAPITAL RESOURCES**

Our cash needs are primarily due to property, plant and equipment purchases, costs and expenses relating to operating activities and bank loans repayment. We have historically received our cash

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resources from capital contributions by shareholders, long-term and short-term bank loans, shareholder loans and operating activities. As of December 31, 2009, 2010 and 2011, we had bank balances and cash in the amounts of US\$194.3 million, US\$336.8 million and US\$217.3 million, respectively, and also had restricted bank balances in the amounts of US\$2.6 million, US\$20.2 million and US\$17.5 million, respectively.

Taking into account the net proceeds from the Global Offering, the financial resources available to our Company, including internally generated funds, the available banking facilities and in the absence of unforeseen circumstances, our Directors are of the opinion that our Company will have available sufficient working capital for at least 125% of our Group's present requirements, that is at least 12 months from the date of this prospectus.

### Cash Flows

The following table sets forth certain information regarding our consolidated statements of cash flows for the periods indicated:

	Year ended December 31,		
	2009	2010	2011
	(US\$ '000)	(US\$ '000)	(US\$ '000)
Net cash from operating activities . . . . .	25,378	178,352	168,509
Net cash used in investing activities . . . . .	(125,237)	(158,707)	(412,420)
Net cash from financing activities . . . . .	217,532	123,488	126,468
Net increase/(decrease) in cash and cash equivalents . . . . .	117,673	143,133	(117,443)
Cash and cash equivalent at beginning of the year . . . . .	76,089	194,302	336,789
Effect of foreign exchange rate changes . . . . .	540	(646)	(2,043)
Cash and cash equivalent at end of the year . . . . .	194,302	336,789	217,303

### ***Net cash flows generated from operating activities***

We derive our cash inflow from operations primarily from the receipts of our copper product sales. Our cash outflows are primarily for various operating expenses. Net cash generated from operating activities was US\$25.4 million, US\$178.4 million and US\$168.5 million in 2009, 2010 and 2011, respectively.

Net cash generated from operating activities in 2011 was primarily attributable to (1) profit before tax in the amount of US\$118.3 million, (2) a US\$74.1 million decrease in trade and other receivables, prepayment and other assets, and (3) depreciation of property, plant and equipment in the amount of US\$59.4 million, which were partially offset by, among others, a US\$97.2 million decrease in trade and other payables and accrued expenses. The decrease in trade and other receivables was primarily due to (1) a greater proportion of our sales attributable to CNMC International Trade and Yunnan Copper Group (to whom we commenced our sales in 2011), whose prepayments to us provided faster settlement of trade receivables as compared to our other customers, and (2) the decrease in the LME price of copper in the fourth quarter of 2011 as compared to the same period in 2010, which reduced our trade receivables as of the year end relating to our sales of copper products in the fourth quarter that were priced in reference to the LME price of copper. The decrease in trade and other payables was primarily due to (1) the decrease in our purchase of copper concentrate from external suppliers on accounts at the end of 2011 as compared to at the end of 2010 to better control our inventory, and (2) the decrease in the LME price of copper in the fourth quarter of 2011 as compared to the same period in 2010, which reduced our trade payables as of the year end relating to our purchase of copper concentrate in the fourth quarter that were priced by reference to the LME price of copper.



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Net cash generated from operating activities in 2010 was primarily attributable to (1) profit before tax in the amount of US\$127.6 million, (2) depreciation of property, plant and equipment in the amount of US\$45.6 million, (3) loss on changes in fair value of derivatives in the amount of US\$25.5 million, (4) finance costs in the amount of US\$8.2 million, and (5) decrease in trade and other payables and accrued expenses in the amount of US\$8.0 million, which were partially offset by a US\$2.6 million increase in inventories and US\$31.9 million increase in investments in derivatives, among others. The increase in trade and other payables and accrued expenses and the increase in inventories were primarily due to increased sales of blister copper and operation of Luanshya. The investments in derivatives increased mainly because we entered into more copper futures contracts, which required more margin deposits.

Net cash generated from operating activities in 2009 was primarily attributable to (1) profit before tax of US\$105.8 million, (2) a US\$144.3 million increase in trade and other payables and accrued expenses, and (3) depreciation of US\$31.9 million, which was partially offset by (1) a US\$120.2 million increase in inventories, (2) a US\$90.7 million increase in trade and other receivables, prepayment and other assets, and (3) gain on bargain purchase of US\$48.9 million, among others. The increases in (1) trade and other payables and accrued expenses, (2) inventories, and (3) trade and other receivables, prepayment and other assets were primarily the result of the commencement of CCS' operations in 2009.

### ***Net cash flows used in investing activities***

Our cash outflow from investing activities primarily consists of purchases of property, plant and equipment for copper production. Net cash used in investing activities was US\$125.2 million, US\$158.7 million and US\$412.4 million in 2009, 2010 and 2011, respectively.

Net cash used in investing activities in 2011 was primarily attributable to a US\$393.0 million purchase of property, plant and equipment mainly for our leaching facilities at Luanshya (i.e. Muliashi Project) and SML as well as our mining and ore processing facilities at NFCA and Luanshya and finance leases to a fellow subsidiary in the amount of US\$34.9 million, partially offset by repayment of finance lease receivables from a fellow subsidiary of US\$5.0 million, receipt of government grant to finance the Group's capital expenditures and interest that have been capitalized, and a US\$2.6 million decrease in restricted bank balances as pledge for the banking facilities available to us.

Net cash used in investing activities in 2010 was primarily attributable to (1) a US\$147.0 million purchase of property, plant and equipment mainly for our mining and ore processing facilities at NFCA and Luanshya, and (2) a US\$17.5 million increase in restricted bank balances mainly as pledge for the new bank loans we borrowed and for issuing letters of credit for purchasing certain plant and equipment, partially offset by receipt of government grant of US\$5.6 million.

Net cash used in investing activities in 2009 was primarily attributable to a US\$126.9 million purchase of property, plant and equipment mainly for the mining and ore processing facilities at NFCA and Luanshya.

### ***Net cash flows generated from financing activities***

Our cash inflow from financing activities primarily consists of new bank and other borrowings, and proceeds from increase in capital. Our cash outflow from financing activities primarily consists of repayment of bank and other borrowings, dividend payments, and interest payments. Net cash generated from financing activities was US\$217.5 million, US\$123.5 million and US\$126.5 million in 2009, 2010 and 2011, respectively.



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Net cash generated from financing activities in 2011 was primarily attributable to new bank and other borrowings raised in the amount of US\$287.1 million, partially offset by repayment of bank and other borrowings in the amount of US\$118.0 million. We also paid dividends of US\$28.7 million to shareholders of our subsidiaries, and paid interests of US\$14.0 million.

Net cash generated from financing activities in 2010 primarily resulted from new bank and other borrowings raised in the amount of US\$165.8 million, partially offset by repayment of bank and other borrowings in the amount of US\$11.0 million. We also paid dividends of US\$21.1 million to shareholders of our subsidiaries, and paid interests of US\$10.2 million.

Net cash generated from financing activities in 2009 primarily resulted from new bank and other borrowings raised in the amount of US\$284.8 million, partially offset by repayment of bank and other borrowings in the amount of US\$48.5 million. We also paid dividends of US\$9.4 million to shareholders of our subsidiaries, and paid interests of US\$9.4 million.

### NET CURRENT ASSETS

As at December 31, 2009, 2010 and 2011 and April 30, 2012, we had net current assets of US\$320.2 million, US\$361.6 million, US\$183.2 million and US\$191.6 million, respectively, as set out in detail below:

	As of December 31,			As of
	2009	2010	2011	April 30,
	(US\$'000)	(US\$'000)	(US\$'000)	(US\$'000)
	(audited)	(audited)	(audited)	(unaudited)
Current assets:				
Inventories	174,958	177,524	164,281	161,353
Finance lease receivables	—	—	6,483	6,483
Trade receivables	80,980	132,975	95,786	117,439
Amounts due from a customer under a construction contract <sup>(1)</sup>	26,066	26,085	—	—
Prepayments and other receivables <sup>(2)</sup>	144,261	110,395	56,084	60,390
Restricted bank balances	563	18,168	7,557	7,708
Bank balances and cash	194,302	336,789	217,303	305,463
<b>Total current assets</b>	<b>621,130</b>	<b>801,936</b>	<b>547,494</b>	<b>658,836</b>
Current liabilities:				
Trade payables	(172,796)	(171,160)	(107,364)	(127,578)
Other payables and accrued expenses <sup>(3)</sup>	(75,761)	(100,758)	(57,116)	(139,658)
Income tax payable	(4,342)	(1,535)	(87)	(187)
Derivatives, at fair value	(134) <sup>(4)</sup>	(10,101) <sup>(4)</sup>	(775) <sup>(4)</sup>	(776)
Bank and other borrowings — due within one year	(47,944) <sup>(5)</sup>	(156,745) <sup>(5)</sup>	(199,000) <sup>(5)</sup>	(199,000)
<b>Total current liabilities</b>	<b>(300,977)</b>	<b>(440,299)</b>	<b>(364,342)</b>	<b>(467,199)</b>
<b>Net current assets</b>	<b>320,153</b>	<b>361,637</b>	<b>183,152</b>	<b>191,637</b>

Notes:

(1) Represents the amounts due from a fellow subsidiary under a construction contract in respect of building a transformer station in Zambia. For additional details, see Note 19 of Section B to the Accountants' Report, set out in Appendix I to this prospectus.

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- (2) Represents prepayments for inventories, VAT receivables, deposits in futures margin accounts, and other receivables. Prepayment and other receivables include balances with the Retained Group and non-controlling shareholders of our subsidiaries. The decrease in other receivables during the Track Record Period was primarily due to the settlement of the outstanding amounts due to us by ZCCZ in relation to the infrastructure construction work CCS had performed for ZCCZ in the Zambia-China Economic & Trade Cooperation Zone. For additional details, see Note 20 of Section B to the Accountants' Report, set out in Appendix I to this prospectus.
- (3) Represents receipts in advance from customers, accrued expenses, payables for properties, plant and equipment, dividends payable, and other payables, which included provision for legal cases and payables on balances to related parties. Other payables and accrued expenses include balances with the Retained Group and non-controlling shareholders of our subsidiaries that are mainly related to dividends payable, accrued interest expenses, as well as amounts arisen from normal course of business and are recurring in nature. The dividends payable will be settled before the Listing whereas the accrued interest expenses will be settled within the six months after the Listing. For additional details, see Note 23 of Section B to the Accountants' Report, set out in Appendix I to this prospectus.
- (4) The decrease in derivatives at fair value from US\$10.1 million as of December 31, 2010 to US\$0.8 million as of December 31, 2011 was attributable to the differences between the market LME copper cash prices and the exercise prices of the unsettled copper futures contracts (the "Differences") in December 2010 were larger than those in December 2011. The LME copper cash prices were US\$9,650 and US\$7,590 as of December 31, 2010 and 2011, respectively, whereas the exercise prices of unsettled copper futures contracts ranged from US\$8,150 to US\$9,261 and US\$7,150 to US\$8,190, respectively, and these contracts were stated at their fair values, which were estimated at the Differences times the size of the unsettled copper futures contracts.
- (5) The current portion of bank and other borrowings increased from US\$156.7 million as of December 31, 2010 to US\$199.0 million as of December 31, 2011 primarily because a US\$110 million loan due in 2013 that was classified as current liabilities, partially offset by settlement of certain loans from CNMC and a non-controlling shareholder of a subsidiary and bank loans in the amount of US\$67.6 million.

### Bank Balances and Cash

We hold our bank balances and cash principally in US dollars and, to a lesser extent, in ZMK and Renminbi. Bank balances and cash consist of cash, time deposits and demand deposit. As at December 31, 2009, 2010 and 2011, we had bank balances and cash of US\$194.3 million, US\$336.8 million and US\$217.3 million, respectively. The decrease in bank balances and cash was primarily due to our capital expenditure for various projects.

### Trade Receivables

Our trade receivables represent the receivables from the sale of products to external customers. As at December 31, 2009, 2010 and 2011, we had trade receivables of US\$81.0 million, US\$133.0 million and US\$95.8 million, respectively. The increase in our trade receivables from 2009 to 2010 was primarily attributable to higher revenue during the period from US\$696.3 million in 2009 to US\$1,357.3 million in 2010, which was driven by the increase in sales volume. The decrease in our trade receivables from December 31, 2010 to December 31, 2011 was primarily due to (1) a greater proportion of our sales attributable to CNMC International Trade and Yunnan Copper Group (to whom we commenced our sales in 2011), whose prepayments to us provided faster settlement of trade receivables as compared to our other customers, and (2) the decrease in the LME price of copper in the fourth quarter of 2011 as compared to the same period in 2010, which reduced our trade receivables as of the year end relating to our sales of copper products in the fourth quarter that were priced by reference to the LME price of copper.

Up to April 30, 2012, US\$92.1 million, or 96.1%, of trade receivables as of December 31, 2011 had been settled.

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### Inventories

Our inventories included raw materials, spare parts and consumables (worth US\$138.1 million, US\$109.5 million and US\$83.1 million), work-in-progress (worth US\$0.8 million, US\$2.1 million and US\$10.6 million) and finished goods (worth US\$36.0 million, US\$65.9 million and US\$70.5 million) as at December 31, 2009, 2010 and 2011, respectively. The increases in our inventories from December 31, 2009 to December 31, 2010 was primarily due to the increase in our production of blister copper. The decrease in our inventories from December 31, 2010 to December 31, 2011 was primarily because (1) the LME price of copper decreased from the end of 2010 to the end of 2011 so that our cost of blister copper and costs of other raw materials decreased, and (2) we purchased less copper concentrate at the end of 2011 as compared to the end of 2010 to better control our inventory level.

Up to April 30, 2012, US\$70.5 million of finished goods and US\$63.9 million of other inventories, or 81.9% of inventories in total as of December 31, 2011, had been used/sold.

### Trade Payables

Our trade payables represent the payables for the purchase of raw materials and auxiliary materials from external suppliers. As at December 31, 2009, 2010 and 2011, we had trade payables of US\$172.8 million, US\$171.2 million and US\$107.4 million, respectively. The decreases in our trade payables from December 31, 2010 to December 31, 2011 was primarily due to (1) the decrease in our purchase of copper concentrate from external suppliers on accounts at the end of 2011 as compared to at the end of 2010 to better control our inventory, and (2) the decrease in the LME price of copper in the fourth quarter of 2011 as compared to the same period in 2010, which reduced our trade payables as of the year end relating to our purchase of copper concentrate in the fourth quarter that were priced by reference to the LME price of copper.

Up to April 30, 2012, US\$105.6 million, or 98.4%, of trade payables as of December 31, 2011 had been settled.

### NON-CURRENT ASSETS

Our non-current assets primarily consist of property, plant and equipment, which primarily include the mining and ore processing facilities at NFCA and Luanshya, the smelting facilities at CCS and the leaching facilities at SML. As at December 31, 2009, 2010 and 2011, we had property, plant and equipment of US\$436.7 million, US\$538.0 million and US\$875.8 million, respectively. The increases in property, plant and equipment from December 31, 2009 to December 31, 2011 was primarily due to the increases of our investment in our mining, ore processing, smelting and leaching facilities.

Our non-current assets also include prepayments for electricity under a power supply agreement (the "Power Supply Agreement") and a connection agreement (the "Connection Agreement") between Luanshya and Copperbelt Energy Corporation Plc ("Copperbelt Energy"), a power supply company in Zambia listed on the Lusaka Stock Exchange. The electricity generated by the relevant network assets will be provided to the Group on an exclusive basis and the electricity fees were negotiated by referencing the standard market rates in Zambia. Under these agreements and consistent with the usual local practice to secure power supply, Luanshya will construct relevant network assets at its own cost and transfer it to Copperbelt Energy for the consideration of US\$3,725,000. The total budgeted construction cost of such relevant network assets is US\$12.0 million. Our Directors consider the difference between the budgeted construction cost and the consideration to be paid by Copperbelt Energy are, in substance, prepayments for electricity in connection with the Power

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Supply Agreement. For additional details, see Note 20 of Section B to the Accountants' Report, as set out in Appendix I to this prospectus.

Our Zambian legal adviser is of the view that, under Zambian laws, Luanshya does not need any approval or permit to construct the relevant network assets because Luanshya does not generate, transmit, distribute or supply electricity.

### INDEBTEDNESS

The following table sets forth our indebtedness as at the dates presented:

	As of December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Bank borrowings			
— secured . . . . .	170,000	270,000	170,000
— unsecured . . . . .	180,000	234,000	435,450
Loans from CNMC, unsecured <sup>(1)</sup> . . . . .	33,922	34,723	82,068
Loans from a non-controlling shareholder of a subsidiary, unsecured <sup>(2)</sup> . . . . .	42,683	42,683	23,661
<b>Total</b> . . . . .	<b>426,605</b>	<b>581,406</b>	<b>711,179</b>
Carrying amount repayable:			
Within one year . . . . .	47,944	156,745	199,000
More than one year, but not exceeding two years . . . . .	119,000	199,000	19,000
More than two years, but not exceeding five years . . . . .	244,661	160,661	149,661
More than five years . . . . .	15,000	65,000	343,518
<b>Total</b> . . . . .	<b>426,605</b>	<b>581,406</b>	<b>711,179</b>

*Notes:*

(1) The borrowings as at December 31, 2011 of US\$82.1 million are repayable from November 20, 2014 to November 17, 2018. We intend to repay these borrowings within six months after Listing.

(2) The borrowings as at December 31, 2011 of US\$23.7 million are repayable from January 10, 2012 to June 30, 2014. We intend to repay these borrowings within six months after Listing.

For more details of our bank and other borrowings as of December 31, 2009, 2010 and 2011, see Note 24 of Section B to the Accountants' Report, set out in Appendix I to this prospectus.

Due to our business expansion during the Track Record Period, we have relied on both long-term and short-term borrowings to fund a portion of our capital requirement and working capital needs. Our long-term loan and short-term borrowings increased from US\$426.6 million as at December 31, 2009 to US\$711.2 million as at December 31, 2011, primarily due to the increased funds we used to support our business expansion and capital expenditure.

The Directors believe that, in view of the strong financial position, our Company is able to conveniently secure external funding if we need to.

At the close of business on April 30, 2012, being the latest practicable date for the purpose of the indebtedness statement, the Group had outstanding unsecured loans from the ultimate holding company of approximately US\$82.1 million, unsecured loans from a non-controlling shareholder of a subsidiary of approximately US\$19.7 million, secured bank borrowings of approximately

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US\$170.0 million and unsecured bank borrowings of approximately US\$424.5 million. The secured bank borrowings were secured by certain of the Group's bank balances and guaranteed by corporate guarantees given by the ultimate holding company and a bank in the PRC. Included in the unsecured bank borrowings of the Group are loans of US\$80.0 million, which are guaranteed by corporate guarantees given by the ultimate holding company and a non-controlling shareholder of a subsidiary. The remaining unsecured bank borrowings of the Group of US\$344.5 million are guaranteed by corporate guarantees given by the ultimate holding company.

### CONTINGENT LIABILITIES

In addition, as of April 30, 2012, the Group had outstanding contingent liabilities in respect of various claims involving alleged unfair/unlawful termination or breach of employment contracts, wrongful calculation of wages/benefits, compensation for injuries and false imprisonment and defamation. At the end of each of the Relevant Years and as at April 30, 2012, we had made relevant provision for the potential liabilities of US\$300,000, US\$300,000, US\$300,000 (see Note 39 of Section B to the Accountants' Report, set out in Appendix I to this Prospectus), and US\$300,000, respectively, which our Directors opined that it is adequate based on the present assessments by our Group's legal advisers.

Save as disclosed under “— Indebtedness” and “— Contingent Liabilities”, and apart from intra-group liabilities, we did not have outstanding at the close of business on April 30, 2012 any loan capital issued and outstanding or agreed to be issued, bank overdrafts, loans or other similar indebtedness, liabilities under acceptance (other than normal trade bills) or acceptance credits, debentures, mortgages, charges, hire purchase commitments, guarantees or other material contingent liabilities.

Save as disclosed above, the Directors have confirmed that there have been no material changes in our indebtedness since April 30, 2012.

### PROVISION FOR RESTORATION, REHABILITATION AND ENVIRONMENTAL COSTS

Our provision for restoration, rehabilitation and environmental costs in relation to our subsidiaries in Zambia involving in mining, leaching and smelting operations, which amounted to US\$17.1 million, US\$16.5 million and US\$17.5 million for 2009, 2010 and 2011, respectively, represent the accrued cost required to provide adequate restoration and rehabilitation, which is (1) estimated based on actual costs, contractors' quotation and our best-effort estimate according to our environmental management and rehabilitation plans, and (2) audited by independent qualified professionals, (i.e. third-party chemical/environmental scientists and engineering geologists) in Zambia in accordance with the Mines and Minerals Act (Environmental) Regulations on an annual basis.

The Ministry of Mines and Mineral Development of Zambia relies on the results of such independent audit report and the annual estimate of the restoration, rehabilitation and environmental costs to each company set out therein when making its assessment to require the subsidiaries to make an annual contribution equal to 1% to 4% of the estimated restoration costs into an EPF, which is administered by the Zambian government.

The relevant EPF regulations also require that the balance of the estimated restoration costs be secured using instruments such as a bank guarantee and letter of credit.

Our Directors have reviewed the underlying assumptions and calculations and the discount rates used to determine the provision for restoration, rehabilitation and environmental costs. Based on the

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above, our Directors are satisfied that adequate provision has been made at the end of each reporting period and the Sponsors have no reasons to believe otherwise.

### FINANCIAL RATIOS

#### Profitability Ratios

The following table shows a summary of our Earnings Before Interests, Taxes, Depreciation and Amortization (or EBITDA, which equals profit before tax plus the absolute amounts of net finance costs, depreciation and amortization), Earnings Before Interests and Taxes (or EBIT, which equals profit before tax plus the absolute amount of net finance costs) and profitability ratios for the periods indicated.

	Year ended December 31,		
	2009	2010	2011
Profit attributable to owners of the Company (US\$'000) . . . . .	81,674	73,911	70,014
Add: Profit attributable to non-controlling interests (US\$'000) . . .	12,673	33,471	33,276
Add: Income tax expense (US\$'000) . . . . .	11,480	20,202	15,020
Profit before tax (US\$'000) . . . . .	105,827	127,584	118,310
Add: net finance costs (US\$'000) . . . . .	5,330	8,232	9,248
EBIT (US\$'000) . . . . .	111,157	135,816	127,558
Add: Depreciation (US\$'000) . . . . .	31,930	45,584	59,388
EBITDA <sup>(1)</sup> (US\$'000) . . . . .	143,087	181,400	186,946
EBIT margin <sup>(2)</sup> . . . . .	16.0%	10.0%	9.9%
EBITDA margin <sup>(3)</sup> . . . . .	20.5%	13.4%	14.6%
Net profit margin <sup>(4)</sup> . . . . .	13.5%	7.9%	8.0%
Net profit margin attributable to the owners of the Company <sup>(5)</sup> . . .	11.7%	5.4%	5.5%

*Notes:*

- (1) EBITDA is not a standard measure under HKFRS and should not be considered in isolation or be construed as an alternative to cash flows, profit or any other measure of performance or as an indicator of our operating performance, liquidity, profitability or cash flows generated by operating, investing or financing activities.
- (2) EBIT margin equals EBIT divided by revenue, expressed as a percentage.
- (3) EBITDA margin equals EBITDA divided by revenue, expressed as a percentage.
- (4) Net profit margin equals profit for the year as a percentage of revenue.
- (5) Net profit margin attributable to the owners of the Company equals net profit attributable to owners of the Company as a percentage of revenue.

Our EBITDA margin decreased from 20.5% in 2009 to 13.4% in 2010, primarily due to (1) the increases in sales of blister copper, which had a lower gross profit margin, and (2) the one-time gain on purchase bargain associated with the acquisition of Luanshya in 2009. Our EBIT margin decreased from 16.0% in 2009 to 10.0% in 2010, primarily due to the same reason. Our EBITDA margin increased from 13.4% in 2010 to 14.6% in 2011 primarily due to the increase in international copper prices. Our EBIT margin decreased from 10.0% in 2010 to 9.9% in 2011 primarily due to the increase in depreciation of NFCA's Chambishi West Mine in 2011, partially offset by the increase in international copper prices. Our net profit margin attributable to owners of the Company were 11.7%, 5.4% and 5.5% in 2009, 2010 and 2011, primarily reflecting to the one-time gain on purchase bargain associated with the acquisition of Luanshya in 2009. Without considering the one-time gain on bargain purchase, our net profit margin attributable to owners of

## FINANCIAL INFORMATION

the Company would have been 4.7%, 5.4% and 5.5% in 2009, 2010 and 2011, respectively, primarily due to the change in our product mix, which had different profit margins, and the differences in tax incentive we received during each period.

### Return Ratios

The following table shows a summary of our return ratios for the periods indicated.

	Year ended December 31,		
	2009	2010	2011
Return on equity <sup>(1)</sup> . . . . .	40.0%	25.2%	20.3%
Return on assets <sup>(2)</sup> . . . . .	10.2%	6.1%	4.9%

*Notes:*

- (1) Return on equity equals profit attributable to owners of the Company divided by average equity attributable to owners of the Company, expressed as a percentage. Average equity attributable to owners of the Company equals the sum of equity attributable to owners of the Company at the beginning of the period and equity attributable to owners of the Company at the end of the period divided by two.
- (2) Return on assets equals profit attributable to owners of the Company divided by average total assets, expressed as a percentage. Average total assets equals the sum of total assets at the beginning of the period and total assets at the end of the period divided by two.

Our return on equity decreased from 40.0% in 2009 to 25.2% in 2010, primarily reflecting the one-time gain on purchase bargain associated with the acquisition of Luanshya in 2009. Our return on assets decreased from 10.2% in 2009 to 6.1% in 2010, primarily due to the same reasons. Our return on equity decreased from 25.2% in 2010 to 20.3% in 2011 primarily because CCS halted production for one month in June 2011 due to the periodic maintenance of the ISA furnace. Our return on assets decreased from 6.1% in 2010 to 4.9% in 2011 primarily due to the same reason.

### Liquidity Ratios

The following table shows a summary of our liquidity ratios for the periods indicated.

	As of December 31,		
	2009	2010	2011
Current ratio <sup>(1)</sup> . . . . .	206.4%	182.1%	150.3%
Quick ratio <sup>(2)</sup> . . . . .	148.2%	141.8%	105.2%

*Notes:*

- (1) Current ratio equals current assets divided by current liabilities, expressed as a percentage.
- (2) Quick ratio equals current assets minus inventories, then divided by current liabilities, expressed as a percentage.

Our current ratio decreased from 206.4% in 2009 to 182.1% in 2010 and 150.3% in 2011, primarily reflecting the changes in our working capital structure, including the significant increase in bank and other borrowings due within one year attributable to both increases in new loans and increases in the portion of long-term loans due to repayment within one year. Our quick ratio decreased from 148.2% in 2009 to 141.8% in 2010 and 105.2% in 2011, primarily due to the same reasons.



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### Turnover Ratios

#### *Inventory turnover days*

The following table shows a summary of the average inventory turnover days for the respective periods as shown below.

	Year ended December 31,		
	2009	2010	2011
Inventory turnover days <sup>(1)</sup> . . . . .	62.3	56.4	56.9

*Note:*

(1) Inventory turnover days equals average inventory divided by cost of sales and multiplied by the numbers of days for the period incurring the cost of sales. Average inventory equals the sum of inventory at the beginning of the period and inventory at the end of the period divided by two.

Our inventory turnover days decreased from 62.3 days in 2009 to 56.4 days in 2010 and 56.9 days in 2011, because in 2010 and 2011 our blister copper and copper cathode were primarily sold to the more liquid international markets while in 2009 we generated a portion of our revenue by selling copper concentrate in the less liquid local market.

Our inventories are stated at the lower of cost and net realizable value, less any provision for obsolescence. Net realizable value is determined based on estimated selling price, less further costs expected to be incurred to completion and disposal. When inventories have been written down to net realizable value, a new assessment of net realizable value is made in each subsequent period. When the circumstances that caused the write down no longer exist, the amount of the write down is reversed. We made no provision for inventory in 2009, 2010 and 2011.

#### *Trade receivables turnover days and trade payables turnover days*

The following table shows our turnover of average trade receivables and average trade payables for the periods indicated:

	Year ended December 31,		
	2009	2010	2011
Trade receivables' turnover days <sup>(1)</sup> . . . . .	33.8	28.8	32.5
Trade payables' turnover days <sup>(2)</sup> . . . . .	58.1	55.0	46.4

*Notes:*

(1) Trade receivables' turnover days equals average trade receivables divided by revenue and multiplied by the numbers of days for the period generating the sales. Average trade receivables equals the sum of trade receivables at the beginning of the period and trade receivables at the end of the period divided by two.

(2) Trade payables' turnover days equals average trade payables divided by cost of sales and multiplied by the numbers of days for the period incurring the cost of sales. Average trade payables equals the sum of trade payables at the beginning of the period and trade payables at the end of the period divided by two.

Our trade receivables' turnover days decreased from 33.8 days in 2009 to 28.8 days in 2010 and increased to 32.5 days in 2011 which reflected the normal fluctuation of our trade receivables' turnover. The average credit period we grant to our customers is within two months upon presentation of invoices.

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Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortized cost using the effective interest method. Appropriate allowances for estimated irrecoverable amounts are recognized in profit and loss when there is objective evidence that the asset is impaired. In making the estimates, we consider that detailed procedures have been in place to monitor this risk. In estimating whether allowance for bad and doubtful debts is required, we take into consideration the aging status and the likelihood of collection. Following the identification of doubtful debts, the responsible sales personnel discuss with the relevant customers and report on the recoverability. When there is objective evidence of impairment loss, we take into consideration the estimation of future cash flows. The amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. Where the actual future cash flows are less than expected, a material impairment loss may arise. As of December 31, 2009, 2010 and 2011, we had allowance of doubtful accounts of US\$5.6 million, US\$2.7 million and US\$3.8 million, respectively.

The following table sets forth the aging analysis of our trade receivables as at the dates indicated, presented based on the invoice date, net of allowance for doubtful debts:

	At December 31,		
	2009 (US\$'000)	2010 (US\$'000)	2011 (US\$'000)
Within 1 month . . . . .	77,837	96,846	84,913
More than 1 month, but less than 3 months . . . . .	931	32,022	9,712
More than 3 months, but less than 6 months . . . . .	885	1,403	82
More than 6 months, but less than 12 months . . . . .	858	2,517	874
Over 1 year . . . . .	469	187	205
	<u>80,980</u>	<u>132,975</u>	<u>95,786</u>

Our trade payables' turnover days decreased from 58.1 days in 2009 to 55.0 days in 2010 and 46.4 days in 2011, primarily because we procured a greater portion of copper concentrate through faster settlement of trade payables and prepayment. The average credit period we are granted by our suppliers is within three months upon presentation of invoices.

### Gearing Ratios

The following table sets out a summary of our gearing ratios for the periods indicated:

	As of December 31,		
	2009	2010	2011
Total debt to total assets ratio <sup>(1)</sup> . . . . .	39.9%	42.8%	48.3%
Net debt <sup>(2)</sup> to total equity ratio <sup>(3)</sup> . . . . .	86.0%	70.4%	127.9%
Interest coverage ratio <sup>(4)</sup> . . . . .	15.02x	17.19x	13.12x

*Notes:*

- (1) Total debt to total assets ratio equals total bank and other borrowings divided by total assets, expressed as a percentage.
- (2) Net debt equals total bank and other borrowings minus bank balances and cash, and restricted bank balances.
- (3) Net debt to total equity ratio equals net debt divided by total equity attributable to the owners of our Company, expressed as a percentage.
- (4) Interest coverage ratio equals EBITDA divided by the sum of finance costs before capitalization, expressed as a percentage.

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Our total debt to total assets ratio increased from 39.9% in 2009 to 42.8% in 2010 and 48.3% in 2011, primarily due to our new bank and other borrowings in 2010 and 2011 for our investment in the smelting facilities of the Chambishi Copper Smelter, the mining and ore processing facilities at NFCA and Luanshya, the Muliashi Project, as well as our increasing needs for working capital associated with our business expansion.

Our net debt to total equity ratio decreased from 86.0% in 2009 to 70.4% in 2010 and then increased to 127.9% in 2011, primarily due to (1) the significant increase in bank balances and cash from 2009 to 2010, and (2) the further increase in bank and other borrowings in 2011.

Our interest coverage ratio increased from 15.02 times in 2009 to 17.19 times in 2010, primarily due to the increase in profit as a result of CCS's full production in full year 2010 as compared to CCS's full production from June to December in 2009. Our interest coverage ratio decreased from 17.19 times in 2010 to 13.12 times in 2011, primarily due to the increase in interest expense associated with the increase in bank and other borrowings.

### CAPITAL COMMITMENTS

The following table sets forth the capital commitments of our Company and its subsidiary as at the dates indicated:

	As at December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Capital expenditure contracted for but not provided for in respect of:			
— acquisition of property, plant and equipment . . . . .	15,673	97,609	284,159
Capital expenditure authorized but not contracted for in respect of:			
— acquisition of property, plant and equipment . . . . .	—	—	1,057,213

In addition to the above, as at December 31, 2010 and 2011, our Group had commitment to invest in an associate amounting to US\$2,143,000 pursuant to the relevant joint venture agreement of that associate. In February 2012, our Group had fulfilled such commitment to invest in this associate.

We plan to fund our capital commitments with cash from operating activities, proceeds from the Global Offering and short-term and long-term indebtedness. See the section headed "Future Plans and Use of Proceeds — Use of Proceeds" in this prospectus for further information. The Directors expect that we will have sufficient resources to fund our capital commitments during the next 12 months.

We do not have any existing plan to use the above capital commitments for the provision of finance lease to other parties, nor would we do so in the foreseeable future.

### OFF-BALANCE SHEET ARRANGEMENTS

As of the Latest Practicable Date, except for the above capital commitments, we had no other significant off-balance sheet arrangements.

### DISCLOSURE ABOUT MARKET RISK

We are, in the normal course of business, exposed to market risks relating primarily to credit risk, foreign currency exchange risk, liquidity risk, interest rate risk and commodity price risk.

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### Credit Risk

Our credit risk is primarily attributable to our trade and other receivables and finance lease receivables. Our Group has concentration of credit risk because 94.8%, 86.4% and 91.0% of the trade receivables as at December 31, 2009, 2010 and 2011, respectively, was due from our Group's seven largest customers during each of the period then ended. Other than the above, we do not have significant concentration of credit risk. The maximum exposure to credit risk is represented by the carrying amount of each financial asset in the consolidated statements of financial position. Our Directors monitor the exposures to these credit risks on an ongoing basis.

Our credit risk on restricted bank balances and bank balances is minimal as such amounts are placed in banks with good reputation.

### Foreign Currency Exchange Risk

Our operation is in Zambia and most of our sales and purchases were denominated in US\$, our functional currency, while certain sales and purchases were settled in currencies (mainly ZMK and Renminbi) other than our functional currency that expose us to foreign currency risk. In addition, the carrying amounts of our foreign currency denominated monetary assets and liabilities are as follows:

	As at December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
ZMK denominated monetary assets . . . . .	46,836	49,989	25,396
ZMK denominated monetary liabilities . . . . .	(1,386)	(7,943)	(2,874)
RMB denominated monetary assets . . . . .	1,512	8,894	26,573
RMB denominated monetary liabilities . . . . .	(25,842)	(29,143)	(44,677)

During the Track Record Period, the exchange rate between Zambia Kwacha and US dollar had fluctuated between approximately 4,500:1 to 5,740:1, and the exchange rate between Zambia Kwacha and Renminbi had fluctuated between approximately 660:1 to 840:1. We had foreign exchange gain of US\$1.1 million in 2009, and incurred foreign exchange losses of US\$3.5 million and US\$4.7 million in 2010 and 2011, respectively. Although we are exposed to foreign currency risk as the result of certain sales and purchase that were settled in ZMK and RMB, these exposure is not expected to have any significant impact on our business, financial condition and results of operation in the foreseeable future as the majority of our assets, liabilities, revenues and expenses are denominated in US dollar. During the Track Record Period, we have had no currency hedging activities and do not expect to have such activities in the foreseeable future.

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The sensitivity analysis below has been determined based on the exposure to exchange rates of ZMK and RMB against US\$. For a 5%, 10%, 15% weakening/strengthening of ZMK and RMB against US\$ and all other variables being held constant, there would have no impact on our total equity apart from the retained profits and the effect on our profit before tax for the Track Record Period are as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
ZMK against US\$:			
Weakening			
- 5% .....	(2,273)	(2,102)	(1,126)
- 10% .....	(4,545)	(4,205)	(2,252)
- 15% .....	(6,818)	(6,307)	(3,378)
Strengthening			
- 5% .....	2,273	2,102	1,126
- 10% .....	4,545	4,205	2,252
- 15% .....	6,818	6,307	3,378
RMB against US\$:			
Weakening			
- 5% .....	1,217	1,012	905
- 10% .....	2,433	2,025	1,810
- 15% .....	3,650	3,037	2,716
Strengthening			
- 5% .....	(1,217)	(1,012)	(905)
- 10% .....	(2,433)	(2,025)	(1,810)
- 15% .....	(3,650)	(3,037)	(2,716)

The conversion of Renminbi into foreign currencies, including US dollar and Hong Kong dollar, has been based on rates set by the PBOC. On July 21, 2005, the PRC government changed its policy of pegging the value of Renminbi to US dollar. Under the revised policy, RMB is permitted to fluctuate within a narrow and managed band against a basket of certain foreign currencies. This change in policy resulted in a more than 17% appreciation of RMB against US dollar in the following three years. RMB has fluctuated significantly since July 2008 against other freely traded currencies, in tandem with US dollar. On June 19, 2010, the PBOC announced that the PRC government would further reform Renminbi exchange rate regime and increase the flexibility of the exchange rate. As of December 31, 2011, the new policy had resulted in a further 7.4% appreciation of Renminbi against US dollar. As Hong Kong dollar is pegged with US dollar, fluctuations in exchange rates between Renminbi and US dollar may adversely affect the value, translated or converted into Hong Kong dollars, of our net assets, earnings and any dividends we declare.

### Liquidity Risk

Liquidity risk is the risk that we will not be able to meet our financial obligations as they become due. Our Directors have built an appropriate liquidity risk management framework for the management of our short, medium and long-term funding and liquidity requirements. We manage liquidity risk by maintaining banking facilities and by continuously monitoring forecasted and actual cash flows and matching the maturity profiles of our financial assets and liabilities.

Our Directors have carried out a detailed review of our cash flow forecast for the period ending on May 31, 2013. Based on such forecast, our Directors have determined that adequate liquidity exists

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## FINANCIAL INFORMATION

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to finance our working capital and capital expenditure requirements during that period. Our Directors are of the opinion that the assumptions and sensitivities which are included in the cash flow forecast are reasonable. However, as with all assumptions in regard to future events, these are subject to inherent limitations and uncertainties and some or all of these assumptions may not be realized.

### Interest Rate Risk

We are exposed to cash flow interest rate risk through the impact of rate changes on interest-bearing financial assets and liabilities, mainly interest-bearing restricted bank balances, bank balances and bank and other borrowings at variable interest rates. We currently do not have an interest rate hedging policy. However, our Directors will consider hedging significant interest rate risk should the need arise.

The sensitivity analysis below has been determined based on the exposure to interest rates for interest-bearing restricted bank balances, bank balances and variable rate bank and other borrowings at the end of each reporting period and assumed that the amount of assets and liabilities outstanding at the end of each reporting period was outstanding for the whole year.

If interest rates on bank and other borrowings had been 100 BPs lower (such effect on restricted bank balances and bank balances, however, had been ignored as most of them bore interest at minimal rate at the end of each reporting period) and all other variables were held constant, there would have no impact on our total equity apart from retained profits and the potential effect on profit before tax for the Track Record Period is as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Increase in profit before tax for the year . . . . .	3,355	3,760	3,037

If interest rates on restricted bank balances, bank balances and bank and other borrowings had been 100 BPs higher and all other variables were held constant, there would have no impact on our total equity apart from retained profits and the potential effect on profit before tax for the Track Record Period is as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Decrease in profit before tax for the year . . . . .	(1,511)	(522)	(676)

### Commodity Price Risk

Our commodity price risk is mainly the exposure to fluctuations in the prevailing market price of copper which are the major commodities we purchased, produced and sold. To minimize this risk, we enter into copper futures contracts and provisional price arrangement to manage our exposure in relation to forecasted sales of copper products, forecasted purchases of copper concentrate, inventories and firm commitments to sell our copper products.

Our financial assets and liabilities whose fair value change in line with the fluctuations in the prevailing market price of copper mainly comprise copper futures contracts and provisional price arrangements. If all prices of copper futures had been increased by 10% and all other variables were

## FINANCIAL INFORMATION

held constant, there would have no impact on our total equity apart from retained profits and the potential effect on profit before tax for the Track Record Period is as follows:

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
(Decrease)/increase in profit before tax for the year . . . . .	(7,312)	4,112	9,729

There would be an equal and opposite impact on the profit before tax for the year where there had been 10% decrease in all prices of copper futures.

### HISTORICAL AND PLANNED CAPITAL EXPENDITURE

Our principal capital expenditure relates to the provision of construction work, purchases of equipment and materials with regard to our development and expansion projects. The following table sets forth our historical capital expenditure for the Track Record Period.

	Year ended December 31,		
	2009	2010	2011
	(US\$'000)	(US\$'000)	(US\$'000)
Mining and ore processing facilities at NFCA . . . . .	61,176	66,078	87,109
Mining and ore processing facilities at Luanshya (Baluba Center Mine) . . . . .	33,221	52,608	14,696
Smelting facilities at CCS . . . . .	9,709	14,496	37,672
Leaching facilities at SML . . . . .	2,669	4,157	45,307
Mining and leaching facilities at Luanshya (Muliashi Project) . . . . .	7,678	19,572	214,474
<b>Total</b> . . . . .	<u>114,453</u>	<u>156,911</u>	<u>399,258</u>

Our total capital expenditure increased by 37.1% from US\$114.5 million in 2009 to US\$156.9 million in 2010 and further increased significantly to US\$399.3 million in 2011. We used our capital expenditure primarily to expand our production capacities, including mining, smelting and leaching facilities, and to improve our mining, smelting and leaching technology.

We plan to expend US\$757.4 million on our mining and ore processing, smelting and leaching facilities up to the end of 2013:

	Year ending December 31,	
	2012	2013
	(US\$'000)	(US\$'000)
Mining and ore processing facilities at NFCA . . . . .	153,000	168,000
Mining and ore processing facilities at Luanshya (Baluba Center Mine) . . . . .	9,002	5,585
Smelting facilities at CCS . . . . .	68,678	88,535
Leaching facilities at SML . . . . .	103,650	61,000
Mining and leaching facilities at Luanshya (Muliashi Project) . . . . .	100,000	—
<b>Total</b> . . . . .	<u>434,300</u>	<u>323,120</u>

We plan to finance such capital expenditure out of the net proceeds available to us from the Global Offering, cash generated from operating activities, available banking facilities and cash generated from future operations. See the section headed “Future Plans and Use of Proceeds” in this prospectus for further information.



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Our current plan with respect to future capital expenditure is subject to change based upon the evolution of our business plan, including potential acquisitions, the progress of our capital projects, market conditions and our outlook on future business conditions. Other than as required by law and the Listing Rules, we do not undertake any obligation to publish updates of our capital expenditure plans.

### **DISTRIBUTABLE RESERVES**

Although our Company did not have any distributable reserves as at December 31, 2011, as our business develops, and subject to the availability of distributable reserves, the Directors intend to pursue a dividend policy which reflects our cash flow and earnings, while maintaining an appropriate level of dividend cover and having regard to the need to further fund development of our activities.

### **DIVIDENDS**

In 2009, 2010 and 2011, the aggregate dividends we declared to external shareholders of our subsidiaries amounted to US\$9.4 million, US\$28.5 million and US\$22.8 million, respectively. As of the Latest Practicable Date, all outstanding dividends payable have been fully settled. We funded the payment of the declared dividends with cash in hand. In March 2012, the board of directors of SML resolved the appropriation of dividend of US\$10.0 million for the approval in the forthcoming shareholders' meeting.

The amount of dividend declared by our Board of Directors in the future will depend upon: (a) our overall results of operation; (b) our financial position; (c) our capital requirements; (d) our shareholders interests; (e) our future prospects; and (f) other factors that the Board of Directors deems relevant. Any declaration and payment as well as the amount of dividends will be subject to our constitutional documents and the Companies Ordinance, including, inter alia, the approval of our Shareholders.

Future dividend payments will also depend upon the availability of dividends received from our subsidiaries in Zambia. There is no statutory provision under Zambian laws requiring a foreign enterprise to set aside part of their net profit as statutory reserves. Such a requirement is solely based on a company's policy. Under the Companies Act of Zambia, a company is obliged to maintain its nominal share capital as indicated on incorporation and procedures are prescribed where a company wishes to increase or reduce its share capital. Distributions from our subsidiaries may also be restricted if they incur debt or losses or in accordance with any restrictive covenants in bank credit facilities, convertible bond instruments or other agreements that we or our subsidiaries may enter into in the future.

### **CONNECTED PARTY TRANSACTIONS**

See the section headed "Connected Transactions" in this prospectus for details on our transactions with connected parties.

### **RELATED PARTIES TRANSACTIONS**

In the opinion of the Directors, our transactions with related parties during the Relevant Periods as set out in Note 36 of Section B to the Accountants' Report, set out in Appendix I to this prospectus were conducted on normal commercial terms and in our ordinary course of business.

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### UNAUDITED PRO FORMA STATEMENT OF ADJUSTED NET TANGIBLE ASSETS

The following unaudited pro forma statement of adjusted net tangible assets of our Group prepared in accordance with Rule 4.29 of the Listing Rules is for illustration purposes only, and is set out below to illustrate the effect of the Global Offering on the consolidated net tangible assets attributable to owners of the Company as if the Global Offering had taken place on December 31, 2011.

This unaudited pro forma statement of adjusted net tangible assets has been prepared for illustrative purposes only and because of its hypothetical nature, it may not give a true picture of the consolidated net tangible assets of our Group as at December 31, 2011 or at any future dates following the completion of the Global Offering.

	Audited consolidated net tangible assets attributable to owners of the Company as at December 31, 2011 <sup>(1)</sup> (US\$'000)	Estimated net proceeds from the Global Offering <sup>(2)</sup> (US\$'000)	Unaudited pro forma adjusted net tangible assets attributable to owners of the Company (US\$'000)	Unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share <sup>(3)</sup> (US\$)
Based on an Offer				
Price of HK\$2.10 per Share . . . . .	372,304	219,953	592,257	0.17
Based on an Offer				
Price of HK\$2.80 per Share . . . . .	372,304	295,604	667,908	0.19

*Notes:*

- (1) The audited consolidated net tangible assets attributable to the owners of the Company as at December 31, 2011 were extracted from the accountants' report of the financial information of the Group as set out in Appendix I to this Prospectus.
- (2) The estimated net proceeds of the Company from the Global Offering are based on the indicative Offer Price range of HK\$2.10 per Share and HK\$2.80 per Share after deduction of the underwriting fees and other relevant expenses payable by the Company (assuming the Over-allotment is not exercised). The estimated net proceeds of the Company from the Global Offering are converted to United States dollars at an exchange rate of US\$0.1282 to HK\$1.00 prevailing on the Latest Practicable Date.
- (3) The unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share is arrived at after the adjustments referred to in the above paragraph and on the assumption of a total of 3,470,000,000 Shares, being the number of Shares in issue upon completion of the Global Offering (including Shares in issue as of the date of this prospectus and those Shares to be issued pursuant to the Global Offering, which takes no account of any Shares which may be issued pursuant to the exercise of the Over-allotment Option) were in issue. The unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share is converted to United States dollars at an exchange rate of US\$0.1282 to HK\$1.00 prevailing on the Latest Practicable Date.

### DIRECTORS' CONFIRMATION ON NO MATERIAL ADVERSE CHANGE

Our Directors confirm that there has been no material adverse change in our financial or trading position or our prospects since December 31, 2011, the date on which the latest audited financial statements were published.

Our Directors confirm that they have performed sufficient due diligence on us to ensure the financial and operational conditions or prospects did not have material adverse changes from December 31, 2011 (the date of the consolidated statement of financial position that we published the latest

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## FINANCIAL INFORMATION

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audited financial information) to the date of this prospectus. Since December 31, 2011, there are no events which would materially affect the information stated in the Accountants' Report attached hereto as Appendix I to this prospectus.

### **DISCLOSURE REQUIRED UNDER THE LISTING RULES**

Our Directors confirm that as at the Latest Practicable Date there were no circumstances that would give rise to a disclosure requirement under Rule 13.13 to Rule 13.19 of the Listing Rules.

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## FUTURE PLANS AND USE OF PROCEEDS

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### FUTURE PLANS

Please see the section headed “Business — Our Business Strategies” in this prospectus for a detailed description of our future plans.

### USE OF PROCEEDS

The net proceeds from the Global Offering, after deducting underwriting fees and estimated total expenses paid and payable by us in connection with the Global Offering, are estimated to be approximately HK\$2,010.7 million (equivalent to approximately US\$257.8 million) before any exercise of the Over-allotment Option, assuming an Offer Price of HK\$2.45 per Share, being the mid-point of the proposed Offer Price range of HK\$2.10 to HK\$2.80 per Share. We intend to use such net proceeds as follows:

- approximately HK\$603.2 million (equivalent to approximately US\$77.3 million, or approximately 30% of our total estimated net proceeds) for financing the exploration and development of the Chambishi Southeast Mine;
- approximately HK\$402.1 million (equivalent to approximately US\$51.6 million, or approximately 20% of our total estimated net proceeds) for financing the expansion of the Chambishi Copper Smelter;
- approximately HK\$100.5 million (equivalent to approximately US\$12.9 million, or approximately 5% of our total estimated net proceeds) for financing the Muliashi Project;
- approximately HK\$100.5 million (equivalent to approximately US\$12.9 million, or approximately 5% of our total estimated net proceeds) for financing the development of the Mwambashi Project;
- approximately HK\$301.6 million (equivalent to approximately US\$38.7 million, or approximately 15% of our total estimated net proceeds) for acquisitions of companies with existing exploration rights and additional mining assets. As of the Latest Practicable Date, we had not identified any acquisition targets;
- approximately HK\$301.6 million (equivalent to approximately US\$38.7 million, or approximately 15% of our total estimated net proceeds) for the repayment of certain existing loans; and
- the balance of the net proceeds to be used for working capital and other general corporate purposes.

If the Offer Price is set at the highest or lowest point of the indicative Offer Price range, the net proceeds of the Global Offering, assuming that the Over-allotment Option is not exercised, will increase to approximately HK\$2,305.7 million or decrease to approximately HK\$1,715.6 million, respectively. In such event, we will increase or decrease the intended use of the net proceeds for the above purposes on a pro-rata basis.

If the Over-allotment Option is exercised in full, the net proceeds from the Global Offering will increase to approximately HK\$2,320.5 million, assuming an Offer Price of HK\$2.45 per Share, being the mid-point of the proposed Offer Price range. If the Offer Price is set at the high-end or low-end of the proposed Offer Price range, the net proceeds of the Global Offering, including the

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## **FUTURE PLANS AND USE OF PROCEEDS**

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proceeds from the exercise of the Over-allotment Option, will increase or decrease by approximately HK\$339.3 million or HK\$339.3 million, respectively. In such event, we will increase or decrease the allocation of the net proceeds to the above purposes on a pro-rata basis.

To the extent that the net proceeds of the Global Offering are not immediately used for the above purposes and to the extent permitted by the relevant laws and regulations, we intend to invest such net proceeds into short-term, interest-bearing and investment grade securities with licensed banks and/or financial institutions.

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## UNDERWRITING

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### HONG KONG UNDERWRITERS

#### Joint Lead Managers

UBS AG, Hong Kong Branch

China International Capital Corporation Hong Kong Securities Limited

J.P. Morgan Securities (Asia Pacific) Limited

#### Co-Managers

Pacific Foundation Securities Limited

China Merchants Securities (HK) Co., Limited

Haitong International Securities Company Limited

### INTERNATIONAL UNDERWRITERS

#### Joint Lead Managers

UBS AG, Hong Kong Branch

China International Capital Corporation Hong Kong Securities Limited

J.P. Morgan Securities Ltd.

#### Co-Managers

Pacific Foundation Securities Limited

China Merchants Securities (HK) Co., Limited

Haitong International Securities Company Limited

### UNDERWRITING ARRANGEMENTS AND EXPENSES

#### Hong Kong Public Offering

##### *Hong Kong Underwriting Agreement*

Pursuant to the Hong Kong Public Offering, our Company is offering 87,000,000 Hong Kong Offer Shares for subscription by the public in Hong Kong on, and subject to, the terms and conditions set out in this prospectus and the Application Forms.

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## UNDERWRITING

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Subject to:

- the Listing Committee of the Hong Kong Stock Exchange granting listing of, and permission to deal in, our Shares in issue and to be issued as mentioned in this prospectus (subject only to allotment and/or dispatch of share certificates) and such listing and permission not subsequently being revoked; and
- certain other conditions set out in the Hong Kong Underwriting Agreement (including but not limited to the Offer Price being agreed upon between us and the Joint Global Coordinators (on behalf of the Underwriters)),

the Hong Kong Underwriters have agreed severally, and not jointly, to subscribe for, or procure subscribers for, the Hong Kong Offer Shares which are being offered but are not taken up under the Hong Kong Public Offering, on the terms and conditions set out in this prospectus, the Application Forms and the Hong Kong Underwriting Agreement. If, for any reason, the Offer Price is not agreed between us and the Joint Global Coordinators, on behalf of the Underwriters, the Global Offering will not proceed.

The Hong Kong Underwriting Agreement is conditional upon and subject to the International Underwriting Agreement having been signed and becoming unconditional.

### ***Grounds for termination***

The obligation of the Hong Kong Underwriters to subscribe for, or to procure subscribers for, the Hong Kong Offer Shares is subject to termination by notice in writing to us from the Joint Global Coordinators (for themselves and on behalf of the Hong Kong Underwriters) if, prior to 8:00 a.m. on the Listing Date:

- there shall develop, occur or come into effect:
  - (i) any event or series of events or circumstance in the nature of force majeure (including, without limitation, any acts of government, declaration of a national or international emergency or war, calamity, crisis, epidemic, pandemic, outbreak of infectious disease, economic sanctions, strikes, lock-outs, fire, explosion, flooding, earthquake, volcanic eruption, civil commotion, riots, public disorder, acts of war, outbreak or escalation of hostilities (whether or not war is declared), acts of God or acts of terrorism) in or affecting Hong Kong, the PRC, the United States, the United Kingdom, European Union (or any member state thereof), Zambia or the Katanga province of the DRC (each a “Relevant Jurisdiction”); or
  - (ii) any change, or any development involving a prospective change, or any event or series of events or circumstance likely to result in any change or development involving a prospective change, in any financial, economic, political, military, industrial, fiscal, regulatory, currency, credit or market conditions (including, without limitation, conditions in the stock and bond markets, money and foreign exchange markets, the interbank markets and credit markets) in or affecting any Relevant Jurisdiction, including any event which involves one or more members of the European Union announcing, voluntarily or compulsorily, its or their intention to leave the Economic and Monetary Union of the European Union; or
  - (iii) any blanket moratorium, suspension or unusual restriction (including, without limitation, any imposition of or requirement for any minimum or maximum price limit or price range) in or on



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## UNDERWRITING

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trading in securities generally on the Hong Kong Stock Exchange, the New York Stock Exchange, the NASDAQ Global Market, the London Stock Exchange, the Shanghai Stock Exchange or the Shenzhen Stock Exchange; or

- (iv) any general moratorium on commercial banking activities in any of the Relevant Jurisdictions declared by the relevant authorities, or any disruption in commercial banking or foreign exchange trading or securities settlement or clearance services, procedures or matters in any Relevant Jurisdiction; or
- (v) any new law, or any change or any development involving a prospective change or any event or circumstance likely to result in a change or a development involving a prospective change in (or in the interpretation or application by any court or other competent Authority of) existing laws, in each case, in or affecting or any Relevant Jurisdiction; or
- (vi) the imposition of economic sanctions, in whatever form, directly or indirectly, by the United States or the European Union (or any member state thereof) on any of the Relevant Jurisdictions; or
- (vii) a change or development involving a prospective change in or affecting taxation or exchange control, currency exchange rates or foreign investment regulations (including, without limitation, a change in the system under which the value of the Hong Kong currency is linked to that of the currency of the United States or a material devaluation of the Hong Kong dollar or the Renminbi against any foreign currencies), or the implementation of any exchange control, in any Relevant Jurisdiction; or
- (viii) any litigation or claim of any third party being threatened or instigated against any member of the Group; or
- (ix) a Director being charged with an indictable offence or prohibited by operation of law or otherwise disqualified from taking part in the management of a company; or
- (x) the chairman or president of the Company vacating his or her office; or
- (xi) an authority or a political body or organization (for the avoidance of doubt, excluding Human Rights Watch and other similar profit or non-profit organizations of a social, non-political and/or non-governmental nature) in any Relevant Jurisdiction commencing any investigation or other action, or announcing an intention to investigate or take other action, against any member of the Group or Director; or
- (xii) a contravention by any member of the Group of the Listing Rules or applicable laws; or
- (xiii) a prohibition on the Company for whatever reason from offering, allotting, issuing or selling any of the Shares (including any Shares to be issued or sold pursuant to the exercise of the Over-allotment Option) pursuant to the terms of the Global Offering; or
- (xiv) non-compliance of the prospectus (or any other documents used in connection with the contemplated offer and sale of the Shares) or any aspect of the Global Offering with the Listing Rules or any other applicable laws by any member of the Group, the Directors or the Controlling Shareholders; or
- (xv) the issue or requirement to issue by the Company of any supplement or amendment to the prospectus (or to any other documents used in connection with the contemplated offer and

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## UNDERWRITING

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sale of the Shares) pursuant to the Companies Ordinance or the Listing Rules or any requirement or request of the Hong Kong Stock Exchange and/or the SFC; or

- (xvi) an order or petition for the winding up of any member of the Group or any composition or arrangement made by any member of the Group with its creditors or a scheme of arrangement entered into by any member of the Group or any resolution for the winding-up of any member of the Group or the appointment of a provisional liquidator, receiver or manager over all or part of the material assets or undertaking of any member of the Group or anything analogous thereto occurring in respect of any member of the Group,

which, individually or in the aggregate, in the sole opinion of the Joint Global Coordinators after consultation with the Company (but whose consent or consensus shall not be required to be obtained by the Joint Global Coordinators in such determination), (1) has or will have or may have a material adverse effect on the assets, liabilities, business, general affairs, management, prospects, shareholders' equity, profits, losses, results of operations, financial position or otherwise, or performance of the Group as a whole; or (2) has or will have or may have a material adverse effect on the success of the Global Offering or the level of applications under the Hong Kong Public Offering or the level of interest under the International Offering; or (3) makes or will make or may make it inadvisable or impracticable for the Global Offering to proceed or to market the Global Offering; or (4) has or will have or may have the effect of making any part of the Hong Kong Underwriting Agreement (including underwriting) incapable of performance in accordance with its terms or preventing the processing of applications and/or payments pursuant to the Global Offering or pursuant to the underwriting thereof; or

- there has come to the notice of the Joint Global Coordinators:
  - (i) that any statement contained in any of the prospectus, the Application Forms and/or in any notices, announcements, advertisements, communications or other documents issued or used by or on behalf of the Company in connection with the Hong Kong Public Offering (including any supplement or amendment thereto) was, when it was issued, or has become, untrue, incorrect in any material respect or misleading, or that any forecast, estimate, expression of opinion, intention or expectation contained in any of the prospectus and the Application Forms and/or any notices, announcements, advertisements, communications or other documents issued or used by or on behalf of the Company in connection with the Hong Kong Public Offering (including any supplement or amendment thereto) is not fair and honest and based on reasonable assumptions; or
  - (ii) that any matter has arisen or has been discovered which would, had it arisen or been discovered immediately before the date of the prospectus, constitute a material omission from any of the prospectus, the Application Forms and/or in any notices, announcements, advertisements, communications or other documents issued or used by or on behalf of the Company in connection with the Hong Kong Public Offering (including any supplement or amendment thereto); or
  - (iii) any breach of any of the obligations imposed upon any party to the Hong Kong Underwriting Agreement or the International Underwriting Agreement (other than upon any of the Hong Kong Underwriters or the International Underwriters); or
  - (iv) any event, act or omission which gives or is likely to give rise to any liability of any of the Indemnifying Party (as defined in the Hong Kong Underwriting Agreement) under the indemnities in the Hong Kong Underwriting Agreement; or

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## UNDERWRITING

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- (v) any adverse change or development involving a prospective adverse change in the assets, liabilities, business, general affairs, management, prospects, shareholders' equity, profits, losses, results of operations, position or condition, financial or otherwise, or performance of any member of the Group or the Group as a whole; or
- (vi) any breach of, or any event or circumstance rendering untrue or incorrect in any respect, any of the Warranties; or
- (vii) approval by the Listing Committee of the Hong Kong Stock Exchange of the listing of, and permission to deal in, the Shares to be issued or sold (including any Shares to be issued or sold pursuant to the exercise of the Over-allotment Option) under the Global Offering is refused or not granted, other than subject to customary conditions, on or before the Listing Date, or if granted, the approval is subsequently withdrawn, qualified (other than by customary conditions) or withheld; or
- (viii) the Company withdraws the prospectus (and/or any other documents issued or used in connection with the Global Offering) or the Global Offering.

### ***Listing Rules obligations***

Pursuant to Rule 10.08 of the Listing Rules, no further Shares or securities convertible into equity securities (whether or not of a class already listed) may be issued by our Company, or form the subject of any agreement to such an issue within six months from the Listing Date (whether or not such issue of Shares or securities will be completed within six months from the commencement of dealing) subject to certain exceptions as stated in Rules 10.08(1) to 10.08(4) of the Listing Rules.

### ***Undertakings by the Company***

Our Company has undertaken to the Hong Kong Stock Exchange that no further Shares or securities convertible into equity securities (whether or not of a class already listed) will be issued or form the subject of any agreement to such an issue within six months from the date on which Shares first commence dealing on the Hong Kong Stock Exchange (whether or not such issue of Shares will be completed within six months from the commencement of dealing), except for the issue of Shares, the listing of which has been approved by the Hong Kong Stock Exchange, pursuant to a share option scheme or similar arrangement under Chapter 17 of the Listing Rules, or any capitalization issue, capital reduction or consolidation or sub-division of Shares.

We have undertaken to each of the Joint Global Coordinators, the Hong Kong Underwriters and the Joint Sponsors that, except pursuant to the Global Offering (including pursuant to the Over-allotment Option), during the period commencing on the date of the Hong Kong Underwriting Agreement and ending on the date which is six months after the Listing Date (the "First Six-month Period"), we will not, and to procure each other member of our Group will not, without the prior written consent of the Joint Sponsors and the Joint Global Coordinators (on behalf of the Hong Kong Underwriters) and unless in compliance with the requirements of the Listing Rules:

- allot, issue, sell, accept subscription for, offer to allot, issue or sell, contract or agree to allot, issue or sell, mortgage, charge, pledge, hypothecate, lend, grant or sell any option, warrant, contract or right to subscribe for or purchase, grant or purchase any option, warrant, contract or right to allot, issue or sell, or otherwise transfer or dispose of or create an encumbrance over, or agree to transfer or dispose of or create an encumbrance over, either directly or indirectly, conditionally or unconditionally, any Shares or other securities of the Company or

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## UNDERWRITING

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any shares, capital or other securities of such other member of the Group, as applicable, or any interest in any of the foregoing (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares or any shares or capital of such other member of our Group, as applicable), or deposit any Shares or other securities of the Company or any shares, capital or other securities of such other member of the Group, as applicable, with a depositary in connection with the issue of depositary receipts; or

- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of any Shares or other securities of the Company or any shares, capital or other securities of such other member of the Group, as applicable, or any interest in any of the foregoing (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares or any shares or capital of such other member of the Group, as applicable); or
- enter into any transaction with the same economic effect as any of the foregoing transactions; or
- offer to or agree to or announce any intention to effect any of the above,

in each case, whether any of the foregoing transactions is to be settled by delivery of Shares or other securities of the Company or shares, capital or other securities of such other member of the Group, as applicable, or in cash or otherwise (whether or not the issue of such Shares or other shares or securities will be completed within the First Six-month Period).

In the event that, during the period of six months commencing on the date on which the First Six-month Period expires (the “Second Six-Month Period”), our Company enters into any of the foregoing transactions or offers to or agrees to or announces any intention to effect any such transaction, our Company shall take all reasonable steps to ensure that it will not create a disorderly or false market in the securities of the Company.

### ***Undertakings by our Controlling Shareholder***

Our ultimate Controlling Shareholder, CNMC, has undertaken to the Hong Kong Stock Exchange that, except pursuant to the Global Offering (including the Over-allotment Option and the Stock Borrowing Agreement), (i) it shall not and shall procure that the relevant registered holder of the Shares in which it has a beneficial interest shall not, without the prior written consent of the Hong Kong Stock Exchange or unless otherwise in compliance with the requirements of the Listing Rules, at any time during the period commencing on the date by reference to which disclosure of its shareholding is made in this prospectus and ending on the date which is six months from the Listing Date, dispose of any of the Shares in respect of which it is shown by this prospectus to be the beneficial owner nor will it enter into any agreement to dispose of or otherwise create any options, rights, interests or encumbrances in respect of such Shares; and (ii) it shall not and shall procure that the relevant registered holder shall not, without the prior written consent of the Hong Kong Stock Exchange or unless otherwise in compliance with the requirements of the Listing Rules, at any time during the period of six months from the date on which the period referred to in paragraph (i) above expires, dispose of, nor enter into any agreement to dispose of or otherwise create any options, rights, interests or encumbrances in respect of, any of the Shares referred to in paragraph (i) above if, immediately following such disposal or upon the exercise or enforcement of such options, rights, interests or encumbrances, it would then cease to be a controlling shareholder (as defined in the Listing Rules) of our Company.

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## UNDERWRITING

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Our Controlling Shareholders have undertaken to the Joint Global Coordinators, the Joint Sponsors and the Hong Kong Underwriters that, except as disclosed herein, it will not, without the prior written consent of the Joint Sponsors and the Joint Global Coordinators (on behalf of the Hong Kong Underwriters) and unless in compliance with the requirements of the Listing Rules or pursuant to any stock borrowing agreement:

- it will not, at any time during the First Six-Month Period, (i) sell, offer to sell, contract or agree to sell, mortgage, charge, pledge, hypothecate, lend, grant or sell any option, warrant, contract or right to purchase, grant or purchase any option, warrant, contract or right to sell, or otherwise transfer or dispose of or create an encumbrance over, or agree to transfer or dispose of or create an encumbrance over, either directly or indirectly, conditionally or unconditionally, any Shares or other securities of the Company or any interest therein (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares), or deposit any Shares or other securities of the Company with a depository in connection with the issue of depository receipts, or (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of any Shares or other securities of the Company or any interest therein in (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares), or (iii) enter into any transaction with the same economic effect as any of the foregoing transactions, or (iv) offer to or agree to or announce any intention to effect any of the foregoing transactions, in each case, whether any of the foregoing transactions is to be settled by delivery of Shares or other securities of the Company or in cash or otherwise (whether or not the issue of such Shares or other securities will be completed within the First Six-Month Period);
- it will not, during the Second Six-Month Period, (i) sell, offer to sell, contract or agree to sell, mortgage, charge, pledge, hypothecate, lend, grant or sell any option, warrant, contract or right to purchase, grant or purchase any option, warrant, contract or right to sell, or otherwise transfer or dispose of or create an encumbrance over, or agree to transfer or dispose of or create an encumbrance over, either directly or indirectly, conditionally or unconditionally, any Shares or other securities of the Company or any interest therein (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares), or deposit any Shares or other securities of the Company with a depository in connection with the issue of depository receipts, or (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of any Shares or other securities of the Company or any interest therein in (including, without limitation, any securities convertible into or exchangeable or exercisable for or that represent the right to receive, or any warrants or other rights to purchase, any Shares), or (iii) enter into any transaction with the same economic effect as any of the foregoing transactions or (iv) offer to or agree to or announce any intention to effect any such transaction if, immediately following any sale, transfer or disposal or upon the exercise or enforcement of any option, right, interest or encumbrance pursuant to such transaction, it will cease to be a “controlling shareholder” (as the term is defined in the Listing Rules) of the Company, and until the expiry of the Second Six-Month Period, in the event that it enters into any of the foregoing transactions or agrees to or announce any intention to effect any such transaction, it will take all reasonable steps to ensure that it will not create a disorderly or false market in the securities of the Company.

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## UNDERWRITING

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Our ultimate Controlling Shareholder, CNMC, has further undertaken to the Hong Kong Stock Exchange and our Company that it will, at any time commencing on the date by reference to which disclosure of its shareholdings is made in this prospectus up to and including the date falling 12 months after the Listing Date, immediately inform us of:

- any pledges or charges of any of the securities in our Company beneficially owned by it in favor of any authorized institution pursuant to Note (2) to Rule 10.07(2) of the Listing Rules, and the number of such securities so pledged or charged; and
- any indication received by it, either verbal or written, from any pledgee or chargee of any of the pledged or charged securities that any of such securities will be disposed of.

We will also inform the Hong Kong Stock Exchange as soon as we have been informed of the above matters (if any) by our Controlling Shareholders and disclose such matters by way of a press notice which is published in accordance with applicable rules as soon as possible after being so informed by our Controlling Shareholders.

Our Controlling Shareholders have further undertaken to the Joint Sponsors and the Joint Global Coordinators that it will, at any time within the period commencing on the date of the registration of the Hong Kong Prospectus and ending on the date which is 12 months after the Listing Date:

- upon any pledge or charge in favor of an authorized institution (as defined in the Banking Ordinance (Chapter 155 of the Laws of Hong Kong)) of any Shares or securities or interests in the Shares or securities of our Company beneficially owned by it for a bona fide commercial loan, immediately inform our Company and the Joint Global Coordinators in writing of such pledge or charge together with the number of Shares or securities so pledged or charged; and
- upon any indication received by it, either verbal or written, from any pledgee or chargee that any of the pledged or charged Shares or securities or interests in the Shares or securities of the Company will be disposed of, immediately inform our Company and the Joint Global Coordinators in writing of such indications,

and our Company agrees and undertakes to the Joint Global Coordinators, the Joint Sponsors and each of the Hong Kong Underwriters, that, upon receiving such information in writing from the Controlling Shareholder, it shall, as soon as practicable, notify the Hong Kong Stock Exchange and make an announcement in accordance with the Listing Rules.

### ***Hong Kong Underwriters' interests in our Company***

Save as disclosed below and elsewhere in this prospectus and save for their obligations under the Hong Kong Underwriting Agreement, as of the Latest Practicable Date, none of the Hong Kong Underwriters is interested directly or indirectly in any shares or securities in our Company or any other member of our Group or has any right or option (whether legally enforceable or not) to subscribe for, or to nominate persons to subscribe for, any shares or securities in our Company or any other member of our Group.

### **International Offering**

In connection with the International Offering, we expect to enter into the International Underwriting Agreement with, among others, the International Underwriters. Under the International Underwriting Agreement, the International Underwriters would, subject to certain conditions, severally agree to purchase the International Offer Shares or procure purchasers for the



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## UNDERWRITING

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International Offer Shares initially being offered pursuant to the International Offering. Please refer to “Structure of the Global Offering — The International Offering” for further details.

Under the International Underwriting Agreement, we intend to grant to the International Underwriters the Over-allotment Option, exercisable in whole or in part at one or more times, at the sole and absolute discretion of the Joint Global Coordinators on behalf of the International Underwriters from the date of the International Underwriting Agreement until 30 days from the last day for the lodging of applications under the Hong Kong Public Offering to require us to allot and issue up to an aggregate of 130,500,000 additional Shares, representing 15% of the number of Offer Shares initially available under the Global Offering at the Offer Price, to, among other things, covering over-allotment in the International Offering, if any.

### ***Total commissions and expenses***

The Hong Kong Underwriters will receive a commission of 2.6% of the aggregate Offer Price of all the Hong Kong Offer Shares, out of which they will pay any sub-underwriting commissions. We may, in our sole discretion, pay to the Joint Bookrunners or any of them, an incentive fee of up to 0.5% of the aggregate Offer Price of all the Hong Kong Offer Shares.

For unsubscribed Hong Kong Offer Shares reallocated to the International Offering, if any, the International Underwriters will be paid an underwriting commission at the rate applicable to the International Offering and such commission will be paid to the International Underwriters, but not the Hong Kong Underwriters.

The aggregate commissions and estimated expenses, together with the Hong Kong Stock Exchange listing fee, SFC transaction levy, the Hong Kong Stock Exchange trading fee, legal and other professional fees, printing and other fees and expenses relating to the Global Offering, are estimated to amount in aggregate to not more than approximately HK\$120.8 million (assuming no exercise of the Over-allotment Option and an Offer Price of HK\$2.45 per Share, being the mid-point of the stated range of the Offer Price between HK\$2.10 and HK\$2.80 per Share), and are payable by us. Included in the total are commissions on the offer of the Offer Shares, which are expected to be not more than approximately HK\$66.1 million, payable to the Hong Kong Underwriters and the International Underwriters.

We have agreed to indemnify the Hong Kong Underwriters for certain losses which they may suffer, including losses arising from their performance of their obligations under the Hong Kong Underwriting Agreement and any breach by us of the Hong Kong Underwriting Agreement.



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## STRUCTURE OF THE GLOBAL OFFERING

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### PRICE PAYABLE ON APPLICATION

The Offer Price will not be more than HK\$2.80 and is expected to be not less than HK\$2.10. Applicants under the Hong Kong Public Offering should pay, on application, the maximum price of HK\$2.80 per Share plus the brokerage fee of 1.0%, the SFC transaction levy of 0.003% and the Hong Kong Stock Exchange trading fee of 0.005% thereon, amounting to a total of HK\$2,828.22 for one board lot of 1,000 Shares.

If the Offer Price, as finally determined in the manner described below, is lower than HK\$2.80, being the maximum price, we will refund the respective difference (including the brokerage fee, the SFC transaction levy and the Hong Kong Stock Exchange trading fee attributable to the surplus application monies) to successful applicants, without interest. Further details are set out in “How to Apply for Hong Kong Offer Shares” in this prospectus.

### DETERMINING THE OFFER PRICE

The Offer Price is expected to be determined by agreement between the Joint Global Coordinators, on behalf of the Underwriters and us on or before the Price Determination Date, when market demand for the Offer Shares will be determined. The Price Determination Date is expected to be on or around Monday, June 25, 2012 and in any event, no later than Wednesday, June 27, 2012.

The Offer Price will not be more than HK\$2.80 per Offer Share and is expected to be not less than HK\$2.10 per Offer Share. The Offer Price will fall within the Offer Price range as stated in this prospectus unless otherwise announced, as further explained below, not later than the morning of the last day for lodging applications under the Hong Kong Public Offering. Prospective investors should be aware that the Offer Price to be determined on the Price Determination Date may be, but is not expected to be, lower than the indicative Offer Price range stated in this prospectus.

The Joint Global Coordinators, on behalf of the Underwriters, may, where considered appropriate, based on the level of interest expressed by prospective professional, institutional, corporate and other investors during the book-building process, and with our consent, reduce the number of Offer Shares and/or the indicative Offer Price range below that stated in this prospectus at any time prior to the morning of the last day for lodging applications under the Hong Kong Public Offering. In such a case, we will, as soon as practicable following the decision to make such reduction, and in any event not later than the morning of the last day for lodging applications under the Hong Kong Public Offering, cause to be published in the South China Morning Post (in English) and the Hong Kong Economic Times (in Chinese) notices of the reduction in the number of Offer Shares and/or the indicative Offer Price range. Such notice will also be available at the website of the Hong Kong Stock Exchange at [www.hkexnews.hk](http://www.hkexnews.hk) and at our Company’s website at [www.cnmc1.net](http://www.cnmc1.net). Upon issue of such a notice, the revised number of Offer Shares and/or Offer Price range will be final and conclusive and the Offer Price, if agreed upon with us, will be fixed within such revised Offer Price range. Such notice will also include confirmation or revision, as appropriate, of the working capital statement, the offer statistics as currently set out in the section headed “Summary” and any other financial information which may change materially as a result of such reduction.

**If applications for Hong Kong Offer Shares have been submitted, then even if the number of Offer Shares and/or the Offer Price range is so reduced, such applications cannot be withdrawn subsequently.**

In the absence of any such notice being so published of a reduction in the number of Offer Shares and/or the indicative Offer Price range stated in this prospectus on or before the morning of the last

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day for lodging applications under the Hong Kong Public Offering, the number of Offer Shares and/or the Offer Price, if agreed upon with us, will under no circumstances be fewer than the number of Offer Shares or be set outside the Offer Price range as stated in this prospectus.

**If the Joint Global Coordinators (on behalf of the Underwriters) and our Company are unable to reach agreement on the Offer Price on Wednesday, June 27, 2012, the Global Offering will not become unconditional and will lapse immediately.**

We expect to publish an announcement of the Offer Price, together with the level of interest in the International Offering and the results of application in respect of the Hong Kong Public Offering and basis of allotment of the Hong Kong Offer Shares, on Thursday, June 28, 2012.

### THE GLOBAL OFFERING

This prospectus is published in connection with the Hong Kong Public Offering as part of the Global Offering. The Global Offering comprises the Hong Kong Public Offering and the International Offering. We intend to make available initially up to 870,000,000 Shares under the Global Offering, of which 783,000,000 Shares will initially be conditionally placed pursuant to the International Offering and the remaining 87,000,000 Shares will initially be offered to the public in Hong Kong at the Offer Price under the Hong Kong Public Offering (subject, in each case, to reallocation on the basis described below under “The Hong Kong Public Offering”). We will conditionally place our Shares in the International Offering with professional, institutional, corporate and other investors whom we anticipate to have a sizeable demand for our Shares in Hong Kong and other jurisdictions outside the United States to non-U.S. persons, in reliance on Regulation S, and in the United States with QIBs in reliance on Rule 144A.

Investors may apply for our Shares under the Hong Kong Public Offering or indicate an interest, if qualified to do so, for our Shares under the International Offering, but may not do both. The Hong Kong Public Offering is open to members of the public in Hong Kong as well as to institutional and professional investors in Hong Kong. The International Offering will involve selective marketing of our Shares to professional, institutional, corporate and other investors anticipated to have a sizeable demand for such Shares. Professional investors generally include brokers, dealers, companies (including fund managers) whose ordinary business involves dealing in shares and other securities and corporate entities which regularly invest in shares and other securities. Prospective professional, institutional, corporate and other investors will be asked to specify the number of our Shares under the International Offering they would be prepared to acquire either at different prices or at a particular price. This process, known as “book-building”, is expected to continue up to the Price Determination Date.

Allocation of our Shares pursuant to the International Offering will be determined by the Joint Bookrunners and will be based on a number of factors including the level and timing of demand, total size of the relevant investor’s invested assets or equity assets in the relevant sector and whether or not it is expected that the relevant investor is likely to buy further, and/or hold or sell, our Shares, after the Listing of the Shares on the Hong Kong Stock Exchange. Such allocation is intended to result in a distribution of our Shares on a basis which would lead to the establishment of a solid professional and institutional Shareholder base to the benefit of our Company and our Shareholders as a whole.

Allocation of Hong Kong Offer Shares to investors under the Hong Kong Public Offering will be based solely on the level of valid applications received under the Hong Kong Public Offering. The basis of allocation may vary, depending on the number of Hong Kong Offer Shares validly applied for by applicants, although the allocation of Hong Kong Offer Shares could, where appropriate,

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consist of balloting, which would mean that some applicants may receive a higher allocation than others who have applied for the same number of Hong Kong Offer Shares, and those applicants who are not successful in the ballot may not receive any Hong Kong Offer Shares.

In connection with the Global Offering, we intend to grant the Over-allotment Option to the International Underwriters exercisable by the Joint Global Coordinators on behalf of the International Underwriters. Further details are set out in “— The Over-allotment Option” below.

The Hong Kong Public Offering is fully underwritten by the Hong Kong Underwriters and the International Offering is expected to be fully underwritten by the International Underwriters in each case on a several basis, each being subject to the conditions set out under “— Conditions of the Hong Kong Public Offering” below. We entered into the Hong Kong Underwriting Agreement on Friday, May 18, 2012, as amended on Tuesday, June 19, 2012, subject to an agreement on the Offer Price between us and the Joint Global Coordinators (on behalf of the Underwriters), and expect to enter into the International Underwriting Agreement on Monday, June 25, 2012. The Hong Kong Underwriting Agreement and the International Underwriting Agreement are expected to be conditional upon each other.

### THE HONG KONG PUBLIC OFFERING

The Hong Kong Public Offering is a fully underwritten public offer (subject to agreement as to pricing and satisfaction or waiver of the other conditions set out in the Hong Kong Underwriting Agreement) for the subscription in Hong Kong of, initially, 87,000,000 Shares at the Offer Price representing 10% of the total number of Shares initially available under the Global Offering. Subject to the reallocation of Shares between the International Offering and the Hong Kong Public Offering, the Hong Kong Offer Shares will represent 2.51% of our Company’s enlarged issued share capital immediately after completion of the Global Offering assuming that the Over-allotment Option is not exercised.

The total number of our Offer Shares available under the Hong Kong Public Offering (after taking account of any reallocation referred to below) is to be divided into two pools for allocation purposes (subject to adjustment of odd lot size): pool A and pool B. The Hong Kong Offer Shares in pool A will be allocated on an equitable basis to applicants who have applied for Hong Kong Offer Shares with an aggregate subscription price of HK\$5,000,000 (excluding the brokerage, the SFC transaction levy and the Hong Kong Stock Exchange trading fee payable) or less. The Hong Kong Offer Shares in pool B will be allocated on an equitable basis to applicants who have applied for the Hong Kong Offer Shares with an aggregate subscription price of more than HK\$5,000,000 and up to the total value of pool B (excluding the brokerage, the SFC transaction levy and the Hong Kong Stock Exchange trading fee payable). Applicants should be aware that applications in pool A and in pool B may receive different allocation ratios. If the Hong Kong Offer Shares in one (but not both) of the pools are undersubscribed, the surplus Hong Kong Offer Shares will be transferred to the other pool to satisfy demand in that pool and be allocated accordingly. Applicants can only receive an allocation of the Hong Kong Offer Shares from either pool A or pool B but not from both pools. Multiple or suspected multiple applications and any application for more than 50% of the Hong Kong Offer Shares initially included in the Hong Kong Public Offering will be rejected. Each applicant under the Hong Kong Public Offering will also be required to give an undertaking and confirmation in the application submitted by him that he and any person(s) for whose benefit he is making the application have not indicated an interest for or taken up and will not indicate an interest for or take up any Offer Shares under the International Offering, and such applicant’s application will be rejected if the said undertaking and/or confirmation is breached and/or untrue (as the case may be).

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The Offer Shares to be offered in the Hong Kong Public Offering and the International Offering may, in certain circumstances, be reallocated as between these offerings at the sole discretion of the Joint Global Coordinators.

The allocation of Offer Shares between the Hong Kong Public Offering and the International Offering is subject to adjustment. If the number of Offer Shares validly applied for under the Hong Kong Public Offering represents 15 times or more but less than 50 times the number of the Offer Shares initially available for subscription under the Hong Kong Public Offering, then Offer Shares will be reallocated to the Hong Kong Public Offering from the International Offering, so that the total number of Offer Shares available under the Hong Kong Public Offering will be 261,000,000 Offer Shares, representing 30% of the Offer Shares initially available under the Global Offering. If the number of Offer Shares validly applied for under the Hong Kong Public Offering represents 50 times or more but less than 100 times the number of the Offer Shares initially available for subscription under the Hong Kong Public Offering, then the number of Offer Shares to be reallocated to the Hong Kong Public Offering from the International Offering will be increased so that the total number of Offer Shares available under the Hong Kong Public Offering will be 348,000,000 Offer Shares, representing 40% of the Offer Shares initially available under the Global Offering. If the number of Offer Shares validly applied for under the Hong Kong Public Offering represents 100 times or more the number of the Offer Shares initially available for subscription under the Hong Kong Public Offering, then the number of Offer Shares to be reallocated to the Hong Kong Public Offering from the International Offering will be increased, so that the total number of Offer Shares available under the Hong Kong Public Offering will be 435,000,000 Offer Shares, representing 50% of the Offer Shares initially available under the Global Offering. In each such case, the additional Offer Shares reallocated to the Hong Kong Public Offering will be allocated equally (subject to adjustment of odd lot size) between pool A and pool B and the number of Offer Shares allocated to the International Offering will be correspondingly reduced.

In addition, if the Hong Kong Public Offering is not fully subscribed, the Joint Global Coordinators will have the discretion (but shall not be under any obligation) to reallocate to the International Offering all or any unsubscribed Hong Kong Offer Shares in such proportion and amounts as they deem appropriate. Conversely, the Joint Global Coordinators may at their discretion reallocate Offer Shares from the International Offering to the Hong Kong Public Offering to satisfy valid applications under the Hong Kong Public Offering.

References in this prospectus to applications, Application Forms, application or subscription monies or the procedure for application relate solely to the Hong Kong Public Offering.

### CONDITIONS OF THE HONG KONG PUBLIC OFFERING

Acceptance of all applications for the Offer Shares pursuant to the Hong Kong Public Offering will be conditional on:

- the Listing Committee of the Hong Kong Stock Exchange granting listing of, and permission to deal in, our Shares to be issued pursuant to the Global Offering, including the additional Shares which may be issued under the Over-allotment Option, and such listing and permission not subsequently having been revoked prior to the commencement of dealings in our Shares on the Hong Kong Stock Exchange;
- the Offer Price having been duly agreed between our Company and the Joint Global Coordinators;

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## STRUCTURE OF THE GLOBAL OFFERING

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- the execution and delivery of the International Underwriting Agreement on or around the Price Determination Date; and
- the obligations of the Underwriters under each of the respective Underwriting Agreements becoming and remaining unconditional (including, if relevant, as a result of the waiver of any conditions by the Joint Global Coordinators, on behalf of the Underwriters) and such obligations not being terminated in accordance with the terms of the respective Underwriting Agreements,

in each case, on or before the dates and times specified in the respective Underwriting Agreements (unless and to the extent such conditions are validly waived on or before such dates and times) and in any event not later than 30 days after the date of this prospectus.

The consummation of the Hong Kong Public Offering is conditional upon, among other things, the International Offering and the Hong Kong Public Offering becoming unconditional and not having been terminated in accordance with their respective terms.

If the above conditions are not fulfilled or waived prior to the times and dates specified, the Global Offering will lapse and we will notify the Hong Kong Stock Exchange immediately. We will publish or cause to be published a notice of the lapse of the Hong Kong Public Offering in the South China Morning Post (in English) and the Hong Kong Economic Times (in Chinese) on the Business Day immediately following such lapse.

In case the Hong Kong Public Offering lapses, we will return all application monies to the applicants, without interest and on the terms set out under “How to Apply for Hong Kong Offer Shares”. In the meantime, we will hold all application monies in a separate bank account or separate bank accounts with the receiving banker(s) or other bank(s) licensed under the Banking Ordinance (Chapter 155 of the Laws of Hong Kong) (as amended).

### THE INTERNATIONAL OFFERING

The number of Offer Shares to be initially offered for subscription or purchase under the International Offering will be 783,000,000 Offer Shares to be offered by us representing 90% of the Offer Shares initially available under the Global Offering. The International Offering is subject to the Hong Kong Public Offering being unconditional.

Pursuant to the International Offering, the International Offer Shares will be conditionally placed by the International Underwriters, or through selling agents appointed by them, with professional, institutional, corporate and other investors anticipated to have a sizeable demand for Shares in Hong Kong and other jurisdictions outside the United States in reliance on Regulation S and in the United States with QIBs in reliance on Rule 144A.

The Joint Global Coordinators (on behalf of the Underwriters) may require any investor who has been offered Offer Shares under the International Offering, and who has made an application under the Hong Kong Public Offering to provide sufficient information to the Joint Global Coordinators so as to allow them to identify the relevant applications under the Hong Kong Public Offering and to ensure that such investor is excluded from any application for the Offer Shares under the Hong Kong Public Offering.

### THE OVER-ALLOTMENT OPTION

In connection with the Global Offering, we intend to grant the Over-allotment Option to the International Underwriters, exercisable at the discretion of the Joint Global Coordinators on behalf

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## STRUCTURE OF THE GLOBAL OFFERING

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of the International Underwriters. The Over-allotment Option gives the Joint Global Coordinators (on behalf of the International Underwriters) the right, exercisable at any time from the date of the International Underwriting Agreement until 30 days from the last day for the lodging of applications under the Hong Kong Public Offering, to require us to allot and issue up to an aggregate of 130,500,000 additional Shares, representing in aggregate 15% of the initial size of the Global Offering at the Offer Price, to, among other things, cover over-allotment, if any, in the International Offering. The Joint Global Coordinators may also cover such over-allotment by purchasing Shares in the secondary market or by a combination of purchase in the secondary market and a partial exercise of the Over-allotment Option. Any such secondary market purchase will be made in compliance with all applicable laws, rules and regulations. If the Joint Global Coordinators exercise the Over-allotment Option in full, the number of Shares being offered in the Global Offering will increase to 1,000,500,000 Shares. In the event that the Over-allotment Option is exercised, a press announcement will be made.

### **STOCK BORROWING ARRANGEMENT**

In order to facilitate the settlement of over-allotment in connection with the International Offering, the Stabilizing Manager may choose to borrow Shares from CNMD under the Stock Borrowing Agreement that may be entered into between the Stabilizing Manager and CNMD, or acquire Shares from other sources. The Stock Borrowing Agreement will not be subject to the restrictions of Rule 10.07(1)(a) of the Listing Rules provided that the requirements set out in Rule 10.07(3) are complied with. Furthermore, (i) Shares so borrowed will only be used for settlement of over-allotment in the International Offering prior to the exercise of the Over-allotment Option; (ii) the maximum number of Shares to be borrowed from CNMD will be limited to the maximum number of Shares which may be issued and allotted by our Company upon exercise of the Over-allotment Option, which is limited to 130,500,000 Shares or 15% of the Shares initially available under the Global Offering; (iii) the same number of Shares so borrowed must be returned to CNMD on or before the seventh Business Day following the earlier of (a) the last date on which the Shares may be issued and allotted by our Company pursuant to the Over-allotment Option, and (b) the day on which the Over-allotment Option is exercised in full; (iv) borrowing of stock pursuant to the Stock Borrowing Agreement will be effected in compliance with all applicable laws and regulatory requirements; and (v) no payment will be made to CNMD in relation to the Stock Borrowing Agreement.

### **STABILIZING ACTION**

Stabilization is a practice used by underwriters in some markets to facilitate the distribution of securities. To stabilize, the underwriters may bid for, or purchase, the newly issued securities in the secondary market, during a specified period of time, to minimize and, if possible, prevent a decline in the prices of our Shares. In Hong Kong and certain other jurisdictions, the price at which stabilization is effected is not permitted to exceed the Offer Price.

In connection with the Global Offering, China International Capital Corporation Hong Kong Securities Limited, as the Stabilizing Manager, or any person acting for it, on behalf of the Underwriters, may over-allot or effect transactions with a view to stabilizing or maintaining the market price of our Shares at a level higher than that which might otherwise prevail in the open market for a limited period commencing on the Listing Date. Such transactions may be effected in all jurisdictions where it is permissible to do so, in each case in compliance with all applicable laws and regulatory requirements including those of Hong Kong. However, there is no obligation on the Stabilizing Manager or any person acting for it to do this. Such stabilization, if commenced, will be conducted at the absolute discretion of the Stabilizing Manager or any person acting for it and may be discontinued at any time, and must be brought to an end within 30 days of the last day for the



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## STRUCTURE OF THE GLOBAL OFFERING

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lodging of applications under the Hong Kong Public Offering. The number of Shares that may be over-allotted will not be greater than the number of Shares which may be sold upon exercise of the Over-allotment Option, being 130,500,000 Shares, which is 15% of our Shares initially available under the Global Offering.

The Stabilizing Manager or any person acting for it may take all or any of the following stabilizing actions in Hong Kong during the stabilization period:

- purchase, or agree to purchase, any of our Shares or offer or attempt to do so for the sole purpose of preventing or minimizing any reduction in the market price of our Shares; and/or
- in connection with any action described in the foregoing paragraph:
  - (A) (1) over-allot our Shares; or
    - (2) sell or agree to sell our Shares so as to establish a short position in them,
  - for the sole purpose of preventing or minimizing any reduction in the market price of our Shares;
  - (B) exercise the Over-allotment Option and purchase or subscribe for or agree to purchase or subscribe for our Shares in order to close out any position established under paragraph (A) above;
  - (C) sell or agree to sell any of our Shares acquired by it in the course of the stabilizing action referred to in paragraph (i) above in order to liquidate any position that has been established by such action; and/or
  - (D) offer or attempt to do anything as described in paragraph (A)(2), (B) or (C) above.

The Stabilizing Manager, or any person acting for it, may, in connection with the stabilizing action, maintain a long position in our Shares, and there is no certainty as to the extent to which and the time period for which it will maintain such a position. Investors should be warned of the possible impact of any liquidation of the long position by the Stabilizing Manager or any person acting for it, which may include a decline in the market price of our Shares.

Stabilization cannot be used to support the price of our Shares for longer than the stabilization period, which begins on the day on which dealings in our Shares commence on the Hong Kong Stock Exchange and ends on the 30th day after the last day for the lodging of applications under the Hong Kong Public Offering. The stabilization period is expected to expire on the 30th day after the last day for the lodging of applications under the Hong Kong Public Offering. After this date, when no further stabilizing action may be taken, demand for our Shares, and therefore their market price, could fall. A public announcement will be made within seven days after the end of the stabilizing period in accordance with the Securities and Futures (Price Stabilizing) Rules of the Hong Kong Securities and Futures Ordinance.

Any stabilizing action taken by the Stabilizing Manager, or any person acting for it, may not necessarily result in the market price of our Shares staying at or above the Offer Price either during or after the stabilization period. Stabilization bids or market purchases effected in the course of the stabilizing action may be made at any price at or below the Offer Price and can therefore be done at a price below the price investors have paid in acquiring our Shares.



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### DEALING

Assuming that the Hong Kong Public Offering becomes unconditional at or before 8:00 a.m. in Hong Kong on Friday, June 29, 2012, it is expected that dealings in our Shares on the Hong Kong Stock Exchange will commence at 9:00 a.m. on Friday, June 29, 2012. Our Shares will be traded on the Main Board in board lots size of 1,000 Shares each.

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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### CHANNELS OF APPLYING FOR THE HONG KONG OFFER SHARES

There are two channels to make an application for the Hong Kong Offer Shares. You may either (i) use a **WHITE** or **YELLOW** Application Form; or (ii) apply online through the designated website of the **White Form eIPO** Service Provider, referred to in this prospectus as the **White Form eIPO** Service ([www.eipo.com.hk](http://www.eipo.com.hk)).

Except where you are a nominee and provide the required information in your application, you or your joint applicant(s) may not make more than one application (whether individually or jointly) by applying on a **WHITE** or **YELLOW** Application Form or applying online through **White Form eIPO** service.

### WHICH APPLICATION CHANNEL TO USE

Use a **WHITE** Application Form if you want the Hong Kong Offer Shares issued in your own name in physical certificates(s).

Instead of using a **WHITE** Application Form, you may apply for the Hong Kong Offer Shares by means of **White Form eIPO** service by submitting applications online through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk). Use **White Form eIPO** if you want the shares issued in your own name.

Use a **YELLOW** Application Form if you want the Hong Kong Offer Shares issued in the name of HKSCC Nominees and deposited directly into CCASS for credit to your CCASS Investor Participant stock account or your designated CCASS Participant's stock account. Any Hong Kong Offer Shares allocated to you will be registered in the name of HKSCC Nominees and deposited directly into CCASS for credit to your CCASS Investor Participant stock account or your designated CCASS Participant's stock account.

You should note that by completing and submitting the **WHITE** and **YELLOW** Application Forms, among other things, you:

- (a) agree with our Company and each Shareholder of our Company, and our Company agrees with each of our Shareholders, to observe and comply with the Companies Ordinance, the Memorandum of Association and Articles of Association;
- (b) confirm that you have only relied on the information and representations contained in this prospectus and the relevant Application Form in making your application, and will not rely on any other information or representations save as set out in any supplement to this prospectus and agree that our Company, the Joint Global Coordinators, the Joint Sponsors, the Hong Kong Underwriters, and their respective directors, officers, employees, partners, agents, advisors and any other person or parties involved in the Global Offering will have no liability for any such other information or representations;
- (c) agree that the Company, the Joint Global Coordinators, the Joint Sponsors, the Hong Kong Underwriters and any of their respective directors, officers, employees, partners, agents, advisors and any person or parties involved in the Global Offering are liable only for the information and representations contained in this prospectus and any supplement thereto (and only to the extent such liability is held to exist by a court with competent jurisdiction);

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- (d) undertake and confirm that you (if the application is made for your benefit) or the person(s) or whose benefit you have made the application have not applied for or taken up or indicated an interest for and will not apply for or take up or indicate any interest in, any International Offer Shares in the International Offering, nor otherwise participated in the International Offering;
- (e) agree to disclose to our Company, and our Company's Hong Kong Share Registrar, the receiving bankers, the Joint Sponsors, the Hong Kong Underwriters, the Joint Global Coordinators and their respective advisors and agents any personal data and any information which they require about you or the person(s) for whose benefit you have made the application;
- (f) instruct and authorize our Company and the Joint Global Coordinators (or our respective agents or nominees) each acting as agent for our Company to execute any transfer forms, contract notes or other documents on your behalf and to do on your behalf all other things necessary to effect the registration of any Hong Kong Offer Shares allocated to you in your name(s) or the name of HKSCC Nominees as the case may be, as required by the Articles of Association and otherwise to give effect to the arrangements described in this prospectus and the relevant Application Form;
- (g) undertake to sign all documents and to do all things necessary to enable you or HKSCC Nominees, as the case may be, to be registered as the holder of the Hong Kong Offer Shares allocated to you, and as required by the Articles of Association;
- (h) represent and warrant that you understand that the Hong Kong Offer Shares have not been and will not be registered under the U.S. Securities Act and you are outside the United States (as defined in Regulation S) when completing and submitting the Application Form or are a person described in paragraph (h)(3) of Rule 902 of Regulation S;
- (i) agree (without prejudice to any other rights which you may have) that once your application has been accepted, you may not revoke or rescind it other than as provided in this prospectus and the relevant Application Forms;
- (j) (if the application is made by an agent on your behalf) warrant that you have validly and irrevocably conferred on your agent all necessary power and authority to make the application;
- (k) (if the application is made for your own benefit) warrant that the application is the only application which will be made for your benefit on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider under the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk));
- (l) (if you are an agent for another person) warrant that reasonable enquiries have been made of that other person that the application is the only application which will be made for the benefit of that other person on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider under the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)), and that you are duly authorized to sign the Application Form as that other person's agent;
- (m) agree that once your application is accepted, your application will be evidenced by the results of the Hong Kong Public Offering made available by our Company;
- (n) warrant the truth and accuracy of the information contained in your application and our Company, the Joint Global Coordinators, the Joint Sponsors, the Hong Kong Underwriters and their respective directors, officers, employees, partners, agents, advisors, and any other parties involved in the Global Offering are entitled to rely on any of your warranties, representations or declarations in the application;

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- (o) agree that your application, any acceptance of it and the resulting contract will be governed by and construed in accordance with the laws of Hong Kong;
- (p) undertake and agree to accept the Hong Kong Offer Shares applied for, or any lesser number allocated to you under the application;
- (q) authorize our Company to place your name(s) or the name of HKSCC Nominees, as the case may be, on the register of members of our Company as the holder(s) of any Hong Kong Offer Shares allocated to you, and our Company and/or its agents to send any share certificate(s) (where applicable) and/or any refund cheque(s) (where applicable) to you or (in case of joint applicants) the first-named applicant on your Application Form by ordinary post at your own risk to the address stated on your Application Form unless you have applied for 1,000,000 Hong Kong Offer Shares or more and have indicated on your Application Form that you wish to collect your share certificate(s) (where applicable) and/or refund cheque(s) (where applicable) in person then you can collect it/them from the Hong Kong Share Registrar between 9:00 a.m. and 1:00 p.m. on Thursday, June 28, 2012 (Hong Kong time) or such other date as notified by our Company;
- (r) if the laws of any place outside Hong Kong are applicable to your application, you agree and warrant that you have complied with all such laws and none of our Company, the Joint Global Coordinators and the Hong Kong Underwriters nor any of their respective directors, officers or advisors will infringe any laws outside Hong Kong as a result of the acceptance of your offer to subscribe, or any actions arising from your rights and obligations under the terms and conditions set out in this prospectus;
- (s) confirm that you have read the terms and conditions and application procedures set out in this prospectus and the relevant Application Form and agree to be bound by them;
- (t) agree with our Company, for itself and for the benefit of each shareholder of our Company that Shares are freely transferable by the holders thereof;
- (u) authorize our Company to enter into a contract on behalf of you with each Director and officer of our Company whereby such Directors and officers undertake to observe and comply with their obligations to shareholders stipulated in the Memorandum of Association and Articles of Association;
- (v) confirm that you are aware of the restrictions on Global Offering of the Hong Kong Offer Shares described in this prospectus; and
- (w) understand that these declarations and representations will be relied upon by our Company, the Joint Global Coordinators and the Hong Kong Underwriters in deciding whether or not to allocate any Hong Kong Offer Shares in response to your application.

In addition to the above, you should note that by completing and submitting the **YELLOW** Application Forms, among other things you also:

- (a) agree that each of HKSCC and HKSCC Nominees reserves the right at its absolute discretion (1) not to accept any or part of such allotted Hong Kong Offer Shares to you issued in the name of HKSCC Nominees or not to accept such allotted Hong Kong Offer Shares for deposit into CCASS; (2) to cause such allotted Hong Kong Offer Shares to be withdrawn from CCASS and transferred into your name (or, in the case of joint applicants to the name of the first-named applicant) at your own risk and costs; and (3) to cause such allotted Hong Kong Offers Shares

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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to be issued in your name (or, in the case of joint applicants, to the first-named applicant) and in such a case, to post the share certificates for such allotted Hong Kong Offer Shares at your own risk to the address stated on your **YELLOW** Application Form by ordinary post or to make available the same for your collection;

- (b) agree that each of HKSCC and HKSCC Nominees may adjust the number of allotted Hong Kong Offer Shares issued in the name of HKSCC Nominees;
- (c) agree that neither HKSCC nor HKSCC Nominees shall have any liability for the information and representations not so contained in this prospectus and the **YELLOW** Application Forms; and
- (d) agree that neither HKSCC nor HKSCC Nominees shall be liable to you in any way.

In the event of the application being made by joint applicants, all the warranties, representations, declarations and obligations expressed to be made, given or assumed by or imposed on the joint applicants shall be deemed to have been made, given and assumed by and imposed on the applicants jointly and severally.

In order for the **YELLOW** Application Form to be valid, you, as an applicant, must complete the Application Form as indicated below and sign on the first page of the Application Form. Only written signatures will be accepted:

- (a) If the application is made through a designated CCASS Participant (other than a CCASS Investor Participant), the designated CCASS Participant must endorse the form with its company chop (bearing its company name) and insert its CCASS Participant I.D. in the appropriate box in the Application Form.
- (b) If the application is made by an individual CCASS Investor Participant:
  - (i) the Application Form must contain the CCASS Investor Participant's name and Hong Kong identity card number; and
  - (ii) the CCASS Investor Participant must insert its participant I.D. in the appropriate box in the Application Form.
- (c) If the application is made by a joint individual CCASS Investor Participant:
  - (i) the Application Form must contain all joint CCASS Investor Participants' names and the Hong Kong identity card numbers of all joint CCASS Investor Participants; and
  - (ii) the participant I.D. must be inserted in the appropriate box in the Application Form.
- (d) If the application is made by a corporate CCASS Investor Participant:
  - (i) the Application Form must contain the CCASS Investor Participant's company name and Hong Kong business registration number; and
  - (ii) the participant I.D. and company chop (bearing its company name) must be inserted in the appropriate box in the Application Form.

Incorrect or incomplete details of the CCASS Participant (including participant I.D. and/or company chop bearing its company name), the omission or inadequacy of participant I.D. or other similar matters render the application invalid.

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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Nominees who wish to submit separate applications in their names on behalf of different beneficial owners are requested to designate on each Application Form in the box marked “For nominees”, account numbers or other identification codes for each beneficial owner or, in the case of joint beneficial owners, for each joint beneficial owners.

If your application is made through a duly authorized attorney, our Company, or the Joint Global Coordinators or the Hong Kong Underwriters and their respective agents or nominees, each severally in its capacity as the Company’s agent, may accept your application at their discretion, and subject to any conditions we think fit, including production of evidence of the authority of your attorney. Our Company and the Joint Global Coordinators, in its capacity as their agent, will have full discretion to reject or accept any application, in full or in part, without assigning any reason.

You may only apply by means of the **White Form eIPO** service if you are an individual applicant.

Corporations or joint applicants may not apply by means of **White Form eIPO**.

If the applicant is a firm, the application must be in the names of the individual members, not the firm’s name. If the applicant is a body corporate, the Application Form must be stamped with the company chop (bearing the company name) and signed by a duly authorized officer, who must state his or her representative capacity.

The number of joint applicants may not exceed four.

We, the Joint Global Coordinators, or our respective agents or the designated **White Form eIPO** Service Provider (where applicable) have full discretion to reject or accept any application, in full or in part, without assigning any reason.

The Hong Kong Offer Shares are not available to existing beneficial owners of Shares, our directors or chief executive of our Company or any of our subsidiaries, or associates of any of them or U.S. persons (as defined in Regulation S) or persons who do not have a Hong Kong address or any other connected persons of our Company or persons who will become our connected persons immediately following completion of the Global Offering or have been allocated or applied for Shares under the International Offering or otherwise participate on the International Offering.

You may apply for Hong Kong Offer Shares under the Hong Kong Public Offering or indicate an interest for International Offer Shares under the International Offer, but may not do both.

You may apply for the Hong Kong Offer Shares available for subscription by the public on a **WHITE** or **YELLOW** Application Form if you or any person(s) for whose benefit you are applying are an individual and:

- are 18 years of age or older;
- have a Hong Kong address;
- are outside the United States (as defined in Regulation S) when completing and submitting the Application Form;
- are not a United States Person (as defined in Regulation S) or are a person described in paragraph (h)(3) of Rule 902 of Regulation S; and

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- are not a legal or natural person of the PRC (except qualified domestic institutional investors); and have not been allocated or have not applied for Shares under the International Offering or otherwise participated on the International Offering.

If you wish to apply for Hong Kong Offer Shares online through the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)), in addition to the above you must also:

- have a valid Hong Kong identity card number; and
- be willing to provide a valid e-mail address and a contact telephone number.

### WHERE TO COLLECT THE PROSPECTUS AND APPLICATION FORMS

You can collect a **WHITE** Application Form and a prospectus during normal business hours from 9:00 a.m. on Wednesday, June 20, 2012 until 12:00 noon on Monday, June 25, 2012 from:

(1) any of the following addresses of the Joint Sponsors and/or the Hong Kong Underwriters:

- |   |  |
|---|--|
| (a) <b>UBS AG, Hong Kong Branch</b>   | 52/F Two International Finance Centre<br>8 Finance Street<br>Central, Hong Kong      |
| (b) <b>China International Capital Corporation<br/>Hong Kong Securities Limited</b> | 29/F One International Finance Centre<br>1 Harbour View Street<br>Central, Hong Kong |
| (c) <b>J.P. Morgan Securities (Asia Pacific) Limited</b>                            | 28/F Chater House<br>8 Connaught Road<br>Central, Hong Kong                          |
| (d) <b>Pacific Foundation Securities Limited</b>                                    | 11/F, New World Tower II<br>16-18 Queen's Road Central, Hong Kong                    |
| (e) <b>China Merchants Securities (HK) Co.,<br/>Limited</b>                         | 48/F, One Exchange Square<br>Central, Hong Kong                                      |
| (f) <b>Haitong International Securities Company<br/>Limited</b>                     | 25/F New World Tower<br>16-18 Queen's Road Central, Hong Kong                        |

(2) any of the following branches of Bank of China (Hong Kong) Limited:

	<u>Branch Name</u>	<u>Address</u>
<b>Hong Kong Island</b>	Bank of China Tower Branch	3/F, 1 Garden Road
	United Centre Branch	Shop 1021, United Centre, 95 Queensway
<b>Kowloon</b>	Yau Ma Tei Branch	471 Nathan Road, Yau Ma Tei
<b>New Territories</b>	Sheung Shui Branch Securities Services Centre	136 San Fung Avenue, Sheung Shui

or



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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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(3) any of the following branches of China Construction Bank (Asia) Corporation Limited:

	<u>Branch Name</u>	<u>Address</u>
Hong Kong Island	Central Des Voeux Road Branch	99 Des Voeux Road Central, Central
Kowloon	Kwun Tong Hoi Yuen Road Branch	56 Hoi Yuen Road, Kwun Tong
New Territories	Shatin Plaza Branch	Shop 5, Level 1, Shatin Plaza, Shatin

(4) any of the following branches of Wing Lung Bank Limited:

	<u>Branch Name</u>	<u>Address</u>
Hong Kong Island	Head Office	45 Des Voeux Road Central
	North Point Branch	361 King's Road
Kowloon	Mongkok Branch	B/F Wing Lung Bank Centre, 636 Nathan Road
New Territories	Tsuen Wan Branch	251 Sha Tsui Road

You can collect a **YELLOW** Application Form and a prospectus during normal business hours from 9:00 a.m. on Wednesday, June 20, 2012 until 12:00 noon on Monday, June 25, 2012 from:

- the Depository Counter of HKSCC at 2/F, Infinitus Plaza, 199 Des Voeux Road Central, Hong Kong; or
- your stockbroker, who may have such Application Forms and this prospectus available.

### HOW TO APPLY BY USING THE WHITE OR YELLOW APPLICATION FORM

Obtain an Application Form as described in the paragraph above headed “— Where to Collect the Prospectus and Application Forms”.

Complete the Application Form in English using blue or black ink, and sign it. There are detailed instructions on each Application Form. You should read these instructions carefully. If you do not follow the instructions, your application may be rejected and returned by ordinary post together with the accompanying cheque or banker's cashier order(s) to you (or the first-named applicant in the case of joint applicants) at your own risk to the address stated in the Application Form. Each Application Form must be accompanied by payment, in the form of either one cheque or one banker's cashier order. You should read the detailed instruction set out on the Application Form carefully, as an application is liable to be rejected if the cheque or banker's cashier order does not meet the requirements set out on the Application Form.

Lodge the Application Form in one of the collection boxes by the time and at one of the locations as described in the paragraph above headed “— Where to Collect the Prospectus and Application Forms”.

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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### HOW TO MAKE PAYMENT FOR APPLICATION

Each completed **WHITE** or **YELLOW** Application Form must be accompanied by either one cheque or one banker's cashier order, which must be stapled to the top left hand corner of the Application Form.

If you pay by cheque, the cheque must:

- (a) be in Hong Kong dollars;
- (b) be drawn on your Hong Kong dollar bank account in Hong Kong;
- (c) bear your account name (or, in the case of joint applicants, the name of the first-named applicant) either pre-printed on the cheque or endorsed on the reverse of the cheque by an authorized signatory of the bank on which it is drawn, which must be the same as the name on your Application Form (or, in the case of joint applicants, the name of the first-named applicant). If the cheque is drawn on a joint account, one of the joint account names must be the same as the name of the first-named applicant);
- (d) be made payable to "Bank of China (Hong Kong) Nominees Limited — China Nonferrous Mining Public Offer";
- (e) be crossed "Account Payee Only"; and
- (f) not be post-dated.

Your application may be rejected if your cheque does not meet all of these requirements or is dishonored on first presentation.

If you pay by banker's cashier order, the banker's cashier order must:

- (a) be in Hong Kong dollars;
- (b) be issued by a licensed bank in Hong Kong and have your name certified on the reverse of the banker's cashier order by an authorized signatory of the bank on which it is drawn. The name on the reverse of the banker's cashier order and the name of the Application Form must be the same. If the application is a joint application, the name on the back of the banker's cashier order must be the same as the name of the first-named applicant;
- (c) be made payable to "Bank of China (Hong Kong) Nominees Limited — China Nonferrous Mining Public Offer";
- (d) be crossed "Account Payee Only"; and
- (e) not be post-dated.

Your application may be rejected if your banker's cashier order does not meet all of those requirements.

The right is reserved to present all or any remittance for payment. However, your cheque or banker's cashier order will not be presented for payment before 12:00 noon on Monday, June 25,

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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2012. We will not give you a receipt for your payment. We will keep any interest accrued on your application monies (up until, in the case of monies to be refunded, the date of dispatch of refund cheques). The right is also reserved to retain any share certificates and/or any surplus application monies or refunds pending clearance of your cheque or banker's cashier order.

### MINIMUM SUBSCRIPTION AMOUNT AND PERMITTED NUMBERS

You may use the Application Forms to subscribe for a minimum of 1,000 Hong Kong Offer Shares or for one of the numbers set forth in the table in the Application Forms.

### POWER OF ATTORNEY

If your application is made by a duly authorized attorney, our Company or the Joint Global Coordinators or the Hong Kong Underwriters and their respective agents or nominees, each severally, in its capacity as our agent, may accept your application at its discretion and subject to any conditions as any of them may think fit, including production of evidence of the authority of your attorney. We and the Joint Global Coordinators, in its capacity as our agent, will have the full discretion to reject or accept any application, in full or in part, without assigning any reason.

### HOW MANY APPLICATIONS YOU MAY MAKE

You may make one application for our Offer Shares. You may, however, make more than one application for Hong Kong Offer Shares only if you are a nominee, in which case you may use the **WHITE** or **YELLOW** Application Form, and lodge more than one Application Form in your own name on behalf of different beneficial owners. In the box on the Application Form marked "For nominees" you must include:

- an account number; or
- some other identification code,

for each beneficial owner (or in the case of joint beneficial owners, for each such beneficial owner). If you do not include this information, the application will be treated as being made for your benefit. Otherwise, multiple applications or suspected multiple applications are liable to be rejected.

It will be a term and condition of all applications that, by completing and delivering an Application Form, you:

- (if the application is made for your own benefit) warrant that this is the only application which will be made for your benefit on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider through **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)); and
- (if you are an agent for another person) warrant that you have made reasonable inquiries of that other person that this is the only application which will be made for the benefit of that

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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other person on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider through **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)), and that you are duly authorized to sign the Application Form as that other person's agent.

Except where you are a nominee and provide the information required to be provided in your applications, all of your applications will be rejected as multiple applications if you, or you and your joint applicant(s) together:

- make more than one application (whether individually or jointly) on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider through **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk));
- both apply (whether individually or jointly) on a **WHITE** Application Form and on **YELLOW** Application Form or on one **WHITE** or **YELLOW** Application Form and give an electronic application instruction to the designated **White Form eIPO** Service Provider through **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk));
- apply on a **WHITE** or **YELLOW** Application Form (whether individually or jointly) or by giving an electronic application instruction to the designated **White Form eIPO** Service Provider through **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)) for more than 43,500,000 Hong Kong Offer Shares, being 50% of the Hong Kong Offer Shares initially available in the Hong Kong Public Offering to the public as referred to under the section headed "How to Apply for Hong Kong Offer Shares" in the Prospectus; or
- have applied for or taken up, or have indicated an interest in applying for, or have been or will be placed or allocated (including conditionally and/or provisionally) any Offer Shares under the International Offering.

If you apply by means of **White Form eIPO**, once you complete payment in respect of any electronic application instruction given by you or for your benefit to the designated **White Form eIPO** Service Provider to make an application for Hong Kong Offer Shares, an actual application will be deemed to have been made. For the avoidance of doubt, giving an electronic application instruction under **White Form eIPO** more than once and obtaining different application reference numbers without effecting full payment in respect of a particular reference number will not constitute an actual application.

If you are suspected of submitting more than one application through the **White Form eIPO** service by giving electronic application instructions through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) and completing payment in respect of such electronic application instructions, or of submitting one application through the **White Form eIPO** service and one or more applications by any other means, all of your applications are liable to be rejected.

All of your applications for the Hong Kong Offer Shares are liable to be rejected as multiple applications if more than one application is made for your benefit. If an application is made by an unlisted company and:

- the principal business of that company is dealing in securities, and
- you exercise statutory control over that company,

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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then the application will be treated as being for your benefit.

“Unlisted company” means a company with no equity securities listed on the Hong Kong Stock Exchange.

“Statutory control” in relation to a company means you:

- control the composition of the board of directors of that company;
- control more than half of the voting power of that company; or
- hold more than half of the issued share capital of that company (not counting any part of it which carries no right to participate beyond a specified amount in a distribution of either profits or capital).

### TIME FOR THE PUBLIC TO APPLY FOR HONG KONG OFFER SHARES

#### Applications on WHITE or YELLOW Application Forms

Completed WHITE or YELLOW Application Forms, together with payment attached, must be lodged by 12:00 noon on Monday, June 25, 2012, or, if the application lists are not open on that day due to bad weather, then by 12:00 noon on the next Business Day when such lists are open as described in the paragraph headed “— Effect of Bad Weather on the Opening of the Application Lists” below.

Your completed Application form, with full payment in Hong Kong dollars attached, should be deposited in the special collection boxes provided at any of the branches of the receiving bankers listed above in the paragraph headed “— Where to Collect the Prospectus and Application Forms” at the following times:

Wednesday, June 20, 2012 — 9:00 a.m. to 5:00 p.m.

Thursday, June 21, 2012 — 9:00 a.m. to 5:00 p.m.

Friday, June 22, 2012 — 9:00 a.m. to 5:00 p.m.

Monday, June 25, 2012 — 9:00 a.m. to 12:00 noon

The application lists will be open between 11:45 a.m. and 12:00 noon on Monday, June 25, 2012.

No proceedings will be taken on applications for our Hong Kong Offer Shares and no allotment of any such Hong Kong Offer Shares will be made until the closing of the application lists. No allocation of any of our Hong Kong Offer Shares will be made later than the fifth day after the time of the opening of the application lists (excluding for this purpose any day which is Saturday, Sunday or public holiday in Hong Kong).

#### EFFECT OF BAD WEATHER ON THE OPENING OF THE APPLICATION LISTS

The application lists will not open if there is:

- (a) a tropical cyclone warning signal number 8 or above, or
- (b) a “black” rainstorm warning signal,

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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in force in Hong Kong at any time between 9:00 a.m. and 12:00 noon on Monday, June 25, 2012. Instead they will open between 11:45 a.m. and 12:00 noon on the next Business Day which does not have either of those warnings in force in Hong Kong at any time between 9:00 a.m. and 12:00 noon.

In the event of the above-mentioned tropical cyclone or rainstorm on Monday, June 25, 2012, the latest time for lodging your Application Forms will be postponed accordingly to the next Business Day which does not have either of those warning signals in force in Hong Kong at anytime between 9:00 a.m. and 12:00 noon on such day.

### PUBLICATION OF RESULTS

We expect to publish the basis of allotment and the results of applications under the Hong Kong Public Offering in the South China Morning Post (in English) and the Hong Kong Economic Times (in Chinese) and on our website at [www.cnmcl.net](http://www.cnmcl.net) and the website of the Hong Kong Stock Exchange at [www.hkexnews.hk](http://www.hkexnews.hk) on Thursday, June 28, 2012.

The results of allocations and the Hong Kong identity card/passport/Hong Kong business registration numbers of successful applicants under the Hong Kong Public Offering will be available at the times and dates and in the manner specified below:

- Results of allocations for the Hong Kong Public Offering will be available from our Company's website at [www.cnmcl.net](http://www.cnmcl.net) and the website of the Hong Kong Stock Exchange at [www.hkexnews.hk](http://www.hkexnews.hk) on Thursday, June 28, 2012;
- Results of allocations for the Hong Kong Public Offering will be available from the designated results of allocations website at [www.iporeresults.com.hk](http://www.iporeresults.com.hk) on a 24-hour basis from 8:00 a.m. on Thursday, June 28, 2012 to 12:00 midnight on Wednesday, July 4, 2012. The user of the results of allocations website at [www.iporeresults.com.hk](http://www.iporeresults.com.hk) will be required to key in the Hong Kong identity card/passport/Hong Kong business registration certificate number provided in his/her/its application to search for his/her/its own allocation result;
- Results of allocations will be available from our Hong Kong Public Offering allocation results telephone enquiry hotline. Applicants may find out whether or not their application has been successful and the number of Hong Kong Offer Shares allocated to them, if any, by calling 2862 8669 between 9:00 a.m. and 10:00 p.m. from Thursday, June 28, 2012 to Sunday, July 1, 2012; and
- Special allocation results booklets setting out the results of allocations will be available for inspection during opening hours of branches of the receiving banks from Thursday, June 28, 2012 to Saturday, June 30, 2012 at the branches of the receiving bankers at the addresses set out in the headed "— Where to Collect the Prospectus and Application Forms" above.

### THE PRICE OF THE HONG KONG OFFER SHARES

You must pay the maximum indicative offer price of HK\$2.80 per Share, with 1% brokerage fee, 0.005% Hong Kong Stock Exchange trading fee and 0.003% SFC transaction levy, in full when you apply for the Hong Kong Offer Shares. As such, for one board lot of 1,000 Shares, you must pay HK\$2,828.22 at the time of application. The Application Forms contain tables showing the exact

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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amount payable for certain numbers of a board lot of Shares up to 43,500,000 Hong Kong Offer Shares. You must pay the amount payable upon application for the Shares by cheque or banker's cashier order in accordance with the terms contained in the Application Form.

If your application is successful, the brokerage fee will be paid to participants of the Hong Kong Stock Exchange or the Hong Kong Stock Exchange (as the case may be); the Hong Kong Stock Exchange trading fee will be paid to the Hong Kong Stock Exchange; and the SFC transaction levy will be collected by the Hong Kong Stock Exchange on behalf of the SFC.

### REFUND OF APPLICATION MONIES

If:

- the Offer Price, as finally determined, is less than HK\$2.80 per Share (excluding brokerage fee, SFC transaction levy and Hong Kong Stock Exchange trading fee) that you initially paid upon application;
- if your application is partially unsuccessful;
- if your application is wholly unsuccessful;
- the conditions of the Global Offering are not fulfilled in accordance with the section headed "Structure of the Global Offering — Conditions of the Hong Kong Public Offering" in this prospectus; or
- any application is revoked or any allocation pursuant thereto has become void,

we will, in each case, refund the difference per Offer Share and/or your surplus application monies or your application monies, including the 1% brokerage fee, 0.005% Hong Kong Stock Exchange trading fee and 0.003% SFC transaction levy that you paid to the extent attributable to the surplus application monies. We will not pay interest on any refunded amount. It is intended that special efforts will be made to avoid any undue delay in refunding application monies where appropriate.

All refund cheques will be crossed "Account Payee Only" made out to you, or if you are joint applicants, to the first-named applicant on your Application Form. Part of your Hong Kong identity card number/passport number, or, if you are joint applicants, part of the Hong Kong identity card number/passport number of the first-named applicant, provided by you may be printed on your refund cheque, if any. Such data would also be transferred to a third party for refund purposes. Your banker may require verification of your Hong Kong identity card number/passport number before encashment of your refund cheque. Inaccurate completion of your Hong Kong identity card number/passport number may lead to delay in encashment of or may invalidate your refund cheque.



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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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### DISPATCH/COLLECTION OF SHARE CERTIFICATES/e-REFUND PAYMENT INSTRUCTIONS/REFUND CHEQUES

No temporary documents of title will be issued in respect of our Hong Kong Offer Shares. No receipt will be issued for sums paid on application. Subject to the provisions below relating to personal collection, share certificates and refund cheques will be sent to you in due course by ordinary post, at your own risk, to the address specified in your application:

- (a) for applications on **WHITE** Application Forms or by giving electronic application instructions through **White Form eIPO** service: (i) share certificate(s) for the Hong Kong Offer Shares you have applied for, if the application is wholly successful; or (ii) share certificate(s) for the number of Hong Kong Offer Shares you have successfully applied for, if the application is partially successful, and/or
- (b) for applications on **WHITE** or **YELLOW** Application Forms, a refund cheque or refund cheques crossed “Account Payee Only” in favor of the applicant (or, in the case of joint applicants, the first-named applicant) for: (i) the surplus application monies for the Hong Kong Offer Shares unsuccessfully applied for, if the application is partially unsuccessful; or (ii) all the application monies, if the application is wholly unsuccessful; and/or (iii) the difference between the Offer Price and the initial price per Share paid on application in the event that the Offer Price as finally determined is less than the initial price per Share paid on application, in each case including the related 1% brokerage fee, 0.005% Hong Kong Stock Exchange trading fee and 0.003% SFC transaction levy, but without interest.
- (c) for applicants applying through the **White Form eIPO** service by paying the application monies through a single bank account and applicant’s application is wholly or partially unsuccessful and/or the final Offer Price being different from the Offer Price initially paid on applicant’s application, e-Refund payment instructions (if any) will be dispatched to application payment account on or before Thursday, June 28, 2012. For wholly successful and partially successful applications on **YELLOW** Application Forms, share certificates that the applicants have successfully applied for will be deposited into CCASS as described in the paragraph headed “— Dispatch/Collection of Share Certificates/e-Refund Payment Instructions/Refund Cheques — Personal collection for **YELLOW** Application Forms” below.

Subject to personal collection mentioned below, refund cheques for surplus application monies (if any) in respect of wholly and partially unsuccessful under **WHITE** or **YELLOW** Application Forms or the difference between the Offer Price as finally determined and the initial price per Share paid on application, in each case including 1% brokerage fee, 0.005% Hong Kong Stock Exchange trading fee and 0.003% SFC transaction levy, as well as share certificates for wholly and partially successful applications under **WHITE** Application Forms or through the **White Form eIPO** are expected to be posted on or before Thursday, June 28, 2012. No interest will be paid thereon. We reserve the right to retain any share certificates and any surplus application monies pending clearance of your cheque(s).

Part of your Hong Kong identity card number/passport number, or, if you are joint applicants, part of the Hong Kong identity card number/passport number of the first-named applicant, provided by you may be printed on your refund cheque, if any. Such data would also be transferred to a third party for refund purposes. Your banker may require verification of your Hong Kong identity card number/ passport number before encashment of your refund cheque. Inaccurate completion of your

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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Hong Kong identity card number/passport number may lead to delay in encashment of or may invalidate your refund cheque.

Our share certificates for the Offer Shares will only become valid certificates of title at 8:00 a.m. on Friday, June 29, 2012 provided that:

- the Global Offering has become unconditional in all respects; and
- the right of termination as described in the section headed “Underwriting — Underwriting Arrangements and Expenses — Hong Kong Public Offering — Grounds for termination” to this prospectus has not been exercised.

### **Personal collection for WHITE Application Forms**

If you have (i) applied for 1,000,000 Hong Kong Offer Shares or more on a **WHITE** Application Form, (ii) indicated your intention in your Application Form to collect your refund cheque(s) (if applicable) and/or share certificate(s) (if applicable) for Hong Kong Offer Shares from our Hong Kong Share Registrar, and (iii) provided all information required by your Application Form, you may collect (if applicable) refund cheque(s) and (if applicable) share certificate(s) for Hong Kong Offer Shares from our Hong Kong Share Registrar, Computershare Hong Kong Investor Services Limited, at Shops 1712-1716, 17th Floor, Hopewell Centre, 183 Queen’s Road East, Wanchai, Hong Kong from 9:00 a.m. to 1:00 p.m. on Thursday, June 28, 2012 or any other place and date and time notified by us in the South China Morning Post (in English) and the Hong Kong Economic Times (in Chinese) as the date of collection/dispatch of share certificates/e-Refund payment instructions/ refund cheques. If you are an individual and have elected for personal collection, you may not authorize any other person to make collection on your behalf. If you are a corporate applicant and have elected for personal collection, you must attend by your authorized representative bearing a letter of authorization from your corporation stamped with your corporation’s chop. Both individuals and authorized representatives (if applicable) must produce, at the time of collection, evidence of identity acceptable to our Hong Kong Share Registrar. If you do not collect your refund cheque(s) and share certificate(s) personally within the time specified for collection, they will be promptly sent by ordinary post to the address on your Application Form and at your own risk.

If you have applied for less than 1,000,000 Hong Kong Offer Shares or if you have applied for 1,000,000 Hong Kong Offer Shares or more, but have not indicated in your **WHITE** Application Form that you wish to collect your share certificate(s) (if applicable) and/or refund cheque(s) in person, your share certificate(s) (if applicable) and/or refund cheque(s) will be sent to the address on your Application Form on Thursday, June 28, 2012 by ordinary post and at your own risk.

### **Personal collection for YELLOW Application Forms**

If you have (i) applied for 1,000,000 Hong Kong Offer Shares or more on a **YELLOW** Application Form, (ii) indicated your intention in your Application Form to collect your refund cheque(s) from our Hong Kong Share Registrar, and (iii) provided all information required by your Application Form, you may collect (if applicable) refund cheque(s) from our Hong Kong Share Registrar in the same way as applicants using **WHITE** Application Forms as described above.

If you have applied for less than 1,000,000 Hong Kong Offer Shares or if you have applied for 1,000,000 Hong Kong Offer Shares or more, but have not indicated in your **YELLOW** Application Form that you wish to collect your share certificate(s) (if applicable) and/or refund cheque(s) in

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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person, your share certificate(s) (if applicable) and/or refund cheque(s) will be sent to the address on your Application Form on Thursday, June 28, 2012 by ordinary post and at your own risk.

If you have applied for Hong Kong Offer Shares using a **YELLOW** Application Form and your application is wholly or partially successful, your share certificate(s) for Hong Kong Offer Shares you have successfully applied for will be issued in the name of HKSCC Nominees and deposited directly into CCASS for credit to your CCASS Investor Participant stock account or the stock account of your designated CCASS Participant as instructed by you in your Application Form on Thursday, June 28, 2012, or, under contingent situations, on any other date as will be determined by HKSCC or HKSCC Nominees.

### **If You Have Applied Through a Designated CCASS Participant (Other Than a CCASS Investor Participant)**

For Offer Shares credited to the stock account of your designated CCASS Participant (other than CCASS Investor Participant), you can check the number of Offer Shares allotted to you with that CCASS Participant.

### **If You Have Applied as a CCASS Investor Participant**

The results of CCASS Investor Participants' applications together with the results of the public offer is expected to be made available in the manner described in the paragraph headed "How to Apply for Hong Kong Offer Shares — Publication of Results" above on Thursday, June 28, 2012. You should check the announcement published by us and report any discrepancies to HKSCC before 5:00 p.m. on Thursday, June 28, 2012 or any other date HKSCC or HKSCC Nominees chooses. Immediately after the credit of the Offer Shares to your stock account, you can check your new account balance via the CCASS Phone System and CCASS Internet System (under the procedures contained in HKSCC's "An Operating Guide for Investor Participants" in effect from time to time). HKSCC will also make available to you an activity statement showing the number of Offer Shares credited to your stock account.

### **If You Have Applied Through White Form eIPO Service**

If you have applied for 1,000,000 Hong Kong Offer Shares or more through the **White Form eIPO** service by submitting an electronic application to the designated **White Form eIPO** Service Provider through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) and your application is wholly or partially successful, you may collect your share certificate(s) (where applicable) in person from our Hong Kong Share Registrar, Computershare Hong Kong Investor Services Limited, at Shops 1712-1716, 17th Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong from 9:00 a.m. to 1:00 p.m. on Thursday, June 28, 2012, or such other date as notified by our Company in the newspapers as the date of dispatch/ collection of share certificates/e-Refund payment instructions/ refund cheques.

If you do not collect your share certificate(s) personally within the time specified for collection, they will be sent to the address specified in your application instructions to the designated **White Form eIPO** Service Provider promptly thereafter by ordinary post and at your own risk.

If you have applied for less than 1,000,000 Hong Kong Offer shares, your share certificate(s) (where applicable) will be sent to the address specified in your application instructions to the designated **White Form eIPO** Service Provider through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) on Thursday, June 28, 2012 by ordinary post and at your own risk.

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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Applicants who used a single account to pay the application monies may have e-Refund payment instructions (if any) dispatched to the application payment account on Thursday, June 28, 2012.

Applicants who used multi-bank accounts to pay the application monies may have refund cheques (if any) sent to the address specified in their application instructions to the designated **White Form eIPO** Service Provider by ordinary post and at their own risk on Thursday, June 28, 2012.

Please also note the additional information relating to refund of application monies overpaid, application money underpaid or applications rejected by the designated **White Form eIPO** Service Provider set out in the paragraph headed “— How to Apply Using **White Form eIPO** — Additional Information for Applicants Applying Through **White Form eIPO**” below.

### HOW TO APPLY USING WHITE FORM eIPO

- (a) You may apply through **White Form eIPO** service by submitting an application through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk). If you apply through **White Form eIPO** the Shares will be issued in your own name.
- (b) Detailed instructions for application through the **White Form eIPO** service are set out on the designated website at [www.eipo.com.hk](http://www.eipo.com.hk). You should read these instructions carefully. If you do not follow the instructions, your application may be rejected by the designated **White Form eIPO** Service Provider and may not be submitted to us.
- (c) If you give electronic application instructions through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) you will have authorized the designated **White Form eIPO** Service Provider to apply on the terms and conditions set out in this prospectus, as supplemented and amended by the terms and conditions applicable to the **White Form eIPO** service.
- (d) In addition to the terms and conditions set out in this prospectus, the designated **White Form eIPO** Service Provider may impose additional terms and conditions upon you for the use of the **White Form eIPO** service. Such terms and conditions are set out on the designated website at [www.eipo.com.hk](http://www.eipo.com.hk). You will be required to read, understand and agree to such terms and conditions in full prior to making any application.
- (e) By submitting an application to the designated **White Form eIPO** Service Provider through the **White Form eIPO** service, you are deemed to have authorized the designated **White Form eIPO** Service Provider to transfer the details of your application to our company and our Hong Kong Share Registrar.
- (f) You may submit an application through the **White Form eIPO** service in respect of a minimum of a board lot of 1,000 Hong Kong Offer Shares. Each electronic application instruction in respect of more than a board lot of 1,000 Hong Kong Offer Shares must be in one of the numbers set out in the table in the Application Forms, or as otherwise specified on the designated website at [www.eipo.com.hk](http://www.eipo.com.hk).
- (g) You should give electronic application instructions through the **White Form eIPO** service at the times set out in the paragraph headed “— Time for Applying Through **White Form eIPO** Service” below. You should make payment for your application made by **White Form eIPO** service in accordance with the methods and instructions set out in the designated website at [www.eipo.com.hk](http://www.eipo.com.hk). If you do not make complete payment of the application monies (including any related fees) on or before 12:00 noon on Monday, June 25, 2012 or such later time as

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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described under the paragraph headed “— Effect of Bad Weather on the Opening of the Application Lists” above for further details, the designated **White Form eIPO** Service Provider will reject your application and your application monies will be returned to you in the manner described in the designated website at [www.eipo.com.hk](http://www.eipo.com.hk).

- (h) **Warning:** The application for Hong Kong Offer Shares through the **White Form eIPO** service is only a facility provided by the designated **White Form eIPO** Service Provider to public investors. Our company, our Directors, the Joint Global Coordinators, the Joint Bookrunners, the Joint Sponsors, the Joint Bookrunners, the Joint Lead Managers, the Underwriters and the **White Form eIPO** Service Provider take no responsibility for such applications, and provide no assurance that applications through the **White Form eIPO** service will be submitted to us or that you will be allotted any Hong Kong Offer Shares.
- (i) Please note that internet services may have capacity limitations and/or be subject to service interruptions from time to time. To ensure that you can submit your applications through the **White Form eIPO** service, you are advised not to wait until the last day for submitting applications in the Hong Kong Public Offering to submit your electronic application instructions. In the event that you have problems connecting to the designated website for the **White Form eIPO** service, you should submit a **WHITE** Application Form. However, once you have submitted electronic application instructions and completed payment in full using the application reference number provided to you on the designated website, you will be deemed to have made an actual application and should not submit a **WHITE** Application Form. Please refer to the paragraph headed “— How Many Applications You May Make” above for further details.

### Conditions of the White Form eIPO service

In using the **White Form eIPO** service to apply for the Hong Kong Offer Shares, you shall be deemed to have accepted the following conditions:

That you:

- (a) apply for the desired number of Hong Kong Offer Shares, on the terms and conditions of this prospectus and the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk), and subject to the Memorandum of Association and Articles of Association;
- (b) undertake and agree to accept the Hong Kong Offer Shares applied for, or any lesser number allotted to you on such application;
- (c) declare that it is the only application made and the only application intended by the applicant to be made whether on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider under the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)), to benefit you or the person for whose benefit you are applying;
- (d) undertake and confirm that you and the person for whose benefit you are applying for has not applied for or taken up, or indicated an interest for, or received or been placed or allocated (including conditionally and/or provisionally) and will not apply for or take up, or indicate an interest for, any Offer Shares under the International Offering, nor otherwise participate in the International Offering;

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- (e) understand that such declarations and representations will be relied upon by our Company and the Joint Global Coordinators in deciding whether or not to make any allotment of Hong Kong Offer Shares in response to such application;
- (f) authorize our Company to place the name(s) of the underlying applicants on the register of members of our Company as the holder(s) of any Hong Kong Offer Shares to be allotted to them, and (subject to the terms and conditions set out in this prospectus) to send any share certificate(s) by ordinary post at the applicant's own risk to the address given on the **White Form eIPO** application except where the underlying applicant has applied for 1,000,000 or more Hong Kong Offer Shares and that underlying applicant collects any share certificate(s) in person in accordance with the procedures prescribed in the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk) and this prospectus;
- (g) request that any e-Refund payment instructions be dispatched to the application payment account where the applicants had paid the application monies from a single bank account;
- (h) request that any refund cheque(s) be made payable to the applicant who has used multiple bank accounts to pay for the application monies;
- (i) have read the terms and conditions and application procedures set out in the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk) and this prospectus and agrees to be bound by them;
- (j) represent, warrant and undertake that you and any persons for whose benefit you are applying are non-U.S. person(s) outside the United States (as defined in Regulation S), when completing and submitting the application or is a person described in paragraph (h)(3) of Rule 902 of Regulation S or the allotment of or application for the Hong Kong Offer Shares to or by whom or for whose benefit the application is made would not require our Company, the Joint Global Coordinators and the Hong Kong Underwriters to comply with any requirements under any law or regulation (whether or not having the force of law) of any territory outside Hong Kong; and
- (k) agree that such application, any acceptance of it and the resulting contract, will be governed by and construed in accordance with the law of Hong Kong.

### Supplemental Information

If any supplement to this prospectus is issued, applicant(s) who have already submitted an Application Form or electronic application instruction through the **White Form eIPO** service may or may not (depending on the information contained in the supplement) be notified that they can withdraw their applications. If applicant(s) have not been so notified, or if applicant(s) have been notified but have not withdrawn their applications in accordance with the procedure to be notified, all applications that have been submitted remain valid and may be accepted. Subject to the above and below, an application once made is irrevocable and applicants shall be deemed to have applied on the basis of this prospectus as supplemented.

### Effect of Completing and Submitting an Application Through the White Form eIPO service

By completing and submitting an application through the **White Form eIPO** service, you for yourself or as agent or nominee and on behalf of any person for whom you act as agent or nominee shall be deemed to:

- (a) instruct and authorize our Company and/or the Joint Global Coordinators as agent for our Company (or its respective agents or nominees) to do on your behalf all things necessary to



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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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register any Hong Kong Offer Shares allotted to you in your name as required by the Articles of Association and otherwise to give effect to the arrangements described in this prospectus and the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk);

- (b) confirm that you have only relied on the information and representations contained in this prospectus in making your application and will not rely on any other information and representations save as set out in any supplement to this prospectus;
- (c) agree that our Company the Joint Sponsor, the Hong Kong Underwriters, the Joint Global Coordinators and their respective directors, officers, employees, partners, agents, advisors and any other parties involved in the Global Offering are liable only for the information and representations contained in this prospectus and any supplement thereto;
- (d) agree (without prejudice to any other rights which you may have) that once your application has been accepted, you may not revoke or rescind it because of an innocent misrepresentation;
- (e) (if the application is made by an agent on your behalf) warrant that you have validly and irrevocably conferred on your agent all necessary power and authority to make the application;
- (f) (if the application is made for your own benefit) warrant that it is the only application which will be made for your benefit on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider under the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk));
- (g) (if you are an agent for another person) warrant reasonable enquiries have been made of that other person that it is the only application which will be made for the benefit of that other person on a **WHITE** or **YELLOW** Application Form or by giving electronic application instructions to the designated **White Form eIPO** Service Provider under the **White Form eIPO** service ([www.eipo.com.hk](http://www.eipo.com.hk)), and that you are duly authorized to sign the application as that other person's agent;
- (h) undertake and confirm that, you (if the application is made for your benefit) or the person(s) for whose benefit you have made the application have not applied for or taken up, or indicated an interest for, and will not apply for, taken up or indicate an interest for, any International Offer Shares nor otherwise participate in the International Offering;
- (i) agree that once your application is accepted, your application will be evidenced by the results of the Hong Kong Public Offering made available by our Company;
- (j) agree to disclose to our Company, our Hong Kong Share Registrar, receiving bankers, the Joint Sponsors, the Hong Kong Underwriters, the Joint Global Coordinators and their respective advisors and agents any personal data and any information which they require about you or the person(s) for whose benefit you have made the application;
- (k) agree with our Company and each Shareholder, and our Company agrees with each of the Shareholders, to observe and comply with the Companies Ordinance, the Memorandum and Articles of Association of our Company;
- (l) agree with our Company, for itself and for the benefit of each Shareholder of our Company that the Shares are freely transferable by the holders thereof;



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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- (m) authorize our Company to enter into a contract on your behalf with each of our Directors and officers of our Company whereby such Director and officers undertake to observe and comply with their obligations to shareholders as stipulated in the Memorandum of Association and Articles of Association;
- (n) represent, warrant and undertake that you are not, and none of the other person(s) for whose benefit you are applying, is a U.S. person (as defined in Regulation S);
- (o) represent and warrant that you understand that the Hong Kong Offer Shares have not been and will not be registered under the U.S. Securities Act and you are outside the United States (as defined in Regulation S) when completing the application or are a person described in paragraph (h)(3) of Rule 902 of Regulation S;
- (p) confirm that you have read the terms and conditions and application procedures set out in this prospectus and the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk) and agree to be bound by them;
- (q) undertake and agree to accept the Hong Kong Offer Shares applied for, or any lesser number allocated to you under the application; and
- (r) if the laws of any place outside Hong Kong are applicable to your application, you agree and warrant that you have complied with all such laws and none of our Company, the Joint Global Coordinators and the Hong Kong Underwriters nor any of their respective directors, officers or advisors will infringe any laws outside Hong Kong as a result of the acceptance of your offer to subscribe, or any actions arising from your rights and obligations under the terms and conditions contained in this prospectus and the **White Form eIPO** designated website at [www.eipo.com.hk](http://www.eipo.com.hk). Our Company, the Joint Global Coordinators, the Joint Sponsors, the Hong Kong Underwriters and their respective directors, officers, employees, partners, agents, advisors, and any other parties involved in the Global Offering are entitled to rely on any warranty, representation or declaration made by you in such application.

### **Time for Applying Through White Form eIPO Service**

You may submit your application to the designated **White Form eIPO** Service Provider through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) from 9:00 a.m. Wednesday, June 20, 2012 until 11:30 a.m. on Monday, June 25, 2012 or such later time as described under the paragraph headed “— Effect of Bad Weather on the Opening of the Application Lists” above (24 hours daily, except on the last application day). The latest time for completing full payment of application monies in respect of such applications will be 12:00 noon on Monday, June 25, 2012, the last application day, or, if the application lists are not open on that day, then by the time and date stated in the paragraph headed “— Effect of Bad Weather on the Opening of the Application Lists” above.

You will not be permitted to submit your application to the designated **White Form eIPO** Service Provider through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) after 11:30 a.m. on the last day for submitting applications. If you have already submitted your application and obtained an application reference number from the website prior to 11:30 a.m., you will be permitted to continue the application process (by completing payment of application monies) until 12:00 noon on the last day for submitting applications, when the application lists close.

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### Environmental Protection

The obvious advantage of **White Form eIPO** is to save the use of paper via the self-serviced and electronic application process. Computershare Hong Kong Investor Services Limited, being the designated **White Form eIPO** Service Provider, will contribute HK\$2 for each “China Nonferrous Mining Corporation Limited” **White Form eIPO** application submitted via [www.eipo.com.hk](http://www.eipo.com.hk) to support the funding of “Source of DongJiang — Hong Kong Forest” project initiated by Friends of the Earth (HK).

### Additional Information for Applicants Applying Through White Form eIPO

For the purposes of allocating Hong Kong Offer Shares, each applicant giving electronic application instructions through **White Form eIPO** service to the **White Form eIPO** Service Provider through the designated website at [www.eipo.com.hk](http://www.eipo.com.hk) will be treated as an applicant.

If your payment of application monies is insufficient, or in excess of the required amount, having regard to the number of Hong Kong Offer Shares for which you have applied, or if your application is otherwise rejected by the designated **White Form eIPO** Service Provider, the designated **White Form eIPO** Service Provider may adopt alternative arrangements for the refund of monies to you. Please refer to the additional information provided by the designated **White Form eIPO** Service Provider on the designated website at [www.eipo.com.hk](http://www.eipo.com.hk).

### CIRCUMSTANCES IN WHICH YOU WILL NOT BE ALLOTTED HONG KONG OFFER SHARES

Full details of the circumstances in which you will not be allotted Hong Kong Offer Shares are set out in notes attached to the Application Forms, you should read them carefully. In particular, you should note the following situations in which Hong Kong Offer Shares will not be allotted to you.

#### You May Only Revoke Your Application under Limited Circumstances

By completing and submitting an Application Form, your application may not be revoked on or before the fifth day after the time of opening of the application lists (excluding for this purpose any day which is a Saturday, Sunday or a public holiday in Hong Kong). This agreement will take effect as a collateral contract with us, and will become binding when you lodge your application. This collateral contract will be in consideration of our agreement not to offer any Hong Kong Offer Shares to any person before the fifth day after the time of opening of the application lists (excluding for this purpose any day which is a Saturday, Sunday or a public holiday in Hong Kong) except by means of one of the procedures referred to in this prospectus.

Your application may only be revoked on or before the fifth day after the time of opening of the application lists (excluding for this purpose any day which is a Saturday, Sunday or a public holiday in Hong Kong) if a person responsible for this prospectus under section 40 of the Companies Ordinance gives a public notice under such section to exclude or limit the responsibility of that person for this prospectus.

If any supplement to this prospectus is issued, applicant(s) who have already submitted an application may or may not (depending on the information contained in the supplement) be notified that they can withdraw their applications. If applicant(s) have not been so notified, or if applicant(s) have been notified but have not withdrawn their applications in accordance with the procedures provided, all applications that have been submitted will remain valid and may be accepted. Subject to the above, an application once made is irrevocable and applicants shall be deemed to have applied

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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on the basis of the prospectus as supplemented. If your application has been accepted, it cannot be revoked. For this purpose, acceptance of applications that are not rejected will be constituted by notification in the press of the results of allotment, and where such basis of allotment is subject to certain conditions or provides for allocation by ballot, such acceptance will be subject to the satisfaction of such conditions or results of the ballot, respectively.

### **Your Application May Be Accepted or Rejected at Our Discretion or Our Agent's Discretion**

We and our agents (including the Joint Global Coordinators or their agents) have full discretion to reject or accept any application, or to accept only part of an application. We, the Joint Global Coordinators, the Joint Bookrunners and the Hong Kong Underwriters, in their capacity as our agents, and our and their respective agents and nominees, do not have to provide any reason for any rejection or acceptance.

### **Your Application Will Be Rejected if You Do Not Comply with Certain Conditions**

Your application will be rejected if:

- you have made multiple applications or are suspected of having made multiple applications, including having indicated an interest for, or being placed (including conditionally and/or provisionally), any Offer Shares under the International Offering;
- your Application Form is not completed in accordance with the instructions as stated on such form;
- your electronic application instructions through the **White Form eIPO** service are not completed in accordance with the instructions, terms and conditions set out in the designated website at [www.eipo.com.hk](http://www.eipo.com.hk);
- our Company or the Joint Global Coordinators (on behalf of our Company) believe the acceptance of your application would violate the applicable securities laws, rules or regulations of the relevant jurisdiction;
- your payment is not made correctly;
- you pay by cheque or banker's cashier order and such cheque or banker's cashier order is dishonored on its first presentation;
- you or the person for whose benefit you apply for have applied for or taken up, or indicated an interest for, or have been or will be placed or allocated (including conditionally and/or provisionally) Offer Shares under the International Offering. By filling in any of the Application Forms or applying by giving electronic application instructions to the designated **White Form eIPO** Service Provider through the **White Form eIPO** service, you agree not to apply for Hong Kong Offer Shares as well as Offer Shares in the International Offering. Reasonable steps will be taken to identify and reject applications in the Hong Kong Public Offering from investors who have received Offer Shares in the International Offering, and to identify and reject indications of interest in the International Offering from investors who have received Hong Kong Offer Shares in the Hong Kong Public Offering;
- if you apply for more than 50% of the Hong Kong Offer Shares initially being offered in the Hong Kong Public Offering (that is 43,500,000 Offer Shares);

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## HOW TO APPLY FOR HONG KONG OFFER SHARES

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- your application for Offer Shares is not in one of the numbers set out in the table in the Application Form; and
- any of the Underwriting Agreements does not become unconditional in accordance with its terms or is terminated in accordance with its terms.

### **Your Application Will Not Be Accepted under Certain Circumstances**

Your application will not be accepted if either:

- the Offer Price is not agreed;
- any Underwriting Agreement does not become unconditional; or
- any Underwriting Agreement is terminated in accordance with its terms.

### **Your Allotment of Hong Kong Offer Shares Will Be Void under Certain Circumstances**

Your allotment of Hong Kong Offer Shares or the allotment of Hong Kong Offer Shares to HKSCC Nominees (if you apply by a **YELLOW** Application Form) will be void if the Listing Committee does not grant permission to list our Shares either:

- within three weeks from the closing of the applications lists; or
- within a longer period of up to six weeks if the Listing Committee notifies us of such longer period within three weeks of the closing of the application lists.

## **DEALINGS AND SETTLEMENT**

### **Commencement of Dealings in Our Shares on the Hong Kong Stock Exchange**

Dealings in our Shares on the Hong Kong Stock Exchange are expected to commence at 9:00 a.m. on Friday, June 29, 2012.

Our Shares will be traded on the Hong Kong Stock Exchange in board lots of 1,000 Shares. The stock code of our Shares is 1258.

### **Our Shares Will Be Eligible for Admission into CCASS**

If the Hong Kong Stock Exchange grants the listing of, and permission to deal in, our Shares on the Hong Kong Stock Exchange and we comply with the stock admission requirements of HKSCC, our Shares will be accepted as eligible securities by HKSCC for deposit, clearance and settlement in CCASS with effect from the Listing Date or any other date HKSCC chooses. Settlement of transactions between participants of the Hong Kong Stock Exchange is required to take place in CCASS on the second Business Day after any trading day.

All activities under CCASS are subject to the General Rules of CCASS and CCASS Operational Procedures in effect from time to time.

All necessary arrangements have been made for our Shares to be admitted into CCASS.

You should seek advice of your stockbroker or other professional advisor for details of the settlement arrangements as such arrangements will affect your rights and interests.

The following is the text of a report received from our reporting accountants, Deloitte Touche Tohmatsu, Certified Public Accountants, Hong Kong, for the purpose of incorporation in this prospectus.

**Deloitte.**  
**德勤**

德勤·關黃陳方會計師行  
香港金鐘道88號  
太古廣場一座35樓

Deloitte Touche Tohmatsu  
35/F One Pacific Place  
88 Queensway  
Hong Kong

June 20, 2012

The Directors  
China Nonferrous Mining Corporation Limited  
UBS AG, Hong Kong Branch  
China International Capital Corporation Hong Kong Securities Limited  
J.P. Morgan Securities (Asia Pacific) Limited

Dear Sirs,

We set out below our report on the financial information (the “Financial Information”) relating to China Nonferrous Mining Corporation Limited (the “Company”) and its subsidiaries (hereinafter collectively referred to as the “Group”) for each of the three years ended December 31, 2009, 2010 and 2011 (the “Relevant Years”) for inclusion in the prospectus of the Company dated June 20, 2012 (the “Prospectus”) in connection with the initial listing of the shares of the Company on the Main Board of The Stock Exchange of Hong Kong Limited (the “Stock Exchange”).

The Company, which acts as an investment holding company, was incorporated in Hong Kong with limited liability on July 18, 2011. Pursuant to a group reorganization, as more fully explained in the section headed “Our History and Reorganization” in the Prospectus (the “Reorganization”), the Company became the holding company of the companies now comprising the Group on December 2, 2011.

As at the date of this report, the Company had the following subsidiaries comprising the Group and an associate:

Name of company	Place and date of incorporation	Issued and fully paid-up capital	Equity interest attributable to the Company as at			Date of this report	Principal activities
			December 31,				
			2009	2010	2011		
			%	%	%	%	
<i>Subsidiaries</i>							
China Nonferrous Mining Holdings Limited (“CNMH”) (Note 1)	Ireland September 23, 2011	Euro171,152,002	—	—	100	100	Investment holding
NFC Africa Mining PLC (“NFC”) (Note 2)	Zambia March 5, 1998	US\$ 9,000,001	85	85	85	85	Mining and exploration of copper and production of copper concentrate

Name of company	Place and date of incorporation	Issued and fully paid-up capital	Equity interest attributable to the Company as at			Date of this report	Principal activities
			December 31,				
			2009	2010	2011		
			%	%	%	%	
<i>Subsidiaries (continued)</i>							
Chambishi Copper Smelter Limited ("CCS") (Note 2)	Zambia July 19, 2006	US\$ 2,000	60	60	60	60	Production and sale of blister copper and sulfuric acid
Sino-Metals Leach Zambia Limited ("SML") (Note 2,3)	Zambia December 3, 2004	US\$ 1,000	67.75	67.75	67.75	67.75	Production and sale of copper cathodes
CNMC Luanshya Copper Mines PLC ("Luanshya") (Note 2,4)	Zambia July 10, 2003	US\$ 10,000,001	80	80	80	80	Mining and exploration of copper and production of copper concentrate
Kakoso Metals Leach Limited ("Kakoso") (Note 2,5)	Zambia August 18, 2010	ZMK10,000,000	—	59.62	59.62	59.62	Inactive
Huachin Metals Leach SPRL ("Huachin") (Note 2,5)	Congo December 17, 2010	US\$ 10,000,000	—	42.34	42.34	42.34	Production and sale of copper cathodes and sulfuric acid
<i>Associate</i>							
Huachin Minerals SPRL (Note 2,6)	Congo January 27, 2011	US\$ 5,000,000	—	—	20.33	20.33	Mining, exploration and sale of copper ores

*Notes:*

- (1) This company is directly held by the Company.
- (2) These companies are indirectly held by the Company.
- (3) 55% and 15% of the issued and paid-up share capital of SML are directly held by CNMH and NFCA, respectively, following the Reorganization. The 55% shareholding in SML was transferred by China Nonferrous Metal Mining (Group) Co., Ltd. ("CNMC"), the ultimate holding company, to the Company and then to CNMH in the Reorganization.
- (4) The former name of this company was Luanshya Copper Mines PLC, of which 80% of shareholding was acquired by CNMC on July 7, 2009 (the "Date of Acquisition"). The 80% shareholding in Luanshya Copper Mines PLC was transferred by CNMC to the Company and then to CNMH in the Reorganization. Details of the acquisition are set out in note 31 of Section B to the Financial Information.
- (5) Incorporated by SML and other non-controlling shareholders, 88% and 62.5% shareholdings in Kakoso and Huachin, respectively, are directly held and controlled by SML.
- (6) 30% and 70% of the issued and paid-up share capital of this associate are directly held by SML and Mr. Ng Siu Kam, respectively. The Group paid the capital in February 2012.

The financial year end date of all the companies now comprising the Group and an associate is December 31.

The statutory financial statements of NFCA and Luanshya for the year ended December 31, 2009 prepared in accordance with the International Financial Reporting Standards (“IFRSs”) were audited by Deloitte & Touche, the certified public accountants registered in Zambia.

No audited financial statements have been prepared for the Company and CNMH since their incorporation as their first statutory financial statements are not yet due to be issued. No audited financial statements have been prepared for Huachin since its incorporation as there is no statutory requirement for Huachin to issue audited financial statements in Congo. For the purpose of this report, we have, however, reviewed all the relevant transactions of the Company, CNMH and Huachin since their respective dates of incorporation to December 31, 2011. Besides, no audited financial statements have been issued for NFCA for each of the two years ended December 31, 2010 and 2011, CCS for each of the three years ended December 31, 2009, 2010 and 2011, Luanshya for each of the two years ended December 31, 2010 and 2011, SML for each of the three years ended December 31, 2009, 2010 and 2011, and Kakoso since its date of incorporation to December 31, 2011 as their auditors are in the process of auditing such financial statements which are prepared in accordance with the IFRSs. The directors of the Company expect to approve and issue these audited financial statements before September 2012.

For the purpose of this report, the directors of the Company have prepared the consolidated financial statements of the Group for the Relevant Years (the “Underlying Financial Statements”) in accordance with Hong Kong Financial Reporting Standards (“HKFRSs”) issued by the Hong Kong Institute of Certified Public Accountants (the “HKICPA”). Deloitte Touche Tohmatsu CPA Ltd. has carried out an independent audit on the Underlying Financial Statements in accordance with Hong Kong Standards on Auditing issued by the HKICPA. We have examined the Underlying Financial Statements in accordance with the Auditing Guideline 3.340 “Prospectuses and the Reporting Accountant” as recommended by the HKICPA.

The Financial Information of the Group for the Relevant Years as set out in this report has been prepared from the Underlying Financial Statements, on the basis set out in Note 1 of section B to the Financial Information. No adjustments are considered necessary to the Underlying Financial Statements for the preparation of the Financial Information.

The Underlying Financial Statements are the responsibility of the directors of the Company who approved their issue. The directors of the Company are also responsible for the contents of the Prospectus in which this report is included. It is our responsibility to compile the Financial Information set out in this report from the Underlying Financial Statements, to form an independent opinion on the Financial Information and to report our opinion to you.

In our opinion, on the basis of presentation set out in note 1 of Section B below, the Financial Information gives, for the purpose of this report, a true and fair view of the state of affairs of the Company as at December 31, 2011 and of the Group as at December 31, 2009, 2010 and 2011 and of the consolidated results and consolidated cash flows of the Group for the Relevant Years.



## A. FINANCIAL INFORMATION

## CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Notes	Year ended December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
Revenue . . . . .	5,6	696,290	1,357,285	1,283,906
Cost of sales . . . . .		(604,550)	(1,141,146)	(1,095,648)
Gross profit . . . . .		91,740	216,139	188,258
Other income . . . . .	7	2,081	1,240	4,835
Distribution and selling expenses . . . . .		(6,236)	(21,863)	(27,917)
Administrative expenses . . . . .		(20,865)	(29,016)	(36,983)
Finance costs . . . . .	8	(5,330)	(8,232)	(9,248)
(Loss)/gain arising on change in fair value of derivatives . . . . .	25	(134)	(25,538)	10,369
Gain on bargain purchase . . . . .	31	48,945	—	—
Other expenses . . . . .	9	(4,374)	(5,146)	(11,004)
Profit before tax . . . . .		105,827	127,584	118,310
Income tax expense . . . . .	10	(11,480)	(20,202)	(15,020)
Profit for the year . . . . .	6,11	94,347	107,382	103,290
Profit and total comprehensive income attributable to:				
Owners of the Company . . . . .		81,674	73,911	70,014
Non-controlling interests . . . . .		12,673	33,471	33,276
		94,347	107,382	103,290
Earnings per share, in US¢ Basic . . . . .	14	3.81	2.84	2.69

## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

	Notes	At December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
<b>NON-CURRENT ASSETS</b>				
Property, plant and equipment	15	436,688	537,959	875,833
Restricted bank balances	21	2,059	2,002	9,978
Other assets	20	2,681	12,528	14,414
Finance lease receivables	16	—	—	23,351
Deferred tax assets	28	5,538	4,997	2,149
		<u>446,966</u>	<u>557,486</u>	<u>925,725</u>
<b>CURRENT ASSETS</b>				
Inventories	17	174,958	177,524	164,281
Finance lease receivables	16	—	—	6,483
Trade receivables	18	80,980	132,975	95,786
Amounts due from a customer under a construction contract	19	26,066	26,085	—
Prepayments and other receivables	20	144,261	110,395	56,084
Restricted bank balances	21	563	18,168	7,557
Bank balances and cash	21	194,302	336,789	217,303
		<u>621,130</u>	<u>801,936</u>	<u>547,494</u>
<b>CURRENT LIABILITIES</b>				
Trade payables	22	172,796	171,160	107,364
Other payables and accrued expenses	23	75,761	100,758	57,116
Income tax payable		4,342	1,535	87
Bank and other borrowings — due within one year	24	47,944	156,745	199,000
Derivatives, at fair value	25	134	10,101	775
		<u>300,977</u>	<u>440,299</u>	<u>364,342</u>
<b>NET CURRENT ASSETS</b>		<u>320,153</u>	<u>361,637</u>	<u>183,152</u>
<b>TOTAL ASSETS LESS CURRENT LIABILITIES</b>		<u>767,119</u>	<u>919,123</u>	<u>1,108,877</u>
<b>CAPITAL AND RESERVES</b>				
Capital	29	15,652	15,652	333,333
Share premium		—	—	35,256
Other reserves		130,253	130,253	—
Retained profits		121,162	172,798	3,715
Equity attributable to owners of the Company		267,067	318,703	372,304
Non-controlling interests		59,111	86,357	117,046
<b>TOTAL EQUITY</b>		<u>326,178</u>	<u>405,060</u>	<u>489,350</u>
<b>NON-CURRENT LIABILITIES</b>				
Bank and other borrowings — due after one year	24	378,661	424,661	512,179
Deferred revenue	26	—	5,627	11,458
Provision for restoration, rehabilitation and environmental costs	27	17,095	16,479	17,452
Deferred tax liabilities	28	45,185	67,296	78,438
		<u>440,941</u>	<u>514,063</u>	<u>619,527</u>
		<u>767,119</u>	<u>919,123</u>	<u>1,108,877</u>

## STATEMENT OF FINANCIAL POSITION OF THE COMPANY

	Note	December 31, 2011 <u>US\$'000</u>
<b>NON-CURRENT ASSETS</b>		
Investment in a subsidiary .....	30	315,859
Receivable from a subsidiary .....	30	<u>52,730</u>
		<u>368,589</u>
<b>CURRENT ASSETS</b>		
Prepayments .....		<u>1,719</u>
		<u>1,719</u>
<b>CURRENT LIABILITY</b>		
Amount due to the ultimate holding company .....		<u>4,000</u>
		<u>4,000</u>
<b>NET CURRENT LIABILITY</b> .....		<u>(2,281)</u>
<b>TOTAL ASSETS LESS CURRENT LIABILITIES</b> .....		<u>366,308</u>
<b>CAPITAL AND RESERVES</b>		
Capital .....		333,333
Share premium* .....		35,256
Accumulated losses .....		<u>(2,281)</u>
<b>TOTAL EQUITY</b> .....		<u>366,308</u>

\* Share premium represents the excess of the aggregate amount of (i) net assets of NFCA, Luanshya, CCS and SML attributable to the Company; and (ii) a receivable of US\$106,058,000 assigned to the Company over the total nominal value of the share capital issued by the Company in the Reorganization.

## CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

	Attributable to owners of the Company					Non-controlling interests	Total
	Capital	Share premium*	Other reserves**	Retained profits	Sub-total		
	US\$'000		US\$'000	US\$'000	US\$'000		
At January 1, 2009 . . . . .	7,652	—	88,253	45,284	141,189	51,771	192,960
Profit and total comprehensive income for the year . . . . .	—	—	—	81,674	81,674	12,673	94,347
Dividend declared (Note 13) . . . . .	—	—	—	(5,796)	(5,796)	(3,554)	(9,350)
Acquisition of a subsidiary (Note 31) . . . . .	8,000	—	42,000	—	50,000	(1,779)	48,221
At December 31, 2009 . . . . .	15,652	—	130,253	121,162	267,067	59,111	326,178
Profit and total comprehensive income for the year . . . . .	—	—	—	73,911	73,911	33,471	107,382
Dividend declared (Note 13) . . . . .	—	—	—	(22,275)	(22,275)	(6,225)	(28,500)
At December 31, 2010 . . . . .	15,652	—	130,253	172,798	318,703	86,357	405,060
Profit and total comprehensive income for the year . . . . .	—	—	—	70,014	70,014	33,276	103,290
Contribution from non-controlling shareholder of a subsidiary (Note 37(i)) . . . . .	—	—	—	—	—	3,750	3,750
Reorganization (Note 1) . . . . .	317,681	35,256	(130,253)	(222,684)	—	—	—
Dividend declared (Note 13) . . . . .	—	—	—	(16,413)	(16,413)	(6,337)	(22,750)
At December 31, 2011 . . . . .	<u>333,333</u>	<u>35,256</u>	<u>—</u>	<u>3,715</u>	<u>372,304</u>	<u>117,046</u>	<u>489,350</u>

\* Share premium represents the excess of the aggregate amount of (i) net assets of NFCA, Luanshya, CCS and SML attributable to the Company; and (ii) a receivable of US\$106,058,000 assigned to the Company over the total nominal value of the share capital issued by the Company in the Reorganization.

\*\* Other reserves as of December 31, 2009 and 2010 mainly comprise of share premium of group entities and investment cost paid by CNMC.

## CONSOLIDATED STATEMENTS OF CASH FLOWS

	Notes	Year ended December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
<b>OPERATING ACTIVITIES</b>				
Profit before tax		105,827	127,584	118,310
Adjustments for:				
Depreciation of property, plant and equipment	11	31,930	45,584	59,388
Interest income	7	(1,210)	(84)	(233)
Finance income earned under finance leases to a fellow subsidiary	7	—	—	(1,049)
Loss/(gain) arising on changes in fair value of derivatives	25	134	25,538	(10,369)
Impairment loss recognized/(reversed) on trade receivables, net	9	1,186	(1,568)	1,168
Loss/(gain) on disposal of property, plant and equipment, net	9	36	105	(605)
Gain on bargain purchase	31	(48,945)	—	—
Finance costs	8	5,330	8,232	9,248
Operating cash flows before movements in working capital		94,288	205,391	175,858
(Increase)/decrease in inventories		(120,157)	(2,566)	13,243
(Increase)/decrease in trade and other receivables, prepayments and other assets		(90,684)	(238)	74,075
(Increase)/decrease in investments in derivatives		(2,000)	(31,888)	5,001
Increase/(decrease) in trade and other payables and accrued expenses		144,340	8,010	(97,190)
Cash generated from operations		25,787	178,709	170,987
Income tax paid		(409)	(357)	(2,478)
<b>NET CASH FROM OPERATING ACTIVITIES</b>		<u>25,378</u>	<u>178,352</u>	<u>168,509</u>
<b>INVESTING ACTIVITIES</b>				
Purchase of property, plant and equipment		(126,883)	(146,974)	(393,049)
Increase in restricted bank balances		(32)	(17,548)	—
Decrease in restricted bank balances		—	—	2,635
Purchase of property, plant and equipment under finance leases to a fellow subsidiary		—	—	(34,881)
Repayment of finance lease receivables from a fellow subsidiary		—	—	5,047
Interest received		1,210	84	233
Finance income earned under finance leases to a fellow subsidiary received		—	—	1,049
Receipts of government grant		—	5,627	5,831
Proceeds from disposal of property, plant and equipment		468	104	715
<b>NET CASH USED IN INVESTING ACTIVITIES</b>		<u>(125,237)</u>	<u>(158,707)</u>	<u>(412,420)</u>

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<b>FINANCING ACTIVITIES</b>			
New bank and other borrowings raised . . . . .	284,785	165,801	287,139
Repayment of bank and other borrowings . . . . .	(48,537)	(11,000)	(118,039)
Dividends paid . . . . .	(5,803)	(18,025)	(21,413)
Dividends paid to non-controlling shareholders . . . . .	(3,547)	(3,075)	(7,237)
Interest paid . . . . .	(9,366)	(10,213)	(13,982)
<b>NET CASH FROM FINANCING ACTIVITIES . . . . .</b>	<b>217,532</b>	<b>123,488</b>	<b>126,468</b>
<b>NET INCREASE/(DECREASE) IN CASH AND CASH</b>			
<b>EQUIVALENTS . . . . .</b>	<b>117,673</b>	<b>143,133</b>	<b>(117,443)</b>
<b>CASH AND CASH EQUIVALENTS AT BEGINNING OF THE</b>			
<b>YEAR . . . . .</b>	<b>76,089</b>	<b>194,302</b>	<b>336,789</b>
Effect of foreign exchange rate changes . . . . .	540	(646)	(2,043)
<b>CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>			
represented by bank balances and cash . . . . .	194,302	336,789	217,303

**B. NOTES TO THE FINANCIAL INFORMATION****1. GENERAL INFORMATION AND BASIS OF PRESENTATION OF FINANCIAL INFORMATION**

The Company was incorporated in Hong Kong on July 18, 2011 with limited liability. Its parent and ultimate holding company are China Nonferrous Mining Development Limited (“CNMD”), incorporated in the British Virgin Islands (“BVI”), and CNMC, incorporated in the People’s Republic of China (the “PRC”), respectively. The registered office of the Company is located at Room 1201, Allied Kajima Building, 138 Gloucester Road, Wanchai, Hong Kong, and its principal place of business is located at 32 Enos Chomba Road, Kitwe, Zambia.

CNMD was incorporated as a wholly-owned subsidiary of CNMC in BVI on July 12, 2011. On July 18, 2011, the Company was incorporated as a limited liability company in Hong Kong by Bosco Nominees Limited.

On July 20, 2011, CNMD acquired the entire issued share capital of the Company, being 1 ordinary share of HK\$1.00 each, from Bosco Nominees Limited for nominal consideration. Pursuant to such acquisition, CNMD became the sole shareholder of the Company and CNMC became the ultimate holding company of the Company. On September 23, 2011, CNMH was incorporated as a wholly-owned subsidiary of the Company in the Republic of Ireland.

Pursuant to a share swap agreement dated November 21, 2011 entered into between CNMC and CNMD, CNMD (as purchaser) acquired the 85%, 80%, 60% and 55%, respectively, issued share capital of NFCA, Luanshya, CCS and SML, respectively, representing the equity interests in NFCA, Luanshya, CCS and SML held by CNMC, from CNMC (as seller) for an aggregate consideration of US\$349,620,000. The consideration was satisfied by the allotment and issue of 349,620,000 ordinary shares of US\$1.00 each of CNMD to CNMC.

Pursuant to a share swap agreement dated November 22, 2011 entered into between CNMD and the Company, the Company (as purchaser) acquired the 85%, 80%, 60% and 55%, respectively, issued share capital of NFCA, Luanshya, CCS and SML, respectively, representing the equity interests in NFCA, Luanshya, CCS and SML held by CNMD, from CNMD (as seller) for an aggregate consideration of HK\$2,599,999,999 (equivalent to approximately US\$333,333,333). The consideration was satisfied by the allotment and issue of 2,599,999,999 ordinary shares of HK\$1.00 each of the Company to CNMD. Pursuant to a deed of assignment dated November 22, 2011, CNMC assigned its receivable of US\$106,058,000 due from Luanshya (Note 31) to the Company at nil consideration.

Pursuant to a share swap agreement dated December 2, 2011 entered into between the Company and CNMH, CNMH (as purchaser) acquired the 85%, 80%, 60% and 55%, respectively, issued share capital of NFCA, Luanshya, CCS and SML, respectively, representing the equity interests in NFCA, Luanshya, CCS and SML held by the Company, from the Company (as seller) for an aggregate consideration of Euro171,152,000 (equivalent to approximately US\$243,562,000). The consideration was satisfied by the allotment and issue of 171,152,000 ordinary shares of Euro1.00 each of CNMH to the Company.

Upon the completion of the above share swap transactions, CNMC held 100% of CNMD which held 100% equity interest in the Company. The Company held 100% equity interest in CNMH which in turn held 85%, 80%, 60% and 55%, respectively, equity interests in NFCA, Luanshya, CCS and SML, respectively, since December 2, 2011, the date of the completion of the Reorganization.

The Group is under the control of CNMC prior and after the Reorganization. The Group comprising the Company and its subsidiaries resulting from the Reorganization is under the control



of CNMC throughout the Relevant Years (other than the acquisition of Luanshya in 2009 which is accounted for under the acquisition method in accordance with HKFRS 3) and is therefore regarded as a continuing entity. Accordingly, for the purpose of the preparation of the Financial Information of the Group, the Company has been considered as the holding company of the companies now comprising the Group throughout the Relevant Years (other than the acquisition of Luanshya in 2009).

The consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the Relevant Years which include the results, changes in equity and cash flows of the companies now comprising the Group have been prepared as if the current group structure had been in existence throughout the Relevant Years (other than the acquisition of Luanshya), or since their respective dates of incorporation where it is a shorter period.

The consolidated statements of financial position as at the respective reporting dates have been prepared to present the assets and liabilities of the companies now comprising the Group as if the group structure upon the completion of the Reorganization had been in existence at those dates (other than the acquisition of Luanshya).

The functional currency of companies comprising the Group is United States dollars (“US\$”) and the Financial Information has been presented in US\$.

The principal activity of the Company is investment holding. The Group’s subsidiaries are principally engaged in mining, exploration, ore processing, leaching, smelting and sale of copper concentrate, copper cathodes, blister copper and sulfuric acid.

## 2. APPLICATION OF NEW AND REVISED HONG KONG FINANCIAL REPORTING STANDARDS

For the purpose of preparing and presenting the Financial Information for the Relevant Years, the Group adopted Hong Kong Accounting Standards (“HKASs”), Hong Kong Financial Reporting Standards (“HKFRSs”), amendments and interpretations (“HK(IFRIC) — Int”) issued by the Hong Kong Institute of Certified Public Accountants (the “HKICPA”) which are effective for the Group’s financial year beginning on January 1, 2011 consistently for the Relevant Years.

At the date of this report, the HKICPA has issued the following new and revised standards and amendments which are not yet effective for the Relevant Years.

HKFRSs (Amendments)	Annual Improvements to HKFRSs 2009-2011 Cycle <sup>2</sup>
HKFRS 1 (Amendments)	Severe Hyperinflation and Removal of Fixed Dates for First-time Adopters <sup>1</sup>
HKFRS 1 (Amendments)	Government Loans <sup>2</sup>
HKFRS 7 (Amendments)	Disclosures: Transfer of Financial Assets <sup>1</sup> Disclosures: Offsetting Financial Assets and Financial Liabilities <sup>2</sup> Mandatory Effective Date of HKFRS 9 and Transition Disclosure <sup>3</sup>
HKFRS 9	Financial Instruments <sup>3</sup>
HKFRS 10	Consolidated Financial Statements <sup>2</sup>
HKFRS 11	Joint Arrangements <sup>2</sup>
HKFRS 12	Disclosure of Interests in Other Entities <sup>2</sup>
HKFRS 13	Fair Value Measurement <sup>2</sup>
HKAS 1 (Amendments)	Presentation of Items of Other Comprehensive Income <sup>5</sup>
HKAS 12 (Amendments)	Deferred Tax — Recovery of Underlying Assets <sup>4</sup>
HKAS 19 (2011)	Employee Benefits <sup>2</sup>
HKAS 27 (2011)	Separate Financial Statements <sup>2</sup>
HKAS 28 (2011)	Investments in Associates and Joint Ventures <sup>2</sup>
HKAS 32 (Amendments)	Offsetting Financial Assets and Financial Liabilities <sup>6</sup>
HK(IFRIC)-Int 20	Stripping Costs in the Production Phase of a Surface Mine <sup>2</sup>

- <sup>1</sup> Effective for annual periods beginning on or after July 1, 2011.
- <sup>2</sup> Effective for annual periods beginning on or after January 1, 2013.
- <sup>3</sup> Effective for annual periods beginning on or after January 1, 2015.
- <sup>4</sup> Effective for annual periods beginning on or after January 1, 2012.
- <sup>5</sup> Effective for annual periods beginning on or after July 1, 2012.
- <sup>6</sup> Effective for annual periods beginning on or after January 1, 2014.

HKFRS 13 establishes a single source of guidance for fair value measurements and disclosures about fair value measurements. The Standard defines fair value, establishes a framework for measuring fair value, and requires disclosures about fair value measurements. The scope of HKFRS 13 is broad; it applies to both financial instrument items and non-financial instrument items for which other HKFRSs require or permit fair value measurements and disclosures about fair value measurements, except in specified circumstances. In general, the disclosure requirements in HKFRS 13 are more extensive than those in the current standards. For example, quantitative and qualitative disclosures based on the three-level fair value hierarchy currently required for financial instruments only under HKFRS 7 Financial Instruments: Disclosures will be extended by HKFRS 13 to cover all assets and liabilities within its scope.

HKFRS 13 is effective for annual periods beginning on or after January 1, 2013, with earlier application permitted.

The directors of the Company anticipate that HKFRS 13 will be adopted in the Group's consolidated financial statements for the annual period beginning on January 1, 2013 and that the application of the new Standard may result in more extensive disclosures in the consolidated financial statements.

The directors of the Company anticipate that the application of the other new and revised standards and amendments to HKFRSs and HKASs will have no material impact on the Financial Information.

### **3. SIGNIFICANT ACCOUNTING POLICIES**

The Financial Information has been prepared on the historical cost basis except for certain financial instruments, which are measured at fair values, as explained in the accounting policies set out below which conform with HKFRSs.

In addition, the Financial Information includes applicable disclosures required by the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules") and by the Hong Kong Companies Ordinance.

#### **(a) Basis of consolidation**

The Financial Information incorporates the financial statements of companies now comprising the Group. Where necessary, adjustments are made to the financial statements of subsidiaries to bring their accounting policies in line with those used by other members of the Group.

All intra-group transactions, balances, income and expenses are eliminated on consolidation.

Non-controlling interests in subsidiaries are presented separately from the equity of the owners of the Company.

***Allocation of total comprehensive income to non-controlling interests***

Total consolidated comprehensive income and expense of a subsidiary is attributed to the owners of the Company and to the non-controlling interests even if this results in the non-controlling interests having a deficit balance.

**(b) Investment in subsidiaries**

Investment in subsidiaries is included in the Company's statement of financial position at cost less any impairment loss.

**(c) Business combinations not involving entities under common control**

Acquisitions of businesses are accounted for using the acquisition method. The consideration transferred in a business combination is measured at fair value, which is calculated as the sum of the acquisition-date fair values of the assets transferred by the Group, liabilities incurred by the Group to the former owners of the acquiree and the equity interests issued by the Group in exchange for control of the acquiree. Acquisition related costs are generally recognized in profit or loss as incurred.

At the acquisition date, the identifiable assets acquired and the liabilities assumed are recognized at their fair value at the acquisition date, except that:

- deferred tax assets or liabilities and liabilities or assets related to employee benefit arrangements are recognized and measured in accordance with HKAS 12 Income Taxes and HKAS 19 Employee Benefits respectively;
- liabilities or equity instruments related to share-based payment transactions of the acquiree or the replacement of an acquiree's share-based payment transactions with share-based payment transactions of the Group are measured in accordance with HKFRS 2 Share-based Payment at the acquisition date; and
- assets (or disposal groups) that are classified as held for sale in accordance with HKFRS 5 Non-current Assets Held for Sale and Discontinued Operations are measured in accordance with that Standard.

Goodwill is measured as the excess of the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree, and the fair value of the acquirer's previously held equity interest in the acquiree (if any) over the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed. If, after re-assessment, the net of the acquisition-date amounts of the identifiable assets acquired and liabilities assumed exceeds the sum of the consideration transferred, the amount of any non-controlling interests in the acquiree and the fair value of the acquirer's previously held interest in the acquiree (if any), the excess is recognized immediately in profit or loss as a bargain purchase gain.

Non-controlling interests that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation may be initially measured either at fair value or at the non-controlling interests' proportionate share of the recognized amounts of the acquiree's identifiable net assets.

The choice of measurement basis is made on a transaction-by-transaction basis. Other types of non-controlling interests are measured at their fair value or another measurement basis required by another HKFRS/ HKAS.

**(d) Property, plant and equipment*****Exploration and evaluation expenditure***

Exploration and evaluation expenditure, other than that is acquired from the purchase of another entity, is recognized as an expense in the period in which it is incurred, except when the expenditure will be recouped from future exploitation or sale of the area of interest and it is planned to continue with active and significant operations in relation to the area, or at the reporting period end, the activity has reached a stage which permits a reasonable assessment of the existence of commercially recoverable reserves, in which case the expenditure is capitalized. Purchased exploration and evaluation assets are recognized at their fair value at acquisition as part of a business combination. All capitalized exploration and evaluation expenditure is monitored for indications of impairment. Where a potential impairment is indicated, an assessment is performed for each area of interest or at the cash generating unit level. To the extent that capitalized expenditure is not expected to be recovered, it is charged to profit or loss.

***Mining properties and leases***

The costs of mining properties and leases, which include the costs of acquiring and developing mining properties and mining rights, are firstly capitalized as property, plant and equipment under the heading of "Construction in progress" in the year in which they are incurred and then reclassified to the heading of "Mining properties and leases" when they are ready for commercial production.

When a decision is taken that a mining property is viable for commercial production, all further pre-production primary development expenditure other than land, buildings, plant and equipment, etc. is capitalized as part of the cost of the mining property until the mining property is capable of commercial production. From that point, capitalized mining properties and leases costs are depreciated on a unit-of-production basis over the total estimated remaining commercial reserves of each property or a group of properties.

Stripping costs incurred in the development of a mine (or pit) before the production commences are capitalized as part of the cost of constructing the mine (or pit) and subsequently amortized over the life of the mine (or pit) on a unit of production basis. Stripping costs and secondary development expenditure, mainly comprising of costs on blasting, haulage, excavation, etc. incurred during the production stage of an orebody are charged to profit or loss immediately.

In circumstances where a mining property is abandoned, the cumulative capitalized costs relating to the property are written off in the period.

Commercial reserves are proved and probable reserves. Changes in the commercial reserves affecting unit of production calculations are dealt with prospectively over the revised remaining reserves.

***Other property, plant and equipment***

Other property, plant and equipment including land and buildings held for use in the production or supply of goods or services, or for administrative purposes (other than construction in progress as described below) are stated at cost less subsequent accumulated depreciation and accumulated impairment losses, if any.

Construction in progress is carried at cost, less any recognized impairment loss. Costs include professional fees and, for qualifying assets, borrowing costs capitalized in accordance with the

Group's accounting policy. Construction in progress is classified to the appropriate categories of property, plant and equipment when completed and ready for intended use. Depreciation of these assets, on the same basis as other property, plant and equipment, commences when the assets are ready for their intended use.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected to arise from the continued use of the asset. Any gain or loss arising on the disposal or retirement of an item of property, plant and equipment is determined as the difference between the sales proceeds and the carrying amount of the asset and is recognized in profit or loss.

### **Depreciation**

Mining properties in the course of development or construction are not depreciated. Capitalized mining properties costs are depreciated once commercial production commences, as described in "Property, plant and equipment — mining properties and leases". Depreciation of other property, plant and equipment is recognized so as to write off their costs (other than construction in progress) less their residual values over their useful lives, using the straight-line method, as follows:

Land and buildings .....	10 to 30 years
Machinery and equipment .....	3 to 10 years
Motor vehicles .....	5 years

The estimated useful lives, residual values and depreciation method are reviewed at the end of each reporting period, with the effect of any changes in estimate accounted for on a prospective basis.

### **(e) Impairment of tangible assets**

At the end of each reporting period, the Group reviews the carrying amounts of its tangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the cash generating unit to which the asset belongs. Where a reasonable and consistent basis of allocation can be identified, corporate assets are also allocated to individual cash-generating units, or otherwise they are allocated to the smallest group of cash-generating units for which a reasonable and consistent allocation basis can be identified.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or a cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or the cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognized immediately in profit or loss.

Where an impairment loss subsequently reverses, the carrying amount of the asset (or cash generating unit) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset (or cash-generating unit) in prior years. A reversal of an impairment loss is recognized immediately in profit or loss.

**(f) Leasing**

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases.

***The Group as lessee***

Operating lease payments are recognized as an expense on a straight-line basis over the lease term.

***The Group as lessor***

Amounts due from lessees under finance leases are recorded as receivables at the amount of the Group's net investment in the leases. Finance lease income is allocated to accounting periods so as to reflect a constant periodic rate of return on the Group's net investment outstanding in respect of the leases.

***Leasehold land for own use***

When a lease includes both land and building elements, the Group assesses the classification of each element as a finance or an operating lease separately based on the assessment as to whether substantially all the risks and rewards incidental to ownership of each element have been transferred to the Group. Specifically, the minimum lease payments (including any lump-sum upfront payments) are allocated between the land and the building elements in proportion to the relative fair values of the leasehold interests in the land element and building element of the lease at the inception of the lease. As the Group's lease payments cannot be allocated reliably between the land and building elements, the entire lease is accounted for as property, plant and equipment.

**(g) Provisions**

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that the Group will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

The amount recognized as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period, taking into account the risks and uncertainties surrounding the obligation. When a provision is measured using the cash flows estimated to settle the present obligation, its carrying amount is the present value of those cash flows (where the effect of the time value of money is material).

When some or all of the economic benefits required to settle a provision are expected to be recovered from a third party, a receivable is recognized as an asset if it is virtually certain that reimbursement will be received and the amount of the receivable can be measured reliably.

**(h) Environmental rehabilitation**

An obligation to incur restoration, rehabilitation and environmental costs arises when environmental disturbance is caused by the development or ongoing production of a mine or production facilities. Costs arising from the installation of plant and other site preparation work, discounted to net present value, are provided for and a corresponding amount is capitalized at the start of each project, as soon as the obligation to incur such costs arises. These costs are charged to profit or loss over the life of the operation through the depreciation of the asset and the unwinding of the discount on the provision. The cost estimates are reviewed periodically and are adjusted to

reflect known developments which may have an impact on the cost estimates or life of operations. The cost of the related asset is adjusted for changes in the provision due to factors such as updated cost estimates, new disturbance and revisions to discount rates. The adjusted cost of the asset is depreciated prospectively over the lives of the assets to which they relate. The unwinding of the discount is shown as a finance cost in profit or loss.

Costs for restoration of subsequent site damage which is caused on an ongoing basis during production are provided for at their net present values and charged to profit or loss as extraction progresses. Where the costs of site restoration are not anticipated to be significant, they are expensed as incurred.

### **(i) Financial instruments**

Financial assets and financial liabilities are recognized when a group entity becomes a party to the contractual provisions of the instrument.

Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities (other than financial assets and financial liabilities at fair value through profit or loss) are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition.

Transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss are recognized immediately in profit or loss.

#### ***Financial assets***

Financial assets are classified into the following specified categories: “financial assets at fair value through profit or loss” (FVTPL), “held-to-maturity investments”, “available-for-sale (AFS) financial assets” and “loans and receivables”. The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

#### ***Effective interest method***

The effective interest method is a method of calculating the amortized cost of a debt instrument and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the debt instrument, or, where appropriate, a shorter period to the net carrying amount on initial recognition.

Income is recognized on an effective interest basis for debt instruments other than those financial assets classified as at FVTPL.

#### ***Financial assets at FVTPL***

Financial assets are classified as at FVTPL when the financial asset is held for trading.

A financial asset is classified as held for trading if:

- it has been acquired principally for the purpose of selling it in the near future; or



- on initial recognition it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit-taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

Financial assets at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. Fair value is determined in the manner described in note 33.

#### *Loans and receivables*

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables (including trade and other receivables, restricted bank balances, bank balances and cash) are measured at amortized cost using the effective interest method, less any impairment.

Interest income is recognized by applying the effective interest rate, except for short-term receivables when the recognition of interest would be immaterial.

#### ***Impairment of financial assets***

Financial assets, other than those at FVTPL, are assessed for indicators of impairment at the end of each reporting period. Financial assets are considered to be impaired when there is objective evidence that, as a result of one or more events that occurred after the initial recognition of the financial asset, the estimated future cash flows of the investment have been affected.

For all other financial assets, objective evidence of impairment could include:

- significant financial difficulty of the issuer or counterparty; or
- breach of contract, such as a default or delinquency in interest or principal payments; or
- it becoming probable that the borrower will enter bankruptcy or financial reorganization.

For certain categories of financial asset, such as trade and other receivables, assets that are assessed not to be impaired individually are, in addition, assessed for impairment on a collective basis. Objective evidence of impairment for a portfolio of receivables could include the Group's past experience of collecting payments, an increase in the number of delayed payments in the portfolio past the average credit period, as well as observable changes in national or local economic conditions that correlate with default on receivables.

For financial assets carried at amortized cost, the amount of the impairment loss recognized is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the financial asset's original effective interest rate.

The carrying amounts of trade and other receivables are reduced through the use of an allowance account. When a trade or other receivable is considered uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognized in profit or loss.

For financial assets measured at amortized cost, if, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, the previously recognized impairment loss is reversed through profit or loss to the extent that the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortized cost would have been had the impairment not been recognized.

***Financial liabilities and equity instruments***

Debt and equity instruments issued by a group entity are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument.

***Equity instruments***

An equity instrument is any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities. Equity instruments issued by group entities are recognized at the proceeds received, net of direct issue costs.

***Financial liabilities at FVTPL***

Financial liabilities are classified as at FVTPL when the financial liability is held for trading.

A financial liability is classified as held for trading if:

- it has been acquired principally for the purpose of repurchasing it in the near term; or
- on initial recognition it is part of a portfolio of identified financial instruments that the Group manages together and has a recent actual pattern of short-term profit-taking; or
- it is a derivative that is not designated and effective as a hedging instrument.

Financial liabilities at FVTPL are stated at fair value, with any gains or losses arising on remeasurement recognized in profit or loss. The net gain or loss recognized in profit or loss incorporates any interest paid on the financial liability. Fair value is determined in the manner described in note 33.

***Other financial liabilities***

Other financial liabilities (including trade and other payables, bank and other borrowings) are subsequently measured at amortized cost using the effective interest method.

***Effective interest method***

The effective interest method is a method of calculating the amortized cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments (including all fees and points paid or received that form an integral part of the effective interest rate, transaction costs and other premiums or discounts) through the expected life of the financial liability, or, where appropriate, a shorter period to the net carrying amount on initial recognition.

Interest expense is recognized on an effective interest basis other than financial liabilities classified as at FVTPL.

***Derivative financial instruments***

Derivatives are initially recognized at fair value at the date when derivative contracts are entered into and are subsequently remeasured to their fair value at the end of the reporting period. The resulting gain or loss is recognized in profit or loss immediately unless the derivative is designated

and effective as a hedging instrument, in which case the timing of the recognition in profit or loss depends on the nature of the hedge relationship.

### ***Embedded derivatives***

Derivatives embedded in non-derivative host contracts are treated as separate derivatives when their risks and characteristics are not closely related to those of the host contracts and the host contracts are not measured at FVTPL.

### ***Derecognition***

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity.

On derecognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss.

The Group derecognizes financial liabilities when, and only when, the Group's obligations are discharged, cancelled or they expire. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

### **(j) Government grants**

Government grants are not recognized until there is reasonable assurance that the Group will comply with the conditions attaching to them and that the grants will be received.

Government grants are recognized in profit or loss on a systematic basis over the periods in which the Group recognizes as expenses the related costs for which the grants are intended to compensate. Specifically, government grants whose primary condition is that the Group should purchase, construct or otherwise acquire non-current assets are recognized as deferred revenue in the consolidated statements of financial position and transferred to profit or loss on a straight-line basis over the useful lives of the related assets.

Government grants that are receivable as compensation for expenses or losses already incurred or for the purpose of giving immediate financial support to the Group with no future related costs are recognized in profit or loss in the period in which they become receivable.

### **(k) Taxation**

Income tax expense represents the sum of the tax currently payable and deferred tax.

The tax currently payable is based on taxable profit for the year. Taxable profit differs from profit as reported in the consolidated statements of comprehensive income because of items of income or expense that are taxable or deductible in other years and items that are never taxable or deductible. The Group's liability for current tax is calculated using tax rates that have been enacted or substantively enacted by the end of the reporting period.

Deferred tax is recognized on temporary differences between the carrying amounts of assets and liabilities in the Financial Information and the corresponding tax bases used in the computation of

taxable profit. Deferred tax liabilities are generally recognized for all taxable temporary differences. Deferred tax assets are generally recognized for all deductible temporary differences to the extent that it is probable that taxable profits will be available against which those deductible temporary differences can be utilized. Such deferred tax assets and liabilities are not recognized if the temporary difference arises from goodwill or from the initial recognition (other than in a business combination) of other assets and liabilities in a transaction that affects neither the taxable profit nor the accounting profit.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in subsidiaries, except where the Group is able to control the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with such investments and interests are only recognized to the extent that it is probable that there will be sufficient taxable profits against which to utilize the benefits of the temporary differences and they are expected to reverse in the foreseeable future.

The carrying amount of deferred tax assets is reviewed at the end of each reporting period and reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow all or part of the asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the period in which the liability is settled or the asset realized, based on tax rates (and tax laws) that have been enacted or substantively enacted by the end of the reporting period. The measurement of deferred tax liabilities and assets reflects the tax consequences that would follow from the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

Current or deferred tax for the year is recognized in profit or loss, except when they relate to items that are recognized in other comprehensive income or directly in equity, in which case, the current and deferred tax is also recognized in other comprehensive income or directly in equity respectively. Where current tax or deferred tax arises from the initial accounting for a business combination, the tax effect is included in the accounting for the business combination.

### **(l) Inventories**

Inventories are stated at the lower of cost and net realizable value, less any provision for obsolescence.

Cost is determined on the following bases:

- Purchased copper concentrate and all other materials, including stores and spares, are valued on weighted average basis.
- Finished products are valued at raw material cost plus costs of conversion, comprising labor costs and an attributable proportion of manufacturing overheads based on normal levels of activity.

Net realizable value is determined based on estimated selling price, less further costs expected to be incurred to completion and disposal.

### **(m) Revenue recognition**

Revenue is recognized when the seller has transferred to the buyer all significant risks and rewards of ownership of the assets sold. Revenue excludes any applicable sales taxes, mineral royalty and

windfall tax and is recognized at the fair value of the consideration received or receivable to the extent that it is probable that economic benefits will flow to the Group and the revenues and costs can be reliably measured. In most instances, sales revenue is recognized when the product is delivered to the destination specified by the customer, which is typically the vessel on which it is shipped, the destination port or the customer's premises.

For certain sales of the Group, the sales price is determined on a provisional basis at the date of sale, as the final selling price is subject to the grades of copper, gold and silver in the Group's copper products and movements in market prices up to the date of final pricing, normally ranging from 30 to 180 days after initial booking. Revenue on provisionally priced sales is recognized based on the estimated grades of copper, gold and silver in the Group's copper products and fair value of the total consideration receivable. The revenue adjustment mechanism embedded within provisionally priced sales arrangements has the character of a commodity derivative. Accordingly, the fair value of the final sales price adjustment is re-estimated continuously and changes in fair value are recognized as an adjustment to revenue. In all cases, fair value is estimated by reference to forward market prices.

Interest income from a financial asset is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts the estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount on initial recognition.

Dividend income from investments is recognized when the shareholders' rights to receive payment have been established (provided that it is probable that the economic benefits will flow to the Group and the amount of revenue can be measured reliably).

#### **(n) Construction contracts**

Where the outcome of a construction contract can be estimated reliably, revenue and costs are recognized by reference to the stage of completion of the contract activity at the end of the reporting period, measured based on the proportion of contract costs incurred for work performed to date relative to the estimated total contract costs, except where this would not be representative of the stage of completion. Variations in contract work, claims and incentive payments are included to the extent that the amount can be measured reliably and its receipt is considered probable.

Where the outcome of a construction contract cannot be estimated reliably, contract revenue is recognized to the extent of contract costs incurred that it is probable will be recoverable. Contract costs are recognized as expenses in the period in which they are incurred.

When it is probable that total contract costs will exceed total contract revenue, the expected loss is recognized as an expense immediately.

Where contract costs incurred to date plus recognized profits less recognized losses exceed progress billings, the surplus is shown as amounts due from customers for contract work. For contracts where progress billings exceed contract costs incurred to date plus recognized profits less recognized losses, the surplus is shown as the amounts due to customers for contract work. Amounts received before the related work is performed are included in the consolidated statements of financial position, as a liability, as advances received. Amounts billed for work performed but not yet paid by the customer are included in the consolidated statements of financial position under trade and other receivables.

#### **(o) Foreign currencies**

The functional currency of companies comprising the Group is US\$. In preparing the financial statements of each individual group entity, transactions in currencies other than the entity's

functional currency (foreign currencies) are recognized at the rates of exchange prevailing at the dates of the transactions. At the end of the reporting period, monetary items denominated in foreign currencies are retranslated at the rates prevailing at that date. Non-monetary items carried at fair value that are denominated in foreign currencies are retranslated at the rates prevailing at the date when the fair value was determined. Non-monetary items that are measured in terms of historical cost in a foreign currency are not retranslated.

Exchange differences on monetary items are recognized in profit or loss in the period in which they arise except for:

- exchange differences on foreign currency borrowings relating to assets under construction for future productive use, which are included in the cost of those assets when they are regarded as an adjustment to interest costs on those foreign currency borrowings;
- exchange differences on transactions entered into in order to hedge certain foreign currency risks; and
- exchange differences on monetary items receivable from or payable to a foreign operation for which settlement is neither planned nor likely to occur (therefore forming part of the net investment in the foreign operation), which are recognized initially in other comprehensive income and reclassified from equity to profit or loss on disposal of the net investment in the foreign operation.

**(p) Retirement benefit costs**

Payments to defined contribution retirement benefit plans are recognized as an expense when employees have rendered service entitling them to the contributions.

**(q) Borrowing costs**

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale.

Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the borrowing costs eligible for capitalization.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

**(r) Earnings per share**

Basic earnings per share is computed by dividing the profit attributable to owners of the Company by the weighted average number of shares outstanding during the reporting period.

**(s) Cash and cash equivalents**

Cash and cash equivalents comprise cash at banks and on hand, and short-term deposits with an original maturity of three months or less, which are readily convertible into a known amount of cash.

**(t) Related party transactions**

Parties are considered to be related if one party has the ability, directly or indirectly, to control, joint control the other party or exercise significant influence over the other party in making financial and operating decisions. Parties are also considered to be related if they are subject to common control and joint control. Related parties may be individuals or corporate entities. A transaction is considered to be a related party transaction when there is a transfer of resources or obligations between related parties.

**4. CRITICAL ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY**

In the process of applying the Group's accounting policies, which are described in note 3, the directors of the Company have identified the following judgment and key sources of estimation uncertainty that have significant effect on the amounts recognized in the Financial Information.

The key assumptions concerning the future, and other key sources of estimation uncertainty at the end of each reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next twelve months, are discussed below.

**(a) Revenue recognition**

The Group produces blister copper, copper cathodes, copper concentrate and sulfuric acid. Copper products are sold under provisional pricing arrangements where final grades of copper, gold and silver in copper products are agreed based on third-party examination and final prices are set at a specified date based on market prices. Revenues are recognized when title and risk pass to the customer using history of grades of copper, gold and silver in copper products based on internal examination statistics and forward prices for the expected date of final settlement. Besides, changes between the prices recorded upon recognition of revenue and the final price due to fluctuations in copper market prices result in the existence of an embedded derivative in the trade receivables. This embedded derivative is recorded at fair value, with changes in fair value classified as a component of revenue. Sulfuric acid revenue is recorded when title and risk have passed to the customer.

**(b) Depreciation of mining properties and leases**

Mining properties and leases costs are depreciated using the unit of production method (the "UOP"). The calculation of the UOP rate of depreciation, and therefore the annual depreciation charge to operations, can fluctuate from initial estimates. This could generally result when there are significant changes in any of the factors or assumptions used in estimating mine reserves, notably changes in the geology of the reserves and assumptions used in determining the economic feasibility of the reserves. Such changes in reserves could similarly impact the useful lives of assets depreciated on a straight-line basis, where those lives are limited to the life of the project, which, in turn is limited to the life of the proved and probable mineral reserves. Estimates of proved and probable reserves are prepared by experts in extraction, geology and reserve determination. Assessments of UOP rates against the estimated reserve base and the operating and development plan are performed regularly.

**(c) Income taxes**

Current income taxes are recorded based on estimated income taxes payable for the current year and significant judgment is required in determining the provision for income tax. There are many transactions and calculations for which the ultimate determination is uncertain during the ordinary



course of business. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such difference will impact the income tax and deferred tax provision in the period in which such determination is made. Deferred income tax assets and liabilities are recognized for temporary differences between the tax and accounting bases of assets and liabilities using substantively enacted tax rates for the period in which the differences are expected to reverse. Deferred tax assets relating to tax losses are recognized when management considers to be probable that tax losses can be utilized. The outcome of their actual utilization may be different.

**(d) Restoration, rehabilitation and environmental costs**

Provision is made for costs associated with restoration and rehabilitation of mining sites and certain production facilities of the Group as soon as the obligation to incur such costs arises. Such restoration and closure costs are typical of mining, leaching and smelting industries and they are normally incurred at the end of the life of the mine and production facilities. The costs are estimated on the basis of mine/plant closure plans and the estimated discounted costs of dismantling and removing these facilities and the costs of restoration are capitalized when incurred reflecting the Group's obligations at that time. A corresponding provision is created on the liability side.

The capitalized asset is charged to profit or loss over the life of the asset through depreciation over the life of the operation and the provision is increased each period via unwinding the discount on the provision. Management estimates are based on local legislation. The actual costs and cash outflows may differ from estimates because of changes in laws and regulations, changes in prices, analysis of site conditions and changes in restoration technology.

The Group provides for such costs in accordance with statutory requirements.

**(e) Valuation of derivative instruments**

Derivative instruments are carried at fair value and the Group evaluates the quality and reliability of the assumptions and data used to measure fair value in the three hierarchy levels, Level 1, 2 and 3, as prescribed by HKFRS 7. Fair values are determined in the following ways: externally verified via comparison to quoted market prices in active markets ("Level 1"); by using models with externally verifiable inputs ("Level 2"); or by using alternative procedures such as comparison to comparable instruments and/or using models with unobservable market inputs requiring the Group to make market-based assumptions ("Level 3"). Details of the hierarchy of fair value measurement of the financial instruments of the Group are set out in note 33.

**(f) Estimated impairment of trade receivables**

Trade receivables are measured at initial recognition at fair value, and are subsequently measured at amortized cost using the effective interest method. Appropriate allowances for estimated irrecoverable amounts are recognized in profit and loss when there is objective evidence that the asset is impaired.

In making the estimates, management considered detailed procedures have been in place to monitor this risk. In estimating whether allowance for bad and doubtful debts is required, the Group takes into consideration the ageing status and the likelihood of collection. Following the identification of doubtful debts, the responsible sales personnel discuss with the relevant customers and report on the recoverability. When there is objective evidence of impairment loss, the Group takes into consideration the estimation of future cash flows. The amount of the impairment loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash

flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. Where the actual future cash flows are less than expected, a material impairment loss may arise.

Details of movements of allowance for trade receivables are disclosed in note 18.

## 5. REVENUE

An analysis of the Group's revenue from sale of goods for the year is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Blister copper . . . . .	624,185	1,278,483	1,186,840
Copper cathodes . . . . .	33,848	56,336	58,223
Copper concentrate . . . . .	28,218	—	—
Sulfuric acid . . . . .	10,039	22,466	38,843
	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>

## 6. SEGMENTAL INFORMATION

Information reported to the directors of CNMC before the Reorganization and the directors of the Company upon the completion of the Reorganization, being the chief operating decision maker, for the purposes of resource allocation and assessment of segment performance focuses on types of goods produced.

Specifically, the Group's operating and reportable segments under HKFRS 8 are as follows:

- Mining — Mining and exploration of copper and production of copper concentrate;
- Leaching — Production and sale of copper cathodes which are produced using the solvent extraction-electrowinning technology; and
- Smelting — Production and sale of blister copper and sulfuric acid which are produced using ISA smelting technology.

*Segment revenue and results*

The following is an analysis of the Group's revenue and results by reportable segment.

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<i>Segment revenue</i>			
Revenue from external customers			
— Mining	28,218	—	—
— Leaching	33,848	56,336	58,223
— Smelting	634,224	1,300,949	1,225,683
	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>
Inter-segment sales			
— Mining	98,997	218,965	285,835
— Leaching	1,290	813	—
— Smelting	432	510	1,676
	<u>100,719</u>	<u>220,288</u>	<u>287,511</u>
Total segment revenue			
— Mining	127,215	218,965	285,835
— Leaching	35,138	57,149	58,223
— Smelting	634,656	1,301,459	1,227,359
	<u>797,009</u>	<u>1,577,573</u>	<u>1,571,417</u>
Elimination *	<u>(100,719)</u>	<u>(220,288)</u>	<u>(287,511)</u>
Revenue for the year	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>

\* Inter-segment sales were conducted at terms mutually agreed among the companies comprising the Group.

<i>Segment profit</i>			
— Mining	22,763	34,684	28,751
— Leaching	17,556	36,723	28,020
— Smelting	9,733	41,119	49,190
	<u>50,052</u>	<u>112,526</u>	<u>105,961</u>
Unallocated expenses *	—	—	(2,281)
Elimination	(4,650)	(5,144)	(390)
Gain on bargain purchase	48,945	—	—
Profit for the year	<u>94,347</u>	<u>107,382</u>	<u>103,290</u>

\* The unallocated expenses mainly represent expenses of the Company.

The accounting policies of the operating and reportable segments are the same as the Group's accounting policies described in note 3. Segment profit represents the profit for the year earned by each segment. This is the measure reported to the chief operating decision maker for the purposes of resource allocation and assessment of segment performance.

*Segment assets and liabilities*

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<i>Segment assets</i>			
— Mining .....	401,377	589,112	596,030
— Leaching .....	112,113	156,339	386,689
— Smelting .....	618,603	666,040	523,450
Total segment assets .....	1,132,093	1,411,491	1,506,169
Unallocated assets* .....	—	—	1,719
Elimination .....	(63,997)	(52,069)	(34,669)
Consolidated total assets .....	<u>1,068,096</u>	<u>1,359,422</u>	<u>1,473,219</u>
<i>Segment liabilities</i>			
— Mining .....	258,350	450,973	652,257
— Leaching .....	8,005	5,936	6,399
— Smelting .....	536,020	542,338	350,558
Total segment liabilities .....	802,375	999,247	1,009,214
Unallocated liabilities* .....	—	—	4,000
Elimination .....	(60,457)	(44,885)	(29,345)
Consolidated total liabilities .....	<u>741,918</u>	<u>954,362</u>	<u>983,869</u>

\* The unallocated assets and liabilities mainly represent those of the Company.

For the purposes of monitoring segment performance and allocating resources between segments, all assets and liabilities, except for those of the Company, are allocated to operating and reportable segments.

*Other segment information*

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<i>Interest income</i>			
— Mining .....	576	43	9
— Leaching .....	9	6	—
— Smelting .....	625	35	224
	<u>1,210</u>	<u>84</u>	<u>233</u>
<i>Finance income earned under finance leases to a fellow subsidiary</i>			
— Mining .....	—	—	1,049
— Leaching .....	—	—	—
— Smelting .....	—	—	—
	<u>—</u>	<u>—</u>	<u>1,049</u>
<i>Loss/(gain) arising on change in fair value of derivatives</i>			
— Mining .....	—	—	—
— Leaching .....	—	—	—
— Smelting .....	134	25,538	(10,369)
	<u>134</u>	<u>25,538</u>	<u>(10,369)</u>
<i>Finance costs</i>			
— Mining .....	914	1,971	3,702
— Leaching .....	—	—	—
— Smelting .....	4,416	6,261	5,546
	<u>5,330</u>	<u>8,232</u>	<u>9,248</u>

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<i>Income tax expense/(credit)</i>			
— Mining	11,720	21,537	14,392
— Leaching	(32)	(4,357)	317
— Smelting	(208)	3,022	311
	<u>11,480</u>	<u>20,202</u>	<u>15,020</u>
<i>Depreciation</i>			
— Mining	19,050	29,798	41,523
— Leaching	2,976	3,270	3,755
— Smelting	9,904	12,516	14,110
	<u>31,930</u>	<u>45,584</u>	<u>59,388</u>
<i>Impairment loss recognized/(reversed) on trade receivables, net</i>			
— Mining	1,186	(2,957)	354
— Leaching	—	—	814
— Smelting	—	1,389	—
	<u>1,186</u>	<u>(1,568)</u>	<u>1,168</u>
<i>Additions to non-current assets*</i>			
— Mining	94,397	118,686	101,805
— Leaching	10,347	23,729	259,781
— Smelting	9,709	14,496	37,672
	<u>114,453</u>	<u>156,911</u>	<u>399,258</u>

\* Excluding financial instruments and deferred tax assets.

#### Revenue from major products

The Group's revenue from its major products is set out in note 5.

#### Geographical information

The Group's operation is mainly in Zambia and nearly all its non-current assets (other than financial instruments and deferred tax assets) are in Zambia.

The Group's revenue from external customers by their geographical locations is detailed below:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
PRC	200,275	750,744	825,841
Hong Kong	—	—	22,135
United Kingdom	91,213	38,580	—
Switzerland	370,460	545,494	365,594
Luxembourg	—	—	31,496
Zambia	19,138	22,467	38,840
South Africa	15,204	—	—
	<u>696,290</u>	<u>1,357,285</u>	<u>1,283,906</u>

*Information about major customers*

Revenue from customers contributing over 10% of the total revenue of the Group during the Relevant Years is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Customer A			
— Mining	—	—	—
— Leaching	15,204	—	—
— Smelting	91,213	38,580	—
Customer B			
— Mining	—	—	—
— Leaching	—	31,927	30,216
— Smelting	94,073	174,789	85,552
Customer C			
— Mining	—	—	—
— Leaching	—	—	—
— Smelting	83,828	55,784	—
Customer D			
— Mining	6,099	—	—
— Leaching	—	—	—
— Smelting	109,427	267,237	94,555
Customer E			
— Mining	—	—	—
— Leaching	18,644	24,409	28,007
— Smelting	181,631	726,335	626,874
Customer F			
— Mining	13,020	—	—
— Leaching	—	—	—
— Smelting	64,013	15,758	155,270
Customer G			
— Mining	—	—	—
— Leaching	—	—	—
— Smelting	—	—	170,960
	<u>677,152</u>	<u>1,334,819</u>	<u>1,191,434</u>

**7. OTHER INCOME**

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Interest income	1,210	84	233
Finance income earned under finance leases to a fellow subsidiary	—	—	1,049
Revenue from construction contracts, net of expenses	—	—	1,715
Net income from sale of spare parts and other materials	809	947	1,052
Others	62	209	786
	<u>2,081</u>	<u>1,240</u>	<u>4,835</u>



**8. FINANCE COSTS**

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Interest on bank and other borrowings:			
— wholly repayable within five years . . . . .	7,549	9,807	8,543
— wholly repayable beyond five years . . . . .	1,817	406	5,439
Total borrowing costs . . . . .	9,366	10,213	13,982
The unwinding of the discount (Note 27) . . . . .	161	337	268
Less: Borrowing costs capitalized in construction in progress . . . . .	(4,197)	(2,318)	(5,002)
	<u>5,330</u>	<u>8,232</u>	<u>9,248</u>
The weighted average capitalization rate on funds borrowed, generally (per annum) . . . . .	<u>2.3%-4.2%</u>	<u>1.3%-1.9%</u>	<u>1.1%-1.3%</u>

**9. OTHER EXPENSES**

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Foreign exchange (gains)/losses, net . . . . .	(1,115)	3,461	4,739
Loss/(gain) on disposal of property, plant and equipment, net . . . . .	36	105	(605)
Net expenses for operating hospitals, schools and recreational facilities . . . . .	1,351	2,468	3,231
Impairment loss recognized/(reversed) on trade receivables, net . . . . .	1,186	(1,568)	1,168
Listing expenses . . . . .	—	—	2,281
Depreciation of property, plant and equipment under suspension of production . . . . .	2,440	—	—
Others . . . . .	476	680	190
	<u>4,374</u>	<u>5,146</u>	<u>11,004</u>

**10. INCOME TAX EXPENSE**

Income tax expense recognized in profit or loss:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Current tax:			
— Zambia Income Tax . . . . .	261	1,934	1,030
— Reversal of income tax of a subsidiary . . . . .	—	(4,384)	—
	261	(2,450)	1,030
Deferred tax (Note 28) . . . . .	11,219	22,652	13,990
Total income tax expense . . . . .	<u>11,480</u>	<u>20,202</u>	<u>15,020</u>

No provision for Hong Kong profits tax has been made as there was no assessable profit arising in Hong Kong during the Relevant Years.

Income tax in Zambia is calculated at 35% on the assessable income, except for that arising from mining activities which is 30% on the relevant assessable income, for the Relevant Years.

During the Relevant Years, the Group enjoyed the following income tax incentives:

- On June 10, 2010, SML was granted a rebate of the income tax payable, in respect of its operations, for the charge years covering the period from April 1, 2005 to March 31, 2009 according to Statutory Instrument No. 43 of 2010.

Accordingly, the Group reversed its accrued tax of SML for the period from December 3, 2004 (date of incorporation) to December 31, 2007 amounting to US\$4,384,000 in June 2010.

Besides, on June 10, 2011, SML was also granted ten-year income tax incentives for zero rate of income tax for the first five profitable years; 50% of income tax relief for the next three years thereafter; and 25% of income tax relief for the remaining 2 years. The first profitable year of SML, for Income Tax purpose, is 2008.

- On April 3, 2009, CCS was granted ten-year income tax incentives for zero rate of income tax for the first five profitable years; 50% of income tax relief for the next three years thereafter; and 25% of income tax relief for the remaining 2 years. The first profitable year of CCS, for Income Tax purpose, is 2010.

#### **Other taxes**

The Group is also subject to Value Added Tax ("VAT") at 16% on purchases and sales in Zambia whereas VAT is exempted on export, and relevant input VAT paid for purchases supported by valid VAT invoices could be refunded by the Zambia Revenue Authority (the "ZRA") to the extent total input VAT paid on purchases exceeds total output VAT payable on domestic sales.

In addition, NFCA and Luanshya are also subject mineral royalty at 3% on sale of taxable mining products. On September 25, 2009, according to Statutory Instrument No. 66 of 2009, the Commissioner of ZRA shall remit the whole or part of the mineral royalties payable by Luanshya not exceeding US\$9 million. Since the Date of Acquisition until December 31, 2011, Luanshya had not made any payment for such mineral royalty as the mineral royalty payable by Luanshya has not exceeded US\$9 million as of December 31, 2011.

For the period from April 1, 2008 to March 31, 2009, NFCA was also subject to Windfall Tax based on the amount by which the monthly average selling prices of copper and cobalt exceed certain "Trigger Prices" as stipulated in the Tenth Schedule of the Income Tax (Amendment) Act 2008. The rates applicable were 0%, 25%, 50% or 75% depending on the average copper or cobalt price. The tax was payable quarterly. The Windfall Tax was abolished in 2009.

Prior to 2011, NFCA received certain management services rendered by certain third-party overseas suppliers with management fees paid to them being subject to withholding tax ("WHT") and reverse value added tax ("RVAT"). RVAT is a charge to transfer of liability to account for and pay VAT on imported services from the person making the supply to the person receiving the supply according to the Value Added Tax Act in Zambia. On August 5, 2011, NFCA received the assessments for the assessment years 2004 to 2009 which indicated, among other things, the outstanding WHT and RVAT be the equivalents of US\$1.5 million and US\$1.6 million, respectively. The amounts have been included in "other payables and accrued expenses" as at December 31, 2009 and 2010 set out in note 23. On September 9, 2011, the outstanding taxes payable has been fully settled.

In the opinion of the Company's Zambian counsel, pursuant to the Convention between the Republic of Zambia and Ireland for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to Tax on Income, distribution of dividends to CNMH, an investment holding company incorporated under the laws of Ireland, from its Zambian subsidiaries would be exempt from such withholding tax save for instances where CNMH has a permanent establishment in Zambia. The directors of the Company confirm that CNMH has no permanent establishment in Zambia, and therefore are of the view that no provision for withholding tax on the Group's undistributed profit is required to be made during the Relevant Years.

The tax charge for the Relevant Years can be reconciled to the profit per the consolidated statements of comprehensive income as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Profit before tax	105,827	127,584	118,310
Tax at Income Tax rate in Zambia			
—for operations at 30%	23,633	15,323	12,142
—for operations at 35%	9,467	26,777	27,243
	33,100	42,100	39,385
Tax effect of expenses not deductible for tax purpose	3,933	16,729	4,150
Tax effect of income not taxable for tax purpose	(14,684)	—	—
Reversal of income tax of a subsidiary	—	(4,384)	—
Effect of tax incentives granted to the Group	(10,869)	(34,243)	(28,515)
Income tax expense for the year	11,480	20,202	15,020
Effective tax rate	10.8%	15.8%	12.7%

## 11. PROFIT FOR THE YEAR

Profit for the year has been arrived at after charging/(crediting):

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Depreciation of property, plant and equipment	31,930	45,584	59,388
Auditor's remuneration	77	139	140
Staff costs:			
Salaries, wages and welfare ( including directors' remuneration as disclosed in Note 12)	20,250	44,305	63,543
Retirement benefit schemes contributions	3,145	7,089	9,495
Total staff costs	23,395	51,394	73,038
Less: Amounts included in construction in progress	(6,250)	(2,618)	(2,345)
	17,145	48,776	70,693
Cost of inventories recognized as an expense	604,550	1,141,146	1,095,648
Donations	9	78	584
Minimum lease payments in respect of			
—Land and buildings	3,170	3,804	4,688
—Machinery and equipment	844	729	80

## 12. DIRECTORS' AND EMPLOYEES' EMOLUMENTS

*Directors*

Details of the emoluments paid to the directors for the Relevant Years are as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Directors' fees . . . . .	—	—	—
Salaries and other allowances . . . . .	597	774	809
Bonus . . . . .	—	—	—
Retirement benefit schemes contributions . . . . .	16	18	20
	<u>613</u>	<u>792</u>	<u>829</u>
Directors:			
Tao Luo . . . . .	—	—	—
Xinghu Tao . . . . .	—	—	—
Chunlai Wang . . . . .	166	210	219
Xingeng Luo . . . . .	166	210	219
Xinguo Yang . . . . .	134	188	198
Kaishou Xie . . . . .	147	184	193
Chuanyao Sun . . . . .	—	—	—
Jingwei Liu . . . . .	—	—	—
Shuang Chen . . . . .	—	—	—
	<u>613</u>	<u>792</u>	<u>829</u>

*Employees*

Of the five highest paid individuals of the Group for the Relevant Years, the number of directors and employees are as follows:

	Year ended December 31,		
	2009	2010	2011
Directors . . . . .	4	4	4
Employee . . . . .	1	1	1
	<u>5</u>	<u>5</u>	<u>5</u>

The aggregate remunerations of the highest paid directors are set out above. The remunerations of the remaining individual for the Relevant Years are as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Salaries and other allowances . . . . .	120	156	198
Retirement benefit schemes contributions . . . . .	—	4	15
	<u>120</u>	<u>160</u>	<u>213</u>

The emoluments of the above employee were within the following bands:

	Year ended December 31,		
	2009	2010	2011
	<u>Number of employees</u>		
HK\$nil to HK\$1,000,000 .....	1	—	—
HK\$1,000,001 to HK\$1,500,000 .....	—	1	1

During the Relevant Years, no emoluments were paid by the Group to any of the directors or the five highest paid individuals (including directors and employees) as an inducement to join or upon joining the Group or as compensation for loss of office. None of the directors waived any emoluments during the Relevant Years.

### 13. DIVIDENDS

No dividend has been paid or declared by the Company since its date of incorporation. The dividends recognized as distribution during the Relevant Years represented the dividends paid by the following subsidiaries to their shareholders.

	Year ended December 31,		
	2009	2010	2011
	<u>US\$'000</u>	<u>US\$'000</u>	<u>US\$'000</u>
NFCA .....	—	20,000	10,000
SML .....	11,000	10,000	15,000
	11,000	30,000	25,000
Less: Dividends of SML declared to NFCA eliminated at consolidation .....	(1,650)	(1,500)	(2,250)
	<u>9,350</u>	<u>28,500</u>	<u>22,750</u>

### 14. EARNINGS PER SHARE

	Year ended December 31,		
	2009	2010	2011
Profit for the year attributable to owners of the Company for the purposes of basic earnings per share (in US\$'000) .....	<u>81,674</u>	<u>73,911</u>	<u>70,014</u>
Weighted average number of shares for the purposes of basic earnings per share ('000) .....	<u>2,143,520</u>	<u>2,600,000</u>	<u>2,600,000</u>

The calculation of the basic earnings per share is based on the profit attributable to owners of the Company for each of the reporting period in the Relevant Years and the weighted average number of ordinary shares for the purpose of basic earnings per share after taking into account the Reorganization, as adjusted for the impact of the acquisition of Luanshya in 2009.

No diluted earnings per share is presented as the Company and its subsidiaries did not have potential ordinary shares outstanding during the Relevant Years.

## 15. PROPERTY, PLANT AND EQUIPMENT

The GROUP

	Mining properties and leases	Land and buildings	Machinery and equipment	Motor vehicles	Construction in progress	Total
	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
Cost:						
At January 1, 2009 . . . . .	91,906	24,333	74,876	6,252	173,267	370,634
Additions . . . . .	2,132	18,689	7,879	4,189	71,716	104,605
Acquisition through business combination (Note 31) . . . . .	13,657	37,948	18,222	1,740	24,772	96,339
Transfer from construction in progress . . . . .	—	40,958	74,783	1,461	(117,202)	—
Transfer to inventories . . . . .	—	—	—	—	(15,460)	(15,460)
Disposals . . . . .	—	(408)	(167)	(50)	—	(625)
At December 31, 2009 . . . . .	107,695	121,520	175,593	13,592	137,093	555,493
Additions . . . . .	—	—	11,246	15,573	120,245	147,064
Transfer from construction in progress . . . . .	14,154	4,312	42,002	236	(60,704)	—
Disposals . . . . .	—	—	(463)	(904)	—	(1,367)
At December 31, 2010 . . . . .	121,849	125,832	228,378	28,497	196,634	701,190
Additions . . . . .	1,773	682	16,124	12,215	366,578	397,372
Transfer from construction in progress . . . . .	79,357	29,899	48,389	—	(157,645)	—
Disposals . . . . .	(2,540)	—	(1,437)	(570)	—	(4,547)
At December 31, 2011 . . . . .	<u>200,439</u>	<u>156,413</u>	<u>291,454</u>	<u>40,142</u>	<u>405,567</u>	<u>1,094,015</u>
Depreciation:						
At January 1, 2009 . . . . .	(41,520)	(4,829)	(38,086)	(2,561)	—	(86,996)
Depreciation . . . . .	(10,008)	(3,848)	(16,082)	(1,992)	—	(31,930)
Disposals . . . . .	—	53	58	10	—	121
At December 31, 2009 . . . . .	(51,528)	(8,624)	(54,110)	(4,543)	—	(118,805)
Depreciation . . . . .	(12,215)	(5,176)	(23,789)	(4,404)	—	(45,584)
Disposals . . . . .	—	—	309	849	—	1,158
At December 31, 2010 . . . . .	(63,743)	(13,800)	(77,590)	(8,098)	—	(163,231)
Depreciation . . . . .	(10,216)	(6,258)	(32,999)	(9,915)	—	(59,388)
Disposals . . . . .	2,539	—	1,363	535	—	4,437
At December 31, 2011 . . . . .	<u>(71,420)</u>	<u>(20,058)</u>	<u>(109,226)</u>	<u>(17,478)</u>	<u>—</u>	<u>(218,182)</u>
Carrying amounts:						
At December 31, 2011 . . . . .	<u>129,019</u>	<u>136,355</u>	<u>182,228</u>	<u>22,664</u>	<u>405,567</u>	<u>875,833</u>
At December 31, 2010 . . . . .	<u>58,106</u>	<u>112,032</u>	<u>150,788</u>	<u>20,399</u>	<u>196,634</u>	<u>537,959</u>
At December 31, 2009 . . . . .	<u>56,167</u>	<u>112,896</u>	<u>121,483</u>	<u>9,049</u>	<u>137,093</u>	<u>436,688</u>

Except for certain pieces of land of Luanshya amounting to US\$562,000, US\$552,000 and US\$542,000 as at December 31, 2009, 2010 and 2011, respectively, in Zambia held under medium-term lease, the above land and buildings are located in Zambia held under long-term lease.

The Group is in the process of obtaining land use right certificates for certain parcels of its land for its tailing storage facility and several residential areas, which in the opinion of the directors of the Company, are not crucial to the operations of the Group.

## 16. FINANCE LEASE RECEIVABLES

The Group had purchased certain machinery and equipment which were leased out under finance leases to a fellow subsidiary. All interest rates inherent in the leases are fixed at the contract date over the lease terms.

	At December 31,					
	2009		2010		2011	
	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
Analyzed as:						
Current .....	—	—				6,483
Non-current .....	—	—				23,351
	<u>—</u>	<u>—</u>				<u>29,834</u>
	Minimum lease payments			Present value of minimum lease payments		
	2009		2010		2011	
	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
Finance lease receivables comprise:						
Within one year .....	—	—	8,083	—	—	6,483
In more than one year but not more than two years .....	—	—	7,473	—	—	6,242
In more than two years but not more than five years .....	—	—	18,460	—	—	17,109
	—	—	34,016	—	—	29,834
Less: Unearned finance income .....	—	—	(4,182)	—	—	N/A
Present value of minimum lease payment receivables .....	<u>—</u>	<u>—</u>	<u>29,834</u>	<u>—</u>	<u>—</u>	<u>29,834</u>

Effective interest rates of the above finance leases range from 5.6% to 6.1% per annum for the year ended December 31, 2011.

The finance leases are not used to pledge as security for any borrowings of the Group. In the event of default by the lessee, the Group has the right to sell the lease assets. At the end of the lease term, the lease assets will be transferred to the fellow subsidiary at nil consideration.

## 17. INVENTORIES

The GROUP

	At December 31,					
	2009		2010		2011	
	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
Raw materials .....	112,196	71,007				42,071
Spare parts and consumables .....	25,926	38,515				41,078
Work in progress .....	797	2,125				10,604
Finished goods .....	36,039	65,877				70,528
	<u>174,958</u>	<u>177,524</u>				<u>164,281</u>



**18. TRADE RECEIVABLES**

The GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Trade receivables . . . . .	86,576	135,632	99,611
Less: Allowance of doubtful debts . . . . .	(5,596)	(2,657)	(3,825)
	<u>80,980</u>	<u>132,975</u>	<u>95,786</u>

The following is an aged analysis of trade receivables, presented based on the invoice date, net of allowance for doubtful debts:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Within 1 month . . . . .	77,837	96,846	84,913
More than 1 month, but less than 3 months . . . . .	931	32,022	9,712
More than 3 months, but less than 6 months . . . . .	885	1,403	82
More than 6 months, but less than 12 months . . . . .	858	2,517	874
Over 1 year . . . . .	469	187	205
	<u>80,980</u>	<u>132,975</u>	<u>95,786</u>

The Group sells blister copper, copper cathodes and copper concentrate under provisional pricing arrangements where final grades of copper, gold and silver in copper products are agreed based on third-party examination and final prices are set at a specified date based on market prices. Revenues are recognized when title and risk pass to the customer using past history of grades of copper, gold and silver in copper products based on internal examination statistics and forward prices for the expected date of final settlement and the Group normally issues invoices to customers based on 90% of revenues with the remainder being invoiced upon the date of final settlement. The Group normally requires prepayments from customers before goods dispatch while certain major customers could have an average credit period on sales of goods within two months upon issuance of sales invoice. Allowances for doubtful debts are recognized against trade receivables based on estimated irrecoverable amounts determined by reference to past default experience of the counterparty and an analysis of the counterparty's current financial position.

Before accepting any new customer, the Group assesses the potential customer's credit quality and defines credit limits by customer. Limits attributed to customers are reviewed regularly. Trade receivables disclosed above include amounts (see below for aged analysis) which are past due at the end of the reporting period for which the Group has not recognized an allowance for doubtful debts because there has not been a significant change in credit quality and the amounts are still considered recoverable. The Group does not hold any collateral or other credit enhancements over these balances nor does it have a legal right of offset against any amounts owed by the Group to the counterparty.

Age of receivables that are past due but not impaired is analyzed as follows:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Overdue by:			
Within 1 month . . . . .	24,149	26,148	39,396
More than 1 month, but less than 3 months . . . . .	521	32,022	9,712
More than 3 months, but less than 6 months . . . . .	885	1,403	82
More than 6 months, but less than 12 months . . . . .	858	2,517	874
Over 1 year . . . . .	469	187	205
	<u>26,882</u>	<u>62,277</u>	<u>50,269</u>

Movement in the allowance for doubtful debts is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Balance at the beginning of the year . . . . .	(4,426)	(5,596)	(2,657)
Impairment losses (recognized)/reversed on trade receivables, net . . . . .	(1,186)	1,568	(1,168)
Amounts written off during the year as uncollectible . . . . .	16	1,371	—
Balance at the end of the year . . . . .	<u>(5,596)</u>	<u>(2,657)</u>	<u>(3,825)</u>

In determining the recoverability of a trade receivable, the management of the Group considers any change in the credit quality of the trade receivable from the date credit was initially granted up to the end of the reporting period. Although the Group's seven largest customers accounted for significant portion, 97%, 98% and 93% respectively, of its sales for each of the three years ended December 31, 2009, 2010 and 2011, these customers are large and reputable in the market and have traded with the Group with good settlement history. The remaining sales revenue is attributable to a number of customers in different countries. In the opinion of the directors of the Company, the Group has concentration of credit risk because 95%, 86% and 91% of the trade receivables as at December 31, 2009, 2010 and 2011, respectively, was due from the Group's seven largest customers.

The Group does not hold any collateral over these balances.

Age of impaired trade receivables is analyzed as follows:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Overdue by:			
Within 6 months . . . . .	(47)	(174)	(814)
More than 6 months, but less than 12 months . . . . .	(19)	(93)	(352)
Over 1 year . . . . .	(5,530)	(2,390)	(2,659)
	<u>(5,596)</u>	<u>(2,657)</u>	<u>(3,825)</u>

Included in the Group's trade receivables are balances with the following related parties:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Fellow subsidiaries .....	18,172	81,985	58,591
A subsidiary of a non-controlling shareholder of a subsidiary .....	—	—	13,784
	<u>18,172</u>	<u>81,985</u>	<u>72,375</u>

The above balances with related parties are unsecured, interest-free and are repayable according to the relevant sales contracts.

## 19. AMOUNTS DUE FROM A CUSTOMER UNDER A CONSTRUCTION CONTRACT

### THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Construction costs incurred plus recognized profits less recognized losses to date .....	26,066	26,085	—
Less: Progress billings .....	—	—	—
	<u>26,066</u>	<u>26,085</u>	<u>—</u>

The above represents the amounts due from a fellow subsidiary under a construction contract in respect of the construction of a transformer station in Zambia. At December 31, 2009 and 2010, the Group did not have retention held by the fellow subsidiary for the contract work while the Group received advances from the fellow subsidiary amounted to US\$26,966,000 and US\$27,800,000 (included in "receipts in advance from customers" in "other payables and accrued expenses" set out in note 23 below) for the contract work as at December 31, 2009 and 2010, respectively. During the year ended December 31, 2011, the construction of the transformer station has been completed and a net revenue of US\$1,715,000 was recognized to profit or loss.

## 20. PREPAYMENTS, OTHER RECEIVABLES AND OTHER ASSETS

### THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
<i>Non-current:</i>			
Prepayments for property, plant and equipment .....	2,681	12,528	4,336
Contributions to Environment Protection Fund (Note 27) .....	—	—	1,434
Prepayments for electricity* .....	—	—	8,644
	<u>2,681</u>	<u>12,528</u>	<u>14,414</u>
<i>Current:</i>			
Prepayments for inventories .....	56,136	11,581	9,461
VAT receivables .....	27,017	12,335	23,336
Deposits in futures margin accounts .....	2,000	18,317	14,359
Other receivables .....	59,108	68,162	8,928
	<u>144,261</u>	<u>110,395</u>	<u>56,084</u>

\* Pursuant to a power supply agreement (the "Power Supply Agreement") and a connection agreement (the "Connection Agreement") entered into between a subsidiary of the Group, Luanshya, and a power supply company, Copperbelt Energy Corporation Plc ("Copperbelt Energy"), in Zambia, Luanshya undertook to construct certain power supply network assets (the "Network Assets") to enable Copperbelt Energy to supply the electricity to the mining/leaching project of Luanshya in Muliashi, Copperbelt Province of Zambia. According to the Connection Agreement, Luanshya shall transfer the Network Assets to Copperbelt Energy upon the completion of the construction for a consideration of US\$3,725,000 payable by Copperbelt Energy to Luanshya within the seventh anniversary from the date of transfer, subject to Luanshya's fulfillment of consumption of electricity prescribed in the Connection Agreement.

The total construction cost of the Network Assets is budgeted to be approximately US\$12.0 million, out of which US\$8,644,000 had been incurred up to December 31, 2011. The construction of the Network Assets completed in March 2012.

The directors of the Company consider that the construction costs for the Network Assets are, in substance, prepayments for electricity that will be amortized over the tenure of the Power Supply Agreement (expires in January 2025) upon the commencement of electricity consumption by Luanshya.

Included in the Group's prepayments, other receivables and other assets are balances with the following related parties:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
CNMC and fellow subsidiaries . . . . .	63,274	68,725	12,886
Associate . . . . .	—	—	897
A non-controlling shareholder of a subsidiary . . . . .	1,451	—	444
	<u>64,725</u>	<u>68,725</u>	<u>14,227</u>

The above balances with related parties are unsecured, interest-free and are repayable on demand.

## 21. RESTRICTED BANK BALANCES/BANK BALANCES AND CASH

### THE GROUP

#### (i) Restricted bank balances

The Group's restricted bank balances are analyzed as follows:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Pledged for bank loans:			
— repayable after 1 year classified as non-current assets . . . . .	2,059	2,002	2,004
— repayable within 1 year classified as current assets . . . . .	—	2,092	2,126
Designated as deposits classified as non-current assets:			
— for issuing letters of guarantee to secure future restoration costs as required by the government of Zambia (Note 27) . . . . .	—	—	7,974
Designated as deposits classified as current assets:			
— for custom clearance . . . . .	563	563	563
— for issuing letters of credit . . . . .	—	15,513	4,868
	<u>2,622</u>	<u>20,170</u>	<u>17,535</u>

The restricted bank balances carry interest at rates ranging from 0.1% to 3.0% per annum for the Relevant Years.

## (ii) Bank balances and cash

Bank balances carry interest at market rates ranging from 0.1% to 3.0% per annum for the Relevant Years.

**22. TRADE PAYABLES**

The following is an aged analysis of trade payables, presented based on the invoice date:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Within 1 month . . . . .	134,542	99,456	56,363
More than 1 month, but less than 3 months . . . . .	29,805	60,584	33,872
More than 3 months, but less than 6 months . . . . .	174	1,848	732
More than 6 months, but less than 12 months . . . . .	933	291	3,725
Over 1 year . . . . .	7,342	8,981	12,672
	<u>172,796</u>	<u>171,160</u>	<u>107,364</u>

The average credit period on purchases of certain goods is within 3 months and most payables are paid within the credit time frame. The trade payables aged over 1 year are mainly due to CNMC and fellow subsidiaries, and a contractor of the Group.

Included in the Group's trade payables are balances with the following related parties:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
CNMC and fellow subsidiaries . . . . .	<u>7,831</u>	<u>13,476</u>	<u>3,044</u>

The above balances with related parties are unsecured, interest-free and are repayable on demand.

**23. OTHER PAYABLES AND ACCRUED EXPENSES**

## THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Receipts in advance from customers . . . . .	29,245	30,800	9,124
Accrued expenses . . . . .	32,291	32,161	20,005
Payables for properties, plant and equipment . . . . .	8,874	17,472	15,168
Dividends payable . . . . .	—	7,400	1,500
Other payables* . . . . .	<u>5,351</u>	<u>12,925</u>	<u>11,319</u>
	<u>75,761</u>	<u>100,758</u>	<u>57,116</u>

\* Included a provision for legal cases of US\$300,000, US\$300,000 and US\$300,000 as at December 31, 2009, 2010 and 2011, respectively, details of which are set out in note 39.

Included in the Group's other payables and accrued expenses are balances with the following related parties:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
CNMC and fellow subsidiaries . . . . .	43,638	62,377	26,276
Non-controlling shareholders of subsidiaries . . . . .	1,010	4,892	1,500
	<u>44,648</u>	<u>67,269</u>	<u>27,776</u>

The above balances with related parties are unsecured, interest-free and are repayable on demand, except for those received from a fellow subsidiary for a construction contract as at December 31, 2009 and 2010, as disclosed in note 19, that were applied to settle the amounts due from that fellow subsidiary under the construction contract during the year ended December 31, 2011.

## 24. BANK AND OTHER BORROWINGS

### THE GROUP

	Notes	At December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
Bank borrowings				
— secured . . . . .	1	170,000	270,000	170,000
— unsecured . . . . .	2	180,000	234,000	435,450
Loans from CNMC, unsecured . . . . .	3	33,922	34,723	82,068
Loans from a non-controlling shareholder of a subsidiary, unsecured . . . . .	4	42,683	42,683	23,661
		<u>426,605</u>	<u>581,406</u>	<u>711,179</u>
Carrying amount repayable:				
Within one year . . . . .		47,944	156,745	199,000
More than one year, but not exceeding two years . . . . .		119,000	199,000	19,000
More than two year, but not exceeding five years . . . . .		244,661	160,661	149,661
More than five years . . . . .		15,000	65,000	343,518
		426,605	581,406	711,179
Less: Amounts shown under current liabilities . . . . .		(47,944)	(156,745)	(199,000)
		<u>378,661</u>	<u>424,661</u>	<u>512,179</u>

#### Notes:

- (1) The bank loans are secured by bank balances as disclosed in note 21. Additionally, CNMC and a bank in the PRC had granted guarantees in favor of banks for these bank loans granted to the Group. These bank loans bore interest at rates, varied based on LIBOR, ranging from 1.0% to 4.3% per annum during the Relevant Years.
- (2) CNMC had granted guarantees in favor of banks for bank loans of US\$180.0 million, US\$234.0 million and US\$355.5 million as at December 31, 2009, 2010 and 2011, respectively, granted to the Group. Besides, CNMC and a non-controlling shareholder of a subsidiary had also provided a joint-guarantee to a bank for granting a bank loan of US\$80.0 million as at December 31, 2011. These bank loans bore interest at rates, varied based on LIBOR, ranging from 1.4% to 3.0% per annum during the Relevant Years.

(3) The loans from CNMC are analyzed as follows:

	Interest rate (per annum)	At December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
At fixed rate .....	8%	109	109	—
At floating rate, varied based on LIBOR .....	2.2%-7.1%	8,000	8,000	82,068
Others .....	Note	25,813	26,614	—
		<u>33,922</u>	<u>34,723</u>	<u>82,068</u>

Note: Interest on loans outstanding for the period from January 1, 2009 to June 30, 2009 bore interest at fixed interest rates. The loans starting from July 1, 2009 bore interest at a rate, varied based on the RMB benchmark loan rate published by the People's Bank of China, of 5.9% per annum. These loans were repaid in 2011.

The loans from CNMC as at December 31, 2011 totaled to US\$82.1 million are repayable from November 20, 2014 to November 17, 2018. Nevertheless, the Group intends to repay these loans within six months after the listing of the Company's shares on the Main Board of the Stock Exchange (the "Listing").

(4) Interest on the loans outstanding for the period from January 1, 2009 to June 30, 2009 bore interest at fixed rates. The loans for the period from July 1, 2009 to December 31, 2011 bore interest at rates, varied based on LIBOR, ranging from 1.4% to 2.2% per annum.

The loans from a non-controlling shareholder of a subsidiary as at December 31, 2011 totaled to US\$23.7 million are repayable from January 10, 2012 to June 30, 2014. Nevertheless, the Group intends to repay all remaining loans within six months after the Listing.

## 25. DERIVATIVES

### THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Copper futures contracts, at fair value .....	134	10,101	775

Details of the above futures contracts are analyzed as follows:

	At December 31,		
	2009	2010	2011
Number of contracts			
— Buy .....	—	1	—
— Sell .....	1	12	25
Exercise price (in US\$) .....	7,105	8,150 – 9,261	7,150 – 8,190
		January 5, 2011 –	January 6, 2012 –
Maturity date .....	March 24, 2010	March 21, 2011	February 29, 2012

For the Relevant Years, the Group entered into certain copper futures contracts to hedge its risk associated with the prices of its blister copper sold as follows:

	Year ended December 31,		
	2009	2010	2011
Number of contracts			
— Buy .....	—	37	56
— Sell .....	1	55	101
Exercise price (in US\$) .....	7,105	6,245 – 9,270	7,150 – 9,950
Loss/(gain) arising on change in fair value of derivatives recognized to profit or loss (in US\$'000) .....	<u>134</u>	<u>25,538</u>	<u>(10,369)</u>



**26. DEFERRED REVENUE**

The amount represents grants of RMB35,700,000 in total (approximately US\$5,627,000) received in 2010 and RMB35,230,000 (approximately US\$5,831,000) received in 2011 from Ministry of Finance of the PRC to subsidize the Group's capital expenditure and interest incurred in its copper mines exploration and development activities in Zambia which were capitalized under mining properties and leases.

**27. PROVISION FOR RESTORATION, REHABILITATION AND ENVIRONMENTAL COSTS**

## THE GROUP

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Balance at beginning of year .....	1,145	17,095	16,479
Additional provisions recognized .....	2,132	1,400	705
Acquisition through business combination (Note 31) .....	13,657	—	—
Reductions resulting from remeasurement by qualified professionals in Zambia .....	—	(2,353)	—
Unwinding of discount (Note 8) .....	161	337	268
Balance at end of year .....	<u>17,095</u>	<u>16,479</u>	<u>17,452</u>

The Group's provision for restoration, rehabilitation and environmental costs is related to the Group's subsidiaries in Zambia which are involved in mining, leaching and smelting operations. The provision represents the accrued cost required to provide adequate restoration and rehabilitation measured by qualified professionals in Zambia, as discounted at rates ranging from 1.4% per annum to 3.7% per annum during the Relevant Years, upon the completion of their operations. These amounts will be settled when rehabilitation is undertaken, generally at the end of a project life, which ranges from 2 to 40 years.

The Group is required, under the prevailing regulations, to make an annual contribution equal to one-fifth of 5% to 20% of the estimated restoration costs into the Environment Protection Fund which is administrated by the Government of the Republic of Zambia. The regulations also require that the balance of the estimated restoration costs be secured using letters of guarantee. All companies in the Group have provided the relevant letters of guarantee as at December 31, 2011 (Note 21(i)), except for SML, which has not received a demand notice at the date of this report.

The directors of the Company opined that adequate provision has been made at the end of each reporting period.

**28. DEFERRED TAXATION**

## THE GROUP

***Deferred tax assets/(liabilities)***

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Deferred tax assets .....	<u>5,538</u>	<u>4,997</u>	<u>2,149</u>
Deferred tax liabilities .....	<u>(45,185)</u>	<u>(67,296)</u>	<u>(78,438)</u>

The following are the major deferred tax balances recognized and movements thereon during the Relevant Years:

	Property, plant and equipment	Tax losses	Total
	US\$'000	US\$'000	US\$'000
Balance at January 1, 2009 .....	(34,310)	—	(34,310)
Arising from business combination (Note 31) .....	(24,323)	30,205	5,882
(Charge)/credit to profit or loss .....	<u>(20,829)</u>	<u>9,610</u>	<u>(11,219)</u>
Balance at December 31, 2009 .....	(79,462)	39,815	(39,647)
(Charge)/credit to profit or loss .....	<u>(37,373)</u>	<u>14,721</u>	<u>(22,652)</u>
Balance at December 31, 2010 .....	(116,835)	54,536	(62,299)
(Charge)/credit to profit or loss .....	<u>(82,074)</u>	<u>68,084</u>	<u>(13,990)</u>
Balance at December 31, 2011 .....	<u>(198,909)</u>	<u>122,620</u>	<u>(76,289)</u>

Subject to agreement with the ZRA, the above tax losses of a subsidiary available to be carried forward up to a maximum of ten years from the year in which they are incurred for set off against future taxable profits from the same source of that subsidiary.

## 29. CAPITAL

The balance of capital at December 31, 2009 and 2010 represents the aggregate of the capital of companies comprising the Group attributable to CNMC prior to the Reorganization.

The Company was incorporated with an authorized share capital of HK\$100,000, divided into 100,000 ordinary shares of HK\$1.00 each. At the date of incorporation, 1 ordinary share of HK\$1.00 each was issued at HK\$1.00 paid to an initial subscriber which was then transferred to CNMD. On October 6, 2011, the Company's authorized share capital increased from 100,000 ordinary shares of HK\$1.00 each to 5,000,000,000 ordinary shares of HK\$1.00 each.

The balance of capital as at December 31, 2011 represents the issued and fully paid share capital of the Company upon the completion of the Reorganization. The movement of the share capital of the Company is as follows:

	Number of shares	Share capital
		HK\$'000
<i>Ordinary shares of HK\$1.00 each</i>		
Authorized:		
At date of incorporation on July 18, 2011 .....	100,000	100
Increase on October 6, 2011 .....	<u>4,999,900,000</u>	<u>4,999,900</u>
At December 31, 2011 .....	<u>5,000,000,000</u>	<u>5,000,000</u>
Issued and fully paid:		
At date of incorporation on July 18, 2011 .....	1	—
Issued pursuant to the Reorganization on November 22, 2011 .....	<u>2,599,999,999</u>	<u>2,600,000</u>
At December 31, 2011 .....	<u>2,600,000,000</u>	<u>2,600,000</u>

	December 31, 2011
	<u>US\$'000</u>
Presented in the Financial Information as .....	333,333

### 30. INTERESTS IN SUBSIDIARIES

	December 31, 2011
	<u>US\$'000</u>
THE COMPANY	
Cost of investment in a subsidiary .....	315,859
Receivable from a subsidiary .....	<u>52,730</u>
	<u>368,589</u>

A receivable from Luanshya of US\$106,058,000 was assigned to the Company from CNMC pursuant to a deed of assignment dated November 22, 2011 in the Reorganization (Note 1). The directors of the Company consider that the balance will not be repayable within one year. Fair value adjustment amounting to US\$53,328,000 in respect of the receivable, calculated using a discount rate of 15% per annum and a term of five years has been recognized as part of the cost of investment in Luanshya.

### 31. ACQUISITION OF A SUBSIDIARY

On the Date of Acquisition, CNMC completed an acquisition of 80% shareholding in Luanshya, a company comprising the Group after the Reorganization, and US\$106.1 million debts owed by Luanshya to its shareholder (Enya Holding BV) pursuant to agreements entered into with Enya Holding BV and The Government of the Republic of Zambia (the then shareholders of Luanshya). Luanshya was incorporated in Zambia and carried out mining operations in its copper/cobalt mines in Zambia. Due to the global economic turndown that negatively affected the business of Luanshya in late 2008 and early 2009, all its employees were terminated in January 2009 and its mines were either placed on care-and-maintenance or have yet developed.

Because Enya Holding BV needs to dispose of its investment in Luanshya and the Government of the Republic of Zambia needs to resume the operation of Luanshya in order to resolve the unemployment of local workers in a short period of time, only a few of potential buyers were invited for bidding and CNMC succeeded in the bidding in June 2009.

The directors of the Company initially measure the separately recognizable identifiable assets acquired and the liabilities assumed as of the Date of Acquisition in accordance with the requirements of HKFRS 3 (revised) and engages an independent consultant to determine the identifiable assets and the liabilities as set out below.

The Group reviews the procedures it used to identify and measure the assets acquired and liabilities assumed. After that review, the management of the Group considered that the procedures and resulting measures were appropriate and recognized a gain on bargain purchase of US\$48,945,000.

The following table summarizes the consideration paid for the acquisition of Luanshya and the amounts of the assets acquired and liabilities assumed on the Date of Acquisition.

	<u>Date of Acquisition</u> US\$'000
<i>Consideration</i>	
Total consideration transferred — Cash* . . . . .	50,000
<i>Recognized amount of identified assets acquired and liabilities assumed</i>	
Inventories . . . . .	7,952
Other receivables . . . . .	650
Property, plant and equipment (Note 15) . . . . .	96,339
Deferred tax assets (Note 28) . . . . .	5,882
Provision for restoration, rehabilitation and environmental costs (Note 27) . . . . .	(13,657)
Amount due to CNMC assigned to the Company upon the completion of the Reorganization (Note 1) . . . . .	(106,058)
Total identifiable net liabilities . . . . .	(8,892)
Non-controlling interest in Luanshya . . . . .	1,779
	<u>(7,113)</u>

*Note:*

\* The consideration was paid by CNMC.

Acquisition-related costs are insignificant and were expensed in profit or loss for the year ended December 31, 2009.

The revenue included in the consolidated statements of comprehensive income since the Date of Acquisition contributed by Luanshya was nil, US\$62.8 million and US\$116.6 million (being intra-group revenue fully eliminated at consolidation) for each of the three years ended December 31, 2009, 2010 and 2011, respectively. Luanshya also contributed loss of US\$4.6 million and US\$4.0 million for each of the two years ended December 31, 2009 and 2010, respectively, and a profit of US\$4.9 million for the year ended December 31, 2011.

Had Luanshya been consolidated from January 1, 2009, the consolidated revenue and profit of the Group would have been US\$696.3 million and US\$93.9 million, respectively for the year ended December 31, 2009.

### 32. CAPITAL MANAGEMENT

The Group manages its capital to ensure that entities in the Group will be able to continue as a going concern while maximizing the return to stakeholders through the optimization of the debt and equity balance. The Group's overall strategy remains unchanged during the Relevant Years.

The capital structure of the Group consists of net debt (which includes bank and other borrowings), restricted bank balances, bank balances and cash and equity attributable to owners of the Company (comprising capital, share premium, other reserves and retained profits).

#### **Gearing ratio**

The Group's management reviews the capital structure on a regular basis. As part of this review, the directors of the Company consider the cost of capital and the risks associated with each class of capital.

The gearing ratio of the Group at the end of the reporting period was as follows:

	Notes	At December 31,		
		2009	2010	2011
		US\$'000	US\$'000	US\$'000
Debts .....	(i)	426,605	581,406	711,179
Less: Restricted bank balances, bank balances and cash . . .		(196,924)	(356,959)	(234,838)
Net debt .....		229,681	224,447	476,341
Equity .....	(ii)	267,067	318,703	372,304
Net debt to equity ratio .....		86.0%	70.4%	127.9%

Notes:

- (i) Debt comprises non-current and current bank and other borrowings as detailed in note 24.  
(ii) Equity includes capital, share premium, other reserves and retained profits attributable to owners of the Company.

### 33. FINANCIAL INSTRUMENTS

#### *Categories of financial instruments*

##### THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Financial assets			
Loans and receivables (including restricted bank balances, bank balances and cash) . . .	366,029	588,748	377,247
Finance lease receivables .....	—	—	29,834
Financial liabilities			
Amortized costs .....	613,626	790,363	846,530
Derivatives .....	134	10,101	775

##### THE COMPANY

Financial liabilities			
Amortized costs .....	—	—	4,000

#### *Financial risk management objectives and policies*

The Group's major financial instruments include trade and other receivables, restricted bank balances, bank balances and cash, trade and other payables, finance lease receivables, bank and other borrowings, and derivatives. Details of these financial instruments are disclosed in the respective notes. The risks associated with these financial instruments and the policies on how to mitigate these risks are set out below. The directors of the Company manage and monitor these exposures to ensure appropriate measures are implemented on a timely and effective manner.

#### *Credit risk*

The Group's maximum exposure to credit risk in the event of the counterparties failure to perform their obligations at the end of each reporting period in relation to each class of recognized financial assets is the carrying amount of those assets stated in the consolidated statements of financial position.

The Group's credit risk is primarily attributable to its trade and other receivables and finance lease receivables. In order to minimize the credit risk, the Group's management continuously monitors the level of exposure to ensure that follow-up action is taken to recover overdue debts. In addition, the Group reviews the recoverable amount of each individual debt at the end of each reporting period to ensure that adequate impairment losses are made for irrecoverable amounts. In this regard, the directors of the Company consider that the Group's credit risk is significantly reduced.

The credit risk on restricted bank balances and bank balances is minimal as such amounts are placed in banks with good reputation.

The Group has concentration of credit risk because 95%, 86% and 91% of the trade receivables as at December 31, 2009, 2010 and 2011, respectively, was due from the Group's seven largest customers during each of the three years then ended.

Other than the above, the Group does not have significant concentration of credit risk.

#### *Currency risk*

The Group's operation is in Zambia and most of its sales and purchases were denominated in US\$, the functional currency of the companies comprising the Group, while certain sales and purchases were settled in currencies (mainly Zambia Kwacha ("ZMK") and Renminbi ("RMB")) other than the functional currency of these group entities that expose the Group to foreign currency risk.

The carrying amounts of the Group's foreign currency denominated monetary assets and liabilities are as follows:

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
ZMK denominated monetary assets .....	46,836	49,989	25,396
ZMK denominated monetary liabilities .....	(1,386)	(7,943)	(2,874)
RMB denominated monetary assets .....	1,512	8,894	26,573
RMB denominated monetary liabilities .....	<u>(25,842)</u>	<u>(29,143)</u>	<u>(44,677)</u>

The sensitivity analysis below has been determined based on the exposure to exchange rates of ZMK and RMB against US\$. For a 5%, 10%, 15% weakening/strengthening of ZMK and RMB against US\$ and all other variables being held constant, there would have no impact on the Group's total equity apart from the retained profits and the effect on the Group's profit before tax for the Relevant Years are as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
	Increase/(Decrease)		
<u>ZMK against US\$</u>			
Weakening			
— 5% .....	(2,273)	(2,102)	(1,126)
— 10% .....	(4,545)	(4,205)	(2,252)
— 15% .....	(6,818)	(6,307)	(3,378)
Strengthening			
— 5% .....	2,273	2,102	1,126
— 10% .....	4,545	4,205	2,252
— 15% .....	6,818	6,307	3,378
<u>RMB against US\$</u>			
Weakening			
— 5% .....	1,217	1,012	905
— 10% .....	2,433	2,025	1,810
— 15% .....	3,650	3,037	2,716
Strengthening			
— 5% .....	(1,217)	(1,012)	(905)
— 10% .....	(2,433)	(2,025)	(1,810)
— 15% .....	<u>(3,650)</u>	<u>(3,037)</u>	<u>(2,716)</u>

#### *Liquidity risk management*

The directors of the Company have built an appropriate liquidity risk management framework for the management of the Group's short, medium and long-term funding and liquidity requirements. The Group manages liquidity risk by maintaining banking facilities and by continuously monitoring forecast and actual cash flows and matching the maturity profiles of its financial assets and liabilities.



The following table details the Group's remaining contractual maturity for its financial liabilities. The table has been drawn up to reflect the undiscounted cash flows of non-derivative financial liabilities based on the earliest date on which the Group can be required to pay. The table includes both interest and principal cash flows. The interest payments are computed using contractual rates or if variable, based on the prevailing market rate at the end of each reporting period. For derivatives settled on a net basis, the table has been drawn up based on undiscounted contractual net cash flows.

	Weighted average interest rate	Less than 6 months	Over 6 months but not more than 1 year	1 to 5 years	More than 5 years	Total undiscounted cash flows	Carrying amounts
	%	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000	US\$'000
<b>THE GROUP</b>							
<u>December 31, 2009</u>							
Trade and other payables . . . . .		187,021	—	—	—	187,021	187,021
Bank and other borrowings . . . . .	1.96%	26,080	29,783	374,016	15,021	444,900	426,605
Derivatives . . . . .		134	—	—	—	134	134
		<u>213,235</u>	<u>29,783</u>	<u>374,016</u>	<u>15,021</u>	<u>632,055</u>	<u>613,760</u>
<u>December 31, 2010</u>							
Trade and other payables . . . . .		208,957	—	—	—	208,957	208,957
Bank and other borrowings . . . . .	1.90%	27,250	139,003	374,502	70,569	611,324	581,406
Derivatives . . . . .		10,101	—	—	—	10,101	10,101
		<u>246,308</u>	<u>139,003</u>	<u>374,502</u>	<u>70,569</u>	<u>830,382</u>	<u>800,464</u>
<u>December 31, 2011</u>							
Trade and other payables . . . . .		135,351	—	—	—	135,351	135,351
Bank and other borrowings* . . . . .	1.54%	26,647	188,066	204,255	376,475	795,443	711,179
Derivatives . . . . .		775	—	—	—	775	775
		<u>162,773</u>	<u>188,066</u>	<u>204,255</u>	<u>376,475</u>	<u>931,569</u>	<u>847,305</u>
<b>THE COMPANY</b>							
<u>December 31, 2011</u>							
Amount due to the ultimate holding company . . . . .		4,000	—	—	—	4,000	4,000

\* The Group intends to repay the loans from CNMC in an aggregate amount of US\$82,068,000 and the remaining loans from a non-controlling shareholder of a subsidiary of US\$23,661,000, within six months after the Listing (Note 24). The expected repayment dates of the bank and other borrowings after taking into account the aforesaid intention is as follows:

	The undiscounted cash flows
	US\$'000
Less than 6 months . . . . .	26,647
Over 6 months but not more than 1 year . . . . .	287,099
1 to 5 years . . . . .	166,438
More than 5 years . . . . .	296,098
	<u>776,282</u>

*Interest rate risk management*

The Group is exposed to cash flow interest rate risk through the impact of rate changes on interest-bearing financial assets and liabilities, mainly interest-bearing restricted bank balances, bank balances and bank and other borrowings at variable interest rates. The Group currently does not have an interest rate hedging policy. However, the management will consider hedging significant interest rate risk should the need arise.

The sensitivity analysis below has been determined based on the exposure to interest rates for interest-bearing restricted bank balances, bank balances and variable rate bank and other borrowings at the end of each reporting period and assumed that the amount of assets and liabilities outstanding at the end of each reporting period was outstanding for the whole year.

If interest rates on bank and other borrowings had been 100 basis points (“BPs”) lower (such effect on restricted bank balances and bank balances, however, had been ignored as most of them bore interest at minimal rate at the end of each reporting period) and all other variables were held constant, there would have no impact on the Group’s total equity apart from retained profits and the potential effect on profit before tax for the Relevant Years is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Increase in profit before tax for the year . . . . .	<u>3,355</u>	<u>3,760</u>	<u>3,037</u>

If interest rates on restricted bank balances, bank balances and bank and other borrowings had been 100 BPs higher and all other variables were held constant, there would have no impact on the Group’s total equity apart from retained profits and the potential effect on profit before tax for the Relevant Years is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Decrease in profit before tax for the year . . . . .	<u>(1,511)</u>	<u>(522)</u>	<u>(676)</u>

*Commodity price risk*

The Group’s commodity price risk is mainly the exposure to fluctuations in the prevailing market price of copper which are the major commodities purchased, produced and sold by the Group. To minimize this risk, the Group enters into copper futures contracts and provisional price arrangement to manage the Group’s exposure in relation to forecasted sales of copper products, forecasted purchases of copper concentrate, inventories and firm commitments to sell the Group’s copper products.

Financial assets and liabilities of the Group whose fair value change in line with the fluctuations in the prevailing market price of copper mainly comprise copper futures contracts and provisional price arrangements. If all prices of copper futures had been increased by 10% and all other variables were held constant, there would have no impact on the Group’s total equity apart from retained profits and the potential effect on profit before tax for the Relevant Years is as follows:

	Year ended December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
(Decrease)/increase in profit before tax for the year . . . . .	<u>(7,312)</u>	<u>4,112</u>	<u>9,729</u>

There would be an equal and opposite impact on the profit before tax for the year where there had been 10% decrease in all prices of copper futures.

*Fair value of financial instruments*

The fair value of financial assets and financial liabilities are determined in accordance with generally accepted pricing models based on discounted cash flow analysis using rates from observable current market transaction as input. The fair value of derivative instruments are calculated using quoted prices.

The directors of the Company consider that the carrying amounts of financial assets, financial liabilities recorded at amortized cost in the Financial Information approximate their fair values at the end of each reporting period.

*Fair value measurements recognized in the consolidated statements of financial position*

The following table provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, grouped into Levels 1 to 3 based on the degree to which the fair value is observable:

- Level 1 fair value measurements are those derived from quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2 fair value measurements are those derived from inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and
- Level 3 fair value measurements are those derived from valuation techniques that include inputs for the asset or liability that are not based on observable market data (unobservable inputs).

	<u>Level 1</u> US\$'000	<u>Level 2</u> US\$'000	<u>Level 3</u> US\$'000	<u>Total</u> US\$'000
<u>December 31, 2009</u>				
<i>Financial liabilities</i>				
Derivative instruments .....	134	—	—	134
<u>December 31, 2010</u>				
<i>Financial liabilities</i>				
Derivative instruments .....	10,101	—	—	10,101
<u>December 31, 2011</u>				
<i>Financial liabilities</i>				
Derivative instruments .....	<u>775</u>	<u>—</u>	<u>—</u>	<u>775</u>

### 34. OPERATING LEASE — THE GROUP AS LESSEE

At the end of each of the Relevant Years, the Group had commitments for future minimum lease payments under a non-cancellable operating lease which fall due as follows:

	<u>At December 31,</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
	US\$'000	US\$'000	US\$'000
Within one year .....	—	—	6,567
In the second to fifth years inclusive .....	—	—	9,453
	<u>—</u>	<u>—</u>	<u>16,020</u>

Operating lease payments represent rentals payable by the Group under a property rent agreement signed on June 30, 2011 between a subsidiary of the Company, CCS, and a fellow subsidiary of the Group. The lease period is from July 1, 2011 to June 30, 2014 and rentals are determined on a fixed amount plus a variable amount calculated at LIBOR+0.4% per annum of the value of the assets leased to CCS less accumulated payments of the fixed amounts made.

### 35. CAPITAL COMMITMENTS

#### THE GROUP

	At December 31,		
	2009	2010	2011
	US\$'000	US\$'000	US\$'000
Capital expenditure contracted for but not provided for in respect of:			
— acquisition of property, plant and equipment . . . . .	<u>15,673</u>	<u>97,609</u>	<u>284,159</u>
Capital expenditure authorized but not contracted for in respect of:			
— acquisition of property, plant and equipment . . . . .	<u>—</u>	<u>—</u>	<u>1,057,213</u>

In addition to the above, as at December 31, 2010 and 2011, the Group had commitment to invest in an associate amounting to US\$2,143,000 pursuant to the relevant joint venture agreement of that associate. In February 2012, the Group had fulfilled such commitment to invest in this associate.

## 36. RELATED PARTY TRANSACTIONS

Other than the transactions and balances with related parties disclosed elsewhere in the Financial Information, the Group had the following significant transactions with related parties during the Relevant Years:

	Notes	Related parties	Year ended December 31,		
			2009	2010	2011
			US\$'000	US\$'000	US\$'000
<i>Continuing transactions</i>					
Sales of:					
— Blister copper	(i)	Fellow subsidiary	181,631	726,335	626,874
	(i)	Subsidiary of a non-controlling shareholder of a subsidiary	—	—	170,960
— Copper cathodes	(i)	CNMC and fellow subsidiaries	18,644	24,409	28,007
— Other materials	(i)	Fellow subsidiary	305	1,251	1,729
Construction revenue	(i),(iii)	Fellow subsidiary	1,807	19	1,715
Services income	(i)	Fellow subsidiary	76	103	118
Finance income earned under finance leases	(i),(iv)	Fellow subsidiary	—	—	1,049
Purchases of:					
— Plant and equipment	(i)	CNMC and fellow subsidiaries	17,969	21,529	93,046
— Materials	(i)	CNMC and fellow subsidiaries	17,653	19,965	38,467
— Electricity	(i)	Fellow subsidiary	5,705	8,515	8,229
— Services	(i)	Fellow subsidiaries	3,747	11,933	98,096
— Freight and transportation	(i)	Fellow subsidiaries	—	5,952	9,453
Rental expenses	(i)	Fellow subsidiary	3,170	3,804	4,688
Rental expenses	(v)	CNMC	308	346	359
Interest expense	(ii)	CNMC	1,836	1,953	1,811
	(ii)	Non-controlling shareholder of a subsidiary	1,223	732	641
Guarantee fee	(i)	CNMC	1,737	2,733	2,135

*Notes:*

- (i) These transactions were conducted in accordance with terms of the relevant agreements.
- (ii) The interest expense arose from unsecured loans from CNMC and a non-controlling shareholder of a subsidiary. Further details of the loans at each of the end of the reporting period are set out in note 24.
- (iii) Details of this transaction are set out in note 19.
- (iv) The finance income earned under finance leases arose from the finance leases to a fellow subsidiary. Details of the finance leases are set out in note 16.
- (v) The rental expenses were conducted on terms mutually agreed.

	Note	Related parties	Year ended December 31,		
			2009	2010	2011
			US\$'000	US\$'000	US\$'000
<i>Discontinued transaction</i>					
Sale of a hospital	(i)	Fellow subsidiary	1,638	—	—

*Note:*

- (i) This transaction was conducted in accordance with the terms of the relevant agreement.

In addition to the above, during the Relevant Years, the Group also had the following transactions with the related parties:

- (i) During the Relevant Years, apart from those disclosed above, CNMC also provided guarantees to banks, at nil consideration, for granting unsecured loans to the Group of US\$180.0 million, US\$234.0 million, and US\$355.5 million as at December 31, 2009, 2010 and 2011, respectively. In addition, CNMC and a non-controlling shareholder of a subsidiary had provided a joint-guarantee to a bank at nil consideration for granting an unsecured loan to a subsidiary of US\$80.0 million as at December 31, 2011. Further details are set out in note 24.
- (ii) The details of remuneration of key management personnel, represents emoluments of directors of the Company, paid during the Relevant Years are set out in note 12.
- (iii) On July 1, 2009, a subsidiary of the Company, CCS, entered into an agreement with Fifteen MCC Africa Construction & Trade Ltd. ("Fifteen MCC Africa"), a fellow subsidiary, (the "Fifteen MCC Africa Agreement") pursuant to which that subsidiary agreed to provide certain living quarters to Fifteen MCC Africa on a free of charge basis. Fifteen MCC Africa shall pay for the use of water and electricity and other expenses such as repair and any applicable tax in Zambia. The Fifteen MCC Africa Agreement shall remain for as long as CCS is in existence. As Fifteen MCC Africa provides construction as well as equipment repair and maintenance services to CCS on an ongoing basis, it requires accommodation for its staff based in Zambia.
- (iv) On July 1, 2011, a subsidiary of the Company, CCS entered into a debt transfer and offset agreement with CNMC and Zambia China Economic and Trade Cooperation Zone Development Company Limited ("ZCCZ"), a fellow subsidiary, pursuant to which CCS and ZCCZ agreed to set off an amount payable to ZCCZ by CCS of US\$8,877,000 against the amount receivable by CCS from ZCCZ of US\$62,698,000.

Pursuant to the same agreement, CCS, CNMC and ZCCZ agreed to transfer a shareholder's loan owed by CCS to CNMC of US\$39,327,000 to ZCCZ.

Immediately after the set off and the transfer of the shareholder's loan, CCS's receivable due from ZCCZ became US\$14,494,000 and CCS's shareholder's loan payable to CNMC became nil. The balance of US\$14,494,000 has been settled by ZCCZ during the year ended December 31, 2011 in cash.

### 37. MAJOR NON CASH TRANSACTIONS

- (i) During the year ended December 31, 2011, the Group and a non-controlling shareholder of a subsidiary injected additional capital to Huachin amounting to US\$6,250,000, in cash, and US\$3,750,000, in form of property, plant and equipment. The injection of additional capital in form of property, plant and equipment is a non-cash transaction.
- (ii) Pursuant to the Reorganization, the Company issued and allotted as fully paid up capital of HK\$2,599,999,999 (equivalent to US\$333,333,000) which comprise of 2,599,999,999 ordinary shares at HK\$1.00 each to CNMD, which is a non-cash transaction.
- (iii) Pursuant to the debt transfer and offset agreement entered into among CCS, CNMC and ZCCZ (Note 36 (iv)), (i) CCS and ZCCZ agreed to set off an amount payable to ZCCZ by CCS of US\$8,877,000 against the amount receivable by CCS from ZCCZ of US\$62,698,000; and (ii) CCS, CNMC and ZCCZ agreed to transfer a shareholder's loan owed by CCS to CNMC of US\$39,327,000 to ZCCZ. They are all non-cash transactions.

**38. RETIREMENT BENEFIT SCHEMES**

The employees of the Group's subsidiaries in Zambia are members of the state-managed retirement benefits scheme operated by the Zambia government. The subsidiaries are required to contribute a certain percentage of their payroll to the retirement benefits scheme to fund the benefits. Besides, certain employees of the Group are also members of the state-managed retirement benefits scheme operated by the PRC government. The Group also contributes a certain percentage of their payroll to the retirement benefits scheme to fund the benefits.

The only obligation of the Group with respect to the aforesaid retirement benefits schemes is to make the required contributions under the schemes.

**39. CONTINGENT LIABILITIES**

As at the date of this report, the Group was the defendant for various claims involving alleged unfair/unlawful termination or breach of employment contracts, wrongful calculation of wages/benefits, compensation for injuries and false imprisonment and defamation. At the end of each of the Relevant Years, the Group has made relevant provision for the potential liabilities of US\$300,000, US\$300,000 and US\$300,000, respectively (Note 23) which the directors of the Company opined is adequate based on the present assessments by the Group's legal advisers.

**C. DIRECTORS' REMUNERATION**

Under the arrangement currently in force, the aggregate amount of remunerations of the directors of the Company payable for the year ending December 31, 2012 is estimated to be approximately US\$730,255 (excluding any discretionary bonus).

**D. EVENTS AFTER THE REPORTING PERIOD**

- (a) In March 2012, the Group's subsidiary, SML, entered into a joint venture agreement with Huachin SPRL, a non-controlling shareholder of a subsidiary, in relation to the establishment of CNMC-Mabende Metal Leach SPRL ("CNMC-Mabende") which has yet to be established. Pursuant to the joint venture agreement, the principal business of CNMC-Mabende will involve in mining and production of copper cathodes in Congo, and SML and Huachin SPRL shall contribute US\$6,000 and US\$4,000 in cash, respectively, towards the capital of CNMC-Mabende and shall hold its 60% and 40% equity interest, respectively.

Besides, Huachin SPRL shall supply all ores in the Mabende mine to CNMC-Mabende and shall not supply the ores to any third party unless permitted by the shareholders' agreement or with the express written permission from SML. If Huachin SPRL sells any such ore to other parties, all the proceeds from the sale shall be paid to SML as compensation. In the event that the construction of production facilities of CNMC-Mabende is not completed within three years after the signing of the shareholders' agreement, Huachin SPRL shall have the right to supply ores not exceeding 1,500 tons of copper metal in the form of concentrate per month to third parties until the construction of production facilities of CNMC-Mabende is completed and put into production; and Huachin SPRL shall, at the expiry of the mining outsourcing contract involving the Mabende mine, transfer the resources of the mine (including but not limited to the surface right and mining right) to CNMC-Mabende according to a valuation conducted by independent organization appointed by both shareholders.

- (b) In March 2012, the board of directors of SML resolved the appropriation of dividend of US\$10 million for the approval in the forthcoming shareholders' meeting.



**E. SUBSEQUENT FINANCIAL STATEMENTS**

No audited financial statements of the Group, the Company or any of the companies comprising the Group have been prepared in respect of any period subsequent to December 31, 2011.

Yours faithfully,

Deloitte Touche Tohmatsu  
*Certified Public Accountants*  
Hong Kong

For illustrative purpose only, the unaudited pro forma financial information prepared in accordance with Rule 4.29 of the Listing Rules is set forth below to provide prospective investors with further information on how the proposed listing might have affected the financial position of the Group after the completion of the Global Offering.

The unaudited pro forma financial information is derived according to a number of adjustments.

The information sets out in this Appendix does not form part of the accountants' report of the financial information of the Group received from Deloitte Touche Tohmatsu, Certified Public Accountants, Hong Kong, the reporting accountants of our Company, as set forth in Appendix I to this prospectus, and is included herein for illustrative purposes only.

The unaudited pro forma financial information should be read in conjunction with the section headed "Financial Information" in this prospectus and the accountants' report of the financial information of the Group set out in Appendix I to this prospectus.

#### A. UNAUDITED PRO FORMA STATEMENT OF ADJUSTED NET TANGIBLE ASSETS

The following unaudited pro forma statement of adjusted net tangible assets of our Group prepared in accordance with Rule 4.29 of the Listing Rules is for illustration purposes only, and is set out below to illustrate the effect of the Global Offering on the consolidated net tangible assets attributable to owners of the Company as if the Global Offering had taken place on December 31, 2011.

This unaudited pro forma statement of adjusted net tangible assets has been prepared for illustrative purposes only and because of its hypothetical nature, it may not give a true picture of the consolidated net tangible assets of our Group as at December 31, 2011 or at any future dates following the completion of the Global Offering.

	Audited consolidated net tangible assets attributable to owners of the Company as at December 31, 2011 <sup>(1)</sup>	Estimated net proceeds from the Global Offering <sup>(2)</sup>	Unaudited pro forma adjusted net tangible assets attributable to owners of the Company	Unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share <sup>(3)</sup>
	US\$'000	US\$'000	US\$'000	US\$
Based on an Offer				
Price of HK\$2.10 per Share . . . . .	372,304	219,953	592,257	0.17
Based on an Offer				
Price of HK\$2.80 per Share . . . . .	372,304	295,604	667,908	0.19

*Notes:*

- (1) The audited consolidated net tangible assets attributable to the owners of the Company as at December 31, 2011 were extracted from the accountants' report of the financial information of the Group as set out in Appendix I to this Prospectus.
- (2) The estimated net proceeds of the Company from the Global Offering are based on the indicative Offer Price range of HK\$2.10 per Share and HK\$2.80 per Share after deduction of the underwriting fees and other relevant expenses payable by the Company (assuming the Over-allotment is not exercised). The estimated net proceeds of the Company from the Global Offering are converted to United States dollars at an exchange rate of US\$0.1282 to HK\$1.00 prevailing on the Latest Practicable Date. No representation is made that Hong Kong dollar amounts have been, could have been or could be converted to United States dollar, or vice versa, at that rate or at any other rates or at all.

- (3) The unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share is arrived at after the adjustments referred to in the above paragraph and on the assumption of a total of 3,470,000,000 Shares, being the number of Shares in issue upon completion of the Global Offering (including Shares in issue as of the date of this prospectus and those Shares to be issued pursuant to the Global Offering, which takes no account of any Shares which may be issued pursuant to the exercise of the Over-allotment Option) were in issue. The unaudited pro forma adjusted net tangible assets attributable to owners of the Company per Share is converted to United States dollars at an exchange rate of US\$0.1282 to HK\$1.00 prevailing on the Latest Practicable Date. No representation is made that Hong Kong dollar amounts have been, could have been or could be converted to United States dollar, or vice versa, at that rate or at any other rates or at all.

**B. REPORT FROM THE REPORTING ACCOUNTANTS ON THE UNAUDITED PRO FORMA FINANCIAL INFORMATION**

*The following is the text of a report received from the reporting accountants of the Company, Deloitte Touche Tohmatsu, Certified Public Accountants, Hong Kong, in respect of the unaudited pro forma financial information of the Group.*

**Deloitte.**  
**德勤**

德勤·關黃陳方會計師行  
香港金鐘道88號  
太古廣場一座35樓

Deloitte Touche Tohmatsu  
35/F One Pacific Place  
88 Queensway  
Hong Kong

**ACCOUNTANTS' REPORT ON UNAUDITED PRO FORMA FINANCIAL INFORMATION  
TO THE DIRECTORS OF CHINA NONFERROUS MINING CORPORATION LIMITED**

We report on the unaudited pro forma financial information (the “Unaudited Pro Forma Financial Information”) of China Nonferrous Mining Corporation Limited (the “Company”) and its subsidiaries (hereinafter collectively referred to as the “Group”), which has been prepared by the directors of the Company for illustrative purposes only, to provide information about how the proposed global offering of 870,000,000 shares of HK\$1.00 each of the Company on the Main Board of The Stock Exchange of Hong Kong Limited might have affected the financial information presented, for inclusion in Appendix II to the prospectus of the Company dated June 20, 2012 (the “Prospectus”). The basis of preparation of the Unaudited Pro Forma Financial Information is set out in Section A of Appendix II to the Prospectus.

**Respective responsibilities of directors of the Company and reporting accountants**

It is the responsibility solely of the directors of the Company to prepare the Unaudited Pro Forma Financial Information in accordance with paragraph 29 of Chapter 4 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the “Listing Rules”) and with reference to Accounting Guideline 7 “Preparation of Pro Forma Financial Information for Inclusion in Investment Circulars” issued by the Hong Kong Institute of Certified Public Accountants (the “HKICPA”).

It is our responsibility to form an opinion, as required by paragraph 29(7) of Chapter 4 of the Listing Rules, on the Unaudited Pro Forma Financial Information and to report our opinion to you. We do not accept any responsibility for any reports previously given by us on any financial information used in the compilation of the Unaudited Pro Forma Financial Information beyond that owed to those to whom those reports were addressed by us at the dates of their issue.

**Basis of opinion**

We conducted our engagement in accordance with Hong Kong Standard on Investment Circular Reporting Engagements 300 “Accountants’ Reports on Pro Forma Financial Information in Investment Circulars” issued by the HKICPA. Our work consisted primarily of comparing the unadjusted financial information with source documents, considering the evidence supporting the adjustments and discussing the Unaudited Pro Forma Financial Information with the directors of the Company. This engagement did not involve independent examination of any of the underlying financial information.

We planned and performed our work so as to obtain the information and explanations we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the Unaudited Pro Forma Financial Information has been properly compiled by the directors of the Company on the basis stated, that such basis is consistent with the accounting policies of the Group and that the adjustments are appropriate for the purpose of the Unaudited Pro Forma Financial Information as disclosed pursuant to paragraph 29(1) of Chapter 4 of the Listing Rules.

Our work has not been carried out in accordance with the auditing standards or other standards and practices generally accepted in the United States of America or auditing standards of the Public Company Accounting Oversight Board (United States) and accordingly should not be relied upon as if it has been carried out in accordance with those standards.

The Unaudited Pro Forma Financial Information is for illustrative purpose only, based on the judgments and assumptions of the directors of the Company, and, because of its hypothetical nature, does not provide any assurance or indication that any event will take place in future and may not be indicative of the financial position of the Group as at December 31, 2011 or any future date.

### **Opinion**

In our opinion:

- a) the Unaudited Pro Forma Financial Information has been properly compiled by the directors of the Company on the basis stated;
- b) such basis is consistent with the accounting policies of the Group; and
- c) the adjustments are appropriate for the purposes of the Unaudited Pro Forma Financial Information as disclosed pursuant to paragraph 29(1) of Chapter 4 of the Listing Rules.

Yours faithfully,

**Deloitte Touche Tohmatsu**  
*Certified Public Accountants*  
Hong Kong

June 20, 2012

**Technical Assessment Report  
of CNMC's Copper Properties  
in Copperbelt Province,  
Republic of Zambia**

**Report Prepared for**

**China Nonferrous Metals Mining (Group) Co., Ltd**

**Report Prepared by**



**SRK Consulting (China) Ltd**

**March 30, 2012**

**Technical Assessment Report  
of CNMC's Copper Properties in  
Copperbelt Province,  
Republic of Zambia**

For

**China Nonferrous Metals Mining (Group) Co., Ltd**

**CNMC Building, No. 10, Anding Road,  
Chaoyang District, Beijing, 100029, China  
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**SRK Project Number: SCN275  
March 30, 2012**

**Compiled by:**

**Peer Reviewed by:**

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**Dr. Yiefei Jia, MAusIMM**  
Principal Consultant  
(Geology)

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**Mike Warren, FAusIMM**  
Corporate Consultant  
(Project Evaluations)

Authors:

Qiushi Li; Pengfei Xiao; Muhui Huang; Qiuji Huang; Lanliang Niu; Andrew Lewis and Dr Yiefei Jia

Peer Reviewer:

Dr Anson Xu (internal) and Mr Mike Warren (external)



**EXECUTIVE SUMMARY**

China Nonferrous Metals Mining (Group) Co., Ltd (“CNMC”, “the Company”, or “the Client”) commissioned SRK Consulting China Limited (“SRK”) to undertake an independent assessment of all relevant technical aspects of CNMC’s four subsidiary companies’ operating properties in Zambia including the Chambishi and Luanshya copper deposits and associated ore processing plants, leaching plants and smelter, and projects under construction, including ore processing plants and leaching plants. The SRK Independent Technical Review Report (“ITR”) was required for inclusion in documents for a proposed listing (“Proposed Listing”) on the Main Board of the Stock Exchange of Hong Kong Limited (“HKEx”).

The work program for this project consisted of review of data provided, a site visit and inspection of operations in April to May 2011, discussions with the Company employees and relevant geological brigades professionals and consultants who conducted the geological exploration and feasibility study, supervision on the quality assurance and quality control (“QA/QC”) on the Chambishi Southeast Mine between June and July 2011 and updated in February 2011, data verification in May and June 2011, and resource estimation of the Chambishi SE mine in July 2011, review on production records provided by CNMC in February 2012, analysis of the data provided the Company and generated by SRK, and preparation of this report.

**Results****Overall**

The reviewed projects are owned by CNMC’s four Zambia-based subsidiary companies. NFC Africa Mining PLC (“NFCA”) which is 85% owned by CNMC, has three large-scale mining licenses covering three copper mines including Chambishi Main, Chambishi West and Chambishi Southeast, and one processing plant in the Chambishi area. These mining licenses were transferred from Zambia Consolidated Copper Mines Ltd (“ZCCM”) to NFCA in 1998. The Chambishi Main and Chambishi West Mines and the processing plant have been in operation under the control of NFCA since 2003. Sino-Metals Leach Zambia Ltd (“SML”) which is 55% owned by CNMC has one prospecting license in Mwambashi and some resources of tailings and residues in the Chambishi area. CNMC Luanshya Copper Mines PLC (“CLM”) which is 80% owned by CNMC has seven mining licenses and one processing plant in the Luanshya Area. The Baluba Center Mine has been actively mined since 2009. CNMC holds an 80% equity interests in the Chambishi Copper Smelter Ltd (“CCS”). The detail is listed in the following table.

<u>Company/Mine and Plant</u>	<u>Production</u>	<u>Design Capacity (t/a)</u>	<u>2011 Production (t)</u>	<u>Status</u>
<b>NFC Africa Mining PLC</b>				
Chambishi Main Mine . . . . .	Raw Ore - sulfide	2,145,000	1,028,306	Production
Chambishi West Mine . . . . .	Raw Ore - mixed	990,000	487,123	Production
Chambishi Southeast				
Mine <sup>1</sup> . . . . .	Raw Ore	3,300,000		Construction
Chambishi Processing Plant ..	Cu Concentrate	86,000	61,119	Production
Chambishi SE Processing				
Plant <sup>2</sup> . . . . .	Cu Concentrate	261,030		Designed
<b>Sino-Metals Leach Zambia Ltd</b>				
Chambishi Processing Plant ..	Cu Concentrate	8,150	2,094	Production
Chambishi Leach Plant . . . . .	Cu Cathode	7,000	7,003	Production
Mwambashi Processing				
Plant <sup>3</sup> . . . . .	Cu Concentrate			Planned
Kakoso Leach Plant <sup>4</sup> . . . . .	Cu Cathode	3,000		Designed
CNMC Huachin (Congo)				
Leach Plant <sup>5</sup> . . . . .	Cu Cathode	10,000		Production
Mabende Project <sup>6</sup> . . . . .	Cu Cathode	20,000		Construction

Company	Mine and Plant	Production	Design Capacity (t/a)	2011 Production (t)	Status
<b>Chambishi Copper Smelter Ltd</b>					
	Chambishi Copper Smelter . . . . .	Blister Copper	150,000	150,863	Production
<b>CNMC Luanshya Copper Mines PLC</b>					
	Baluba Center Mine . . . . .	Raw Ore - sulfide	1,500,000	1,224,068	Production
	Baluba East Mine <sup>7</sup> . . . . .	Raw Ore - oxide	900,000		Planned
	Muliashi North Mine . . . . .	Raw Ore - oxide	4,500,000	Stripping	Production
	Mashiba Mine <sup>8</sup> . . . . .	Raw Ore - sulfide			Planned
	Muliashi South Mine <sup>9</sup> . . . . .	Raw Ore - oxide			Planned
	Baluba Center Processing				
	Plant . . . . .	Cu Concentrate	86,000	63,015	Production
	Muliashi Leach Plant . . . . .	Cu Cathode	40,000		Production

## Notes:

- <sup>1</sup> NFCA-Chambishi Southeast Mine is under construction and is expected to commence production in 2016
- <sup>2</sup> NFCA-Chambishi Southeast Processing Plant is expected to be constructed in 2013 and to commence production in 2016
- <sup>3</sup> SML-Mwambashi Processing Plant is planned and construction is expected to commence in 2012
- <sup>4</sup> SML-Kakoso Leach Plant is planned and is expected to be constructed in 2012
- <sup>5</sup> SML-Mabende Project (Leach Plant) is under construction and is expected to commence production in 2014
- <sup>6</sup> SML-CNMC Huachin (Congo) Leach Plant commenced production in March 2012
- <sup>7</sup> CLM-Baluba East Mine is planned and is expected to be constructed in 2017
- <sup>8</sup> CLM-Mashiba Mine is planned and is expected to be constructed in 2014
- <sup>9</sup> CLM-Muliashi South Mine is planned and is expected to be constructed in 2014

The mines and associated plants operated by the subsidiary companies of CNMC in the Copperbelt Province of the Republic of Zambia are well integrated and well managed operations. The operating standards at all sites are generally following the Zambian national and/or international industrial practices. The plants under construction and those designed will continue to apply the same or more advanced technology and should achieve similar or better results to those achieved historically.

As of December 31, 2011, the JORC Code-compliant Measured, Indicated and Inferred Mineral Resources for NFCA's three mines were 11.31Mt at an average grade of 2.13% total copper content ("TCu"), 66.29Mt at an average grade of 2.16% TCu and 151.02Mt at an average grade of 1.88% TCu, respectively. For SML's projects, the Measured, Indicated and Inferred Mineral Resources were 0.82Mt at an average grade of 2.22% TCu with 0.91% oxidized Cu ("Ox-Cu"), 8.38Mt at an average grade of 2.00% TCu with 0.75% Ox-Cu, and 12.42Mt at an average grade of 0.91% TCu with 0.52% Ox-Cu, respectively. The Measured, Indicated and Inferred Mineral Resources for CLM were estimated at 49.14Mt at an average grade of 1.30% TCu with 0.68% Ox-Cu, 71.35Mt at an average grade of 1.26% TCu with 0.34% Ox-Cu, and 36.54Mt at an average grade of 1.38% TCu with 0.33% Ox-Cu, respectively, as shown in the following table.

Company	Deposit/Project	Measured Resource				Indicated Resource				Inferred Resource			
		Ore (Mt)	Average Grade (%)			Ore (Mt)	Average Grade (%)			Ore (Mt)	Average Grade (%)		
		TCu	Ox-Cu	Co	TCu	Ox-Cu	Co	TCu	Ox-Cu	Co	TCu	Ox-Cu	Co
<b>NFCA</b>													
	Chambishi Main ..	5.12	2.50			5.61	2.49			8.14	2.42		
	Chambishi West ..	6.19	1.83			25.25	1.88			17.32	2.09		
	Chambishi Southeast .....					35.43	2.30	0.12		125.56	1.82		0.10
	<b>Sub-total .....</b>	<b>11.31</b>	<b>2.13</b>			<b>66.29</b>	<b>2.16</b>			<b>151.02</b>	<b>1.88</b>		
<b>SML</b>													
	Mwambashi .....	0.82	2.22	0.91		8.38	2.00	0.75		1.77	2.10	0.26	
	Kakoso Tailing ...									9.08	0.60	0.47	
	Chambishi Tailing & Ore Pile .....									1.57	1.33	1.08	0.02
	<b>Subtotal .....</b>	<b>0.82</b>	<b>2.22</b>	<b>0.91</b>		<b>8.38</b>	<b>2.00</b>	<b>0.75</b>		<b>12.42</b>	<b>0.91</b>	<b>0.52</b>	
<b>CLM</b>													
	Baluba Center Sulfide .....	0.70	2.33	0.06	0.17	15.91	2.25	0.08	0.15	3.88	1.91	0.10	0.12
	Muliashi North ...	38.87	1.14	0.67	0.06	22.13	0.98	0.59	0.07	20.02	1.18	0.41	0.05
	Muliashi South Oxide .....									4.40	1.73		
	Mashiba .....	3.17	1.89	0.24		5.67	1.96	0.22		4.97	1.67	0.43	
	Baluba East .....	6.40	1.90	1.00	0.02	27.64	0.77	0.31	0.03	3.27	1.03	0.37	0.04
	<b>Subtotal .....</b>	<b>49.14</b>	<b>1.30</b>	<b>0.68</b>		<b>71.35</b>	<b>1.26</b>	<b>0.34</b>		<b>36.54</b>	<b>1.38</b>	<b>0.33</b>	

The Chambishi Main and West Mines are underground operations accessed by shafts. The main shaft development combined with decline access has been utilized, and cut-and-fill and local sublevel open-stopping and sublevel caving mining methods are used with an average ore loss of 38% and a mining dilution of 30%. The Chambishi Southeast Mine is also an underground mine which is in construction stage. The main shaft development combined with decline access has been utilized, and cut-and-fill, sublevel open-stopping and post-pillar cut-and-fill mining methods are employed with designed ore loss of 18.6% and the mining dilution of 17.4%.

The Baluba Center Mine is an underground mine. Shaft and decline access have been utilized and the sublevel caving method is used with an average ore loss of 40% and a mining dilution of 38%. Both the Muliashi North and Baluba East (southern portion) mines are designed as open pit mining areas. The designed mining recovery rates and mining dilution are 97% and 3% for Muliashi North Mine, and 95% and 5% for the Baluba East Mine. The designed stripping ratios are 3.44 for Muliashi North Mine and 4.04 for the Baluba East Mine, respectively.

A conventional ore process flow sheet including crushing, milling, flotation and dewatering is used in the ore processing plants to produce copper concentrates. In 2010 the ore processing plants achieved good recovery rates of 94.89% Cu for the NFCA Chambishi Processing Plant and 93.5% for Cu and 67.7% Co at the CLM Baluba Processing Plant.

The technologies used in the SML Chambishi Leach Plant and CCS Chambishi Copper Smelter are of international industry standards. The plant and smelter are both well managed and consistently produce high quality products of Cu cathode (>99.95% Cu) and blister Cu (99.08% Cu). The average copper recovery rates in 2010 were 85.36% and 96.28%, respectively.

As of December 31, 2011, the total workforce number at CNMC's four subsidiary companies was 10,716, which includes subcontractors' employees, who constitute approximately 40% of total

workforce. This figure includes 3,433 for NFCA, 399 for SML, 1,995 for CCS and 4,889 for CLM. The number for each company includes the management and technical staff, and workers in mining, processing, safety, production maintenance, and sale and supply departments. Annual staff turnover is estimated at 8% of the workforce. Based on past experiences, there have been no problems with sourcing skilled workers. SRK considers that the workforce numbers can completely meet the Company's current production capacity.

A number of the Company's technical management personnel have worked at the mines for more than three years. They have a thorough knowledge of the geology and mining conditions in the mine, and can employ suitable techniques and experience from a range of mines, plants and smelter. However, SRK recommends that more technical personnel be employed to manage the operating mines efficiently.

The Company has committed and prepared relevant measures to a greening program at the mines and plants with improvements in dust control, waste water and sewage treatment. Once implemented, these practices will demonstrate the Company's responsible approach towards environmental protection.

### ***Operational Permits***

CNMC's copper mining projects in Zambia are operated by four subsidiary companies, namely NFCA, CLM, CCS and SML, and all the subsidiaries have the necessary business licenses including *Certificate of Incorporation of a Public Company and Certificate of Share Capital*, mining licenses and safety licenses (the *annual operating permit*), which are in compliance with the related Zambian laws and regulations.

### ***Geology and Mineralogy***

The Copperbelt of Zambia is located in the heart of Africa, south of the Equator, in the vicinity of latitude 13°S and longitude 28°E. The Copperbelt is enriched in copper and cobalt, has a Northwest strike and extends from Ndola, the capital city of Copperbelt Province in Zambia, to Katanga Province in the Democratic Republic of the Congo.

Regionally, the reviewed projects are located at the southeast part of the Lufilian Fold belt. The Chambishi and Mwambashi projects are on the west limb of the Kafue Anticline, while the Luanshya project is situated on south-eastern edge of the Kafue Anticline. The Kafue Anticline, i.e. the Basement Complex, was overlain by Neoproterozoic Katanga Supergroup. The widespread Katanga System is subdivided into the Lower Roan (RL), Upper Roan (RU) and Mwashia Groups. The copper and cobalt mineralization is generally associated with the sedimentary rocks of Lower Roan (RL) Group.

Faults are not well developed in the Copperbelt region. The gabbro intrusive intruded during the Lufilian Orogeny event, and it is almost entirely confined to the Upper Roan Group.

#### ***Chambishi Main, West and Southeast Mines***

The Chambishi mining license (No. 7069-HQ-LML) covers an area of 107 square kilometers (km<sup>2</sup>); it includes the Chambishi Main Mine, Chambishi West Mine and Chambishi Southeast Mine. The three copper mines are situated on the northeast limb of the Chambishi Basin which is a northwest plunging synclinal basin with a strike in the north-western direction. The three mines share similar geological and structural features which are common within the Copperbelt of Zambia.

The three mines are of typical stratabound copper deposits which are hosted in the Lower Roan Group of the Katanga Supergroup within the Chambishi Basin. The main mineralized bodies occur

in the Ore Shale Formation of the Lower Roan. Several minor occurrences of low grade sulfide mineralization were found in argillite and quartzite above the Ore Shale Formation and in the conglomerate below the Ore Shale Formation.

**Chambishi Main Mine** has one orebody (“Chambishi Main orebody”). It strikes east-westerly and dips to the north with dip angles of 15° to 75°. The Chambishi Main orebody is about 2,280m long and 2.1 to 18.2m thick with an average thickness of 8.0m. The down-dip extension of the orebody defined by boreholes is about 900m from the surface. The average grade of the Chambishi Main orebody is 2.51% TCu.

**Chambishi West Mine** has one orebody (“Chambishi West orebody”). It strikes north-westerly and dips to south with an average dip angle of 30°. It is about 1,400 to 2,100m long and 2.0 to 17.0m thick with an average thickness of 8.0m. The down-dip extension of the orebody defined by boreholes is about 600m from the surface. The average grade of the Chambishi West orebody is 2.15% TCu.

**Chambishi Southeast Mine** has two ore bodies, which is the north orebody and the south ore body. The characteristics of these ore bodies are detailed below.

The north ore body trends Southeast (SE) — Northwest and dips to Northwest (NW) with dip angles of 5° to 15°. The ore body is about 4,500m along the strike. The width of the body varies from 569 to 1,237m. The thickness varies from 1.38m up to 22.92m with an averaging thickness around 10.00m. Under the cut-off grade TCu of 0.80%, the average grades of TCu and TCo (Total Cobalt Content) are 2.02% and 0.074%, respectively.

The south ore body is located at the south of north ore body. It extends 3,540m along the SE-NW trending. The width varies from 800m to 1,600m. Under the cut-off grade TCu of 0.80%, the average grade of TCu and TCo are 1.66% and 0.125%.

These mineralized bodies are situated below the weathered zone. The primary minerals are predominantly chalcopyrite, pyrite, pyrrhotite, carrollite, skutterudite, linnaeite and bornite. The ore texture range from disseminated, veinlets to massive.

#### *Mwambashi Copper Deposit*

The prospecting license (No. 15201-HQ-LPL/1) of the Mwambashi Copper Deposit was transferred from Edgeway Business Solutions Limited to Sino-Metals Leach Zambia Limited on January 6, 2011.

The Mwambashi Copper Deposit has the same geological and mineralogical characteristics as the Chambishi Main, West and Southeast Mines. The Mwambashi Copper Deposit is also a stratabound-type deposit; its mineralized body shows a stratiform shape and is hosted by sandy sediments in the Lower Roan. The thickness of mineralization varies from 30m in the shallower region to less than 1.0m at depth with average thickness of 15m. The mineralized body is about 600m long and continues to approximately 250m below the surface. It is still open at depth.

This mineralized body shows a vertical zonation from oxidized zone to sulfide zone. Below the overburden, the first 15 to 20m of the mineralized body is predominantly oxidized mineralization which consists mainly of malachite and subordinate chrysocolla and pseudomalachite. The mixed sulfide-oxide mineralization zone has ratios of oxide and sulfide varying from 80:20 to 20:80 from top to the bottom within the mixed zone. The sulfide mineralization zone contains predominantly chalcopyrite, bornite and chalcocite. Ore minerals are mainly malachite, chalcocite, chalcopyrite, chrysocolla and pseudomalachite with minor bornite and trace of cuprite and native copper.

*Kakoso Tailings Development Project*

SML holds an 88% share of the Kakoso Tailings Development Project. This tailing dam is located about 78km northwest of Kitwe, 4km south of Chililabombwo at approximately latitude 12°37'S and longitude 28°01'E.

The Kakoso Tailing Dam includes the main dam with an area of 388,700m<sup>2</sup> and the subsidiary dam with an area of 320,500m<sup>2</sup>. In 2010, SML conducted prospecting work in the Kakoso Tailing Dam. A total of 13 and 10 auger boreholes were carried out on the main tailing dam and the subsidiary dam with an exploration grid of 200m × 200m. The average depth of tailing in the main dam is 11.4m, and 5.1m in the subsidiary dam. A total of 78 samples were collected from the Kakoso Tailings Development Project and returned an average grade of 0.60% TCu and 0.47% acid soluble copper.

*Chambishi Tailings Development Project*

The Chambishi Copper Mine has nine tailing dams including 6<sup>th</sup>, 7<sup>th</sup>, 7A<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, Luano, Musahashi, Wener Dam and New Dam, and an acidic leaching residue stockpile named 10<sup>th</sup>. All of the tailing dams are located within the mining license of Chambishi Copper Mine. In June 2001, Chambishi Copper Mine carried out some prospecting work in those tailing dams and leaching residues for resource estimate. A total of 73 samples were collected for analysis of Cu and Co. In 2008, a sampling program was conducted at the Luano tailing (16<sup>th</sup>), and a total of 62 samples were collected. The bulk density of 1.6t/m<sup>3</sup> was used for the resource estimation completed by NFCA in 2011.

There were three oxidized ore piles in the Chambishi Copper Mine located nearby the open pit. In July 2003, NFCA carried out sampling work on the oxidized ore piles named 3-1#, 3-2# and 4#. A total of 79 samples were collected from shallow pits along the exploration line with grid spacing of 10m × 10-15m. The bulk density of 2.70t/m<sup>3</sup> was applied for mineral resource estimates.

SRK has carefully reviewed the sampling method and resource estimation by NFCA, and also reviewed the historical production records of SML. According to the production records, SRK believes that it is reasonable to use the average feed grade instead of the average grade of tailings and the oxidized ore piles for resource estimate.

*Baluba Center Mine*

The mineralized units within the Baluba syncline are recognized as extending for about 3km along the east trending strike and approximately 1.5km along dip. Economical copper mineralization is largely confined to the RL6 argillite and a thin zone near the upper contact of the RL7 Formation. The Baluba Center Mine oxidized cap exists above the oxide-sulfide interface roughly assumed to be 60m below surface. The oxidized mineral contents increase upwards towards the surface while the sulfide minerals increase with depth and become predominant at about 60m below the surface.

The outcrop of the oxidized cap is distributed on the north limb of the Baluba Syncline, extending approximately 3,000m from west to east with a thickness of 10m and a depth of 110m below surface.

The Baluba Center sulfide orebody strikes about 3,600m and is distributed on both limbs of the Baluba Syncline. The width (along dip) of the orebody reaches about 1,500m and the thickness varies from several meters up to dozens of meters averaging at 10m. Near the north limb, the Baluba Center orebody dips to the southwest at 210° with a relative large dip angle varying from 45° up to nearly 90°.



*Muliashi North Deposit*

The Muliashi North deposit is recognized as an oxidized cap. The weathering and associated oxidation occur widely from the surface and extending to variable depths. Protogenic copper sulfides, including chalcopyrite, bornite and chalcocite, distributes predominantly below 100m from the surface. Approaching the surface there is a gradual transition where copper sulfides were oxidized and produced secondary minerals. The copper mineral in the oxidized zone is predominantly malachite with minor chrysocolla.

Three orebodies have been identified in the Muliashi North deposit. Due to different host rocks one discontinuous orebody is identified as the Hangingwall Orebody (HOB) and is located just above the RL6-RL5 contact traditionally recognized as the hangingwall waste in the rest of the Roan-Muliashi Basin. The other two orebodies, namely the Upper Orebody (UOB) and the Lower Orebody (LOB), occur in the lower and/or upper zone of RL6 Formation and are separated by a pyritic zone. The RL6 Formation at Muliashi North is thinner than in the rest of Roan-Muliashi Basin.

*Muliashi South Deposit*

The Muliashi South deposit is located south of Muliashi North but west of the 28# Shaft. It borders with the Mashiba deposit on the western flank. The Muliashi South oxide cap covers a distance of about 800m on the surface and extends down to the upper mining limit of the underground mine which varied from section to section.

Most of sulfide ore in the area was extracted through the 28# Shaft during the period of Zambia Consolidated Copper Mines Limited ("ZCCM") ownership. Underground mining was resumed by ENYA Holding BV ("ENYA") in 2008 but only last several months and the mine was then shut down in November 2008.

*Mashiba Deposit*

The Mashiba Deposit is recognized as an isolated deposit located roughly 3km west of 28# Shaft. Spatially, it is localized and thins out in all three directions (east, south and west). The mineralization, with the southern part outcropping on the surface, extends about 600m along strike (east-west) and 800m along dip in the northerly direction. The thickness of the orebody within this zone is much thicker than other deposits with a maximum up to 41m.

Unlike the typical Copperbelt sulfide orebodies, the Mashiba ore has a relatively high copper oxide component and its thickness varies drastically over short distances. The ratio of the Ox-Cu content to the TCu content above 1,200m level of mineralized zone is relatively higher (>5).

*Baluba East Deposit*

There are two orebodies separated by a pyrite zone at the Baluba East Deposit. The orebody below the pyrite zone is the lower orebody (LOB) while the one above is the upper orebody (UOB). The UOB is the predominant orebody which was partly mined out while the LOB was not mined because it is thin. In the pyrite zone the copper grades are below 1.00%.

The oxidized cap at Baluba East Deposit is the oxidized upper part of the orebodies. It extends to a depth of about 60m. Both the LOB and the UOB have a high oxide content. The oxide level increases towards the surface where more oxidation took place. Common minerals are malachite, cuprite and chrysocolla.



*Roan Basin, Roan Extension West and Roan Extension East*

The areas named Roan Basin, Roan Extension West and Roan Extension East have experienced many years of underground mining and the sulfide zones were almost all depleted and some ore remains as about 60m-deep oxidized caps. These zones are characterized by the oxidized minerals of malachite, tenorite and chrysocolla, mixed with chalcocite and occasional finely disseminated chalcopyrite.

*Muva Hill and Lufubu*

The Muva Hill license area is located at the north of the project area, and Lufubu is situated at the western part of the Muliashi License area. Some geological investigation has been performed in both areas, and the preliminary exploration on Lufubu North and South has been conducted. It is considered that the two projects possess some exploration potential.

***Mineral Resource and Ore Reserve Estimates***

SRK has inspected a number of portals, tunnels, bore holes and shafts, which show the exposure of the mineralization at Chambishi Main, Chambishi West and Chambishi Southeast Mines, and Baluba Center Mine. SRK has also reviewed all original geological databases including geological surveys and mapping at different scales, drill holes, shafts, adits and drafts logging; sampling methodologies and sample preparation and assaying; assay quality control and quality assurance; the geological interpretation, mineral resource estimation procedures and parameter applied by NFCA and Sino-Mine Resource Exploration Co., Ltd (“Sinomine”) for the Chambishi Main, West and Southeast Mines; by professional geologists of Dexter S. Ferreira and Andre M. Deiss for the Mwambashi Copper Deposit; by Golder Associates Africa (Pty) Ltd (“Golder”) for the Baluba Center and East Mines, and the Muliashi North and South Deposits; and by SRK Consulting South Africa Ltd for the Mashiba Deposit.

Sinomine is a qualified and approved Chinese independent geological consultant, who had used methods and procedures to estimate the mineral resources which comply with Chinese standards for resource estimation. Other consulting companies who conducted the mineral resource estimation for the other mines and deposits are considered by SRK to be qualified to do so and they followed the South African Code for Reporting of Exploration Results, Mineral Resources and Reserves (the “SAMREC Code”).

These copper mines and deposits are typical stratabound type deposits and the copper grades have relatively low variability throughout the mineralized bodies. SRK considers that the exploration programs provide sufficient data and a reasonable basis to estimate the resources contained in the mineralized bodies at these mines and deposits, and that the analytical methods used for these mines and deposits produced acceptable results with no material bias.

SRK conducted sample verifications at the Chambishi Main, West and Southeast Mines. Sample verification included selecting core pulp samples, core reject samples and re-sampling on site using the channeling method. The selected core pulp and reject samples were sent to the Alfred H. Knight based in Kitwe, Zambia and SGS laboratories based in Kalulushi, Zambia and Tianjin, China for analysis. Both laboratories are internationally recognized analytical branches for ASL and SGS.

SRK required all samples to be reground to -200 mesh. The standard and blank samples were provided by the Alfred H. Knight and SGS. SRK also visited both laboratories to review the quality assurance and quality control procedures. Samples were dissolved using sodium peroxide fusion (“FUS-PER05”) and were assayed using the inductively coupled plasma-atomic emission spectroscopy (“ICP-AES”) method.

The comparisons of results between the original core samples and SRK core pulp/reject samples, assayed from Alfred H. Knight and SGS show that the relative differences between them are mostly within 15%. These results of data verification indicate that the original database is sound and reliable for the purposes of resource estimation.

Based on reviewing the deposit geology, drilling and sampling data, and procedures and parameters used for the mineral resources estimation of the Chambishi Main, West and Southeast Mines, and SRK's data verifications at the three mines, SRK is of the opinion that the mineral resources estimated under the 1999 Chinese mineral resource system for the Chambishi Main, West and Southeast copper mines by Chinese Geological Brigades reconcile well to the relevant JORC Mineral Resource categories (a comparison of the Chinese and JORC systems is provided in Appendix II). The economic portion of the Measured and Indicated Mineral Resources can accordingly be used to estimate Proved and Probable Ore Reserves.

### ***Mineral Resource Estimate***

The copper resources of the mines, deposits, tailings and recoverable waste oxidized ore piles were estimated by the relevant geological consultants and/or consulting companies. The technical parameters used to estimate the copper resources including cut-off grade, minimum mineable thickness and maximum allowed waste thickness were carefully reviewed in this report.

The Mineral Resource estimates under the JORC Code as of December 31, 2011 for each company's mines, deposits, tailings and recoverable waste oxidized ore piles are summarized in the table below. SRK has shown in bold the details of the cut-off it believes is reasonable. Only the Measured and Indicated resources can be used for ore reserve estimation and mine planning.

The Measured, Indicated and Inferred Mineral Resources of the Chambishi Main, West and Southeast Mines in total were 11.31Mt at an average grade of 2.13% TCu, 66.29Mt at an average grade of 2.16% TCu and 151.02Mt at an average grade of 1.88% TCu, respectively.

For the Mwambashi Copper Deposit, Kakoso Tailings and Chambishi Tailings and Old Ore Piles, the total Measured, Indicated and Inferred Mineral Resources were 0.84Mt at an average grade of 2.18% TCu with 0.34% Ox-Cu, 10.77Mt at an average grade of 1.63% TCu with 0.63% Ox-Cu, and 13.10Mt at an average grade of 0.88% TCu with 0.50% Ox-Cu, respectively.

The Measured, Indicated and Inferred Mineral Resources at Baluba Center and East Mines, Muliashi North and South Mines, Mashiba Mine, Roan Basin and Roan Extension West and Roan Extension East in total were 49.14Mt at an average grade of 1.30% TCu with 0.68% Ox-Cu, 78.51Mt at an average grade of 1.30% TCu with 0.40% Ox-Cu, and 46.04Mt at an average grade of 1.55% TCu with 0.59% Ox-Cu, respectively. Only the Measured and Indicated Resources can be used for Ore Reserve estimation and mine planning.

For the CLM projects above, SRK notes that the Mineral Resources of some mines are currently unlikely to be mined due to subsidence near surface and/or are deeply covered by flood waters (see the table below for details).

Company	Deposit /Project	Measured Resource			Indicated Resource			Inferred Resource		
		Cut-off (TCu %)	Resource (Mt)	Average Grade (%) TCu Ox-Cu TCo	Resource (Mt)	Average Grade (%) TCu Ox-Cu TCo	Resource (Mt)	Average Grade (%) TCu Ox-Cu TCo		
NFCA	Chambishi Main	1.00	5.12	2.50	5.61	2.49	8.14	2.42		
	Chambishi West	1.00	6.19	1.83	25.25	1.88	17.32	2.09		
	Chambishi Southeast	0.80			35.43	2.30	125.56	1.82		
	<b>Total</b>		<b>11.31</b>	<b>2.13</b>	<b>66.29</b>	<b>2.16</b>	<b>151.02</b>	<b>1.88</b>		
SML	Mwambashi	0.50	0.82	2.22	8.38	2.00	1.77	2.10		
		0.30 <sup>7</sup>	0.02	0.40	2.39	0.35	0.68	0.21		
	Kakoso Tailings	0.50					9.08	0.60		
	Chambishi Tailings & Ore Pile <sup>1</sup>	0.50					1.57	1.33		
	<b>Total</b>		<b>0.84</b>	<b>2.18</b>	<b>10.77</b>	<b>1.63</b>	<b>13.10</b>	<b>0.88</b>		
CLM	Baluba Center Sulfide Ore	1.00	0.70	2.33	15.91	2.49	3.88	1.91		
	Baluba Center Oxidized Ore <sup>2</sup>	1.00			6.56	1.65	1.62	1.70		
	Muliashi North	0.30	38.87	1.14	22.13	0.98	20.02	1.18		
	Muliashi South Sulfide Ore <sup>3</sup>	1.00			0.60	2.48	0.08	2.50		
	Muliashi South Oxidized Ore	0.30					4.40	1.73		
	Mashiba	0.50	3.17	1.89	5.67	1.96	4.97	1.67		
	Baluba East	0.50	6.40	1.90	27.64	0.77	3.27	1.03		
Roan Basin <sup>4</sup>	0.30					3.23	1.82			
Roan Extension West <sup>5</sup>	0.30					1.82	2.79			
Roan Extension East <sup>6</sup>	0.30					2.75	2.59			
	<b>Total</b>		<b>49.14</b>	<b>1.30</b>	<b>78.51</b>	<b>1.30</b>	<b>46.04</b>	<b>1.55</b>		

Note:

- No. 9 and No. 15 Tailings, and Old oxidized cap are recoverable resources in the Chambishi area.
- Unlikely to be mined due to subsidence near the surface.
- Unlikely to be mined due to subsidence near the surface.
- Unlikely to be mined due to subsidence near the surface.
- Unlikely to be mined due to subsidence near the surface.
- Unlikely to be mined due to subsidence near the surface.
- Resources at cut-off grade of 0.3% Cu are in addition to resources at cut-off grade of 0.5% Cu.

The information in this report which relates to Mineral Resources is based on information compiled by Dr Yiefei Jia, a full time employee of SRK Consulting China Ltd and a Member of the Australasian Institute of Mining and Metallurgy. Dr Jia has sufficient experience which is relevant to

the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the JORC Code. Yiefei consents to the reporting of this information in the form and context in which it appears.

### Ore Reserves

Ore reserves have been estimated for the Chambishi Main, West and Southeast Mines, Baluba Center and East Mines, and Muliashi North Mine based on the each mine's mining recovery rate and dilution rate cited either from the mining production records of 2011 and/or from the feasibility study. As of December 31, 2011, the Proved and Probable Ore Reserves at NFCA's Chambishi Main, West and Southeast Mines were 9.12Mt at an average grade of 1.64% TCu and 54.59Mt at an average grade of 1.78% TCu, respectively. The Proved and Probable Ore Reserves at CLM's properties were 48.46Mt at an average grade of 1.22% TCu and 67.62Mt at an average grade of 1.07% TCu, respectively. Details are listed in the following table.

Company/Mine	Tonnes Mt	Average Grade (%)			Tonnes Mt	Average Grade (%)		
		TCu	Ox-Cu	TCo		TCu	Ox-Cu	TCo
<b>NFCA</b>		<b>Proved Ore Reserve</b>			<b>Probable Ore Reserve</b>			
Chambishi Main . . . . .	4.13	1.92			4.52	1.92		
Chambishi West . . . . .	4.99	1.41			20.35	1.45		
Chambishi Southeast . . . . .					29.72	1.98		0.10
<i>Subtotal</i> . . . . .	<b>9.12</b>	<b>1.64</b>			<b>54.59</b>	<b>1.78</b>		
<b>CLM</b>								
Baluba Center Sulfide . . . . .	0.58	1.69	0.04	0.12	13.18	1.63	0.06	0.11
Muliashi North . . . . .	38.84	1.11	0.65	0.06	22.11	0.95	0.57	0.07
Baluba East . . . . .	6.38	1.81	0.95	0.02	27.57	0.73	0.30	0.03
Mashiba . . . . .	2.66	1.35	0.17		4.76	1.40	0.16	
<i>Subtotal</i> . . . . .	<b>48.46</b>	<b>1.22</b>	<b>0.66</b>		<b>67.62</b>	<b>1.07</b>	<b>0.34</b>	

The information in this report which relates to Mineral Resources is based on information compiled by Dr Yiefei Jia, a full time employee of SRK Consulting China Ltd and a Member of the Australasian Institute of Mining and Metallurgy. Dr Jia has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the JORC Code. Yiefei consents to the reporting of this information in the form and context in which it appears.

### Mining Assessment

#### NFCA — Chambishi Main, West and Southeast Mines

The designed production capacity for the Chambishi Main Mine is 6,500tpd (2.145Mtpa), and currently the mining operation takes place between the 500 and 900m level. The Chambishi West Mine's construction commenced in 2007 and the mining operation began in 2010. The designed production capacity for Chambishi West Mine is 3,000tpd (0.99Mtpa).

For both the Chambishi Main and Chambishi West Mines, development access is by both the main shaft and a decline (or ramp), and cut-and-fill and local sublevel open-stopping and sublevel caving mining methods are used. According to the production records in 2010 and 2011, the average ore loss is 38% and the mining dilution is 30%. The mined ore is dumped into internal orepass by load-haul-dump machines ("LHD") prior to being loaded into ore cars driven by electric locomotive and then hoisted to surface by skip through the main shaft.

The Chambishi Southeast Mine is currently under further exploration and construction. At the time of SRK's site visit, geotechnical drilling for the south ventilation shaft and the main shaft has been completed. The mine development is expected to be finished by the end of 2016. The designed production size is 10,000tpd (3.30Mtpa). Main shaft in conjunction with decline access is proposed and cut-and-fill, sublevel open-stopping and post-pillar cut-and-fill mining methods are to be employed. Ore loading is to be undertaken by LHD, and the ore haulage is to be carried out by both track and trackless means prior to being hoisted to surface by skip through the main shaft.

Both the ore loss and mining dilution are considerably high due to the strength of the orebody and the fact that the country rock is weak, the thickness of the orebody is thin, and the orebody is fairly flat. In addition, water inflows and design defects contribute to low resource recoverability. Therefore, the current priority is to select more reasonable and appropriate mining method.

#### *CLM — Baluba Center Mine, Baluba East Mine and Muliashi North Mine*

The underground production in Baluba Center Mine was resumed at the end of 2009. Shaft and ramp development was adopted, and the sublevel cave mining method is used. Trackless equipment is used for underground drilling, loading, and haulage. The mine is divided into eastern and western zones. Level development is progressing in the eastern zone. The mining operation of the western zone is almost finished except for several portions. According to the mining records from 2010 and 2011, the ore loss was 40% and the mining dilution was 38%.

The Muliashi North Mine has completed the infrastructure construction and commenced production in December 2012. The designed production size is 4.5Mtpa, including 0.9Mtpa of the soft rock ore and 3.6Mtpa for hard rock ore.

The basic design for the southern portion of Baluba East Mine has been finished. The designed mining area is the upper oxidized ore and a mining capacity of 900,000tpa is proposed. As the status of the deep mined-out zone in the northern portion of Baluba East Mine is unclear, this area is not incorporated into the current mine plan.

After reviewing the design documents, communication with mine management and engineers and completing a site visit, SRK opines that the measured sulfide mineral resources in the Luanshya project are limited, the potential of expansion is limited, and the mining operating cost is high. However, the upper oxidized mineral resources in the Luanshya project area is abundant and has a shallow burial depth. It is expected by SRK that these resources could be mined by open-pit mining with fairly low mine operating costs. The Muliashi North open-pit mine, in which the overburden stripping is underway, will be the dominant operational mine of CLM in the future. The mining of the deep sulfide ore has been completed, but the upper oxidized ore resource contains considerable tonnes, which are expected to generate a favorable economic outcome. The current priority is to verify the mined-out zone and subsidence status and implement a feasible treatment plan of the mined-out zone to provide parameters for the future open-pit mining.

#### ***Metallurgical and Processing Assessment***

CNMC's four subsidiary companies have built a series of processing plants including ore concentrating, hydrometallurgical/electrolysis refining, and pyrometallurgical smelting operations. A series of plants are either under construction or planned to be constructed in the future.

For sulfide ore, the flotation process has been adopted to produce Cu concentrate which is then sold to CCS to produce blister Cu utilizing the pyrometallurgical smelting process. The blister Cu, with a grade above 99% Cu, is sold to international markets including China. For oxidized ore, the

hydrometallurgical refining process is used to produce Cu cathode. The Cu cathode, with a grade higher than 99.95% Cu, is also sold to international markets, including China. The following table shows the technical index details of NFCA Chambishi Processing Plant, SML Chambishi Leach Plant, CCS Copper Smelter, and CLM Baluba Processing Plant in 2011 and planned parameters for SML Chambishi Processing Plant, SML Kakoso Leach Plant, NFCA Chambishi SE Processing Plant, SML-CNMC Huachin (Congo) Leach Plant and CLM Muliashi Leach Plant.

<u>Term</u>	<u>NFCA-Chambishi Processing Plant</u>	<u>CLM-Baluba Processing Plant</u>	<u>SML-Chambishi Processing Plant</u>	<u>NFCA Chambishi SE Processing Plant</u>
Ore Treated (t) . . . . .	1,569,187	1,247,163	330,000	3,300,000
Ore Grade (Cu%) . . . . .	1.67	1.36	1.86	2.02
Concentrate (t) . . . . .	61,119	63,015	8,150	261,030
Concentrate Grade (Cu%) . . . . .	38.03	25.42	28.00	24.00
Cu Recovery Rate (%) . . . . .	88.69	94.43	91.36	93.98

<u>Term</u>	<u>SML-Chambishi Leach Plant</u>	<u>CLM-Muliashi Leach Plant</u>	<u>SML-Kakoso Leach Plant</u>	<u>SML-CNMC Huachin (Congo) Leach Plant</u>
Ore/Tailings Treated (t) . . . . .	600,829	4,500,000	679,000	330,000
Ore/Tailings Grade (Cu%) . . . . .	1.34	1.27	0.60	3.50
Cu Cathode (t) . . . . .	7,003	42,105	3,000	10,000
Cu Cathode (%) . . . . .	99.95	99.95	99.95	99.95
Cu Recovery Rate (%) . . . . .	86.89	73.63	73.60	86.54

<u>Term</u>	<u>CCS-Chambishi Copper Smelter</u>
Cu Concentrate Fed (t) . . . . .	458,771
Concentrate Grade (Cu%) . . . . .	33.62
Blister Cu (t) . . . . .	150,863
Blister Cu Grade (%) . . . . .	99.01
Cu Recovery Rate (%) . . . . .	96.59

SRK observed that the processing methods/flowsheets and applied equipment in the NFCA Chambishi and CLM Baluba processing plants, the SML Chambishi Leach Plant and the CCS Chambishi Copper Smelter, the designed SML Chambishi concentrator and CLM Baluba Slag concentrator, and the SML Kakoso Leach Plant and Muliashi Leach Plant are rational and are in line with international industrial practice.

SRK has inspected all operating plants and plants under construction. In 2011, the Cu recovery rate at NFCA Chambishi Processing Plant was 88.69%. For the CLM Baluba Processing Plant, the recovery rate of Cu was 94.43%. The Cu recovery rates of blister Cu at CCS Chambishi Copper Smelter and cathode Cu at SML Chambishi Leach Plant were 96.59% and 86.89%, respectively.

SRK observes that the Company applies relatively high level techniques and advanced equipment for production, and SRK believes that the Company can produce quality products and develop more high-quality copper products by utilizing its own technical capability.

### **Occupational Health and Safety (OHS)**

CNMC's projects have been assessed in accordance with a series of decrees and/or regulations constituted by the Mines Safety Department of Zambia and CNMC subsidiary companies. Where possible, SRK has sighted and reviewed the Annual Operating Permits (AOP), Emergency Response Plans (ERP) and documented Occupational Health and Safety (OHS) management systems/



procedures for each CNMC subsidiary company. Established employees are provided with updated training every year or every second year depending on the employee's experience level.

OHS statistics for the CNMC's subsidiary companies have been recorded for last three years (for the operations that have been running less than 3 years, the last years of operation were provided). SRK considers the accident statistics to show that each subsidiary company has been generally committed to safety training, provision of safety equipment and safety monitoring. SRK recommends that all minor and near miss statistics should also be included in the regular compilation and review of safety statistics, and issues relating to PPE (Personal Protection Equipment) and site visit inductions and housekeeping be addressed.

### Operating Costs

Major cost inputs to the each project are salaries, consumables, on site and off site administration costs, and other government charges. The cash operating costs in 2009 and 2011 and the five-year forecast of operating costs between 2012 and 2016 are provided in the table below. The historical operating costs for mining and ore processing plants (unit: USD per tonne copper concentrate) at NFCA Chambishi and CLM Baluba Processing Plants, and the operating costs for producing copper cathode at SML Chambishi Leach Plant and the blister copper at CCS Chambishi Copper Smelter (unit: USD per tonne copper metal) were sourced from the management accounts of the Group's subsidiaries. SRK classified the costs based on the Chapter 18 requirements on the HKEx. The operating cost forecast for these plants and other plants being constructed and/or planned are estimated based on the historical data. Details are summarized in the following table.

Year	Unit	NFCA-Chambishi Mining Operation	CLM-Baluba Mining Operation	SML-Chambishi Leach Plant	SML-Chambishi Processing Plant	CCS-Chambishi Cu Smelter*
2009 ...	USD	1,470.58	N/A	2,305.39	N/A	5,872.32
2010 ...	USD	1,697.92	1,177.32	2,715.89	N/A	7,461.11
2011 ...	USD	1,882.16	1,360.13	3,896.52	N/A	7,749.39
2012 ...	USD	1,634.91	1,172.65	2,638.53	502.09	7,544.22
2013 ...	USD	1,541.62	1,179.48	3,564.22	506.09	7,514.69
2014 ...	USD	1,449.20	1,149.14	3,172.94	510.89	7,545.75
2015 ...	USD	1,436.84	1,149.25	3,222.64	515.79	7,541.32
2016 ...	USD	1,436.84	1,149.25	3,275.64	521.09	7,544.85

Year	Unit	CCS-Sulfuric Acid Plant	SML-CNMC Huachin (Congo) Leach Plant	CLM-Muliashi Mining and Leach Plant	SML-Kakoso Leach Plant
2009 ...	USD	18.92	N/A	N/A	N/A
2010 ...	USD	18.25	N/A	N/A	N/A
2011 ...	USD	22.76	N/A	N/A	N/A
2012 ...	USD	27.89	3,378.44	3,696.77	N/A
2013 ...	USD	27.89	3,374.46	3,082.98	2,796.00
2014 ...	USD	27.89	3,451.70	2,792.63	2,663.00
2015 ...	USD	27.89	3,220.90	2,675.03	2,663.00
2016 ...	USD	27.89	3,245.65	2,675.03	2,663.00

Note:

\* CCS Chambishi Cu Smelter: Cu concentrate costs of USD 5,537.05 in 2009, USD 7,140.12 in 2010, USD 7,291.30 in 2011 and USD 7,291.30 forecast in every year between 2012 and 2016 are included in the consumables.



### ***Capital Costs and Investment***

Between 2012 and 2016, CNMC plans to invest approximately USD1,647,582,000 in the four subsidiary companies' projects in exploration, mining development, mine construction, technical improvement, upgrading the capacities of tailing storage facilities and other supporting facilities. The investments are approximately USD898,500,000 for NFCA's projects, USD186,850,000 for SML's projects, USD213,213,000 for CCS's projects, and USD349,019,000 for CLM's project (see Table 11-4 for details). In SRK's opinion, the proposed capital investments are sufficient and likely to achieve the Company's stated targets if capital is available.

### ***Environmental***

The significant environmental aspects for the CNMC Zambian Projects that are subject to this Report are associated with the mining and mineral processing activities at the CNMC Zambian Projects' sites. The environmental review identified the most significant current and potential environmental / social management and legislative compliance liabilities that relate to operation and further development of the Project and defines gaps in operational management as relates to industry best practices.

SRK noted that at the time of the site visit CNMC was predominantly complying with Zambian national legislative requirements and had systems in place to action any non-compliance or upgrade work notices as directed to by the Environmental Council of Zambia (ECZ), but could do more to conform to industry best practices to improve their operational environmental / social management of the projects. SRK verified the CNMC Zambian Project's NFCA, SML, CCS and Luanshya operational units had obtained the necessary licenses and permits to develop and operate the projects and produced the required Environmental Social Impact Assessment (ESIA) reports, inclusive of the required Environmental Management Plan (EMP) and conceptual rehabilitation plans.

SRK notes the provided/sighted environmental and social management documentation for the CNMC Zambian Projects have been prepared in line with Zambian legislative requirements and generally in accordance with International Finance Corporation (IFC) environmental standards and guidelines, and internationally recognized industry environmental management practices. SRK observed that CNMC's subsidiary companies and staff have a good understanding of Zambian legislative requirements for conducting the appropriate project development assessments and their necessary ECZ governmental approvals, and associated licenses, permits and agreements.

At the time of SRK's site visit, the majority of CNMC subsidiary companies' project units were in full operation along with some expansion and new developments being at different phases of progress. SRK was able to review the existing operational environmental management and protection measures for the operational facilities of each project along with the developmental activities and developmental assessments and planning taking place and their planned future operational environmental management and protection measures. SRK cannot make any statements on the operational environmental performance of those sites that not yet operating.

The environmental review identified the following as the most significant current and potential environmental management and legislative compliance liabilities relating to operation and further development of CNMC Zambian Projects:

- Surface water management and discharges such as site discharges and stormwater runoff.
- Groundwater management and discharges such as mine dewatering and seepage from Waste Rock Dump (WRD) and Tailings Storage Facility (TSF).

- Dust and gaseous emissions management and mitigation.
- Storage and handling of hazardous materials.
- Waste generation and management of industrial and domestic wastes.
- Rehabilitation of waste rock stockpiles and other disturbed areas.
- Potential and current contaminated sites.
- Site erosion controls, sediment entrainment and management for disturbed areas.
- Lack of geochemical characterization of industrial waste materials such as waste rock.
- Continued implementation of closure planning process.
- Continued development of social license to operate.
- Implementation and enforcement of health and safety standard practices.

SRK noted during the site investigation that current management of the above noted potential risks were being managed at a reasonable level and is considered by SRK to be within the acceptable / tolerable risk classification, but further attention is required to reduce and maintain the realized and potential impacts at an acceptable level.

The environmental risks associated with surface and groundwater, dust and gas emissions, hazardous materials storage, WRD, TSF and stockpile management, and land disturbance and rehabilitation, can be generally managed if Zambian national environmental standards and regulatory requirements are met along with the application of industry best practices.

The environmental risks associated with the potential for generating contaminated sites and other site closure liabilities and developing and maintaining social license to operate, including health and safety standards, can be effectively managed by adopting relevant recognized international industry practices. On-site management of these above risks should be coordinated through the implementation of the operational EMP, Emergency Response Plan (ERP) and Health Safety Environment (HSE) plans which incorporate all areas of required work. Developing and maintaining a social license to operate needs to be managed through the development of Social Development Plans and support of initiatives defined through the consultation process.

### ***Social***

CNMC reported that there are no significant cultural heritage sites, burial sites or nature reserves within or surrounding any of the Project sites except for a small monument constructed to commemorate the discovery of copper resources in the area which is on the NFCA site and kept in good order. CNMC stated they have received some official notices of public complaints in relation to the activities of the Project, but they maintain the issues were minor and otherwise a positive relationship with the local communities exists due to the stated social development measures discussed below.

CNMC stated the positive effects to the surrounding local communities are mainly direct employment of local contractors and use of local suppliers and service providers where practical. CNMC has also developed a number of social development measures among local communities

including water and electricity supply to local villages and the financial support for schools in the local communities. CNMC reported to SRK that they would also provide access for locals to the CNMC medical clinic along with other measures.

The CNMC Zambia Projects' ESIA's include details for the development of Social Development Programs in line with Zambian legislative requirements. However, CNMC has not developed these Social Development Programs past their initial efforts. It is SRK's opinion that the social and labor situation in the surrounding communities has the potential to lead to conflicts with these communities if CNMC does not further their social license to operate within and about these villages. CNMC stated they have no formalized social dispute resolution mechanism and reported to SRK that is carried out between CNMC and local Zambian by the local police force.

The ESIA's report, Management Programs and Action Plans must be compiled with to deal with specific mitigation measures and actions necessary for the project to comply with applicable Zambian laws and regulations and to meet the requirements of the IFC Performance Standards. This will require a number of Plans and Action Plans in order the meet the IFC Performance Standards.

CNMC stated they are currently in the process of developing the applicable policies with some key areas already addressed during the last 12 months. CNMC reported they are also committed to developing a number of plans in terms of the IFC's requirements.

Public participation/community consultation programs were confirmed as being undertaken for each Project operation as part of their ESIA along with most of the other required plans and policies. However, SRK observed that CNMC staff outside the Environmental Department had little knowledge about the program or their results. SRK found the ongoing management and continuation of these plans is where the main issue lies with regards to the social risks for the projects continued operations.

A number of non-compliance notices and other notices of a breach of environmental or social conditions for the CNMC Zambia Projects from the local or provincial governments have been sighted as part of this review. CNMC reported to SRK that each notice includes statements to rectify the non-compliances and that the CNMC subsidiary companies action the issues through Corrective Action Statements and reports on the actions taken through their annual reporting process. CNMC action non-compliances as they are identified in line with Zambian requirements. CNMC also stated to SRK that they maintain a strong relationship with local, provincial and national governments along with the local police.

**Risk Analysis**

Mining is a relatively high risk industry and in general, the risk may decrease from exploration, development, to the production stage. CNMC's projects are production projects and risks exist in different areas. SRK considered various technical aspects which may affect the feasibility and future cash flow of the project, and conducted a risk assessment which has been summarized in following table. The full qualitative risk analysis process is described in Appendix V.

<u>Risk Issue</u>	<u>Likelihood</u>	<u>Consequence</u>	<u>Overall</u>
<b>Geology and Resource</b>			
Lack of Significant Resource . . . . .	Unlikely	Moderate	Low
Lack of Significant Reserve . . . . .	Unlikely	Moderate	Low
Significant Unexpected Faulting . . . . .	Unlikely	Major	Medium
<b>Mining</b>			
Significant Production Shortfalls . . . . .	Unlikely	Major	Medium
Production Pumping System Adequacy . . . . .	Unlikely	Moderate	Low
Significant Geological Structure . . . . .	Possible	Moderate	Medium
Poor Pit Slope Condition . . . . .	Unlikely	Moderate	Low
Poor Mine plan . . . . .	Unlikely	Moderate	Low
<b>Process Plant</b>			
Lower Yields . . . . .	Possible	Moderate	Medium
Lower Recovery . . . . .	Unlikely	Minor	Low
Higher Production Cost . . . . .	Possible	Moderate	Medium
Lower Plant Reliability . . . . .	Unlikely	Major	Medium

The following table is the Environmental Qualitative Risk Assessment Matrix which is separately reported within the risk assessment chapter.

<u>Sources of Environmental Risk</u>	<u>Consequence Severity</u>	<u>Likelihood</u>	<u>Inherent Environmental Risk</u>
Surface water management and discharges (i.e. stormwater runoff, erosion control measures). . . . .	Moderate	Certain	Medium
Groundwater management and discharges (i.e. mine dewatering and seepage from the WRD). . . . .	Moderate	Possible	Medium
Dust generation and gas emissions management and monitoring. . . . .	Moderate	Possible	Medium
Storage and handling of hazardous materials. . . . .	Moderate	Likely	Medium
Waste generation and management (industrial and domestic wastes). . . . .	Moderate	Possible	Medium
Rehabilitation of the waste rock stockpiles and other disturbed areas. . . . .	Moderate	Likely	Medium
Potential and current contaminated sites . . . . .	Moderate	Certain	Medium
Site erosion controls, sediment entrainment and deposition . . . . .	Moderate	Certain	Medium
Lack of geochemical characterization/ ARD assessment of waste rock. . . . .	Moderate	Unlikely	Low
Continued implementation of closure planning process. . . . .	Moderate	Likely	Medium
Continued development of social license to operate . . . . .	Moderate	Certain	Medium
Implementation of environmental health and safety standard practices . . . . .	Moderate	Likely	Medium

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**Disclaimer**

The opinions expressed in this Report have been based on the information supplied to SRK by CNMC. The opinions in this Report are provided in response to a specific request from CNMC to do so. SRK has exercised all due care in reviewing the supplied information. While SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them.

Opinions presented in this Report apply to the site's conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK have had no prior knowledge nor had the opportunity to evaluate.

## LIST OF ABBREVIATIONS

%	Percent
°	Degrees, either of temperature or angle of inclination
ASL	Above sea level
AusIMM	Australasian Institute of Mining and Metallurgy
Co	The chemical symbol for cobalt
Cu	The chemical symbol for copper
DRC	The Democratic Republic of the Congo
E	East
ENFI	Beijing Central Engineering Institute for Non-ferrous Metallurgical Industries
EPs	Exploration Permits
g	gram
g/t	gram per tonne
HKEx	The Stock Exchange of Hong Kong Limited
Indicated Mineral Resource	That part of a 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 exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed
Inferred Mineral Resource	That part of a resource for which 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 geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes which may be limited or of uncertain quality and reliability
IP (Induced Polarization)	An exploration technique whereby an electrical current is pulsed through the ground and the response from the sub surface measured in order to identify minerals of interest. Strong IP responses may be a result of sulfide which may be associated with gold mineralization
JORC Code	Joint Ore Reserves Committee Code
JORC Committee	Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia
kg	kilogram, equivalent to 1,000 grams
km	kilometers, equivalent to 1,000 meters
km <sup>2</sup>	square kilometers
kV	kilovolts – equivalent 1,000 volts
kW	Kilowatt, equivalent to 1,000 watt
Late Triassic	a time period of approximately 18 million years from 228 million to 210 million years ago
m	Meter(s)
m <sup>2</sup>	square meter
m <sup>3</sup>	cube meter
M	Million

Measured Mineral Resource	That part of a resource for which 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 exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes
Micron	1/1,000 of a millimeter
Middle Triassic	A time period of approximately 14 million years from 242 million to 228 million years ago
MLR	Ministry of Land and Resources
mm	Millimeter(s)
Mt	Million tonne (s)
Mtpa	Million tonnes per annum
MW	Megawatt, equivalent to 1,000,000 watt
N	North, also the chemical symbol for Nitrogen
NE	North East
NEE	North East East
NE-NNE	North East-North North East
NQ size core	47.6mm diameter, approximately 70% of the core taken
NW	North West
oz	troy ounce, equivalent to 31.1035 grams
Ox-Cu	Oxidized Copper Content
pH	A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale commonly in use ranges from 0 to 14
PPE	personal protective equipment
ppm	parts per million, equivalent to grams per tonne (g/t)
PQ size core	85mm diameter
PRC	People's Republic of China
Probable Ore Reserves	The economically mineable part of an indicated, and in some circumstances measured, resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and government factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified
Proved Ore Reserves	The economically mineable part of a measured resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and government factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Also referred to as recoverable proved reserve.
QA/QC	Quality Assurance/Quality Control
RC (Reverse Circulation)	A percussion-drilling technique in which the cuttings are recovered



RL	see mRL
S	South, also the chemical symbol for sulfur
SE	South East
t	Tonne
Te	tellurium
TCu	Total Copper Content
TCo	Total Cobalt Content
tpa	tonnes per annum
tpd	tonnes per day
Triassic	A time period, approximately 250 million to 210 million years ago
Valmin Code	Code for Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports
Zambia	The Republic of Zambia

## 1 INTRODUCTION AND SCOPE OF REPORT

CNMC commissioned SRK to undertake an independent assessment of all relevant technical aspects of CNMC's four subsidiary companies' operating properties in Zambia, including the Chambishi Main and West copper mines, the Baluba Center copper mine and associated ore processing plants, leaching plants and smelter; developing projects at the Chambishi Southeast copper deposit, Mwambashi copper deposit; and projects under construction including ore processing plants and leaching plants. The SRK Independent Technical Review Report ("ITR") was required for inclusion in documents for a proposed listing ("Proposed Listing") on the Main Board of the Stock Exchange of Hong Kong Limited ("HKEx").

## 2 BACKGROUND AND BRIEF

### 2.1 Background of the Projects

SRK was commissioned by CNMC to review and report all relevant technical aspects of the CNMC's four subsidiary companies' mining properties in the Republic of Zambia. The mining permits are currently wholly or partially owned by the Company's four subsidiary mining companies. Copies of the original mining licenses are shown in Appendix 1.

CNMC has four subsidiary mining/metallurgical companies including the NFC Africa Mining PLC ("NFCA"), Sino-Metals Leach Zambia Limited ("SML"), Chambishi Copper Smelter Limited ("CCS") and CNMC Luanshya Copper Mines PLC ("CLM"). These companies are all incorporated in the Republic of Zambia, and wholly or partially owned by CNMC. Each subsidiary company wholly or partially owns the copper mine(s) and associated processing plants, leaching plants and smelter. The proposed target group structure for the listing is shown Figure 2-1.

2.2 Background of the Properties

NFCA owns the Chambishi operating mine with an associated ore processing plant. SML owns the Chambishi Leach Plant which is engaged in hydrometallurgical refining operations to produce Cu cathode, and other projects which are either under construction or have planned be conducted in the future. CCS owns the Chambishi Cu Smelter to produce blister Cu utilizing pyrometallurgical smelting operations. Luanshya owns the Baluba operating mine with an associated ore processing plant; it also owns the Muliashi Copper Mine and other projects which are either under construction or are planned to be conducted in the future. Table 2-1 lists the properties of CNMC's four subsidiary companies in Zambia.

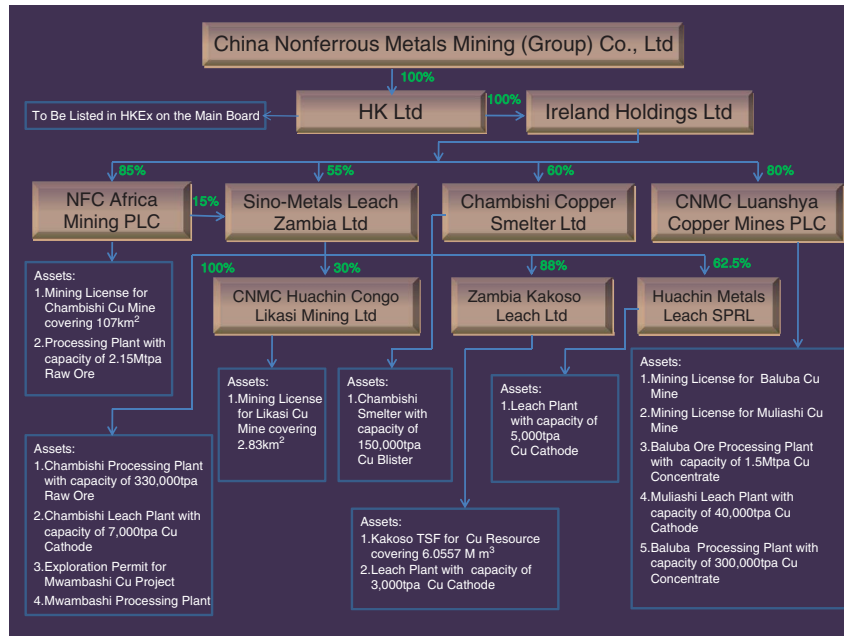


Figure 2-1: Proposed Target Group Structure

Table 2-1: Properties of CNMC's Four Subsidiaries in Zambia

Property	Designed Capacity (tpa)	Product	Source	Status
<b>NFC Africa Mining PLC</b>				
Chambishi Main Mine . . . . .	2,145,000	Raw Ore		Production
Chambishi West Mine . . . . .	990,000	Raw Ore		Production
Chambishi Processing Plant . . .	86,000	Cu Concentrate	Chambishi Primary Ore	Production
Chambishi Southeast Mine . . . .	3,300,000	Raw Ore		Construction
Chambishi SE Processing Plant . . . . .	261,030	Cu Concentrate	Chambishi SE Ore	Designed
<b>Sino-Metals Leach Zambia Ltd</b>				
Chambishi Processing Plant . . .	8,150	Cu Concentrate	Chambishi Oxidized Ore	Production
Chambishi Leach Plant . . . . .	7,000	Cu Cathode	Chambishi Tailings	Production
Mwambashi Cu Exploration Project . . . . .				
Mwambashi Processing Plant . . . . .		Cu Concentrate		Planned
Kakoso Leach Plant . . . . .	3,000	Cu Cathode	Kakoso Tailings	Designed
Kakoso Tailings . . . . .				
CNMC Huachin (Congo) Leach Plant . . . . .	10,000	Cu Cathode		Production
Mabende Project . . . . .	20,000	Cu Cathode	Mabende Cu Mine	Construction
<b>Chambishi Copper Smelter Ltd</b>				
Chambishi Cu Smelter . . . . .	150,000	Blister Cu	Chambishi/Baluba Cu Concentrate	Production
<b>CNMC Luanshya Copper Mines PLC</b>				
Baluba Center Mine . . . . .	1,500,000	Raw Ore		Production
Baluba Processing Plant . . . . .	86,000	Cu Concentrate	Baluba Mine	Production
Muliashi North Mine . . . . .	4,500,000	Raw Ore		Production
Muliashi Leach Plant . . . . .	40,000	Cu Cathode	Muliashi North & Baluba East Mines	Production

### 3 PROGRAM OBJECTIVES AND WORK PROGRAM

#### 3.1 Program Objectives

The principal objective of this Report is to provide existing CNMC shareholders and the HKEx with an ITR suitable for inclusion in documents that CNMC plans to submit to the HKEx in relation to the proposed listing on the Main Board. The SRK report is proposed to provide the HKEx and existing and potential shareholders in CNMC with an ITR which provides an unbiased technical assessment of the risk and opportunities associated with the mining and processing assets of the proposed listing company.

#### 3.2 Reporting Standard

This Report has been prepared to comply with the Listing Rules of the HKEx. The Report has also been prepared to the standard of a Technical Assessment Report under the guidelines of the Valmin

Code. The Valmin Code is the code adopted by the Australasian Institute of Mining and Metallurgy and incorporates the Joint Ore Reserves Committee (“JORC”) Code for the reporting of Mineral Resources and Ore Reserves. The standard is binding upon all Australasian Institute of Mining and Metallurgy (“AusIMM”) members.

This Report is not a valuation report and does not express an opinion as to the value of mineral asset. Aspects reviewed in this Report do include product prices, socio-political issues and environmental considerations; however SRK does not express an opinion regarding the specific value of the assets and tenements involved.

### 3.3 Limitations Statement

SRK is not professionally qualified to opine upon and/or confirm that CNMC has 85%, 67.75%, 60% and 80% ownership of its four subsidiary companies of NFCA, SML, CCS and CLM, respectively, and that each subsidiary company has 100% control of the underlying tenement and/or has any unresolved legal matters relating to any transfer of ownership or associated fees and royalties. SRK has therefore assumed that no legal impediments regarding the existence of the relevant tenements exist and that CNMC and its subsidiary companies have legal rights to all underlying tenements as purported. Assessing the legal tenures and rights to the prospects of CNMC and its subsidiary companies are the responsibility of legal due diligence conducted by entities other than SRK.

### 3.4 Work Program

The work program consisted of a review of data provided by CNMC and its subsidiary companies, site visit to the mining tenements and other properties in April to May 2011 in the Copperbelt Province, northern Republic of Zambia; inspection of all the operating mines and development projects including the geology and resource, the production sites of the ore processing plants, leach plant and smelter; discussions with CNMC and its subsidiary companies’ professionals and consultants who conducted the geological exploration and feasibility study; collection of verification samples of the Chambishi Main, West and Southeast Mines; supervision on the QA/QC on the Chambishi SE mine between June and July 2011 and resource estimation of the Chambishi SE mine in July 2011; collection and review of relevant documents; and preparation of this Report.

### 3.5 Project Team

The SRK project team, title and responsibility within this Report are shown in Table 3-1 below.

**Table 3-1: SRK Team Members and Responsibilities**

<u>Consultant</u>	<u>Title</u>	<u>Discipline and Task</u>
Dr Yiefei Jia	Principal Consultant (Geology)	Geology and Resources, Reporting
Qiushi Li	Senior Geologist	Geology and Resources
Pengfei Xiao	Senior Geologist	Geology and Resources
Lanliang Niu	Senior Consultant (Metallurgist)	Processing and Product Quality
Qiuji Huang	Senior Mining Engineer	Mining Assessment
Andrew Lewis	Senior Consultant (Geo-Environmental)	Environment, Permits and Approvals
Muhui Huang	Business Development Supervisor	Project Coordination and Execution
Dr Anson Xu	Principal Consultant (Geology)	Internal Peer Review
Mike Warren	Corporate Consultant (Project Evaluations)	External Peer Review

Yiefei Jia, *PhD, MAusIMM*, is a principal consultant (geology) with a specialty of exploration of mineral deposits. He has more than 20 years experience in the field of exploration, development, and resources estimate of precious (gold, silver, and PGE) and base metal (lead, zinc, copper, vanadium, titanium, and iron) as well as other metal ore deposits in different geological settings in China, Australia, and North America. He also has extensive experience in project management, exploration design and resource assessment and has coordinated a number of due diligence projects with technical reports for fund raising or overseas stock listing such as on the HKEx. *Dr Jia was the project manager of this project.*

Qiushi Li, *M.Sc., (Structural Geologist)* graduated from China University of Geosciences with M.Sc. degree in 2006. From July 2006 to July 2009, he worked at China National Geological & Mining Corporation and Eritrea-China Exploration & Mining Sh. Co. He has been involved in exploration projects in deposits of gold, lead-zinc, copper manganese etc. With the past 6 years of working and studying, he has got more experience in various of prospecting and exploration projects. Before he joined SRK, Qiushi Li was involved in or managed many projects with exploration design, due diligence and management, as well as compiling technical report independently for clients. *He was responsible for geological quality assurance and quality control and resources/reserves estimation.*

Pengfei Xiao, *M.Sc., (Geophysics)* graduated from the Chinese Academy of Sciences. In the past few years, Pengfei has completed a number of training courses on Petrology, Tectonics, and Geophysical exploration; he has also taken part in geological mapping. As a main participant, he has worked on the geophysical exploration and geological survey in some metal minerals and coal projects, including a key project sponsored by National Nature Science Foundation of China. *Mr Xiao assisted Dr Jia in reviewing the geology and resources.*

Qiuji Huang, *B.Eng., MAusIMM*, a senior mining engineer with SRK Consulting China, graduated from Central South University of Mining and Metallurgy in 1982. He was previously a mining director for several gold mines in the southwest region of China. He later joined the Gold Administration Bureau of Guangxi province in charge of the supervision and direction of mine construction, mine planning and mining technology developing. Mr Huang is an expert on mine construction, mining technology, mine production and mine planning. *He was responsible for the mining review.*

Lanliang Niu, *BEng, MAusIMM*, is a senior mineral processing engineer who graduated in 1987 from Beijing University of Science and Technology majoring in ore processing. He has worked on the industrial testing of gold leaching with low grade ores, managed or participated in processing and metallurgical testing for more than 10 precious and non-ferrous metals projects. With SRK, he has been responsible for the ore processing and metallurgical scope of work and has been involved in many key projects. *He reviewed the metallurgical and processing aspects of the projects for this report.*

Andrew Lewis, *BEng, MAusIMM*, is a senior environmental engineer with SRK Consulting China. He has worked extensively in China and Asia for nearly a decade. He has worked on a wide variety of different projects ranging from technology transfer to environmental health and safety. His current focus is on environmental compliance, permitting, auditing and impact assessments on mining projects in China and Mongolia. He also works on environmental management systems, pollution prevention/mitigation and remediation of contaminated sites. *Mr. Lewis was responsible for the review of environmental issues.*

Huang Muhui (Chris), *Business Development Supervisor, Juris Master*. Bachelor graduated from Beijing Foreign Studies University, Juris Master graduated from China University of Political Science and Law. With three years' engineering consulting experience and three years' mining project consulting experience, he has been providing project management, translation and logistic service for

many SRK projects, namely, Citic Dameng Manganese — Due Diligence Review — Guangxi, China/Jiulong Molybdenum — Due Diligence Review — Shanxi, China/Yindongpo Gold & Silver — Technical Review — Tongbai, Henan, China/Chenjiawan Cu-Mo-Au — Technical Review — Huangshi, Hubei, China / Meulaboh Bara Coal Mine — Exploration QA/QC — Aceh, Indonesia/ State Grid Copper Project — Technical Review, Kazakhstan/Tongling Non-Ferrous Copper Project — Technical Review, Ecuador. *Chris was responsible for project coordination and execution.*

**Dr Anson Xu, PhD, MAusIMM**, is a principal consultant with a specialty in exploration of mineral deposits. He has more than 20 years experience in exploration and development of various types of mineral deposits including copper-nickel sulfide deposits related to ultrabasic rocks, tungsten and tin deposits, diamond deposits, and in particular, various types of gold deposits, vein-type, fracture-breccia zone type, alteration type and Carlin type. He was responsible for the resource estimate of several diamond deposits, and review of resource estimates of several gold deposits. He has recently completed several due diligence jobs for clients in China, including gold, silver, lead-zinc, iron, bauxite, and copper projects, and several technical review projects as well as HKEx technical reports. *Dr Xu provided internal peer review to ensure the quality control of the report.*

**Mike Warren, BSc (Mining Eng), MBA, FAusIMM, FAICD**, is a mining engineer with over 30 years experience. He specializes in open pit and underground mining analysis, due diligence reports and mine evaluations. Mr Warren is a JORC Code competent person and Corporate Consultant (Project Evaluation) with SRK Australasia. *He completed the external peer review of the report to ensure its quality.*

As the author of portions of the Report for CNMC on certain mineral properties in Copperbelt Province, Republic of Zambia, I, Yiefei Jia, do hereby certify that:

- I am employed by, and carried out the assignment for SRK Consulting China Limited, located at:  
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100005  
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- I graduated with a Bachelor's degree in Geology and Geochemistry from Jilin University, China (B.Sc.) in 1987, a Master's degree in Geochemistry from Jilin University, China (M.Sc.) in 1990, and a Doctor's degree in Geology and Geochemistry from the University of Saskatchewan, Canada (Ph.D.) in 2001. I was awarded a Post Doctoral Fellowship from the Natural Science and Engineering Research Council of Canada ("NSERC") from April 2002 to March 2004 to work as a Research Scientist at the Australian National University. From 2004 to 2005, I worked for the Mining and Exploration Division of the Commonwealth Scientific and Industrial Research Organization ("CSIRO") as a research fellow.
- I am a member of the Australasian Institute of Mining and Metallurgy (AusIMM) (No. 230607).
- I have been directly involved in geological research and mineral exploration for more than 18 years.
- I have read the definition of "competent person" set out in HKEx listing rules and certify that by reason of my education, affiliation with a professional associations (as defined in the listing rules) and past relevant work experience, I fulfill the requirements to be a "competent person" for the purposes of the technical report.
- I visited the CNMC's properties in June 2011.



- I am the primary author responsible for the preparation and compilation of the report, and supervising Mr. Pengfei Xiao and Mr Qiushi Li to prepare geology and resource section and mining assessment section.
- I have had no previous involvement with the CNMC's projects. I have no interest, nor do I expect to receive any interest, either directly or indirectly, in the CNMC's Project, nor in the securities of China Nonferrous Metals Mining (Group) Co., Ltd and its subsidiary mining companies.
- I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- I am independent of the issuer applying all of the tests in sections 18.21 and 18.22 of the listing rules of HKEx.
- I consent to the filing of the Technical Assessment Report with HKEx and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Mr Mike Warren, Dr Anson Xu, Mr Lanliang Niu, Mr Qiuji Huang and Mr. Andrew Lewis are also independent competent persons on overall quality control, ore processing, mining and environmental and social issues. Their qualifications have been outlined in the short biographical notes above.

### **3.6 Statement of SRK Independence**

Neither SRK nor any of the authors of this Report has any material, present or contingent interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK's fee for completing this Report is based on its normal professional daily rates plus reimbursement of incidental expenses. Payment of that professional fee is not contingent upon the outcome of the Report.

None of SRK or any authors of this report have any direct or indirect interest in any assets which had been acquired, or disposed of by, or leased to any member of the Company or any of the Company or any of its subsidiaries within the two years immediately preceding the issue of this Report.

None of SRK or any authors of this report has any shareholding, directly or indirectly in any member of the Group or any right (whether legally enforceable or not) to subscribe for or to nominate persons to subscribe for securities in any member of the Group.

### **3.7 Representation**

CNMC and its subsidiary companies have represented to SRK that full disclosure has been made of all material information and that, to the best of their knowledge and understanding, such information is complete, accurate and true. SRK has no reason to doubt the representation.

### **3.8 Consent**

SRK consents to this Report being included, in full, in documents that CNMC proposes to submit to the HKEx, in the form and context in which the technical assessment is provided, and not for any other purpose.

SRK provides this consent on the basis that the technical reviews expressed in the Executive Summary and in the individual sections of this Report are considered with, and not independently of, the information set out in the complete Report and the cover letter.

### 3.9 Indemnities

As recommended by the VALMIN Code, CNMC has provided SRK with an indemnity under which SRK is to be compensated for any liability and/or any additional work or expenditure resulting from any additional work required:

- which results from SRK's reliance on information provided by CNMC or to CNMC not providing material information; or
- which relates to any consequential extension workload through queries, questions or public hearings arising from the Report.

### 3.10 SRK Experience

SRK Consulting is an independent, international consulting group with extensive experience in preparing independent technical reports for various stock exchanges around the world (see [www.srk.com](http://www.srk.com) for a review). SRK is a one-stop consultancy offering specialist services to mining and exploration companies for the entire life cycle of a mining project, from exploration through to mine closure. Among SRK's more than 1,500 clients are most of the world's major and medium-sized metal and industrial mineral mining houses, exploration companies, banks, petroleum exploration companies, agribusiness companies, construction firms and government departments.

Formed in Johannesburg, South Africa, in 1974 SRK now employs more than 1,000 professionals internationally in 42 permanent offices on six continents. A broad range of internationally recognized associate consultants complements the core staff.

SRK Consulting employs leading specialists in each field of science and engineering. Its seamless integration of services, and global base, has made the company a world's leading practice in due diligence, feasibility studies and confidential internal reviews.

The SRK Group's independence is ensured by the fact that it holds no equity in any project and that its ownership rests solely with its staff. This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgment issues.

SRK China was established in early 2005, and is mainly working on Chinese mining projects independently or together with SRK's other offices, mainly SRK Australasia (see [www.srk.cn](http://www.srk.cn) and [www.srk.com.au](http://www.srk.com.au)). SRK China has prepared a number of independent technical reports on mining projects for various companies which acquired Chinese projects or pursued listings on overseas stock exchanges, as showing in Table 3-2.

**Table 3-2: Recent Reports by SRK for Chinese Companies**

<u>Company</u>	<u>Year</u>	<u>Nature of Transaction</u>
Yanzhou Coal Limited (company listed on the Stock Exchange of Hong Kong Limited)	2000	Sale of Jining III coal mine by parent company to the listed operating company
Chalco (Aluminum Corporation of China)	2001	Listing on the Stock Exchange of Hong Kong Limited and New York Stock Exchange
Fujian Zijin Gold Mining Company	2004	Listing on the Stock Exchange of Hong Kong Limited
Lingbao Gold Limited	2005	Listing on the Stock Exchange of Hong Kong Limited
Yue Da Holdings Limited (company listed on the Stock Exchange of Hong Kong Limited)	2006	Proposed acquisition of shareholding in mining projects in P.R. China
China Coal Energy Company Limited (China Coal)	2006	Listing on the Stock Exchange of Hong Kong Limited
Sino Gold Mining Limited	2007	Dual listing on the Stock Exchange of Hong Kong Limited
Xinjiang Xinxin Mining Industry Company Limited	2007	Listing on the Stock Exchange of Hong Kong Limited
Espco Technology Holdings Limited	2008	Acquisition of shareholding in Tongguan Taizhou Gold-Lead projects in P.R. China
China Shenzhou Mining and Resources Inc	2008	Listing (SHZ) on the American Stock Exchange
Green Global Resource Ltd	2009	Acquisition of shareholding in iron project in Mongolia
Ming Fung Jewelry Group Ltd	2009	Acquisition of shareholding in gold projects in Anhui and Hebei Provinces, P.R. China
Continental Holdings Ltd	2009	Acquisition of a gold project in Henan Province, P.R. China
CNNC International Ltd	2010	Acquisition of a uranium mine in Africa
New Times Energy Corporation Ltd	2010	Acquisition of shareholding in gold projects in Hebei, Province, P.R. China
CITIC Dameng Resources Holdings Limited	2010	Listing on the Stock Exchange of Hong Kong Limited

### 3.11 Forward-looking Statements

Estimates of mineral resources are inherently forward looking statements. Being projections of future performance, they will differ from actual performance. The errors in such projections result from inherent uncertainties in interpretation of geologic data, variations in the execution of mining and processing plans, the ability to meet construction and production schedules, availability of necessary equipment and supplies, fluctuating prices and changes in regulations.

Opinions presented in this Report apply to the site's conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK have had no prior knowledge nor had the opportunity to evaluate.

## 4 LOCATION, CLIMATE AND INFRASTRUCTURE

### 4.1 Location and Access

The reviewed operations include four Zambia based subsidiary companies of CNMC, namely NFCA, SML, CCS and CLM.

The mine sites, concentrators and smelting plants of CNMC are all located within the administrative area of the Copperbelt Province in the north of the Republic of Zambia. The Chambishi mines and concentrators and smelters operated by NFCA, SML and CCS are located near the city of Kitwe, and projects operated by CLM are located near the city of Luanshya.

Both Kitwe and Luanshya are mining cities in the Copperbelt Province with decades of history. Kitwe is the local economic center and the third largest city in terms of size and population of Zambia. The general location and access of the cities near the Projects is shown in Figure 4-1.

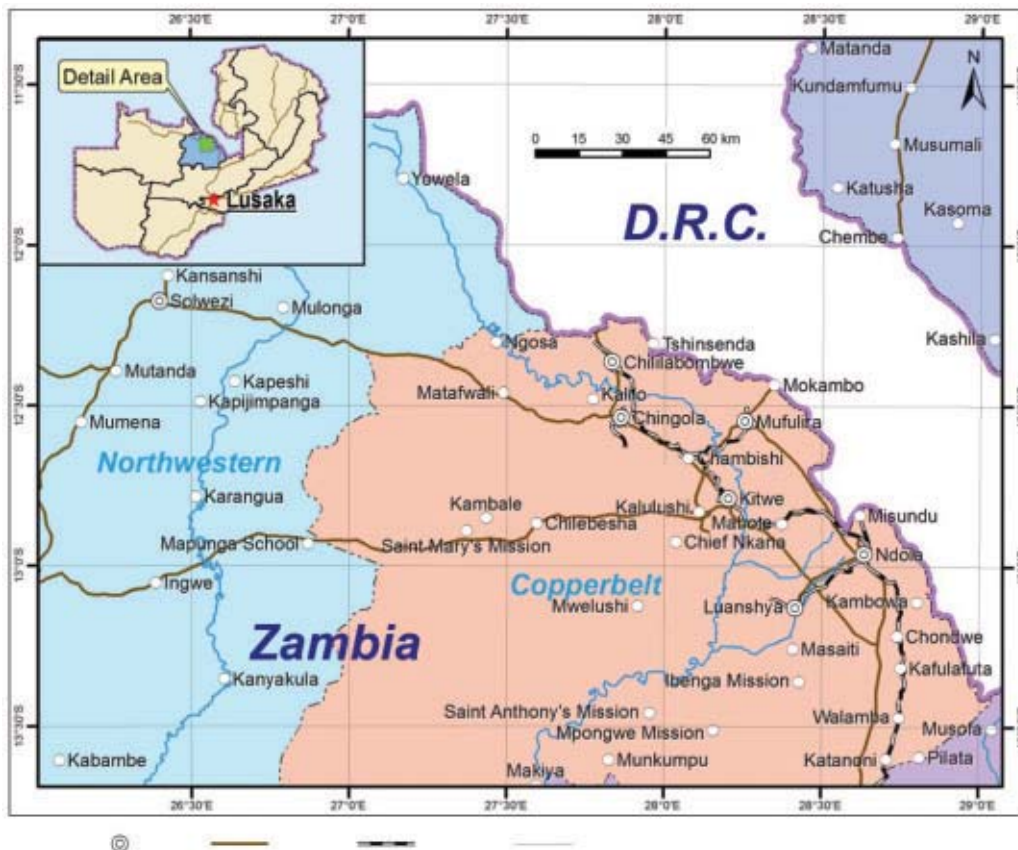


Figure 4-1: General Location and Access of the Projects

The access to the sites of the Projects is excellent. This area is generally flat without any considerable relief and the driveable unpaved roads at the mining sites are extensively developed. Railways are available at Kitwe, Chambishi and Luanshya. The main railway passes through the Copperbelt Province and extends north into the area of the Democratic Republic of the Congo (“DRC”), linking with the seaport at Dar el Salaam in Tanzania.

The airport at Ndola, the capital city of the Copperbelt Province, is located about 60km south-east of Kitwe and approximately 45km north-east of Luanshya, and services regular commercial domestic and international flights from Lusaka, Solwezi, Nairobi and Johannesburg. Another nearby airport, Southdowns Airport near Kitwe lies about 12km south-west of Kitwe but does not currently receive any scheduled services. The airport was closed down for repair in 2005, and re-opened in 2008, however it is not regularly used for civil transportation.

#### **4.1.1 Chambishi Projects and Kakoso Tailings Development Project**

##### ***Chambishi Main and Chambishi West***

Chambishi Main and Chambishi West Mines are located 28km Northwest of Kitwe. The T3 road (national highway) passes the east side of the mines. The access from Kitwe to the mine sites, is generally excellent. Its geographic coordinates of the mines are approximately latitude 12°39'S and longitude 28°02'E.

##### ***Chambishi Southeast***

The Chambishi Southeast Project is situated 20km northwest of Kitwe and with the geographic coordinates of latitude 12°48'S and longitude 28°00'E. The T3 national road crosses the mine site.

##### ***Mwambashi***

The Mwambashi Project area is located approximately 25km to the southwest of Chingola and approximately 35km west to Kitwe. Normal access to the Mwambashi Project is via a paved road mixed with unpaved road from Chingola. A shortcut via an unpaved road of 8km links it directly with the Chambishi Main Mine; however it is available only in the dry season and on rainy days it is usually flooded. The geographic coordinates of the Mwambashi Project are about latitude 12°43'S and longitude 28°58'E.

##### ***Kakoso Tailings Development Project***

The Kakoso Tailings Development Project is located about 78 km northwest of Kitwe, 4 km south of Chililabombwe and 23 km north of Chingola with the geographic coordinates about Latitude 12°37'S and 28°02'E. The T3 national road reaches the boundary and connects with the N1 road of DRC.

#### **4.1.2 Luanshya Projects**

The Luanshya Projects are located about 40km southwest of Ndola. The mine sites are well connected to Luanshya downtown with paved roads.

#### **4.2 Climate and Physiography**

The project areas are located on the great plateau in Southern Africa with relatively flat natural terrain at an elevation of about 1,200 to 1,270 m above sea level (ASL). This region lies within the tropics, but it has a pleasant climate affected by latitude. The temperature and rainfall varies greatly. Average annual temperature is around 20 degrees Celsius (°C). The year is divided into wet and dry seasons. The wet season lasts from early November until late March of the next year, and during this period rain falls almost daily. The period from the end of the wet season until September is called winter months. October is the hottest month year round, and the maximum temperature can reach 35 °C. The annual precipitation is around 1,000 to 1,500 millimeters (mm) (F. Mendelsohn, 1961).

The landscape around Kitwe and Luanshya is an attractive mix of gently undulating woodland, dambos, farmland and rivers such as the Kafue River flowing along Kitwe's eastern and southern edges. The region is drained by the Kafue River and its tributaries. The Kafue is a major tributary of the Zambezi River which is one of main river systems in Zambia and also the fourth-longest river in Africa and flows into Lake Kariba. Water supplies for both domestic and industrial use in the region are satisfactory.

### 4.3 Local Economy and Infrastructure

Kitwe was founded in 1936 and is the main industrial and commercial center of the Copperbelt Province. The Copperbelt Province is endowed with a range of mineral resources, in particular copper and cobalt, as well as wood and agriculture products. The development of local economy predominantly depends on mining activities. Some copper mines are located around Kitwe, such as Nkana, Chingola, Chambishi, Luanshya, Kululushi and Mindolo. Exploration and mining tools or machines are readily available in Kitwe. One of the main sources of hydroelectric power on the river is the Kariba Dam, which provides power to Zambia and Zimbabwe. The electric power grid covers all areas of the Projects. Telecommunications, hospitals, schools, university, lodges and supermarkets, as well as maintenance workshops for mining and transportation machines are available either in Kitwe or at nearby mining cities.

## 5 LICENSES AND PERMITS

### 5.1 Business Licenses

The business licenses detail of NFCA, CLM, CCS and SML are presented in Table 5-1.

**Table 5-1: List of Business Licenses**

Business License No.	40172
License Type	Certificate of Incorporation of a Public Company
Issued To	NFC Africa Mining PLC
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	March 5, 1998
Commencing Date	March 5, 1998
Business License No.	40172
License Type	Certificate of Share Capital
Issued To	NFC Africa Mining PLC
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	March 5, 1998
Commencing Date	March 5, 1998
Business License No.	52849
License Type	Certificate of Incorporation of a Public Company
Issued To	CNMC Luanshya Copper Mines Plc
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	November 10, 2009 (name replacement)
Commencing Date	December 12, 2003
Business License No.	52849
License Type	Certificate of Share Capital
Issued To	CNMC Luanshya Copper Mines Plc
Issued By	Office of Register of Companies Republic of Zambia
Issue Date	July 16, 2004
Commencing Date	July 16, 2004



Business License No.	62959
License Type	Certificate of Incorporation of a Private Company Limited By Shares
Issued To	Chambishi Copper Smelter Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	July 19, 2006
Commencing Date	July 19, 2006
Business License No.	62959
License Type	Certificate of Minimum Capital
Issued To	Chambishi Copper Smelter Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	July 19, 2006
Commencing Date	July 19, 2006
Business License No.	62959
License Type	Certificate of Share Capital
Issued To	Chambishi Copper Smelter Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	July 19, 2006
Commencing Date	July 19, 2006
Business License No.	57192
License Type	Certificate of Incorporation of a Private Company Limited By Shares
Issued To	Sino-Metals Leach Zambia Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	December 3, 2004
Commencing Date	December 3, 2004
Business License No.	57192
License Type	Certificate of Minimum Capital
Issued To	Sino-Metals Leach Zambia Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	December 3, 2004
Commencing Date	December 3, 2004
Business License No.	57192
License Type	Certificate of Share Capital
Issued To	Sino-Metals Leach Zambia Limited
Issued By	Office of the Register of Companies Republic of Zambia
Issue Date	December 3, 2004
Commencing Date	December 3, 2004

## 5.2 Mining and Exploration Licenses

The mining licenses detail of NFCA, CLM and SML are presented in Table 5-2.

**Table 5-2: List of Mining and Exploration Licenses**

Mining License No.	7068-HQ-LML
License Type	Large-Scale Mining License
Issued To	NFC Africa Mining PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	May 12, 2010
Commencing Date	June 29, 1998
Period Granted	Twenty Five Years
Minerals Granted	Sb, Mo, Si, W, U, PGE, Au, Co, Cu, Ni, Zn, Se, Te, Cd, Ag, Ge, Fe and Pb



Mining License No.	7069-HQ-LML
License Type	Large-Scale Mining License
Issued To	NFC Africa Mining PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	May 12, 2010
Commencing Date	June 29, 1998
Period Granted	Twenty Five Years
Minerals Granted	Sb, Mo, Si, W, U, PGE, Au, Co, Cu, Ni, Zn, Se, Te, Cd, Ag, Ge, Fe and Pb
Mining License No.	7070-HQ-LML
License Type	Large-Scale Mining License
Issued To	NFC Africa Mining PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	May 12, 2010
Commencing Date	June 29, 1998
Period Granted	Twenty Five Years
Minerals Granted	Sb, Mo, Si, W, U, PGE, Au, Co, Cu, Ni, Zn, Se, Te, Cd, Ag, Ge, Fe and Pb
Mining License No.	8097-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	January 23, 2004
Period Granted	Twenty Years
Minerals Granted	Cu, Co, Au, Ag, Pb, Zn, Ni, U, S, Se, Bi, Te, Ge, Auf, Mo, W, Cadmium
Mining License No.	8396-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	October 19, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt
Mining License No.	8394-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	October 19, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt
Mining License No.	8393-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	October 19, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt

Mining License No.	8395-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	October 19, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt
Mining License No.	8404-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	September 9, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt
Mining License No.	8392-HQ-LML
License Type	Large-Scale Mining License
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Mines Development Department
Issue Date	April 29, 2010
Commencing Date	October 19, 2006
Period Granted	Twenty Five Years
Minerals Granted	Copper and Cobalt
Mining License No.	15201-HQ-LPL
License Type	Exploration License
Issued To	Sino-Metals Leach Zambia Ltd
Issued By	Republic of Zambia Geological Survey Department
Issue Date	January 6, 2011
Commencing Date	December 20, 2011
Period Granted	Two Years
Minerals Granted	Copper

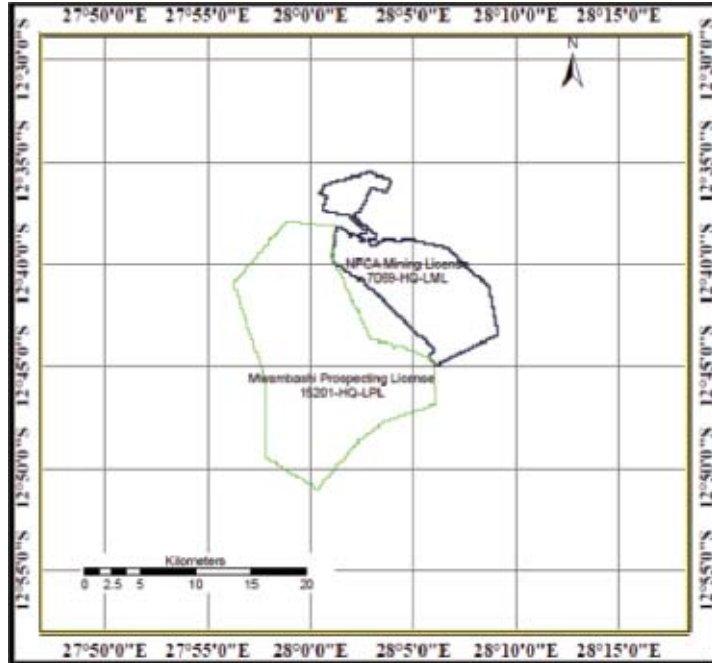


Figure 5-1: Map of Mining License Areas 7069-HQ-LML and 15201-HQ-LPL

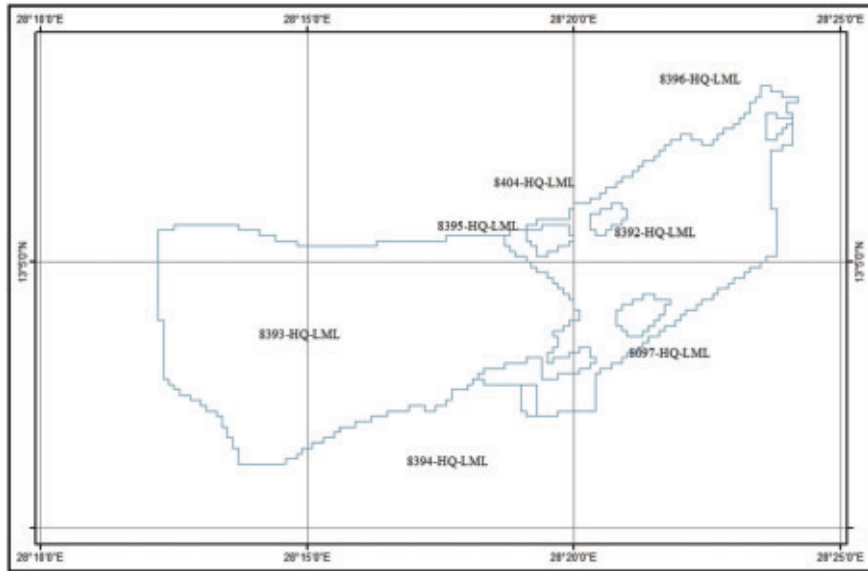


Figure 5-2: Map of Mining License Areas of CLM Projects

### 5.3 Annual Operating Permit

Operating Permit No.	027/2012
License Type	Annual Operating Permit
Issued To	NFC Africa Mining PLC
Issued By	Republic of Zambia Ministry of Mines & Minerals Mine Safety Department
Issue Date	February 2, 2012
Commencing Date	January 1, 2012
Period Granted	One Year

Operating Permit No.	029/2012
License Type	Annual Operating Permit
Issued To	CNMC Luanshya Copper Mines PLC
Issued By	Republic of Zambia Ministry of Mines & Minerals Mine Safety Department
Issue Date	February 10, 2012
Commencing Date	January 1, 2012
Period Granted	One Year

Operating Permit No.	018/2012
License Type	Annual Operating Permit
Issued To	Chambishi Copper Smelter Limited
Issued By	Republic of Zambia Ministry of Mines & Minerals Mine Safety Department
Issue Date	January 9, 2012
Commencing Date	January 1, 2012
Period Granted	One Year

Operating Permit No.	036/2012
License Type	Annual Operating Permit
Issued To	Sino-Metals Leach Zambia Ltd
Issued By	Republic of Zambia Ministry of Mines & Minerals Mine Safety Department
Issue Date	February 17, 2012
Commencing Date	January 1, 2012
Period Granted	One Year

## 6 GEOLOGY & MINERAL INVENTORY ASSESSMENT

The review of geology and/or resource presented in this section involves the projects below.

- NFCA Chambishi Project: it includes the three mines of Chambishi Main, Chambishi West, and Chambishi Southeast (Chambishi SE);
- SML Tailing Project: it includes the recyclable Chambishi tailing dams, Kakoso tailings development project and Mwambashi exploration and development project;
- CLM Luanshya Project: it includes seven mining licenses located in the Roan-Muliashi Basin near Luanshya.

### 6.1 Regional Geology

The Copperbelt of Zambia is located in the heart of Africa, south of the Equator, in the vicinity of latitude 13°S and longitude 28°E. The belt is enriched in copper and cobalt mineralization and extends from Ndola, the capital of Copperbelt Province of Zambia, to Katanga Province of the DRC with a nearly southeast (SE) — northwest (NW) strike.

The Chambishi and Mwambashi Projects are on the west limb of the Kafue Anticline (Figure 6-1) while the Luanshya Project is situated on the south-eastern edge of the Kafue Anticline (Figure 6-2). The Chambishi Main, Chambishi West and Chambishi SE Mines are situated at the north-east edge of the Chambishi Basin, and the Mwambashi Project is situated at the north-west edge of the Chambishi Basin.

The Kafue Anticline, trending roughly NW-SE (an average trend about 145°), is the dominant structural feature of the Copperbelt and is composed of the Basement Complex. The copper deposits in the Copperbelt are almost all lined up on either side of this geological feature. Approximately 40km through the Copperbelt the Kafue River follows the anticlinal axis, consisting of schists of the Lufubu Systems, granites intrusive therein, and two infolds of the Muva System.

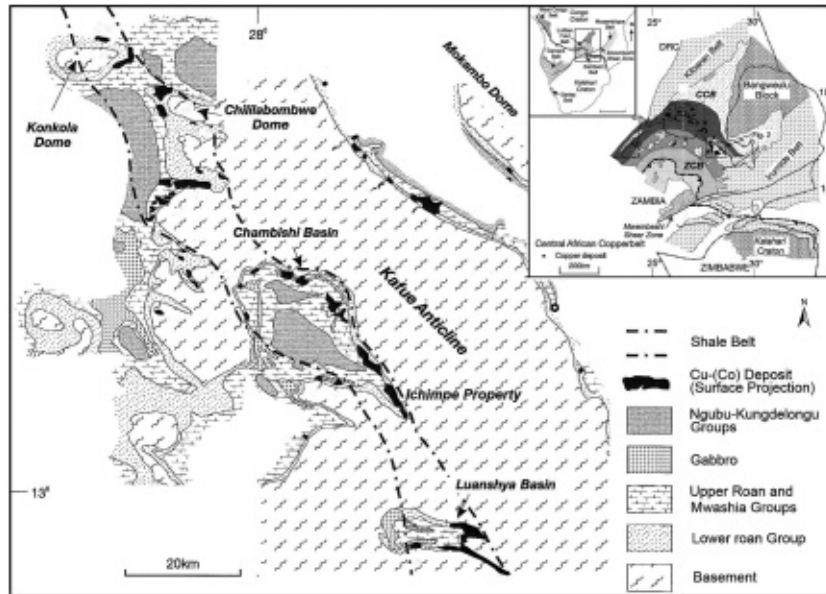
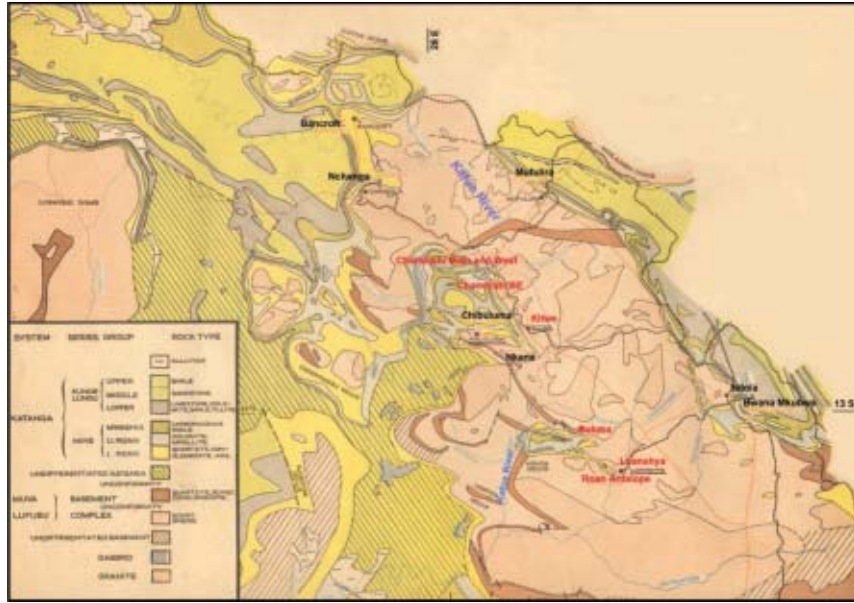


Figure 6-1: Tectonic Location of the Project Sites

(Modified from David Selley et al 2005)



**Figure 6-2: Regional Geological Map of Chambishi and Luanshya Projects\***

\* Sourced and modified from “Geological Map of the Northern Rhodesian Copperbelt” of 1:500,000 scale published by former Rhodesian Selection Trust Ltd incorporation with Anglo-American Corporation Ltd and printed by Mufurila Copper Mines Ltd in 1961. “Northern Rhodesian” refers to the area of what is now named Zambia.

The synclinorium parallel to the Kafue Anticline is developed in the region. Only a few minor scale faults were discovered during the mining operation stage. Some minor folds are also developed in this area. The gabbro, intruded during the Lufilian Orogeny event, is almost entirely confined to the Upper Roan Group and increases westwards across the Copperbelt.

The Kafue Anticline, i.e. the Basement Complex is overlain by the Neoproterozoic Katanga Supergroup, with an unconformity contact. The widespread Katanga System is subdivided into the Lower Roan (RL), Upper Roan (RU) and Mwashia Groups, and other series of the Nguba Group and Kundelungu Series. The Nguba Group is absent in the Chambishi area and the Luanshya area. Copper and cobalt mineralization is generally associated with the sedimentary rocks of the Lower Roan (RL) Group. The Quaternary sediments cover the regional area.

## 6.2 NFCA Chambishi Projects

The NFCA large-scale mining license of the Chambishi Projects includes two operating mines, namely Chambishi Main Mine and Chambishi West Mine, and one development project, namely the Chambishi Southeast (Chambishi SE) deposit, which is now under exploration and construction.

### 6.2.1 Local Geology and Background

The Chambishi Basin which hosts NFCA Chambishi mines (Chambishi Main, Chambishi West and Chambishi SE) is dominated by the Neoproterozoic Katanga Supergroup (Figure 6-3). The local geology and structure share the typical features of the Copperbelt.



The underlain Basement Complex consists of the Lufubu and Muva Systems and granitoids/granites. The Lufubu consists of gneiss and is overlain by the Muva System which consists of schist quartzite and conglomerate. The Basement Complex is overlain by the Katanga System with an unconformity contact. The Katanga Supergroup is widespread in the Chambishi Basin, which is subdivided into groups of Lower Roan, Upper Roan, Mwashia, Nguba and Kundelungu, among which the Nguba is absent in the Chambishi Basin. Copper and cobalt mineralization is generally associated with the sedimentary rocks of Lower Roan.

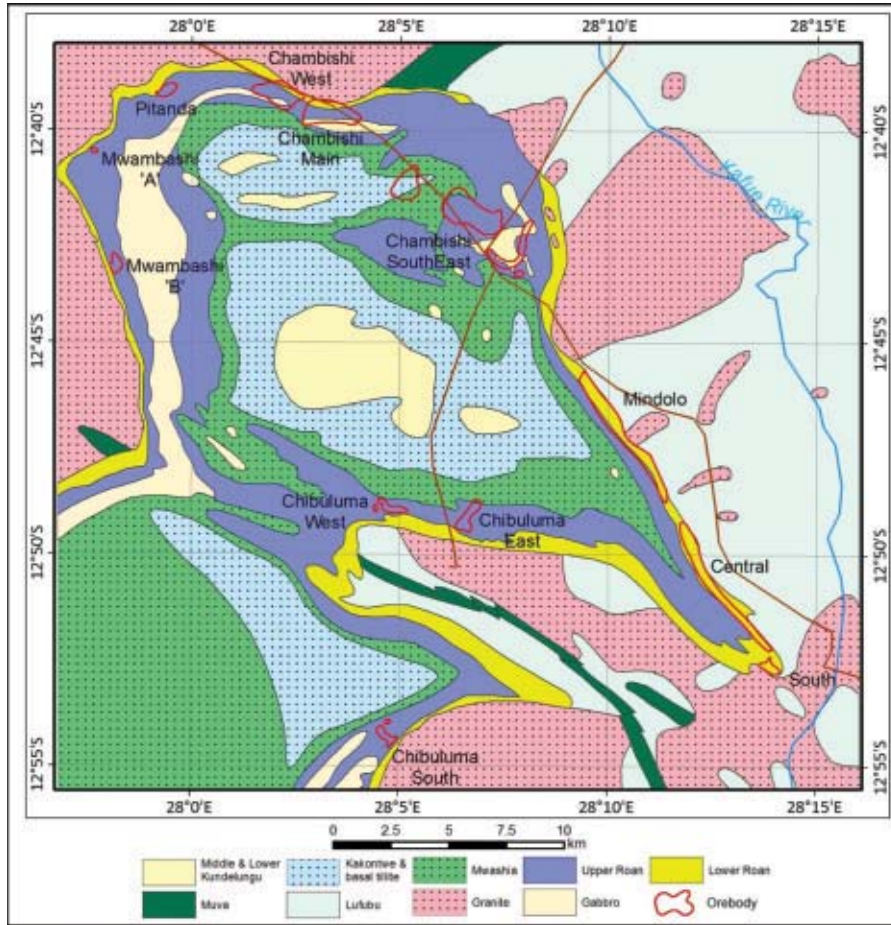


Figure 6-3: Local Geological Map of Chambishi Area

Along the rim of the Chambishi Basin, some copper/copper-cobalt deposits have experienced exploration and mining activity such as at the Nkana, Mindolo and Chibuluma deposits.

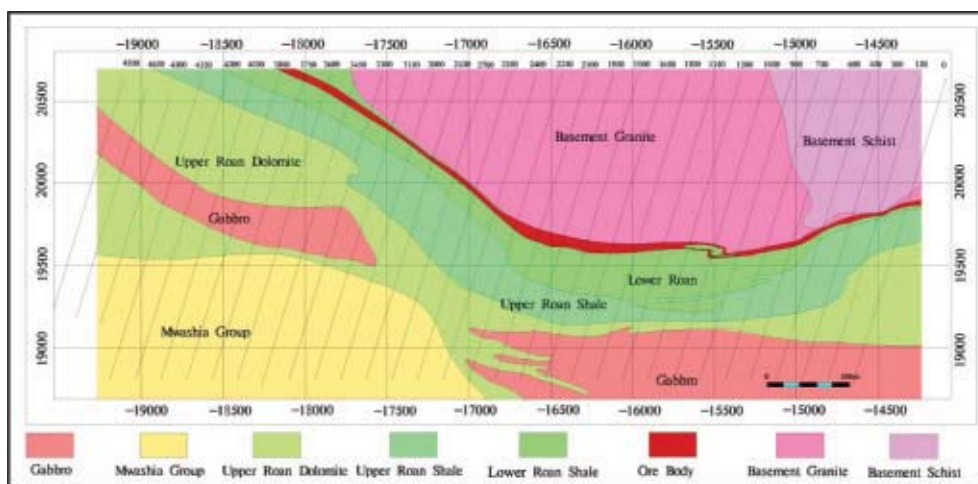
**6.2.2 Geology of Chambishi Main, West and Southeast Mines**

The Chambishi Main, West and Southeast Mines are situated on the northeast limb of the Chambishi Basin which is a northwest plunging synclinal basin with a strike in the north-western direction. The geological map of the Chambishi Main and Chambishi West is shown on Figure 6-4. One barren gap 200 to 300m along the strike of the mineralization was defined by the exploration program. The Chambishi Main orebody extends over 2,280m from east to west. The Chambishi West orebody extends 1,400 to 2,100m with a north-west strike. The Chambishi Southeast copper-cobalt (Cu-Co) deposit is approximately 7km southeast of the Chambishi Main Mine. Two Cu-Co mineralized bodies have been defined by NFCA in the deposit area (Figure 6-4).



Gneiss is widespread within the mapping area. Gneiss, biotite schists and quartzite of the Lufubu and Muva Systems make up the Basement Complex. A sequence of sedimentary rocks of the Katanga Supergroup, including dolomites, sandstone, limestone, silt, quartzite and illite, overlies the Basement Complex with unconformable contact. The Lower Roan, Upper Roan and Mwashia Groups of the Katanga Supergroup spread in the southern part of the area; they strike east-westerly and dip to south with a dip angle of up to 60°.

The Lower Roan is made up of basal conglomerate, quartzite, arkose, footwall conglomerate, ore shale formation and hangingwall quartzite. The Lower Roan Group hosts the copper mineralization and is overlain by the Upper Roan Group which consists of schist, quartzite, dolomite and some meta-gabbro. The Mwashia Group is distributed at the south edge of the mapping area, which is unconformably overlain by the Upper Roan Group and consists of dark-grey argillaceous sediments, minor dolostone and quartzite.



**Figure 6-4: Geological Map of Chambishi Main Mine and Chambishi West Mine**

The north rim of the Chambishi Basin shows considerable sinuosity due mainly to folding along a southeast-striking axial plane. The folds plunge southeast parallel to the Kafue anticline. The minor scale of interbedded folds are well developed in the siltstone of the hanging wall. The minor scale of faults with a displacement of several meters in ore bodies were discovered during the mining stage.

### 6.2.3 Orebody Geology

#### *Chambishi Main and West Mines*

The ore bodies at the Chambishi Copper project occur in the Ore Shale Formation of the Lower Roan. Several minor occurrences of low grade sulfide mineralization have been found in argillite and quartzite above the Ore Shale Formation and in the conglomerate below the Ore Shale Formation.

The Chambishi Main Mine has one orebody. It strikes E-W with dip angles of 15° to 75° (Figure 6-5). The extension of the orebody along the strike is around 2,280m. There is a 200 to 300m wide gap consisting of barren and low grade mineralization between the Chambishi Main orebody and the Chambishi West orebody. Down-dip extension of the Chambishi Main orebody is defined by boreholes to about 900m from the surface. The thickness of the Chambishi Main orebody ranges from 2.10m and 18.23m with an average of 8.03m. The average grade of the Chambishi Main orebody is 2.51% TCu.

The Chambishi West Mine has one orebody. The orebody strikes north-westerly and dips to the south with an average dip angle of 30°. It is about 1,400 to 2,100m long and has an average thickness of around 8.0m. The eastern part of the orebody is relatively thicker. The thickness of mineralized shale in the western part of the orebody is generally around 1.0m. Down-dip extension of the Chambishi West orebody is defined by boreholes to about 600m from the surface. The thickness of the Chambishi West orebody ranges approximately from 2m and 17m with an average of 8m (Figure 6-6). The average grade of the Chambishi West orebody is 2.15% TCu.

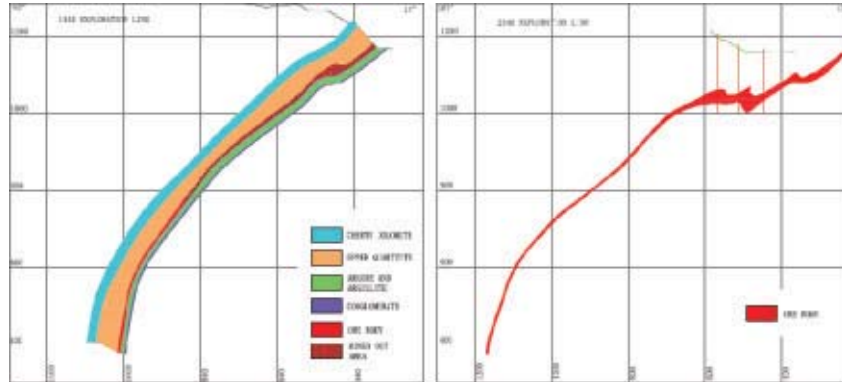


Figure 6-5: Cross-section of 1440# and 2340# Exploration Lines at Chambishi Main

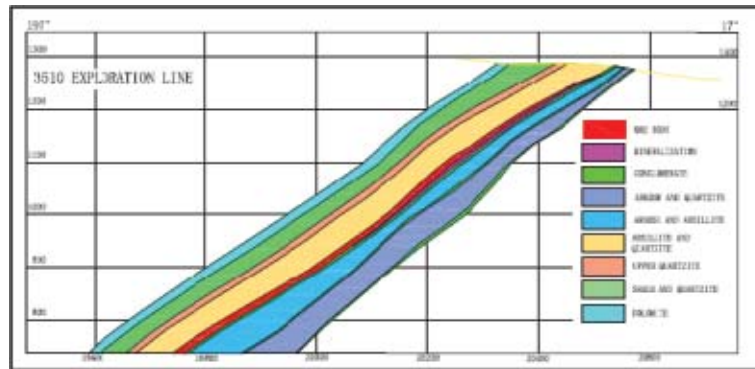


Figure 6-6: Cross-section of 3,510# Exploration Line at Chambishi West

*Chambishi Southeast Mine*

The Chambishi Southeast Mine has two Cu-Co ore bodies; the North orebody is in the northern zone and the South orebody is within the southern zone. The characteristics of the two ore bodies are detailed below.

The two Cu-Co mineralized bodies appear as bedded and stratified mineralization and are hosted in the Ore Shale Formation of the Lower Roan. The North orebody shown in the center of Figure 6-7 is defined between 0# and 53# exploration lines. It extends 4,500m along a southeast (SE) — northwest (NW) trend and dips to the northeast (NE) at dip angles of 5° to 15°. The width (down dip extension) of the body varies from 569 to 1,237m. The thickness of the North mineralized body varies from 1.4m to 22.9m with an averaging thickness about 10.0m. The average grades of Cu and Co as analyzed from completed drill cores are 2.30% and 0.116%, respectively.

The South orebody shown in the south of the Figure 6-7 is defined between 0# and 64# exploration lines. It extends 3,540m along the SE-NW trending. The width (down dip extension) of the orebody varies from 800m to 1,600m. This orebody is delineated by 14 drill holes.

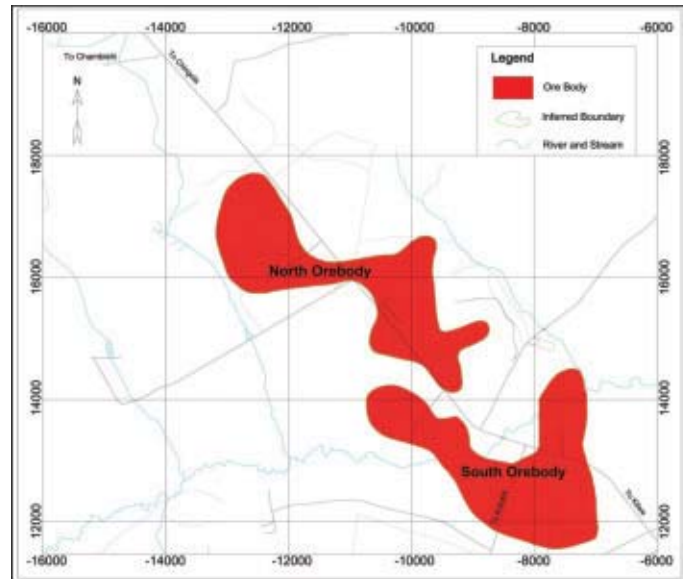


Figure 6-7: Map of Cu-Co Mineralized Bodies of Chambishi SE Mine

Figure 6-8 shows the Chambishi SE North orebody at the level of 600m deep from the surface. The orebody is intersected by current drilling explorations.

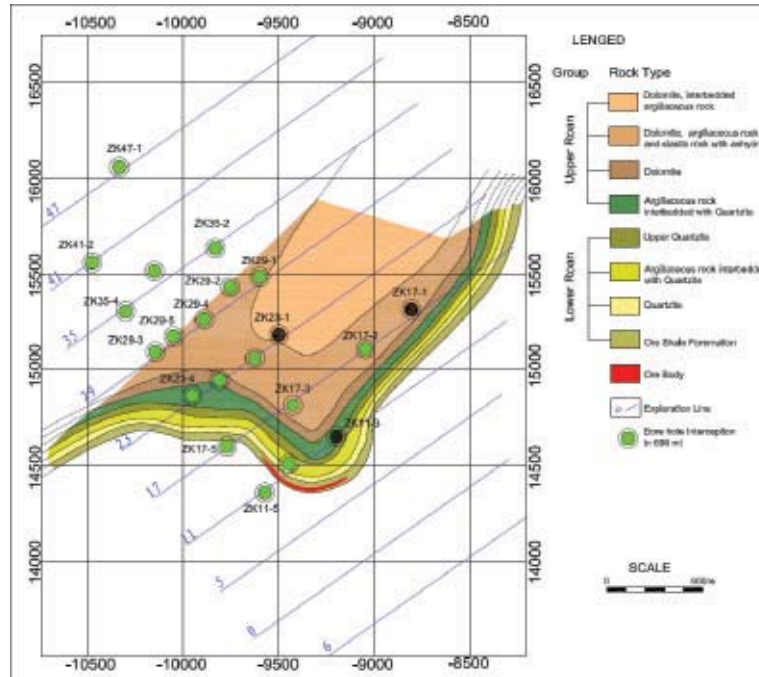


Figure 6-8: Geological Map of Chambishi SE North Orebody at -600m Level

## 6.2.4 Mineralogical Characteristics

### *Chambishi Main and West Mines*

In the Chambishi Main Mine, the remaining mineralized body is below the weathering zone. Ore minerals are mainly bornite and chalcopyrite. Gangue minerals are mainly hornblende, carbonate, quartz and clay minerals. The T<sub>Cu</sub> grade decreases from the top to bottom of the orebody. According to the mineral component, the Main orebody is divided into three zones (Figure 6-9): the chalcopyrite zone, the chalcopyrite-bornite zone and the bornite zone. The grades of T<sub>Cu</sub> are generally below 2% in the chalcopyrite zone, 2 to 4% in the chalcopyrite-bornite zone, and more than 4% in the bornite zone (Figure 6-10).

In Chambishi West Mine, the orebody is hosted by the Ore Shale Formation of the Lower Roam Group. Ore minerals are mainly chalcopyrite, bornite with minor chalcocite. Gangue minerals are mainly hornblende, carbonate, quartz and clay minerals. The orebody shows a vertical zonation. From top (0m level) to bottom (200m level) it transitions from oxidized ore to mixed mineralization to primary ore.

Both the Chambishi Main and Chambishi West ore bodies are characterized by a banded structure and a disseminated texture.

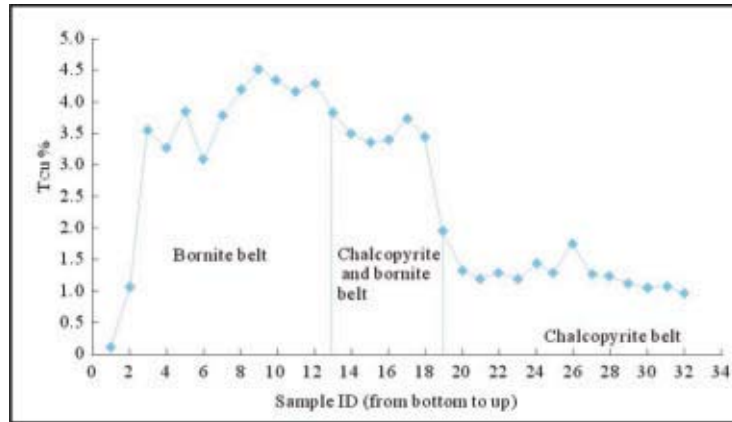


Figure 6-9: Grade of TCU Profile of 255003# Underground Borehole



Figure 6-10: Bornite Mineralization in Fresh Sample — Chambishi Main

The hangingwall rocks of the Chambishi Main orebody are shale formation. The footwall rock is basal conglomerate. The orebodies have a sharp contact with the footwall rock and the grade of TCU gradually decreases to the hangingwall.

#### *Chambishi Southeast Mine*

The mineralization at Chambishi SE is defined generally below the oxidized zone, starting at a vertical depth of 500 to 600 m. The sulfide minerals are predominantly chalcopyrite (see Figure 6-11), pyrite, pyrrhotite, carrollite, skutterudite, linnæite and bornite. The texture of ore occurs as massive, banded, disseminated and nodular. The ore structure is characterized by xenomorphic granular and irregular granular. Chalcopyrite occurs as grains from 0.2 to 20 mm in diameter. Minor chalcopyrite shows aggregate with pyrrhotite and pyrite. A microscopic study indicates that copper bearing minerals are dominated by chalcopyrite and minor bornite. The cobalt bearing minerals include carrollite, skutterudite and linnæite. Gangue minerals are represented by quartz, carbonate, feldspar, hornblende and clay minerals.



**Figure 6-11: Chalcopyrite Mineralization — Chambishi SE Mine**

The useful elements consist of Cu and Co associated with non-recoverable Au (with grade of 0.10 to 17.20ppb) and Ag (with grade of 0.10 to 5.70ppb). Harmful components are SiO<sub>2</sub> (35.98 to 63.05%), P<sub>2</sub>O<sub>5</sub> (0.077 to 0.350%), arsenic (“As”, 1.70 to 170.00ppb) and sulfur (“S”, 0.43 to 5.81%). The content of the harmful components are lower than the limits of the smelting process. Trace uranium was detected in the mineralization section of borehole ZK17-2.

The host rocks are sedimentary rocks. Massive and stable quartzite and argillaceous rock formed the hanging wall. The footwall rock consists of basal conglomerate and quartzite. The N1 Cu-Co mineralized body has a sharp contact with the footwall.

### **6.2.5 Exploration, Sampling, Analytical Procedures and Quality Control**

#### *Chambishi Main and West Mines*

Chambishi Copper Mines (including Chambishi Main and Chambishi West) were closed in 1987. A total of 305 boreholes and some tunnels located in Chambishi Main and Chambishi West were conducted by ZCCM and other companies before 1986. In 1998, NFCA obtained the business right and mining licenses, but the geological data about history exploration work could not be completely collected from ZCCM. Most of cores of old boreholes were stored in the Kalulushi Core Store.

In the Chambishi Main Mine, NFCA conducted a total of 113 underground drill holes with 7,364.33m footage for updating the resource/reserve classification of the eastern and western extension of the Chambishi Main deposit during January 2001 to March 2002. NFCA geologists completed the report of “*Prospecting Report on Eastern and Western Segments of Main Orebody Above 500 Meter Level, Chambishi Copper Mine, Zambia*”. During 2004 to 2006, a total of 26 underground drill holes were carried out to define the main orebody within the depth interval from 700 to 900mL. NFCA estimated the resource/reserve and finalized the report of “*Preliminary Prospecting Report of Main Orebody Within 700-900 Meter Level, Chambishi Copper Mine, Zambia*”. An additional 420 drill holes with over 34,800m footage were completed during 2004 to 2010 for mining activities and updating the resources. In Chambishi West Mine, a total of 57 underground drill holes with 4,595.65m footage and 12 surface drill holes were (Figure 6-12) were conducted by NFCA for the mining program. Most of the drill cores were kept in the core storage warehouse (Figure 6-13) at the Chambishi Copper Mine.





**Figure 6-12: Location of Borehole WS001 —  
Chambishi West Mine**



**Figure 6-13: NFCA Drill Cores Storage  
Warehouse**

The core recovery rates were generally more than 80% for the whole drill cores and above 90% for the mineralized interval. The site geologists completed the geological logging and sampling. Samples were taken from drill cores by splitting along the core axis. Each sample was generally 1m long, and wall rock and mineralization sections were sampled separately. Trench samples were collated from fresh rock in the tunnels by the channeling method at a scale of 5cm wide by 3cm deep by 2m long.

Most of samples were sent to the NFCA Chambishi Mine Laboratory for sample preparation and assaying. The samples were crushed to 2.2mm and at least 1kg crushed sample was further pulverized to 200 mesh. Finally, about 0.125kg weight of each sample was used for assay. The Atomic Absorption Spectrophotometer (AAS) method was used for assay of Cu and Co. During analysis procedure, the standard materials and blank samples were inserted in each sample batch. About 5% of total samples were randomly selected and delivered to Alfred H. Knight (Zambia) for an external check. This laboratory has international certification with accreditation standard of ISO/IEC 17025. By reviewing the procedure of sample preparation and analysis at Alfred H. Knight in May 2011, it is of SRK's opinion that the protocol meets with the requirement of the SAMREC Code.

#### *Chambishi Southeast Mine*

The exploration of Chambishi SE Cu-Co deposit commenced in 1903. Exploration work was subsequently conducted by several companies. Some trial pits and trenches were conducted between 1927 and 1929. Eight boreholes were drilled between 1930 and 1932. Geophysical and geochemical surveys as well as drilling program were carried out between 1952 and 1982. One Cu-Co mineralized body at 600 to 1,100 m below surface was delineated at Chambishi SE deposit.

To follow up the results of previous exploration, ZCCM together with Metal Mining Agency of Japan ("MMAJ") conducted 12 boreholes with 10,663m footage. Based on the findings of the drill cores combining with historical geological data, ZCCM and MMAJ re-delineated the Cu-Co mineralized body and estimated the prospective resource of Chambishi SE deposit in 1995. The resource of the Cu-Co mineralized body in the northern part of Chambishi SE was estimated at 54.79Mt with an average grade of 2.70% TCu and 0.13% TCo, and approximately 14.93 Mt of potential resource in the southern part of Chambishi SE deposit with an average of grade of 2.19 % TCu and 0.13% TCo.

Between December 2008 and October 2010, after obtaining the mining license, NFCA conducted 25 drill holes with 21,053m footage at Chambishi SE deposit. Based on the previous data of 10 boreholes conducted by ZCCM and MMAJ and samples assaying results of 25 boreholes completed by NFCA, Sinomine completed "*Exploration Report on N1 Orebody in Chambishi Southeast, Copperbelt, Zambia*" in December 2010. Ongoing exploration programs were carried out in 2011 and will continue in 2012. Geologists from Sinomine and NFCA are currently in the process of preparing the exploration report and estimating the mineral resource.



The drilling program was awarded to Sinomine who used drill rigs models HXY-2000 and HXY-44T with a depth capacity of 2,000m and 1,000m, respectively. The drill holes used between 150 and 120mm diameter diamond bits and ended with NQ diamond bits (47.6mm diameter). Downhole surveys were conducted every 50m under supervision of NFCA geologists. The core were set in wooden boxes and kept at the Chambishi Copper Mine. When the borehole was completed, a surveying engineer surveyed the location of each borehole which was marked by concrete.

The core recovery rates were generally more than 85% for the weathered section and above 95% for fresh rocks and mineralized intervals. After geological logging, the cores were transported to the Chambishi core storage warehouse. The sample was split along the core axis. Half of the cores were packed and sent to NFCA laboratory for assaying Cu and Co. The other half was stored in the warehouse. The sample length was generally 1m, and the wall rock and mineralization section were sampled separately.

Samples from Chambishi SE deposit were delivered to NFCA Chambishi Mine Laboratory for preparation and assaying. Each sample was crushed to 2.2mm and at least 1kg crushed sample was further pulverized to 200 mesh. Finally, about 0.125kg weight of each sample was used for assay. The AAS method was used for assay of Cu and Co. During the analysis procedure, standard materials and blank sample were inserted in each sample batch. Sinomine geologists selected some samples for internal and external check to insure the quality of assay results. A total of 640 basic samples were assayed in NFCA Mine Laboratory. Sinomine geologist also selected some core samples for composites analysis (56), bulk composition (16), microscopic study (69), specific gravity measure (38), mineral analysis (17) and rock strength test (26).

#### **6.2.6 Resource/Reserve Estimation under Chinese Code**

Based on the drill holes and tunnels conducted by NFCA and other companies, NFCA updated the resource/reserve estimate of the Chambishi Main at above “-600m” (600m deep from surface) level at Chambishi West by applying the conventional geological block method at the end of 2010. Sinomine re-estimated the resource/reserve at the Chambishi Main, Chambishi West and Chambishi SE Mines in early July 2011, using the software of Micromine and following the Chinese National Standard for Solid Mineral Resources/Reserves Classification (GB17766-1999). The Chinese resource classification uses a three-digit system, where the last digit indicates the geological certainty: 1 stands for measured mineral resource; 2 for indicated mineral resource; 3 for inferred resource; and 4 for predicated resource. This system is somewhat different from the criteria used in defining a resource under the JORC Code. The comparison between different systems is provided in Appendix II.

*Chambishi Main and Chambishi West Mine*

#### **Resource/Reserve Category**

For the Chambishi Main and West Mines, exploration (drilling) grids of 75m × 75m, 150m × 150m, and 300m × 300m were used to estimate category 111b resource, category 122b resource and category 333 resource, respectively. The category 334 resource was extrapolation from the category 333 resource; it is exploration potential but not defined by the exploration program.

**Cut-off's**

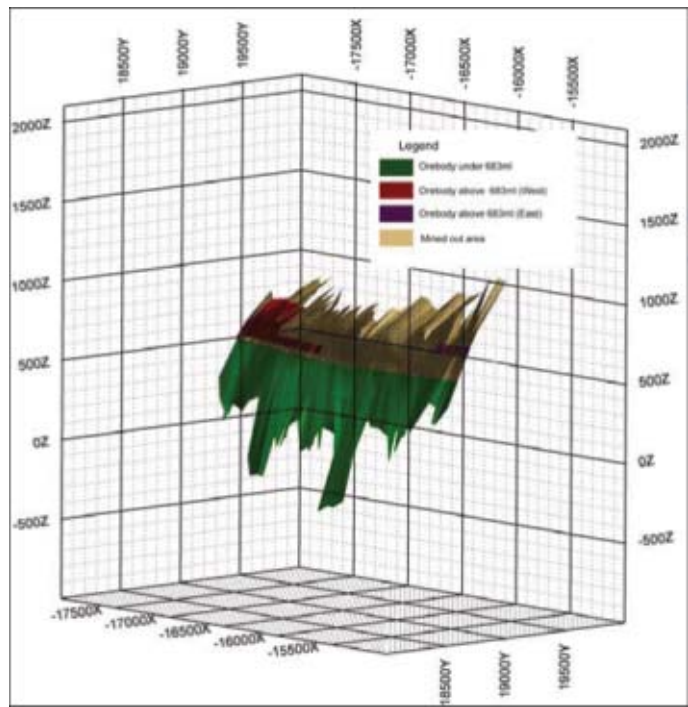
The technical parameters used to estimate copper resources/reserves are shown in Table 6-1.

**Table 6-1: Parameters Used in Resource Estimates**

Ore Type	Cut-off T <sub>Cu</sub> %	Minimum Industrial T <sub>Cu</sub> %	Minimum Mineable Thickness (m)	Specific Gravity
Oxide . . . . .	1.00	2.00	3.00	2.67
Primary . . . . .	1.00	2.00	3.00	2.67

**Resources/Reserves Estimation**

Based on features of the three orebodies of the Chambishi Main and Chambishi West copper mines, a polygonal method with plane projection was used by Sinomine to estimate resources in June 2011. Search radiuses were kept at 75m, 150m and 300m for resource classifications of 111b, 122b and 333, respectively. The parent block size best fits the setting and average thickness of the ore bodies. Figure 6-14 and Figure 6-15 show the geological models of the Chambishi Main and Chambishi West Mines, respectively.



**Figure 6-14: 3D Geological Model View of Chambishi Main Mine**

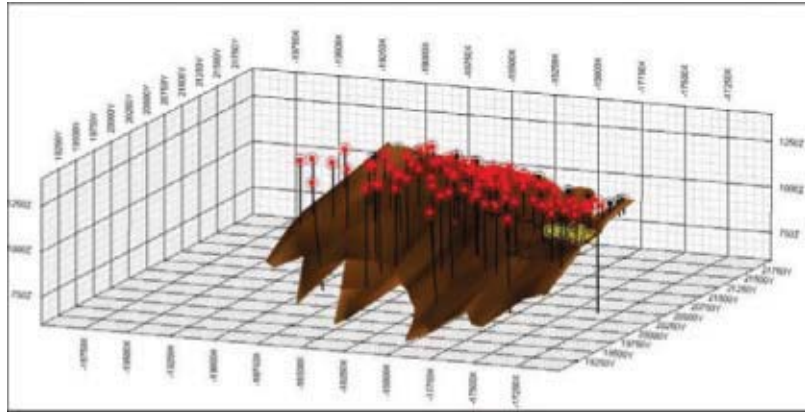


Figure 6-15: 3D Geological Model View of Chambishi West Mine

As of June 30, 2011, the remaining copper resources of category 111b, 122b and 333 resources at Chambishi Main Mine were about 5.60Mt with an average grade of 2.50% TCu, 5.75Mt with an average grade of 2.48% TCu and 8.14Mt with an average grade of 2.42% TCu, respectively. Category 334 Resource was assigned to Chambishi Main with approximately 6.00Mt averaging at 2.43% TCu.

The remaining copper resources of category 111b, 122b and 333 resources at Chambishi West Mine were about 6.58Mt with an average grade of 1.84% TCu, 25.43Mt with an average grade of 1.89% TCu and 17.32Mt with an average grade of 2.09% TCu, respectively (Table 6-2). In addition, there was about 7.85Mt of Category 334 Resource grading at 1.97% TCu as estimated by NFCA and Sinomine. The 334 Resources are regarded as reconnaissance potential and are not included in the table below.

Table 6-2: Remaining Resources at Chambishi Main Mine and West Mine — Chinese Code, as of June 30, 2011

Mine	Ore Type	Resource Category	Tonnage (1,000 t)	Grade TCu (%)	Contained Cu Metal (t)
Chambishi Main	Sulfide	111b	5,597	2.50	139,738
	Sulfide	122b	5,752	2.48	142,808
	Sulfide	333	8,144	2.42	197,135
Chambishi West	Oxidized	122b	6,292	1.14	71,506
	Sulfide	111b	6,575	1.84	121,150
	Sulfide	122b	19,134	2.13	407,795
	Sulfide	333	17,324	2.09	362,313
Chambishi Main & West	Sulfide	111b	12,172	2.14	260,888
	Sulfide	122b	24,886	2.21	550,603
	Sulfide	333	25,468	2.20	559,448
	Oxidized	122b	6,292	1.14	71,506
Total		111b+122b	43,350	2.04	882,997
		333	25,468	2.20	559,448

In the second half of 2011, the Chambishi Main and Chambishi West Mines were under normal mining activities. Based on the monthly production records provided by NFCA, geologists from NFCA updated the mineral resource as of December 31, 2011. In the Chambishi Main Mine, a total of 0.432 Mt of 111b category ore reserve at an average grade of 1.61% TCu and 0.138 Mt of 122b category ore reserve at an average grade of 1.81% TCu were mined out respectively. On the base of the mining recovery rate and dilution rate, a total of 0.473Mt of 111b category ore resource with an average grade of 2.43% TCu and 0.146 Mt of 122b category ore resource with an average grade of 2.23% TCu were consumed, respectively. Details of consumed resource was shown in Table 6-3.

**Table 6-3: Consumed Resources at Chambishi Main and West Mines from July to December 2011**

Mine	Ore Type	Category	Mined out			Consumed		
			Ore Reserve (t)	Grade TCu (%)	Metal Cu (t)	Ore Resource (t)	Grade TCu (%)	Metal Cu (t)
Chambishi Main . . . .	Sulfide	111b	431,945	1.61	6,952	472,955	2.43	11,490
	Sulfide	122b	137,913	1.81	2,497	145,655	2.23	3,259
Chambishi West . . . .	Oxidized	122b	48,432	1.80	870	125,335	2.37	2,971
	Sulfide	111b	252,679	1.85	4,673	386,842	2.07	8,015
	Sulfide	122b	26,761	1.96	524	49,846	2.12	1,057
Chambishi Main & West . . . . .	Sulfide	111b	684,624	1.70	11,625	859,797	2.27	19,505
		122b	164,674	1.83	3,021	195,501	2.21	4,316
	Oxidized	122b	48,432	1.80	870	125,335	2.37	2,971
Total . . . . .		111b+122b	897,730	1.73	15,516	1,180,633	2.27	26,792

SRK carefully reviewed the monthly production records and updated the remaining ore resources of the Chambishi Main and West Mines. As of December 31, 2011, the remaining ore resources of categories 111b and 122b at Chambishi Main mine were 5.12 Mt with an average grade of 2.50% TCu and 5.61 Mt with an average grade of 2.49% TCu, respectively. The remaining ore resource of categories 111b and 122b at Chambishi West Mine were 6.19 Mt with an average grade of 1.83% TCu and 25.25 Mt with an average grade of 2.44% TCu, respectively (see Table 6-4).

**Table 6-4: Remaining Ore Resources at Chambishi Main and West Mines, as of December 31, 2011**

Mine	Ore Type	Resource Category	Tonnage (1,000 t)	Grade TCu (%)	Contained Cu Metal (t)
Chambishi Main . . . . .	Sulfide	111b	5,124	2.5	128,248
	Sulfide	122b	5,606	2.49	139,549
	Sulfide	333	8,144	2.42	197,135
Chambishi West . . . . .	Oxidized	122b	6,167	1.11	68,535
	Sulfide	111b	6,188	1.83	113,135
	Sulfide	122b	19,084	2.13	406,738
	Sulfide	333	17,324	2.09	362,313
Chambishi Main & West . . . . .	Sulfide	111b	11,312	2.13	241,383
		122b	24,690	2.21	546,287
		333	25,468	2.2	559,448
	Oxidized	122b	6,167	1.11	68,535
Total . . . . .		111b+122b	42,169	2.03	856,205
		333	25,468	2.2	559,448

*Chambishi Southeast Mine*

**Resource/Reserve Category**

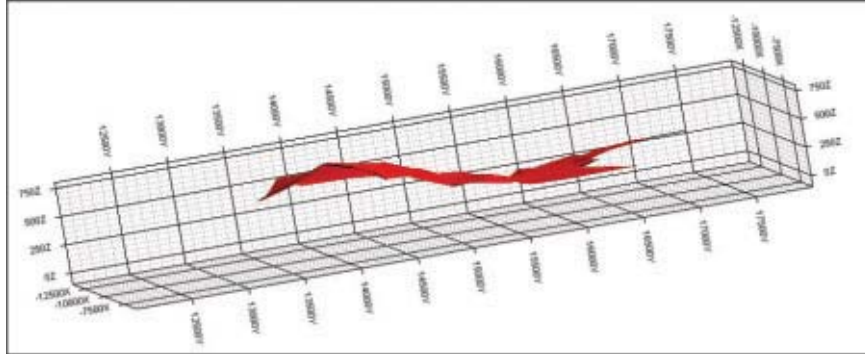
According to the Chinese National Standard for Solid Mineral Resources/Reserves Classification (GB17766-1999), an exploration (drilling) grid of 100-150m × 100m was used to define the Category 332 Resource and a grid of 300m × 200m was applied to estimate Category 333 Resource.

**Cut-offs**

Based on the sample assay results of 51 drill cores mostly from drilling campaign between 2008 and 2011, the mineral resource for north and south Cu-Co mineralized zones in Chambishi SE deposit was estimated by Sinomine utilizing the software of Micromine 12.0.5E (Figure 6-16; Figure 6-17). The bulk density of 2.67t/m<sup>3</sup> was applied referring to the result of the Chambishi Main and West Mines. The resources were estimated under a series of cut-off grades of 1.0% TCu and 0.8% TCu and 0.5% TCu. Table 6-5 shows the technical parameters used to estimate the ore resources of the Chambishi Southeast Mine.

**Table 6-5: Parameters for Resource Estimation at Chambishi Southeast Mine**

<u>Cut-offs (TCu)</u>	<u>Minimum Mineable Thickness</u>	<u>Maximum allowed barren gap width</u>
1.00%	3m	3m
0.80%	3m	3m
0.50%	3m	3m



**Figure 6-16: 3D Geological Model View of North Orebody at Chambishi SE Mine**

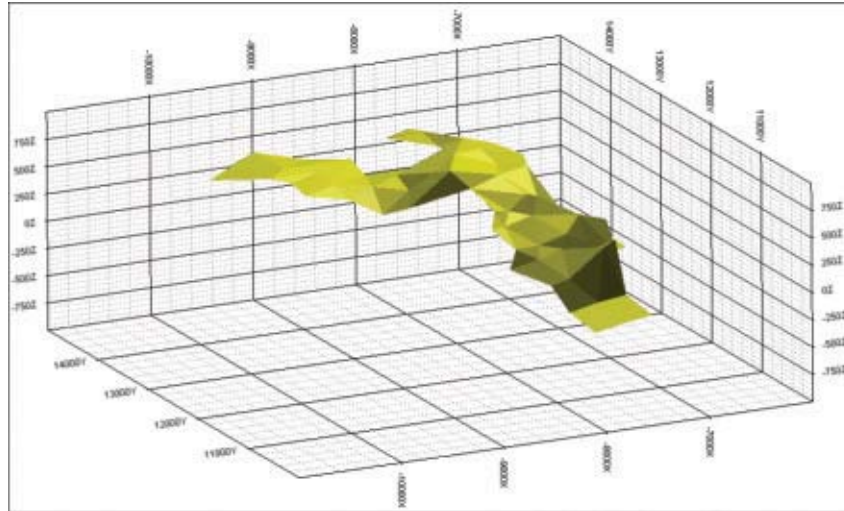


Figure 6-17: 3D Geological Model View of South Orebody at Chambishi SE Mine

#### ***Resources/Reserves Estimation***

As of December 31, 2011, under cut-off grades of 1.0% TCu, 0.8% TCu and 0.5% TCu, the estimated mineral resources in 332 and 333 categories at Chambishi Southeast Mine were 30.15Mt with an average grade of 2.35% TCu and 0.144% TCo and 62.25Mt with an average grade of 2.12% TCu and 0.111% TCo, 35.43Mt with an average grade of 2.30% TCu and 0.123% TCo and 125.56Mt with an average grade of 1.82% TCu and 0.095% TCo, and 38.49Mt with an average grade of 2.22% TCu and 0.122% TCo and 128.94Mt with an average grade of 1.79% TCu and 0.091% TCo, respectively (Table 6-6).

Table 6-6: Resource Summary at Chambishi SE Mine — Chinese Code, as of December 31, 2011

Cut-off (TCu)	Mineralized Zone	Ore Type	Resource Category	Tonnage (1,000t)	Average Grade		Contained Metal (t)	
					TCu (%)	TCo (%)	TCu	TCo
1.00%	North Orebody	Sulfide	332	26,637	2.45	0.143	651,312	37,971
		Sulfide	333	31,470	2.45	0.078	771,332	24,490
	South Orebody	Sulfide	332	3,511	1.66	0.152	58,429	5,352
		Sulfide	333	30,783	1.77	0.145	545,535	44,753
	Total	Sulfide	332	30,148	2.35	0.144	709,741	43,323
		Sulfide	333	62,253	2.12	0.111	1,316,867	69,243
0.80%	North Orebody	Sulfide	332	31,097	2.40	0.121	746,260	37,719
		Sulfide	333	62,765	1.97	0.060	1,239,526	37,859
	South Orebody	Sulfide	332	4,329	1.62	0.139	70,067	6,028
		Sulfide	333	62,793	1.66	0.129	1,042,313	80,886
	Total	Sulfide	332	35,426	2.30	0.123	816,326	43,747
		Sulfide	333	125,558	1.82	0.095	2,281,839	118,745
0.50%	North Orebody	Sulfide	332	34,165	2.29	0.120	783,238	40,847
		Sulfide	333	66,147	1.91	0.056	1,263,593	36,894
	South Orebody	Sulfide	332	4,329	1.62	0.139	70,067	6,028
		Sulfide	333	62,793	1.66	0.129	1,042,313	80,886
	Total	Sulfide	332	38,494	2.22	0.122	853,304	46,875
		Sulfide	333	128,940	1.79	0.091	2,305,906	117,779

### 6.2.7 Resource/Reserve Estimation under JORC Code

#### *Ore Resource/Reserve — JORC Code Classification System*

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia in September 1999 and revised in December 2004 (the “JORC Code”) is a mineral resource/ore reserve classification system that has been widely used and is internationally recognized. The JORC Code is used by SRK to report the mineral resources and ore reserves of the CNMC Zambian Copper Properties in this technical report.

A mineral resource is defined in the JORC Code as an identified in-situ mineral occurrence from which valuable or useful minerals may be recovered. Mineral resources are classified as Measured, Indicated or Inferred according to the degree of confidence in the estimate:

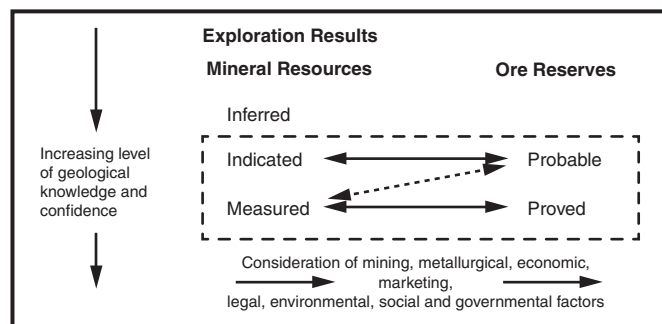
- A Measured resource is one which has been intersected and tested by drill holes or other sampling procedures at locations which are close enough to confirm continuity and where geoscientific data are reliably known;
- An Indicated resource is one which has been sampled by drill holes or other sampling procedures at locations too widely spaced to ensure continuity, but close enough to give a reasonable indication of continuity and where geoscientific data are known with a reasonable level of reliability; and



- An Inferred resource is one where geoscientific evidence from drill holes or other sampling procedures is such that continuity cannot be predicted with confidence and where geoscientific data may not be known with a reasonable level of reliability.

An ore reserve is defined in the JORC Code as that part of a Measured or Indicated Mineral Resource which could be mined and from which valuable or useful minerals could be recovered economically under conditions reasonably assumed at the time of reporting. Ore reserve figures incorporate mining dilution and allow for mining losses and are based on an appropriate level of mine planning, mine design and scheduling. Proved and Probable Ore Reserves are based on Measured and Indicated Mineral Resources, respectively. Under the JORC Code, Inferred resources are deemed to be too poorly delineated to be transferred into an ore reserve category, and therefore no equivalent possible ore reserve category is recognized or used.

The general relationships between Exploration Results, Mineral Resources and Ore Reserves under the JORC code are summarized in Figure 6-18. The Ore Reserves are quoted as comprising part of the total Mineral Resource rather than the Mineral Resources being additional to the Ore Reserves quoted. The JORC Code allows for either procedure, provided the system adopted is clearly specified. In this report, all of the Ore Reserves are included within the Mineral Resource statements.



**Figure 6-18: Schematic Ore Resources and Their Conversion to Ore Reserves**

### ***Review on Original Geological Database***

SRK has reviewed all original geological databases including geological survey and mapping at different scales; recent drill holes conducted by NFCA including 113 underground holes with 7,364.33m footage conducted at Chambishi Main Mine during January 2001 to March 2002; 420 surface holes with 34,800m footage conducted in the Chambishi Main Mine during 2004 to 2010; 57 underground holes with 4,595.65m conducted at the Chambishi West Mine between 2004 and 2010, and 25 surface holes with 21,053m footage conducted at the Chambishi SE deposit from December 2008 to October 2010; logging; sampling methodologies and sample preparation and assaying; assay quality control and quality assurance; the geological interpretation, mineral resource estimation procedures and parameters applied by NFCA. As the Chambishi (Main, West and Southeast) copper mine is a stratabound-type deposit and the copper grades are relatively consistent throughout the mineralized bodies, SRK considers that these exploration programs provide a reasonable basis to estimate the mineralized bodies at Chambishi Main, Chambishi West and Chambishi Southeast Mines, and that the analytical methods used for these deposits produced acceptable results with no material bias.

Based on reviewing the deposit geology, drilling and sampling data, and procedures and parameters used for the estimation of mineral resources, SRK is of the opinion that the mineral resources

estimated under the 1999 Chinese mineral resource system for the Chambishi Main, Chambishi West and Chambishi SE copper deposits by NFCA and Sinomine conform to the equivalent JORC Mineral Resource categories. The economic portion of the Measured and Indicated Resources can accordingly be used to estimate Proved and Probable Ore Reserves.

**SRK's Verifications — Check Samples**

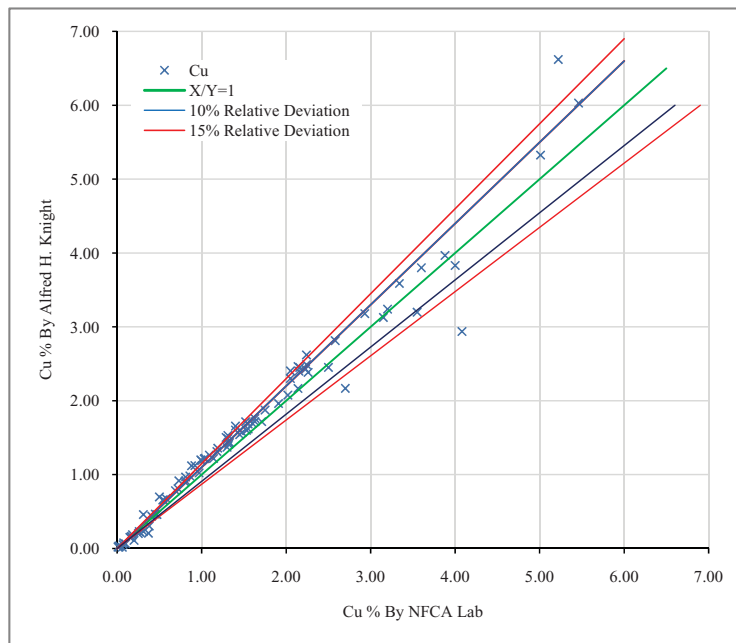
*Chambishi Main and Chambishi West Mines*

SRK collected 113 samples and sent them to the Alfred H. Knight laboratory. These samples include 4 chip samples from No. 0 block of 552mL in the Chambishi Main Mine, 4 chip samples from 150mL of in the Chambishi West Mine and 105 pulp samples from the core of Chambishi Main Mine and Chambishi West Mine. The chip samples returned good result as shown in Table 6-7. Overall, the relative differences between the original and SRK results are within 15% for TCu (see Figure 6-19). These results of data verification indicate that the original database is sound and reliable for the purposes of resource estimation.

**Table 6-7: Assay Result of Chip Samples at Chambishi Main and West Mines**

No.	Lab ID	Sample ID	Location		Assay Result (TCu%)
1	A37550/1	C552-0-E1	Chambishi Main	No.0 block, 552mL	7.96
2	A37550/2	C552-0-E2	Chambishi Main	No.0 block, 552mL	3.09
3	A37550/3	C552-0-E3	Chambishi Main	No.0 block, 552mL	2.22
4	A37550/4	C552-0-W1	Chambishi Main	No.0 block, 552mL	7.05
5	A37550/5	CW01	Chambishi West	150mL	2.14
6	A37550/6	CW02	Chambishi West	150mL	1.44
7	A37550/7	CW03	Chambishi West	150mL	0.39
8	A37550/8	CW04	Chambishi West	150mL	0.29

\* Samples collected by SRK and analyzed in Alfred H. Knight laboratory

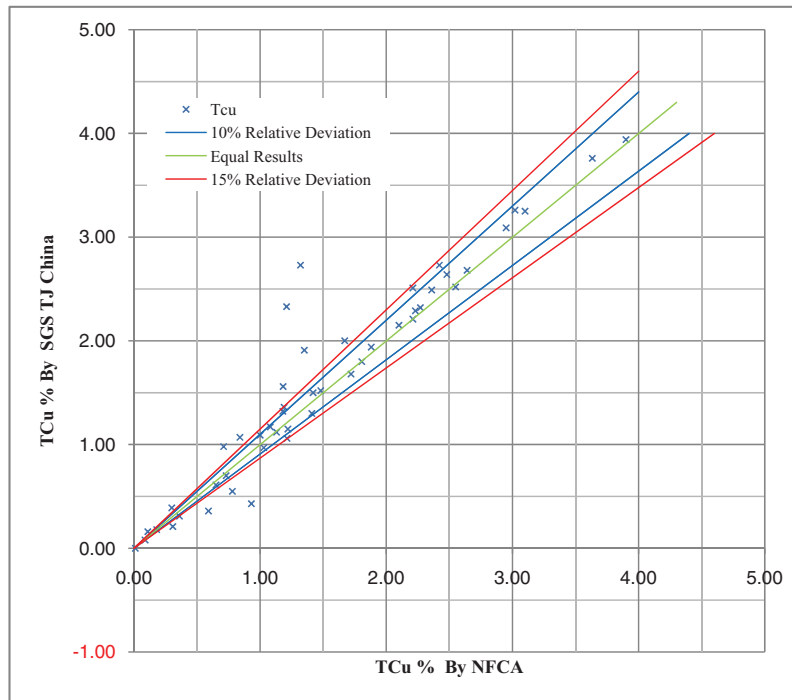


**Figure 6-19: Performance of Core Pulp Duplicates at Chambishi Main and West Mines**

*Chambishi Southeast Mine*

SRK geologists selected a total of 48 pulp samples from the mineralized intervals of six drill cores from the Chambishi Southeast deposit accomplished in 2010. These samples were dispatched to SGS branch laboratory located in Tianjin City, China (SGS TJ) for external check.

Overall, the relative differences between the original and SRK results are within 15% for TCu (see Figure 6-20). These results of data verification indicate that the original database is sound and reliable for the purposes of resource estimation.



**Figure 6-20: Performance of Core Pulp Duplicates at Chambishi Southeast Mine**

***Ore Resource Estimation***

The Mineral Resource estimates under the JORC Code as of December 31, 2011 for the Chambishi Main Mine, Chambishi West Mine and Chambishi Southeast Mine are summarized in Table 6-8. Under cut-off grade of 1.00% TCu, the Measured, Indicated and Inferred Mineral Resources were 5.12Mt with an average grade of 2.50% TCu, 5.61Mt with an average grade of 2.49% TCu and 8.14Mt at an average grade of 2.42% TCu, respectively at the Chambishi Main Mine; and 6.19Mt with an average grade of 1.83% TCu, 25.25Mt with an average grade of 1.88% TCu and 17.32Mt at an average grade of 2.09% TCu, respectively at the Chambishi West Mine.

Under cut-off grade of 0.8% TCu, the Indicated and Inferred Mineral Resource was 35.43Mt with an average grade of 2.30% TCu and 0.123% TCo, and 125.56Mt with average grade of 1.82% TCu and 0.095% TCo at the Chambishi Southeast Mine. Only Measured and Indicated Mineral Resources can be used for Ore Reserve estimation and mine planning.

**Table 6-8: Ore Resources Summary at Chambishi Main, West and Southeast Mines — JORC Code, as of December 31, 2011**

<u>Mine</u>	<u>Ore Type</u>	<u>Resource Category</u>	<u>Tonnage (1,000 t)</u>	<u>Grade TCu (%)</u>	<u>Contained Cu Metal (t)</u>	<u>Grade TCo (%)</u>	<u>Contained Co Metal (t)</u>
Chambishi Main	Sulfide	Measured	5,124	2.50	128,248		
	Sulfide	Indicated	5,606	2.49	139,549		
	Sulfide	Inferred	8,144	2.42	197,135		
<b>Chambishi</b>							
West . . . . .	Oxidized	Indicated	6,167	1.11	68,535		
	Sulfide	Measured	6,188	1.83	113,135		
	Sulfide	Indicated	19,084	2.13	406,738		
	Sulfide	Inferred	17,324	2.09	362,313		
<b>Chambishi</b>							
Southeast . . . . .	Sulfide	Indicated	35,426	2.30	816,326	0.123	43,747
	Sulfide	Inferred	125,558	1.82	2,281,839	0.095	118,745
Subtotal . . . . .	Oxidized	Indicated	6,167	1.11	68,535		
	Sulfide	Measured	11,312	2.13	241,383		
	Sulfide	Indicated	60,116	2.27	1,362,613		
	Sulfide	Inferred	151,026	1.88	2,841,287		
Total . . . . .		Measured+ Indicated	77,595	2.16	1,672,531		
		Inferred	151,026	1.88	2,841,287		

### ***Ore Reserve Estimation***

Ore reserves were estimated for both the Chambishi Main Mine and Chambishi West Mine based on the mining recovery rate of 62% and dilution rate of 30% from the mining production records of 2010. As of December 31, 2011, the Proved and Probable Ore Reserves at the Chambishi Main Mine were 4.13Mt at an average grade of 1.92% TCu and 4.52Mt at an average grade of 1.92% TCu, respectively; and the Proved and Probable Ore Reserves at the Chambishi West Mine were 4.99Mt at an average grade of 1.41% TCu and 20.35Mt at an average grade of 1.45% TCu, respectively (see Table 6-7).

Based on the “*Exploration and Developing Feasibility Study on North Ore Body at Chambishi Southeast Mine*” prepared by Shenyang Design and Research Institute of Nonferrous Metallurgy in December and an updated exploration report with resource estimate prepared by Sinomine in July 2011, SRK believes that the South orebody is currently not mineable. With respect to the mineral resource and grade of copper, the North orebody can be designed as an underground mine.

SRK believes that a mining dilution rate of 17.38%, a mining loss rate of 18.58% and a head grade of 2.02% are reasonable. SRK also noted that the cut-off grade Cu of 0.80% is relevant to an average in-situ grade Cu of 2.40% for the Indicated Resource of the North orebody. Therefore based on these parameters and considering other modifying factors such as production capacity, operating costs and capital costs, SRK estimated the Ore Reserves of the North orebody of the Chambishi Southeast Mine (Table 6-9). As of December 31, 2011, the Probable Ore Reserve was 29.72Mt with an average of 1.98% TCu and 0.10% TCo.

**Table 6-9: Ore Reserve Summary at Chambishi Main, West and Southeast Mine — JORC Code, as of December 31, 2011**

<u>Mine</u>	<u>Ore Type</u>	<u>Reserve Category</u>	<u>Tonnage (1,000 t)</u>	<u>Grade TCu (%)</u>	<u>Contained Cu Metal (t)</u>	<u>Grade TCo (%)</u>	<u>Contained Co Metal (t)</u>
Chambishi Main . . . . .	Sulfide	Proved	4,130	1.92	79,422		
	Sulfide	Probable	4,518	1.92	86,545		
Chambishi West . . . . .	Oxidized	Probable	4,971	0.85	42,441		
	Sulfide	Proved	4,988	1.41	70,209		
	Sulfide	Probable	15,382	1.64	252,023		
Chambishi Southeast . .	Sulfide	Probable	29,720	1.98	589,251	0.10	29,783
Subtotal . . . . .	Oxidized	Probable	4,971	0.85	42,441		
	Sulfide	Proved	9,117	1.64	149,631		
	Sulfide	Probable	49,620	1.87	927,097		
Total . . . . .		Proved+Probable	63,708	1.76	1,119,097		

### **Exploration Potential and Recommendation**

#### *Chambishi Main and Chambishi West Mines*

SRK noticed the ore bodies of the Chambishi Main Mine and Chambishi West Mine are open at depth and along the strike. More exploration work needs to be carried out to define the orebody and update the resource category. SRK recommends to NFCA that a QA/QC protocol should be carried out in the exploration program in the future. The samples collected from the exploration program should be analyzed in a certified laboratory. Standard material, duplicates and blank samples should be inserted to check the quality of the assay results. The company should also keep all sample rejects and pulps for future checks. Competent person(s) as defined in JORC Code should be involved in the future exploration programs and for reporting resource estimates.

#### *Chambishi Southeast Mine*

Sinomine is conducting a drilling program to update the resource at the Chambishi Southeast Mine under SRK's supervision. SRK will continue to carry out the resource estimation following the JORC Code once the whole exploration is completed.

## **6.3 SML Projects**

A part of the SML resources are currently sourced from the previous Chambishi tailings. The Mwambashi Project and Kakoso Tailings have been acquired by SML and are under development. The review in this section will focus on the Mwambashi Copper Deposit, and the Kakoso and the Chambishi tailings operated by SML.

### **6.3.1 Mwambashi Development Project**

The Mwambashi Copper Deposit is held by SML. This prospecting license (No. 15201-HQ-LPL/1) was transferred from Edgeway Business Solutions Limited to SML on January 6, 2011.

6.3.2 Deposit Geological Settings

The Mwambashi Copper Project is situated on the western flank of the Chambishi Basin (Chambishi-Nkana Basin) and the west limb of Lufulian Anticline which is characterized by folds and thrust (Figure 6-21). This project area was dominated by late Proterozoic Katanga metasediments of the Roan Group. The granite and schist of Basement Complex are exposed in places. The Basement Complex is dominated by granite in the Mwambashi Project area. The Roan Group lies on the granite of the Basement Complex with unconformable contact at a dip to the northeast (approximately 35°) in the vicinity of the mineralization body. The Roan Group can be subdivided into the Lower Roan, Upper Roan and Mwashia subgroups from bottom to top. The copper mineralized body was hosted in the Ore Shale Formation of the Lower Roan. The Upper Roan was frequently intruded by gabbros. The surface of project area was overlain by quaternary sediments.

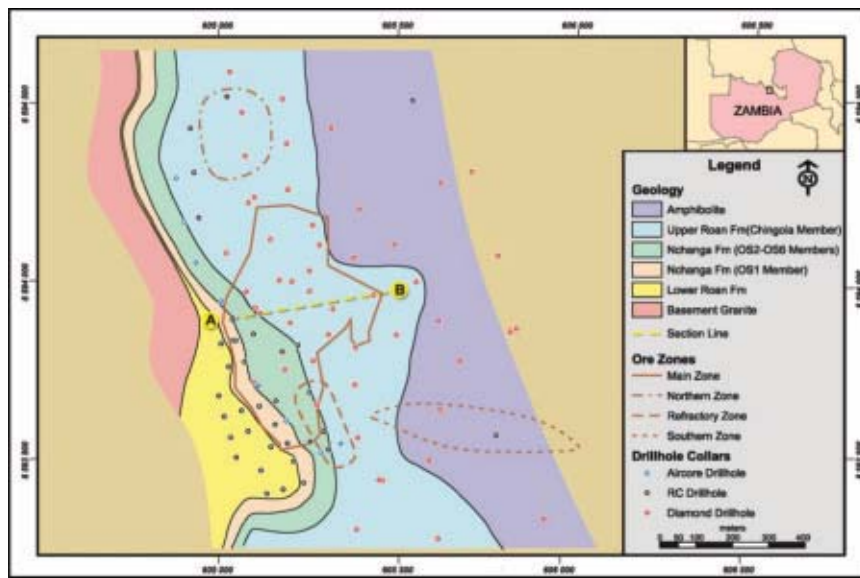


Figure 6-21: Mwambashi Generalized Geological Map (Feasibility Study, 2006)

### 6.3.3 Orebody Geology

The Mwambashi Copper Deposit is also a stratabound-type deposit with a stratiform shape and is hosted by arenaceous sediments in the Lower Roan. The thickness of mineralization varies from 30m in the shallower area to less than 1.0m thickness at depth with average thickness of 15m. The mineralized body is about 600m long and continues to a depth of approximately 250m below the surface. It is still open at depth (Figure 6-22).

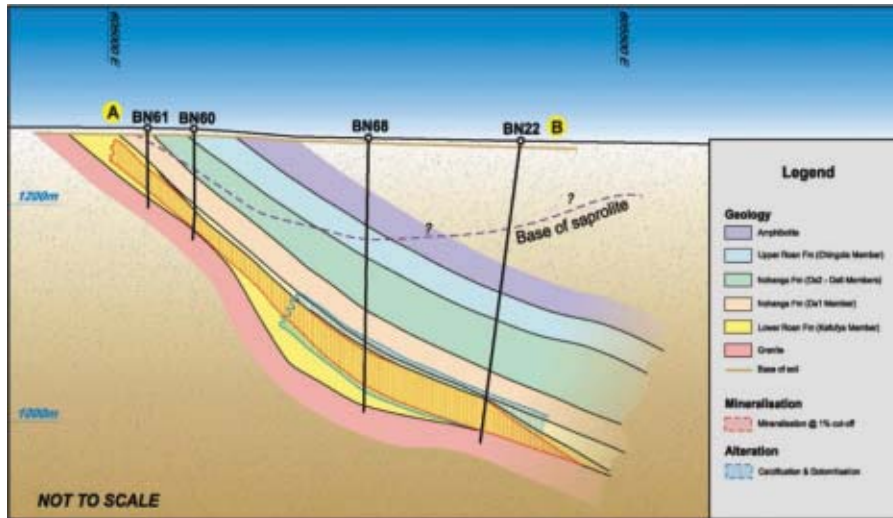


Figure 6-22: Cross-section of Mwambashi Copper Project

### 6.3.4 Mineralogical Characteristics

This mineralized body at Mwambashi shows a vertical zonation. Below the overburden, the first 15 to 20m of the mineralized body is predominantly oxidized mineralization which consists of mainly malachite and subordinate chrysocolla and pseudomalachite (Figure 6-23). The mixed sulfide-oxide mineralization zone has ratios of oxide and sulfide varying from 80:20 to 20:80 from the top to the bottom. The sulfide mineralization zone is predominantly chalcopyrite, bornite and chalcocite. Ore minerals are mainly malachite, chalcocite, chalcopyrite, chrysocolla and pseudomalachite with minor bornite and traces of cuprite and native copper.

Significant cobalt mineralization is restricted to the northern zone of the Mwambashi mineralized body. The average grade of Co is around 0.40% in this zone, and an average of 0.04% Co for the entire mineralized body. In the shallow parts of the body, the assay result indicates that the grade of Co is greater than 0.05%, but no visible cobalt minerals were detected.



Figure 6-23: Malachite of Mwambashi Copper Deposit



### 6.3.5 Exploration, Sampling, Analytical Procedures and Quality Control

Geological mapping at Mwambashi was conducted in 1927, followed by pitting in 1929 to establish the stratigraphy. Three boreholes (BN1 to BN3) were drilled in 1951. From 1963 to 1967, RST conducted soil sampling, gravity and magnetic survey and auger drilling over the full strike length of the Lower Roan on the western wedge of Nkana-Chambishi Basin. AZAM/ZCCM commenced the exploration activity in 1995, and carried out scoping study in 2003 and updated this study in 2005. In 2006, TEAL Exploration & Mining Inc (“TEAL”) completed the feasibility study of Mwambashi Copper Project (Table 6-10).

In September 2005, RSG Global Pty Limited completed an Independent Technical Report followed the National Instrument 43-101 Standards of Disclosure for Mineral Project (NI 43-101) on TEAL's Properties in Central Africa including the Mwambashi property. In November 2005, SRK Consulting (South Africa) Ltd was appointed by AZAM (now as a subsidiary of TEAL, a Canadian listed company) to audit and review the geotechnical investigations and contracted to undertake hydro-geological investigation for Mwambashi Copper Project. In 2006, SRK completed the geotechnical logging on diamond drill core on site followed the recommendation from geotechnical drilling for the determination of mining design.

**Table 6-10: Summary of Exploration Work Completed at Mwambashi**

<u>Year</u>	<u>Company</u>	<u>Exploration Work</u>	<u>Description</u>
1927-1950	RST*	Geological Mapping	Mapping and Geochemical Survey
1954	RST	Drilling	Three boreholes were conducted
1963-1967	RST	Drilling and Survey	Soil sampling, gravity and magnetic surveys
1967-1970	RST	Drilling	37 boreholes for test anomaly
1971-1973	RST/RCM*	Drilling and Survey	2 holes, EM, magnetic and radiometric techniques
1974-1975	MINDECO/Noranda		Metallurgical test
1995-2003	TEAL/ZCCM	Drilling	72 drill holes, 10,346m and scope study
2005-2006	TEAL/ZCCM	Drilling	6 drill doles for geotechnical purpose, 959m
2005	TEAL/ZCCM	Technical report	Independent Technical Report compiled by RSG Global
2006	TEAL/ZCCM	Drilling	5 drill holes for hydrogeological monitoring , 258 m
	TEAL	Feasibility Study	2 drill holes as pump test wells, 259 m

\* RST Global Pty Limited

In January 2011, TEAL transferred this prospecting license, drill cores and geological data to SML. At present, the drill cores are kept in core boxes with original marks then covered with the water-proof plastic sheets and are stacked at the yard of the SML Camp (office district). No additional exploration work has been conducted by SML.

During SRK's site visit from April 25 to May 6, 2011, SRK inspected the project area and verified some bore holes collars with a handheld GPS (Figure 6-24) and reviewed the original core logs, down-hole survey and sampling and assaying methods. The exploration program including drilling, core handling, logging and sampling conducted at Mwambashi Project followed “*The Geological Procedures Manual for Konkola North Project*” which is an internal standard for ZAZM. Qualified

personal completed the works of down-hole survey, RQD assessment and geological logging. RSG considered that core logging by TEAL and predecessors was generally undertaken to acceptable industry standards. SRK checked some drill cores from the Mwambashi Copper Project (Figure 6-25). The average core recovery of the mineralized intervals was more than 90%.



**Figure 6-24: Borehole MW27**



**Figure 6-25: Drill Cores**

The sampling work was assigned by the logging geologist. Each fresh core sample was split using a diamond splitter along a line marked by geologists. The weathered and fractured core samples were cut with a chisel. Sample length was generally between 0.5 to 1.0m. One half of the core was bagged and sent for preparation. Weather and fracture core samples were cut with chisels with similar width. The samples at one meter intervals from RC, percussion, air core and rotary air blast drilling were placed in bags and sent for preparation.

Samples were crushed to -2mm, and split into two. One half was stored in plastic bags while the other was pulverized. Compressed air and quartz material was used to clean the pulveriser after each sample. The samples were riffled to produce a 100 gram (“g”) for assay. RSG Global has inspected the sample preparation facility and reported that “all the equipment is well maintained and would appear to be operational, the operation of the facility is considered to be professional”.

The analyses for 1995 to 1997 drill core samples were carried out by ZCCM, and check assays were conducted at African Rainbow Minerals Ltd (“AVRL”) in Johannesburg. The samples from 2000 to 2001 drill cores were analyzed by Alfred H. Knight in Kalulushi and check assays were sent to the Society of Economic Geologists Inc (“SGE”) in Kalulushi and AVRL. The standard material and duplicate were inserted into the basic samples. All core samples from the 2000 and 2011 drilling programs were analyzed for total copper, acid soluble copper, total cobalt and total zinc.

Two assay standards material of Cu with a concentration of 203ppm and 30,501.43ppm were inserted in the assay program. The QA/AC result of the standard, undertaken by Alfred H. Knight Lab, show no bias for Cu, and positive and negative bias of 9.5% for Co, -8.3% for Zn and -14% for acid soluble Cu (“AS-Cu”), which were within the acceptable values of 15%.

A total of 176 duplicate samples (62 from BN drill holes series and 114 from MW drillholes series) were analyzed. The result returned from Alfred H. Knight indicated good precision.

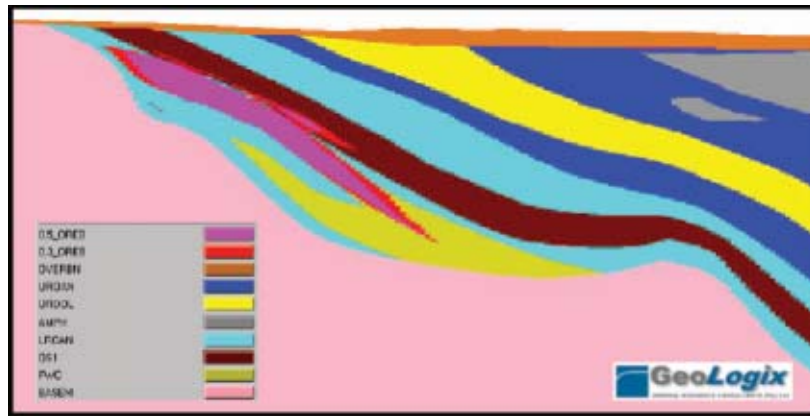
### 6.3.6 Resource Estimation

The initial resource for Mwambashi was estimated by Camisani and Van der Merwe in 2001 and updated by Van der Merwe in 2005 with the classification of Measured Mineral Resource. In

February 2005, ARM estimated the resource at Mwambashi Copper Project using deterministic wireframer and ordinary kriging. The mineral resource estimate was classified by Anglovaal Mining Research Laboratories (“ARM”) as Indicated Mineral Resource at 8,614,304t with an average grade of 2.43% TCu and 1.11% for acid soluble Cu and 0.066% for TCo.

In July 2006, GeoLogix Mineral Resource Consultants (Dexter S. Ferreira — Geostatistics and Andre M. Deiss — Geological Modelling) estimated the resource using Datamine™, Vulcan™ SD mining software for the Mwambashi B area for TEAL. Two cut-off grades of 0.3% TCu and 0.5% TCu were used to delineate the orebodies (Figure 6-26).

The block model parent cell was set as 30m in the X, 30m in the Y and 10m in the Z based on the average drillhole spacing of approximately 60m. The high-grade portion of orebody was treated as the midpoint. Based on the results of 78 specific gravity samples measured in 2005 by RCM, the bulk density of 2.5t/m<sup>3</sup> was used for resource estimate with the exception of overburden. A density check carry out in 2005 supported this bulk density result.



**Figure 6-26: Section View of Geological Model (From Feasibility Study 2006)**

The estimated resource at cut-off grades of 0.50% TCu (high-grade) and 0.30% TCu (low-grade) at the Mwambashi Copper Project is shown in Table 6-11 and Table 6-12, respectively.

As of December 31, 2011, the high-grade Measured, Indicated and Inferred Resource were 0.82Mt with an average grade of 2.22% TCu and 0.91% soluble TCu, 8.38Mt with an average grade of 2.00% TCu and 0.75% soluble TCu, and 1.77Mt with an average grade of 2.10%TCu and 0.26% soluble TCu, respectively (Table 6-11). The low-grade Measured, Indicated and Inferred Resource were 0.02Mt with an average grade of 0.40% TCu and 0.26% soluble TCu, 2.39Mt with an average grade of 0.35% TCu and 0.21% soluble TCu, and 0.68Mt with an average grade of 0.35%TCu and 0.21% soluble TCu, respectively (Table 6-12).

**Table 6-11: High-Grade Resource Summary at Mwambashi Copper Mine, as of December 31, 2011\***

Ore Type	Category	Resource (Mt)	TCu (%)	Contained TCu (t)	Acid Soluble TCu (%)	Soluble TCu (t)
Oxidized .....	Measured	0.02	1.98	475	1.69	407
	Indicated	0.14	1.44	1,990	1.20	1,665
	Inferred	0.04	0.78	300	0.66	252
Mixed .....	Measured	0.54	2.26	12,245	1.21	6,544
	Indicated	6.45	1.95	125,998	0.89	57,512
	Inferred	0.36	1.72	6,194	0.73	2,641
Sulfide .....	Measured	0.26	2.15	5,599	0.22	580
	Indicated	1.79	2.22	39,741	0.23	4,129
	Inferred	1.37	2.24	30,597	0.13	1,724
Total .....	Measured	0.82	2.22	18,319	0.91	7,531
	Indicated	8.38	2.00	167,729	0.75	63,306
	Inferred	1.77	2.10	37,092	0.26	4,617

\* at a cut-off grade of 0.50% TCu

**Table 6-12: Low-Grade Resource Summary at Mwambashi Copper Mine, as of December 31, 2011\***

Ore Type	Category	Resource (Mt)	TCu (%)	Contained TCu (t)	Acid Soluble TCu (%)	Soluble TCu (t)
Oxidized and Mixed .....	Measured	0.02	0.40	94	0.26	61
	Indicated	2.39	0.35	8,333	0.21	5,043
	Inferred	0.68	0.35	2,356	0.21	1,439

\* at a cut-off grade of 0.30% TCu

The mineral resource estimate and classification of the Mwambashi Copper Project were carried out under the guidance of the SAMREC Code. The SAMREC Code has similar requirements as the JORC Code. SRK has reviewed the estimation method and classification and considered that the resource is unbiased. SRK supports the classification of the estimate resource as being compliant with the JORC Code.

### 6.3.7 Kakoso Tailings Development Project

The Kakoso Tailings Development Project is located about 78km northwest of Kitwe, 4km south of Chililabombwe and 23 km north of Chingola with geographic coordinates of 12°37'S and 28°02'E.

In 2010, SML conducted prospecting work on the Kakoso Tailing Dam. A total of 13 and 10 auger holes were carried out on the main tailing dam and the subsidiary dam, respectively, with an exploration grid of 200m × 200m. The average depth of tailing in the main dam is 11.4m, and 5.1m in the subsidiary dam. A total of 78 samples were collected and returned an average grade of 0.60% TCu and 0.45% acid soluble copper. The area of the main dam and subsidiary dam is 388,700m<sup>2</sup> and 320,500m<sup>2</sup>, respectively. The volume of the Kakoso Tailings Development Project is 6,055,700 m<sup>3</sup>. The bulk density of tailing as measured by SML is 1.50 t/m<sup>3</sup>. SRK conducted a site visit and reviewed the resource estimation method, which SRK classifies as an Inferred Resource category under the guidance of the JORC Code.

As of December 31, 2011, the JORC Code compliant Inferred Resources were 6.65Mt with an average grade of 0.62% TCu and 0.48% soluble TCu at the main dam, and 2.45Mt with an average grade of 0.55% TCu and 0.45% soluble TCu at the subsidiary dam, respectively (see Table 6-13).

**Table 6-13: Resource Summary of Kakoso Tailings Development Project, as of December 31, 2011**

<u>Dam</u>	<u>Category</u>	<u>Resource (Mt)</u>	<u>TCu (%)</u>	<u>Contained TCu (t)</u>	<u>Acid Soluble TCu (%)</u>	<u>Soluble TCu (t)</u>
Main .....	Inferred	6.65	0.62	41,230	0.48	31,920
Subsidiary .....	Inferred	2.45	0.55	13,475	0.45	11,025
<b>Total .....</b>	<b>Inferred</b>	<b>9.08</b>	<b>0.60</b>	<b>54,705</b>	<b>0.47</b>	<b>42,945</b>

SML completed a study in July 2010 but SRK considers that the exploration work completed by SML may not be enough to support a feasibility study, as defined by international industry practice. SRK recommends that more auger drillholes and survey should be carried out in order to update the resource estimate.

### 6.3.8 Chambishi Tailings Development Projects

The Chambishi Copper Mine has nine tailing dams including 6<sup>th</sup>, 7<sup>th</sup>, 7A<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup>, Luano, Musahashi, Wener Dam and New Dam, and an acidic leaching residues dumps named 10<sup>th</sup>. All of them are located within the mining license of Chambishi Copper Mine. In June 2001, Chambishi Copper Mine carried out some prospecting work in those tailing dams and leaching residues to complete a resource estimate. A total of 73 samples were collected for analysis Cu and Co. In 2008, sampling program was conducted in Luano tailing (16<sup>th</sup>), and a total of 62 samples were collected. The bulk density of 1.6t/m<sup>3</sup> was used by NFCA for the resource estimation in 2011.

There were three oxidized ore piles in the Chambishi Copper Mine located nearby the open pit. In July 2003, NFCA carried out sampling work on the oxidized ore piles named 3-1#, 3-2# and 4#. A total of 79 samples were collected from shallow pits along the exploration line with grid spacing of 10m × 10-15m at the three oxidized ore piles. The bulk density of 2.70t/m<sup>3</sup> was applied for mineral resource estimate.

SRK has carefully reviewed the sampling method and resource estimation by NFCA, and also reviewed the historical production records of SML. According to the production records, SRK suggests that it be reasonable using the average feed grade instead of the average grade of tailings and the oxidized ore piles for resource estimate. SRK considers that the value of 1.14% can be using the acid contained copper grade. The resource of the oxidized ore piles was estimated by SRK utilizing the same method.

As of June 30, 2011, the JORC Code compliant Inferred Resources remaining at 7#, 7A#, 8#, 9# and 10# tailing dams were 0.71Mt with an average As-Cu grade of 1.44%. The remaining Inferred Resources of three oxidized ore piles were 1.11Mt with an average As-Cu grade of 0.87% (Table 6-14).

**Table 6-14: Remaining Resources of Tailings and Oxidized Ore Piles, as of June 30, 2011**

<u>Type</u>	<u>Category</u>	<u>Resource (Mt)</u>	<u>Acid Soluble TCu (%)</u>	<u>Contained TCu (t)</u>	<u>TCu (%)</u>	
Tailings .....	Inferred	Estimated Resource in 2001	3.088	1.44	44,467	0.026
		Consumed by June 30, 2011	2.381	1.14	34,287	
		<b>Remaining Resource on June 30, 2011</b>	<b>0.707</b>	<b>1.44</b>	<b>10,180</b>	<b>0.026</b>
Oxidized Ore Piles ...	Inferred	Estimated Resource in 2003	1.916	0.87	16,669	0.012
		Consumed by June 30, 2011	0.804	0.63	6,994	
		<b>Remaining Resource on June 30, 2011</b>	<b>1.112</b>	<b>0.87</b>	<b>9,676</b>	<b>0.012</b>



Based on the production records provided by SML from July to December 2011, a total of 247,897t of tailings at an average grade of 1.13% As-Cu and 5,639t of oxidized ore piles at an average grade As-Cu of 1.42% were consumed from July to December 2011, respectively (Table 6-15). As of December 31, 2011, the JORC Code compliant Inferred Resources of tailings were 0.46Mt with an average grade of 1.44% As-Cu. The remaining Inferred Resources of the oxidized ore piles as of the same date were 1.11Mt with an average grade of 0.87% As-Cu (Table 6-16).

**Table 6-15: Consumed Resources from July to December 2011**

Month (2011)	Tailing			Oxidized Ore Piles		
	Consumed resource (t)	Consumed Metal Cu (t)	Acid Soluble TCu (%)	Consumed resource (t)	Consumed Metal Cu (t)	Acid Soluble TCu (%)
July	43,112	504.41	1.17	1,673	24.26	1.45
August	46,781	505.24	1.08	1,766	28.78	1.63
September	37,787	438.33	1.16	469	5.3	1.13
October	41,118	432.74	1.05	0	0	0
November	35,763	407.4	1.14	1,551	19.7	1.27
December	43,336	515.7	1.19	180	1.98	1.10
<b>Total</b>	<b>247,897</b>	<b>2,803.82</b>	<b>1.13</b>	<b>5,639</b>	<b>80.02</b>	<b>1.42</b>

**Table 6-16: Remaining Resources of Tailings and Oxidized Ore Piles, as of December 31, 2011**

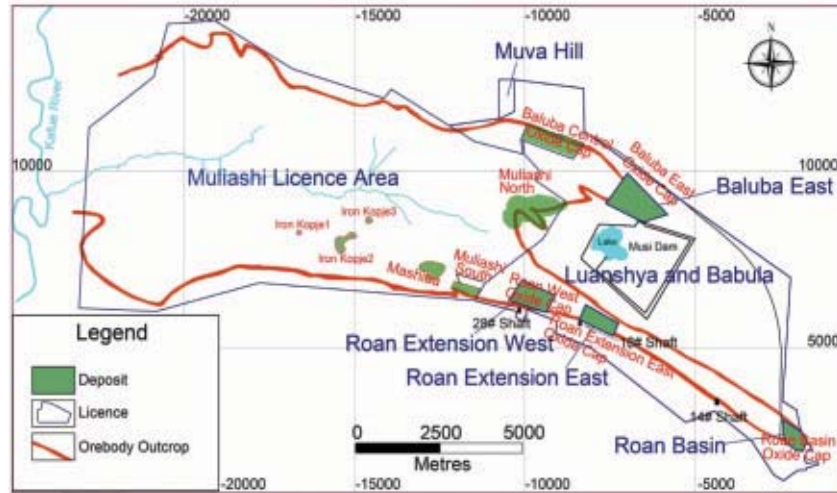
Type	Category	Resource (Mt)	Acid Soluble TCu (%)	Contained TCu (t)	TCu (%)	
Tailings	Inferred	Remaining Resource on June 30, 2001	0.707	1.44	10,180	0.026
		Consumed by December 31, 2011	0.248	1.13	2,804	
		<b>Remaining Resource on December 31, 2011</b>	<b>0.460</b>	<b>1.44</b>	<b>7,376</b>	<b>0.026</b>
Oxidized Ore Piles	Inferred	Remaining Resource on June 30, 2001	1.112	0.87	9,676	0.012
		Consumed by December 31, 2011	0.006	1.42	80	
		<b>Remaining Resource on December 31, 2011</b>	<b>1.106</b>	<b>0.87</b>	<b>9,596</b>	<b>0.012</b>

SRK carefully reviewed the geological data regarding the tailing dams, residues and oxidized ore piles in the Chambishi Copper Mine. In 2001, some sampling work was conducted using the shallow pit and trenching sampling method, and some drilling was completed. Most of shallow pits and trenches were too shallow to completely intercept the tailing, such as the 6#, 7#, 7A#, 8# and 9#. Only one sample was collected from 10# residues. SRK considers that some samples collected do not fully represent the grade and resource of tailings at Chambishi. More exploration work such as drilling, pitting and survey should be conducted to improve the resource classification and provide higher certainty regarding the estimate of the tailings resource.

## 6.4 CNMC Luanshya Projects

### 6.4.1 Local Geology and Background

The Luanshya projects operated by CLM involve seven mining licenses including areas named Luanshya-Baluba, Muliashi, Roan Basin, Roan Extension East, Roan Extension West, Baluba East and Muva Hill. The Muliashi license covers the deposits of Muliashi North, Muliashi South, Mashiba and Lufubu, as well as a part of the oxidized cap at Baluba Center (Figure 6-27).

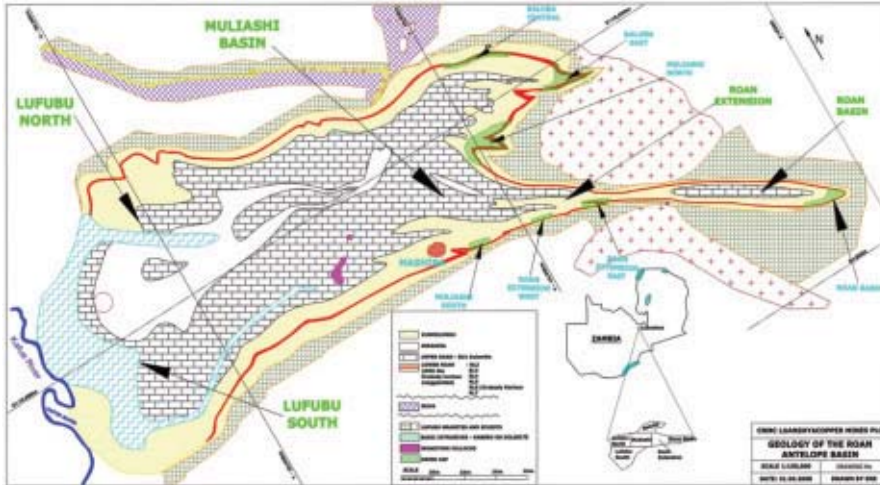


**Figure 6-27: Licenses and Deposits of CLM Luanshya Project**

CLM's Luanshya projects are located at the south-eastern end of the Copperbelt. The Roan-Muliashi Basin, which hosts the Luanshya (former Roan Antelope deposit) and the Baluba mines, is an isolated basin and an outlier of the Katanga Supergroup on the south-eastern edge of the Kafue Anticline. The Kafue Anticline is the most dominant geological facet of the Zambian Copperbelt. The copper deposits of the Copperbelt are almost all lined up on either side of this geological feature.

The Roan-Muliashi Basin begins approximately 2km west of the town of Luanshya and extends for more than 22km east towards the Kafue River. The geology of CLM's Luanshya projects is shown in Figure 6-28. Generally, the project area, Roan-Muliashi Basin, is made of three major basins, namely the Roan Basin, the Baluba Syncline and the Lufubu-Muliashi Basin. The Baluba Syncline is in the north of and is an echelon with the Roan Basin, both of which open gently into the Muliashi Synclinorium. In the central-east part of the project area the Baluba Syncline forms a fold nose whose southern limb joins the north limb of the Roan Basin and forms a crest at Muliashi North halfway between Baluba and Shaft 28# (south of Roan Extension West, refer Figure 6-27). The crest plunges suddenly to the west and abruptly thins out into the southwest trending monoclinical structure. The south limb of the Baluba Syncline continues westwards and opens up to join its north limb. Around this point the Baluba north limb becomes the north limb of the Muliashi Synclinorium in the Roan-Muliashi Basin.





**Figure 6-28: Geological Map of CLM Luanshya Projects**

The local stratigraphic column of the Roan-Muliashi Basin is depicted in Table 6-17 below. Two planes of unconformity occur, one between the Lufubu and Muva systems within the Basement Complex, and the other between the Muva System and Katanga Supergroup. The Basement Complex comprises the older tremolite-biotite schist which is intruded by granite. Comprised of Lower and Upper Roan and Mwashia Groups from lower to upper respectively, the so-called “Mine Series” of copper deposits in Copperbelt is hosted in Katanga Supergroup (or System) and overlaid by tillite of Kundelungu Series.

Table 6-17: Stratigraphic Column of Luanshya Project Area

System	Series	Group	Formation	Rocks/Lithology
Katanga Supergroup	Kundelungu			Tillite
	Mine	Mwashia		Carbonaceous shale
		Upper Roan	RU1	Dolomite and argillite
		Lower Roan	RU2	Argillites with dolomite
				Basal schist
			RL3	Arkose, grits, quartzites, argillites and conglomerates
			RL4	Schistose argillite
				Cherty dolomite
			RL5	Upper dolomites and dolomitic argillites
				Quartzite
			RL6	Interbedded argillites and quartzites
				Argillite (Copperbelt Ore Shale)
			RL7	Dolomite schist
		Transitional schist		
		Footwall conglomerate		
Argillaceous quartzite				
Second conglomerate				
Basement Complex	Muva		Quartzite and mica schist	
	Lufubu		Schist and granite (the intrusive)	

The Lower Roan (RL) and Upper Roan (RU) Groups, which occupy most of the Roan-Muliashi Basin area, are presented as folded and regionally metamorphosed sediments which include arenaceous, argillaceous and dolomitic formations. A total of seven formations have been identified as shown in Table 6-17.

The Roan-Muliashi formations are folded to form a tightly folded Roan Basin which is surrounded by the basement to the north, east and south. The north and south limbs of the Roan Basin are squeezed and become overturned in the west where the limbs open out into the wider Roan Extension, a zone immediately west of the Roan Basin.

The Roan Antelope deposit is a large continuous copper mineralization in the Roan-Muliashi Basin that extends from east to west over a stretch of 25 km. The strike length of economic mineralization is about 15 km on the Luanshya side and approximately 5 km on the Baluba side. In the east, at Roan Basin, there is only one feasibly economic orebody, the upper orebody (UOB). The lower orebody (LOB) is thin and uneconomic. In the Roan Extension to the west of the Roan Basin the lower orebody becomes more prominent. The two orebodies are separated by a pyrite zone and the ore hosting units including the hangingwall formations are highly folded. Further to the west in the Muliashi area the upper orebody diminishes and later disappears completely where only the LOB exists and it is overlain by a pyrite zone.

The economic copper mineralization is mostly confined to the Formation RL6 (refer Table 6-17) and partly in the transitional schist bed of the upper RL7 formation. This comprises a thin (up to 2 meters) zone of chalcocite, locally with cuprite, in a gritty dolomite schist or breccia, named the Transitional Schist. Chalcopyrite and sometimes native copper (especially in Baluba west) also occur in this zone. Chalcopyrite and sometimes bornite occur in the tremolite-biotite-dolomite schist. This has a thickness of up to 4 meters and structurally overlies the transitional schist.

The RL6 overlies the RL7 and varies in thickness from about 30 m to 65 m towards the east. The formation consists of a basal micaceous dolomitic schist of about 3-6 m thick overlain by a biotitic quartz-feldspar argillite. Economic copper-cobalt mineralization occurs abundantly within the micaceous dolomitic schist and extends into the argillite. The dolomitic schist is generally a weak stratum.

The argillite (equivalent to the Copperbelt Ore Shale) overlying the schist also contains chalcopyrite. Upwards it grades through a mixed zone of both chalcopyrite and pyrite into a predominantly pyrite zone and beyond that into a chalcopyrite or chalcocite zone of the upper orebody.

#### 6.4.2 Mineralogical Characteristics

Overall, the mineralization is mostly sulfide in the form of chalcopyrite, chalcocite and bornite. Within the lower orebody, the bottom contact is geological and is invariably on the contact of the Footwall Conglomerate with the RL6 Formation while the orebody hangingwall shows a gradational change within the argillite. Generally the best copper and cobalt grades occur near the footwall of the orebody (dolomite schist). The average grade of primary copper ores in the Baluba and Mashiba areas is about 2% Cu.

The oxidized caps of the copper deposits are widely spread within the CLM Luanshya Projects area. As the Luanshya deposits have been mined for almost 80 years, the sulfide ores are no more dominant among the total remaining resources. The average grades of oxidized ores vary, from about 1% Cu at Baluba East and Muliashi North, to about 1.7% Cu at Baluba Center and Muliashi South, up to greater than 2.5% Cu at Roan Extension East and West.

The main copper bearing minerals are chalcocite in Baluba East and Roan Basin and chalcopyrite in the rest of Roan-Muliashi Basin. However, chalcocite occurs throughout the Roan Antelope deposit largely as a minor mineral in the transitional schist as fine disseminations or erratic blebs. Chalcopyrite occurs as blebs and fine disseminations, however it is absent in the Baluba East. Comparative to chalcopyrite and chalcocite, bornite is a subordinate mineral and occurs as replacement of chalcopyrite.

The occurrence of both chrysocolla and malachite is common throughout the deposit. However, it is usually limited to staining only. Cuprite is also present, but is more common in transitional and tremolite-biotite-dolomite schist. Native copper has been found in footwall lithologies such as transitional and footwall conglomerate.

Major cobalt mineralization only occurs in the form of carrollite in the main Baluba deposit (Baluba Center). Chalcopyrite has been found to contain granular aggregates of carrollite and linnaeite, suggesting exsolution. Carrollite occurs as fine disseminations and scattered specks.

Pyrite occurs below the upper orebody in the in Baluba East and above the lower orebody in the rest of Baluba. In similar fashion, the pyrite zone lies below the upper orebody in Roan Basin and above the lower orebody in Muliashi. It occurs within the RL6 Argillite (Ore Shale) often aligned to

bedding. The tenor of mineralization drops off within the upper dolomitic schist and overlying argillite where the typical mineralization consists of a mixed chalcopyrite-pyrite zone. The top of the economic copper mineralization is normally within this zone as the rock becomes very pyritic above (see Figure 6-29).



**Figure 6-29: Weathered Copper Ore with Pyritic Features**

Sulfide mineral zoning has been studied systemically. The paragenetic sequence appears as follows: barren near shore sediments, to chalcocite in shallow waters, to bornite with carrollite and chalcopyrite, then chalcopyrite and finally pyrite.

The useful elements consist of copper (Cu) and cobalt (Co) and associated components, including Au and Ag. Iron mineralized bodies are discovered in some parts of the deposit, and the grades of other elements are not high enough to be recovered commercially.

#### **6.4.3 Geology of Baluba Center Mine and Muliashi Projects**

##### *Baluba Center Mine*

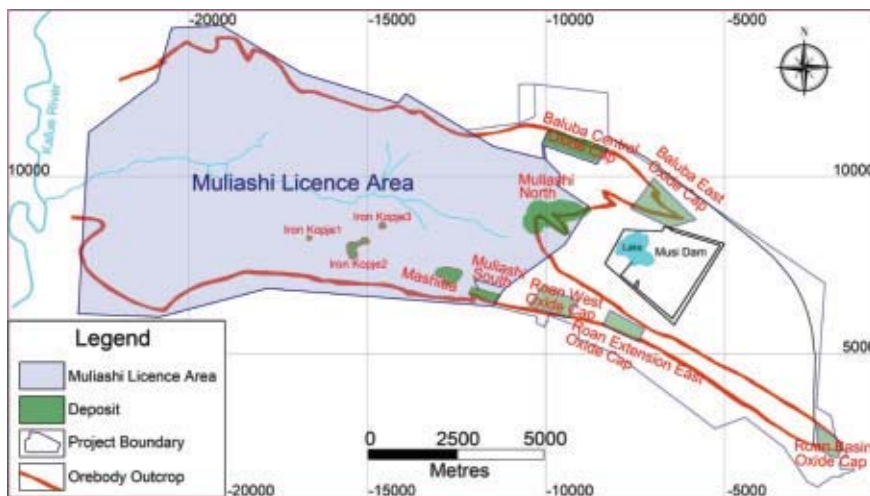
The currently operating underground mine of CLM is the Baluba Center Mine which started production in 1973; it is located approximately 10km northwest of the Roan Antelope Mine (near Roan and Luanshya area), on the northeast flank of the Muliashi Basin. The Baluba Center Mine operates with a granted mining license (8097-HQ-LML) “Luanshya Mine and Baluba Mine” covering a total area of 46.34km<sup>2</sup>, occupying the eastern part and accounting for nearly half of the total CLM Projects area.

Roan Antelope Mine was established in 1911. Due to the resources being nearly depleted (about 93% of the total resources were depleted as cited from data provided by CLM) and the remaining resource areas experiencing flooding and surface subsidence, the Luanshya Mine (main part of the former Roan Antelope deposit) and shafts were closed in 2001. Therefore within the area covered by mining license “Luanshya and Baluba Mines” currently only the Baluba Mine exists with production of sulfide copper ores.

### *Muliashi Projects*

The Muliashi-Luanshya license (License 8393-HQ-LML) includes four deposits, namely Baluba Center Oxide Cap (which has been reported together with Baluba Center Sulfide in Section 6.4.4 Ore Body Geology — Baluba Center Mine), Muliashi North, Muliashi South and Mashiba as shown in Figure 6-30. The license covers an area of 81.22km<sup>2</sup>.

The Muliashi North Deposit is situated in the center of the CLM Projects' license area, at the eastern edge of Muliashi Basin and close to the west of Roan Basin. The Muliashi South Deposit is located south of Muliashi North but west of the 28# Shaft. The Mashiba Deposit is recognized as an isolated deposit located approximately 3km west of 28# Shaft.



**Figure 6-30: Location of Muliashi Project**

The Mashiba Deposit is recognized as an isolated deposit located roughly 3km west of 28# Shaft (refer Figure 6-27). Spatially, it is localized and thins out in all three directions (east, south and west), and distributed largely in the lower orebody with a sporadic pyrite zone above it.

#### **6.4.4 Orebody Geology**

##### ***Baluba Center Mine***

The mineralized units within the Baluba syncline are recognized as extending for about 3km along the east trending strike and approximately 1.5km down dip. Economic copper mineralization is largely confined to the RL6 argillite and a thin zone near the upper contact of the RL7 Formation. The Baluba Center oxidized cap exists above the oxide-sulfide interface assumed to be approximately 60m below surface. The oxide content increases towards the surface while the sulfide minerals increase with depth and become predominant roughly 60m from surface.

The outcrop of the oxidized cap is distributed on the north limb of the Baluba Syncline, extending approximately 3,000m from west to east with thickness of 10m and depth of 110m below surface. As an ore-controlling structure, the syncline's northern limb has varying southerly dips, with the shallowest being 45° at both the eastern and western ends. Near the center of the deposit about SS45 (in the shaft area) the dip is nearly vertical (Figure 6-31).

Baluba Center sulfide orebody (mineralized syncline with economic feasibility) extends about 3,600m and is distributed on both limbs of the Baluba Syncline. The width (along dip) of the orebody is about 1,500m and the thickness varies from several meters up to dozens of meters averaging about 10m. Near the north limb, the Baluba Center orebody dips to the southwest ( $210^{\circ}$ ) with a relative large dip angle varying from  $45^{\circ}$  to nearly  $90^{\circ}$ .

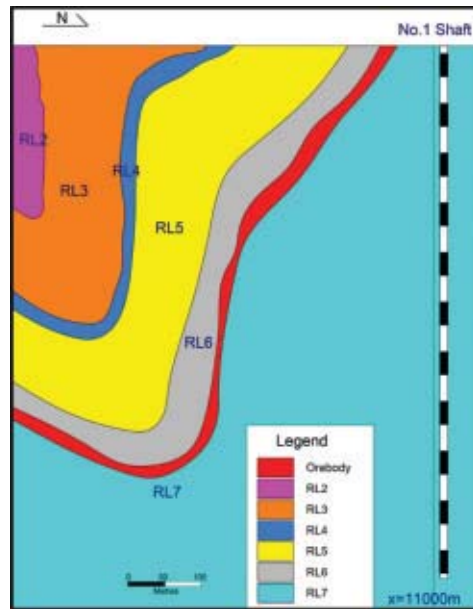


Figure 6-31: Vertical Section SS45 — Baluba Center Mine

### ***Muliashi North Deposit***

The deposit is recognized as an oxidized cap with copper oxidation ratio about 52%. Weathering and associated oxidation have occurred widely from surface spreading to variable depths. Progenetic copper sulfides, including chalcopyrite, bornite and chalcocite, are distributed predominantly below 100m from the surface. Approaching the surface there is a gradual transition where copper sulfides were oxidized and produced secondary minerals. The copper mineral in the oxidized zone is predominantly malachite with minor chrysocolla. A poorly crystallized manganese oxide with adsorbed copper and cobalt is also present in the area.

Three orebodies have been identified in the Muliashi North deposit. Due to different host rocks, one discontinuous orebody has been identified as Hangingwall Orebody (HOB) and is located just above the RL6-RL5 contact traditionally recognized as the hangingwall waste in the rest of the Roan-Muliashi Basin. The other two orebodies, namely the Upper Orebody (UOB) and the Lower Orebody (LOB), both occurred in the lower or upper zone of RL6 Formation and are separated by a pyritic zone. The RL6 Formation at Muliashi North is thinner than the other formations of the Roan-Muliashi Basin.

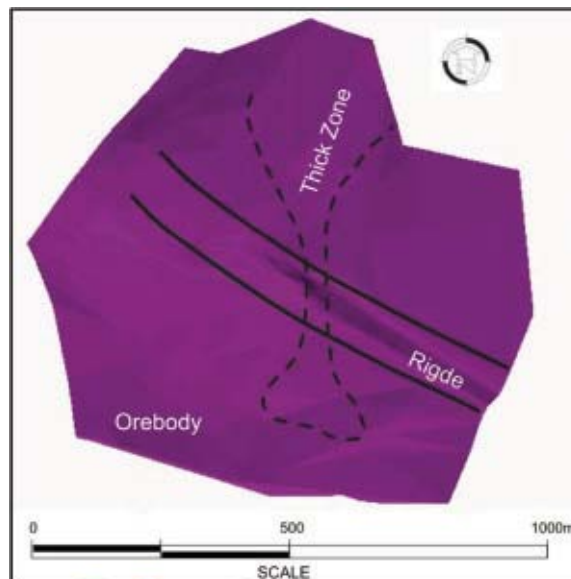
### ***Muliashi South Deposit***

The Muliashi South oxidized cap covers a distance of about 800m on surface and extends down to the underground upper mining limit which varies from section to section.



### ***Mashiba Deposit***

Figure 6-32 illustrates a digital model built by geologists from SRK's South Africa office. The southern part of the mineralization outcrops on surface, and extends about 600m along strike (east-west) and 800m along the dip direction (north). A tight asymmetrical fold or “ridge/crest”, trending ESE, crosses the deposit halfway down its depth. The thickness of the orebody within this zone presents as much thicker with the maximum up to 41m. This “ridge” appears to be associated with an east trending fold present in the Muliashi deposit. There is another thick zone measuring up to 15m in thickness which trends roughly north-south and dissects the “ridge” at its midpoint. The thick zone (called the second “ridge” by SRK South Africa) is irregular in shape and not always evident. It appears to be open ended down dip while it thins out close to the southern limit of the deposit.



**Figure 6-32: Orebody Model of Mashiba Deposit (From F. Camisani, SRK Consulting South Africa, 2008)**

Unlike typical Copperbelt sulfide orebodies, the Mashiba ore has a relatively high copper oxide component and its thickness varies drastically over short distances. The oxide copper covers virtually the whole deposit but confines itself largely along the dolomite schist at the RL6—RL7 contact. This is a zone of relatively high porosity and weathering.

The Ox-Cu/TCu ratio over the entire mineralized length of the borehole intersections reveals that the zone with relatively high ratio (Ox-Cu/TCu>5) is localized above the elevation of 1,200m ASL, ie down to 100m from surface. The same higher ratio oxide applies in the crest area of the fold.

#### **6.4.5 Resource and Reserve Estimation**

##### *Baluba Center Mine*

##### ***Sulfide Mineral Resource and Ore Reserve***

In 2008 before CNMC took over the Baluba mine, the Johannesburg based consultancy Golder performed an estimation of resources of Baluba Center sulfide using GEMCOM Software and the oxide deposit as commissioned by the former mine owner Luanshya Copper Mines PLC. The geostatistics and results are detailed in the report “*Resource estimation of the Baluba Center, Baluba East and Muliashi North Ore Bodies, Luanshya, Zambia*”. Samples from a total of 1,793



holes were used in the estimation, and the resources were classified abiding with the SAMREC Code. In September 2008 Golder reported the Baluba Center Sulfide resources as 9.05Mt Measured Resource grading at 2.45% Cu, 4.70Mt Indicated Resource grading at 2.23% Cu, and 14.87Mt Inferred Resource grading at 2.03% Cu using a cut-off grade of 1.00% TCu.

Additional exploration including underground drilling and sampling was conducted by CLM during the production after 2009, and based on the new exploration results and depletion investigations CLM re-assigned the resource blocks and performed a detailed update of the resources following SAMREC Code classification. The Software AutoCAD and 3DMine were applied and Inverse Distance (Square) Method was used for estimation. The Kriging variance and distance to sample as well as a strict grid of exploration have been taken into account when classifying the resource categories. The updated sulfide resources of the Baluba Center Mine as of July 1, 2010 using a cut-off grade of 1.0% Cu are shown in Table 6-18.

**Table 6-18: Sulfide Mineral Resource of Baluba Center Mine, as of July 1, 2010**

Category	Resource (Mt)	Average Grade*		
		%TCu	%Ox-Cu	%TCo
Measured .....	1.20	2.30	0.07	0.16
Indicated .....	14.16	2.21	0.08	0.16
Inferred .....	3.88	1.91	0.10	0.12

\* TCu — total copper “Cu”; Ox-Cu — copper oxide; TCo — total cobalt “Co”

SRK has carefully reviewed the exploration programs conducted by CLM including logging; sampling methodologies and sample preparation and assaying; assay quality control and quality assurance; the geological interpretation, mineral resource estimation procedures and parameters applied by CLM. SRK considers that these exploration programs provide a reasonable basis to estimate the mineralized bodies at Baluba Center Mine and that the analytical methods used for these deposits produced acceptable results with no material bias.

Based on the production details provided and depletion data from July 2010 to June 30, 2011, the sulfide resources using a cut-off grade of 1.0% Cu were updated. As of June 30, 2011, the JORC Code compliant Measured, Indicated and Inferred Resources were estimated at 0.73Mt with an average grade of 2.31% TCu and 0.17% TCo, 16.68 Mt with an average grade of 2.23% TCu and 0.15% TCo, and 3.88Mt with an average grade of 1.91% TCu and 0.12% TCo, respectively (Table 6-19). Only the Measured and Indicated Resources may be converted to Ore Reserve and used for mine planning.

**Table 6-19: Sulfide Mineral Resource at Baluba Center Mine, as of June 30, 2011**

Category	Resource (Mt)	Average Grade		Contained Metal	
		TCu (%)	TCo (%)	Cu (t)	Co (t)
Measured .....	0.73	2.31	0.17	16,863	1,241
Indicated .....	16.68	2.23	0.15	371,964	25,020
Inferred .....	3.88	1.91	0.12	74,108	4,656

Based on the monthly production records from July to December 2011 at the Baluba Center Mine, a total of 0.034 Mt with average grades of 1.86% TCu and 0.61% TCo of Measured Resource and 0.768 Mt with average grades of 1.86% TCu and 0.161% TCo of Indicated Reserve were consumed.

As of December 31, 2011, the JORC Code compliant Measured, Indicated and Inferred Resource were estimated at 0.70 Mt with an average grade of 2.33% TCu and 0.170% TCo, 15.91 Mt with average grade of 2.25% TCu and 0.149% TCo, and 3.88Mt with an average grade of 1.91% TCu and 0.12% TCo, respectively (Table 6-20).

**Table 6-20: Sulfide Mineral Resource at Baluba Center Mine, as of December 31, 2011**

Category	Resource (Mt)	Average Grade		Contained Metal	
		TCu (%)	TCo (%)	Cu (t)	Co (t)
Measured	0.696	2.33	0.170	16,239	1,187
Indicated	15.912	2.25	0.149	357,669	23,782
Inferred	3.88	1.91	0.120	74,108	4,656

Based on the production data analysis in 2011, the mining loss rate and a dilution rate at the Baluba Center Mine of 40% and 38%, respectively, and other modifying factors, SRK estimated the ore reserves. As of December 31, 2011, the estimated Proved and Probable Ore Reserves were 0.58Mt at an average grade of 1.69% TCu and 0.123% TCo and 13.17Mt at an average grade of 1.63% TCu and 0.108% TCo, respectively (Table 6-21).

**Table 6-21: Ore Reserves at Baluba Center Mine (Sulfide Ore), as of December 31, 2011**

Category	Reserve (Mt)	Average Grade		Contained Metal	
		TCu (%)	TCo (%)	TCu (t)	TCo (t)
Proved	0.576	1.69	0.123	9,730	710
Probable	13.175	1.63	0.108	214,812	14,225

#### ***Oxidized Mineral Resource and Ore Reserve***

In September 2008, Golder Associates also conducted a resource estimation following the SAMREC Code for the oxidized cap at the northern part of the Baluba deposit. The SAMREC Code is similar to the JORC Code. The Indicated and Inferred Resources were 6.56Mt at an average grade of 1.65% TCu with 1.14% Ox-Cu and 0.12% TCo, and 1.62Mt at an average grade of 1.70% TCu with 0.93% Ox-Cu and 0.10% TCo, respectively (Table 6-22). The oxidized ore resources were not mined from September 2008 to December 31, 2011.

**Table 6-22: Mineral Resource at Baluba Center Mine (Oxidized Ore), as of December 31, 2011**

Category	Resource (Mt)	Average Grade*		
		%TCu	%Ox-Cu	%TCo
Indicated	6.56	1.65	1.14	0.12
Inferred	1.62	1.70	0.93	0.10

\* TCu – total copper “Cu”; Ox – Cu – copper oxide; TCo – total cobalt “Co”

It is noticed that the Oxidized Resource Cap has subsided and/or has the potential to sink. Therefore most of the Baluba Center Oxide resources listed in Table 6-22 are unlikely to be mined at the present time. The resources are not able to be designed for reserves estimation.

#### ***Muliashi Projects***

##### ***Muliashi North Deposit***

Before CLM took over the deposit, four drilling campaigns had been carried out at Muliashi North. The first campaign was from 1963 to 1971, followed by drilling and tunnelling programs between 1971 and 1975. Table 6-23 demonstrates the total exploration workload from the first two exploration programs.

**Table 6-23: Workload Spreadsheet between 1963 and 1975 in Muliashi North Deposit**

Item	Count	Footage (m)
Boreholes	159	40,049
Pits and auger holes	244	2,381
Prospect trench	1	2
Winzes	3	300
Crosscuts and drives at 152m level	4	570

Two feasibility studies were carried out during 1998 and 2007. Low grade zones in between the original three orebodies were counted in as a new orebody. The cut-off grade was also reduced from 0.50% to 0.30% TCu. The reduced cut-off grade effectively decreased the average grade further but significantly increased the tonnages.

Boreholes were drilled along sections which were positioned 75 meters apart. On each section boreholes were sited at distances varying from 30m to 100m apart depending on the complexity of the structure and mineral variations. Most boreholes were vertical.

The historical drill cores are now kept at a warehouse near CLM's general office. During the site visit to CLM in early May 2011, SRK observed the open-pit stripping at Muliashi North, inspected the newly-drilled boreholes and drill cores stored at another warehouse near 28# shaft (Figure 6-33). The new exploration was undertaken by Sinomine under the supervision of CLM's experienced geologists.



Figure 6-33: Historical Storage (Left) and New (Right) Drill Cores — Muliashi North Project

**Mineral Resource and Ore Reserve**

A number of resource estimations for the Muliashi North area were carried out since the initial exploration campaign in 1963.

As shown in Table 6-24, the latest resource estimation was conducted and reported by Golder using SAMREC Code. Using a cut-off of 0.30% Cu, the Measured, Indicated and Inferred Mineral Resources were 38.87Mt at an average grade of 1.14% TCu with 0.67% Ox-Cu and 0.06% TCo, 22.13Mt with an average grade of 0.98% TCu with 0.59% Ox-Cu and 0.07% TCo, and 20.02Mt at an average grade of 1.18% TCu with 0.41% Ox-Cu and 0.05% TCo, respectively.

Table 6-24: Resource Summary at Muliashi North Deposit, as of December 31, 2011

Category	Resource (Mt)	Average Grade (%)			Oxide/Total Cu
		TCu	Ox-Cu	TCo	
Measured	38.87	1.14	0.67	0.06	59%
Indicated	22.13	0.98	0.59	0.07	60%
Inferred	20.02	1.18	0.41	0.05	35%

CLM has planned to utilize the resources through developing an open pit at Muliashi North. Such plan has been achieved and production commenced in December 2011. The current resource status has not changed significantly since the latest resource estimation.

Based on the rates of mining recovery and dilution at 97% and 3%, respectively, as cited in the Preliminary Design (NERIN) and considered other modifying factors, the Proved and Probable Ore Reserves of the Muliashi North Project are estimated at 38.84Mt at an average grade of 1.11% Cu and 22.11 Mt at an average grade of 0.95% Cu, respectively (Table 6-25).

**Table 6-25: Ore Reserves at Muliashi North Deposit, as of December 31, 2011**

<u>Category</u>	<u>Reserve (Mt)</u>	<u>Grade Cu (%)</u>	<u>Contained Metal Cu (t)</u>
Proved .....	38.84	1.11	429,824
Probable .....	22.11	0.95	210,368

It is noted that since 2010 a total of 58 additional boreholes and 9 trenches have been completed and the new samples were not included in the resource inclusive of reserve estimations above. To date of SRK's visit of the project, CLM was continuing the exploration in Muliashi North, and SRK was advised that a new assessment of the Project, including resource estimation, would be commenced after the exploration of this stage is completed and all samples are assayed.

### ***Muliashi South Deposit***

Most of sulfide ore at the Muliashi South Deposit was extracted through the 28# Shaft during the ZCCM ownership period. Underground mining was resumed in 2008 but only last several months and in November 2008 the mine was shut down by ENYA.

Oxidized mineral resources and the remaining sulfide mineral resources were estimated by Snowden in 2006 and Golder in 2008 respectively using the SAMREC Code. Using a cut-off grade of 0.30% TCu, the oxidized Inferred Resource was estimated at 4.4Mt with an average grade of 1.73% TCu. The remaining sulfide Indicated and Inferred Resources were estimated at approximately 0.60Mt at an average grade of 2.48% TCu and 0.08Mt at an average grade of 2.5% TCu (Table 6-26). The Muliashi South deposit was not mined from 2008 to December 31, 2011.

**Table 6-26: Resource Summary at Muliashi South Deposit, as of December 31, 2011**

<u>Category</u>	<u>Resource (Mt)</u>	<u>%TCu</u>
<b>Sulfide Ore</b>		
Indicated .....	0.60	2.48
Inferred .....	0.08	2.50
<b>Oxidized Ore</b>		
Inferred .....	4.44	1.73

It should be noted that the sulfide resources have been flooded and re-construction and mining for the small amount of sulfide resources (probably some parts of the resource are no longer accessible) is currently unlikely to be economically feasible, but after de-watering it could be economically used in the future.

The Mineral Resources listed above suggest that currently no Ore Reserves could be stated at Muliashi South. It is recommended the Company carry out more detailed exploration in order to verify and upgrade the resources, which may allow some reserves to be designed and/or estimated.

### ***Mashiba Deposit***

The initial drilling at Mashiba started in the 1930s, but most of the drilling occurred between 1950 and 2007. A total of 77 boreholes have been drilled to date within and in the immediate vicinity of the deposit, of which 54 were drilled before 2007 and 23 in 2007. Of the pre-2007 boreholes ("old

holes”), 16 had only “% TCu” grade recorded over the entire orebody intersection. Of these, 7 holes had no “Ox-Cu” assays. Within the pre-2007 boreholes, 32 were assayed for “% TCu” continuously over the entire mineralization, but only a few samples per intersection (1-3) were assayed for “% Ox-Cu”. The 2007 campaign boreholes were assayed for both “% TCu” and “% Ox-Cu”.

In 2008 geologists from SRK’s South Africa (“SRK SA”) office, with Luanshya Copper Mines Plc’s (“LCM”) assistance, were able to reconstruct most of the borehole core assay data to generate a mineral resource. However, SRK SA’s staff did not validate any of the pre-2007 borehole drilling, core logging, sampling or assaying QA/QC procedures.

### **Mineral Resource and Ore Reserve**

A total of 66 drillholes (48 “old holes” drilled prior to 2000 and 18 holes of the 2007 campaign) were drilled within the Mashiba deposit proper and were used for the estimation of resources by SRK’s SA staff in January 2008. SRK conducted a site visit and reviewed the resource estimation method, which is comparable to the Inferred Resource category in the JORC Code. Using a cut-off grade of 0.5% TCu, the JORC Code compliant Measured, Indicated and Inferred Mineral Resources were 3.17Mt at an average grade of 1.89% TCu and 0.24% Ox-Cu, 5.67Mt with an average grade of 1.96% TCu and 0.22% Ox-Cu, and 4.97Mt at an average grade of 1.67% TCu, 0.43% Ox-Cu, respectively (Table 6-27). The Mashiba deposit was not mined from 2008 to December 2011.

**Table 6-27: Resource Summary at Mashiba Deposit, as of December 31, 2011**

<u>Category</u>	<u>Resource (Mt)</u>	<u>TCu (%)</u>	<u>Ox-Cu (%)</u>
Measured . . . . .	3.17	1.89	0.24
Indicated . . . . .	5.67	1.96	0.22
Inferred . . . . .	4.97	1.67	0.43

In addition, a tonnage of 2.8Mt at an average grade of 1.7% TCu with 0.6% Ox-Cu was estimated by SRK SA’s staff. This tonnage refers to the peripheral part of the deposit which does not satisfy the conditions of the JORC Code Resource classifications, and this additional prospective material at the Mashiba Project should be considered to be an exploration target.

Regarding the resources reliability, SRK SA’s report also made comments and recommendations as below.

*“It is SRK’s opinion that a borehole twinning program should be undertaken before any mining commences at Mashiba. It is recommended that at least 25% of the pre-2007 boreholes should be twinned with new boreholes and the new core assays checked with the existing pre-2007 assays. If the assay variance is greater than 10% then SRK recommends that the deposit should be re-drilled and assayed to the current QA/QC standards.”*

It should be noted that a certain proportion of verification drilling will be necessary before a mining design can be completed in the future, as some of the original data of the historical boreholes is no longer available.

By consideration of similar type of operating mines in this region, and applying the mining recovery rate of 60% and dilution of 40%, the Ore Reserves were estimated by SRK as shown in Table 6-28. However the figures should be adjusted after a detailed study, and any other factors regarding geological, mining, cost, legal, social and environmental aspects which possibly impact the reserve estimates should be also seriously considered.

Table 6-28: Estimated Ore Reserves at Mashiba Deposit, as of December 31, 2011

Category	Reserve (Mt)	Grade Cu (%)	Contained Metal Cu (t)
Proved .....	2.66	1.35	35,948
Probable .....	4.76	1.40	66,679

**6.4.6 Baluba East, Roan, Roan Extension and Others**

*Baluba East*

Baluba East as the name implies is situated at the eastern end of the Baluba Syncline. The north and south limb of Baluba Syncline meet to form a nose which plunges westwards. The nose outcrops near SS04. The syncline increasingly opens up wider as it deepens and plunges at 40° westwards.

**Orebody Geology**

At Baluba East there are two orebodies separated by a pyrite zone. The orebody below the pyrite zone is the lower orebody (LOB) while the one above is the upper orebody (UOB). The UOB is the predominant orebody which was partly mined out while the LOB was not mined out because it is thin. In the pyrite zone the copper grades are below 1.00% allowing the pyrite to be dominant in the zone.

Towards the west the north limb of Baluba East joins the north limb of Baluba Center. However, there is a near barren zone that demarcates Baluba East from Baluba Center. Similarly, the south limb of Baluba East and the Center Limb East are separated by a near barren gap.

The oxide cap at Baluba East is the oxidized upper part of the orebodies. At a depth of about 60m both the LOB and the UOB have high oxide content. The oxide level increases towards the surface where more oxidation took place. Common minerals are malachite, cuprite and chrysocolla. It is a reasonable approximation to consider the 60m line below surface as the oxide-sulfide interface. Below the oxide-sulfide interface the materialization increases in sulfur content, with a resulting drop in oxide copper. The oxide-sulfide interface is not fixed and therefore can be found at different horizons. The major sulfur minerals are chalcocite, minor bornite and chalcopyrite. What is clearly noticeable is the lack of cobalt in the Baluba East orebody.

The mined out area at Baluba is between SS7 and SS15, while east of SS13 mining reached the trough of the north and south limbs. Mining started on the north limb and it was to proceed to the south limb at a later date. Figure 6-34 shows the typical section of the Baluba East deposit.

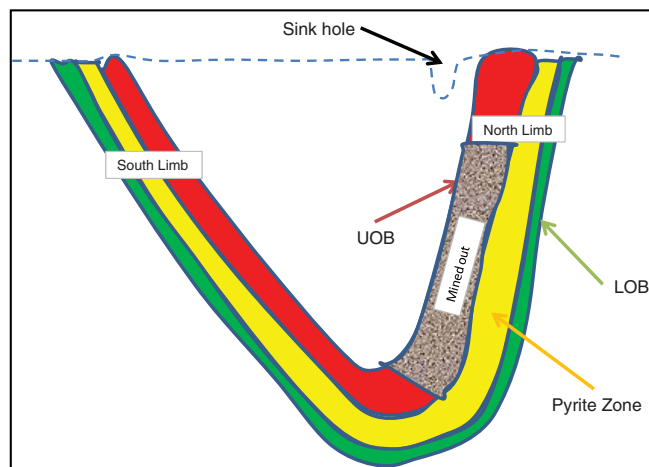


Figure 6-34: Typical Baluba East Section



**Resource and Reserve Estimation**

Two major sink holes were conducted at the surface of Baluba East in 2006. Using a cut-off grade of 0.30% TCu, the resource was estimated by Snowden at 10.0Mt at an average grade of 1.43% TCu.

During 2007, a total of 19 boreholes were drilled at Baluba East. The purpose of drilling these holes was to determine the remaining ore resource and its grade in the oxide part of both the north limb and the south limb.

In September 2008, Golder estimated the resources of Baluba East in line with the SAMREC Code, which is similar to the JORC Code. As the mine was not operated from September 2008 to December 31, 2011, the JORC compliant Measured, Indicated and Inferred Mineral Resources at Baluba East Mine at December 31, 2011 were 6.40Mt at an average grade of 1.90% TCu, 1.00% Ox-Cu and 0.02% TCo, 27.64Mt with an average grade of 0.77% TCu, 0.31% Ox-Cu and 0.03% TCo, and 3.27Mt at an average grade of 1.03% TCu, 0.37% Ox-Cu and 0.04% TCo, respectively (Table 6-29).

**Table 6-29: Estimated Resources at Baluba East Deposit, as of December 31, 2011**

<u>Category</u>	<u>Resource (Mt)</u>	<u>%TCu</u>	<u>%Ox-Cu</u>	<u>%TCo</u>
Measured .....	6.40	1.90	1.00	0.02
Indicated .....	27.64	0.77	0.31	0.03
Inferred .....	3.27	1.03	0.37	0.04

\* TCu — total copper “Cu”; Ox-Cu — copper oxide; TCo — total cobalt “Co”

Based on a recovery rate of 95% as well as a dilution rate of 5% for open-pit mining and other modifying factors cited from the feasibility study, the Ore Reserves of Baluba East were estimated as shown in Table 6-30. However, the figures should be adjusted after a detailed study, and any other factors regarding geological, mining, cost, legal, social and environmental aspects which possibly impact the reserve estimates should be also seriously considered.

**Table 6-30: Estimated Ore Reserves at Baluba East, as of December 31, 2011**

<u>Category</u>	<u>Reserve (Mt)</u>	<u>%TCu</u>	<u>%Ox-Cu</u>	<u>%TCo</u>
Proved .....	6.38	1.81	0.95	0.019
Probable .....	27.57	0.73	0.30	0.029

**Roan Basin**

Roan Basin forms the furthest eastern end of the Roan-Muliashi Basin. Like Baluba East, the fold nose of Roan Basin is formed by the north and south limbs (see Figure 6-27). The fold nose of Roan Basin is located beneath the cricket field north of the CLM's general office. The Luanshya River diversion tunnel passes just east of the surface projection of the fold nose.

The Roan Basin oxide cap forms a syncline which plunges to the west at approximately 20° and outcrops to the east at the cricket field. The south limb has a strike of approximately 290° and dips between 45° and 50° to the north. The north limb strikes between 90° and 110° and dips at between 60° and 70° to the south.

The oxidized cap occurs over an area of 600m west to east and 400m, north to south, while the mineralized zone is 20m thick at 30m below the surface. It extends from the fold nose at SS02 to SS40 on the south limb.



The first tonne of copper ore was hoisted at Roan Antelope deposit in 1931. Mining was carried out using the Beatty Shaft, now decommissioned. Only the sulfide ore was extracted because at the time the technology to treat oxide ores was not yet developed.

Mining was carried out 60m below the surface. The oxide-sulfide interface dictated the upper limit of mine extraction. The upper limit of underground mining averaged 45m below the surface although it reached 25m below the surface on a few local sections such as 6# and 14#.

Drillholes into the Roan Basin oxide cap are all shallow (less than 70m) and so un-oxidized sulfide material has not been intersected. There are, however, zones of mixed oxide/sulfide material identified in the logs. These zones are characterized by oxide minerals malachite, tenorite and chrysocolla, mixed with chalcocite and occasional finely disseminated chalcopyrite.

Eight boreholes were drilled at Roan Basin. These boreholes were meant to define the previous mining limit and to confirm the presence of the orebody.

In 2006, Snowden estimated the resources at Roan Basin following the SAMREC Code. Using a cut-off grade of 0.30% TCu, the Inferred Resource was 3.3Mt at an average grade of 2.12% TCu, and there were no sufficient assays for copper oxide at the time.

In 2010, CLM re-estimated and updated the resources of Roan Basin as 3.23Mt Inferred Resource grading 1.82% Cu and 1.24% Ox-Cu.

As the Roan Basin is close to CLM General Office, roads and Luanshya downtown as well as other facilities, the future mining activity will be impacted by these factors. It is likely that only a part of the resources could be extracted.

#### *Roan Extension West*

The deposit is located north of and in between 18# and 28# Shafts (see Figure 6-27). It is probably the smallest asset of the oxide caps at Luanshya. In the Roan Extension Basin both the LOB and UOB deposits exist and are fully developed but highly folded. The pyrite zone is also well developed such that the cubic pyrite minerals are clearly seen.

Very little data is known about the Roan Extension West deposit because it represents a very small deposit among the Luanshya oxide assets. It is also thought that part of the oxide cap may be overlain by the waste dump north of 28# Shaft. Both the LOB and the UOB form the oxide cap that was undermined by underground mine extraction. As a result some of the orebody may have been lost due to the slumping of the ore horizon following the mining induced caving.

Following the SAMREC Code, the resource of oxidized caps estimated by Snowden using a cut-off grade at 1.00% Cu was about 1.82Mt Inferred Resource at an average of 2.79% TCu with 2.54% Ox-Cu. The underground sulfide resources are almost depleted and a subsidence potential of the surface exists. At present, it is unlikely that the Roan Basin Extension West will be mined.

#### *Roan Extension East*

Three quarters of the Roan Extension East is located north of 18# Shaft. The deposit is the surface express of a limb in the Roan Extension Basin. The limb forms a small syncline which increases the ore resource in comparison to the Roan Extension West. Similar to the Roan Extension West, the underground sulfide resource in the area is almost depleted and subsidence has occurred in the local area.

The Inferred Resource at Roan Extension East was estimated by Snowden following the SAMREC Code at 2.75Mt with an average of 2.59% TCu and 1.82% Ox-Cu.

#### *Muva Hill and Lufubu*

The Muva Hill is located at the north of the Projects area, and Lufubu is situated at the western part of the Muliashi License. The lithological systems of Muva and Lufubu are named after the prospects' names. Some geological investigation has been performed in both areas and preliminary exploration on Lufubu North and South has been conducted. It is considered that the two projects share some exploration potential.

#### **6.4.7 Exploration Analytical Procedures and Quality Control**

The historical exploration and sampling, analytical procedures as well as quality control of the CLM Luanshya Projects have been described separately in this report, including in the section on Muliashi and Mashiba. For an overall assessment of the exploration of CLM Luanshya Projects, the sections below describe the typical procedures of the historical exploration regarding QA/QC. Due to some of the historical data being not available, most of the knowledge is derived from SRK's site observations and recent documents provided to SRK.

#### *Drilling and Sampling Procedures*

The detailed procedures that Luanshya Copper Mines uses for core logging, sampling, bagging, transporting and the handling of analyses to reduce errors and biases in the assays and to maintain integrity of the assay in order to increase confidence in the estimate of the resources are discussed below. Note that the procedures discussed refer to the 2007-2008 in-fill drilling program.

**Core Handling:** During the drilling all the core was checked for core recovery, for the condition of core (core grinding if any), the nature of core (weathering, etc.), the nature of fragmentation and any fractures of the core. The core losses were recorded on a daily basis. The borehole was stopped when the hole intersected the orebody horizons, namely argillite, dolomite schist and transitional schist. About six meters of drilling was allowed into the footwall beyond the last visible copper mineralization. The hole would be stopped in the argillaceous quartzite rock unit. If no visible mineralization was observed, and this sometimes happened even if no mineralization existed, the drilling of the borehole would be stopped 3.0m after passing the rock units of the ore formation (i.e. dolomite schist or transitional schist).

All the drills in the recent drilling programs (since 1990s) used the wire line drilling method. In this method the drill bit (crown) is attached to the core-barrel at the end of the drill string (i.e. at the bottom of the borehole). The core is collected by the inner tube which sits a few millimeters above the drill bit inside the core barrel. During drilling the core enters the inner tube and is held in position by the core lifters. When the drill run is completed (a drill run is usually 3m long) the inner tube is pulled by a winch attached to a wireline. The core-barrel remains down the hole. On surface the core is removed from the inner tube by using water under pressure from the by-pass hose. This prevents the core from breaking up. Sometimes the core is removed from the inner tube by tapping the inner tube which is raised on one end.

Care was taken by the driller to avoid damaging the core in any way. This ensured that all the geological data was collected during the logging and subsequent sampling of the core to get the full benefit of core drilling.

**Core Transportation:** Core was laid out in 1.5-meter long runs inside the core boxes. Each core box had 5 runs. Due to core losses a core box may indicate it held more than 7.5m of core length. However, the actual physical core in the box would only be 7.5m.

The core boxes were labelled with the borehole number and the meters found therein e.g. MO382 from 0.0m to 8.0m. The core was transported by Toyota Land cruiser in a closed core box to the core yard where core logging and sampling took place. All core boxes had covers. Before the core box may be stored permanently each box was stencilled with the borehole number and the length of core kept in the box.

**Keeping of Core:** The core boxes were stacked one on top of another and according to the core box number within the batch of one borehole. CLM currently has two large warehouses for core storage, and both historical and recent drill cores are stored there.

**Marking of Core Boxes:** In the field where drilling took place, the core boxes were marked by a gem marker. After logging, the core boxes were stencilled with red gloss paint on a white background. The stencilled labels indicated the borehole number and the core length kept with the core box.

**Core Logging:** The cores were logged by geologists at the core shed using a standard drill-hole log sheet. The rock unit was described in terms of color, texture, fabric, grain size, structure, state of weathering, mineralization, competence of rock, etc.

SRK recommends that CLM check and re-log relevant historical cores, as some of the markers in core boxes are lost or unreadable.

**Core Losses:** Any core losses were marked by measuring what was marked between drill runs such as the 3.0m per drill run. If the core per drill run fell short of the stated length the missing core was the loss and the remaining core was expressed as a core recovery in percent of the drill run. For the in-fill drilling campaign of Muliashi North the core recovery was in excess of 90%.

**Core Cutting:** The core was cut in half along its length using a diamond core cutter. Half of the core was sampled and bagged while the other half remained in the box for the record. The core was split using a chisel leading to uneven sides being split.

**Core Sampling:** A sample interval of 0.5m was maintained throughout the sampled zones except where there was a lithological (geological) contact. Sample lengths of 1m or higher were also used in some places where the rock unit and the mineralization was homogeneous. Sampling across the contacts was avoided whenever possible. Core losses for each sample interval was determined and compared with that measured during logging and that recorded during the drilling. This information was recorded in the sample book together with a simple core description.

#### *Procedure on Mineral Standards*

African Mineral Standards, a company based in South Africa, provided the mineral standards for assaying. The company specializes in making reference material for African ores. The mineral standards that African Mineral Standards provides have a Certificate of Analysis and each packet is labelled with the value of the reference material. Inside this there is an unlabelled manila (khaki) envelope which contained the mineral standard of known value. The unlabelled manila envelope was put into an empty sample bag with a numbered sample ticket. The purpose of the reference material was to monitor the accuracy of a single analysis.

**Blank Samples:** Pure sand from Muva Hill, a quartzite hill near Baluba Mine, was used as sample blanks. The sand was put into a sample bag with ticket number of the same series. The stub of the ticket was indicated “blank”. The purpose of using pure sand as a blank sample (i.e. sample without copper) was to check sample contamination arising from the pulp preparation of the previous sample.

**Duplicate Samples:** The remainder of the pulp after removing material for assaying was kept in marked manila envelopes. At random a pulp from a previously analyzed batch of samples was selected. This pulp, a duplicate sample of a known value, was put into an unmarked envelope and sent to the laboratory with other samples in batch. In the stub of the sample ticket book the original sample number was recorded for future reference. The purpose of the duplicate sample was to check the reproducibility of the assay value of the copper in the laboratory analysis.

**Bagging of samples:** A sample ticket was put into every sample bag immediately after placing the core sample. A record of the drilled length, core loss and the visual estimates of the copper mineralization were recorded on the remaining stub in the sample ticket book. This helps to check against the assayer's copper metal determination. The sample interval and the distance of the sample from borehole collar were also recorded on the stub of the sample ticket. This information was used to reconstruct the interval where the sample was taken when compiling the drill-hole data. In this way the sample interval will be correctly positioned in the correct dimensional space.

**Transportation of Samples:** Immediately after the bagging of the entire core of a borehole that was chosen to be sampled was completed, the samples were transported to the assay lab. They were transported as one batch so that when the sample analyses were completed the assay results were also dispatched to the Company geology staff as one batch.

**Transmission of Assays from the Laboratory:** The laboratory sent the assay results to the relevant geology department as e-mail attachments. A hard copy was later sent as confirmation of the dispatched assays.

**Procedure of Using Electronic Assays:** The assays were transferred to assay sheet on the drill-hole log by the cut and paste method. In this way it was possible to avoid typographical errors which may introduce random errors.

#### *Sample Preparation*

In May 2011, SRK visited the laboratory and a procedure of sample preparation adopted by CLM Laboratory is shown in Figure 6-35. It is SRK's opinion that the sample preparation is performed in line with the standard defined by CLM Laboratory.

#### **Assaying**

The CLM Laboratory routinely assays all the samples from prospecting, mining and from the concentrator. The laboratory is not accredited to any ISO standards or other international agency. All the procedures at the laboratory have been internally standardized and are described in a manual called “Analytical Methods of Analyses” compiled by the Analytical Services Department of the mine.

The sample preparation at the mine follows the steps shown in Figure 6-35. The pulverized -150 micron sample retained at the end of the sample preparation is further split and coned. A portion of 1g is then analyzed for CuO, one portion of 0.25g is analyzed for TCu and one portion of 0.25g for Co.

The analyses are done using Atomic Absorption Spectrophotometric methods in one of the two Atomic Absorption Spectrometers in use at the laboratory. The lab has standardized a series of internal checks which are done on every sample submitted for analysis.

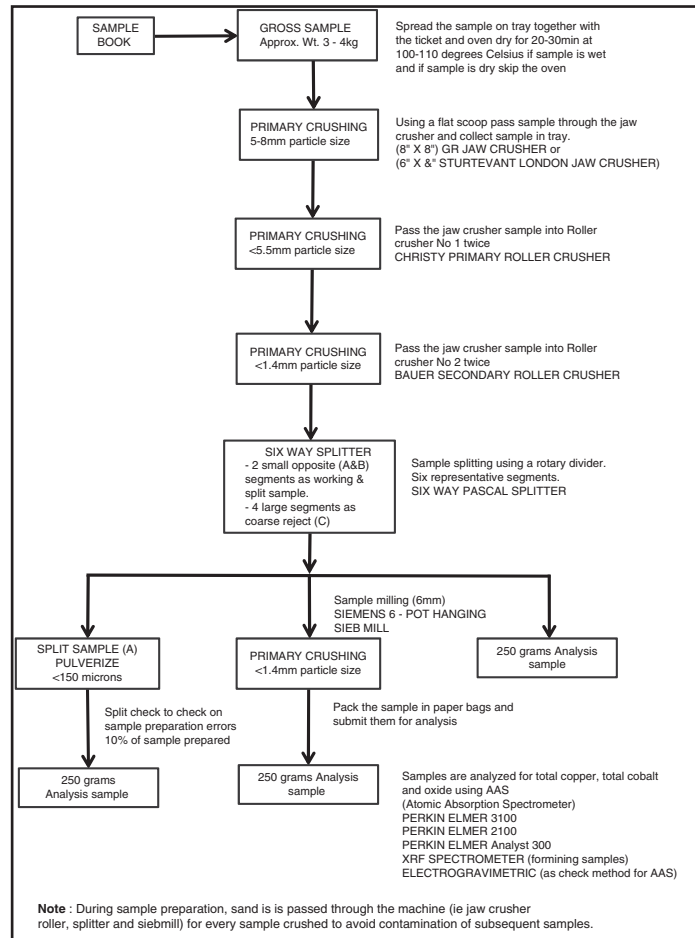


Figure 6-35: Sample Preparation Procedure — CLM Laboratory

*QA/QC Procedures for Geological Samples*

The placement of mineral standards, blanks and duplicate samples is predetermined statistically as 1:20. Each borehole intersection will have between 1 and 5 mineral standards, blanks and duplicates with the former figure being most frequent. Mineral standards, blanks and duplicates are placed in samples for the following reasons:

- Accuracy, using standards or certified reference material to assess accuracy and analytical bias.
- Contamination, using blanks to assess contamination in sample preparations.
- Precision, using duplicate data to assess bias, precision and extent of random errors in the system.

During QA/QC analysis the assay values of standard materials are compared and statistically analyzed. If the variance of standards falls within two standard deviations then the assay values are considered as accurate.

Pure sand was used as blank sample (i.e. sample without copper) to check sample contamination arising from the pulp preparation of the previous sample. Graphical methods are used to analyze the assays of blanks during QA/QC analysis. If the assay value detected in the blank is below the threshold of 0.3% total copper then no contamination is considered to have taken place.

The duplicate assays are compared with the original assays during QA/QC. If the relative percentage between the two assays of the same sample are below 10% then the assay are considered accurately reproduced.

SRK has randomly checked some original assay sheets during the visit to the laboratory and has found that the laboratory complied with the protocols discussed above.

#### *Conclusions and Recommendations*

Overall, the exploration, sampling and assaying were performed in compliance with the JORC Code and/or SAMREC Code. As a large and well-know mining zone in the Copperbelt with almost a 100-year history, during which the deposits were continually explored and developed, it is difficult and unlikely to verify all the work at various stage of historical drilling programs. With the assistance of CLM personnel, SRK was able to read the available documents for historical exploration and mining, review the present exploration data of Baluba Center, Baluba East and Muliashi North Project, visit the mining sites and CLM Laboratory, and check the drill core remaining. Results of the reviews and inspections partly reflected that the drilling and sampling was performed following a reasonable procedure.

Although the CLM Laboratory has no accreditation to any international agency or standard, it has successfully inherited and formed a standard procedure and discipline to perform the sample preparation and assaying. The QA/QC protocols used in CLM Laboratory apply to the general procedures of the same level of accuracy as any other respected laboratory in Zambia.

It is recommended that future exploration will be strictly managed with standard procedures in compliance with the JORC Code and all data should be securely stored for further check and review.

#### **6.4.8 History and Background**

##### *Luanshya and Baluba Mines*

The Roan Antelope orebody at Luanshya was first discovered in 1902. In 1927, Roan Antelope Copper Mines Limited was incorporated by Rhodesian Selection Trust Group to develop an underground mine complete with concentrator and smelter. The first ore was hoisted four years later, commencing copper production that continued until 2000. By 1943, annual copper output had reached 44,000t and increased to an average of 95,000t during the 1950s. In 1960 it peaked at 105,000t. During those times the mine provided about 15% of Zambia's total copper production. The relatively cobalt-rich Baluba orebody, 14.5 km west of Luanshya, was discovered in 1928 but was developed only in the late 1960s and came into full production in 1973.

The Zambian copper mining industry was nationalized in 1970. In 1982, ZCCM was formed to manage the operations. In 1987-88 a major restructuring began, and a renewed efficiency drive projected increased national production to reach 600,000t/a by 2000. However, copper production declined to 285,000t/a by 1998 due to inefficiencies and declining reserves. In 1997, the Government

began its privatization program. In September 1997, a consortium comprising the Binani Group, the Dallah Albaraka Group and Allenby Finance Limited bought 85% of Luanshya and Baluba to operate it as Roan Antelope Mining Corporation of Zambia Plc (“Ramcoz”). ZCCM Investments Holdings Plc held the balance.

The smelter shut down and re-opened several times during the 1990s and was finally closed in February 1999. This required toll-treatment arrangements with the Nkana and Mufulira smelters. In November 2000, Ramcoz was placed in receivership due to its failure to meet production targets. The failure was brought about by insufficient funding, which led to failing maintenance of infrastructure and decreasing availability of equipment.

In February 2001, abnormally high rainfall and inadequate pumping facilities resulted in the overtopping of the Luanshya Dam and flooding of the adjoining caved area. Three shafts (Storke or No 14, Irwin or No 18 and Maclaren or No 28) were flooded, resulting in the suspension of production. Dewatering was successfully undertaken by the receiver.

In January 2004, a Swiss registered company, J&W Investments, acquired the property. Baluba Mine was their real interest. After their assessment of Luanshya Mine, they decided to close it down permanently and were issued with a certificate of closure by the Government.

At the time of the purchase, the Baluba Mine was not operational. By June 2004, production was restored and the mine has since operated continuously. The Luanshya projects experienced a short-time pause in production in early 2009 due to the impact of world economic crisis. After CNMC took over LCM from ENYA in 2009, the Baluba Mine resumed operations.

#### *Muliashi Area*

The Muliashi North deposit has been known since the mid 1900s. The first borehole was drilled in 1963 and since then more drilling was done. Unfortunately the deposit contained mainly oxide ore and the technology to process oxide ore did not exist then. As a result the deposit was virtually ignored by ZCCM.

In October 1997, the Luanshya Division of ZCCM was acquired by Ramcoz. By January 1998 the new company had commissioned Kilborn SNC Lavalin Europe, UK (“KSLE”) to carry out a feasibility study to determine the mining method, the metallurgical process, the capital cost and the profitability of mining the then-little Muliashi North deposit. Due to poor copper prices and financial problems, Ramcoz started experiencing serious operational challenges. To save the Muliashi North project the mining license area was demarcated into two, one for underground operations and the other for surface ores.

Finally in November 2000 a receiver was appointment for Ramcoz and following the rainy season (February 2001) Luanshya Mine was flooded. The water was pumped out of the Luanshya shaft system (three shafts connected underground) by December 2001. Three years later LCM took over the mine, but in January 2004 decided to flood the mine indefinitely. In January 2007, LCM commissioned Snowden Mining Industry Consultants Pty Ltd to undertake a feasibility study on Muliashi North.



## 7 MINING ASSESSMENT

### 7.1 Introduction

CNMC obtained 85% controlling stake of Chambishi Cu Mine through competitive bidding in 1996. In July 2009, CNMC acquired 80% controlling stake of Luanshya Cu Mine. NFCA was founded on September 28, 1998 by CNMC taking over Chambishi Cu Mine, which was divided into three areas for independent mining, including the main deposit, west deposit and southeast deposit.

The main deposit reconstruction for Chambishi Cu Mine commenced on July 28, 2000 and was commissioned on July 28, 2003. The designed mining production rate was 6,500tpd (2.145Mtpa). However, the actual maximum mined tonnes were only 4,500tpd, which dropped to around 3,000tpd in steady operation. In 2011, the mined tonnes of the main deposit were 1.03Mt. The infrastructure construction for the western deposit was initiated from June 2007 and commissioned in July 2010. The designed mining production size for western deposit was 3,000tpd (0.99Mtpa). The mined tonnes in 2011 were 487,123t. The deposit exploration and mine construction for the southeast deposit started in December 2010 and are expected to be accomplished by December 2016, with designed mining production rate of 10,000tpd (3.30Mtpa)

In July 2009, CNMC obtained the controlling stake of Luanshya Cu Mine through acquisition and founded CLM to take over the mine construction and operation.

The Luanshya Cu Mine owned by CLM comprises 7 ore zones, of which two zones were in operation in 2011, i.e. Baluba Center and Muliashi North. The underground production in Baluba Center was resumed at the end of 2009, and the designed mining and processing capacity was 4,545tpd (1.5Mtpa). The mined tonnes in 2011 were 1.2Mt, and forecast at 1.4Mtpa in 2012 prior to the full production of 1.5Mtpa in 2013.

The Muliashi North Mine completed the infrastructure construction and overburden stripping in 2011. The designed mining production rate is 13,636tpd (4.5Mtpa) which divide into soft ore for 900ktpa and hard ore for 3,600ktpa. Mining commenced in December 2011 and the planned mining capacity is 3,480,000t in 2012. The basic design for Baluba East's south part has been finished and the upper oxidized ore is designed to be mined with mining production rate of 0.9Mtpa. As the status of the deep mined-out zone in Baluba East north part is not defined yet, this area is not incorporated into the current mine plan.

#### *Chambishi Main, West and Southeast Mines*

Chambishi Cu Mine owned by NFCA is located in Kalulushi City and the Cu mineral resources are distributed mainly in three deposit zones, i.e., the main, west and southeast zones. Underground mining is used for all deposits.

After obtaining the controlling stake of Chambishi Cu Mine, NFCA commissioned Sinomine to conduct supplemental exploration in the project area. Since 2000, NFCA successively commissioned Beijing Central Engineering Institute for Non-ferrous Metallurgical Industries ("ENFI") and Shenyang Design and Research Institute of Nonferrous Metallurgy to complete a feasibility study and basic design for the main deposit, west deposit and southeast deposit. Based on the requirement of NFCA, Chambishi Cu Mine has been designed to be divided into three sections consisting of independent development and production systems, i.e., the main, west and southeast zones.

The production rate designed for the main deposit is 6,500tpd (2.145Mtpa), and the main mining operations take place between the 500 and 900m level. Main shaft development combined with decline access is used, and cut-and-fill and local sublevel open-stoping and sublevel caving mining methods are used. The ore is dumped into internal orepass by LHD prior to being loaded into ore cars driven by electric locomotive and then hoisted to surface by skip through the main shaft.

The west deposit is about 300m from the main deposit, with basically the same mineralization. The designed production rate is 3,000tpd (0.99Mtpa). The mine construction commenced in 2007 and the mine was commissioned in 2010. Main shaft development combined with decline access is employed, and cut-and-fill mining method is used. After being dumped by LHD, the ore is hauled by self-dumping underground cars before being hoisted to surface through the main shaft.

The southeast deposit is about 7km from the main deposit, with basically the same mineralization. The designed production size is 10,000tpd (3.30Mtpa). Main shaft development in conjunction with decline access is used, and mining methods of cut-and-fill sublevel open-stoping and post-pillar cut-and-fill are used. Ore loading is undertaken by LHD, and the ore haulage is carried out by both track and trackless means prior to being hoisted to surface by skip through the main shaft.

Except for the main level, all the underground development and mining haulage in Chambishi Cu Mine is trackless. Hydro-electric jumbo and production drill, LHD and self-dumping underground cars are imported. The final product is Cu concentrate.

Following three years' reconstruction and improvement, the main deposit of Chambishi Cu Mine was commissioned in 2004. According to the production records, the mined ore in 2010 and 2011 amounted to 1.29Mt and 1.03Mt, respectively, giving an average ore loss of 38% and mining dilution of 30%. The planned mined ore in 2012 is 1.00Mt.

The development for the west deposit was completed in 2010, followed by the trial production. The mined tonnes in 2010 and 2011 reached 50,000t and 487,123t respectively, and the planned tonnes are 860,000t in 2012.

The exploration and construction for the southeast deposit commenced at the end of 2010. As of SRK's site visit, geotechnical drilling for the south ventilation shaft and the main shaft had been accomplished. The mine development is expected to be finished by the end of 2016 prior to the underground commissioning.

Through reviewing the design documents, communication with mine management and engineers, and the site visit, SRK opines that although the mineral resources in Chambishi Cu Mine are significant, the mine production is still obstructed by many issues, and the resource utilization is restricted to some extent, leading to high operating cost. The future of the mine might be significantly influenced by the fluctuation of commodity prices and other external factors.

#### *Luanshya Baluba Center and East and Muliashi Mines*

The Luanshya Cu Mine is located 12km west of Luanshya city. The Luanshya Cu Mine was owned by ZCCM before 1997 and then in 2004 acquired by ENYA, which founded LCM. In June 2009, CNMC took over LCM with an investment of US\$50 million and renamed the company as CLM, of which 80% equity shares were owned by CNMC and the rest by ZCCM.

The whole project area of Luanshya Cu Mine comprises 7 mineral zones, i.e. Baluba Center, Baluba East (south part and north part), Muliashi North, Muliashi South, Roan Extension West, Roan Extension East and Roan Basin. Baluba East (south part) is not yet developed.

Underground mining is used at Baluba Center and production has resumed. By the end of 2009, the production rate for sulfide ore was 1,500tpd while the mined tonnes were 765,000t in 2010 and 1.22Mt in 2011. The mine is expected to achieve a steady production rate of 1.5Mt in 2013.

The lower sulfide ore at the northern part of Baluba East, Muliashi South and Roan Basin has been almost mined out except for the Roan Extension West and Roan Extension East, where there is still about 20Mt of sulfide ore. The sublevel caving mining method is expected to be employed in those areas resulting in large area of surface subsidence, and the upper oxidized ore has also been impacted. Therefore, there is a potential safety hazard for the mining production of the overlying oxidized ore as the mined-out zone status is not currently clear. Furthermore, the Muliashi South mine has been flooded and the production may not resume soon. CLM has suspended the mining plan in Baluba East, and the status of the mined-out zone in the deep area has yet to be identified.

Currently the oxidized ore of the CLM project is mainly from Muliashi North. Oxidized ore from other areas is planned to be used as a backup resource, which is expected to be developed only after the mined-out zone is identified.

After reviewing the design documents, communication with mine management and engineers and site visit, SRK opines that the measured sulfide mineral resources at the Luanshya project area are limited, and the mining conditions and issues are similar to those in Chambishi Cu Mine. Therefore, the potential of expansion is limited, and the mining operating cost is high. However, the upper oxidized mineral resources in the Luanshya project area is abundant with a shallow burial depth, which could be mined by open-pit with fairly low mining operating cost. The Muliashi North open-pit mine, in which the overburden stripping is underway, will be the dominant operational mine of CLM in the future. As for the zones where the mining of the deep sulfide ore has been completed, the upper oxidized resources are still considered and will undergo economic analysis. The current priority is to verify the mined-out zone and subsidence status and implement a feasible treatment plan to determine conditions for future open-pit mining.

## **7.2 Mining Technical Conditions**

### **7.2.1 Geotechnical Conditions**

#### *Chambishi Main, West and Southeast Mines*

The project area is located in a plateau region with simple terrain and topography. The semi-hard rock group is controlled by fold structures and gabbro intrusions, which have an extensive distribution and significant thickness. An aquifer is present in the weathering zone and is moderate water-bearing bed distributed in the structural fracture. The geotechnical conditions are extremely poor since the rock mass has transformed into the soft erosion layers. The country rock quality is moderate with good stability. Therefore the geotechnical conditions for the upper folded structure are complicated while those for the lower orebody and hanging wall and footwall rocks are simple.

Golder carried out some rock mechanics tests and a joints structure survey at 500m and 400m levels of the main deposit. In addition, rock quality assessments and geological records from the core samples from the orebody and rocks below 500m elevation were also conducted, with details as follows:

Ore and rock density varies from 2.59 to 2.71t/m<sup>3</sup> with an average density of 2.67t/m<sup>3</sup> at Chambishi Main and West Mine and 2.60t/m<sup>3</sup> at Chambishi Southeast deposit:

UCS: central area: 116MPa; west area: 168MPa.

Averaged RQD of orebody and hanging wall rock is 63 (below the 500m elevation, RQD is higher in the east and varies significantly in the central and west area).

Based on the ore and rock lithology, the averaged UCS for main rocks are as follows:

Ore and hanging wall rock: 80 to 100MPa; footwall quartzite: 100 to 120MPa; and granite: 140 to 160MPa.

In SRK's view, the quality of the geological survey is low, but the structure of the deposit is complex, resulting in restrictions on mine design and technical management. Therefore, a thorough and systematic geological survey is necessary to provide reliable parameters for mine development and operations.

#### *Luanshya Baluba Center and East and Muliashi Mines*

The strata in the Luanshya project area mainly comprise epimetamorphic rock, with complex fold structure overlying an ancient granite base bed.

The averaged density of ore and rock is 2.67t/m<sup>3</sup>. SRK was informed that generally the UCS of ore-bearing slate is over 100MPa. The ore-bearing schist of the lower orebody has poor stability and the UCS is around 500MPa whereas the UCS is around 75MPa for conglomerate, which is adjacent to the footwall rock.

The geological structure in the project area is characterized by bedding, joints, cleavage and some secondary fissures. The rock mass deformation is controlled by a crushed belt, which may easily result in collapse, landslide and transformation. In addition, the regional ground water is a significant factor affecting rock mass stability.

Based on the UCS, the ore and wall-rock of the Baluba deposit are classified as medium hard. The stopes are generally stable under the circumstance of the current mining depth without structural influence. Local collapse may result from rock stress.

Compared to Chambishi Cu Mine, the stability of the main deposit in the Baluba project area is poorer than that of the east area of the Chambishi main deposit and similar to that of the west area, giving an unstable nature.

The Muliashi North zone is located in the middle of Luanshya Cu project area, and the deposit is bounded in the basin that consists of a fold structure. The sulfide minerals mainly include chalcopyrite, bornite and pyrite.

The project area structure is dominated by fold without faults. The orebody and rock mass are characterized by sedimentary beddings and metamorphic and tectonic structure. The geotechnical conditions are significantly influenced by metamorphism where the bedding structure is developed.

According to the records, no geological survey has been conducted to date, and the status of the beddings, joints and cleavages is not identified. In addition, the major groups of joint and fissure planes are yet to be identified. Therefore, SRK opines that a supplementary geological investigation will provide additional data for the mine development and operations.

7.2.2 Hydrogeological Conditions

*Chambishi Main, West and Southeast Mines*

Chambishi Cu project is located in a plateau hilly area with ASL ranging from 1,250 to 1,325m. The topography is gentle with a gradient of between 2% and 4%. The rainy season is from November to next April, and the climate is warm and humid. The cool season is from May to July, with a dry and cool climate. The temperature is high in the dry season ranging from August to October. The annual average precipitation in project area is 1,341mm, and a maximum precipitation of 2,687mm has been recorded. The annual average evaporation is 2,072mm. The main water course near the mine is the Kafuai River which is about 10 km northeast of the project area. The supply of ground water is sufficient, with the ground water supply area estimated at 67km<sup>2</sup> to 83km<sup>2</sup>, and the precipitation permeability coefficient is between 0.1 and 0.15.

As the two main aquifers of the Chambishi deposit, the orebody is of medium porosity while the hanging wall dolomite is of rich porosity. The footwall granite or schist is impervious.

The ground water quantity is shown in Table 7-1.

**Table 7-1: Groundwater Quantity at Chambishi Project Area**

<u>Water Gushing Quantity</u>	<u>Unit</u>	<u>Main Deposit</u>	<u>West Deposit</u>	<u>Southeast Deposit</u>
Normal . . . . .	m <sup>3</sup> /d	28,000-30,000	15,000	18,000-24,000
Maximum . . . . .	m <sup>3</sup> /d	36,624	28,000	30,000-40,000

Ground water was a significant factor that influenced the mining production in the historical operations. The main water prevention and treatment work comprises water-detection and drainage during deposit development, followed by the completion of pre-drainage of the orebody and hanging wall dolomite aquifers by using drainage drifts and drill holes.

The development in the orebody and country rocks is difficult due to the large water flow and rock mass instability. As the caving mining method is used, mining is directly restricted by the high water flow in the hanging wall. The water in the orebody and dolomite aquifers is drained in advance. The water at the next level (100m interval) below is drained in advance, and the drainage method has been verified to be successful.

Water-prevention crown pillars are reserved in the west and south deposits below the bottom of the open-pit. The pillar top width is about 10m, and the top elevation is about 1,098m. During the ramping-down period of the open-pit operations or the maintenance period, the pit water is drained to the underground mine through pipelines. In the storm season, a floating pump is used to pump the water to the underground mine. Each year, hundreds of tonnes of sludge are cleaned from the pit bottom to control the water level and ensure normal operational conditions of the pump.

*Luanshya Baluba Center and East and Muliashi Mines*

The terrain in the Luanshya project area is gentle with an ASL of between 1,260 and 1,285m. The mine area has a subtropical climate, which is similar to the Chambishi project area.

As the main aquifer in the Baluba project area, the chert dolomite aquifer is located in the hanging wall of the orebody. Therefore, water drainage must be conducted before mining operations can commence. Currently, the ground water level in the main production area has dropped to around 600mL, which no longer constitutes any influence on mining production.

The ground water quantity is shown in Table 7-2.

**Table 7-2: Groundwater Quantity at Luanshya Project Area**

<u>Underground Gushing Water</u>	<u>Unit</u>	<u>Baluba Center</u>	<u>Muliashi North</u>	<u>Baluba East</u>
Normal .....	m <sup>3</sup> /d	14,000	11,386	9,221
Maximum .....	m <sup>3</sup> /d	18,000	46,430	52,020

SRK was informed that the hydro-geologic data for the Luanshya project is poor, and no more hydro-geologic exploration has been conducted since CLM took over the project. The design for water drainage and slope stability may be affected since the hydro-geologic data is limited. Therefore, SRK opines that supplementary hydro-geologic exploration should be carried out to obtain reliable data for mining of the upper oxidized deposit.

### **7.3 Deposit Development**

#### **7.3.1 Chambishi Main, West and Southeast Mines**

The Chambishi Cu project owned by NFCA comprises 3 deposits, i.e., the main, west and southeast deposits. Open-pit mining was initially adopted for the main deposit before 1978, followed by underground mining afterwards. The underground development for the western orebody was completed in July 2010 prior to the mining production commissioning. In addition, the feasibility study for the southeast deposit was also completed, and the geotechnical drilling for the south ventilation shaft and main shaft had been concluded as of SRK's site visit. The underground development started in 2011 and the mining production is projected to be started by the end of 2016.

##### *Chambishi Main Mine Development*

Underground mining of the main orebody at Chambishi has been conducted for many years, and a completed development system is in place. Based on ENFI's design, the original development system was planned to be reused, i.e., footwall shaft #3 combined with a 3.6m wide × 3.3m high decline development. The ore, workers, and materials are hoisted through shaft #3 (6.5m diameter), and adit #6 located at the pit bottom was used for the trackless equipment access. The mining operations are conducted in three areas, i.e., the eastern area above 500m, western area above 500m and central area between 500 and 900m. Through the internal orepasses, the ore from the eastern and western areas is loaded to mine cars with the haulage track at the 500m level and then dumped to the main orepass beside shaft #3. The ore below 500m level is drawn to the 700m main haulage level via internal orepasses and then is transferred by mine car on tracks to the ore dump station of shaft #3.

The 700m level is used as an initial truck haulage level, and a second main haulage level will be formed when production is commenced at the 900m level. The ore on the 900, 700 and 500m levels is transported to a centralized crushing station at 920m prior to hoisting to the surface.



The waste rock is trucked along the central ramp to the upper levels and then dumped to the mined-out zones. The development system longitudinal section for the Chambishi Main deposit is shown in Figure 7-1, and shaft #3 headframe is shown in Figure 7-2.

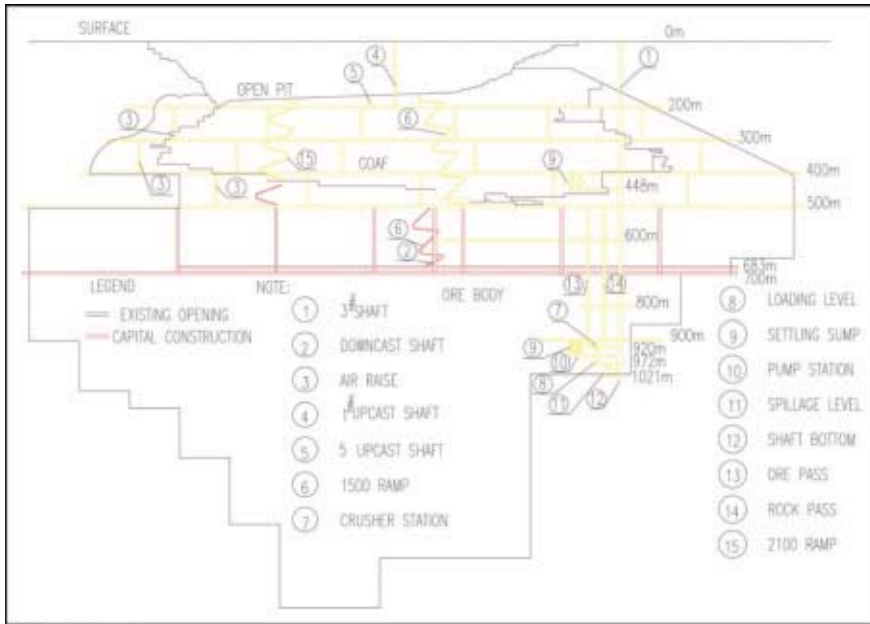


Figure 7-1: Development System at Chambishi Main Mine (Longitude-Section)

SRK noticed that the maintenance cost for mine development is relatively high. SRK also observed within ENFI's design that waste rock is not planned to be lifted to surface but used as underground back-fill instead. However about 2,000tpd of waste rock is required to be hoisted to surface during actual production, therefore a certain percentage of hoisting capacity of shaft 3# was occupied, which is one reason the project ore throughput did not achieve the designed capacity.



Figure 7-2: An Overview of Shaft 3# at Chambishi Main Mine



*Chambishi West Mine Development*

In the basic design for the western deposit completed by ENFI in 2007, a combined development of main ramp and central auxiliary shaft is used. The main ramp portal elevation is 174m and it was an exploration adit in the previous open-pit.

The main ramp is used as the access for ore haulage, workers and materials, as well as fresh air intake. The profile of the main ramp is 4.0m wide × 3.6m high, with a gradient of 12.5%, except for 5% at the curved portions, gentle areas and level access connections. The turning radius of the main ramp is 20m, and safety bays are set up along the main ramp.

The central auxiliary shaft is located in the footwall of the deposit, and has a depth of 545m and a net diameter of 5.0m. A 3,600mm×1,600mm cage with a counter-balance weight is used in the hoisting system. The auxiliary shaft is developed to 500m level for the hoisting of workers and materials and is used as a fresh air shaft as well. The water supply pipe, discharge pipe and cables are all set up in the shaft.

The western return air shaft is located at the footwall the orebody. The net diameter of shaft is 3.7m, and the depth is 221m. A ladder compartment is set up in the western return air shaft as a second egress.

The eastern return air shaft is located at the footwall the orebody. The net diameter of the shaft is 3.7m, and the depth is 207m. No ladder compartment is set up in the shaft.

There are three auxiliary sublevels, i.e., 100m, 164m, and 300m. The 100m sublevel is used as a return air access, and the 164m sublevel is used for fresh air access, ore loading and collecting drainage water of the stope backfilling. The 300m sublevel is used for exploration and water pre-drainage.

The portal of the main decline of the western orebody is shown in Figure 7-3, and the central auxiliary shaft is shown in Figure 7-4.



**Figure 7-3: Portals of Main Ramp of Chambishi West Mine**



**Figure 7-4: Headframe of Central Auxiliary Shaft at Chambishi West Mine**

SRK opines that trackless mining could be further technically argued based on the conditions which include the orebody occurrence, orebody and wall rock stability, and large water inflows. Mine development and maintenance and safety management should also be reconsidered.

#### *Chambishi Southeast Mine Development*

The exploration and development of the Chambishi Southeast deposit has not been fully completed yet. The Indicated and Inferred Resources were estimated based on the stage exploration results, and therefore the Indicated Resource was used as the basis for mine design. In 2010, NFCA commissioned Shenyang Design and Research Institute of Nonferrous Metallurgy to complete a feasibility study for exploration and construction. The southeast deposit is divided into north mineralized belt and south mineralized belt, which respectively comprise two orebodies. The north mineralized belt consists of the North orebody while the south mineralized belt is composed of the South orebody. Mining production is planned to be conducted in the North ore body based on the Probable Ore Reserves.

Both the main and the auxiliary shafts are circular in cross-section. The net diameter of the auxiliary shaft is 7.2m, and the shaft top elevation is 1,220m, with the depth of 1,120m. A single cage hoisting system is used with the cage specification of 3m × 5.18m.

The diameter of the main shaft is 6.5m, and a double skip hoisting system is used. The 740m, 940m and 1,020m levels are used as track haulage levels, through which ore is transferred to the main orepass. There is a primary crushing chamber about 53m below the 1,020m level. After crushing, the ore is drawn to the bottom ore loading pocket and then hoisted to the surface using skips.

A part of the waste rock is used for backfilling of mined-out zones, and the rest is hoisted to the surface after crushing.

The main shaft and auxiliary shaft are also used for air intake while the south and north ventilation shafts are used for air exhaust.

Chambishi Southeast orebody was undergoing infill drilling at the time of SRK's site visit, with supervision by SRK site geologist. SRK suggests that a mine design with higher confidence degree should be accomplished for Chambishi Southeast deposit after the infill exploration is completed and the resource/reserve model is upgraded.

### 7.3.2 Luanshya Baluba Center and East and Muliashi Mines

For the Luanshya project owned by CLM, only Baluba Center Mine was in operation at the time of SRK's site visit. Overburden stripping of Muliashi North Mine is underway, and mining production commenced in December 2011. Mining will be deferred for Baluba East Mine.

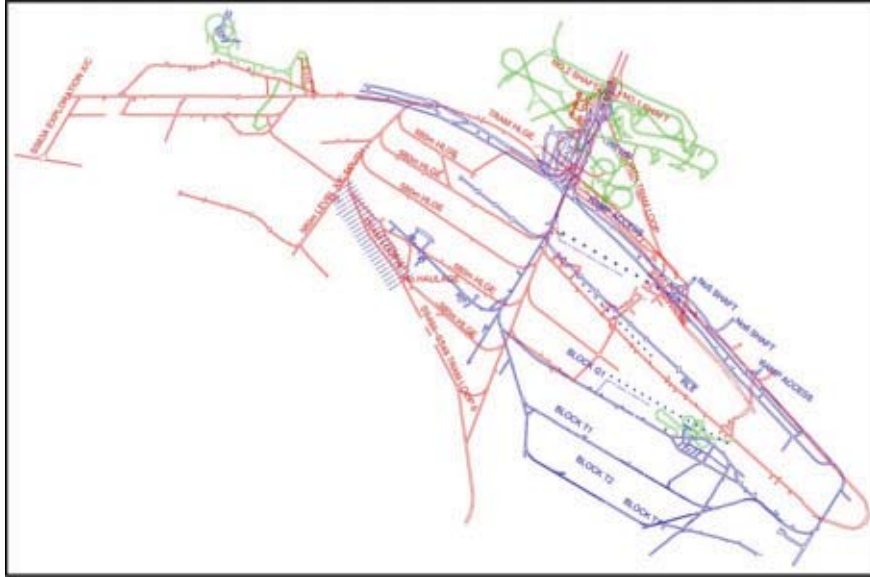
#### *Baluba Center Mine Development*

After CLM took over the Baluba Center Mine, the original development system was utilized. A central shaft combined with a decline in the foot wall is used for the development. B1 and B2 shafts are located along the strike of the deposit. B1 is used for ore and waste rock hoisting, and B2 is used for the hoisting of workers, materials and equipment. The central decline extends down to 580m level and is mainly used for the access of trackless equipment. The main haulage levels are 480m and 580m levels, with level interval of 100m. The ore and waste rock are dumped to the orepass and then loaded into mine cars at the main haulage levels and transferred to dumping stations near the B1 shaft prior to primary crushing and hoisting to the surface.

A two-wing centralized diagonal ventilation system is employed. The fresh air flows into the working face through B1 and B2 shafts and the central decline. B4 shaft is used for the return air of the western and central mining areas, and B5 shaft is used for the returned air of the eastern area. B1 and B2 shafts headframes are shown in Figure 7-5, and the plan of the development system of the Baluba Center Mine is shown in Figure 7-6.



**Figure 7-5: An Overview of B1 and B2 Shaft Headframes at Baluba Center Mine**



**Figure 7-6: Development System of Baluba Center Mine**

Since the facilities and equipment of original development system are in good condition, Shenyang Design and Research Institute of Nonferrous Metallurgy did not make amendment on the development system of Baluba Center Mine in the design completed in 2009. Except for local collapsed areas that have been restored, the original development system is planned to be used for mining production, and SRK is in agreement with this plan.

*Pit Optimization and Development Approach of Muliashi North Zone*

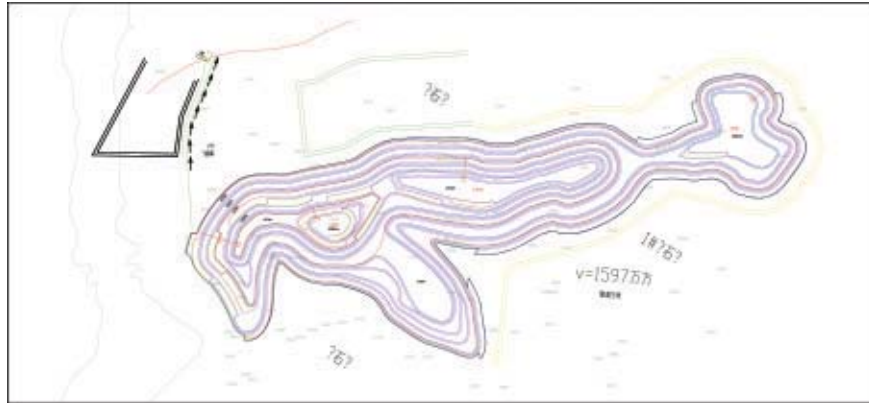
In January 2010, China NERIN Engineering Technical Co., Ltd. (“NERIN”) accomplished the “*Basic Design for Muliashi Project of CNMC Luanshya Copper Mines PLC*”, which optimized the ultimate pit of Muliashi North.

The geotechnical optimization parameters of the slope and road for the ultimate open-pit limit are listed in Table 7-3.

**Table 7-3: Geotechnical Optimization Parameters of Open-pit Limit at Muliashi North Zone**

<u>Item</u>	<u>Unit</u>	<u>Value</u>	<u>Notes</u>
Bench Height	m	15	30m (after bench merger)
Bench Face Angle	°	65	
Overall Interramp Slope Angle	°	38-42	
Berm Width	m	20	Safety Berm: 10m; Cleaning Berm: 15-20m
Road Width	m	20	Pit Bottom Single Lane: 12m
Road Maximum Gradient	%	8	
Road Minimum Turning Radius	m	25	
Transitional Length	m	60	
Top Bench Elevation	m	1,280	
Pit Bottom Elevation	m	1,085	
Pit Closing Elevation	m	1,250	
Pit Top Dimension	m	2,500×500	
Pit Bottom Dimension	m	120×100	
Waste Rock Quantity	1,000t	146,477.7	
Ore Quantity	1,000t	42,642.2	
Average Stripping Ratio	t/t	3.44	Oxidized Rate:60%

The overall pit is of irregular strip shape with an E-W strike. The No. 1, No. 2 and No. 3 pits are located from east to west, and the pit bottom elevations are 1,205m, 1,115m and 1,085m, respectively. The No.3 pit has the highest slope, which extends to 180m high while the slope in the east is lower with maximum height of 79m. The ultimate pit plan is shown in Figure 7-7.



**Figure 7-7: A Plan View of Open-pit Design at Muliashi North Zone**

The deposit development is to be carried out with road-truck transportation, which is a conventional development approach for open-pit mining.

SRK opines that the pit should be dynamically designed with consideration of the economic and technical optimization.

## **7.4 Mining Methods**

### **7.4.1 Chambishi Main Orebody**

In accordance with the orebody occurrence, thickness and ore and wall rock strength, ENFI proposed different mining methods to different areas in main orebody mine design, in which two portions including three mining areas are delineated for mining.

The first portion refers to the area above the 500m level, which is further divided into the west and east mining area. The west mining area is to be mined from top to bottom, while the east area is to be mined from the bottom to the top.

The second portion refers to the area from the 500m level to 900m level. Mining is firstly to be conducted to the 700m level by stoping upwards. In 4 to 5 years of full production, the 900m level development and associated haulage level should be commenced. By then the 900m level and the 700m level production will be carried out at the same time. The 900m level also uses bottom-up stoping strategy.

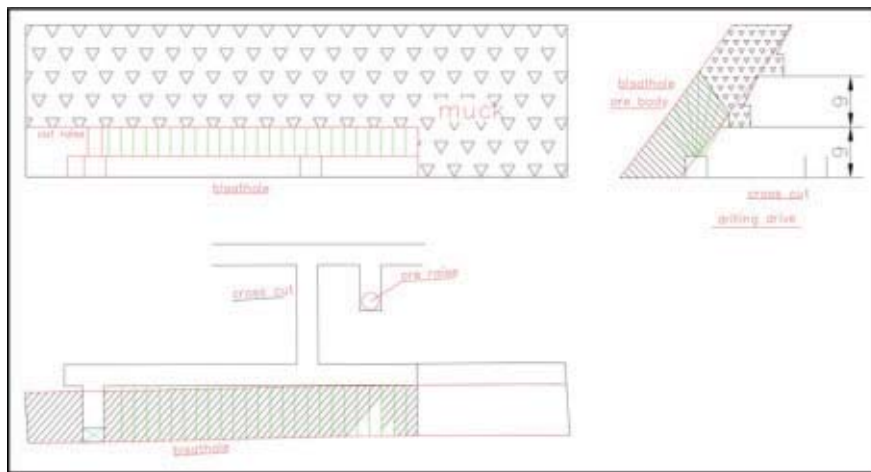
Mining methods applied include sublevel caving, sublevel open-stoping, cut and fill, and sublevel open-stoping with post backfill. These mining methods are separately adapted to:

- Sublevel caving: fold area in the west of the orebody above the 500m level;
- Sublevel open-stoping: non-fold area in the west of orebody from the 500m level to 700m level;
- Cut and fill: east area above the 500m level and part of orebody between the 500m level and 700m level in west of exploration line No. 1950; and
- Sublevel open-stoping with post backfill for the orebody between the 500m level and 900m level except for the part that is mined by cut and fill.



The average mining dilution is designed to be 25% and the average designed ore loss is 25%. In practice at the mine, all of the abovementioned mining methods have their shortcomings resulting in ore loss and mining dilution exceeding the upper-limits of the mining benchmark, and the mining production efficiency is affected as well. In 2010 and 2011, the actual ore loss and mining dilution of the mine were 38% and 30%. About 1.2881Mt of ore was mined in 2010 and 1.0283Mt of ore was mined in 2011, respectively.

As the development tunnels in ore are difficult to maintain, sublevel open-stopping has been rarely used. Cut and fill and sublevel open-stopping with post backfill had also been seldom applied due to their lower efficiency and higher cost. Presently, the most used mining method is sublevel caving which accounts for 77.56% of all mining methods. Based on the orebody dip angle, thickness, sublevel caving is further divided into low sublevel caving and high sublevel caving with sublevel height of 8 to 10m and 16 to 20m, respectively. Figure 7-8 shows a diagram of the low sublevel caving mining method.



**Figure 7-8: Scheme of Low Sublevel Caving Method for Chambishi Main Orebody**

The mining block is aligned transversely along the plunge of the orebody with a length of about 150m and sublevel height of 10m. The spacing between cross-cuts is 10m and they have a profile of 3.6m wide x 3.3m high.

The stope production drilling is undertaken by Simba H1354 drill while the drift drilling is undertaken by Boomer 281 single boom hydraulic jumbo.

ANFO is used for blasting, which is charged by explosive loading truck, and a non-electric blast is used.

Ore and waste rock are loaded and trammed by ST1000 LHD with bucket volume of 5.6m<sup>3</sup>.

Engineers of NFCA explained that although the stoping efficiency of the sublevel caving is higher than that of cut and fill, ore loss and mining dilution are also high due to the following:

- The footwall drilling draft is prone to rock burst; and
- Ore adjacent to the boundaries between the orebody and the hanging wall or footwall rock cannot be effectively recovered

SRK believes that the current mining plan has resulted in higher ore losses and mining dilution than would normally result from the mining methods. Because trackless mining is used, the drift profile is

required to be larger than 3.2m wide × 3.0m high which causes rock failures in the roof due to stress. SRK observes that in ENFI's design, waste rock is not planned to be lifted to the surface, but is to be used in underground back-filling. During actual production, about 2,000tpa of waste rock is required to be hoisted to the surface. Therefore, a certain percentage of hoisting capacity of Shaft 3# will be occupied for waste hoisting. In addition, if waste rocks are dumped to the orepass the dilution rate will increase.

To conclude, it is SRK's opinion that the current use of the sublevel caving method should be reconsidered, based on the technical argument regarding the mining dilution. Therefore, further studies of mining methods should be conducted in order to determine a more acceptable mining method. SRK recommends that both the underhand cut and fill (UCF) and the underhand drift and fill (UDF) should be considered in the potential mining methods study, as it is likely that after a comprehensive trade-off study, the UCF and UDF methods might produce positive results including efficiency and operating cost, ore loss, mining dilution and revenue.

#### **7.4.2 Chambishi West Orebody**

ENFI conducted a basic design of the west orebody in 2008 which considered the orebody, country rock and orebody strength and ground water as main factors influencing mining method selection. The study concluded that, in order to ensure mining operations, the aquifers in the orebody should be drained prior to mining.

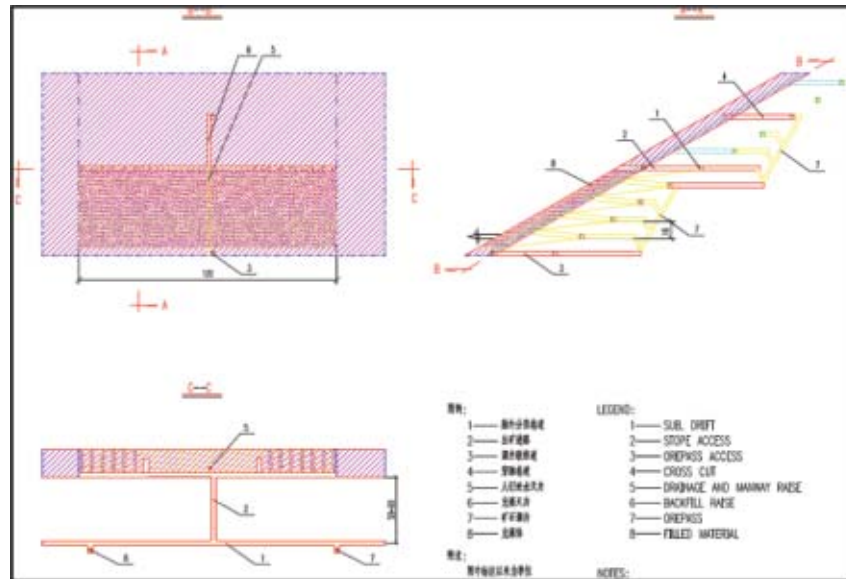
The west orebody is classified as dipping and moderately thick. The strength of the orebody is moderate while that of the hangingwall rock is weak. Therefore, cut and fill, post-pillar cut and fill and drift and fill mining methods were selected, with stope fill to be placed as hydraulic sandfill.

Following the commissioning of the west orebody in 2010, an industrial test on drift and fill mining method has been carried out in the stopes of #10, 11 and 12 at 150m level.

- Drift profile: 4m wide x 4m high;
- Slice height: 4m;
- Drill: Simba 281 jumbo;
- LHD: ST 1010



Figure 7-9 shows a scheme of the drift and fill mining method for the Chambishi West orebody.



**Figure 7-9: Drift and Fill Scheme for Chambishi West Orebody**

SRK observed during the site visit that the first 15 stopes are completed with trial exploitation but need to be back-filled in order to proceed with the following upward mining. However, a potential bottleneck for sustainable production is caused by the backfilling system including both the hydraulic sandfill and the waste rock fill. To achieve the designed production capacity, it is imperative for the mine to solve the problems resulting from the hydraulic sandfill slurry pump and to ensure the quality of the waste rock.

The designed mining loss and mining dilution are 25% utilizing the above mentioned method. Based on the actual mining records in 2010 and 2011, the mining loss and mining dilution were 38% and 30%. About 0.5Mt of ore was mined in 2010 and 487,123t of ore was mined in 2011.

### 7.4.3 Chambishi Southeast Orebody

Southeast orebody is divided into the South orebody and the North orebody by exploration line No. 0#. Both the North and South orebodies are delineated at a cut off grade of  $TCu \geq 0.8\%$ . In December 2010, Shenyang Design and Research Institute of Nonferrous Metallurgy carried out the “Chambishi Mine Southeast Orebody Feasibility Study” on the North orebody.

Based on the North orebody occurrence and technical conditions of mining, Shenyang Design and Research Institute of Nonferrous Metallurgy proposed four mining methods for orebody N1, including sublevel open-stopping with post-backfill, room and pillar with post-backfill, post pillar cut and fill, and overhand drift and fill. Applicable conditions for each mining method are detailed in Table 7-4.

The designed mining loss and mining dilution are 15.58% and 17.38%, respectively.

Table 7-4: Applicable Conditions for Each Mining Method at Chambishi Southeast Mine

Mining Method	Orebody Dip Angle	Stability		Thickness
		Orebody	Hangingwall Rock	
Sublevel open-stoping with post-backfill . . . . .	>15°	Stable	Stable	<10m
Post pillar cut and fill . . . . .	No limits	Stable	Unstable	>10m
Room and pillar mining with post-backfill . . . . .	<15°	Stable	Stable	<7m
Overhand drift and fill . . . . .	No limits	Stable	Unstable	>2m

SRK suggests more geological exploration should be conducted in the Southeast orebody in order to provide an improved resource base for future mine designs and planning and to minimize investment risks.

**7.4.4 Baluba Center Mine**

Quite a few mining methods have been used at Baluba Center since the underground commissioning in 1973. Methods included cut and fill, drift and fill, post pillar cut and fill, sublevel caving and sublevel open-stoping. The sublevel open-stoping was the main mining method of the Baluba Mine before 2006, but others became more popular with sublevel caving being predominant due to the deficiency of the backfill system during the later operational period of LCM.

The mine design at the time of reopening recommended sublevel open-stoping for thick orebodies with steep dip and sublevel caving for orebodies with moderate dip. These account for the majority of orebodies at Baluba.

The sublevel caving of the Baluba Center Mine is similar to that used in the Chambishi Main orebody except for the sublevel height of 10m. Figure 7-10 shows scheme of the sublevel caving without bottom sill pillar.

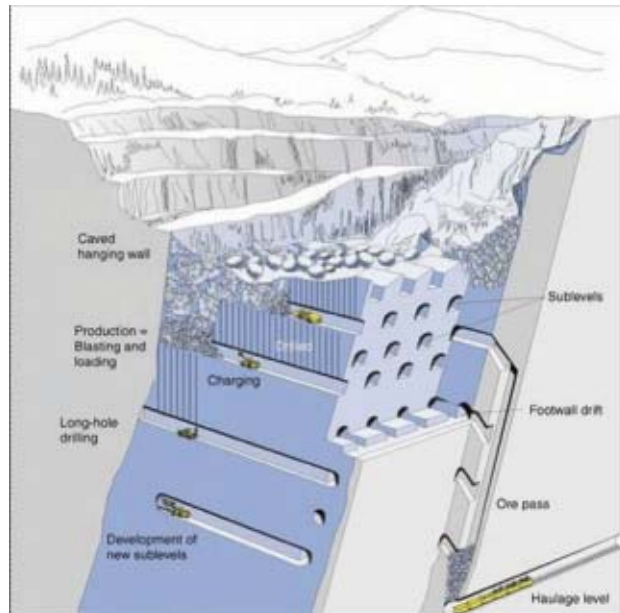


Figure 7-10: Scheme of Sublevel Caving without Bottom Sill Pillar at Baluba Center Mine

SRK noticed that fractures are well developed within the Baluba orebody, and the strength of the footwall rock is weak, resulting in higher ore loss and mining dilution than is usual for this method. In 2010 and 2011, the actual ore loss was 40%, and the mining dilution was 38%. It is SRK's opinion that sublevel caving is not technically capable of dealing with such a weak orebody and low footwall rock strengths. Therefore, selective mining techniques should be examined together with the potential for development to be designed in the hanging wall.

#### 7.4.5 Muliashi North and Baluba East Open-Pit Mines

In the basic design conducted by NERIN on the Muliashi North and Baluba East Mines, the open-pit mining method is employed with the following parameters.

- Drilling:  $\phi 250\text{mm}$  drill;
- Blasting: Emulsion and non-electric detonation;
- Loading:  $11\text{m}^3$  hydraulic excavator; and
- Hauling: 91t truck.

The mining recovery rate and mining dilution rate are designed to be 97% and 3% for the Muliashi North Mine and 95% and 5% for the Baluba East Mine. The designed stripping ratios are 3.44 at Muliashi North Mine and 4.04 at Baluba East Mine. Figure 7-11 shows a snapshot of waste being loaded at Muliashi northwest open-pit.



**Figure 7-11: An Overview of Waste Loading at Muliashi Northwest Open-pit**

The Muliashi North open-pit commenced mining in December 2011. SRK considers that the mine design by NERIN is feasible, but there is room to optimize the equipment size and fleet. In addition, selective mining should also be addressed in the basic design to facilitate the mine operations.

## 7.5 Mine Plan

### 7.5.1 Mine Work Schedule, Production Scale and Life of Mine (LoM)

The work schedule for the mines of both NFCA and CLM is 330 working days per year, three shifts per day, and eight hours per shift.

It is SRK's opinion that the mine plan is reasonable for the underground mine, but considering the rainy season from November to April it is difficult for the open-pit mine to achieve the targeted working days. Therefore, 300d/a is more reasonable.

The mined tonnes in 2011, production scale and LoM for the all mines of NFCA and CLM are listed in Table 7-5. The LoM (in years) is based on projects' mine designs, and the numbers reflect the designed total years of mine life.

**Table 7-5: Production Capacity and Service Life of Each Mine of NFCA and CLM**

Company	Mine	Designed Capacity (Mtpa)	2011 Production (Mt)	LoM (years)	Remark
NFCA	Chambishi Main . . . . .	2.145	1.028	13	Production re-commenced in 2003
	Chambishi West . . . . .	0.99	0.487	25	Production commenced in 2010
	Chambishi Southeast . . . . .	3.3		20	Production expected to commence in 2016
CLM	Baluba Center . . . . .	1.5	1.224	13	Production re-commenced in 2010
	Muliashi North . . . . .	4.5		12.5	Production commenced in December 2011
	Baluba East . . . . .	0.9		7	Production expected to commence in 2017

In terms of the mine design, SRK believes that the recommended mine production rate might drop after considering the orebody shape, occurrence and geotechnical and hydro-geological conditions. As a result, the LoM might expand.

SRK has been informed that the mining sequence of the Muliashi project is expected to be the Muliashi North in first six years followed by the Baluba East thereafter.

## 7.5.2 Mine Plan

Both NFCA and CLM have a five-year mining plan from 2012 to 2016 (see Chapter 11). Production from the southeast orebody is planned to commence after 2016. Production at Muliashi North commenced in December 2011 and production at Baluba East is expected to commence in 2017 (6 years after Muliashi North). In SRK's opinion, the production target projected by NFCA and CLM can be achieved if there are no serious disturbances or unexpected events.

## 8 ORE PROCESSING ASSESSMENT

### 8.1 NFCA-Chambishi Processing Plant

#### 8.1.1 Introduction

NFCA owns the Chambishi Main, West and Southeast Mines and one processing plant ("Chambishi Processing Plant") in the Copperbelt Province of Zambia. Currently, the Chambishi Main and West Mines are in operation and the Chambishi Southeast Mine is under construction and exploration.

The Chambishi Processing Plant has a designed capacity of 6,500tpd to treat the ore extracted from the Chambishi Main and West Mines. The plant processes the sulfide ore and/or the mixed sulfide and oxidized ore with oxidization rate less than 20%. The oxidized and blended ore with oxidation rate higher than 20% is transferred to SML for processing. The copper concentrate product is then sold to CCS.

Chambishi Copper Concentrator started operation in 1965. Trench leaching was initially adopted to process oxidized and blended ore from open pits and underground. From 1978, flotation was adopted to replace trench leaching to produce copper concentrates with ore processing capacity reaching 6,500tpd. In August 1987, the Chambishi Concentrator was shut down and production ceased. NFCA took over Chambishi Copper Mine in September 1998. In April 2000, ENFI completed the *Preliminary Construction Design Scheme of Chambishi Copper Mine's Restoration*, in which the large-scaled technical improvement and upgrading were conducted in relation to both mining and processing of the main orebody. The restoration construction of Chambishi Copper Mine commenced in July 2000, and it was finished and put into operation in July 2003. After the restoration, the processing capacity reached 6,500tpd (2,150,000tpa). SRK understands that the restoration of the Chambishi Concentrator was successful, and better mineral processing technical parameters were achieved with renewed equipment and an optimized process flowsheet.

In 2010, ENFI compiled *Feasibility Study Report on West Orebody of Chambishi Copper Mine*, in which the designed mining capacity is 3,000tpd (990,000tpa). As for the main orebody, the flotation method is also adopted to process sulfide ore and produce copper concentrates. Currently, ore from the west orebody is transferred to the Chambishi Concentrator for handling as well. Figure 8-1 is an overview of the Chambishi Concentrator (ore leaching heaps of SML are on the left side of the conveyor belt).

In 2010, Shenyang Design and Research Institute of Nonferrous Metallurgy compiled *Feasibility Study Report on Southeast Orebody's Exploration and Construction of Chambishi Copper Mine*, in which the designed mining capacity is 10,000tpd (3,300,000tpa). A new processing plant with 10,000tpd capacity is planned to be built and, similarly to the main and west orebody, the flotation method is expected to be adopted to process sulfide ore and produce copper concentrate. The Chambishi Southeast Processing Plant is expected to be put into service in 2016. The output of copper concentrate will be sold to CCS.



**Figure 8-1: An Overview of Chambishi Processing Plant**



### 8.1.2 Process Flow

Figure 8-2 shows the process flowsheet of the Chambishi Processing Plant. It can be divided into four steps including ore crushing, milling, flotation and dewatering. A brief description is set out below.

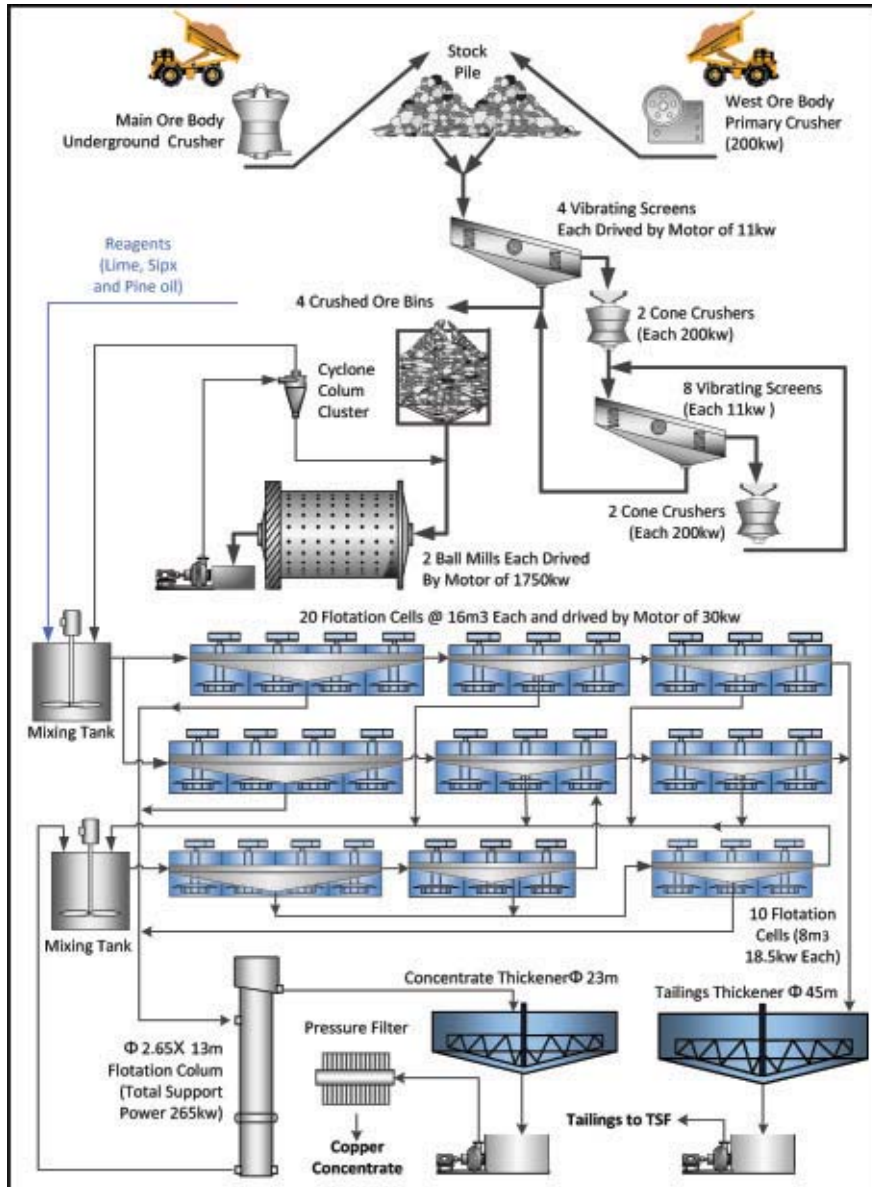


Figure 8-2: Copper Recovery Process Flow

#### Ore Preparation — Crushing

Pre-screening and three-stages of crushing within single closed circuit process are used to crush ore to a size smaller than 14mm. Currently the feed materials is mainly sulfide ore from the main and west orebodies. A rotary crusher installed underground in the main orebody crushes the ore to less than 220mm. The crushed ore will be hoisted to the surface and transferred by a 1.8m belt conveyor to the concentrator's raw ore stockpile. Ore from the west orebody is trucked to the crushing station in the concentrator for primary crushing, and then transported to the raw ore stockpile to a belt

conveyor and then transferred to four vibrating screens for pre-screening. Ore particles larger than 14mm are fed for cone crushing and then transferred to 8 vibrating screens for check screening. Ore particles larger than 14mm are fed for cone crushing for the third time. The crushed ore is returned to the vibrating screens for check screening again, forming a closed circuit to control the size to less than 14mm. Ore passing through the two sets of vibrating screens (smaller than 14mm) is transferred to four fine ore bins for stock piling.

### *Milling*

Single closed-circuit milling is used to mill the crushed ore to 80% passing 74 $\mu$ m (-200 mesh 80%) in preparation for flotation. Ore is fed evenly by vibrating feeder from the fine ore bins to the ball mills, and milled ore from the ball mill is pumped to a group of cyclones to be classified. Underflow recirculates for re-milling. The overflow proceeds for flotation. The milling-classification circuit has two mills in parallel where the diameter of each ball mill is 4.27m, and the length is 6.1m, which are powered by a 1750kw electric motor. The cyclone group is composed of six cyclones with a diameter of 500mm.

### *Flotation*

The flotation system consists of open circuits for roughing-scavenging combining centralized middling flotation. The overflow's concentration from the cyclones is 33% Cu, and 80% of the grain sizes are smaller than 74 $\mu$ m. Flotation reagents are blended into the mixing drum, and then a series of flotation cells separate copper minerals and gangue minerals, producing rough concentrates and tailings. The flotation system includes 1 unit of roughing and 2 units of scavenging. The middling central processing circuit includes 1 unit of roughing, 1 unit of scavenging and 1 unit of cleansing. The rough concentrates produced from roughing and centralized middling flotation are pumped to a flotation column (2.65m in diameter and 13m in height) for cleansing. Figure 8-3 is an overview of the flotation section at the Chambishi Processing Plant.



**Figure 8-3: Flotation Section of the Chambishi Concentrator**

### *Dewatering*

Copper concentrates are pumped to a 23m diameter thickener to be dewatered to 65-70% solids, which then are pumped to a frame filter press so the water content can be reduced to less than 10.5%, producing final copper concentrates which are sold to CCS. Tailings from flotation are pumped to a 48m diameter thickener to be dewatered to 45% solids which are then pumped to the



tailings storage facility (“TSF”), or pumped to the filling and mixing station where the coarse particles will be classified and used as filling materials for underground mining. The overflows from these two thickeners flow to a water tank (an unserviceable former thickener) with a diameter of 76m. The recycled water is pumped back to the concentrator and supplemented with fresh water.

### 8.1.3 Tailings Storage Facilities

The TSF for the Chambishi Processing Plant is located at the Musakashi river valley, 7km from the concentrator. The TSF was originally designed by WLP, a British company, in 1989 and was a rock filled seepage drainage dam made of red clay with 15m height, and storage capacity of 3.1 million m<sup>3</sup>. When NFCA took over, the storage was almost full. NFCA reconstructed the TSF by reinforcing and heightening the dam wall according to ENFI design, by which the storage capacity was expanded to 4.73 million m<sup>3</sup>. The life of the expanded TSF was filled by the end of 2010. In May 2010, NFCA again heightened and reinforced the tailings dam wall, expanding the storage capacity to 5.73 million m<sup>3</sup> which can serve for another 5 years at the current production rate. Considering some coarse tailings are used as underground filling material (where the estimated consumption will be 52% of total tailings), the service life of the TSF can be prolonged to 8.5 years. Figure 8-4 shows an overview of the Musakashi TSF which is in good condition and equipped with improved drainage and flood control systems.

In case of the TSF storage running out by 2018, new TSFs are planned to be built in April 2018 at a site downstream, 2km from the current TSF.



Figure 8-4: An Overview of the Chambishi TSF

### 8.1.4 Production Records and Technical Parameters

Table 8-1 lists the production record and technical parameters of NFCA's mineral processing from 2008 to 2011. The data indicates that NFCA has achieved a high level in relation to the grade of copper concentrate and the recovery of copper. The copper concentrate also contains gold and silver with grades of 2g/t and 80g/t, respectively, for which NFCA will be paid. The copper concentrate also contains 1,000g/t of bismuth which is treated as a price penalty. SRK has noticed that the quantity of ore processed is well below the designed production capacity of 2,150,000tpa. The high proportion of oxide ore and high clay content result in lower grade and lower recovery rate of copper. SRK believes that the proportion of oxide ore and clay content will decrease and the recovery rate of copper will increase along with the deepening exploitation of the west orebody. However, the Cu grade of copper concentrate will decrease along with more ore being exploited from both west orebody and southeast orebody, because chalcopyrite is the main copper mineral in the west orebody.

**Table 8-1: Product Technical Index of Chambishi Processing Plant, 2008 to 2011**

<u>Term</u>	<u>Unit</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Treated Ore .....	t	1,450,916	1,358,682	1,330,539	1,569,187
Ore Grade .....	Cu%	1.87	1.81	1.75	1.67
Concentrate .....	t	58,189	53,341	50,325	61,119
Treated Ore/Concentrate .....	t/t	24.93	25.47	26.44	25.67
Concentrate Grade .....	Cu%	44.68	44.06	43.78	38.03
Contained Cu Metal in Concentrate .....	t	26,001	23,502	22,030	23,247
Copper recovery rate .....	Cu%	95.83	95.57	94.61	88.69

### 8.1.5 Material Consumption and Production Costs

The system for reagent use in the NFCA Chambishi Concentrator is simple. To process one tonne of raw ore, the lime used as acid-base regulator is 229g, sodium iso-propyl (Sodium isopropyl xanthate, Sidx) used as collector is 14g, terpenic oil (2#) used as foaming agent is 18g, and steel ball consumption is 690g. The quantity of these reagents used is rather small so that production costs can remain on a relatively low level. The operating costs at the Chambishi Processing Plant in recent three years are discussed in Chapter 11.

### 8.1.6 Chambishi Southeast Processing Plant

The designed ore processing capacity is 10,000tpd (3,300,000tpa) by adoption of advanced semi-autogenous milling (SAG) process. The flotation method to process sulfide ore and produce copper concentrate is the same as at the Chambishi Processing Plant. The designed technical index of the Chambishi Southeast Processing Plant is listed in Table 8-2. According to the Company's plan, the plant will commence production in 2016, and the half-year production is anticipated to produce 29,500t copper in copper concentrate in 2016. The operating cost is expected as US\$56.31 per tonne of ore. SRK is the opinion that the designed recovery is acceptable, but the designed operating costs are relatively lower compared with the Chambishi Processing Plant even if the inflation is not considered.

**Table 8-2: Technical Index of Chambishi Southeast Processing Plant**

<u>Term</u>	<u>Unit</u>	<u>Capacity</u>
Ore processing capacity .....	Mtpa	3.3
Concentrate throughput .....	t	261,030
Treated Ore/Concentrate .....	t/t	12.64
Head grade .....	%Cu	2.02
	%Co	0.104
Concentrate grade .....	%Cu	24.00
	%Co	0.60
Recovery .....	%Cu	93.98
	%Co	45.63
Contained Cu .....	t	62,647
Contained Co .....	t	1,566

### 8.1.7 Conclusions and Recommendations

Copper minerals contained in the ore of the Chambishi Main orebody mainly include bornite ( $\text{Cu}_5\text{FeS}_4$ , Cu 63.44%), followed by chalcocite ( $\text{Cu}_2\text{S}$ , Cu 79.8%) and a small amount of chalcopyrite ( $\text{CuFeS}_2$ , Cu 34.6 %). For west orebody, chalcopyrite is the main content, followed by chalcocite and a small amount of bornite. Minerals of the southeast orebody are similar to those of the west orebody, with chalcopyrite being the main component. All these minerals have good floatability and the flotation recovery rate is relatively high. Due to different contents of Cu in

different minerals, the grades of copper concentrate from different orebodies are also different. The grade of copper concentrates from the main orebody is the highest.

The oxidization degree of ore from the west orebody is 10 to 15%, with a high content of clay minerals. As a result, copper concentrate grade and recovery rate have decreased, but the production records are generally satisfactory. SRK believes that the oxidization degree and clay content will decrease while the recovery rate of copper concentrates will increase with the deepening exploitation of west orebody.

The Chambishi Processing Plant was successfully built and transformed from an old concentrator. The equipment was upgraded and the process flowsheet has been optimized. Due to insufficient supply of feed ore, the actual processing capacity is still far from reaching the designed capacity which is 2,150,000tpa.

Access to the Chambishi Processing Plant is generally good and the water and power supplies are well equipped. Machinery maintenance and laboratory testing are also well performed. The plant can meet the requirements of processing sulfide ore from the three orebodies of NFCA.

## 8.2 SML — Chambishi Leach Plant

### 8.2.1 Introduction

The mineral resources for the SML Chambishi Leach Plant are sourced from the large amounts of stripped waste rocks from oxidized ore, tailings of heap leaching and flotation tailings from the Chambishi mine area.

In March 2004, a sulfuric acid leaching test was conducted. The results listed in Table 8-3 show that the combination of agitation leaching and heap leaching can be adopted to process copper-containing residues remaining at the Chambishi West Mine area.

**Table 8-3: Results of Leach Test**

<u>Type of resources</u>	<u>Leaching method</u>	<u>Conditions</u>	<u>Leaching rate</u>
Stripped waste rocks . . . . .	Column leaching	-25mm, 30days	65%
		-80mm, 30days	53%
Heap leaching tailings . . . . .	Column leaching	-25mm, 10days	90%
Flotation tailings . . . . .	Agitation leaching	2hr	75%

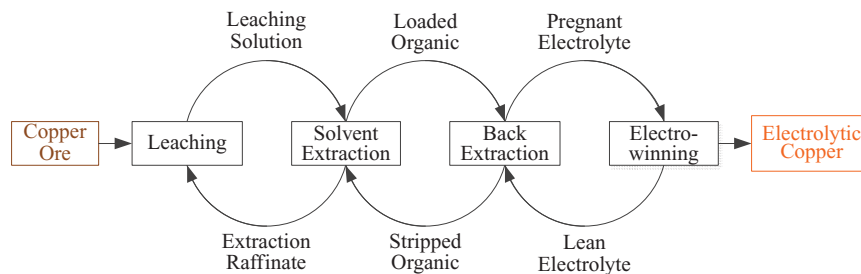
In order to make full use of the waste copper mineral resources left over, Shanxi Zhongtiaoshan Engineering Design and Research Institute Co. Ltd was entrusted to design the copper hydrometallurgy. The process of leaching (agitation leaching+heap leaching) — extraction — electro-winning is adopted to produce electrolytic copper. The designed annual production capacity of the project is 5,000 tonnes. This project was started in November 2004 and the actual production scale was expanded to 8,000tpa during the process of construction. Meanwhile, the Chambishi Sulfuric Acid Plant was also constructed to provide sulfuric acid, as the leaching reagent, for copper hydrometallurgy. It was finished and put into trial operation on June 30, 2006. On December 31, 2006, the trial production was completed and 1,503 tonnes of electrolytic copper was produced. The hydrometallurgy plant is still in normal operation, however the Chambishi Sulfuric Acid Plant has ceased production because CCS went into production (CCS owns a Sulfuric Acid Plant as well).

In Chambishi and its surrounding areas as well as within borders of the DRC, there are considerable amounts of low-grade copper containing tailings resources. SML has or is obtaining these resources

in a variety of ways. Chinese research institutes are also being entrusted to study the method of using these low-grade resources economically and rationally. Microbial oxidization leaching and other methods are included in the study. SML plans to achieve the following production targets step by step before 2015: the production of electrolytic copper to reach 30,000tpa, contained copper in concentrates to reach 2,000tpa and cobalt contained in cobalt salts to reach 2,000tpa, which is proposed to be achieved by the Chambishi Processing Plant with a daily processing capacity of 1,000 tonnes, 10,000 tonnes of copper per year of CNMC Huachin (Congo) Leach Plant in the D.R.C, Kakoso copper hydrometallurgy of 3,000tpa and other newly purchased mines and tailings utilizations in the D.R.C.

### 8.2.2 Hydrometallurgical Method

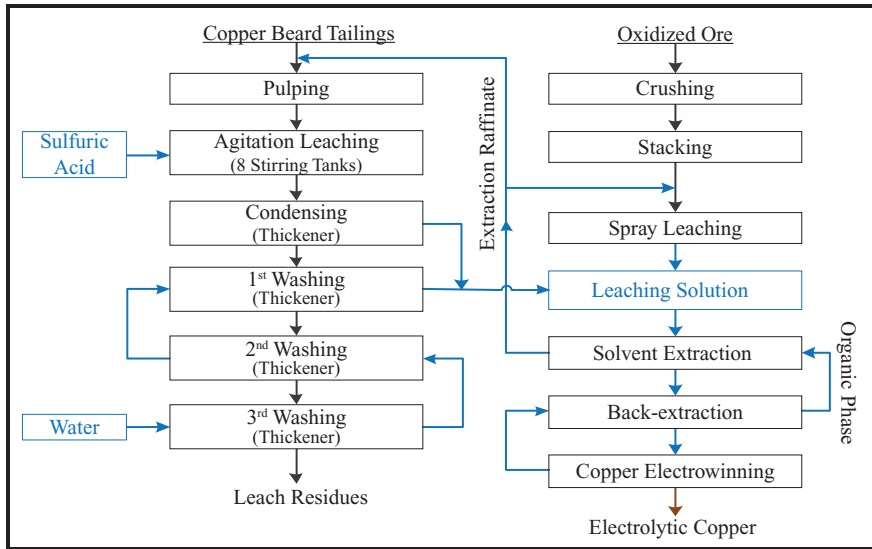
Figure 8-5 shows the operation principles of copper hydrometallurgy, including the circulation of leaching solution, organic phase for extraction and electrolytic solution. The processing method used for Chambishi copper hydrometallurgy is shown in Figure 8-6. It includes agitation leaching of tailings, heap leaching of oxidized ore, leaching solution and electrowinning. Electrolytic copper with a content of 99.95% Cu is forecast to be produced. A brief description is as follows.



**Figure 8-5: Operation Principle of Cu Hydrometallurgy**

#### *Agitation leaching of tailings*

Old tailings are transported by truck to a place near the agitation leaching plant. The raffinate solutions after copper extraction are sprayed on the tailings by high-pressure water guns and then conveyed to a slurry tank. The slurry concentration should be controlled at about 25% solids. Then it is pumped to an agitation leaching tank which is 6m in diameter and also 6m high where sulfuric acid is supplemented. Four tanks are linked together in a series and the total leaching process lasts 4 hours, solid copper minerals being turned to copper sulfate solution. After leaching, slurry is pumped to a thickener with a diameter of 20m where solid-liquid separation is carried out. The overflow is the solution containing copper which is transferred to sedimentation tank for further clarification and then pumped to the extraction plant. The underflow has a concentration of 60% solids. It continuously undergoes counter-current washing by three thickeners with a diameter of 20m washing out the copper-containing solution which are also put in the sedimentation tank for clarification and pumped to the extraction plant. The underflow from the third thickener is the leaching tailings which are pumped to the TSF for storage. Figure 8-7 is an overview of the agitation leaching plant.



**Figure 8-6: Hydrometallurgical Method Process for Cu Recovery**

The daily processing capacity of the leaching plant is 1,500t of ore. In order to increase copper output, SML has externally purchased part of the basic copper carbonate and high-grade oxidized ore. The high-grade oxidized ore contains some copper sulfide which is hard to leach. The suggestions for small concentrators with a daily processing capacity of 100t should be to recycle this type of copper sulfide by process of crushing-milling-flotation. Thus a small amount of concentrates can be produced and sold to CCS. The tailings will be pumped to the agitation leaching circuit.



**Figure 8-7: An Overview of Agitation Leach Plant**

#### *Heap leaching of oxidized ore*

The heap leaching site is very close to the Chambishi Processing Plant. There is a slope (3 to 5%) inclining to one side. After it is leveled and compacted, a layer of high density polyethylene (HDPE) membrane with a thickness of 1.5mm is used to prevent the seepage of leaching solution. A jaw crusher is used to crush the oxidized ore to a size smaller than 50mm which is then transported to the heap leaching site for stacking. After the heap is built, a pipeline network for pumping liquid and distribution nozzles are installed on top of the heap to spray the extraction raffinate from the extraction plant. When the solution flows from top to the bottom of the heap, sulfuric acid in the raffinate will react with copper minerals, generating dissoluble copper sulfate which seeps away from the heap in the form of a solution. On the lower side of the heap, there is a liquid storage

container and flood control pool formed by a layer of HDPE membrane with a thickness of 1.5mm to prevent the seepage. The liquid storage container collects and store copper-containing solution which, after sedimentation and clarification, is transferred to the extraction plant.

Heaps are built layer by layer or one by one in series. The leaching cycle for a single heap with one layer lasts 90 days. After that is completed, another layer is laid on top of it, with a height of 2 to 3m. Leaching solution containing sulfuric acid is also sprayed. The total leaching time may last a few years. However, in the later stage, the copper content in the leaching solution cannot meet the requirements of extraction. Thus sulfuric acid is supplemented to this kind of leaching solution, which is then used for new heap leaching irrigation. When leaching is finished, tailings can be stockpiled right on the site. In Figure 8-7, the left side of the photo, which is enclosed by the belt conveyer corridor, is the ore heap for leaching.

#### *Copper extraction*

Four to six grams of copper are contained in one liter of leached solution from agitation leaching and heap leaching. The pH value of the leach solution is 1.8 to 2. The process adopted in the extraction plant is two-stage for extraction and one-stage back extraction/recycling process to increase the content of copper to 40 to 50g per liter (“g/L”) and leaving many impurities in the solution.

The copper containing solution is then pumped to the electrolysis plant, to produce pure Cu metal. The extraction agent used is Lix984 and kerosene 260# is used as the diluent. The concentration of the organic phase is controlled at 15 to 17%. The reagents are mixed with leaching solution so that copper ions in the leaching solution (aqueous phase) can go to the organic phase. Then aqueous phase separates from the loaded organic phase in the clarification tank. The copper content in the aqueous phase is less than 0.1g/L and the pH value is 0.8 to 1.5 after one stage recycling. The extraction raffinate is returned to the leaching operation after the residual organic matter has been removed (using oil). The copper content in the loaded organic phase is 8g/L. The loaded organic phase will contact with a lean electrolytic solution consisting of: Cu 30 to 35g/L, H<sub>2</sub>SO<sub>4</sub> 170 to 180g/L. After recycling, the contents of Cu and H<sub>2</sub>SO<sub>4</sub> in the copper-rich solution are respectively 40 to 45g/L and 150 to 160g/L. After oil is removed, the solution is transferred to the electrolysis plant to produce electrolytic copper. After extraction, the organic phase is recycled for use in the extraction operation.

#### *Copper electrolysis (Copper electrowinning)*

The copper-rich solution is evenly pumped, by measuring with a metering pump, to 54 parallel electrolytic cells where copper ions obtain electrons and become metallic copper through reduction on the negative plate when direct current is supplied. The anode used is a Pb-Ag-Ca-Sr quaternary alloy. In order to prevent corrosion and improve current efficiency, traces of cobalt sulfate are added to the alloy. 1000×900mm stainless steel plate is used as the material of some cathodes and it is hoisted out every 24 hours to separate out copper cathode. It is then used as starting sheets for other cathodes and is taken out from the electrolytic cells after 7 days' electrolysis. After that, it is soaked in hot water with a temperature of 80°C for washing. The commodity-copper cathode is produced after drying, and the content of copper can be controlled above 99.95%. The electrical current density used is 200-220A/m<sup>2</sup> and the electrolytic cell voltage is 1.8 to 2.4V. In order to maintain the content of ferric ions in the electrolytic solution under 3g/L and ensure the quality of cathode copper, part of the lean electrolytic solution is returned for extraction operation in open circuit. Figure 8-8 is a photo of the electrolysis plant and a cathode starting sheet is in the lower right corner.





**Figure 8-8: Copper Electrolysis Plant**

### 8.2.3 Tailings Storage Facilities

The TSF of SML is close to the agitation leaching plant and cell leaching tailings pile. It is a ground-based tailings pond with its surrounding dams being built by old tailings and waste rocks. On the ground, a layer of HDPE membrane, which is 1.5mm thick, is used to prevent seepage. The tailings pond has been in service for five years and has expanded gradually to an area of 450,000m<sup>2</sup>. On one side of the TSF, the old tailings have been used so that a water reservoir with a capacity of 40,000m<sup>3</sup> is formed and used as a flood control pool for excessive water storage during the rainy season. It is planned that the dam body should be heightened every year to enlarge capacity and store newly generated tailings. Meanwhile, the exhausted areas of both the old and new TSF will be covered to reduce or prevent seepage. In normal production, the clarified water from the TSF can be added to the production process as washing water for leached residues of the agitation leaching plant. Figure 8-9 is a photo of part of the TSF.

The existing potential safety risk is the imperfect flood control system during the rainy season. SRK suggests that flood control and flood drainage systems of the TSF should be improved.



**Figure 8-9: An Overview of SML's TSF**

### 8.2.4 Production Records and Technical Index

Table 8-4 shows the production records of SML from 2008 to 2011. There are four sources for raw materials of agitation leaching: old tailings, oxidized ore from the Chambishi Copper Mine, externally purchased high-grade oxidized ore, and basic copper carbonate. Flotation is in place to handle externally purchased high-grade ore and copper concentrates can be produced. Agitation leaching is used on tailings from the flotation residues from externally purchased oxidized ore as well as old tailings, whose contributions to the output of electrolytic copper are getting greater year



by year. The scale of heap leaching is small and copper recovery rate is relatively low, so that it contributes to the increase in the electrolytic copper output by less than 10%. The raw materials fed to the agitation leaching tank is a mixture with different leaching performances and it is difficult to determine the specific recovery rate of each material. Judging by the nature of materials, SRK indicates that the copper extraction rate of basic copper carbonate is about 96%. The copper recovery rate of externally purchased oxidized ore is about 95% and that of the oxidized ore exploited is about 90%. The recovery rate of old tailings is about 75%. Leaching solution from heap leaching and agitation leaching are mixed and then extraction and electro-winning is conducted. As the cycle for heap leaching is very long, it is hard to determine the specific recovery rate. The Cu recovery rate listed in Table 8-4 is an approximation.

Although the recovery rate from heap leaching is lower than other processing methods, it has a flexible scale and advantages of low investment and low operating costs. Combined with agitation leaching, heap leaching maintains a good water balance. Wash water used in agitation leaching is later applied to heap leaching in the form of extraction raffinate and excessive water is consumed by evaporation in the heap leaching process. In this way, sulfuric acid contained in the solution can be fully utilized and its total usage is reduced. The cost of environmental treatment of acidic waste water is saved as no acidic water is discharged.

**Table 8-4: Product Technical Index of Chambishi Leach Plant from 2008 to 2011**

Index	Item	2008	2009	2010	2011
Raw materials feed (t)					
Agitation leaching . . . . .	Old tailings	428,118	449,500	462,820	495,187
	Oxidized ore	0	17,700	14,050	9,273
	Purchased ore	12,528	18,687	26,732	47,590
	Purchased Cu carbonate	4,554	546	0	0
Heap leaching . . . . .	Oxidized ore	130,000	160,000	90,000	48,779
	Total	575,200	646,433	593,602	600,829
Raw materials feed (Cu%)					
Agitation leaching . . . . .	Old tailings	1.34	1.27	1.25	1.10
	Oxidized ore	—	2.07	2.09	1.58
	Purchased ore	4.3	5.96	5.89	4.11
	Purchased Cu carbonate	34.81	36.54	—	—
Heap leaching . . . . .	Oxidized ore	0.92	0.83	0.74	1.04
	Average	1.50	1.40	1.40	1.34
Cu contained in materials (t)					
Agitation leaching . . . . .	Old tailings	5,312	6,044	5,785	5,443
	Oxidized ore	0	366	294	147
	Purchased ore	538	1,114	1,577	1,954
	Purchased Cu carbonate	1,585	200	0	0
Heap leaching . . . . .	Oxidized ore	1,196	1,328	666	507
	Total	8,632	9,051	8,322	8,051
Cu Cathode (t)					
Agitation leaching . . . . .		5,955	5,954	6,849	6,753
Heap leaching . . . . .		550	559	255	250
Total . . . . .		6,505	6,513	7,103	7,003
Cu recovery rate (Cu%)					
Agitation leaching . . . . .		80.08	77.09	89.46	89.51
Heap leaching . . . . .		46.02	42.09	38.21	49.27
Estimated total Cu recovery . . . . .		75.36	71.96	85.36	86.98

### 8.2.5 Reagent consumption and production costs

Table 8-5 shows the consumption rates of the main reagents in the past three years and reflects the unit cost of production, excluding all kinds of taxation by the state or local governments where the projects are located. Unit cost and material consumption are influenced by the composition of materials fed as well as the copper grade. The hydrometallurgical method has advantages in processing low-grade oxidized ore to produce high quality copper metal directly. The process is simpler than its alternatives and the investment and operational cost are lower and therefore it is the best option and practice to process large amounts of low-grade oxidized ore and old tailings. The operating costs at the Chambishi Leach Plant are discussed in Chapter 11 of this report.

**Table 8-5: Power, Water and Major Reagent Consumption at Chambishi Leach Plant**

<u>Item</u>	<u>Unit</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Sulfuric acid . . . . .	t/t Cu	1.64	2.01	2.28	2.47
Kerosene . . . . .	l/t Cu	57.03	77.54	55.53	62.40
Extraction reagent . . . . .	kg/t Cu	3.60	5.39	3.80	3.47
Guar gum . . . . .	g/t Cu	4.61	57.58	17.46	0.03
Cobalt sulfate . . . . .	g/t Cu	8.84	8.60	11.26	0.02
Flocculating agent . . . . .	kg/t Cu	3.45	3.78	3.09	2.55
Lime . . . . .	kg/t Cu	82.85	30.22	63.88	90.57
Water . . . . .	t/t Cu	101.56	81.57	56.08	28.37
Electrical Power . . . . .	kWh/t Cu	2,866	2,779	3,051	3,212

### 8.2.6 Future development

The remaining tailings resources on the surface at Chambishi can still satisfy the needs for the next five years at the current production capacity of SML. There are also large amounts of low-grade tailings resources available. In order to maintain sustainable operation, SML has entrusted Chinese research institutions to study the technologies to utilize the low-grade tailings. SML is also actively seeking and developing other copper resources. Table 8-6 shows SML's investment plan over the next 5 years, including the new Kakoso Leach Plant with capacity of 3,000t Cu cathode annually. SML plans to achieve more sustainable development based on two kinds of resources: surface resource and underground resource. The surface resource includes old tailings and low-grade copper waste rocks, which are widely distributed in the Copperbelt ranging from Zambia to the DRC. Underground resource includes the Mwambashi Copper Mine (owned by SML), oxidized ore of the Chambishi Copper Mine (owned by NFCA) and the Congo Likasi Copper Mine (owned by Huachin).

**Table 8-6: SML Projects under Construction or Planned for Development**

<u>Projects</u>	<u>Designed Capacity</u>	<u>Investment (US\$1,000)</u>	<u>Construction Period</u>
Kakoso Leach Plant . . . . .	3,000tpa Cu Cathode	17,000	2012.6 to 2013.6
Mwambashi Mine Development . . . . .		50,000	2012.8 to 2014.8
Industrialization of Bioleaching Test* . . . . .		3,500	2011.5 to 2013.05
Mabende Project . . . . .	20,000tpa Cu Cathode	95,000	2012.1 to 2014.5

Note:

\* The bio-leaching technology is being currently tested and is expected to be used to treat the resource of Mufulira tailings dam, which contains low grade Cu sulfide considered non-profitable using the traditional hydrometallurgical method

### 8.2.7 SML Chambishi Processing Plant

The SML Chambishi Processing Plant is located at Chambishi West Mine. The plant is fed with ore from the NFCA Chambishi West orebody. Based on the ore processing testing results conducted on the oxidized orebody by ENFI, a combination of flotation and agitation leaching is planned to be used. The results in Table 8-7 show that minerals of copper sulfide and copper oxide can be recovered by a combination of flotation and agitation leaching, with the total copper recovery rate reaching 92%.

The SML Chambishi Processing Plant processes mixed ore and oxidized ore with an oxidization rate higher than 20%. Taking into account the influence of oxidized ore over flotation parameters, the combination of “flotation + hydrometallurgy” process has been finally adopted after many comparative studies. This processing method can provide good Cu recovery from sulfide and oxidized ore. The best economic results from the west orebody can also be achieved using this processing method. The SML Chambishi Processing Plant has a designed daily raw ore processing capacity of 1,000t (330,000tpa). The same flotation process as used at the NFCA Chambishi Processing Plant is used to recover copper sulfide ore and produce copper concentrates for sale to CCS. Tailings are pumped to the existing SML Chambishi Leaching Plant for copper extraction by hydrometallurgy methods. Figure 8-10 shows the construction of the SML Chambishi Processing Plant. The plant was completed and began trial production in May 2011. It now processes ore from the Chambishi West Orebody and No. 3# waste rocks. It is also expected to process oxidized ore from the Mwambashi Mine.

**Table 8-7: Designed Processing Index Oxidized Ore from Chambishi West Mine**

<u>Parameters</u>	<u>Unit</u>	<u>Designed</u>	<u>2011.9-12</u>
Raw ore treated .....	tpa	330,000	48,461
Raw ore grade .....	% Cu	1.86	1.78
Concentrate yield .....	%	2.47	4.32
Concentrate .....	tpa	8,150	2,094
Concentrate grade .....	% Cu	28.00	20.40
Tailings .....	tpa	292,590	46,367
Tailings grade .....	% Cu	0.96	1.00
Cu recovery rate (flotation) .....	%	42.43	49.47
Cu recovery rate (agitation leaching tailings) .....	%	85.00	—
Cu recovery rate in total .....	%	91.36	—



**Figure 8-10: SML Chambishi Processing Plant**

### **8.2.8 Kakoso Tailings Development Project**

SML and Shenzen Resources Limited (“Shenzen”) signed an agreement to form a joint venture company, Kakoso Metals Leach Limited. Shenzen holds 12% of the project and is responsible for obtaining the licenses for water, power and land use. SML, which holds 88% of the project, invested capital and made the processing technique available, and is responsible for the construction and operational management of the project.

The Kakoso tailings deposit is located in the middle of the Zambian Copperbelt, at the northern edge of Chingola, 4km from Chililabombwe town and 25km from Chingola. The Kakoso tailings pond is 50km from Chambishi and 78km from Kitwe. The Project can be easily accessed via a secondary road, 8km from the paved road that links Kitwe and Chingola. The total area of the Kakoso tailings pond is 709,200m<sup>2</sup>, including a main pond with an area of 388,700m<sup>2</sup> and an auxiliary pond with an area of 320,500m<sup>2</sup>. The total volume is 6,055,700m<sup>3</sup>. According to the measured bulk density of 1.5t/m<sup>3</sup>, the quantity of ore is estimated at 9,080,000t. From April to May of 2010, 13 holes were drilled in the main tailings pond with an average depth of 11.4m, and 10 holes had been drilled in the auxiliary tailings pond with an average depth of 5.1m. The spacing between each hole was 200m, and 78 samples were collected. Calculated from the grade of the samples collected, the average grade of TCu is 0.60%, and that of copper oxide and cobalt are respectively 0.47% and 0.04%. The average oxidization rate was estimated at 78.3%. Agitation leaching tests have been conducted on tailings containing a TCu grade of 0.64% with an Ox-Cu grade of 0.52%. The leaching rates of total copper and oxide copper were 79.53% and 89.90%, respectively. The consumption of acid was 29kg per tonne.

In July 2010, Shenyang Design and Research Institute of Nonferrous Metallurgy carried out a feasibility study for the Kakoso tailings pond development and utilization. The preliminary design of the Kakoso Leach Plant with a capacity of 3,000tpa Cu cathode was completed in 2011. The process

of “agitation leaching-extraction-electrowinning” will be adopted to produce Cu cathode with a purity of 99.95% Cu. The designed technical parameters are listed in Table 8-8. SRK believes that the samples tested are not fully representative of the tonnes proposed to be treated. The designed copper oxide recovery rate of 90% is assessed as optimistic, and the actual annual production of cathode is unlikely to reach 3,000t. Due to the low grade of the tailings, SRK suggests that new samples which better represent the total resource should be collected and leaching tests should be conducted to determine the likely leaching conditions of Cu and Co.

**Table 8-8: Designed Parameters of Kakoso Leach Plant**

<u>Item</u>	<u>Unit</u>	<u>Index</u>
Quantity of tailings processed .....	tpa	679,000
Cu cathode product .....	tpa	3,000
Operating life of tailings .....	year	12
Tailings feed grade .....	TCu%	0.60
	Ox-Cu%	0.47
Cu leaching rate .....	Ox-Cu%	90.00
Extraction recovery rate .....	Ox-Cu%	98.00
Electrolysis recovery rate .....	Ox-Cu%	99.50
Cu recovery rate in total .....	Ox-Cu%	87.76

### 8.2.9 Mwambashi Mine development

According to the “*Mwambashi Copper Project Feasibility Study*” completed by Teal in July 2006, the Mwambashi orebody shares similar parameters with ore bodies in the local area, including an oxidization rate of 80%. Malachite is the main mineral in the oxidized ore, followed by a small amount of chrysocolla and chalcocite, etc. Chalcocite is the main mineral in the sulfide ore, followed by a small amount of chalcopyrite and malachite. Flotation of sulfide ore is usually easy while it is hard to leach with sulfuric acid. For oxidized ore, it is easy to leach with sulfuric acid while flotation is less effective. These conditions make the processing method of such deposits complex and a combination of different methods is commonly adopted. At Mwambashi, flotation is proposed to be used to process sulfide ore to produce copper concentrates. For oxidized ore, hydrometallurgy is proposed to produce electrolytic copper. For mixed ore, flotation is proposed to recover sulfide ore, and then leaching will be conducted on the tailings to produce electrolytic copper. The grade of the ore as well as smelting and processing performance will be used to decide whether the combined methods can be adopted.

Mwambashi has carried out many tests on drill core and drill chips. Please refer to Table 8-9 for details. Konkola Copper Mines conducted flotation and leaching test work in 2004. The acid-insoluble flotation recoveries mostly did not exceed 70%. Leach efficiencies ranged from about 80% to 95%, AS-Cu basis, although a few of the deeper samples yielded lower efficiencies.

Material from the Mwambashi project responds well to a combination of flotation and leaching:

- Sulfide copper flotation recoveries of 90% to 97% are achievable, some low-grade ore from the upper levels may yield rather lower acid insoluble copper (“AI-Cu”) recoveries;
- Oxide flotation is partly successful, but recoveries are limited to about 45% to 65%, AS-Cu basis;

- Sulfuric acid leaching of the oxide minerals is quite successful. Leach extractions range from 75% to 95%, acid-soluble copper basis, after four hours of ambient-temperature leaching at pH 1.8. There is a clear relationship between leach efficiency and feed grade, as there seems to be a limiting residue grade of about 0.6% to 0.8% AS-Cu in most cases;
- Only flotation or only leaching was used to process certain mixed samples and the copper recovery rate is not ideal. Therefore, the combined methods should be adopted.

SML plans to commence construction at the Mwambashi project in 2012. SRK suggests that further tests of mixed samples with different oxidization rates should be carried out before a development design is finished. Through the tests, the flotation and leaching parameters of these samples can be determined so that smelting and processing methods for ore with different oxidization rates can be decided. It appears that hydrometallurgy should be conducted for oxidized ore and flotation should be conducted for sulfide ore, while for some mixed ore, the combined process of “flotation + leaching” is proposed, but this will increase investment and metallurgical costs. Therefore, it is important to make clear the metallurgical parameters and complete a good technical and economic evaluation.

**Table 8-9: Test Results of Mwambashi Ore Samples**

Composite	Head Grade %		Concentrate Grade %	Recoveries %			Leach Efficiency %
	TCu	AS-Cu	TCu	TCu	AS-Cu	AI-Cu	AS-Cu
<i>Test results from Teal, 2006 Teal Exploration and Mining Incorporated</i>							
Oxidized samples . . . . .	2.58		25.80	68.6	69.8	62.1	95.7
Mixed samples . . . . .	0.42		17.30	86.4	56.4	94.8	86.5
<i>Test results of AVRL in 2001 Anglovaal Mining Research Laboratories</i>							
Primary sulfide ore . . . . .	5.12	0.65	59.50	92.0	50.1	95.7	6.6
Chalcocite dominant ore . . . . .	3.60	0.89	64.50	86.0	49.2	94.6	16.3
Mixed sulfide/oxidized ore . . . . .	2.90	1.80	54.50	65.2	23.5	89.3	44.9
Oxidized ore . . . . .	2.25	1.96	40.50	50.3	26.6	84.7	79.9
<i>RCM test results in 1972 Roan Consolidated Mines</i>							
Chalcocite/malachite . . . . .	5.60	1.08	27.10	92.4	72.8	97	
Chalcocite/chrysocolla . . . . .	2.20	0.82	9.30	74.8	54.3	87.4	
Malachite/chrysocolla . . . . .	2.06	1.73	6.80	43.5	44.7	38.9	
Chalcocite/oxidized ore . . . . .	4.17	1.30	12.60	87.6	74.3	94.2	

### 8.2.10 Other resource development

SML has a 30% of share in the development of Huachin Copper Mine within the borders of the D.R.C. The construction of one hydrometallurgy plant having an annual production capacity of 10,000t Cu cathode began in January 2011 and was completed in February 2012. The Mabende Leach Plant with a designed capacity of 20,000tpa cathode Cu is currently under construction and is expected to commence production in 2014. The planned cathode Cu production capacities are 10,000t in 2014 and 20,000t in 2015 and 2016. The Mabende Leach Plant is a joint venture company of SML and Congo Huachin. SML also owns a 60% share of the Mabende Leach Plant. In addition, one sulfuric acid producing plant that is removed from the Chambishi Leach Plant is under construction, and one cobalt recovering system is planned as well. SML commissioned Shenyang Design and Research Institute of Nonferrous Metallurgy to conduct the cobalt recovery system design with a production capacity of 800tpa CoCO<sub>3</sub> in the first phase. This production capacity can be increased by 2,000tpa.



### 8.2.11 Conclusions and Recommendations

SML has adopted a combined hydrometallurgical method of heap leaching and agitation leaching to process low grade copper resources in the Chambishi Mine area. The method is appropriate and the process is rational. The hydrometallurgy plant is well built and the parameters are stable. This has not only made full use of the copper resources which used to be regarded as waste rocks, but also brought great economic benefits for the Company. Since heap leaching can effectively adjust the solution volume of the whole leaching-extraction system, it is suggested that the scale of heap leaching should be expanded.

Oxidized ore of the copper belt usually contains some copper sulfide which cannot be leached. The microbial oxidization leaching method is being studied and developed to process the low-grade tailings resources, with the aim of increasing the Cu recovery rate. SRK appreciates this and suggests that SML should speed up research to cultivate bio-metallurgical talents so that this method can be conducted on low-grade tailings and “waste rocks”. The expected technical advantage can help increase resources and economic benefits.

In the process of hydrometallurgy, a small amount of cobalt in ore can also be leached and it will accumulate in the circuit, creating reasonable conditions for its recovery. SRK suggests that SML should monitor cobalt closely and make evaluations about the feasibility of cobalt recovery.

Due to the large quantity of resources of raw materials, it is suggested that supervision should be strengthened, and the operational parameters should be adjusted along with the changes in raw materials, in order to achieve the best metallurgical results.

The infrastructure of the metallurgy plants and concentrators should be constructed in advance and industrial tests and pilot production should be carried out.

## 8.3 Chambishi Copper Smelter Ltd. (CCS)

### 8.3.1 Introduction

CCS was registered in July 2006 in Zambia. Its associated smelter is located about 3.5km east of Chambishi Town, Kalulushi City in the Copperbelt Province. The smelter was designed by ENFI. Construction commenced in November 2006, and in February 2009 the main body of the smelter was put into trial production. In June 2009, the construction was completed and full production began. The smelter takes Cu concentrate as feed for blister copper production and has a blister copper production capacity of 0.15Mtpa and sulfuric acid production capacity of 0.3Mtpa (as a by-product). Figure 8-11 shows a photo of the Chambishi Copper Smelter.



Figure 8-11: An Overview of Chambishi Copper Smelter

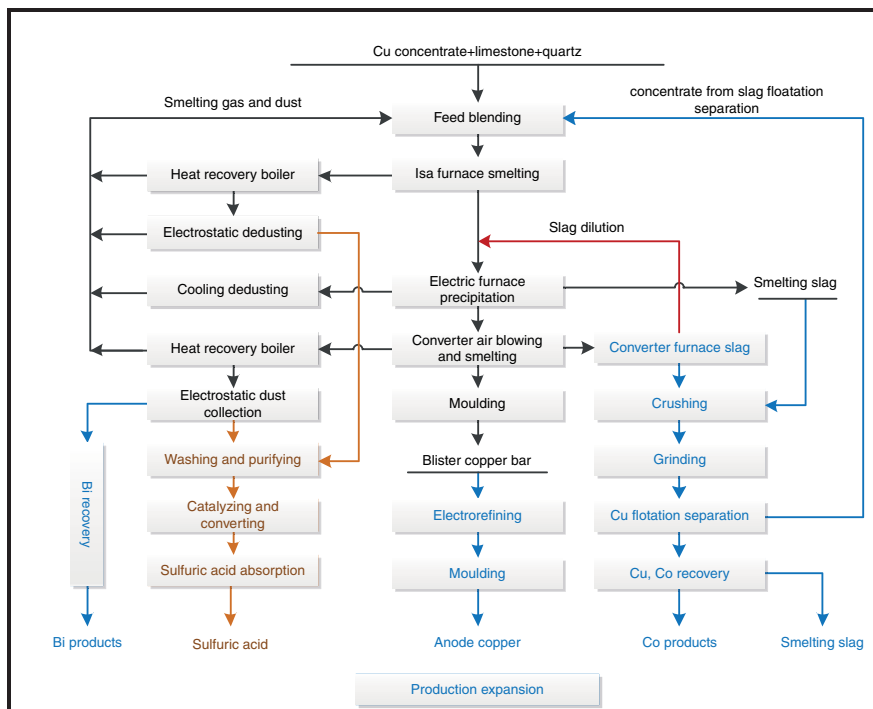


After a detailed comparison of various processing flows and studies on economic feasibility and operability, CCS selected the pyrometallurgical smelting process of “Isa furnace oxygen injection and rich oxygen bath smelting — electric furnace precipitation — converter blow” for production. The SO<sub>2</sub> gas generated is used for sulfuric acid production by two stages conversion and two stages absorption after a circuit of heat recovery boiler dust collection, high voltage electrostatic de-dusting and sulfuric acid purifying and waste heat is applied for power generation. CCS has its associated sulfuric acid production workshop, oxygen station, water treatment station and waste heat power generation plant. Considering that smelting slag still has about 1% of Cu residues which is a relatively high content, a flotation separation workshop is under construction to recover Cu from smelting slag to improve total Cu recovery rate. At the same time, CCS is also carrying out preliminary preparation for 0.25Mtpa blister copper and copper anode production expansion.

During the site visit, SRK found that the smelter and its supporting facilities are well allocated and constructed. The flowsheet adopted at CCS for smelting is rational and conforms to local practice with good technical parameters. Further study on Cu, Co and Bi recovery from slag and smelting gas will further improve the Cu recovery rate and bring additional profit to the Company.

**8.3.2 Smelter Description**

The pyrometallurgical smelting flow used is indicated in Figure 8-12 and it includes five main circuits which are detailed as follows.



**Figure 8-12: CCS Pyrometallurgical Smelting Flowsheet**

*Feeds Blending*

Pyrometallurgical copper smelting at CCS uses Cu concentrate produced from Lumuwana, Kanshanshi, NFCA, Chibuluma and Luanshya as raw materials. Fluxes used are quartz and limestone. Cu concentrates, fluxes, coal and recycled dust from smelting are stored separately at the smelter prior to being sent to their own feed bins (14 to 17m<sup>3</sup>) by cranes, and then constantly transferred to the feeder on the top of smelting furnace by conveyor belt using a fixed scale and quantities so that feed materials are blended.

*Smelting*

The smelter uses the advanced smelting furnace oxygen injection and oxygen rich bath smelting process. The smelting furnace is an Isa furnace, the intellectual property of which is held by Xstrata Technology Pty Limited. A lance into the feed mixture of the furnace injects air with a relatively high oxygen content forming a high temperature bath where the solid feed, smelting fluxes and air react and reactions of heating, dewatering, dissociation, smelting, oxidization, matte smelting and slag formation are finished. The heat needed for bath temperature maintenance comes from the smelting process itself and is maintained by the addition of coal to the feed mixture injected through lance. Bath temperature is controlled at 1,170 to 1,200°C. Because the smelting temperature is relatively low, natural cooling is used for Isa furnace cooling. Gas generated is sent to the heat recovery boiler for cooling and de-dusting and then to the dust catcher for purifying prior to sulfuric acid production.

*Electric Furnace Precipitation*

Matte and slag in an Isa furnace are difficult to separate due to strong agitation. In view of this, an electric furnace is used. The precipitation electric furnace has 3 self baking electrodes with a diameter of 1m and capacity of 6300KVA. Using electrical power, the electric furnace is controlled at 1,200 to 1,280°C where matte and slag are layered and separated. Slag is removed, cooled and stored in a slag dump. Approximately 1.3t of slag with a Cu grade <1% will be generated to produce one tonne of blister Cu. The matte with Cu content of 50 to 65% is poured into tundishes and then sent to the converter for further processing. Gas from electric furnace precipitation has a low content of SO<sub>2</sub> which is cooled by water and purified by dust catcher and finally discharged to the air through a chimney.

*Converter Air Blowing and Smelting*

The converter air blowing and smelting circuit are traditional and mature consisting of three set of P-S converters with blister copper production capacity of 100 to 150t per day, a diameter of 4m and length of 11.7m. Each circuit is operated in series. Matte from the previous electric furnace precipitation circuit is fed to the converter with a quartz flux and high oxygen content air to remove impurities of S and Fe by oxidization. Blister copper is produced. The whole air blowing and smelting circuit can be divided into two sections of slag generation and copper production. The air blowing and smelting of slag generation period refers to FeS oxidization and quartz addition for slag generation. At the end of the slag generation period, the Cu content of matte is higher than 75% and Fe content is less than 1%. In the copper production period air blowing and smelting, S in Cu<sub>2</sub>S is oxidized into SO<sub>2</sub> and copper melt is formed. Products in this converter air blowing and smelting circuit include blister copper, converter slag and gas. Blister copper is poured into tundish and sent for moulding. Converter slag contains approximately 8% copper, which is sent back to the previous electric furnace precipitation circuit. The gas has a high SO<sub>2</sub> content which is used for sulfuric acid production after passing through the heat recovery boiler and dust collection.

### *Blister Copper Moulding*

Blister copper from the converter is sent to a moulding workshop by crane and tundish, and poured into moulds forming copper bars. Each copper bar weighs either 1.1t or 0.7t and after cooling is stored for sale.

## **8.3.3 Expansion Plan, Supporting Facilities and Comprehensive Utilization**

### ***Expansion Plan***

CCS has conducted research on the production capacity of all pyrometallurgical smelters and main copper mines in Zambia and the demand in the local market for sulfuric acid. It is proposed to expand the Chambishi Copper Smelter's production capacity to 0.25Mtpa of copper including 70,000t of blister copper bar with Cu content higher than 99% and 180,000t of copper anode for electro-refining. Isa furnace smelting capacity is forecast to improve to 0.75Mtpa from the current 0.4Mtpa of Cu concentrate. ENFI completed the relevant expansion feasibility study and construction design at the end of 2009. At the time of this report the plant was undergoing expansion.

The expansion proposes to construct a new converter smelting circuit with associated heat recovery furnace and dust collection facilities, as well as a pressure and absorption oxygen producing system and an acid producing system. In order to improve additional value of products, two 4.15m diameter and 12m long anode furnaces with blister copper processing capacity of 300t each are proposed to be added. Blister copper is cast to copper anode which is suitable for electro-refining. The production expansion is designed to be realized by improving oxygen concentration and oxygen supply without addition to the Isa furnace and precipitation electric furnace. Regarding raw material sources, smelting techniques and sulfuric acid market demand, it is SRK's opinion that the expansion target can be achieved. However, production capacity expansion to 0.25Mtpa of copper may be difficult to achieve by simply increased oxygen injection into the Isa furnace. Detailed measures and plans to achieve the expansion target achievement should be worked out.

### **Sulfuric Acid Production**

The gas from the Isa furnace and converter has a SO<sub>2</sub> content of approximately 6.8%, which passes through heat recovery, boiler dust collection and cooling and de-dusting and purifying prior to being sent to the sulfuric acid production plant where pure SO<sub>2</sub> gas is obtained after dilute sulfuric acid washing and purifying, heat exchange, mist removing and concentrated sulfuric acid drying. After two stages of V<sub>2</sub>O<sub>5</sub> catalysis, SO<sub>2</sub> is oxidized into SO<sub>3</sub>, which is then absorbed by concentrated sulfuric acid forming sulfuric acid. Sulfuric acid from the drying tower, the medium absorbing tower and the ultimate absorbing tower are mixed and stored in 6 tanks with a total capacity of 16,400m<sup>3</sup>. Final sulfuric acid concentration is 98%.

SO<sub>2</sub> gas generated from copper smelting is purified by a de-dusting system and sulfuric acid production, by which environment pollution is reduced. Sulfuric acid with a concentration of 98% is produced and the production capacity is 0.25 to 0.33Mtpa. The sulfuric acid has a low impurities content and high quality, and is sold to a local copper ore hydrometallurgical smelter. As part of the production expansion, a new 0.3Mtpa sulfuric acid production line is proposed.

### ***Oxygen Station***

The oxygen plant uses a molecular sieve as the absorbent for air separation which is assisted by changes of pressure. The gas produced contains 90% oxygen which is supplied to the Isa furnace

and P-S converter for smelting. Oxygen-rich air not only improves the smelting capacity, but also increases SO<sub>2</sub> content in the furnace gas which is used to produce sulfuric acid. Current oxygen production capacity is 1,200Nm<sup>3</sup>/h (1,200m<sup>3</sup>/h in normal state). Another 8,000Nm<sup>3</sup>/h pressure-absorption circuit is proposed to achieve the smelter expansion target.

### ***Water Treatment Station***

Water for production and domestic usage comes from the Kafue River which is located 6.2km from the smelter, and from where water is pumped to a pond constructed in the water treatment plant. 19,200m<sup>3</sup> of water is transported to the plant every day, and this is sufficient to meet the expanded demand for production and domestic usage. The water treatment plant uses a flocculant agent to process river water to deionized water and soft water. After passing through a flocculation-sedimentation-filtering and absorption process, treated water is supplied to the heat recovery boiler and smelting furnace and as equipment cooling water. The production capacity of the water treatment plant is 1,200m<sup>3</sup>/d, which can meet current smelting needs. To achieve production expansion target, a new 8,000m<sup>3</sup>/d line is proposed to increase the ultimate water treatment capacity to 9,200m<sup>3</sup>/d. A total of 19,000m<sup>3</sup>/d water including 8,000m<sup>3</sup> fresh water is forecast to be consumed when the production expansion is completed, all of which can be supplied by the water treatment plant.

### ***Power Plant***

The Isa furnace and three converters are separately equipped with heat recovery boilers. Deoxidized, deionized water is injected into the heat recovery boiler. High temperature gas is cooled by a heat exchanger and heat is recovered for saturated steam generation, and then the steam is fed to the thermal power plant driving steam turbine for power generation. Dust from the gas is settled in the boiler, so that the discharged gas is suitable for de-dusting and sulfuric acid production.

The temperature of the gas from Isa furnace and converter is about 1,200°C, which is reduced to about 350°C in heat recovery boiler. Deoxidized deionized water injected into the heat recovery boiler is increased in temperature from 104°C to 257°C. Through a heat exchange process, saturated steam is separated and transferred by pipeline to the power plant to drive steam turbines, during which process steam's temperature is reduced to 60°C. Steam is recycled and re-injected to the heat recovery boiler for another cycle of heat exchange and power generation.

The installed capacity of the electricity generation plant is 5,000kW. At the time of the SRK site inspection, 168.43kWh of electricity was generated for each tonne of blister copper smelting, which accounted for approximately 15% of total smelter power consumption. The proposed smelter production expansion plan is to add one more converter and one heat recovery boiler to increase steam and power generation. It is expected that the power generated by recovered heat from the smelter can account for up to 17 to 18% of the total power consumption of the smelter when the expansion target is achieved.

### ***Comprehensive Utilization***

#### ***Cu Recovery from Converter Slag***

Au, Ag and Co are concentrated into matte with other metal sulfides during blister copper smelting, and then Co is concentrated into converter slag in form of an oxide, while Au and Ag are concentrated into blister copper in the converter. The total recovery rate of Au and Ag can be 94% or higher. Because converter slag has 6 to 8% Cu and 0.8 to 1.2% Co, it is sent back to converter to

recover more Cu. However, metal recovery cannot achieve a good performance as Cu and Co is lost in smelting slag and dilution. A flotation separation processing plant is under construction and proposes to recover Cu from converter slag. The processing plant is planned to be put into production at the end of 2011 for existing slag processing. When the expansion target is achieved, smelter slag and converter slag will be processed in the same circuit at staggered processing times. The processing plant has a designed production capacity of 1,200tpd using three closed stages of crushing and two closed stages of grinding to crush the slag to 85% passing 43µm. The flotation circuit consists of one stage rougher flotation, two stages of scavenging and two stages of cleaning for Cu concentrate and tailings. The Cu concentrate will be sent to the Isa furnace with gas recovered by the heat recovery boiler after moisture is reduced to below 12%. Tailings are processed for Co recovery. The designed flotation separation parameters are indicated in Table 8-10.

**Table 8-10: Cu Recovery Indexes of Slag**

<u>Item</u>	<u>Unit</u>	<u>Smelting Slag</u>	<u>Converter Slag</u>	<u>Total</u>
Slag .....	t/a	318,498	79,416	397,915
Slag grade .....	Cu%	0.80	8.70	2.38
Concentrate yield .....	%	5.497	23.875	9.165
Concentrate .....	t/a	17,508	18,961	36,469
Tailings .....	t/a	300,991	60,456	361,446
Concentrate grade .....	Cu%	8.57	34.40	22.00
Tailings grade .....	Cu%	0.35	0.64	0.40
Cu recovery rate .....	%	58.89	94.40	84.83

### ***Co and Bi Recovery***

In 2010, the feed materials had Co and Bi grades of 0.154% and 0.036%, respectively, therefore Co and Bi recovery could provide additional profit to CCS. Co is mainly concentrated in the converter slag during the smelting process and then in flotation tailings during Cu flotation. The slag is ground to 85% less than 0.043mm prior to Cu flotation, which is quite favorable for Co recovery. Flotation tailings have 0.5 to 0.6% Cu and 0.8 to 1.2% Co. Agitation leaching is used for Cu and Co extraction. Reverse circulation solution is used for electrolytic copper and electrolytic cobalt production through the electrowinning method. CCS has signed a contract with a technical company in Hunan Province for research on flotation tailings Cu and Co extraction techniques. Both companies intend to set up a jointly owned plant for Cu and Co recovery. The plant is expected to be commissioned at the end of 2013 and it is designed to process material containing 300t of Cu and 500t to 700t of Co.

Bi is mainly concentrated in gas and dust collected by the converter electrostatic dust collection circuit with content higher than 10%. Every day about 3t of gas containing Bi is generated. On the site SRK found that collected dust is bagged and stored in raw material stockpile. CCS commissioned Yunnan Copper Science Development Co., Ltd to complete Cu and Bi extraction research, from which hydrometallurgical smelting including leaching and electrowinning was proposed. Final products of BiOCl with a Bi content higher than 60% and 99% purity electrolytic copper can be obtained. The Bi recovery rate is no less than 95% and the total Cu recovery rate is also no less than 95%. Research tests and verification tests are coming to an end and relevant design is about to commence. After consideration of the gas increase caused by the production expansion, a 6tpd converter gas processing line is currently under construction and is expected to be completed by mid 2012.

### 8.3.4 Smelting Performance

The technical parameters of the Chambishi Smelting Plant from 2009 to 2011 are listed in Table 8-11. The designed blister copper quality has been achieved and more than 94% of precious metals are concentrated in the blister copper. In 2009, the Au and Ag grades in blister copper were 7.1g/t and 52.9g/t, respectively. When the smelting slag flotation separation system is put into operation, the total recovery rate of Cu is expected to increase to 98% or higher. Additionally, the Cu recovery rate is expected to further increase from the use of Co and Bi extraction.

**Table 8-11: Technical Parameters of CCS Pyrometallurgical Smelting Plant, 2009 to 2011**

<u>Item</u>	<u>Unit</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Feed Cu concentrate .....	t	333,749	457,334	458,771
Concentrate grade .....	Cu%	37.31	35.16	33.62
Contained Cu metal in concentrate .....	t	124,519	160,804	154,233
Blister Cu output .....	t	108,419	165,118	150,863
Blister Cu grade .....	Cu%	99.19	99.08	99.01
Contained Cu metal in Blister Cu .....	t	107,538	163,600	149,365
Cu metal tonnage in recycled feed .....	t	11,435	-8,774	34,896
Cu recovery rate .....	%	95.55	96.28	96.59
Sulfuric acid output .....	t	217,117	330,034	328,842
Sulfuric acid concentration .....	%	98.32	98.21	98.25

### 8.3.5 Materials Consumption and Production Cost

The material consumption required to produce one tonne of blister Cu is indicated in Table 8-12. The amount of kerosene, coal and electricity consumed has been converted into a coal equivalent for calculation and statistics. Due to high head grade and because waste heat is used for electricity generation, 184.2kg of coal equivalent is required for each tonne of blister copper production. This number is far below the 550kg limit stipulated in national standards of China for comprehensive materials consumption for each tonne of blister copper production. The operating costs are discussed in Chapter 11.

**Table 8-12: Material and Energy Consumption**

<u>Item</u>	<u>Unit</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Fuel .....	l	14.55	8.41	7.04
Coal .....	kg	139.5	122.61	98.59
Power .....	kWh	1,010	870	947
Energy .....	BTU	235.6	184.2	182.3
Fluxes .....	kg	272.5	224.4	227.8
Oxygen .....	Nm <sup>3</sup>	689.2	563.1	677.8
Refractory Materials .....	kg	12	12	12
Electrode Paste .....	kg	3	3	3

### 8.3.6 Conclusions and Recommendations

The CCS smelter is rationally designed and well constructed. The smelter uses “Isa furnace smelting-electric furnace precipitation-PS converter air blowing and smelting” flow for Cu smelting, which conforms to local practices and is relatively easy to operate.



Raw materials fed to the furnace do not need to be dried, so the whole smelting process is simplified and production cost is reduced. Moreover, the Isa furnace's life is prolonged by the adoption of furnace temperature control and natural cooling system which can further reduce production costs.

SRK believes it is rational to replace the electric furnace by flotation separation for copper recovery from converter slag, by which the overall Cu recovery rate is forecast to increase to 98% or higher. Bi and Co recovery is possible and the relevant design is applicable, and an additional profit is expected to be achieved.

After considering raw material supply and local sulfuric acid demand, SRK believes expansion from 0.15Mtpa to 0.25Mtpa blister copper production is reasonable. However the existing Isa furnace production capacity may not be expanded sufficiently only by improving oxygen injection. It is suggested that the proposed Isa furnace production capacity increase plan should be reconsidered.

## **8.4 CNMC Luanshya Copper Mines PLC (CLM)**

### **8.4.1 Introduction**

Luanshya copper mine was once a joint enterprise; it operated several copper mines, one processing plant and one smelter. The mine and processing plant construction commenced in 1928 and production began in 1931. The smelter was put into production in 1933 with a production capacity of 40,000tpa, and the capacity exceeded 100,000tpa in the 1960s, which made it the biggest copper producer in Zambia. The smelter was closed a long time ago.

In 1997, Ramcoz acquired the mine and in 2000 commenced the management and operation of the Luanshya copper mine, Baluba copper mine and its associated processing plant. Production was suspended in October 2000 due to an electricity shortage, but in January 2001 it was resumed. In February 2001, a rainstorm caused the Luanshya River to flood the collapsed area of the mine causing another production suspension. In April 2001, the Baluba copper mine's production was also suspended because of an unsatisfactory performance.

In 2004, a Dutch company, ENYA, established LCM through a business acquisition. The LCM assets include the Luanshya copper mine, Baluba copper mine, Baluba processing plant and their supporting facilities which were put back into operation. In January 2004, Luanshya copper mine was closed, production of LCM was transferred to the Baluba copper mine and processing plant. In 2006, LCM acquired the mining right of the Muliashi North mining area and commissioned Bateman to complete a mining design to achieve a capacity of 60,000tpa Cu cathode. However, LCM suspended production in December 2008 and transferred the mine with associated processing plant to CLM. CNMC holds 80% share of CLM.

The mining area owned by CLM can be divided into 7 sections. From west to east and from north to south they are Baluba Center, Baluba East (further divided as south wing and north wing), Muliashi North, Muliashi South, Roan Extension West, Roan Extension East and Roan Basin area, in which Muliashi North and Baluba East (south wing) have not been developed so far. By the end of 2009 the Baluba Center Mine has been recommissioned to operate with a capacity of 1,500tpd sulfide ore and the further production capacity is expected to achieve 5,000tpd. Excavated ore is sent to the Baluba Processing Plant by an 11.4km long belt conveyor. Except for approximately 20Mt sulfide ore at Luanshya, West Extension and Roan Extension East which has not been excavated, sulfide ore at the other locations has been mined out. Due to a large-scale surface collapse and settlement and for safety reasons, the overlying oxidized ore in these areas cannot be used. The oxidized ore in Muliashi North and Baluba East (south wing) can be utilized, and it is the main raw material source for the Muliashi Leach Plant.



At the time of this report CLM had three mineral processing plants, namely the Baluba Processing Plant, Muliashi Leach Plant, and Baluba Smelting Slag Processing Plant. According to the production recovery design compiled by Shenyang Design and Research Institute of Nonferrous Metallurgy in September 2009 for the Baluba copper mine, equipment and techniques in the processing plants were to be updated, and 3,000tpd processing capacity was achieved by the end of 2009 and 5,000tpd was achieved by the end of 2010. NERIN designed Muliashi Leach Plant to achieve a capacity of 40,000tpa Cu cathode product. This plant commenced production in March 2012. CLM plans to repair the original 4 ball mills and replace old flotation cell in the Baluba Processing Plant to allow processing of the smelting slag.

#### 8.4.2 Baluba Processing Plant

##### *History and Current State*

Since the Baluba Processing Plant was commissioned a long time ago, equipment is outdated and the processing flow is not optimal. In June 2009 when CLM was formed, a production recovery and plant update plan were designed and implemented. The crushing system and flotation circuit were all replaced with new equipment, three sets of 3.5m × 4.5m ball mills were repaired, one flotation column and two ceramic filters were added and the processing flow was upgraded, so that 5,000tpa processing capacity was achievable. The upgraded flowsheet is similar to the NFCA Chambishi Processing Plant and is used for processing sulfide ore excavated from the Baluba Center Mine. The product consists of a Cu-Co concentrate and is sold to CCS, while the tailings are dewatered prior to being pumped to the TSF.

Figure 8-13 shows the ball mills of the Baluba Processing Plant after they have been repaired and SRK notes that they are now in good condition. The processing capacity of the plant has been returned to the original 5,000tpd. However, due to insufficient feed, the actual processing throughput at the time of this report was less than 4,000tpd. During SRK's site visit, one 3.5m × 4.5m ball mill, four 2.4m x 2.7m ball mills and 120 sets of 8.5m<sup>3</sup> flotation cell were still undergoing repair and maintenance. CLM proposed to change those flotation cells to save energy when processing historical smelting slag. Relevant technical upgrading was completed by the end of 2011.



Figure 8-13: Ball Mills at Baluba Processing Plant

### Technical Parameters

Table 8-13 shows the technical parameters at Baluba Processing Plant from 2009 to 2011. The Cu recovery rate achieved was a high level of 93 to 95%. Baluba ore is mainly chalcopyrite, with some pyrite and small quantities of bornite and carrollite. The ore has a Co content of 0.1%. About 48% Co exists in carrollite and 32% exists in pyrite. The Cu mainly occurs as chalcopyrite, which has a lower Cu content of chalcopyrite than the secondary Cu minerals of bornite and chalcocite, therefore the Cu grade in the concentrate is relatively low (approximately 25% in 2011). Due to the high pyrite content of the ore from Baluba Center Mine and in order to increase the Cu grade of the concentrate, the pyrite should be prevented from being concentrated into the Cu concentrate. Because the pyrite is the main carrier of Co, so the recovery of Co is also lower.

**Table 8-13: Production Index of Baluba Processing Plant, 2009 to 2011**

<u>Item</u>	<u>Unit</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
Ore Milled .....	t	6,580	765,446	1,247,163
Head Grade .....	Cu%	1.42	1.40	1.36
	Co%	0.13	0.10	0.11
Concentrate .....	t	608	49,339	63,015
Ore Milled/Concentrate .....	t/t	10.82	15.51	19.79
Concentrate Grade .....	Cu%	14.57	20.30	25.42
	Co%	1.07	1.09	0.90
Contained Cu Metal in Concentrate .....	t	89	10,016	16,018
Recovery rate .....	Cu%	94.81	93.48	94.43
	Co%	76.05	67.56	40.14

### Materials Consumption and Production Cost

The system for reagent use at the CLM Baluba Processing Plant is very simple. To produce one tonne of concentrate, 857g of lime is used as pH regulator, 21g of sodium iso-butyl Xanthate (“Sipx”) is used as a collector, 9.6g of sodium n-butyl xanthate (“SnpX”) is used, 27.2g of terpenic oil (2#) is used as a foaming agent and steel ball consumption is 529g. The quantity of these reagents used is quite small so that the production costs is at a relatively low level. The operating costs are discussed further in Chapter 11.

### Tailings Storage Facilities

The Musi TSF is formed by a valley interception dam and is located at the entrance of the Musiyakupatwa which is 7km northwest of Baluba Processing Plant. The dam is constructed of coarse tailings. To date 115.3Mt of tailings have been stored. In the design compiled by Shenyang Design and Research Institute of Nonferrous Metallurgy for Baluba Processing Plant production recovery, the Musi TSF storage capacity expansion has also been included. CLM commenced the construction based on this design. At the time of SRK’s site visit, three ledges have been formed and each of them is constructed with a 5m wide berm and flood discharging channel, and on the top of which a 10m high subsequent ledge is proposed to be constructed of compacted rock to increase the total TSF design capacity by 18,356,000m<sup>3</sup> with an effective capacity of 12,850,000m<sup>3</sup>. Based on an annual ore processing capacity of 1.5Mt, the expanded TSF can provide storage for 13 years.

The flood carrying capacity of the existing spillways at the Musi TSF is not sufficient, therefore it is proposed to widen it to 18.0m with a series of weirs, increasing the frequency of major flood reduction to once every 1,000 years. Spillways are constructed of a mortar stone structure with draining pipes.

Tailings are pumped to the TSF by six slurry pumps through two lines of 400mm diameter rubber lined pipes having a length of 8,000m each. Recycled water flows to Luanshya Dam formed by impounding the Luanshya River upstream. The Luanshya Dam is the water resource for the processing plant and water collected comes from upstream of Luanshya River, Baluba mine water and Musi TSF recycled water. The water quantity in Luanshya Dam exceeds the processing plant fresh water consumption.

#### 8.4.3 Muliashi Leach Plant

The Muliashi Leach Plant processes oxidized ore of the Muliashi North Mine. In the future, the plant is also expected to process ore from the Baluba East Mine. Considering oxidized ore can be easily dissolved by acid, in 1998 SNC-Lavalin conducted a leaching test on samples. The copper recovery was higher than 70%, ambient agitation leaching yield rate was 51 to 58% and heated agitation leaching yield rate was higher than 75%. In 2008 Mintek (of South Africa) used a 6m high column for a hard ore sample leach test. The leaching cycle was 180 to 246 days and the Cu leach yielding rate was 72.9 to 76.9% with a sulfuric acid consumption of 40,000 to 56,000g for processing one tonne of ore. A soft ore sample was agitated and leached at a temperature of 65°C and had a Cu leach rate of 82 to 87% and a Co leach rate of 20 to 25% with a sulfuric acid consumption of 27,000 to 53,000g for processing one tonne of ore.

Feasibility studies were conducted separately in 1998 and 2008, and both of them selected the “open pit mining-heap leaching and heated agitation heap leaching-extraction-electrowinning” for producing copper cathode. In June 2010, NERIN completed a preliminary design for the Muliashi Leach Plant called “heap leaching and heated leaching-extraction-electrowinning” to process oxidized ore excavated from Muliashi North and Baluba East Mines. The processing capacities for hard and soft ore were designed to be 3.6Mtpa and 900,000tpa, respectively, with a total of 4.5Mtpa, and the annual Cu cathode production capacity was designed to be 40,000tpa.

Hard ore is crushed to -50mm and then sent for screening to produce -6mm fine ore. 6-50mm coarse hard ore is then sent for heap leaching at a designed leaching capacity of 2.556Mtpa and Cu metal output of 21,000tpa. -6mm fine ore is ground to 80% less than 106µm with soft ore and then sent for heated agitation leaching at a leaching capacity of 1,944Mtpa and Cu metal output of 19,000tpa. The technical parameters are indicated in Table 8-14. SRK believes that the design is reasonable and can be achieved.

Table 8-14: Muliashi Leach Plant Production Parameters

Item	Unit	Value
Heap Leaching		
Feed Ore .....	1,000t	3,060
Ore Grade .....	%Cu	1.23
Ore size .....	mm	6 to 50
Cu Leaching Rate .....	%	72
Agitation Leaching		
Feed Ore .....	1,000t	1,440
Ore Grade .....	%	1.36
Ore size .....	mm	0.106 (80%)
Cu leaching Rate .....	%	82
Cu Recovery Rate from Leachate .....	%	96
Extraction-electrowinning		
Cu Extraction Recovery Rate .....	%	98
Cu Electrowinning Recovery Rate .....	%	99.5
Cu Cathode Output (99.95%) .....	t	40,000

A total of US\$350 million was designed to be invested in the Muliashi Leach Plant project, involving open pit mining, processing, TSF construction, infrastructure construction and relevant supporting facilities construction. Trial production lasted three months, the stabilized production duration is 8 years, the forecast production reducing period is 4 years and the total operation duration is 12.5 years. The processing plant is located at the west of Muliashi North open pit and adjacent to the 500m blasting safety line. Co is planned to be concentrated during leaching and extraction circuit of Cu recovery, but no Co recovery has been constructed (space has been allocated in the agitation leaching plant for future construction). Due to a relative high Co content of the Luanshya mining area, it is SRK's opinion that construction of a Co recovery circuit should be conducted at the same time as the Cu circuit and the relevant design work should be completed as soon as possible.

According to “*Preliminary Design Report of Muliashi 40Ktpa Cu Cathode Project*” by NERIN in December 2010, the designed operating cost is to be USD 3,539 per tonne product (Metal Cu), in which the direct operating cost is to be USD 2,475.59 per tonne product (Metal Cu). SRK reviewed the related data, and disclosed the operational cost forecasts within Chapter 11.



Figure 8-14: An Overview of Muliashi Leach Plant

#### 8.4.4 CLM Production Plan

Table 8-15 shows the CLM history and forecast of the production plan for the period 2009 to 2014. The target of 1.5Mtpa throughput is difficult to achieve at the Baluba Processing Plant because mining capacity cannot currently provide sufficient ore feed. The construction of the Muliashi Leach Plant is ongoing and the associated mine is at the stage of surface soil stripping for infrastructure construction. In order to achieve the proposed production goals, SRK suggests improving the capacity of mining and heap leaching. The Baluba Smelting Slag Processing Plant should be put into production as early as possible. Due to the available slag quantity and the existing equipment allocated, the proposed 0.3Mtpa production capacity should be increased to 0.6Mtpa or higher and Co concentrated in the slag should be recovered.

SRK does not agree with separating Co from Cu concentrate which is planned at the Baluba Processing Plant, because the Co concentrate obtained in this way will have a high content of Cu and a low content of Co with a high investment and cost. It is more practical to separate Co concentrate from smelting slag at the CCS plant. Because 32% Co of the Baluba ore is concentrated in pyrite which in turn contains 1.95% Co, SRK believes that a study on a flowsheet to achieve “Cu and (pyrite) bulk separation-Cu and S separation, Co separation for S concentrate” is necessary to increase Co recovery rate.

**Table 8-15: CNMC Luanshya Copper Mines PLC, CLM Production Plan**

<u>Plant</u>	<u>Unit</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Baluba Processing Plant <sup>(1)</sup>							
Ore Treated . . . . .	1,000t	7	765	1,247	1,400	1,500	1,500
Concentrate Output . . . . .	1,000t	1	49	63	76	81	79
Contained Cu Metal . . . . .	t	88	10,017	16,018	18,500	19,845	19,845
Muliashi Leach Plant <sup>(2)</sup>							
Ore — Heap Leaching . . . . .	1,000t				1,065	2,556	2,556
Ore — Agitation Leaching . . . . .	1,000t				1,472	1,942	1,942
Cu Cathode Output . . . . .	t				18,912	32,959	40,033

*Notes:*

(1) Recoverable test in 2009, trial production in 2010 and production from 2011.

(2) Feasibility study in 2009, design in 2010, trial production in 2011 and production from 2012.

#### 8.4.5 Conclusions and Recommendations

The Baluba Processing Plant has been upgraded, by which outdated equipment has been eliminated and the production flow optimized. Based on the actual production parameters, the reconstruction has been successful. However due to the insufficient ore feed, the actual processing capacity in Baluba Processing Plant has not achieved the designed 1.5Mtpa.

The Co content in extracted ore is relatively high at about 0.1%; where 48% Co exists as carrollite and 32% Co is concentrated in pyrite. Currently, the flotation process is to extract Co in both carrollite and pyrite into the Cu concentrate. CLM is planning to separate Co concentrate from this Cu concentrate product through flotation and hydrometallurgical processes.

The Muliashi Leach Plant is rationally designed to produce 40,000tpa electrolytic copper by hard ore heap leaching and soft ore heated agitation leaching-extraction-electrowinning. In order to achieve the production target, SRK suggests increasing both the mining capacity and the heap leaching scale to provide sufficient Cu metal for electrowinning. Due to a high Co content in the ore, a relevant Co recovery design should also be completed so that it can be put into production at the same time with the Cu recovery.

The smelting slag stockpile near the Baluba Processing Plant contains about 10Mt, which is a good resource for Cu and Co recovery. A study should be conducted to estimate the quantity and occurrence of all valuable metals, so that a recovery flowsheet and feasibility study can be completed and commercial production can be realized as soon as possible.

## 9 WORKFORCE

### 9.1 Workforce Numbers

Workforce numbers at each of the subsidiary companies at the end of December 31, 2011 are shown in Table 9-1, Table 9-2, Table 9-3, and Table 9-4, respectively. SRK believes that the workforce number for each operating mine, leach plant and smelter is sufficient to match the current mining and processing capacity of each company.

**Table 9-1: NFCA Labor Statistic**

<u>Department</u>	<u>Sub-Total</u>	<u>Chinese</u>	<u>Zambian</u>
<b>NFCA Headquarter</b> .....	<b>262</b>	<b>33</b>	<b>229</b>
Management .....	9	9	0
Administration and Operation .....	51	8	43
Safety and Environmental .....	25	1	24
Budget & Finance .....	17	7	10
Human Resources .....	13	2	11
Supply .....	50	5	45
Sales & Marketing .....	2	1	1
Security .....	95	0	95
<b>Mining Department</b> .....	<b>606</b>	<b>15</b>	<b>591</b>
Mining Operation .....	451	5	446
Technical .....	17	7	10
Equipment & Power .....	82	1	81
Back Fill Station .....	56	2	54
<b>Metallurgical Processing Plant</b> .....	<b>111</b>	<b>14</b>	<b>97</b>
Concentrator .....	32	8	24
Technical .....	14	5	9
Mechanical & Electrical .....	33	1	32
Lab .....	32	0	32
<i>Contractor 1 ("Jinchengxin")</i> .....	1,907	176	1,731
<i>Contractor 2 ("Sinomine Resouce")</i> .....	252	60	192
<i>Contractor 3 ("Tongling Zhongdu")</i> .....	295	90	205
<b>Total</b> .....	<b>3,433</b>	<b>388</b>	<b>3,045</b>

Table 9-2: CLM Labor Statistic

<u>Department</u>	<u>Sub-Total</u>	<u>Chinese</u>	<u>Zambian</u>
Management	11	9	2
Underground Mining	1,343	6	1,337
Concentrator	293	7	286
Operations	269	2	267
Mechanical & Electrical	4	1	3
Production Services	130	0	130
Technical	129	8	121
Muliashi Project	60	26	34
Human Resources	25	0	25
Luanshya Hospital	124	0	124
Budget & Finance	23	5	18
Supply	41	8	33
Safety and Environmental	34	0	34
Administration & Corporate Affairs	95	8	87
Trust School	38	0	38
Craft School	11	0	11
Contractor 1 (“Panorama Security”)	414	0	414
Contractor 2 (“Zambian Nonferrous Metals Exploration & Construction Limited”)	184	0	184
Contractor 3 (“Workforce Contractors Ltd”)	54	0	54
Contractor 4 (“Geology and Construction Co”)	66	8	58
Contractor 5 (“Shunxin Investment”)	73	0	73
Contractor 6 (“MCC 15”)	1,320	370	950
Contractor 7 (“Chipako Private Co”)	30	0	30
Contractor 8 (“Pro-Earthworks”)	25	0	25
Contractor 9 (“PIGOTT”)	14	0	14
Contractor 10 (“LWP Enterprises Ltd”)	13	0	13
Contractor 11 (“MS Shamrock Ltd”)	66	0	66
<b>Total</b>	<b>4,889</b>	<b>458</b>	<b>4,431</b>

Table 9-3: CCS Labor Statistic

<u>Department</u>	<u>Sub-Total</u>	<u>Chinese</u>	<u>Zambian</u>
CCS Headquarters	1,129	135	994
Management	8	8	0
Administration and Corporate Affairs	57	11	46
Technical & Engineering	32	3	29
Equipment	174	9	165
Lab	54	9	45
Marketing	52	8	44
Human Resources	12	2	10
Budget & Finance	5	4	1
Acid Plant	80	10	70
Slag Processing Plant	80	8	72
Oxygen Plant	38	5	33
Power Station	50	11	39
Production & Technology	5	4	1
Safety, Health & Environmental	31	0	31
Supply	28	3	25
Water Plant	20	3	17
Copper Smelter	398	32	366
Beijing Office	5	5	0
Contractor 1 (“H.G.Security”)	62	0	62
Contractor 2 (“MCC 15”)	804	212	592
<b>Total</b>	<b>1,995</b>	<b>347</b>	<b>1,648</b>



Table 9-4: SML Labor Statistic

<u>Department</u>	<u>Sub-Total</u>	<u>Chinese</u>	<u>Zambian</u>
Management .....	7	6	1
Administration & HR .....	24	4	20
Operations .....	16	4	12
Budget & Finance .....	4	3	1
Technical & Production Services .....	17	4	13
Public Relations .....	3	0	3
Electrolytic Plant .....	40	4	36
Tailings Treatment .....	101	5	96
Concentrator .....	55	7	48
Mechanical & Electrical .....	19	1	18
Leaching Plant .....	67	5	62
Oxide Ore Purchasing .....	5	3	2
Engineering .....	6	1	5
Police GTeam (Security) .....	35	0	35
<b>Total</b> .....	<b>399</b>	<b>47</b>	<b>352</b>

## 9.2 Assessment of Workforce

Based on the labor contract laws of the Republic of Zambia, all Company staff and employees have signed work contracts. The Companies also pay allowances including housing, medical, underground, work injury, transportation, telephone, annual bonus, unemployment, leave, long service awards and national pension scheme funds for employees. SRK was informed during the site visit that the Companies' staff and contractors are relatively stable.

As of December 31, 2011, workforce numbers including management staff, technical staff, operational staff, and exploration, mining and construction contractors in total were 3,433 at NFCA, 4,889 at CLM, 1,995 at CCS and 399 at SML. The total staff turnover is about 8% per year. SRK was informed during the site visit that the Company is planning to decrease the turnover rate and build more stable management and production teams by further improving safety conditions and increasing salary levels.

## 10 OCCUPATIONAL HEALTH AND SAFETY

### 10.1 Safety Permits and Procedures and Training

The main Safety Permit for mining and minerals projects under Zambian legislative requirements is the Annual Operating Permit issued by the Mines Safety Department of Zambia. SRK sighted and reviewed CNMC Subsidiary Companies Annual Operating Permits for the last three years (except for operations younger than three years old — where SRK reviewed the permits from the beginning of operations until present). At the time of SRK's site visit the SML and Luanshya Projects had not received their Annual Operating Permit for 2011 but SRK sighted the submitted applications for their required Annual Operating Permits.

SRK was provided with Emergency Response Plans (ERP) for the CNMC Zambia Project's individual subsidiary companies operations which covered the base requirements for responding to mine emergencies. SRK also sighted and reviewed documented Occupational Health and Safety (OHS) management systems/procedures for the CNMC Zambia Project's operations. The reviewed OHS management systems and procedures which have mainly been developed by the companies' Environmental and Social Departments include:

- Health and Safety Policy and Plan
- Safety Management System Organizational Chart

- Hazard Register for Mine Work — for Daily use
- Hazard Register for Entry to Underground Work
- Hazard Register for underground Development activities
- Shaft Firefighting requirements list
- Hazard Register for start of shift
- Hazard Register from Entry examination
- Hazard Register for underground support activities
- Hazard Register for extending service columns
- Hazard Register for Face Preparation
- Hazard Register for underground area marking off
- Hazard Register for handheld drilling
- Hazard Register for Explosives Management
- Hazard Register for Explosives Charging up
- Hazard Register for Blasting measures
- Hazard Register for cleaning development end with LHD
- Fire Risk Survey for Shaft Complex
- Fire Risk Survey for Shaft Top Risk
- Risk Register for Fixed Structures, Cu filtration plant
- Cu Filter Fixed Equipment inherent vs residual risk matrix
- Failure Mode & Effect Analysis (FMEA) Risk Assessment for underground Haulage rehabilitation, 14-9-2009
- FMEA Risk Assessment for underground drives, 1-10-2010
- FMEA Risk Assessment for removal of raisebore machine, 15-10-2010
- Hazard & Operability Study (HAZOP) for Heap Leach 9-6-2011
- Mines Risk Assessment Report (whole project) — prepared by International Mining Industry Underwriters Limited (IMI), Mar 2005
- Risk Evaluation: Inherent v Residual after employing Corrective and Preventive Controls
- Hazard Register Long Hole Drilling, equipment transport

- Hazard Register Long Hole Drilling, drill rig assembly
- Hazard Register Long Hole Drilling, drilling operations
- Hazard Register Long Hole Drilling, dismantling drill rig
- Mines Risk Assessment Report (whole project) — prepared by IMIU, Apr 19, 2007
- Mining Risk Engineering Assessment Report — Zurich Risk Engineering Ltd, Feb 2008
- Emergency Procedures Plan, June 22, 2010
- Emergency Procedures for Fire Plan, Sept 16, 2010
- Mine Flood Control Manual REV August 1, 2009, prepared by Geology Dept
- Emergency Response Procedure, Oct 11, 2009
- Flood Control Procedures — Action Legend in Pump Chambers

## 10.2 Occupational Health and Safety Observations and Training

Each of CNMC's subsidiary companies has a Safety Monitoring Division which is responsible for the safety of mining, processing plants and tailing dams. Regular reviews of safety responsibilities for each workshop are conducted by the officers from the Safety Monitoring Division.

During site visits, SRK noted that appropriate safety signage was in place at hazard points throughout the various sites and the Material Safety Data Sheets (MSDS) had been promulgated, although they were not at the point of hazard at all the various project sites. SRK also notes that accident response equipment such as showers and eyebaths for contact with hazardous materials were in various states of readiness. Housekeeping in general around the entrance of the NFCA underground mine, concentrator and other areas was poor and should be improved in order to reflect best practice (i.e. clean and dry floors, infrastructure maintenance, etc.). SRK recommends an audit of accident response equipment and housekeeping procedures be undertaken and a register set up to record what equipment requires repair, what areas require new or additional equipment installed and maintenance of in place equipment.

SRK observed that CNMC employees were provided adequate personal protective equipment (PPE) for the majority of tasks they undertake and areas where they work in although this was observed to not always be the case. However, SRK notes that individuals visiting the sites were only provided minimal PPE (i.e. hardhats) when entering the work areas, no evidence of a record system for staff or visitors checking into and out of underground workings and no induction training was provided to detail hazards present about the sites and the company's standard procedures for entering said areas. SRK advises that CNMC would benefit from the continued implementation, review and improvement of the company's health and safety procedures be undertaken for entrance to all site areas; both staff and visitors.

SRK was informed that according to the new employees experience level and work field, they must accept half-day, one-day, or two-day safety training and checking required certificate or license (e.g., the use of explosives) before going to work. For specific workforces, before the start of each shift, employees hold regular safety meetings of about 15 minutes duration with the previous shift workers in their work area. The previous shift workers are required to complete a written and signed safety record to advise the incoming shift about the prevailing work conditions.

Established employees are provided with updated training every year or every second year depending on the employee's experience level. Employees with roles which require certification or licensing (e.g., the use of explosives) are trained by the relevant statutory authority. Such training could extend over seven days per annum and includes skills testing before a certificate or license is issued.

**10.3 Historical Occupational Health and Safety Records**

OHS statistics for the CNMC subsidiary companies have been recorded for last three years (for the operations that have been running less than three years, the last years of operation were provided). Injuries and safety related incidents are recorded. Table 10-1 shows the accident statistics of each subsidiary company for the last year.

**Table 10-1: Safety Statistics for Each Subsidiary Company's Operations**

	<u>NFCA/Contractors</u>	<u>SML</u>	<u>CCS</u>	<u>Luanshya/Contractors</u>
2009 Minor Incidents /				
Injuries . . . . .	1/52	Not Reported	59	Not Reported/n.a.
2009 MSD Reportable				
Accidents . . . . .	0/23	0	6	4/n.a.
2009 Fatalities . . . . .	1/3	0	0	1/n.a.
2010 Minor Incidents /				
Injuries . . . . .	2/16	Not Reported	59	Not Reported/n.a.
2010 MSD Reportable				
Accidents . . . . .	0/8	0	3	10/n.a.
2010 Fatalities . . . . .	1/1	0	1	1/n.a.
2011 Minor Incidents /				
Injuries . . . . .	2/23	0	46	44/12
2011 MSD Reportable				
Accidents . . . . .	1/7	0	0	9/3
2011 Fatalities . . . . .	0/1	0	0	1/2

*Note:*

\* "not applicable" (n.a) is reported for Luanshya Contractors in 2009 and 2010 as NFCA reported to SRK that no contractors had been working at the site prior to 2011.

SRK considers the existence of the above accident statistics and procedures being developed to show that each subsidiary company has been generally committed to safety training, provision of safety equipment and safety monitoring. SRK recommends that all minor and near miss statistics should also be included in the regular compilation and review of safety statistics.

## 11 PRODUCTION, OPERATING AND CAPITAL COSTS

### 11.1 Production History

Table 11-1 shows the CNMC's four subsidiary companies' historical production records from 2008 to 2011.

**Table 11-1: Historical Production Records of Mines and Plants**

Mine/Plant	Item	Unit	2008	2009	2010	2011
<b>NFC Africa Mining PLC</b>						
Chambishi Cu Mine . . .	Ore Mined	t	1,450,983	1,358,042	1,338,137	1,515,429
	Ore Grade	Cu (%)	1.87	1.81	1.75	1.67
<i>Where: Chambishi</i>						
	Main Mine	t	1,450,983	1,358,042	1,288,137	1,028,306
	Ore Grade	Cu (%)	1.87	1.81	1.75	1.58
<i>Where: Chambishi</i>						
West Mine	Ore Mined	t	N/A	N/A	50,000	487,123
	Ore Grade	Cu (%)	N/A	N/A	1.86	1.86
<b>Chambishi Concentrator . . . . .</b>						
Ore Treated		t	1,450,916	1,358,682	1,330,539	1,569,187
	Cu Concentrate	t	58,189	53,341	50,325	61,119
Concentrate Grade		Cu (%)	44.68	44.06	43.78	38.03
	Treated Ore/	t/t				
Concentrate			24.93	25.47	26.44	25.67
Cu Recovery Rate		(%)	95.83	95.57	94.61	88.69
<b>Sino-Metals Leach Zambia Ltd</b>						
Chambishi Leach Plant . . . . .	Cu Cathode	t	6,505	6,513	7,103	7,003
	Cu Recovery Rate	Cu (%)	75.36	71.96	85.36	86.98
<b>Chambishi Copper Smelter Ltd</b>						
Chambishi Cu Smelter . . . . .	Blister Cu	t		108,419	165,118	150,863
	Blister Cu Grade	Cu (%)		99.19	99.08	99.01
Cu Recovery Rate		Cu (%)		95.55	96.28	96.59
<b>CNMC Luanshya Copper Mines PLC</b>						
Baluba Cu Mine . . . . .	Ore Mined	t		6,580	765,446	1,224,068
	Ore Grade	Cu (%)		1.42	1.40	1.36
		Co (%)		0.13	0.10	0.11
	Ore Treated	t		6,580	765,446	1,247,163
Cu Concentrate		t		608	49,339	63,015
	Concentrate	Cu (%)				
Grade				14.57	20.30	25.42
		Co (%)		1.07	1.09	0.90
Treated Ore/		t/t				
	Concentrate			10.82	15.51	19.79
Cu Recovery Rate		(%)		94.81	93.48	94.43
Co Recovery Rate		(%)		76.05	67.56	40.14

### 11.2 Operation Costs

CNMC's four subsidiaries' management provided cash operating cost analysis including mining operations, ore processing plants, electrolytic copper plant, and smelter. Consumption of reagents and other materials in the operating cost records are based on prices obtained by suppliers overseas. Information regarding salary scales was used to calculate labor costs. Power consumption and costs were based on local standards in Zambia.

### 11.2.1 Mining and Processing Costs

Mining is conducted by underground mining techniques utilizing either the services of mining contractors or the subsidiaries' own employees. For mining and development, contractors are responsible for partly providing the necessary production and support equipment as well as all direct labor and front line supervision. The Company generally provides explosives to the contractors. The Company also provides power and water supplies for mining operations carried out by contractors. The mining contracts are signed based on the amount of ore mined and its quality control such as the average grade as well as loss rate and dilution rate. The mine development contracts are signed based on the footage of a certain height × width tunnel that the contractor is required to complete. Safety and environmental issues are also detailed in the contract to define liabilities and responsibilities for both parties.

The operating costs for mining and ore processing plants at Chambishi and Baluba are estimated based on mine and plant monthly production data. Table 11-2 shows the operating costs of mining and processing plant (unit: USD per tonne of copper concentrate). The major cash operating costs for mining were from consumables, on-site and off-site administration, labor, fuel and electricity, and non-income taxes and governmental charges; and for ore processing were from the on-site and off-site administration, non-income taxes and governmental charges, consumables, labor, and fuel and electricity. It should be noted that the operating costs for the CNMC's projects were sourced from the management accounts of the Group's subsidiaries. SRK only classified the costs based on the requirements of the HKEx in Chapter 18.

**Table 11-2: Mining and Processing Costs (USD/t), 2009 to 2011**

<u>Cash Operating Cost</u>	<u>NFCA-Chambishi Operation</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
Workforce Employment . . . . .	139.76	187.26	207.86
Consumables . . . . .	154.95	156.09	107.59
Mining Contract . . . . .	801.00	871.45	991.47
Fuel, Electricity, Water and Other Services . . . . .	79.32	106.88	145.91
On-site and off-site Administration . . . . .	245.45	274.61	318.49
Environmental Protection and Monitoring . . . . .	0.86	0.90	0.85
Transportation of Workforce . . . . .	2.74	7.20	7.80
Product Marketing and Transport . . . . .	46.51	93.52	102.19
Non-income Taxes, Royalties and Other Governmental Charges . . . . .			
Contingency Allowance . . . . .			
<b>Total</b> . . . . .	<b>1,470.58</b>	<b>1,697.92</b>	<b>1,882.16</b>
<u>Cash Operating Cost</u>	<u>CLM-Baluba Center Operation</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
Workforce Employment <sup>(1)</sup> . . . . .		416.71	462.56
Consumables . . . . .		378.12	475.50
Mining Contract . . . . .			
Fuel, Electricity, Water and Other Services . . . . .		92.50	128.86
On-site and off-site Administration . . . . .		277.17	276.05
Environmental Protection and Monitoring . . . . .		0.28	0.25
Transportation of Workforce . . . . .			
Product Marketing and Transport . . . . .		12.55	16.92
Non-income Taxes, Royalties and Other Governmental Charges . . . . .			
Contingency Allowance . . . . .			
<b>Total</b> . . . . .		<b>1,177.32</b>	<b>1,360.13</b>

Note:

(1) Fees of mining contractors were included

### 11.2.2 Copper Cathode and Blister Copper Product Costs

The operating costs for producing electrolytic copper (Cu cathode) and for smelter copper (blister Cu) and associated sulfuric acid are estimated based on the leach plant and smelter monthly operating data. The major costs were from consumables, on-site and off-site administration, labor, and fuel, electricity and other services for the Chambishi Leach Plant, and came from consumables, on-site and off-site administration, non-income taxes, royalties and other governmental charges, and electricity and other services for the Chambishi Copper Smelter (Table 11-3). It should be noted that the operating costs for the CNMC's projects were sourced from the management accounts of the Group's subsidiaries. SRK only classified the costs based on the requirements of the HKEx in Chapter 18.

**Table 11-3: Cu Cathode and Blister Cu Product Costs (USD/t), 2009 to 2011**

<u>Cash Operating Cost</u>	<u>SML-Chambishi Leach Plant</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
Workforce Employment .....	380.93	543.57	674.74
Consumables .....	1,121.76	1,231.45	2,041.94
Fuel, Electricity, Water and Other Services .....	242.75	267.07	393.28
On and off-site Administration .....	457.85	551.18	670.76
Environmental Protection and Monitoring .....	1.54	0.84	0.84
Transportation of Workforce .....			
Product Marketing and Transport .....	100.57	121.78	114.96
Non-income Taxes, Royalties and Other Governmental Charges .....			
Contingency Allowance .....			
<b>Total</b> .....	<b>2,305.39</b>	<b>2,715.89</b>	<b>3,896.52</b>
<u>Cash Operating Cost</u>	<u>CCS-Chambishi Cu Smelter</u>		
	<u>2009</u>	<u>2010</u>	<u>2011</u>
Workforce Employment .....	30.79	30.59	63.85
Consumables <sup>(1)</sup> .....	5,570.78	7,185.72	7,364.32
Fuel, Electricity, Water and Other Services .....	63.65	46.01	40.25
On-site and off-site Administration .....	156.97	77.61	111.49
Environmental Protection and Monitoring .....	0.51	0.23	0.25
Transportation of Workforce <sup>(2)</sup> .....			
Product Marketing and Transport .....	49.62	120.95	169.24
Non-income Taxes, Royalties and Other Governmental Charges .....			
Contingency Allowance .....			
<b>Total</b> .....	<b>5,872.32</b>	<b>7,461.11</b>	<b>7,749.39</b>

*Notes:*

(1) Cu concentrate costs of USD5,537.05 in 2009, USD7,140.12 in 2010, and USD7,291.30 in 2011 were included in the consumables

(2) Fees for transportation of workforce were included in the on-site and off-site administration cost



<u>Cash Operating Cost</u>	CCS-Sulfuric Acid Plant		
	2009	2010	2011
Workforce Employment .....	3.29	3.69	7.09
Consumables .....	2.79	2.80	1.58
Fuel, Electricity, Water and Other Services .....	5.01	6.26	6.34
On and off-site Administration .....	7.83	5.50	7.75
Environmental Protection and Monitoring .....	0.004	0.001	0.002
Transportation of Workforce <sup>(1)</sup> .....			
Product Marketing and Transport <sup>(2)</sup> .....			
Non-income Taxes, Royalties and Other Governmental Charges .....			
Contingency Allowance .....			
<b>Total</b> .....	<b>18.92</b>	<b>18.25</b>	<b>22.76</b>

*Notes:*

(1) Fees for transportation of workforce were included in the on-site and off-site administration cost

(2) Cost for sulfuric acid product transport was billed to the purchaser

### 11.3 Capital Costs and Investments

From 2012 to 2016, CNMC plans to invest approximately USD1,647,582,000 in the four subsidiary companies' projects in exploration, mining development, mine construction, technical improvement, upgrading the capacities of tailing storage facilities and other supporting facilities. The investments are approximately USD898,500,000 for NFCA's projects, USD186,850,000 for SML's projects, USD213,213,000 for CCS's projects, and USD349,019,000 for CLM's project (see Table 11-4). In SRK's opinion, the proposed capital investments are sufficient and likely to achieve the Company's stated targets if the capital is in place.

Table 11-4: Subsidiary Companies' Investment Plan, 2012 to 2016

Project/Mine	2012	2013	2014	2015	2016	Total (1,000USD/ Project)
<b>NFCA</b>						
Main orebody production and development . . . . .	11,500	2,000	1,000	9,000	12,500	36,000
West orebody system upgrade, construction of Stage II . . . .	24,000	15,000	10,000	14,000	17,000	80,000
Southeast orebody development . . . . .	116,000	150,000	180,000	180,000	154,000	780,000
Prospecting . . . . .	1,500	1,000				2,500
<b>Subtotal (1,000USD/a) . . . . .</b>	<b>153,000</b>	<b>168,000</b>	<b>191,000</b>	<b>203,000</b>	<b>183,500</b>	<b>898,500</b>
<b>SML</b>						
Huachin Project, Congo . . . . .	12,000	2,000				14,000
Kakoso 3ktpa leach project . . .	9,000	8,000				17,000
Mwambashi Project . . . . .	25,000	20,000	5,000			50,000
Electrolyzer update . . . . .	3,650					3,650
Mabende Project, Congo . . . . .	50,000	30,000	15,000			95,000
Bio-leaching industrial test . . .	3,500					3,500
Mwambashi risk exploration . . . . .	500	1,000	1,000	1,200		3,700
<b>Subtotal (1,000USD/a) . . . . .</b>	<b>103,650</b>	<b>61,000</b>	<b>21,000</b>	<b>1,200</b>		<b>186,850</b>
<b>CCS</b>						
Capacity expansion of smelter/sulfuric plant and TSF . . . . .	66,821	88,535	4500			159,856
Bi recovery from electrostatic dust . . . . .	1,857					1,857
Co recovery system from converter slag . . . . .			25,500	25,000		50,500
Metals comprehensive utilization . . . . .					1,000	1,000
<b>Subtotal (1,000USD/a) . . . . .</b>	<b>68,678</b>	<b>88,535</b>	<b>30,000</b>	<b>25,000</b>	<b>1,000</b>	<b>213,213</b>
<b>CLM</b>						
Baluba Center development, upgrade and exploration (SCu) . . . . .	9,002	5,585	1,367	1,190	1,500	18,644
Muliashi Leach Project . . . . .	100,000					100,000
Mashiba exploration, development and construction (SCu) . . . . .			195,000	6,302	8,538	209,840
Muliashi South exploration, development and construction (SCu) . . . . .			20,000	192	343	20,535
<b>Subtotal (1,000USD/a) . . . . .</b>	<b>109,002</b>	<b>5,585</b>	<b>216,367</b>	<b>7,684</b>	<b>10,381</b>	<b>349,019</b>
<b>Total . . . . .</b>	<b>434,330</b>	<b>323,120</b>	<b>458,367</b>	<b>236,884</b>	<b>194,881</b>	<b>1,647,582</b>

#### 11.4 Forecast on Operating Costs and Production Capacity

Table 11-5 shows the forecast of the operating costs (cost unit: USD per tonne of copper concentrate) of mining and ore processing plants at NFCA-Chambishi and CLM-Baluba, and the operating costs for producing the electrolytic copper (Cu cathode) at SML-Chambishi Leach Plant, SML-Chambishi Processing Plant and the smelter copper (blister Cu) and associated sulfuric acid product plants at CCS-Chambishi Copper Smelter between 2012 and 2016. The major costs are salary, consumables, fuel, electricity and other services, on-site and off-site administration, and non-income taxes, royalties and other governmental charges. The forecast cost estimates are based on each subsidiary company's historical production records, which were sourced from the management accounts of the Group's subsidiaries. SRK only classified the costs based on the requirements of the HKEx in Chapter 18.

SRK notes that there are two potential uncertainties to be further checked: firstly, the feeding resource of SML bio-leaching project; secondly, the bio-leaching technology is to be further demonstrated and implemented.

**Table 11-5: Forecast on Mining and Processing Costs between 2012 and 2016**

Cash Operating Cost	NFCA-Chambishi Operation				
	2012	2013	2014	2015	2016
Workforce Employment . . . . .	182.71	173.06	163.51	163.20	163.20
Consumables . . . . .	152.29	144.25	136.29	136.03	136.03
Mining Contract . . . . .	850.22	805.33	760.90	759.41	759.41
Fuel, Electricity, Water and Other					
Services . . . . .	104.28	98.78	93.33	93.15	93.15
On and off-site Administration . . . . .	193.90	173.70	152.01	144.13	144.13
Environmental Protection and					
Monitoring . . . . .	5.39	5.11	4.83	4.82	4.82
Transportation of Workforce . . . . .	0.46	0.40	0.34	0.32	0.32
Product Marketing and Transport . . . . .	2.85	2.85	2.85	2.85	2.85
Non-income Taxes, Royalties and Other					
Governmental Charges . . . . .	111.34	108.33	106.97	104.83	104.83
Contingency Allowance (Health and					
Safety) . . . . .	31.47	29.81	28.16	28.11	28.11
<b>Total . . . . .</b>	<b>1,634.91</b>	<b>1,541.62</b>	<b>1,449.20</b>	<b>1,436.84</b>	<b>1,436.84</b>

Cash Operating Cost	CLM-Baluba Mining Operation				
	2012	2013	2014	2015	2016
Workforce Employment <sup>(1)</sup> . . . . .	452.43	438.29	426.89	426.89	426.89
Consumables . . . . .	336.18	348.94	339.86	339.86	339.86
Mining Contract . . . . .					
Fuel, Electricity, Water and Other					
Services . . . . .	113.81	118.31	115.05	115.05	115.05
On and off-site Administration . . . . .	228.45	231.97	225.92	225.92	225.92
Environmental Protection and					
Monitoring . . . . .	10.31	9.99	9.73	9.73	9.73
Transportation of Workforce . . . . .	0.69	0.64	0.64	0.64	0.64
Product Marketing and Transport . . . . .	12.54	12.54	12.54	12.54	12.54
Non-income Taxes, Royalties and Other					
Governmental Charges . . . . .	18.10	18.87	18.39	18.50	18.50
Contingency Allowance (Health and					
Safety) . . . . .	0.13	0.13	0.12	0.11	0.11
<b>Total</b> . . . . .	<b>1,172.65</b>	<b>1,179.48</b>	<b>1,149.14</b>	<b>1,149.25</b>	<b>1,149.25</b>

Note:

(1) Fees of mining contractors were included

Cash Operating Cost	SML-Chambishi Leach Plant				
	2012	2013	2014	2015	2016
Workforce Employment . . . . .	600.00	625.43	481.58	529.78	529.78
Purchase Ore <sup>(1)</sup> . . . . .	0.00	999.18	699.43	699.43	699.43
Consumables . . . . .	766.25	1,822.46	1,519.28	1,519.28	1,519.28
Fuel, Electricity, Water and Other					
Services . . . . .	354.28	352.05	350.58	350.58	350.58
On and off-site Administration . . . . .	642.98	564.98	556.48	556.48	556.48
Environmental Protection and					
Monitoring . . . . .	2.14	2.14	2.14	2.14	2.14
Transportation of Workforce . . . . .	6.68	6.68	6.68	6.68	6.68
Product Marketing and Transport . . . . .	265.00	189.29	255.00	255.00	255.00
Non-income Taxes, Royalties and Other					
Governmental Charges . . . . .					
Contingency Allowance (Health and					
Safety) . . . . .	1.20	1.20	1.20	1.20	1.20
<b>Total</b> . . . . .	<b>2,638.53</b>	<b>3,564.22</b>	<b>3,172.94</b>	<b>3,222.64</b>	<b>3,275.64</b>

Note:

(1) Fees for purchase of ore were not included

Cash Operating Cost	SML-Chambishi Processing Plant				
	2012	2013	2014	2015	2016
Workforce Employment <sup>(1)</sup> . . . . .	40.00	44.00	48.40	53.20	58.50
Consumables . . . . .	307.22	307.22	307.42	307.52	307.52
Fuel, Electricity, Water and Other Services . . . . .	133.55	133.55	133.55	133.55	133.55
On and off-site Administration . . . . .	2.00	2.00	2.20	2.20	2.20
Environmental Protection and Monitoring . . . . .	4.05	4.05	4.05	4.05	4.05
Transportation of Workforce <sup>(2)</sup> . . . . .					
Product Marketing and Transport . . . . .	7.34	7.34	7.34	7.34	7.34
Non-income Taxes, Royalties and Other					
Governmental Charges . . . . .	5.69	5.69	5.69	5.69	5.69
Contingency Allowance (Health and Safety) . . . . .	2.24	2.24	2.24	2.24	2.24
<b>Total</b> . . . . .	<b>502.09</b>	<b>506.09</b>	<b>510.89</b>	<b>515.79</b>	<b>521.09</b>

Notes:

(1) Fees of mining contractors were included

(2) Fees for transportation of workforce were included in the on-site and off-site administration cost

Cash Operating Cost	CCS-Chambishi Cu Smelter				
	2012	2013	2014	2015	2016
Workforce Employment	25.09	19.98	22.38	23.22	26.00
Consumables <sup>(1)</sup>	7,188.95	7,210.26	7,210.26	7,215.68	7,215.68
Fuel, Electricity, Water and Other					
Services	41.09	41.35	43.42	41.60	42.35
On and off-site Administration	144.16	102.75	128.75	122.96	122.96
Environmental Protection and					
Monitoring	0.06	0.05	0.05	0.04	0.04
Transportation of Workforce <sup>(2)</sup>	0.00	0.00	0.00	0.00	0.00
Product Marketing and Transport	143.33	139.20	139.79	136.80	136.80
Non-income Taxes, Royalties and Other					
Governmental Charges	1.03	0.70	0.70	0.65	0.65
Contingency Allowance (Health and					
Safety)	0.51	0.40	0.40	0.37	0.37
<b>Total</b>	<b>7,544.22</b>	<b>7,514.69</b>	<b>7,545.75</b>	<b>7,541.32</b>	<b>7,544.85</b>

Notes:

(1) Cu concentrate costs of USD7,291.30 in 2011 forecast were included in the consumables

(2) Fees for transportation of workforce were included in the on-site and off-site administration cost

Cash Operating Cost	CCS-Sulfuric Acid Plant				
	2012	2013	2014	2015	2016
Workforce Employment	2.57	2.57	2.57	2.57	2.57
Consumables	1.68	1.68	1.68	1.68	1.68
Fuel, Electricity, Water and Other					
Services	7.47	7.47	7.47	7.47	7.47
On and off-site Administration	10.36	10.36	10.36	10.36	10.36
Environmental Protection and					
Monitoring	0.01	0.01	0.02	0.02	0.02
Transportation of Workforce	0.00	0.00	0.00	0.00	0.00
Product Marketing and Transport <sup>(1)</sup>	0.86	0.86	0.86	0.86	0.86
Non-income Taxes, Royalties and Other					
Governmental Charges <sup>(2)</sup>	4.87	4.87	4.87	4.87	4.87
Contingency Allowance (Health and					
Safety)	0.07	0.07	0.07	0.07	0.07
<b>Total</b>	<b>27.89</b>	<b>27.89</b>	<b>27.89</b>	<b>27.89</b>	<b>27.89</b>

Notes:

(1) Cost for sulfuric acid product transport was billed to the purchaser

(2) For the sulfuric acid product, there were no export taxes and other charges

Table 11-6 below is the operating cost forecast of the CNMC Huachin (Congo) Leach Plant; all the data are sourced from “*Feasibility Study of CNMC Huachin (Congo) 5,000tpa Cu Cathode Project*” by Shenyang Design and Research Institute of Nonferrous Metallurgy in December 2010. For the operating cost forecast of the SML Kakoso Leach Plant, all the data are sourced from “*Preliminary Design Report of Kakoso 3,000tpa Cu Cathode Project*” by Shenyang Design and Research Institute of Nonferrous Metallurgy in March 2011.

**Table 11-6: Operating Cost Forecast of SML-CNMC Huachin (Congo) and SML-Kakoso Leach Plants**

<b>Cash Operating Cost</b>	<b>CLM-Muliashi Mining and Leach Plant</b>				
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Workforce Employment .....	382.39	206.70	179.40	170.86	170.86
Consumables .....	1,385.46	1,293.83	1,175.22	1,126.75	1,126.75
Fuel, Electricity, Water and Other					
Services .....	726.50	674.79	623.43	599.92	599.92
On and off-site Administration .....	832.37	528.45	461.50	435.05	435.05
Environmental Protection and Monitoring ..	10.16	19.24	16.69	15.90	15.90
Transportation of Workforce					
Product Marketing and Transport .....	224.93	224.97	206.85	197.00	197.00
Non-income Taxes, Royalties and Other					
Governmental Charges .....	134.97	135.00	129.55	129.55	129.55
Contingency Allowance (Health and Safety)					
<b>Total .....</b>	<b>3,696.77</b>	<b>3,082.98</b>	<b>2,792.63</b>	<b>2,675.03</b>	<b>2,675.03</b>
<b>Cash Operating Cost</b>	<b>SML-CNMC Huachin (Congo) Leach Plant</b>				
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Workforce Employment .....	330.00	330.00	399.30	247.50	272.25
Purchase Ore <sup>(1)</sup> .....	1,728.60	1,730.18	1,726.62	1,726.62	1,726.62
Consumables .....	2,468.77	2,466.01	2,467.90	2,457.40	2,457.40
Fuel, Electricity, Water and Other					
Services .....	204.67	203.45	204.50	202.00	202.00
On and off-site Administration .....	172.25	172.25	177.25	111.25	111.25
Environmental Protection and Monitoring ..	1.50	1.50	1.50	1.50	1.50
Transportation of Workforce					
Product Marketing and Transport .....	200.00	200.00	200.00	200.00	200.00
Non-income Taxes, Royalties and Other					
Governmental Charges					
Contingency Allowance (Health and Safety)					
Safety) .....	1.25	1.25	1.25	1.25	1.25
<b>Total .....</b>	<b>3,378.44</b>	<b>3,374.46</b>	<b>3,451.70</b>	<b>3,220.90</b>	<b>3,245.65</b>

Note:

(1) Fees for the transportation of ore were not included

<b>Cash Operating Cost</b>	<b>SML-Kakoso Leach Plant</b>				
	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Workforce Employment .....		600	600	550	550
Consumables .....		1,000	1,000	1,000	1,000
Fuel, Electricity, Water and Other					
Services .....		380	380	350	350
On and off-site Administration .....		550	550	498	498
Environmental Protection and Monitoring ..		5	5	5	5
Transportation of Workforce .....		6	6	5	5
Product Marketing and Transport .....		250	122	122	122
Non-income Taxes, Royalties and Other					
Governmental Charges					
Contingency Allowance (Health and Safety)					
<b>Total .....</b>		<b>2,796</b>	<b>2,663</b>	<b>2,663</b>	<b>2,663</b>

The production capacities and production forecast for the years from 2012 and 2016 are listed in Table 11-7.

**Table 11-7: Production Capacities and Production Forecast, 2012 to 2016**

<u>Project/Mine</u>	<u>Unit</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
<b>NFCA-Chambishi Processing Plant</b>						
Mined and Treated Ore . . . . .	1,000t	1,700	2,000	2,200	2,350	2,350
<i>Chambishi Main Orebody</i> . . .	1,000t	1,000	1,000	1,000	1,000	1,000
<i>Chambishi West Orebody</i> . . .	1,000t	860	1,090	1,000	1,150	1,150
Average Feed Grade . . . . .	% Cu	1.75	1.78	1.85	1.89	1.89
<i>Chambishi Main Orebody</i> . . .	% Cu	1.68	1.72	1.84	1.89	1.89
<i>Chambishi West Orebody</i> . . .	% Cu	1.85	1.85	1.85	1.89	1.89
Total Cu Recovery Rate . . . . .	%	89.19	88.10	87.73	87.21	87.21
Cu Concentrate . . . . .	t	65,089	77,635	87,358	96,767	96,767
Concentrate Grade . . . . .	% Cu	38.72	37.36	37.06	36.62	36.62
Contained Cu Metal in Concentrate . . . . .	t	25,200	29,006	32,372	35,438	35,438
<b>NFCA-Chambishi SE Processing Plant</b>						
Mined and Treated Ore from Chambishi Southeast . . . . .	1,000t					16,500
Average Feed Grade . . . . .	% Cu					2.00
Average Feed Grade . . . . .	% Co					0.10
Total Cu Recovery Rate . . . . .	%					93.98
Total Co Recovery Rate . . . . .	%					45.63
Cu Concentrate . . . . .	t					122,917
Concentrate Grade . . . . .	% Cu					24.00
Concentrate Grade . . . . .	% Co					0.60
Contained Cu Metal in Concentrate . . . . .	t					29,500
Contained Co Metal in Concentrate . . . . .	t					700
<b>CLM-Baluba Processing Plant</b>						
Mined and Treated Ore from Baluba Center Mine . . . . .	1,000t	1,400	1,500	1,500	1,500	1,500
Average Feed Grade . . . . .	% Cu	1.40	1.40	1.40	1.40	1.40
Cu Recovery Rate . . . . .	%	94.50	94.50	94.50	94.50	94.50
Cu Concentrate . . . . .	t	75,510	81,000	79,380	79,380	79,380
Concentrate Grade . . . . .	% Cu	24.50	24.50	25.00	25.00	25.00
Contained Cu Metal in Concentrate . . . . .	t	18,500	19,845	19,845	19,845	19,845
<b>CLM-Muliashi Leach Plant</b>						
Ore Mined . . . . .	1,000t	4,700	4,600	4,600	4,600	4,600
Includes: Hard Ore . . . . .	1,000t	3,080	1,000	1,000	1,000	1,000
Soft Ore . . . . .	1,000t	1,620	3,600	3,600	3,600	3,600
Cu Grade of Ore Mined . . . . .	%	1.09	1.19	1.19	1.19	1.19
Where: Hard Ore . . . . .	%	1.12	1.06	1.06	1.06	1.06
Soft Ore . . . . .	%	1.05	1.22	1.22	1.22	1.22
Ore Processed . . . . .	1,000t	2,537	4,498	4,498	4,498	4,498
Includes: Agitation Leach Ore . . . .	1,000t	1,472	1,942	1,942	1,942	1,942
Heap Leached Ore . . . . .	1,000t	1,065	2,556	2,556	2,556	2,556
Total Cu Recovery . . . . .	%	51.53	61.59	74.81	74.81	74.81
Cu Recovery of Agitation Leach . .	%	76.00	76.00	76.00	76.00	76.00
Cu Recovery of Heap Leach . . . . .	%	21.05	51.33	73.97	73.97	73.97
Total Cu Cathode Output . . . . .	t	18,912	32,959	40,033	40,033	40,033



**APPENDIX III**

**COMPETENT PERSON'S REPORT**

<b>Project/Mine</b>	<b>Unit</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Cu Cathode Output of Agitation Leach . . . . .	t	16,562	16,915	16,915	16,915	16,915
Cu Cathode Output of Heap Leach . . . . .	t	2,350	16,044	23,118	23,118	23,118
Cu Metal Contained in Cathode ..	t	18,817	32,795	39,833	39,833	39,833
<b>SML-Chambishi Processing Plant</b>						
Treated Ore . . . . .	1,000t	330	330	330	330	330
Includes: Chambishi West						
Oxidized Ore . . . . .	1,000t	240	240			
#3 Oxidized Ore Pile . . . . .	1,000t	90	90			
Ore from Mwambashi . . . . .	1,000t			330	330	330
Average Feed Grade . . . . .	% Cu	1.41	1.41	1.71	1.71	1.71
Where: Chambishi West Oxidized						
Ore . . . . .	% Cu	1.60	1.60			
#3 Oxidized Ore Pile . . . . .	% Cu	0.90	0.90			
Ore from Mwambashi . . . . .	% Cu			1.71	1.71	1.71
Cu Recovery Rate . . . . .	%	52.00	52.00	36.00	36.00	36.00
Cu Concentrate . . . . .	t	10,000	10,000	10,000	10,000	10,000
Concentrate Grade . . . . .	% Cu	20.00	20.00	20.00	20.00	20.00
Contained Cu Metal in Concentrate . . . . .	t	2,000	2,000	2,000	2,000	2,000
<b>SML-Chambishi Leach Plant</b>						
Heap Leached Ore . . . . .	1,000t	135	135	135	135	135
Cu Grade of Heap Leached Ore . . . . .	%	0.65	0.65	0.65	0.65	0.65
Cu Recovery of Heap Leach . . . . .	%	60.00	60.00	60.00	60.00	60.00
Cu Metal Recovered in Heap Leach . . . . .	t	526	526	526	526	526
Agitation Leached Ore . . . . .	1,000t	1,214	1,189	1,021	1,021	1,021
Includes: Tailings from						
Processing Plant . . . . .	1,000t	434	434	320	320	320
Old Tailings of TSF #6 & #16 . . . . .						
Outsourcing Ore . . . . .	1,000t		94	94	94	94
Old Tailings TSF #15 . . . . .	1,000t	478	957	478	478	478
Tailings of Mwambashi Ore						
Processing Plant . . . . .	1,000t			129	129	129
Average Feed Grade of						
Agitation Leach . . . . .	%	0.50	0.48	0.77	0.77	0.77
Includes: Tailings from						
Processing Plant . . . . .	%	0.45	0.45	0.80	0.80	0.80
Old Tailings of TSF #6 & #16 . . . . .						
Outsourcing Ore . . . . .	%		3.50	3.50	3.50	3.50
Old Tailings TSF #15 . . . . .	%	0.20	0.20	0.20	0.20	0.20
Tailings of Mwambashi Ore						
Processing Plant . . . . .	%			0.80	0.80	0.80
Cu Recovery of Agitation Leach . . . . .	%	90.01	81.14	82.59	82.59	82.59
Cu Metal Recovered in Agitation Leach . . . . .	t	5,472	6,471	6,471	6,471	6,471
Average Cu Recovery . . . . .	%	86.16	81.14	82.59	82.59	82.59

**APPENDIX III**
**COMPETENT PERSON'S REPORT**

<b>Project/Mine</b>	<b>Unit</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Cu Cathode Output . . . . .	t	6,000	7,000	7,000	7,000	7,000
Cu Metal Contained in Cathode . . . . .	t	5,998	6,997	6,997	6,997	6,997
<b>SML-CNMC Huachin (Congo) Leach Plant</b>						
Treated Ore . . . . .	t	297,000	330,000	330,000	330,000	330,000
Treated Ore Grade . . . . .	% Cu	3.50	3.50	3.50	3.50	3.50
Cu Cathode . . . . .	t	9,000	10,000	10,000	10,000	10,000
Cu Recovery Rate . . . . .	%	86.54	86.54	86.54	86.54	86.54
Cu Metal Contained in Cathode . . . . .	t	8,996	9,995	9,995	9,995	9,995
Co Metal Contained in Co Carbonate Product . . . . .	t			800	800	800
<b>SML-Kakoso (Tailings) Leach Plant</b>						
Treated Ore . . . . .	t		475,300	679,000	679,000	679,000
Treated Ore Grade . . . . .	% Cu		0.60	0.60	0.60	0.60
Cu Cathode . . . . .	t		2,100	3,000	3,000	3,000
Cu Recovery Rate . . . . .	%		73.60	73.60	73.60	73.60
Cu Metal Contained in Cathode . . . . .	t		2,099	2,998	2,998	2,998
<b>SML-Mabende (Congo) Leach Plant</b>						
Treated Ore . . . . .	t			481,450	963,400	963,400
Ore Grade . . . . .	% Cu			2.40	2.40	2.40
Cu Cathode . . . . .	t			10,000	20,000	20,000
Cu Recovery . . . . .	%			86.5	86.5	86.5
Cu Metal Contained in Cathode . . . . .	t			9,995	19,990	19,990
<b>CCS-Chambishi Copper Smelter</b>						
Feed Cu Concentrate . . . . .	t	518,523	764,809	764,809	825,994	825,994
Concentrate Grade . . . . .	% Cu	33.60	33.50	33.50	33.50	33.50
Cu Recovery Rate . . . . .	%	96.60	96.60	96.60	96.60	96.60
Blister Cu output . . . . .	t	180,000	250,000	250,000	270,000	270,000
Blister Cu grade . . . . .	Cu %	99.00	99.00	99.20	99.50	99.50
Contained Cu metal in Blister Cu . . . . .	t	168,300	247,500	247,500	267,300	267,300
Sulfuric Acid Output . . . . .	1,000t	400	560	560	600	600
Sulfuric Acid Concentration . . . . .	%	98.25	98.25	98.25	98.25	98.25

Note:

\* Co recovery rate is not specified in the Company's forecast

## 12 UTILITIES AND INFRASTRUCTURE

### 12.1 Road Access

NFCA, CLM, CCS and SML are located in the Copperbelt Province in the north of the Republic of Zambia. NFCA, CCS and SML are located in the Chambishi Town area. CLM is located in the Luanshya city area. In the mining areas of Chambishi and Luanshya, there are railways and public roads leading to Lusaka and other cities of Copperbelt Province. Table 12-1 shows the exact distance among them.

**Table 12-1: Distance between Chambishi & Luanshya Mining Areas and Related Cities**

<u>Cities</u>	<u>Unit</u>	<u>NFCA</u>	<u>CLM</u>	<u>Remarks</u>
Lusaka .....	km	360	320	
Kitwe .....	km	28	49	
Ndola .....	km	70	30	
Mufulira .....	km	40		
Luanshya .....	km		12	
Durban(South Africa) .....	km	2600	2600	To Shanghai: 13,400km
Dar es Salaam (Tanzania) .....	km	2100	2100	To Shanghai: 12,000km
Kapilrimbohemia .....	km			To Dar es Salaam: 1,860km

Zambia is landlocked so the consumables and products can only be imported and exported by trains or trucks, via Dar es Salaam port in Tanzania or Durban port in South Africa. The railways and public roads in the two mining areas lead to all major cities and towns as well as other mining plants. There are domestic airlines services from Lusaka, Kitwe and Ndola and there are international services available in Lusaka and Ndola.

The roads within these two mining areas are mainly paths connecting mining industrial areas, processing industrial areas and life welfare facilities. Normally, the roads can handle trucks with a loading capacity up to 25t. CCS is very close to the Zambian national highway from Lusaka to Kitwe. SML is very close to the NFCA concentrator. The NFCA roads are accessible between the plants and 1.5km from Lusaka highways. SRK thus holds the view that the traffic condition of the two mining areas and smelter is generally good.

### 12.2 Electrical Power Supply

The electrical power supply can meet the needs of mine infrastructure and production, since there is a rich power resource in Zambia. Hydropower is used to generate electricity in Zambia and the total capacity is more than 800MW. There is a national power network which is controlled by ZESCO. A file presented by the Zambian power supply department in September 2006 shows that the power network in the Chambishi and Luanshya region is very stable. The period of each power failure lasted no more than 1.5h in the past 20 years.

The power supply for NFCA comes from LUANO central step-down substation of ZESCO. In the mining area, there is a CHISENGA substation (66kV/11kV). The power for the processing industrial area is supplied by a 66kV/11kV power distribution room. The two substations are connected by a 66kV line. The original power supply system remains basically sound.

At CLM, there are three substations which are named Baluba S/S, IRWINS/S and MACLAREN S/S. The power is supplied by CEC through 66kV transmission lines. CEC has indicated that enough power will be supplied for the projects awaiting construction and those in operation, including open-pit mining in Muliashi North.

CCS uses double circuit inlet lines with a load of 66kV. Power is supplied after being reduced to 10kV by the central transformer. The double 66kV power source is from CHISENGA substation which is 3km from CCS and LUANO substation which is 15km away. A 66kV/11kV substation with double inlet lines is needed in CCS. One circuit line is connected to CHISENGA substation and the other line is connected to LUANO substation (12km away from CHISENGA substation; Figure 12-1)

Operation mode: CEC is responsible for 66 to 11kV transformation and CCS is in charge of power lower than 11kV.

According to the feasibility study design, the installation power of the equipment is 62,740kW, and the calculated load is 36,298kW, with a power consumption of about 188×106kWh per year. At CCS, there is a waste-heat power station with a 6,300kW (maximum) steam turbine which can recover the waste heat to generate power. The voltage of the power supplied is 10kV and it is connected to a 10kV bus bar of the central step-down substation.

The power supply for SML is transferred from CHISENGA substation of NFCA and distributed to every plant through a distribution room. The annual power consumption is about 21,300,000kWh and it may increase to 30,000,000kWh in future. SML submits seasonal power supply reports to NFCA.

According to the load calculation results, the existing CHISENGA and CHAMBISHI substations can meet the power requirements of more loads of mining and processing.

The average local price of power in 2011 was 5.6 cents/kWh.

Based on the current situation, SRK thinks that the power supply for CNMC projects in Chambishi and Luanshya mining areas is sufficient, since the hydro-power source is in excess of industry needs.



**Figure 12-1: CCS 66/11kV Substation**

### 12.3 Water Supply

*NFCA, CCS and SML*

The water supply for Chambishi, including domestic and industrial water, comes from underground water discharge. Industrial quality water is supplied to the NFCA Chambishi Processing Plant, SML and CCS which are in the same area. Industrial quality water is collected into a water reservoir with the volume of 50,000m<sup>3</sup> (Figure 12-2). Domestic water is treated and purified before use; NFCA is presently supplying domestic water to Chambishi town 3km from the mine.

CCS and SML are paying NFCA fixed prices for water supply.

*CLM*

CLM sources industrial quality water (for processing) from the Luanshya water reservoir, which collects water from the Musi TSF, Baluba Center Mine and Luanshya River. The domestic water for workers at the Baluba Processing Plant and administration office are supplied by a local Luanshya water company.

SRK is of the opinion that the current water supply for whole project is sufficient, but there is still a need to consider the demand of future expansions.



**Figure 12-2: NFCA Water Reservoir**

### 12.4 Machinery Maintenance Facilities

Based on SRK's site visit, the mechanical maintenances for NFCA, CLM, CCS and SML are basically carried out internally, related machinery maintenance workshops are responsible for and capable of such duties.

Machinery maintenance workshops in the local communities and international mine equipment manufacturers can be available as necessary for machinery maintenance.

### 12.5 Administration and Living Facilities

According to information collected during SRK's site visit, all four companies own their own office and living facilities, with the offices and administration facilities located within the production areas (Figure 12-3). The locations of accommodation for NFCA are in Kitwe, for CLM are in Luanshya which were reconstructed from former LCM facilities, for CCS the accommodation is adjacent to the smelter plant, and for SML is in Chambishi Town. All facilities are comprehensive, sufficient to meet the needs for business and staff leisure, and also with good environments. Company-provided transportation is available for all projects.



Figure 12-3: NFCA Office Building (“Central Control Building”)

## 13 MAJOR CONTRACTS

### 13.1 Mining Contracts

**NFCA:** the Company has one mining contract with Jinchengxin Mining & Construction Zambia Ltd at Chambishi Main and West Mines valid from 2011 to 2013. The mining contract includes development of tunnels, mining preparation and production, underground supporting, underground haulage, back filling and maintenance of ventilation system. Duties to be performed, technical staff allocations and quality of work are specified in the contract and other duties can be added to the contracts as required. Clauses included in the contract indicate both rewards and penalties which apply if production quantities or qualities meet or do not meet contract requirements, and the payment will be issued in accordance to the mining schedules' accomplishment.

**CLM:** All mining development and mining activities in the Baluba Center Mine are undertaken by CLM's own employees. All mining operations in the Muliashi North Mine are carried out by a contractor, Fifteen MCC Africa Construction & Trade Ltd.

### 13.2 Supply Contracts

Supplies of consumable materials such as diesel fuel and reagents for metallurgical and processing plants and other plant are generally purchased at market prices on short-term contracts with a term of one year.

### 13.3 Transport Contracts

#### ROM Transport:

ROM (“run of mine”) transport for both the Chambishi Main Mine and CLM mines are through conveyer belts from mine shafts to concentrators.

ROM transport for the Chambishi West Mine is by trucks from shaft to concentrator.

ROM transport between mine and concentrator designed for the Chambishi Southeast Mine is through conveyer belts from mine shaft to concentrator.

#### Product Transport:

There is one production transport contract for NFCA with All Cargo Solutions Ltd using trucks to transport the copper concentrate in bulk at FOT (Free on Truck) terms from the NFCA Chambishi Mine to CCS for further handling.

There is one production transport contract for NFCA with Sinotra Company Limited using trucks to transport the copper concentrate in bulk on an FOT (Free on Truck) terms from the CLM Mine to CCS for further handling.

There is one production transport contract for CCS with Cargo Management & Logistics Limited using trucks to transport blister copper ingot from CCS to IFC Pretoria Depot/South Africa & Transworld Cargo/Namibia for temporary storage, loading into containers and delivery to Durban and Walvis Bay ports ready for shipment.

### 13.4 Product Sales Contracts

#### Product Sales between NFCA/CLM and CCS:

The Company provided SRK with examples of NFCA and CLM’s product sales contracts with CCS which indicated the terms including major aspects as quality, quantity, price, delivery, deductions, quotational period and payment. The price is the sum of the metal payments less the deductions which consist of the treatment charges and the refining charges specified below:

Copper: 95.25% — 95.5% (CLM & CCS) to 96.00% (NFCA & CCS) of the final copper content shall be paid for at the LME official settlement price for Copper Grade A, as published in the Metal Bulletin and averaged over the quotational period.

Silver: 90% of the final silver content, subject to a minimum deduction of 30g/dmt (CLM & CCS) to 35g/dmt (NFCA & CCS), shall be paid for at the London Bullion Fixing for Spot Silver (U.S. equivalent), as published in the Metal Bulletin, London and averaged over the quotational period.

Gold: 90% of the final gold content, subject to a minimum deduction of 1g/dmt, shall be paid for at the mean of the London AM/PM quotation as published in the Metal Bulletin, and averaged over the quotational period.

#### Product Sales between CCS and External Buyers:

The Company provided SRK with examples of CCS’s product sales contracts with CNMC International Trade Ltd which indicate the terms including major aspects as quality, quantity, price,



delivery, deductions, quotational period and payment. The price is the sum of the metal payments less the deductions which consist of the treatment charges and the refining charges specified below:

**Copper:** The final agreed copper content, subject to a deduction of 0.3 unit/dmt, shall be paid for at the LME Copper Grade A cash settlement quotation in US\$ as published in the Metal Bulletin of London, averaged over the quotational period.

**Gold:** If the final gold content is below or equal to 1g/mt, no payment will be made; if final gold content is above 1g/mt and up to 10g/mt, the buyer will pay for 90% of the final gold content; if the final gold content is above 10g/mt, the buyer will pay for 92% of the final gold content at the mean of the London "AM/PM" US\$ quotation of Gold as published in the Metal Bulletin of London, averaged over the quotational period.

**Silver:** If the final silver content is below or equal to 20g/mt, no payment will be made; if final silver content is above 20g/mt but less than 500g/mt, the buyer will pay for 90% of the final silver content; if the final silver content is above 500g/mt, the buyer will pay for 92% of the silver content at the London Spot quotations, in US\$ as published in the Metal Bulletin of London, averaged over the quotational period.

#### **Refining Charges:**

**Copper:** The Refining Charge shall be US\$300 per tonne of payable copper.

**Silver:** The Refining Charge shall be US\$30.00 per troy ounce of payable silver.

**Gold:** The Refining Charge shall be US\$4.00 per troy ounce of payable gold.

#### ***Product Sales between SML and External Buyers:***

The Company provided SRK with examples of SML's product sales contracts with Trafigura AG Switzerland, CNMC Albetter Albronze Co., Ltd and Tianjin Zhongse International Trading Co., Ltd which indicated the terms including major aspects such as quality, quantity, price, delivery, deductions, quotational period and payment. The price basically according to London Metal Exchange Official Cash Settlement for Copper Grade "A" averaged over the Quotational Period less a certain amount per metric tonne.

#### **13.5 Workforce Contracts**

According to the contract example provided by the Company's subsidiaries, based on the labor contract laws of Republic of Zambia, all Company staff and employees have signed work contracts. The Company's subsidiaries also transact allowances including housing, medical, underground, work injury, transportation, telephone, annual bonus, unemployment, leave, long service awards and national pension scheme funds for employees.

The contracts offered for Chinese staff are usually on a two-year basis, for Zambian senior and managerial staffs are usually on a three-year basis, and the Company's subsidiaries offer either short term contracts (CCS, MLZ) or permanent contracts (NFCA, CLM) to regular Zambian laborers. SRK was informed that the Company's subsidiaries companies have fully complied with the Zambian labor law. The contracts also specify the responsibilities of the employer and employee and define the liabilities of each party.

## 14 ENVIRONMENTAL AND SOCIAL ASSESSMENT

### 14.1 Environmental Review Objective

The objective of this environmental due diligence review was to identify and verify the existing and potential environmental liabilities and risks, and assess any associated proposed remediation measures for the CNMC Zambia Projects.

The SRK scope of the contracted environmental review of the CNMC Zambia Projects comprised the following operations run by the four subsidiary companies:

- NFCA; includes two operating mines (Chambishi Main, Chambishi West) and one developing mine (Chambishi Southeast), as well as processing facilities.
- SML; Sino-Acid Products (Zambia) Ltd (SAPZ); besides its main leaching project near Kitwe, also includes the Kakoso tailing dam, and Vat and Heap Leach facilities and hydrometallurgical plant.
- CCS; smelter and associated facilities.
- CLM; has a large-scale mining license which includes two operating mines (Baluba Center Mine and Muliashi North) and a hydrometallurgical plant.

### 14.2 Environmental Review Process, Scope and Standards

The process for verifying the environmental permitting and licensing compliance and operational conformance for the CNMC Zambia Projects comprised a review and inspection of the projects' environmental management performance against:

- Zambian national environmental regulatory requirements (Appendix III).
- World Bank/International Finance Corporation (IFC) environmental standards and guidelines (Appendix IV).
- Internationally-recognized environmental management practices.

The methodology applied for this environmental review of CNMC Zambia Projects comprised a combination of document review, site visit and interviews with company technical representatives. The site visit was undertaken from April 25 to May 6, 2011.

### 14.3 Status of Environmental Approvals

SRK as part of the independent environmental review received and reviewed project development and operational licenses, permits, assessment documentation and governmental approvals for the CNMC Zambia Projects. SRK observed that CNMC's subsidiary companies and staff have a good understanding of Zambian legislative requirements for conducting the appropriate project development assessments and their necessary Environmental Council of Zambia (ECZ) governmental approvals, and associated licenses, permits and agreements.

SRK sighted and reviewed CNMC subsidiary companies' Annual Operating Permits, issued by the Mines Safety Department of Zambia for the last three years (or periods for which newer operations

have been running). At the time of SRK's site visit the SML and Luanshya Projects had not received their Annual Operating Permit for 2011 but SRK sighted the submitted applications for their required Annual Operating Permits.

SRK was provided with copies of the Environmental Social Impact Assessments (ESIA) prepared for the CNMC Subsidiary Companies' mines and mineral processing facilities and sighted the subsequent governmental approvals for the assessments.

SRK sighted and reviewed the CNMC Subsidiary Companies' operations, required annual Environmental Management Plans (EMP) and Annual Environmental Report (AER) for the previous three years (except for operations that have been running for less than three years – in which case SRK reviewed the plans for the periods they have been operating) along with their governmental acceptances.

SRK was also provided Environmental Protection Fund Audit Reports and documentation of annual environmental bond requirements and payments for the CNMC Zambia Project's operational units for the last three years (or periods for which newer operations have been running). SRK notes the defined bond amount is derived from the CNMC Zambia Project's annual Environmental Protection Fund Audit Report and EMP and considers progressive rehabilitation works that have been carried out throughout the year along with an independent classification of the individual project's environmental and hence closure liability in conjunction with the ECZ.

SRK also sighted and reviewed a large number of required secondary environmental operational licenses, permits and agreements for the CNMC Zambia Project's and their associated facilities. The majority of these Environmental Licenses are required to be renewed yearly and SRK during the site visit was able to verify that the renewal of these licenses was occurring in line with Zambian Legislative Requirements.

#### **14.4 Environmental Compliance and Conformance**

The significant environmental aspects for the CNMC Zambia Projects that are subject to this Report are associated with the mining and mineral processing activities at the CNMC Zambia Projects' sites. The environmental review identified the most significant current and potential environmental / social management and legislative compliance liabilities that relate to operation and further development of the CNMC Zambia Projects and defines gaps in operational management as relates to industry best practices.

SRK noted that at the time of the site visit CNMC was predominantly complying with Zambian national legislative requirements and had systems in place to action any non-compliance or upgrade work notices as directed to by the ECZ, but could do more to conform to industry best practices to improve their operational environmental / social management of the projects. SRK verified that the NFCA, SML, CCS and CLM had obtained the necessary licenses and permits to develop and operate the projects and produced the required ESIA reports, inclusive of the required Environmental Management Plan (EMP) and conceptual rehabilitation plans.

SRK notes the provided/sighted environmental and social management documentation for the CNMC Zambia Projects have been prepared in line with Zambian legislative requirements and generally in accordance with IFC environmental standards and guidelines, and internationally recognized industry environmental management practices.

At the time of SRK's site visit, the majority of CNMC subsidiary companies' project units were in full operation along with some expansion and new developments being at different phases of

progress. SRK was therefore only able to review the existing operational environmental management and protection measures for the operational facilities of each project along with the developmental activities and developmental assessments and planning taking place and their planned future operational environmental management and protection measures for operations being developed and those undertaking expansion works.

SRK noted during the site investigation that current management of potentially significant environmental and social risks were at the time of the site visit being managed at a reasonable level and is considered by SRK to be within the acceptable / tolerable risk classification, but further attention to reduce and maintain the realized and potential impacts at an acceptable level, especially as relate to social and community aspects.

The environmental risks associated with surface and groundwater, dust and gas emissions, hazardous materials storage, waste rock dumps (WRD), tailings storage facilities (TSF) and stockpile management, and land disturbance and rehabilitation, can be generally managed if Zambian national environmental standards and regulatory requirements are met along with the application of industry best practices.

The environmental risks associated with the potential for generating contaminated sites and other site closure liabilities and developing and maintaining social license to operate; inclusive of health and safety standards can be effectively managed by adopting relevant recognized international industry practices. On-site management of these above risks should be coordinated through the implementation of the operational EMP, Environmental Response Plan (ERP) and Health Safety Environment (HSE) plans which incorporate all areas of required work. Developing and maintaining a social license to operate needs to be managed through the development of Social Development Plans and support of initiatives defined through the consultation process.

#### **14.5 Land Disturbance**

The main impact on the surrounding ecological environment is due to disturbance and the potential for contamination caused by surface stripping, waste rock and tailings storage, processing plant drainage, processing wastewater, explosions, transportation and associated buildings that are constructed. If effective measures are not taken to manage and rehabilitate the disturbed areas, the surrounding land can become polluted and the land utilization function will be changed, causing an increase in land degradation, water loss and soil erosion.

The projects' ESIA's provide estimates of areas of disturbances for mines, surface infrastructure and processing facilities, vat and heap leaches, smelters and hydrometallurgical plants, WRD, TSF and other associated infrastructure. SRK was also able to confirm during the site visit that the CNMC Zambian Projects employ the use of a land disturbance and rehabilitation registry for recording all land related disturbance impacts.

Project environmental assessment and management documentation also stipulate measures for minimizing disturbances through the course of normal operations. SRK also observed during the site visit that identified disused disturbed areas and facilities were being progressively rehabilitated and being reported to the ECZ via the required annual reports and feeds into the ongoing Mine Closure Planning process.

#### **14.6 Flora and Fauna**

The development of mining and mineral processing projects may also result in impacts to or loss of flora and fauna habitat. Project ESIA's should determine the extent and significance of any potential

impacts to flora and fauna habitat. Where these potential impacts to flora and fauna habitat are determined to be significant, the ESIA should also propose effective measures to reduce and manage these potential impacts.

Flora and fauna baseline assessments have been conducted within the individual operations ESIA's for the CNMC Zambia Projects. The ESIA's report that no rare or endangered species were identified in or around the various project sites. Fauna was found to be limited in the area due mainly to historical agricultural practices and flora was considered to be a mix of endemic and invasive species. The ESIA's also provide adequate measures for managing potential impacts upon floral and faunal communities around the project sites. The greatest potential impact to the ecology of the area is due to the influx of invasive weed and plant species which impact upon the natural make-up and diversity of the system. This represents the area in which the CNMC subsidiaries can make more effort to reduce the potential for these species to colonize the area.

## **14.7 Waste Rock and Tailings Management**

### **14.7.1 Waste Rock Management**

Currently at the CNMC Zambia Projects' sites there are a number of historical and currently active WRD. The WRDs are numbered and listed on various site management plans. The ECZ requires that these WRDs are assessed regularly for stability and drainage and dust generating impacts upon the surrounding environment. SRK verified that CNMC's subsidiary companies were complying with this requirement through the submission of the independent and internal reports to the ECZ.

The CNMC Zambia Projects' ESIA's provides estimates of waste rock that will be produced by their operations. SRK observed at site that conditions of the WRDs were reasonable, although it is SRK's opinion that improvements could be made to management measures for surface water runoff controls aimed at reducing entrained sediment loads from the drainage before release from the project sites.

The CCS smelter project also has developed slag dumps for the stockpiling of solid wastes from the smelting and associated processes. The slag is placed in either of two dumps; the first for temporary storage prior to reuse and the second for permanent storage.

Top soil stripped as part of the projects development had not at the time of SRK's site visit been separately stockpiled for later reuse, but had been dumped within the WRD sites. SRK recommends that stripped topsoil should be stockpiled for later reuse in rehabilitation works.

CNMC's subsidiary companies stated that no waste rock geochemical/acid rock drainage (ARD) assessment has been conducted due to the general geology and geochemistry of the Zambia Copperbelt being rich in carbonates which naturally act as a buffering / neutralizing agent against sulfidic materials. SRK also observed that no management measures for dealing with potential ARD were in place for the CNMC Zambia Projects. While SRK also considers the likelihood of ARD occurring to be minimal and in that SRK observed no incidences of probable ARD during the site visit the potential still has not been defined through a geochemical characterization program.

SRK recommends conducting a comprehensive ARD/geochemical characterization assessment of waste rock to help determine effects on pH and its impact on leaching heavy metals to confirm the impact is not significant. Additionally, the separate stockpiling of topsoil for use in rehabilitation works would be beneficial.

### 14.7.2 Tailings Management

Currently at the CNMC Zambia Projects' sites there are a number of historical and currently active TSFs. A number of the CNMC subsidiary companies' projects are reprocessing tailings from a number of the historical TSFs with economical copper contents. The TSFs are numbered and listed on various site management plans. The ECZ requires that these TSFs are assessed regularly for stability and drainage and dust generating impacts upon the surrounding environment. SRK verified that CNMC's subsidiary companies were complying with this requirement through the submission of the independent and internal reports to the ECZ.

The CNMC Zambia Projects' ESIA's provides estimates of tailings that will be produced by their operations. SRK observed at site that conditions of the TSFs were reasonable, although it is SRK's opinion that improvements could be made to management measures for surface water runoff controls aimed at reducing entrained sediment loads from the drainage before release from the project sites.

SRK notes that some of the TSFs (leaching plants associated TSFs) were lined with HDPE liners to prevent seepage of low pH tailings water to the surrounding environment (surface and ground water) from the facilities that recycle the acidic leaching process water. TSFs for normal tailings from concentration circuits did not employ the use of HDPE liners, but rather looked to ensure pH stability via the addition of lime as necessary.

CNMC stated, there was one incident of non-compliance (abnormal pollution) which resulted from a burst in the tailings line and discharge of about 5 tonnes of tails into the Fisansa Stream. Immediately a standby line was put on, patched the holed line and excavated the tailings material from the stream and transported it to the designated Musi Tailings Dump. SRK notes that this is an example of the company's system for actioning any operational issue that arises in accordance with Zambian requirements and industry best practices.

CNMC's subsidiary companies stated that no tailings geochemical/ARD assessment has been conducted due to the general geology and geochemistry of the Zambian Copperbelt being rich in carbonates which naturally act as a buffering / neutralizing agent against sulfidic materials. SRK also observed that no management measures for dealing with potential ARD were in place for the CNMC Zambia Projects. While SRK also considers the likelihood of ARD occurring to be minimal and in that SRK observed no incidences of probable ARD during the site visit the potential still has not been defined through a geochemical characterization program.

SRK recommends conducting a comprehensive ARD/geochemical characterization assessment of tailings to help determine effects on pH and its impact on leaching heavy metals from the TSFs to confirm the impact is not significant.

### 14.8 Water Aspects and Impacts

The CNMC Zambia Project sites are characterized by heavy rainfall through a large part of the year in the wet season and minimal rainfall throughout the dry season. The main surface water protection target in the area surrounding the project sites is the Kafue River which is the main economic waterway in Zambia and a tributary of the Zambezi River.



Water use for the CNMC Zambia Projects is mainly for ore processing, dust suppression, operation water and domestic water of the office and lodging buildings at project sites. CNMC stated they do not record the amount of water used for each activity, although the projects' ESIA's include estimations of water requirements and potential impacts to water resources in the area.

The potential impacts of the CNMC Zambia Projects on surface water are due to changes / diversions of local water courses, run-off (inclusive of sediment and contaminant entrainment) from the mine and waste areas, and run-off from the WRD's, heap leaches and TSF's. The projects' ESIA's report mine surface workings, WRD's and TSF's will be designed to collect drainage water into sedimentation ponds before being either recycled or discharged. SRK noted during the site visit that natural wetland areas are also being used for secondary purification during release to the environment via local drainage channels and gullies.

Process waste water from processing, electrowinning and smelting operations partially being recycled for reuse either via thickeners prior to pumping tails to the TSFs or from the TSFs' supernatant water. SRK feels there is opportunity for greater use of recycled water for processing activities which would reduce requirements for sourcing fresh water from local surface water bodies.

Plant drainage systems for the various industrial plants (concentrators, hydrometallurgical and pyrometallurgical plants) were constructed with internal collection drains and sumps for return of plant drainage to the processing circuit via pumps. SRK observed these systems to be well designed and if maintained and used correctly will continue to provide appropriate protection against out flowing drainage of contaminated plant water.

SRK observed that surface and ground water management measures for the most part had been reasonably developed and implemented for the CNMC Zambia Projects' operations. SRK also verified CNMC's subsidiary companies had also developed monitoring plans and were carrying out monitoring of surface and groundwater and site discharges in line with Zambian requirements which are comparable with industry best practices. Protocols were also in place to report to the ECZ any issues with above standard parameters and corrective measures were developed in cooperation with directives from the ECZ.

#### **14.9 Air Emissions**

Dust emissions for the CNMC Zambia Projects are mainly from mining operations, ore and waste stockpiles, ore crushing and transportation. Sporadic significant fugitive dust emissions from these sources were observed during the site visit.

Detailed assessments of these potential dust emissions and their impacts have been completed within the Projects' ESIA's. The ESIA's and associated EMP define measures for managing dust emissions which are mainly in line with Zambian legislative requirements and best industry practices. SRK observed that the majority of the defined measures had been introduced at site and that CNMC subsidiary companies are upgrading remaining measures in line with directives from the ECZ.

SRK observed CNMC subsidiary companies' operations utilize a number of water spray trucks at their sites to suppress dust generation from roads and stockpiling areas. SRK also notes that CNMC have installed dust suppression / collection equipment at the majority of ore crushing, handling and transfer points and other dust generation source points. The CNMC Zambia Projects were also at the time of SRK's site visit installing dust mitigation devices for a number of point sources that previously did not have them. The identified major outstanding point sources without suppression measures yet to be installed include the ore stacking conveyor systems at the Chambishi mine and Baluba mine.



Gas emissions generated by the CNMC Zambia Projects are predominantly from the operation of fixed and mobile plants and emissions include fugitive waste gas, smelter and hydrometallurgical plant emissions. The main pollutants from the various project operations include CO, NO<sub>x</sub>, SO<sub>x</sub>, hydrogen sulfide, acid mists and particulate matter. Detailed assessments of these potential gas emissions and their impacts have been completed within the Projects' ESIA's.

SRK observed that a number of measures had been taken through process design and implementation to reduce NO<sub>x</sub>, SO<sub>x</sub> and particulates being emitted from major gaseous waste discharge source points. The Projects' ESIA's state that external environmental impacts from these discharges should meet Zambian standards if the mitigation measures SRK observed were properly implemented.

The main internal impact from gaseous waste emissions comes from hydrogen sulfide point and fugitive source emissions at the CCS smelter and workers are required to wear gas masks to safely work in those surrounds. SRK notes that as visitors we were not provided with such personal protective equipment (PPE) during the site visit or provided an induction stating on-site dangers of exposure to hydrogen sulfide.

CNMC subsidiary companies reported there has been some operational monitoring of dust and some gas emissions for the CNMC Zambia Projects, but SRK feels this could be further upgraded to meet industry best practices and to ensure compliance with Zambian requirements for atmospheric emissions monitoring.

### ***Greenhouse Gas Emissions***

SRK was informed that there is no Zambian national legislative requirement for the Project to estimate its greenhouse gas emissions or to implement any emissions reductions. As such, none of the Project environmental assessment documentation reviewed addresses the issue of greenhouse gas emissions. However, these are components of IFC environmental requirements and are considered as internationally-recognized environmental management practices. Therefore, SRK recommends that consideration be given by CNMC to developing initiatives to quantify greenhouse gas emissions and assess possible emission reduction strategies for the CNMC Zambia Projects.

### **14.10 Noise Emissions**

The activities that are carried out in the mining industry are characterized by producing sound emissions which, if they are not adequately managed, could affect the health and security of the workers, produce changes in the surrounding faunal compositions and in the environment in general. The main noise sources for the CNMC Zambia Projects will be from the operation of fixed equipment (crushers, compressors, pumps, smelter and hydrometallurgical facilities) and mobile equipment (mainly drilling and haulage activities).

The projects' ESIA's assessed noise sources and mitigating measures and state noise emissions may impact the local acoustic environment, but state with appropriate noise suppression equipment and measures noise will not exceed national noise standards. SRK observed that noise impacts are generally negligible due to the remoteness of most sites, except for off-site transportation.

CNMC subsidiary companies reported there has been some operational monitoring of noise emissions for the CNMC Zambia Projects and SRK notes that noise impacts are reviewed annually as part of the Annual Environmental Monitoring Inspection Reporting process. SRK though opines this could be further upgraded to meet industry best practices and to ensure compliance with Zambian requirements for noise emissions monitoring.

### 14.11 Hazardous Materials Management

Processing reagents used at the CNMC Zambia Projects' sites were observed by SRK to be stored mainly within purpose-built warehouses. CNMC protocols for handling, transfer and mixing of hazardous reagents at the individual operational sites was well managed and appropriate consideration given to safety with appropriate segregation of materials and safety signage and measures implemented. Acid storage tanks and other hazardous liquids also employed adequate secondary containment to contain a medium to major leak / spill.

Oil (diesel and motor) stored on-site was observed by SRK to have appropriate secondary containment facilities at the time of the site investigation. Storage of diesel oil was within a number of above and below-ground tanks at various locations about the CNMC Zambia Project sites. Motor oil and lubricants were also stocked in dedicated storages areas although secondary containment of these facilities would benefit from improved collection facilities. Some evidence of leaks and spills not being fully contained was evident about these areas.

The Project's ESIA reports contain details of practices in relation to environmental control and management of the above stated hazardous materials. CNMC also has hazardous materials management protocol at site and adequately trained the staff on safety and environmental considerations. While all the individual projects had Material Safety Data Sheets (MSDS) for hazardous materials used within their operations, not all areas where these materials were stored, handled or used had MSDS documentation on hand.

SRK suggests CNMC continue to manage storage, containment and collection facilities for hazardous materials and upgrade areas with substandard containment to comply with Zambian national regulations and recognized industry practices.

### 14.12 Waste Management

#### 14.12.1 Waste Oil

The CNMC Zambia Projects produce waste oil from the servicing and maintenance of equipment. The Projects' ESIA's make reference to the management of waste oil and estimates annual generation rates and details an assessment of the storage and handling requirements for this waste oil. SRK observed waste oil collection at Projects' sites was limited to motor oils and lubricants from various fixed and mobile equipment. While hardstands for conducting maintenance work were in place, a lack of dedicated storage areas (with appropriate secondary containment) was observed during the site visit. SRK observed waste oil stored at the maintenance areas being stored outside on open ground and a fair amount of oil being leaked to the environment at a number of the project sites.

SRK recommends all maintenance works be carried out over hardstands to minimize the spillage of waste oil to the soil/water environment. The waste oil collected should be stored in containers within dedicated storage facilities with secondary containment. Initiatives for the sale and recycling of waste oil should be developed and implemented to fulfill Zambian national standards and industry best practices for the reuse/recycling of waste products (including hydrocarbons).

#### 14.12.2 Solid Wastes

The Projects' ESIA's make reference to the management of solid wastes and details measures for their collection and disposal. SRK observed minimal examples of uncontrolled rubbish dumping within the current operational project site areas during the site visit. Most site areas had adequate rubbish bins about, although some instances of uncontrolled dumping were witnessed.

CNMC reported to SRK that the Luanshya Project's domestic solid wastes were collected by the local government for disposal offsite at a local government landfill. It was reported that the NFCA, SML and CCS projects previously used the same system for waste disposal, but were barred from continuing to do so due to waste oil and lubricant substances being dumped in these landfills. The present practice for disposal of waste was at an ad-hoc chosen site where surface dumping of general domestic waste was occurring along with the same waste oil and lubricants. These sites were unmanaged and represent contaminated sites and will continue to get worse without remedial steps to address the practice which is not in line with Zambian requirements or industry best practices.

SRK observed that scrap iron was being collected and stockpiled in a number of designated areas about site prior to being sold for recycling in line with Zambian national directives on the reuse/recycling of waste products.

SRK recommends placing sufficient refuse collection points about the site for the collection of refuse prior to disposal. SRK also suggests a dedicated landfill be constructed in line with Zambian standards at the Project sites for the responsible disposal of solid wastes and that waste oils and lubricants not be dumped there but rather collected and stored for later recycling.

#### **14.12.3 Sewage and Oily Wastewater**

The Project's ESIA's provide detailed assessments regarding sewage generation and management measures to control potential environmental impacts. SRK observed appropriate septic systems to have been installed at all the CNMC Zambian Projects' sites and residential facilities. The treated sewage is then discharged to natural surface water channels and gullies surrounding the Project sites.

The management of oily wastewater or wash-down wastewater is addressed within the CNMC Zambian Projects' ESIA reports. Washing mobile equipment and plant wash-down drainage currently occurs within containment areas and the collected oily water then drains to installed gravity flow oil-water separation facilities. After treatment the separated water is discharged into site surface flow drains which discharge to local surface water channels and gullies surrounding the sites. Separated waste oil is supposed to then be collected for recycling, although SRK was informed by staff at site that this process still required further attention to meet the stated requirements from the ECZ.

SRK recommends ECZ instructions to upgrade management procedures regarding oily waste water be followed to ensure compliance with Zambian requirements.

#### **14.13 Contaminated Sites Assessment**

The assessment, recording and management of contaminated sites within mining or mineral processing operations is a recognized international industry practice (i.e. forms part of the IFC Guidelines) and in some cases a national regulatory requirement (e.g. an Australian environmental regulatory requirement). The purpose of this process is to minimize the level of site contamination that may be generated throughout a project's operation while also minimizing the level and extent of site contamination that will need to be addressed at site closure.

A contaminated site or area can be defined as:

*“An area that has substances present at above background concentrations that presents or has the potential to present a risk of harm to human health, the environment or any environmental value”.*

The CNMC Zambian Projects, individual operations do not employ standalone Contaminated Sites Assessment programs, but rather the process is undertaken through the annual environmental

reporting procedure conducted by independent reviewers and ECZ inspections. The Environmental Departments for the individual operations reported to SRK that they do record areas of known contamination for remediation action also as part of their normal duties.

Annual EMPs also outline requirements for reducing contamination of land and water in and around the sites, identifying such sites and carrying out remediation measures to rectify the contamination.

During the site visit, the major contaminated site was the area used by NFCA, SML and CCS for waste disposal where clear evidence of unmanaged dumping of rubbish and waste oils and lubricants was occurring. SRK also observed other areas of minor to medium contamination (oil spills and rubbish) about areas of the Project sites, mainly, by hydrocarbon storage areas, concentrator sites and vehicle maintenance areas. SRK recommends that a contaminated sites assessment and management process be formalized and regularly conducted for the CNMC Zambian Projects such as is outlined in EMP and in line with directions from the ECZ, thereby actively enabling remediation of current and future contaminated sites.

#### **14.14 Environmental Management Plan**

The purpose of an operational EMP is to direct and coordinate the management of the project's environmental risks. The EMP documents the establishment, resourcing and implementation of the project's environmental management programs. The site environmental performance is monitored and feedback from this monitoring is then utilized to revise and streamline the implementation of the EMP.

Zambian legislation requires the development of an EMP alongside the ESIA at the proposal to develop stage of a project as part of project approvals and also requires the preparation of annual EMP's as part of the annual reporting and compliance / performance checking process.

CNMC's subsidiary companies provided SRK with their original EMP which outlines responsibilities for an Environmental Protection Department, management, monitoring and protection measures for project assessment and approval that were accepted by the ECZ. SRK also sighted the previous couple of years annual EMP's for each of the CNMC Zambian Projects operations.

SRK sighted CNMC's subsidiary companies monitoring plan inclusive of sampling points and result records for their individual projects. Monitoring includes: surface and ground water up and downstream / gradient from the projects' operational facilities and discharge points and atmospheric monitoring. SRK opines the monitoring plans fulfill the companies' obligations under Zambian legislative requirements and is generally in line with industry best practices.

#### **14.15 Emergency Response Plan**

The IFC describes an emergency as 'an unplanned event when a project operation loses control, or could lose control, of a situation that may result in risks to human health, property, or the environment, either within the facility or in the local community'. Emergencies are of a scale that have operational wide impacts, and do not include small-scale localized incidents that are covered under operational area specific management measures. Examples of an emergency for a mining/mineral processing project are events such as pit wall collapse, underground mine explosion, the failure of a TSF or a large-scale spillage/discharge of hydrocarbons or chemicals.

The recognized international industry practice for managing emergencies is for a project to develop and implement an Emergency Response Plan (ERP). The general elements of an ERP are:

- Administration — policy, purpose, distribution, definitions of potential site emergencies and organizational resources (including setting of roles and responsibilities).
- Emergency response areas — command centers, medical stations, muster and evacuation points.
- Communication systems — both internal and external communications.
- Emergency response procedures — work area specific procedures (including area specific training).
- Checking and updating — prepare checklists (role and action list and equipment checklist) and undertake regular reviews of the plan.
- Business continuity and contingency — options and processes for business recovery from an emergency.

SRK was provided with ERP's for the CNMC Zambia Projects individual operations that included environmental emergency response measures, protocols and directives that cover most of the above components along with health and safety measures. SRK noted some discrepancies between planned measures as stated in the ERP and preventative and response measures and facilities implemented and installed at the various sites. Namely, the operational readiness of response facilities such as eye baths, showers and preventative measures such providing inductions and enforced requirement for PPE for everyone at or visiting the sites.

SRK recommends that CNMC implement the operational ERP for all the CNMC Zambia Projects operations, in line with Zambian national requirements and recognized international industry practices.

#### **14.16 Site Closure Planning and Rehabilitation**

The Zambian national requirements for mine closure are covered under the *Mines and Mineral Act 2008*, the *Environmental Protection and Pollution Control Act 1990*. Project ESIA's also report guidance in the development of closure policy and accepted practices has been taken from the Equator Principles. In summary these legislative requirements and accepted practices guidance cover the need to conduct land rehabilitation, to prepare a site closure report and submit a site closure application for assessment and approval.

The recognized international industry practice for managing site closure is to develop and implement an operational site closure planning process and document this through an operational Closure Plan. This operational closure planning process should include the following components:

- Identify all site closure stakeholders (e.g. government, employees, community etc.).
- Undertake stakeholder consultation to develop agreed site closure criteria and post operational land use.
- Maintain records of stakeholder consultation.
- Establish a site rehabilitation objective in line with the agreed post operational land use.
- Describe/define the site closure liabilities (i.e. determined against agreed closure criteria).

- Establish site closure management strategies and cost estimates (i.e. to address/reduce site closure liabilities).
- Establish a cost estimate and financial accrual process for site closure.
- Describe the post site closure monitoring activities/program (i.e. to demonstrate compliance with the rehabilitation objective/closure criteria).

The development of a conceptual closure plan inclusive of cost estimates and the payment of bond accrual funds are required for project development assessment and governmental approval. SRK sighted these closure plans and cost estimates which cover the above listed components had been developed and bond accrual funds set up in line with Zambian legislative requirements for each of the CNMC subsidiary companies project operations.

Zambian annual reporting and assessment requirements also require the development of an operational closure plan that is progressively updated annually to incorporate new operational developments, disturbances, rehabilitation of areas and other changes that may have occurred. The annual payment of the closure accrual bond fund is then based upon this annual update and revised annual payments are made accordingly. SRK sighted the last couple of year's operational closure plans including revised cost estimates along with governmental acceptances of the plans and records of bond accrual fund payments in line with Zambian legislative requirements.

SRK though considers the assessment of social / community / stakeholder conditions can be improved through the ongoing progressive closure planning process to better define opportunities to assist enable the local communities to gain benefit throughout the projects life and after closure.

SRK opines that rehabilitation measures stated in the Projects' ESIA's, conceptual and operational closure plans are reasonable and appropriate as regards site and environmental conditions when considered against industry best practices, but feel more can be done to improve the analysis of social measures as regard community involvement throughout the project operational phase and self-sufficiency objectives for post-closure.

#### **14.17 Social Assessment**

The land use for the general area surrounding the Project sites is a mix of sustenance agricultural, charcoal production, mining and mineral activities and forestry. CNMC stated that the population of the surrounding area is a mix of different tribal Zambian communities and some Congolese refugees. CNMC also reported that there are no significant cultural heritage sites, burial sites or nature reserves, within or surrounding any of the Project sites except for a small monument constructed to commemorate the discovery of copper resources in the area which is on the NFCA site and kept in good order.

CNMC stated they have received some official notices of public complaints in relation to the activities of the CNMC Zambian Projects, but they maintain the issues were minor and otherwise a positive relationship with the local communities exists due to the below stated social development measures.

CNMC stated the positive effects to the surrounding local communities are mainly direct employment of local contractors and use of local suppliers and service providers where practical. CNMC has also developed a number of social development measures among local communities including water and electricity supply to local villages and the financial support for schools in the local communities. CNMC also reported to SRK that they would also provide access for locals to the CNMC medical clinic along with other measures.

The CNMC Zambian Projects' ESIA's include details for the development of Social Development Programs in line with Zambian legislative requirements. CNMC has not itself though further developed these Social Development Programs past their initial efforts. It is SRK's opinion that the social and labor situation in the surrounding communities has the potential to lead to conflicts with these communities if CNMC does not further their social license to operate within and about these villages. CNMC stated they have no formalized social dispute resolution mechanism and reported to SRK that is carried out between CNMC and local Zambian by the local police force.

The ESIA's report, Management Programs and Action Plans must be compiled to deal with specific mitigation measures and actions necessary for the project to comply with applicable Zambian laws and regulations and to meet the requirements of the IFC Performance Standards. This will require a number of Plans and Action Plans in order the meet the IFC Performance Standards which are listed below:

- Public Consultation and Disclosure Plan
- Social and Labor Development Plan
- Training and Localization Plan
- Resettlement Framework
- Decommissioning, Closure and Rehabilitation Plan
- Social and Environmental Awareness and Training Plan
- Emergency Preparedness and Response Plan
- Community Health and Safety Action Plan
- Hazardous Waste Management Plan
- Hazardous Materials Management Plan
- Retrenchment Plan
- Human Resources Policy
- HIV/AIDS Policy
- Occupational Health and Safety Policy
- Environmental, Social and Heritage Policy

CNMC stated they are currently in the process of developing the applicable policies with some key areas already addressed during the last 12 months. CNMC reported they are also committed to developing a number of plans in terms of the IFC's requirements. These include the development of the following:

- Occupational Health and Safety Policy
- Environmental Policy



- Decommissioning, Closure and Rehabilitation Plan
- Resettlement Framework
- Public Consultation and Disclosure Plan
- HIV/AIDS policy
- Relocation Policy Framework
- Social and Labor Development Plan
- Training and Localization Plan
- Hazardous Materials Management Plan
- Retrenchment Plan
- Emergency Preparedness and Response Plan
- Community Health and Safety Action Plan
- Hazardous Waste Management Plan
- Training and Localization Plan

Public participation/community consultation programs were confirmed as being undertaken for each Project operation as part of their ESIA along with most of the other required plans and policies. SRK though observed that CNMC staff outside the Environmental Department had little knowledge about the program or their results. SRK found the ongoing management and continuation of these plans is where the main issue lies with regards to the social risks for the projects continued operations.

A number of non-compliance notices and other notices of a breach of environmental or social conditions for the CNMC Zambian Projects from the local or provincial governments have been sighted as part of this review. CNMC reported to SRK that each notice includes statements to rectify the non-compliances and that the CNMC subsidiary companies action the issues through Corrective Action Statements and reports on the actions taken through their annual reporting process. CNMC also stated to SRK that they maintain a strong relationship with local, provincial and National governments along with the local police.

CNMC reported to SRK that the industrial relations climate was disturbed from 28 to 29 November, 2011 when employees at the hospital proceeded on an industrial action strike for the following reasons:

- Erratic water supply at the hospital;
- Shortage of qualified medical personnel;
- Dilapidated hospital infrastructure;
- Lack of security at the hospital;

- Poor communication between senior and junior nurses;
- Uncompetitive salaries

CNMC stated the strike was called off after the workers were persuaded to return to work by Union Head Office officials with management promising to address all the above concerns. SRK notes that this industrial action comprised only the staff from the hospital and not the mining or processing operations thereby not impacting upon mining or processing output.

CNMC reported the Company experienced another illegal strike from 8 to 11 December, 2011 when workers demanded, initially, that management should withdraw the proposal of salary harmonization from the 2012 collective bargaining session. Management acceded to the employees' demand but the workers made their return to work contingent upon the dismissal four Zambian management officials. The strike was only called off when Government intervened through the Ministry of Labour. During the strike the Company lost 4,128 man-hours and 664 tons of copper in concentrate. Management has improved communication channels to avoid such uncalled for illegal strikes in future.

#### **14.18 Evaluation of Environmental & Social Risks**

The sources of inherent environmental and social risk are project activities that may result in potential environmental and social impacts that detrimentally effect the projects continued operations. These project activities have been previously described within this Report.

In summary, the most significant potential compliance and environmental risks for the development of the CNMC Zambian Projects, currently identified as part of the project assessment, are:

- Surface water management and discharges such as site discharges and stormwater runoff.
- Groundwater management and discharges such as mine dewatering and seepage from WRD and TSF.
- Dust and gaseous emissions management and mitigation.
- Storage and handling of hazardous materials.
- Waste generation and management of industrial and domestic wastes.
- Rehabilitation of waste rock stockpiles and other disturbed areas.
- Potential and current contaminated sites.
- Site erosion controls, sediment entrainment and deposition.
- Lack of geochemical characterization of industrial waste materials such as waste rock.
- Continued implementation of closure planning process.
- Continued development of social license to operate.
- Implementation of health and safety standard practices.

SRK noted during the site investigation that current management of the above noted potential risks were at the time of the site visit being managed at a reasonable level and is considered by SRK to be categorized as acceptable / tolerable risk classification (i.e. requiring normal operational risk management measures), but further attention to reduce and maintain the realized and potential impacts at an acceptable level. The environmental qualitative risk assessment matrix is included within the full project risk assessment in section 15, Table 15-2 of this Report.

The environmental risks associated with surface and groundwater, dust and gas emissions, hazardous materials storage, WRD, TSF and stockpile management, and land disturbance and rehabilitation, can be generally managed if Zambian national environmental standards and regulatory requirements are met along with the application of industry best practices.

The environmental risks associated with the potential for generating contaminated sites and other site closure liabilities and developing and maintaining social license to operate; inclusive of health and safety standards can be effectively managed by adopting relevant recognized international industry practices. On-site management of these above risks should be coordinated through the implementation of the operational EMP, ERP and HSE plans which incorporate all areas of required work. Developing and maintaining a social license to operate needs to be managed through the development of Social Development Plans and support of initiatives defined through the consultation process.

**15 Project Risk Assessment**

Mining is a relatively high-risk industry. In general, the risk may decrease from the exploration to the development to production stage. CNMC’s projects are production projects, in which the risks are relatively low. SRK considered various technical aspects which may affect these iron projects, and has conducted a risk assessment which has been summarized in Table 15-1. The Environmental Qualitative Risk Assessment Matrix is shown in Table 15-2. The full qualitative risk analysis process is described in Appendix V to this Report.

**Table 15-1: Summary of CNMC’s Project Risk Assessment**

<u>Risk Issue</u>	<u>Likelihood</u>	<u>Consequence</u>	<u>Overall</u>
<b>Geology and Resource</b>			
Lack of Significant Resource . . . . .	Unlikely	Moderate	Low
Lack of Significant Reserve . . . . .	Unlikely	Moderate	Low
Significant Unexpected Faulting . . . . .	Unlikely	Major	Medium
<b>Mining</b>			
Significant Production Shortfalls . . . . .	Unlikely	Major	Medium
Production Pumping System Adequacy . . . . .	Unlikely	Moderate	Low
Significant Geological Structure . . . . .	Possible	Moderate	Medium
Poor Pit Slope Condition . . . . .	Unlikely	Moderate	Low
Poor Mine plan . . . . .	Unlikely	Moderate	Low
<b>Process Plant</b>			
Lower Yields . . . . .	Possible	Moderate	Medium
Lower Recovery . . . . .	Unlikely	Minor	Low
Higher Production Cost . . . . .	Possible	Moderate	Medium
Higher Production Cost . . . . .	Unlikely	Major	Medium
<b>Capital and Operating Costs</b>			
Project Timing Delays . . . . .	Possible	Moderate	Medium
Capital Cost Increases . . . . .	Possible	Moderate	Medium
Capital Costs — Ongoing . . . . .	Possible	Moderate	Medium
Operating Costs Underestimated . . . . .	Possible	Moderate	Medium

Table 15-2: CNMC Zambia Environmental Qualitative Risk Assessment Matrix

<u>Sources of Environmental Risk</u>	<u>Consequence Severity</u>	<u>Likelihood</u>	<u>Inherent Environmental Risk Ranking</u>
Surface water management and discharges (i.e. stormwater runoff, erosion control measures). . . . .	Moderate	Certain	Medium
Groundwater management and discharges (i.e. mine dewatering and seepage from the WRD). . . . .	Moderate	Possible	Medium
Dust generation and gas emissions management and monitoring. . . . .	Moderate	Possible	Medium
Storage and handling of hazardous materials. . . . .	Moderate	Likely	Medium
Waste generation and management (industrial and domestic wastes). . . . .	Moderate	Possible	Medium
Rehabilitation of the waste rock stockpiles and other disturbed areas. . . . .	Moderate	Likely	Medium
Potential and current contaminated sites . . . . .	Moderate	Certain	Medium
Site erosion controls, sediment entrainment and deposition . .	Moderate	Certain	Medium
Lack of geochemical characterization/ ARD assessment of waste rock. . . . .	Moderate	Unlikely	Low
Continued implementation of closure planning process. . . . .	Moderate	Likely	Medium
Continued development of social license to operate . . . . .	Moderate	Certain	Medium
Implementation of environmental health and safety standard practices . . . . .	Moderate	Likely	Medium

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110. Approval letter for CCS water abstraction temporary permit from Kafue River (max. 10,000m<sup>3</sup>/day) from Zambia Water Board, Sept 21 2007 (valid for 1 year)
111. CCS Land Application Approval from Zambia Ministry of Lands (Property No. L/541/M/C/1) in Kalulushi, Jan 27 2009
112. CCS Land Application Approval from Zambia Ministry of Lands (Property No. L/541/M/C/2) in Kalulushi, Jan 27 2009
113. CCS Land Contract and Condition of Sale for land from NFCA, Law Association of Zambia, 2006
114. CCS Annual Operating Permit (No. 16/2010) from Zambia Mines Safety Department, Jan 1 2010
115. CCS ESIA for Chambishi Copper Smelter, produced by Binary Solutions Ltd Lusaka Zambia, Sept 2006
116. Copy of General Employee Work Contract and conditions of employment and benefits
117. Copy of Senior Employee Work Contract and conditions of employment and benefits
118. CCS Updated Environmental Management Plan, produced by Eco Environmental Solutions, April 2010
119. CCS Annual Environmental Report, Jan 2010
120. CCS Acid Plant Drain Discharge License (No. ECZ/WP3/183) issued by ECZ on Aug 24 2009 — valid from Jan 1 2009 — Dec 31 2009
121. CCS Smelter Drain Discharge License (No. ECZ/WP3/182) issued by ECZ on Aug 24 2009 — valid from Jan 1 2009 — Dec 31 2009

122. CCS Storage of Hazardous Waste License (No. ECZ/LHWM1/314/2009) issued by ECZ on Aug 24 2009 — valid from Jan 1 2009 — Dec 31 2009
123. CCS Smelter Stack 1 Emission License (No. ECZ/AP4/110) issued by ECZ on Aug 24 2009 — Valid Jan 1 2009 — Dec 31 2009
124. CCS Smelter Stack 2 Emission License (No. ECZ/AP4/111) issued by ECZ on Aug 24 2009 — valid Jan 1 2009 — Dec 31 2009
125. CCS Sulfuric Acid Storage License (No. PTS/ND/925/2009) issued by ECZ on Aug 24 2009 — valid from Jan 1 2009 — Dec 31 2009
126. CCS Acid Plant Stack Emission License (No. ECZ/AP4/112) issued by ECZ on Aug 24, 2009 — valid from Jan 1, 2009 — Dec 31, 2009
127. CCS Operation of Waste Disposal Site License (No. ECZ/WM4/184) issued by ECZ on Aug 24, 2009 — valid from Jan 1, 2009 — Dec 31, 2009
128. CCS Slag Dump License (No. ECZ/WM4/185) issued by ECZ on Aug 24, 2009 — valid Jan 1, 2009 — Dec 31, 2009
129. CCS Storage of Hazardous Waste (waste oil, filters, waste batteries, fluorescent tubes and healthcare waste) License (No. ECZ/LHWM1/313/2009) issued by ECZ on Aug 24, 2009 — Valid from Jan 1, 2009 — Dec 31, 2009
130. CCS Environmental Protection Fund Contribution notification letter for 2008 from the Mines Safety Department, July 14, 2008
131. CCS Slag Dump Environmental Project Brief Approval letter issued by ECZ on Dec 24, 2008
132. CCS Storage of Chemicals License (No. PTS/ND/714/2008) issued by ECZ on July 14, 2008 — valid from July 1, 2008 — June 30, 2009
133. CCS Annual Operating Permit (No. 15/2009) from Zambia Mines Safety Department, Jan 22, 2009
134. CCS Importation of Calcium Carbide License (No. PTS/ND/715/2008) issued by ECZ on July 14, 2008
135. CCS Exportation of Sulfuric Acid License (No. ECZ/ND/811/2009) issued by ECZ on Feb 17, 2009 — valid form Jan 1, 2009 — Dec 31, 2009
136. NFCA Large-Scale Mining License (No. 7069-HQ-LML) issued by the Mines Development Department on July 12, 2010 — valid for 25 years
137. NFCA Waste Water Discharge License (No. ECZ/ND/WP3/152/3) for site drainage issued by ECZ on Mar 24, 2011 — valid from Jan 1, 2011 to Dec 31, 2011
138. NFCA Waste Water Discharge License (No. ECZ/ND/WP3/69/8) for Musakashi TSF issued by ECZ on Mar 24, 2011 — valid from Jan 1, 2011 — Dec 31, 2011
139. NFCA Waste Water Discharge License (No. ECZ/ND/WP3/177/2) for treatment ponds issued by ECZ on Mar 24, 2011 — valid from Jan 1, 2011 — Dec 31, 2011
140. NFCA Hazardous Waste Storage License (No. ECZ/ND/LHWM1/501/2011) for waste oils issued by ECZ on Mar 24, 2011 — valid from Jan 1, 2011 — Dec 31, 2011

141. NFCA Hazardous Waste Generation License (No. ECZ/ND/LHWM1/503/2011) for waste oils and contaminated materials issued by ECZ on Mar 24, 2011 — valid from Jan 1, 2011 — Dec 31, 2011
142. NFCA WRD Statutory Inspection Report, Mar 2010. Produced by Wilson S Moono (Independent Competent Person)
143. NFCA Environmental Impact Statement Prepared by Gilliejoy Consultants Ltd June 2006
144. NFCA Environmental Management Plan (part of EIS) prepared by Gilliejoy Consultants Ltd June 2006
145. NFCA Social Management Action Plan for CSR. Prepared by Lazarous Sinyinza (Enviro Dept.) on behalf on NFCA Sept 28, 2010
146. NFCA Environmental Project Brief for west orebody, 2008. Date and author info not available
147. NFCA letter to ECZ stating no response to the EPB submission was received Mar 9, 2009
148. NFCA Annual Monitoring Report 2008 prepared by Lazarous Sinyinza (Enviro Dept.) for submission to ECZ
149. NFCA Annual Monitoring Report 2009 prepared by Lazarous Sinyinza (Enviro Dept.) for submission to ECZ
150. NFCA Annual Monitoring Report 2010 prepared by Lazarous Sinyinza (Enviro Dept.) for submission to ECZ
151. Approval Letter (No. ECZ/INS/101/4/1) from the ECZ for NFCA EMP Nov 7, 2006
152. NFCA Annual Operating Permit (No. 35/2009) issued by Mines Safety Department, Jan 22, 2009 — valid for 2009
153. NFCA Annual Operating Permit (No. 3/2010) issued by Mines Safety Department, Dec 24, 2009 — valid for 2010
154. NFCA Annual Operating Permit (No. 11/2011) issued by Mines Safety Department, Jan 19, 2011 — valid for 2011
155. NFCA Environmental Inspection Report for site inspection carried out by ECZ in Aug 2010
156. Luanshya Register of Disturbed Areas 2009-2010 — prepared by Enviro Dept.
157. Luanshya Project Rehabilitation of WRD Plan — prepared by Enviro Dept.
158. Luanshya Health and Safety Policy and Plan — prepared by Enviro/Safety Dept.
159. Luanshya Safety Management System Organizational Chart — prepared by Enviro/Safety Dept.
160. Luanshya Hazard Register for Mine Work — for Daily use — prepared by Enviro/Safety Dept.
161. Luanshya Hazard Register for Entry to Underground Work — prepared by Enviro/Safety Dept.
162. Luanshya Hazard Register for underground Development activities — prepared by E/S Dept.
163. Luanshya Shaft Firefighting requirements

164. Luanshya EMP 2011 — prepared by E/S Dept.
165. Luanshya Hazard Register for start of shift — prepared by E/S Dept.
166. Luanshya Hazard Register from Entry examination — prepared by E/S Dept.
167. Luanshya Hazard Register for underground support activities — prepared by E/S Dept.
168. Luanshya Hazard Register for extending service columns — prepared by E/S Dept.
169. Luanshya Hazard Register for Face Preparation — prepared by E/S Dept.
170. Luanshya Hazard Register for underground area marking off — prepared by E/S Dept.
171. Luanshya Hazard Register for handheld drilling — prepared by E/S Dept.
172. Luanshya Hazard Register for Explosives Management — prepared by E/S Dept.
173. Luanshya Hazard Register for Explosives Charging up — prepared by E/S Dept.
174. Luanshya Hazard Register for Blasting measures — prepared by E/S Dept.
175. Luanshya Hazard Register for cleaning development end with LHD — prepared by E/S Dept.
176. Luanshya Fire Risk Survey for Shaft Complex — prepared by E/S Dept.
177. Luanshya Fire Risk Survey for Shaft Top Risk — prepared by E/S Dept.
178. Luanshya Risk Register for Fixed Structures, Cu filtration plant — prepared by E/S Dept.
179. Luanshya Cu Filter Fixed Equipment inherent vs residual risk matrix — prepared by E/S Dept.
180. Luanshya Failure Mode & Effect Analysis (FMEA) Risk Assessment for underground Haulage rehabilitation , 14-9-2009
181. Luanshya FMEA Risk Assessment for underground drives, 1-10-2010
182. Luanshya FMEA Risk Assessment for removal of raisebore machine, Muliashi 15-10-2010
183. Luanshya Hazard & Operability Study (HAZOP) for Heap Leach 9-6-2011
184. Luanshya Cu Mines Risk Assessment Report (whole project) — prepared by International Mining Industry Underwriters Limited (IMIU), Mar 2005
185. Luanshya Risk Evaluation: Inherent v Residual after employing Corrective and Preventive Controls — prepared by E/S Dept.
186. Luanshya Hazard Register Long Hole Drilling, equipment transport — prepared by E/S Dept.
187. Luanshya Hazard Register Long Hole Drilling, drill rig assembly — prepared by E/S Dept.
188. Luanshya Hazard Register Long Hole Drilling, drilling operations — prepared by E/S Dept.

189. Luanshya Hazard Register Long Hole Drilling, dismantling drill rig — prepared by E/S Dept.
190. Luanshya Cu Mines Risk Assessment Report (whole project) — prepared by IMIU, Apr 19, 2007
191. Luanshya Mining Risk Engineering Assessment Report — Zurich Risk Engineering Ltd, Feb 2008
192. Luanshya Emergency Procedures Plan — prepared by E/S Dept., June 22, 2010
193. Luanshya Emergency Procedures for Fire Plan — prepared by E/S Dept., Sept 16, 2010
194. Luanshya Baluba Mine Flood Control Manual REV August 1, 2009, prepared by Geology Dept.
195. Luanshya Emergency Response Procedure, prepared by E/S Dept. Oct 11, 2009
196. Luanshya FLOOD CONTROL PROCEDURES — ACTION LEGEND IN PUMP CHAMBERS
197. Luanshya numerous analytical reports on underground water quality for Muliashi mine from 2010 and 2011
198. Luanshya numerous weekly assay results of surface water monitoring for Luanshya project site from 2010
199. Luanshya Internal Audit for Health Care Waste Management- Luanshya Mine Hospital & Residential Clinics — prepared by E/S Dept. 27-01-2011
200. Luanshya Internal Audit for Baluba Surface Diesel Workshop; Hydrocarbon Contamination & Waste Management — prepared by E/S Dept. 18.03.11
201. Luanshya ENVIRONMENTAL PROTECTION FUND AUDIT REPORT, Baluba Mine — Concentrator — Workshops and Musi Dam — prepared by CHAMSPRO LIMITED (independent consultants) Feb 2011
202. Luanshya ENVIRONMENTAL PROTECTION FUND AUDIT REPORT, DECOMMISSIONED AND CLOSED SHAFTS (14 SHAFT- 18 SHAFT and 28 SHAFT) — prepared by CHAMSPRO LIMITED Feb 2011
203. Luanshya ENVIRONMENTAL PROTECTION FUND AUDIT REPORT, MULIASHI COPPER PROJECT — prepared by CHAMSPRO LIMITED Feb 2011
204. Luanshya ESIA Approval letter for Muliashi Project issued by ECZ on 10-11-2010
205. Luanshya Copper Mines Decommissioning and Closure ESIA Approval Letter, issued by ECZ on 10-11-2010
206. Luanshya ESIA for Operational CNMC Luanshya Copper Mines Approval Letter, issued by ECZ on 10-11-2010
207. Luanshya ESIA for Muliashi Project, produced by Epoch Resources (consulting group) in 2007
208. Luanshya ESIA for Luanshya Copper Mines, produced by No author or date provided



209. Luanshya ESIA Approval Letter for Luanshya Copper Mines Project issued by ECZ on Feb 12, 2008
210. Luanshya EMP 2011 prepared by E/S Dept. for Luanshya Copper Mines
211. Luanshya Copper Mines ESIA for Decommissioning and Closure, no author provided, Dec 2009
212. Luanshya Safety Statistics for 2009 — 2010
213. Luanshya Details of Reportable and Fatal Accidents Dec 2010
214. Luanshya Application for Annual Operating Permit to Mines Development Department and Mines Safety Director, dated Mar 7, 2011
215. Luanshya Decommissioning Plans and Closure of Muliashi Project ESIA, prepared by E/S Dept. No Date provided
216. Luanshya Copper Mines Decommissioning Plans and Closure Project ESIA, prepared by E/S Dept. No Date provided
217. Luanshya Water Abstraction (from Musiyapatwa River) Permit (No.WDB/1661) issued by Zambian Water Board, May 16, 2006 — valid for 5 years
218. Luanshya Large-Scale Mining License (No. 8404-HQ-LML commencing on Nov 9, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
219. Luanshya Large-Scale Mining License (No. 8396-HQ-LML), commencing on Oct 19, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
220. Luanshya Large-Scale Mining License (No. 8395-HQ-LML), commencing on Oct 19, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
221. Luanshya Large-Scale Mining License (No. 8394-HQ-LML), commencing on Oct 19, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
222. Luanshya Large-Scale Mining License (No. 8393-HQ-LML) commencing on Oct 19, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
223. Luanshya Large-Scale Mining License (No. 8392-HQ-LML), commencing on Oct 19, 2006 — valid for 25 years, issued by the Mines Development Dept. on Apr 29, 2010
224. Luanshya Large-Scale Mining License (No. 8097-HQ-LML), commencing on Jan 23, 2004 — valid for 20 years, issued by the Mines Development Dept. on Apr 29, 2010
225. Luanshya Production Hazard / Risk Register, prepared by E/S Dept. Apr 30, 2011
226. SINO-METALS ENVIRONMENTAL MANAGEMENT PLAN 2009
227. SINO-METALS ENVIRONMENTAL MANAGEMENT PLAN 2010
228. SINO-METALS MWAMBASHI EMP

229. SINO-METALS SHEQ REPORTING — ORGANIZATION CHART

230. SINO-METALS ECZ-COMPLIANCE MONITORING — 1, 2, 3 and 4

231. SINO-METALS ECZ-LICENSING — 1, 2, 3 and 4


232. SINO-METALS ANNUAL REPORTS

APPENDICES

Appendix I: Mining Licenses

Mining License — NFCA Chambishi Project (7069-HQ-LML)

**CHAMBISHI MINE** Form XVII  
(Regulation 23)

  
**REPUBLIC OF ZAMBIA**

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 7069-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name RFC AFRICA KINSHU PLC

Address P.O. BOX 22691, KITWE


The mining areas shall be the area described in the Schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals Sb, Mn, W, U, Bi, PGE, Au, Ag, Cr, Cu, Ni, Zn, Se, Te, Cd, Co, Fe, Pb

The licence is granted for a period of TWENTY FIVE (25 YEARS) commencing on the 29TH day of JUNE, 1998


The conditions of grant of this licence are as shown in the Annexures attached hereto.

Issued at LOSACA this 12TH day of JULY, 2010

  
**MOOYA B.C. LUMAMBA DEPT**  
Director  
**12 JUL 2010**

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has been registered in the Register 12 JULY, 2010

  
**MOOYA B.C. LUMAMBA**  
Director

Mining License – CLM Project (8097-HQ-LML)

Form XVII  
(Regulation 23)

**LUANSHYA AND BALUBA MINES**



**REPUBLIC OF ZAMBIA**

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. **8097-HQ-LML**

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name **CMC LUANSHYA COPPER MINES PLC**

Address **P.O. BOX 90456, LUANSHYA**

The mining areas shall be the area described in the Schedule and annexed hereto and bordered **RED** on the Plan.

The licence relates to the following minerals **Cu, Co, Au, Ag, Pb, Zn, Ni, U, S, Se, Bismuth, Te, Ge, Au, Mo, W & Cadmium**

The licence is granted for a period of **TWENTY (20) YEARS** commencing on the **23RD** day of **JANUARY, 2004**

The conditions of grant of the licence are as shown in the Annexures attached hereto.

**ANNEXURES 1-7**

Issued at **LOSACA** this **29TH** day of **APRIL, 2010**

*[Signature]*  
**MOOYA S.C. LOMAMBA**  
Director

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this **29TH** day of **APRIL, 2010** been registered in the Register.

*[Signature]*  
**MOOYA S.C. LOMAMBA**  
Director



Mining License — CLM Project (8396-HQ-LML)

Form XVII  
(Regulation 23)

ROAN BASIN - LUANSHYA



REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8396-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name GRMC LUANSHYA COPPER MINES PLC

Address P.O. BOX 90456, LUANSHYA

The mining areas shall be the area described in the Schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals COPPER AND COBALT

The licence is granted for a period of TWENTY-FIVE (25) YRS commencing on the 19TH day of OCTOBER, 2006

The conditions of grant of the licence are as shown in the Annexures attached hereto.

**ANNEXURES 1-7**

Issued at LUSAKA this 29TH day of APRIL, 2010

  
**MOYA S.C. LEMAMBA**  
Director  
THE DIRECTOR OF MINES

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this 29TH day of APRIL, 2010 been registered in the Register.

  
**MOYA S.C. LEMAMBA**  
Director



Mining License — CLM Project (8394-HQ-LML)

MUVA HILL - LUANSIYA Form XVII  
(Regulation 23)

  
REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8394-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name CRMC LUANSIYA COPPER MINES PLC

Address P.O. BOX 90456, LUANSIYA

The mining areas shall be the area described in the schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals COPPER AND COBALT

The licence is granted for a period of TWENTY-FIVE (25) YRS. commencing on the 19TH day of OCTOBER, 2006.

The conditions of grant of the licence are as shown in the Annexures attached hereto.

**ANNEXURES: 1-7**

Issued at LUSAKA this 29TH day of APRIL, 2010

  
**MOYA S.C. LIMAMBA**  
Director

**ENDORSEMENT OF REGISTRATION**

This Large-Scale Mining Licence has this 29TH day of APRIL, 2010 been registered in the Register.

  
**MOYA S.C. LIMAMBA**  
Director

Mining License — CLM Project (8393-HQ-LML)

MULTASHI - LUANSHYA Form XVII  
(Regulation 23)

  
REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8393-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name CNMC LUANSHYA COPPER MINES PLC  
Address P.O. BOX 90456, LUANSHYA

The mining areas shall be the area described in the Schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals COPPER AND COBALT

The licence is granted for a period of TWOEY-FIVE (25) YRS commencing on the 19TH day of OCTOBER, 2006

The conditions of grant of the licence are as shown in the Annexures attached hereto.

**ANNEXURES 1-7**

Issued at LOSARA this 29TH day of APRIL, 2010

  
**MOOYA S.C. LUMANBA**  
Director

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this 29TH day of APRIL,  
2010

been registered in the Register.

  
  
**MOOYA S.C. LUMANBA**  
Director



Mining License — CLM Project (8395-HQ-LML)

Form XVII  
(Regulation 23)

ROAN EXTENSION WEST - LUANSHYA

  
REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8395-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name CNNC LUANSHYA COPPER MINES PLC

Address P.O. BOX 90456, LUANSHYA

The mining areas shall be the area described in the Schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals COPPER AND COBALT

The licence is granted for a period of TWENTY-FIVE (25) YRS commencing on the 19TH day of OCTOBER, 2006

The conditions of grant of the licence are as shown in the Annexures attached hereto.

ANNEXURES 1-7

Issued at LESAKA the 29TH day of APRIL, 2010

  
MOYA B.C. LUMAMBA  
Director

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this 29TH day of APRIL, 2010 been registered in the Register.

  
MOYA B.C. LUMAMBA  
Director

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Mining License — CLM Project (8404-HQ-LML)

Form XVII  
(Regulation 23)

**ROAN EXTENSION EAST - LUANSHYA**

  
REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8404-BQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name: CNMC LUANSHYA COPPER MINES PLC

Address: P.O. BOX 90456, LUANSHYA

The mining areas shall be the area described in the Schedule and annexed hereto and bordered RED on the Plan.

The licence relates to the following minerals: COPPER AND COBALT

The licence is granted for a period of TWENTY-FIVE (25) YRS commencing on the 9TH day of NOVEMBER, 2006

The conditions of grant of the licence are as shown in the Annexures attached hereto.

ANNEXURES 1-7

Issued at LUSAKA this 29TH day of APRIL, 2010

  
**MOOTYA B.C. LIMAMBA**  
Director

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this 29TH day of APRIL, 2010 been registered in the Register.

  
**MOOTYA B.C. LIMAMBA**  
Director

Mining License — CLM Project (8392-HQ-LML)

BALUBA EAST - LUANSHYA Form XVII  
(Regulation 73)

  
REPUBLIC OF ZAMBIA

The Mines and Minerals Development Act, 2008  
(Act No. 7 of 2008)  
The Mines and Minerals Development (General) Regulations, 2008

LICENCE NO. 8392-HQ-LML

**LARGE-SCALE MINING LICENCE**  
(Section 27 of the Mines and Minerals Development Act, No. 7 of 2008)

Holder's name CNMC LUANSHYA COPPER MINES PLC

Address P.O. BOX 90456, LUANSHYA

The mining areas shall be the areas described in the Schedule and annexed hereto and bordered BY on the Plan.

The licence relates to the following minerals COPPER AND COBALT

The licence is granted for a period of TWENTY-FIVE (25) YRS commencing on the 19TH day of OCTOBER, 2006

The conditions of grant of the licence are as shown in the Annexures attached hereto.

ANNEXURES 1-7

Issued at LUZAKA on the 29TH day of APRIL, 2010

  
MOOTY B.C. LUMAMBA  
Director

ENDORSEMENT OF REGISTRATION

This Large-Scale Mining Licence has this 29TH day of APRIL, 2010 been registered in the Register.

  
MOOTY B.C. LUMAMBA  
Director

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## Appendix II: Chinese Resource and Reserve Standards

### *Categorization of Mineral Resources and Ore Reserves*

The system for the categorization of mineral resources and ore reserves in China is in a period of transition which commenced in 1999. The traditional system, which is derived from the former Soviet system, uses five categories based on decreasing levels of geological confidence — Categories A, B, C, D and E. The new system (Rule 66) promulgated by the Ministry of Land and Resources (MLR) in 1999 uses three-dimensional matrices, based on economic, feasibility/mine design and geological degrees of confidence. These are categorized by a three number code of the form “123”. This new system is derived from the UN Framework Classification proposed for international use. All new projects in China must comply with the new system, however, estimates and feasibility studies carried out before 1999 will have used the old system.

Wherever possible, the Chinese Resource and Reserve estimates have been reassigned by SRK to categories similar to those used by the JORC Code to standardize categorization. Although similar terms have been used, SRK does not mean to imply that in their present format they are necessarily classified as ‘Mineral Resources’ as defined by the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the “JORC Code”).

A broad comparison guide between the Chinese classification scheme and the JORC Code is presented in the following table.

JORC Code Resource Category	Chinese Resource Category	
	Previous system	Current system
Measured .....	A, B	111, 111b, 121, 121b, 2M11, 2M21, 2S11, 2S21, 331
Indicated .....	C	122, 122b, 2M22, 2S22, 332
Inferred .....	D	333
Non-equivalent .....	E	334

#### Definition of the New Chinese Resource and Reserve Category Scheme

Category	Denoted	Comments
Economic	1	Full feasibility study considering economic factors has been conducted
	2	Pre feasibility to scoping study which generally considers economic factors has been conducted
	3	No pre feasibility or scoping study conducted to consider economic analysis
Feasibility	1	Further analysis of data collected in “2” by an external technical department
	2	More detailed feasibility work including more trenches, tunnels, drilling, detailed mapping
	3	Preliminary evaluation of feasibility with some mapping and trenches
Geologically controlled	1	Strong geological control
	2	Moderate geological control via closely-spaced data points (e.g. small-scale mapping)
	3	Minor work which is projected throughout the area
	4	Review stage

**Relationship between JORC Code and the Chinese Reserves System**

In China, the methods used to estimate the resources and reserves are generally prescribed by the relevant Government authority, and are based on the level of knowledge for that particular geological style of deposit. The parameters and computational methods prescribed by the relevant authority include cut-off grades, minimum thickness of mineralization, maximum thickness of internal waste, and average minimum 'industrial' or 'economic' grades required. The resource classification categories are assigned largely on the basis of the spacing of sampling, trenching, underground tunnels and drill holes.

In the pre-1999 system, Category A generally included the highest level of detail possible, such as grade control information. However, the content of each category B, C and D may vary from deposit to deposit in China, and therefore must be carefully reviewed before assigning to an equivalent "JORC Code type" category. The traditional Categories B, C and D are broadly equivalent to the 'Measured', 'Indicated', and 'Inferred' categories that are provided by the JORC Code and USBM/USGS systems used widely elsewhere in the world. In the JORC Code system the 'Measured Resource' category has the most confidence and the 'Inferred' category has the least confidence, based on the increasing levels of geological knowledge and continuity of mineralization.

Old Chinese Classification		A & B		C		D	E & F		
<b>New Chinese Classification</b>									
<b>"E" Economic Evaluation (1XX)</b>	Designed Mining Loss Accounted	Recoverable Reserve (111)	Probable Recoverable Reserve (121)		Probable Recoverable Reserve (122)				
	Designed Mining Loss NOT Accounted (b)	Basic Reserve (111b)	Basic Reserve (121b)		Basic Reserve (122b)				
<b>Marginal Economic (2MXX)</b>		Basic Reserve (2M11)	Basic Reserve (2M21)		Basic Reserve (2M22)				
<b>Submarginal Economic (2SXX)</b>		Resource (2S11)	Resource (2S21)		Resource (2S22)				
<b>Intrinsic Economic (3XX)</b>				Resource (331)		Resource (332)	Resource (333)	Resource (334)	
<b>"F" Feasibility Evaluation</b>		Feasibility (010)	Pre-Feasibility (020)	Scoping (030)	Pre-Feasibility (020)	Scoping (030)	Scoping (030)	Scoping (030)	
<b>"G" Geological Evaluation</b>		<b>Measured (001)</b>			<b>Indicated (002)</b>		<b>Inferred (003)</b>	<b>Predicted (004)</b>	
<b>Comparison to JORC Code</b>		<i>Unclassified</i>							
						<i>Inferred Resource</i>			
				<i>Probable Reserve or Indicated Resource</i>					
				<i>Proved / Probable Reserve or Measured Resource</i>					



### Appendix III: Zambian Environmental Legislative Background

The core pieces of legislation and associated regulations governing environmental management of mining activities and environmental protection are the Environmental Protection and Pollution Control Act (EPPCA) of 1990 and Environmental Impact Assessment Regulations (ESIAR) of 1997, the Mines and Minerals Act of 1955 and the Mines and Minerals Environmental Regulations of 1997. The EPPCA establishes the Environmental Council of Zambia (ECZ) as the national body responsible for enforcing environmental regulations and coordinating sectoral Government agencies involved in environmental management in their sectors. These responsibilities are managed by ECZ's Technical Secretariat, which effectively constitutes Zambia's Environmental Protection Agency (EPA).

The Environmental Impact Assessment regulations require that an Environmental Impact Assessment (ESIA) be prepared for all investments that have a major impact on the environment. The identification and implementation of adequate environmental mitigation measures is also regulated by the ESIAR. The Mines and Minerals Act and the Mines and Minerals Environmental Regulations 1997 address the environmental, health and safety aspects of mining activities in Zambia. The body mandated with monitoring and enforcing compliance with environmental regulations is the Mines Safety Department (MSD) within the Ministry of Mines and Minerals Development (MMMD). They regulate environmental protection and pollution control in the areas where prospecting, exploration and mining operations are being carried out.

The regulation of the environmental impacts of the mining sector also involves other sectors, each with its own regulatory instruments: water affairs, tourism, transport, radiation protection, health, energy, national heritage conservation, local Government and land. These bodies are responsible for sectoral regulations and constitute Delegated Authorizing Agencies (DAAs) under the EPPCA. The ECZ defers to these agencies on specific technical issues, but retains the role of overall coordination of their respective contributions.

The EPPCA also sets environmental quality standards and makes the polluter responsible for meeting them. Thus under the EPPCA, all effluents and emissions from mining operations are regulated through a system of permits, licenses and fines. Dumps, including overburden dumps and tailings dams, are similarly regulated.

The following are other Zambian laws that provide environmental legislative support to the *Mines and Mineral Act (2003)*:

- *Mines and Mineral Development Act, 2008*
- *Environmental Protection and Pollution Control Act, No 12 of 1990, Cap 24*
- *Environmental Protection and Pollution Control Amendment Act, No 12 of 1999*
- *Ozone Depleting Substances Regulations, 2000*
- *The Air Pollution Control (Licensing and Emissions Standards) Regulations, S. I. 141 of 1996*
- *The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997*
- *The Hazardous Waste Management Regulations, S.I. No 125 of 2001*

- *The Pesticides and Toxic Substances Regulations, 1994*
- *The Water Act, 1949*
- *The Water Pollution Control (Effluent and Waste Water) Regulations 1993*
- *The Zambia Wildlife Act, No 12 of 1998*
- *The National Heritage Conservation Commission Act of 1989*

International Conventions and Protocols to which Zambia is a signatory:

- *The Basel Convention on the Control of Trans-boundary movements of Hazardous wastes and their disposal*
- *The United Nations Framework Convention on Climate Change (UNFCCC)*
- *Montreal Protocol on Substances that Deplete the Ozone Layer*
- *Convention Concerning the Protection of the World Cultural and Natural Heritage*
- *Stockholm Convention on Persistent Organic Pollutants (Pops)*



**Appendix IV: World Bank/International Finance Corporation (IFC)  
Environmental Standards and Guidelines**

In seeking to obtain project financing or to list on a stock exchange, these institutions themselves require the proponent to comply with such documents as the Equator Principles and the IFC Performance Standards and Guidelines. This is exemplified by the following preamble from the Equator Principles (July 2006):

Project financing, a method of funding in which the lender looks primarily to the revenues generated by a single project both as the source of repayment and as security for the exposure, plays an important role in financing development throughout the world. Project financiers may encounter social and environmental issues that are both complex and challenging, particularly with respect to projects in the emerging markets.

The Equator Principles Financial Institutions (EPFIs) have consequently adopted these Principles in order to ensure that the projects we finance are developed in a manner that is socially responsible and reflect sound environmental management practices. By doing so, negative impacts on project-affected ecosystems and communities should be avoided where possible, and if these impacts are unavoidable, they should be reduced, mitigated and/or compensated for appropriately. We believe that adoption of and adherence to these Principles offers significant benefits to ourselves, our borrowers and local stakeholders through our borrowers' engagement with locally affected communities. We therefore recognize that our role as financiers affords us opportunities to promote responsible environmental stewardship and socially responsible development. As such, EPFIs will consider reviewing these Principles from time-to-time based on implementation experience, and in order to reflect ongoing learning and emerging good practice.

These Principles are intended to serve as a common baseline and framework for the implementation by each EPFI of its own internal social and environmental policies, procedures and standards related to its project financing activities. We will not provide loans to projects where the borrower will not or is unable to comply with our respective social and environmental policies and procedures that implement the Equator Principles.

The following appendix Table AIV-1 and appendix Table AIV-2 provide a brief summary of the Equator Principles and IFC performance standards respectively. These documents are used by the EPFI's and stock exchanges in their review of social and environmental performance of proponent companies.

**Table AIV-1: Equator Principles**

Equator Principles	Title	Key Aspects (Summary)
1	Review and Categorization	Categorize such project based on the magnitude of its potential impacts and risks.
2	Social and Environmental Assessment	Conduct a Social and Environmental Assessment (“Assessment”). The Assessment should also propose mitigation and management measures appropriate to the nature and scale of the proposed project.
3	Applicable Social and Environmental Standards	The Assessment will refer to the applicable IFC Performance Standards, and applicable Industry Specific EHS Guidelines (“EHS Guidelines”) and overall compliance with same.
4	Action Plan and Management System	Prepare an Action Plan (AP) which addresses the relevant findings of the Assessment. The AP will describe and prioritize the actions, mitigation measures, corrective actions and monitoring to manage the impacts and risks identified in the Assessment. Maintain a Social and Environmental Management System that addresses the management of these impacts, risks, and corrective actions required to comply with host country laws and regulations, and requirements of the applicable Standards and Guidelines, as defined in the AP.
5	Consultation and Disclosure	Consult with project affected communities. Adequately incorporate affected communities’ concerns.
6	Grievance Mechanism	Establish a grievance mechanism as part of the management system. to receive and resolve concerns about the project by individuals or groups from among project-affected communities. Inform the affected communities about the grievance mechanism in the course of the community engagement process and ensure that the mechanism addresses concerns promptly and transparently, and is readily accessible to all segments of the affected communities.
7	Independent Review	Independent social or environmental expert will review the Assessment, AP and consultation process to assess Equator Principles compliance.
8	Covenants	Covenant in financing documentation: a) to comply with all relevant host country social and environmental laws, regulations and permits; b) to comply with the AP during the construction and operation of the project; c) to provide periodic reports not less than annually, prepared by in-house staff or third party experts, that (i) document compliance with the AP, and (ii) provide compliance with

Equator Principles	Title	Key Aspects (Summary)
		relevant local, state and host country social and environmental laws, regulations and permits; and d) to decommission the facilities, where applicable and appropriate, in accordance with an agreed decommissioning plan.
9	Independent Monitoring and Reporting	Appoint an independent environmental and/or social expert, or require that the borrower retain qualified and experienced external experts to verify its monitoring information.
10	EPFI Reporting	Each EPFI adopting the Equator Principles commits to report publicly at least annually about its Equator Principles implementation processes and experience, taking into account appropriate confidentiality considerations.

Table AIV-2: IFC Performance Standards

IFC Performance Standard	Title	Objective (Summary)	Key Aspects (Summary)
1	Social and Environmental Assessment and Management Systems	Social and EIA and improved performance through use of management systems.	Social & Environmental Management System (S&EMS). Social & Environmental Impact Assessment (S&EIA). Risks and impacts. Management Plans. Monitoring. Reporting. Training. Community Consultation
2	Labor and Working Conditions	EEO. Safety and Health	Implement through the S&EMS. HR policy. Working condition. EEO. Forced & child labor. OH&S.
3	Pollution Prevention and Abatement	Avoid pollution. Reduce Emissions.	Prevent pollution. Conserve resources. Energy efficiency. Reduce waste. Hazardous materials. EPR. Greenhouse Gases
4	Community Health, Safety and Security	Avoid or minimize risks to community.	Implement through the S&EMS. Do risk assessment. Hazardous materials safety. Community exposure. ERP
5	Land Acquisition and Involuntary Resettlement	Avoid or minimize resettlement. Mitigate adverse social impacts	Implement through the S&EMS. Consultation. Compensation. Resettlement planning. Economic displacement

IFC Performance Standard	Title	Objective (Summary)	Key Aspects (Summary)
6	Biodiversity Conservation and Sustainable Natural Resource Management	Protect and conserve biodiversity	Implement through the S&EMS. Assessment. Habitat. Protected areas. Invasive species.
7	Indigenous Peoples	Respect. Avoid and minimize impacts. Foster good faith	Avoid adverse impacts. Consultation. Development benefits. Impacts to traditional land use. Relocation.
8	Cultural Heritage	Protect cultural heritage	Heritage Survey. Site avoidances. Consultation.

**Appendix V: Project Technical Review — Risk Analysis**

To ensure the technical integrity of the risk analysis process as applied in the project technical review process, the following Australian Standards for risk analysis and risk management have been utilized for overall guidance:

AS/NZS 3931:1998 Risk Analysis of Technological Systems — Application Guide;

AS/NZS 4360:1999 Risk Management; and

HB 203:2004 Environmental Risk Management — Principles and Process.

These Australian Standards have been developed in line with comparable international standards.

A risk is generally described in terms of the severity/consequence and likelihood of an undesirable occurrence or incident. The greater the potential severity and likelihood of an undesirable occurrence, the higher the level of risk associated with the related activity.

The generic approach for this project technical review qualitative risk analysis has the following three steps:

Establish the context/define the scope of the analysis — goals/objectives, the analysis strategy and evaluation criteria.

Identify and analyze the risks in terms of consequence and likelihood.

Evaluate and rank the risks.

***Qualitative Risk Analysis — Scope***

The scope definition and context for the qualitative risk analysis can be summarized as follows:

**Goals/Objectives** — The primary objective is to analyze the qualitative risks associated with the project's development, operational and closure aspects.

**Strategy** — The strategy employed comprises the application of a qualitative risk analysis where the 'relative magnitude' of risks associated with the project are estimated. Inclusive within this process are also the concepts of inherent and residual risks. Inherent risks being those hazards that are present within the project without any remedial management, and residual risks are defined as those hazards remaining after the application of remedial risk management measures. The risks analyzed are those considered as the 'inherent risks' for the project at the time of the technical review.

This qualitative risk analysis strategy has the following key steps:

**Step 1** — Develop a qualitative risk matrix. This has relative significance rankings for the potential consequences/impacts, levels of event likelihood and the corresponding risk rankings from negligible to extreme.

**Step 2** — Define the inherent risks (i.e. at the time of the technical review). List the sources of risks and apply the qualitative risk analysis to define the level of risk.

**Qualitative Risk Analysis Matrix**

The proposed qualitative risk matrix uses the following definitions for consequence and likelihood:

Consequence:

- **Catastrophic:** Disaster with potential to lead to business failure.
- **Major:** Critical event/impact, which with proper remedial management, will be endured.
- **Moderate:** Significant event/impact, which may be managed under normal procedures.
- **Minor:** Consequences/impacts that may be readily absorbed, but some remedial management effort is still required.
- **Insignificant:** No additional/remedial management required.

Likelihood:

- **Certain:** The event is expected to occur in most circumstances.
- **Likely:** The event probably will occur in most circumstances (i.e. also could be on a regular basis such as weekly or monthly).
- **Possible:** The event should occur at some time (i.e. once in a while).
- **Unlikely:** The event could occur at some time.
- **Rarely:** The event may occur only in exceptional circumstances.

Based on these definitions the Qualitative Risk Matrix is presented below.

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Certain . . . . .	Low risk	Moderate risk	Moderate risk	High risk	Extreme risk
Likely . . . . .	Low risk	Moderate risk	Moderate risk	High risk	High risk
Possible . . . . .	Negligible risk	Low risk	Moderate risk	Moderate risk	High risk
Unlikely . . . . .	Negligible risk	Low risk	Low risk	Moderate risk	Moderate risk
Rarely . . . . .	Negligible risk	Negligible risk	Negligible risk	Low risk	Moderate risk

The risk definitions from this risk matrix can be further grouped into risk evaluation categories that are based on regulatory compliance and the ability for the risk to be managed to a level that conforms to industry standards, guidelines and/or codes of practice. These are:

**Category 1 — Unacceptable Inherent Risks** (Extreme/high risks) — can be defined as those sources of risk that are essentially unacceptable, which if uncorrected, may result in business failure or critical impacts to business.

**Category 2 — Tolerable Inherent Risks** (Moderate risks) — can be defined as those sources of risk that are tolerable and while, at the time of the technical review, they are non-compliant/non-conforming they can made to be compliant/conforming (acceptable risks) through the application of risk management measures.

**Category 3 — Acceptable Inherent Risks** (Low/negligible risks) — can be defined as those sources of risk that are acceptable and are compliant with legal requirements and conform to recognized industry standards, guidelines and codes of practice.

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The Articles of Association were conditionally adopted on April 27, 2012 and will become effective upon the Listing. The following is a summary of certain provisions of the Articles of Association. A copy of the Articles of Association is available for inspection at the address specified in the section headed “Documents Delivered to the Registrar of Companies and Available for Inspection — Documents Available for Inspection” in Appendix VI to this prospectus.

**CHANGES IN CAPITAL**

The Company may exercise any powers conferred or permitted by the Companies Ordinance or any other ordinance from time to time to purchase or otherwise acquire its own shares and warrants (including any redeemable shares) or to give, directly or indirectly, by means of a loan, guarantee, the provision of security or otherwise, financial assistance for the purpose of or in connection with a purchase or other acquisition made or to be made by any person of any shares or warrants in the Company and should the Company purchase or otherwise acquire its own shares or warrants, neither the Company nor the Board of Directors shall be required to select the shares or warrants to be purchased or otherwise acquired rateably or in any other particular manner as between the holders of shares or warrants of the same class or as between them and the holders of shares or warrants of any other class or in accordance with the rights as to dividends or capital conferred by any class of shares, provided that in the case of purchases of redeemable shares, (a) purchases not made through the market or by tender shall be limited to a maximum price and (b) if purchases are by tender, tenders shall be available to all Shareholders alike and provided further that any such purchase or other acquisition or financial assistance shall only be made or given in accordance with any relevant rules or regulations issued by the Hong Kong Stock Exchange, the SFC or the relevant regulators or authorities from time to time in force.

The Company may, from time to time, by ordinary resolution:

- (a) increases its share capital by such sum divided into shares of such amounts as the resolution shall prescribe;
- (b) subject to the provisions of the Companies Ordinance, sub-divide its shares or any of them into shares of smaller amount than is fixed by the Memorandum of Association and determine that as between the shares resulting from such sub-division, any of them may, as compared with the others, have any preference or advantage;
- (c) divide its shares into several classes and attach thereto respectively any preferential, deferred, qualified or special rights, privileges or conditions;
- (d) consolidate and divide all or any of its share capital into shares of larger amount than its existing shares;
- (e) cancel any shares which, at the date of the passing of the resolution, have not been taken or agreed to be taken by any person and diminish the amount of its share capital by the amount of the shares so cancelled; or
- (f) make provision for the issue and allotment of shares which do not carry any voting rights.

Subject to the provisions of the Companies Ordinance and the Articles of Association, the unissued shares in the Company shall be at the disposal of the Directors who may offer, allot, grant options over or otherwise deal with or dispose of the same to such persons and upon such terms as they shall consider fit, provided that no shares of any class shall be issued at a discount to their nominal value except in accordance with the provisions of the Companies Ordinance.

The Company may by special resolution reduce its share capital, any capital redemption reserve fund and any share premium account in any manner allowed by law.

**MODIFICATION OF RIGHTS**

If, at any time, the Company's share capital is divided into different classes of shares, the rights attached to any class of shares (unless otherwise provided by the terms of issue of that class) may be varied, either while the Company is a going concern or during or in contemplation of a winding-up, or with the consent in writing of the holders of three-fourths in nominal value of the issued shares of that class or with the sanction of a special resolution passed at a separate meeting of the holders of shares of that class but not otherwise. All the provisions contained in the Articles of Association relating to general meetings shall mutatis mutandis apply to every such meeting but so that the quorum thereof (other than an adjourned meeting) shall be no less than two persons holding or representing by proxy one-third in nominal value of the issued shares of the class and at any adjourned meeting two persons holding shares of that class or by proxy (whatever the number of shares held by them).

**TRANSFERS OF SHARES**

All transfers of shares must be effected by an instrument of transfer in writing and in any usual form or in a form prescribed by the Hong Kong Stock Exchange or in any other form which the Directors approve and shall be executed by or on behalf of the transferor and by or on behalf of the transferee and shall be under hand or, if the transferor or transferee is a clearing house or its nominee, the instrument of transfer shall be executed by hand or by machine imprinted signature or by such manner of execution as the Board of Directors may approve from time to time. The transferor shall remain the holder of the shares concerned until the name of the transferee is entered in the Company's register of members in respect thereof.

The Board of Directors may, at any time in their absolute discretion and without assigning any reason therefore, decline to register any transfer of any share (not being a fully paid up share). In particular, the Board of Directors may decline to register any transfer if all or any of the following provisions are not satisfied:

- (a) the instrument of transfer is lodged at the Company's registered office or at such other place as the Directors may appoint;
- (b) the instrument of transfer is in respect of only one class of shares;
- (c) in the case of a transfer to joint holders, the number of transferees does not exceed four;
- (d) the shares concerned are free of any lien in favor of the Company;
- (e) the instrument of transfer is properly stamped;
- (f) such other conditions as the Board of Directors may from time to time impose for the purpose of guarding against losses arising from forgery are satisfied;
- (g) the instrument of transfer is accompanied by a fee as permitted under the rules prescribed by the Hong Kong Stock Exchange; and
- (h) the instrument of transfer is accompanied by the certificate of the shares to which it relates, and such other evidence as the Board of Directors may reasonably require to show the right of the transferor to make the transfer.

If the Board of Directors refuses to register a transfer they will, within ten Business Days after the date on which the transfer was lodged with the Company, send to the transferor and transferee notice of the refusal.

No transfer may be made to a minor (under the age of 18) or to a person of unsound mind or under other legal disability.

#### **VOTING AT GENERAL MEETINGS**

Subject to any special rights or restrictions as to voting for the time being attached to any shares by or in accordance with these Articles, at any general meeting on a poll every member of the Company present in person or by proxy or, in the case of a member of the Company being a corporation, by its duly authorized representative shall have one vote for every fully paid share of which he is the holder but so that no amount paid up or credited as paid up on a share in advance of calls or installments is treated for the foregoing purposes as paid up on the share. At any general meeting a resolution put to the vote of the meeting shall be decided by way of a poll. On a poll votes may be given either personally or by proxy.

A person entitled to more than one vote on a poll need not use all his votes or cast all the votes he uses in the same way.

If a clearing house (or its nominee(s)), being a corporation, is a member of the Company, it (or, as the case may be, its nominee) may authorize such persons as it thinks fit to act as its proxy(ies) or representative(s) at any meeting of the Company or at any meeting of any class of member of the Company provided that, if more than one person is so authorized, the proxy form or authorization shall specify the number and class of shares in respect of which each such person is so authorized. Each person so authorized under the provisions of this Article shall be deemed to have been duly authorized without further evidence of the facts and be entitled to exercise the same rights and powers on behalf of the Clearing House (or its nominee(s)) as if such person was the registered holder of the shares of the Company held by the clearing house (or its nominee(s)).

#### **QUALIFICATION OF DIRECTORS**

A Director is not required to hold any qualification shares. No person is required to vacate office or be ineligible for re-election or re-appointment as a Director, and no person is ineligible for appointments as a Director, by reason only of his having attained any particular age.

#### **BORROWING POWERS**

The Board of Directors may at their discretion exercise all the powers of the Company to raise or borrow money and to mortgage or charge all or any part of its undertaking, property and uncalled capital. The Board of Directors may issue debentures, debenture stock, bonds and other securities, whether outright or as collateral security for any debt, liability or obligation of the Company or of any third party.

#### **FEES OF DIRECTORS**

The Directors are entitled to receive by way of remuneration for their services such sum as the Company may from time to time by ordinary resolution determine, which (unless otherwise directed by the resolution by which it is voted) is to be divided among the Directors in such proportions and in such manner as the Board of Directors may agree, or failing agreement, equally, except that in such event any Director holding office for less than the whole of the relevant period in respect of

which the remuneration is paid shall only rank in such division in proportion to the time during such period for which he has held office. The foregoing shall not apply to a Director who holds any salaried employment or office in the Company except in the case of sums paid in respect of Directors' fees.

The Directors are also entitled to be repaid their reasonable traveling, hotel and other expenses properly incurred by them in connection with their attendance at meetings of the Board of Directors, committee meetings or general meetings or otherwise in connection with the discharge of their duties as Directors.

The Directors, or a committee of the Directors, may award special remuneration (by way of bonus, share option, commission, participation in profits or otherwise as the Directors may determine) to any Director who performs services which, in the opinion of the Directors, go beyond the scope of the ordinary duties of a Director.

### **DIRECTORS' INTERESTS**

No Director or intended Director is disqualified by his office from contracting with the Company, nor is any contract or arrangement entered into by or on behalf of the Company in which any Director is in any way interested be liable to be avoided, nor is any Director so contracting or being so interested be liable to account to the Company for any profit realized by any such contract or arrangement by reason of such Director holding that office or of any fiduciary relationship thereby established, provided that such Director shall disclose the nature of his interest in any contract or arrangement in which he is interested as required by and subject to the provisions of the Companies Ordinance.

A Director shall not vote nor be counted in the quorum on any resolution of the Board of Directors in respect of any contract or arrangement or matter in which he or any of his associate(s) has, directly or indirectly, a material interest (other than an interest in shares, debentures or other securities of, or otherwise in or through, the Company), but this prohibition does not apply to any of the following matters:

- (a) any contract or arrangement for the giving of any guarantee, security or indemnity to the Director or his associate(s) in respect of money lent to, or obligations incurred by him or any of them at the request of or for the benefit of, the Company or any of its subsidiaries;
- (b) any contract or arrangement for the giving of any guarantee, security or indemnity to a third party in respect of a debt or an obligation of the Company or any of its subsidiaries for which the Director or his associate(s) has himself/themselves assumed responsibility in whole or in part and whether alone or jointly with others under a guarantee or indemnity or by the giving of security;
- (c) any proposal concerning an offer of shares or debentures or other securities of or by the Company or any other company which the Company may promote or be interested in for subscription or purchase where the Director or his associate(s) is/are or is/are intending to become interested as a participant in the underwriting or sub-underwriting of the offer;
- (d) any contract or arrangement in which the Director or his associate(s) is/are interested in the same manner as other holders of shares or debentures or other securities of the Company by virtue only of his/their interest in those shares or debentures or other securities;
- (e) any proposal concerning any other company in which the Director or his associate(s) is/are interested only, whether directly or indirectly, as an officer, executive or shareholder or in

which the Director or his associate(s) is/are beneficially interested in shares of that company, other than a company in which the Director together with any of his associates are in aggregate the holders of or beneficially interested in 5% or more of the issued shares of any class of such company (or of any other company through which his interest or that of his associates is derived) or of the voting rights attaching to such issued shares;

- (f) any proposal or arrangement concerning the benefit of the employees of the Company or any of its subsidiaries, including the adoption, modification or operation of a pension fund or retirement, death or disability benefit scheme, which relates to the Directors, his associates and employees of the Company or any of its subsidiaries and does not accord to any Director or his associate(s) as such any privilege or advantage not generally accorded to the employees to whom such arrangement relates; and
- (g) any proposal or arrangement concerning the adoption, modification or operation of any employees' share scheme or any share incentive or share option scheme for the benefit of the employees of the Company or any of its subsidiaries under which the Director or his associate(s) may benefit.

A Director may continue to be or become a director or other officer of, or otherwise interested in, any company promoted by the Company or in which the Company may be interested, and subject to the Companies Ordinance shall not be liable to account to the Company for any remuneration or other benefit received by him as a director or other officer or from his interest in such other company. The Board of Directors may exercise the voting powers conferred by the shares in any other company held or owned by the Company or exercisable by them as directors of such other company in such manner as the Board of Directors thinks fit (including the exercise thereof in favor of any resolution appointing themselves or any of them directors, managing directors, joint managing directors, deputy managing directors, executive directors, chief executive officers, managers or other officers of such company) and any Director may vote in favor of the exercise of such voting rights in the manner aforesaid notwithstanding that he may be, or be about to be, appointed a director, managing director, joint managing director, deputy managing director, executive director, manager or other officer of such a company, and that as such he is or may become interested in the exercise of such voting rights in the manner aforesaid. A Director or his firm may not act as the auditors of the Company.

## **DIVIDENDS**

Subject to the Companies Ordinance, the Company in general meeting may declare dividends in any currency to be paid to the members but no dividend shall be declared in excess of the amount recommended by the Board. The Company in general meeting may also make a distribution to its members out of contributed surplus (as ascertained in accordance with the Companies Ordinance). No dividend shall be paid or distribution made out of contributed surplus if to do so would render the Company unable to pay its liabilities as they become due or the realizable value of its assets would thereby become less than the aggregate of its liabilities and its issued share capital and share premium account.

Except in so far as the rights attaching to, or the terms of issue of, any share may otherwise provide, (i) all dividends shall be declared and paid according to the amounts paid up on the shares in respect whereof the dividend is paid but no amount paid up on a share in advance of calls shall for this purpose be treated as paid up on the share and (ii) all dividends shall be apportioned and paid pro rata according to the amount paid up on the shares during any portion or portions of the period in respect of which the dividend is paid. The Directors may deduct from any dividend or other monies

payable to a member by the Company on or in respect of any shares all sums of money (if any) presently payable by him to the Company on account of calls or otherwise.

Whenever the Board or the Company in general meeting has resolved that a dividend be paid or declared on the share capital of the Company, the Board may further resolve either (a) that such dividend be satisfied wholly or in part in the form of an allotment of shares credited as fully paid up, provided that the shareholders entitled thereto will be entitled to elect to receive such dividend (or part thereof) in cash in lieu of such allotment, or (b) that shareholders entitled to such dividend shall be entitled to elect to receive an allotment of shares credited as fully paid up in lieu of the whole or such part of the dividend as the Board may think fit. The Company may also upon the recommendation of the Board by an ordinary resolution resolve in respect of any one particular dividend of the Company that it may be satisfied wholly in the form of allotment of shares credited as fully paid up without offering any right to shareholders to elect to receive such dividend in cash in lieu of such allotment.

Whenever the Board or the Company in general meeting has resolved that a dividend be paid or declared the Board may further resolve that such dividend be satisfied wholly or part by the distribution of specific assets of any kind.

All dividends or bonuses unclaimed for one year after having been declared may be invested or otherwise made use of by the Board for the benefit of the Company until claimed and the Company shall not be constituted a trustee in respect thereof. All dividends or bonuses unclaimed for six years after having been declared shall be forfeited and shall revert to the Company.

#### **INDEMNITY**

Subject to the provisions of the Companies Ordinance, every Director or other officer or auditor of the Company may be indemnified out of the assets of the Company against all liabilities incurred by him in defending any proceedings, whether civil or criminal, in which judgment is given in his favor or in which he is acquitted or in connection with any application in which relief from liability is granted to him by the court.

Subject to the provisions of the Companies Ordinance, the Directors may exercise all the powers of the Company to purchase and maintain insurance for the benefit of a person who is a director, alternate director, manager, secretary or officer of the Company or the auditors of the Company for the purpose of indemnifying such persons and keeping them indemnified against liability for negligence, default, breach of duty or breach of trust or other liability which may lawfully be insured against by the Company and any liability which may be incurred by him in defending any proceedings, whether civil or criminal, taken against him for any negligence, default, breach of duty or breach of trust (including fraud) of which he may be guilty in relation to the Company or a related company.

**A. FURTHER INFORMATION ABOUT US AND OUR SUBSIDIARIES****1. Incorporation**

We were incorporated in Hong Kong with limited liability under the Companies Ordinance on July 18, 2011. Our registered office as at the date of this prospectus is at Room 1201, Allied Kajima Building, 138 Gloucester Road, Wanchai, Hong Kong. A summary of our Articles of Association is set out in Appendix IV to this prospectus.

**2. Changes in Our Share Capital**

At the date of our incorporation, our authorized share capital was HK\$100,000 divided into 100,000 Shares.

The following changes in our share capital have taken place since the date of our incorporation up to the date of this prospectus:

- On October 6, 2011, our authorized share capital was increased from HK\$100,000 divided into 100,000 Shares to HK\$5,000,000,000 divided into 5,000,000,000 Shares by the creation of an additional 4,999,900,000 Shares at a par value of HK\$1.00, such new Shares ranking *pari passu* in all respects with the existing issued Shares.
- On November 22, 2011, our issued share capital was increased from HK\$1 divided into 1 Share to HK\$2,600,000,000 divided into 2,600,000,000 Shares, pursuant to the allotment and issue of 2,599,999,999 Shares arising from a share swap agreement dated November 22, 2011 entered into between CNMD and our Company. Please refer to the section “Our History and Reorganization — Reorganization” of this prospectus for more information.

Assuming that the Global Offering becomes unconditional and the Offer Shares are issued but taking no account of any Shares which may be issued upon the exercise of the Over-allotment Option, our issued share capital will be HK\$3,470,000,000 divided into 3,470,000,000 Shares fully paid or credited as fully paid, with 1,530,000,000 Shares remaining unissued.

On the basis that the Over-allotment Option is exercised in full, 3,600,500,000 Shares will have been allotted and issued fully paid or credited as fully paid and 1,399,500,000 Shares will remain unissued.

Save as disclosed herein and as set forth in the paragraph headed “— 3. Written Resolutions of the Sole Shareholder Passed on April 27, 2012” there has been no alternation in our share capital since the date of our incorporation.

**3. Written Resolutions of the Sole Shareholder Passed on April 27, 2012**

Written resolutions of the sole Shareholder were passed on April 27, 2012 approving, among others, the following:

1. conditional upon (i) the Listing Committee of the Hong Kong Stock Exchange granting the listing of, and the permission to deal in, the Shares in issue and to be issued pursuant to the Global Offering (including any additional Shares which may be issued pursuant to the exercise of the Over-allotment Option); (ii) the Offer Price having been duly agreed between the Joint Global Coordinators and us; (iii) the execution and delivery of the International Underwriting Agreement on or around the Price Determination Date; and (iv) the obligations of the



Underwriters under the Underwriting Agreements having become unconditional and not having been terminated in accordance with the terms therein or otherwise, in each case on or before such dates as may be specified in such agreements:

- (a) the Global Offering was approved and the Directors were authorized to approve the allotment and issue of the Shares, as the case may be, pursuant to the Global Offering on and subject to the terms and conditions thereof as set out in the prospectus and the Application Forms;
- (b) the proposed Listing of the Shares on the Main Board of the Hong Kong Stock Exchange was approved and the Directors were authorized to implement such Listing;
- (c) the Over-allotment Option was approved and the Directors were authorized to effect the same and to allot and issue the Over-allotment Shares upon the exercise of the Over-allotment Option;
- (d) a general unconditional mandate was given to the Directors to allot, issue and deal with (including the power to make and grant offers, agreements and options, or grant securities which would or might require Shares to be allotted and issued), otherwise than pursuant to a rights issue or pursuant to any scrip dividend scheme or similar arrangements providing for the allotment and issue of Shares in lieu of the whole or part of a dividend on Shares in accordance with the Articles or pursuant to a specific authority granted by the Shareholders in general meeting, Shares with a total nominal value not exceeding 20% of the aggregate of the total nominal value of our share capital in issue immediately following completion of the Global Offering (but taking no account of any Shares which may be allotted and issued pursuant to the exercise of the Over-allotment Option), such mandate to remain in effect until the conclusion of our next annual general meeting unless by ordinary resolution passed at that meeting, the authority is renewed, either unconditionally or subject to conditions, or the expiration of the period within which our next annual general meeting is required by the Articles or any applicable laws to be held, or when revoked or varied by an ordinary resolution of the Shareholders in general meeting, which occurs first;
- (e) a general unconditional mandate (the “Repurchase Mandate”) was given to the Directors authorizing them to exercise all powers to repurchase on the Hong Kong Stock Exchange or on any other approved stock exchange on which our securities may be listed and which is recognized by the SFC and Hong Kong Stock Exchange for this purpose, subject to and in accordance with all applicable laws and/or requirements of the Listing Rules or of any other stock exchange on which our securities may be listed, as amended from time to time such number of Shares as will represent up to 10% of the aggregate nominal amount of our share capital in issue immediately following completion of the Global Offering (but taking no account of any Shares which may be issued and allotted pursuant to the exercise of the Over-allotment Option), such mandate to remain in effect until the conclusion of our next annual general meeting unless by ordinary resolution passed at that meeting, the authority is renewed, either unconditionally or subject to conditions, or the expiration of the period within which our next annual general meeting is required by the Articles or any applicable laws to be held, or until revoked or varied by an ordinary resolution of the Shareholders in general meeting, whichever occurs first; and
- (f) the general unconditional mandate in paragraph (d) above be extended by the addition to the aggregate nominal value of our share capital which may be allotted or agreed conditionally or unconditionally to be allotted by the Directors pursuant to such general

mandate of an amount representing the aggregate nominal value of our share capital repurchased us pursuant to the mandate to repurchase Shares referred in paragraph (d) above; and

2. the Articles of Association were adopted as our articles of association, conditional upon the Listing.

#### 4. Further Particulars Relating to Subsidiaries

##### **(a) Changes in Share or Registered Capital of Subsidiaries**

Our present subsidiaries are referred to in the Accountants' Report, the text of which is set forth in Appendix I to this prospectus.

The following alterations in the share capital of each of our subsidiaries took place within the two years immediately preceding the date of this prospectus:

- (i) On August 18, 2010, Kakoso Company was incorporated in Zambia with a starting capital of ZMK10,000,000.
- (ii) On December 17, 2010, Huachin was incorporated in the DRC with a statutory capital of US\$10,000,000.
- (iii) On September 23, 2011, CNMH was incorporated in the Republic of Ireland with an issued share capital of €2.

##### **(b) Subsidiaries**

As at the Latest Practicable Date, we had the following subsidiaries:

<u>Name of subsidiary</u>	<u>Place and date of incorporation/ establishment</u>	<u>Issued and fully paid up capital</u>	<u>Attributable equity interest</u>	<u>Principal activities</u>
NFCA . . . . .	Zambia/March 5, 1998	US\$9,000,001	85%	production and sales of copper concentrate
Luanshya . . . . .	Zambia/July 10, 2003	US\$10,000,001	80%	production and sales of copper cathode
SML . . . . .	Zambia/December 3, 2004	US\$2,000	67.75%	production and sales of copper cathode
CCS . . . . .	Zambia/ July 19, 2006	US\$2,000	60%	production and sales of blister copper
Kakoso Company . . . . .	Zambia/August 18, 2010	ZMK10,000,000	88%	production and sales of copper cathode
Huachin . . . . .	DRC/December 17, 2010	US\$10,000,000	62.5%	purchase, processing and sales of copper and cobalt
CNMH . . . . .	Republic of Ireland/ September 23, 2011	€2	100%	investment holding

**B. FURTHER INFORMATION ABOUT OUR BUSINESS****1. Summary of Material Contracts**

The following contracts (not being contracts entered into in the ordinary course of business) were entered into by members of our Group within the two years preceding the date of this prospectus and are or may be material:

- (a) a shareholders agreement of joint venture dated May 21, 2010 entered into between SML and Shenzen Resources Limited with respect to the establishment of Kakoso Company, a joint venture incorporated in Zambia, in which SML invested approximately US\$35,000,000 and holds 88.0% of the shareholding interest;
- (b) a joint venture agreement dated September 9, 2010 entered into between Huachin SPRL and SML with respect to the establishment of Huachin, a joint venture incorporated in the DRC, in which SML made contribution of US\$6,250,000 and holds 62.5% of the shareholding interest;
- (c) a joint venture agreement dated September 9, 2010 entered into between Ng Siu Kam and SML with respect to the establishment of Huachin Minerals, a joint venture incorporated in the DRC, in which SML made contribution of US\$2,143,000 and holds 30% of the shareholding interest;
- (d) a joint venture agreement dated March 20, 2012 entered into between Huachin SPRL and SML with respect to the establishment of CNMC-Mabende, a joint venture to be incorporated in the DRC, in which SML shall make contribution of US\$6,000 and holds 60% of the shareholding interest;
- (e) a share swap agreement dated November 22, 2011 entered into between our Company and CNMD pursuant to which our Company acquired the 85%, 80%, 60% and 55% interests in the issued share capital of NFCA, Luanshya, CCS and SML, respectively, from CNMD in consideration for an aggregate of 2,599,999,999 Shares in our Company;
- (f) a deed of assignment dated November 22, 2011 entered into between our Company and CNMC pursuant to which CNMC assigned its receivable of US\$106,058,061 due from Luanshya to our Company at nil consideration;
- (g) a share swap agreement dated December 2, 2011 entered into between our Company and CNMH pursuant to which CNMH acquired the 85%, 80%, 60% and 55% interests in the issued share capital of NFCA, Luanshya, CCS and SML, respectively, from our Company in consideration for an aggregate of 171,152,000 ordinary shares of €1.00 each in CNMH;
- (h) a deed of adherence dated December 2, 2011, entered into by CNMH in favor of the shareholders of NFCA pursuant to which CNMH agreed to accede to a shareholders' agreement dated March 1998 between ZCCM, CNMC and NFCA, as a shareholder;
- (i) a deed of adherence dated December 2, 2011, entered into by CNMH in favor of the shareholders of Luanshya pursuant to which CNMH agreed to accede to a shareholders' agreement dated July 2009 between ZCCM, CNMC, the Government of the Republic of Zambia and Luanshya, as a shareholder;
- (j) the placing agreement dated May 11, 2012 entered into between our Company, COSCO Venus and the Joint Global Coordinators pursuant to which COSCO Venus has agreed to subscribe for

such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$232,500,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80;

- (k) the placing agreement dated May 11, 2012 entered into between our Company, CRCC China-Africa and the Joint Global Coordinators pursuant to which CRCC China-Africa has agreed to subscribe for such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$80,000,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80;
- (l) the placing agreement dated May 11, 2012 entered into between our Company, Wise Pine and the Joint Global Coordinators pursuant to which Wise Pine has agreed to subscribe for such number of Offer Shares (rounded down to the nearest board lot) as may be purchased with HK\$232,800,000 at the Offer Price which shall not be more than the maximum Offer Price of HK\$2.80;
- (m) the Deed of Indemnity;
- (n) the Deed of Non-Competition Undertaking; and
- (o) the Hong Kong Underwriting Agreement.

## 2. Intellectual Property Rights of the Group

### (1) Patents

As of the Latest Practicable Date, we had been licensed to use the following registered patent rights:

<u>Technology</u>	<u>Licensor(s)</u>	<u>Licensee(s)</u>	<u>License Fee</u>	<u>Technology Information</u>	<u>Term of License</u>
ISASMELT . . . . .	Xstrata Technology Pty Limited	CCS	US\$800,000	ISASMELT is a technology for smelting non-ferrous metals based on plant and equipment including that for feed preparation, the smelting vessel, lance burner system, equipment for metal and slag tapping and handling, the specifications for refractories and flues and gas cooling and cleaning.	For the life of the smelter at the site of CCS at Chambishi in Zambia

As of the Latest Practicable Date, we had obtained the registration of the following patent rights:





<u>Patent</u>	<u>Patentee(s)</u>	<u>Place of Application</u>	<u>Patent Number</u>	<u>Registration Date</u>	<u>Type</u>
Spraying Lance Control Equipment (噴槍控制裝置)	China Enfi Engineering Corporation (中國恩菲工程技術有限公司) and Chambishi Copper Smelter Limited	China	ZL201020529576.4	May 4, 2011	Utility Model

As of the Latest Practicable Date, we had also applied for the registration of the following patent rights, the registration of which has not yet been granted:

<u>Patent</u>	<u>Applicant(s)</u>	<u>Place of Application</u>	<u>Application Number</u>	<u>Application Date</u>	<u>Type</u>
Spraying Lance Control Method (噴槍控制方法) . . .	China Enfi Engineering Corporation (中國恩菲工程技術有限公司) and Chambishi Copper Smelter Limited	China	201010281989.X	September 15, 2010	Invention

## **(2) Trademarks**

As of the Latest Practicable Date, we had been licensed to use the following trademarks under application:

<u>Trademark</u>	<u>Licensor(s)/ Applicant(s)</u>	<u>License Fee</u>	<u>Place of Application</u>	<u>Application Number</u>	<u>Class</u>	<u>Application Date</u>
	CNMC	Nil	Hong Kong	302083437	1,6,9,14,36,37,40,42	November 11, 2011
	CNMC	Nil	Hong Kong	302083437	1,6,9,14,36,37,40,42	November 11, 2011
	CNMC	Nil	Hong Kong	302083437	1,6,9,14,36,37,40,42	November 11, 2011
	CNMC	Nil	Hong Kong	302083437	1,6,9,14,36,37,40,42	November 11, 2011

## **(3) Copyright**

As of the Latest Practicable Date, we have not registered any copyright.

### **C. REPURCHASE OF OUR OWN SECURITIES**

This section sets out information required by the Hong Kong Stock Exchange to be included in this prospectus concerning the repurchase by us of our own securities.

#### **1. Provisions of the Listing Rules**

The Listing Rules permit companies with a primary listing on the Hong Kong Stock Exchange to repurchase their own securities on the Hong Kong Stock Exchange subject to certain restrictions, the more important of which are summarized below:

##### **(a) Shareholders' approval**

All proposed repurchase of securities (which must be fully paid up in the case of shares) by a company with a primary listing on the Hong Kong Stock Exchange must be approved in advance by an ordinary resolution of the Shareholders, either by way of general mandate or by specific approval of a particular transaction.

##### **(b) Source of funds**

Repurchases must be funded out of funds legally available for the purpose in accordance with the Memorandum of Association and Articles of Association and the Listing Rules and the applicable

laws of Hong Kong. A listed company may not repurchase its own securities on the Hong Kong Stock Exchange for a consideration other than cash or for settlement otherwise than in accordance with the trading rules of the Hong Kong Stock Exchange. Subject to the foregoing, any repurchases by us may be made out of our funds which would otherwise be available for dividend or distribution or out of the proceeds of a new issue of shares made for the purpose of the repurchase. Any amount of premium payable on the purchase over the par value of the shares to be repurchased must be out of the funds which would otherwise be available for dividend or distribution or from sums standing to the credit of our share premium account.

***(c) Trading Restrictions***

The total number of shares which a listed company may repurchase on the Hong Kong Stock Exchange is the number of shares representing up to a maximum of 10% of the aggregate number of shares in issue. A company may not issue or announce a proposed issue of new securities for a period of 30 days immediately following a repurchase (other than an issue of securities pursuant to an exercise of warrants, share options or similar instruments requiring the company to issue securities which were outstanding prior to such repurchase) without the prior approval of the Hong Kong Stock Exchange. In addition, a listed company is prohibited from repurchasing its shares on the Hong Kong Stock Exchange if the purchase price is 5% or more than the average closing market price for the five preceding trading days on which its shares were traded on the Hong Kong Stock Exchange. The Listing Rules also prohibit a listed company from repurchasing its securities which are in the hands of the public falling below the relevant prescribed minimum percentage as required by the Hong Kong Stock Exchange. A company is required to procure that the broker appointed by it to effect a repurchase of securities discloses to the Hong Kong Stock Exchange such information with respect to the repurchase as the Hong Kong Stock Exchange may require.

***(d) Status of Repurchased Shares***

A listed company may not make any repurchase of securities after a price sensitive development has occurred or has been the subject of a decision until such time as the price sensitive information has been made publicly available. In particular, during the period of one month immediately preceding the earlier of: (i) the date of the board meeting (as such date is first notified to the Hong Kong Stock Exchange in accordance with the Listing Rules) for the approval of a listed company's results for any year, half-year, quarterly or any other interim period (whether or not required under the Listing Rules) and (ii) the deadline for publication of an announcement of a listed company's results for any year or half-year under the Listing Rules, or quarterly or any other interim period (whether or not required under the Listing Rules), the listed company may not repurchase its shares on the Hong Kong Stock Exchange other than in exceptional circumstances. In addition, the Hong Kong Stock Exchange may prohibit a repurchase of securities on the Hong Kong Stock Exchange if a listed company has breached the Listing Rules.

***(e) Reporting Requirements***

Certain information relating to repurchases of securities on the Hong Kong Stock Exchange or otherwise must be reported to the Hong Kong Stock Exchange not later than 30 minutes before the earlier of the commencement of the morning trading session or any pre-opening session on the following business day. In addition, a listed company's annual report is required to disclose details regarding repurchases of securities made during the year, including a monthly analysis of the number of securities repurchased, the purchase price per share or the highest and lowest price paid for all such purchase, where relevant, and the aggregate prices paid.

**(f) Connected Persons**

A listed company is prohibited from knowingly repurchasing securities on the Hong Kong Stock Exchange from a “connected person”, that is, a director, chief executive or Substantial Shareholder of the company or any of its subsidiaries or their associates and a connected person is prohibited from knowingly selling his securities to the company.

**2. Reasons for Repurchase**

The Directors believe that it is in the best interest of us and our Shareholders for the Directors to have general authority from the Shareholders to enable us to repurchase Shares in the market. Such repurchases may, depending on market conditions and funding arrangements at the time, lead to an enhancement of the net asset value per Share and/or earnings per Share and will only be made where the Directors believe that such repurchases will benefit us and our Shareholders.

**3. Funding of Repurchases**

In repurchasing securities, we may only apply funds legally available for such purpose in accordance with the Articles, the Listing Rules and the applicable laws of Hong Kong. On the basis of our current financial position as disclosed in this prospectus and taking into account our current working capital position, the Directors consider that, if the Repurchase Mandate were to be exercised in full, it might have a material adverse effect on our working capital and/or our gearing position as compared with the position disclosed in this prospectus. However, the Directors do not propose to exercise the Repurchase Mandate to such an extent as would, in the circumstances, have a material adverse effect on our working capital requirements or the gearing levels which in the opinion of the Directors are from time to time appropriate for us.

**4. General**

Exercise in full of the Repurchase Mandate, on the basis of 3,470,000,000 Shares in issue after completion of the Global Offering (taking no account of any Shares which may be allotted and issued pursuant to the exercise of the Over-allotment Option), could accordingly result in up to 347,000,000 Shares being repurchased by us during the period prior to:

- (a) the conclusion of our next annual general meeting;
- (b) the expiration of the period within which our next annual general meeting is required by the Articles of Association or the Companies Ordinance or any other applicable laws of Hong Kong to be held; or
- (c) the revocation or variation of the Repurchase Mandate by an ordinary resolution of the Shareholders in general meeting,

whichever is the earliest.

None of the Directors nor, to the best of their knowledge having made all reasonable enquiries, any of their associates currently intends to sell any Shares to us or our subsidiaries. The Directors have undertaken to the Hong Kong Stock Exchange that, so far as the same may be applicable, they will exercise the Repurchase Mandate in accordance with the Listing Rules, the Memorandum and Articles of Association and the applicable laws in Hong Kong. If, as a result of a repurchase of Shares, a Shareholder’s proportionate interest in the voting rights of us is increased, such increase



will be treated as an acquisition for the purpose of the Hong Kong Takeovers Code. Accordingly, a Shareholder or a group of Shareholders acting in concert could obtain or consolidate control of us and become obliged to make a mandatory offer in accordance with Rule 26 of the Hong Kong Takeovers Code. Save as aforesaid, the Directors are not aware of any consequences which would arise under the Takeovers Code as a consequence of any repurchases pursuant to the Repurchase Mandate.

No connected person has notified us that he or she has a present intention to sell Shares to us, or has undertaken not to do so, if the Repurchase Mandate is exercised.

#### D. FURTHER INFORMATION ABOUT THE DIRECTORS AND SUBSTANTIAL SHAREHOLDERS

##### 1. Disclosure of Interests

###### ***(a) Interests and/or short positions of the Directors and chief executives in our share capital and its associated corporations following the Global Offering***

Immediately following the completion of the Global Offering (but taking no account of any Shares which may be taken up under the Global Offering), none of the Directors and our chief executives will have any interests and short positions in the Shares, underlying Shares or debentures of us and our associated corporations (within the meaning of Part XV of the SFO) which will have to be notified to us and the Stock Exchange pursuant to Divisions 7 and 8 of Part XV of the SFO (including interests and short positions in which they are taken or deemed to have under such provisions of the SFO), or which will be required, pursuant to section 352 of the SFO, to be entered in the register referred to therein, or which will be required to be notified to us and the Stock Exchange pursuant to the Model Code for Securities Transactions by Directors of Listed Issuers contained in the Listing Rules, once the Shares are listed.

###### ***(b) Interests and/or short positions of the Substantial Shareholders in the Shares which are disclosable under Divisions 2 and 3 of Part XV of the SFO***

Immediately following the completion of the Global Offering, so far as the Directors are aware, the following persons (not being a Director or a chief executive of us) will have an interest or short position in the Shares or underlying Shares which would fall to be disclosed to us and the Hong Kong Stock Exchange under the provisions of Divisions 2 and 3 of Part XV of the SFO, or who will, directly or indirectly, be interested in 10% or more of the nominal value of any class of share capital carrying rights to vote in all circumstances at general meetings of any other member of our Group:

Long position in the Shares:

<u>Substantial shareholder</u>	<u>Capacity/Nature of interest</u>	<u>Number of Shares</u>	<u>Approximate percentage of shareholding<sup>(1)</sup></u>
CNMD <sup>(2)</sup> . . . . .	Registered owner	2,600,000,000	74.93%
CNMC . . . . .	Interest in a controlled corporation	2,600,000,000	74.93%

Notes:

(1) Assuming the Over-allotment Option is not exercised.

(2) CNMD is a wholly-owned subsidiary of CNMC and therefore CNMC is deemed or taken to be interested in all the Shares which are owned by CNMD for the purposes of the SFO.

**(c) Negative statements regarding interests in securities**

None of the Directors or our chief executives will immediately following the completion of the Global Offering (assuming that the Over-allocation Option is not exercised) have any disclosure interests (as referred to in (a) above), other than as disclosed at (a) above.

Taking no account of Shares which may be taken up under the Global Offering, none of the Directors knows of any persons who will immediately following the completion of the Global Offering (assuming that the Over-allocation Option is not exercised) have a notifiable interest (for the purposes of the SFO) in the Shares or, having such a notifiable interest, have any short positions (within the meaning of the SFO) in the Shares, other than as disclosed at (b) above.

**2. Particulars of Directors' service agreements and letters of appointment**

Each of the executive Directors has entered into a service agreement with us for an initial term of three years, commencing from the Listing Date (subject to termination in certain circumstances as stipulated in the relevant service agreement).

Pursuant to the service agreements, the initial annual salary of our executive Directors (excluding any discretionary bonus) are as follows:

<u>Director</u>	<u>Remuneration (per annum)</u>
Xinghu Tao . . . . .	nil
Chunlai Wang . . . . .	RMB1,000,000
Xingeng Luo . . . . .	RMB1,000,000
Xinguo Yang . . . . .	RMB1,000,000
Kaishou Xie . . . . .	RMB1,000,000

In addition, each of our Executive Directors is fully reimbursed for all reasonable out-of-pocket expenses reasonably incurred in the course of his employment under the relevant service agreements.

Our non-executive Director has signed a letter of appointment with us for an initial term of three years, commencing from the Listing Date (subject to termination in certain circumstances as stipulated in the relevant letters of appointment). The annual remuneration payable to our non-executive Director under his letter of appointment is as follows:

<u>Director</u>	<u>Remuneration (per annum)</u>
Tao Luo . . . . .	nil

In addition, our non-executive Director is fully reimbursed for all reasonable out-of-pocket expenses incurred in discharging his duties on production of appropriate proofs of payment.

Each of the independent non-executive Directors has signed a letter of appointment with us for an initial term of three years commencing from the Listing Date (subject to termination in certain circumstances as stipulated in the relevant letters of appointment).

The annual remuneration payable to each of our independent non-executive Directors under the relevant letters of appointment is as follows:

<u>Director</u>	<u>Remuneration (per annum)</u>
Chuanyao Sun .....	RMB240,000
Jingwei Liu .....	RMB240,000
Shuang Chen .....	RMB240,000

In addition, each of the independent non-executive Directors is fully reimbursed for all reasonable out-of-pocket expenses incurred in discharging his duties on production of appropriate proofs of payment.

Save as disclosed in this prospectus, none of the Directors has or is proposed to have entered into any service agreement or letter of appointment with any member of our Group (excluding agreements expiring or determinable by any member of our Group within one year without payment of compensation other than statutory compensation).

### 3. Remuneration of Directors

For the year ended December 31, 2011, the aggregate amounts of remuneration (including fee, salaries, contributions to pension schemes, housing allowances and other allowances and benefits in kind and discretionary bonuses) paid to our Directors was US\$829,000.

Under arrangements in force at the date of this prospectus, the aggregate initial annual salary payable to the Directors, excluding any discretionary bonus, are estimated to be approximately RMB4.72 million (equivalent of approximately US\$730,255) in respect of the year ending December 31, 2012.

Our policy concerning the remuneration of the Directors is that the amount of remuneration is determined on the basis of the relevant Director's experience, responsibility, performance and the time devoted to our business.

Same as disclosed in this prospectus, no Director has been paid in cash or shares or otherwise by any person either to induce him to become, or to qualify him as a Director, or otherwise for service rendered by him in connection with the promotion or formation of us.

### 4. Agency fees or commission

Save as disclosed in this prospectus, within the two years preceding the date of this prospectus, no commissions, discounts, brokerages or other special terms have been granted in connection with the issue or sale of any share or loan capital of us or any of our subsidiaries.

### 5. Related party transactions

During the two years immediately preceding the date of this prospectus, we have engaged in dealings with certain Directors and their associates as described in note 36 to the "Notes to the Financial Information" section of the Accountants' Report set out in Appendix I to this prospectus.

**E. DISCLAIMERS**

Save as disclosed herein:

- (a) none of the Directors or our chief executives has any interest or short position in the shares, underlying shares or debentures of us or any of our associated corporation (within the meaning of the SFO) which will have to be notified to us and the Hong Kong Stock Exchange pursuant to Divisions 7 and 8 of Part XV of the SFO of which will be required, pursuant to section 352 of the SFO, to be entered in the register referred to therein, or which will be required to be notified to us and the Hong Kong Stock Exchange pursuant to Model Code for Securities Transactions by Directors of Listed Companies once the Shares are listed;
- (b) none of the Directors or experts referred to in the section headed “— F. Other Information — 7. Consents of Experts” in this Appendix has any direct or indirect interest in the promotion of us, or in any assets which have within the two years immediately preceding the date of this prospectus been acquired or disposed of by or leased to any member of our Group, or are proposed to be acquired or disposed of by or leased to any member of our Group;
- (c) none of the Directors or experts referred to in the section headed “— F. Other Information — 7. Consents of Experts” in this Appendix is materially interested in any contract or arrangement subsisting at the date of this prospectus which is significant in relation to the business of our Group taken as a whole;
- (d) none of the Directors has any existing or proposed service contracts with any member of our Group (excluding contracts expiring or determinable by the employer within one year without payment of compensation (other than statutory compensation));
- (e) taking no account of Shares which may be taken up under the Global Offering, none of the Directors knows of any person (not being a Director or chief executive of us) who will, immediately following completion of the Global Offering, have an interest or short position in the Shares or underlying Shares of us which would fall to be disclosed to us under the provisions of Divisions 2 and 3 of Part XV of the SFO or be interested, directly or indirectly, in 10% or more of the nominal value of any class of share capital carrying rights to vote in all circumstances at general meetings of any member of our Group;
- (f) none of the experts referred to under the section headed “— F. Other Information — 7. Consents of Experts” in this Appendix has any shareholding in any member of our Group or the right (whether legally enforceable or not) to subscribe for or to nominate persons to subscribe for securities in any member of our Group; and
- (g) so far as is known to the Directors, none of the Directors, their respective associates (as defined under the Listing Rules) or Shareholders who are interested in more than 5% of our issued share capital have any interests in the five largest customers or the five largest suppliers of our Group.

**F. OTHER INFORMATION****1. Indemnity**

CNMC, our Controlling Shareholder, has agreed to give indemnities in respect of certain non-tax and taxation matters (including estate duty) in favor of our Group. Please see the paragraph “Deed

of Indemnity” in the section entitled “Relationship with our Controlling Shareholder” of this prospectus for details of the indemnities.

## **2. Litigation**

Except as disclosed in this prospectus, as of the Latest Practicable Date, we were not engaged in any litigation, arbitration or claim of material importance and no litigation, arbitration or claim of material importance is known to our Directors to be pending or threatened by or against us, that would have a material adverse effect on our results of operations or financial condition.

## **3. Joint Sponsors**

The Joint Sponsors have made an application on our behalf to the Listing Committee for the Listing of, and permission to deal in, our Shares in issue and to be issued as mentioned in this prospectus.

Each of the Joint Sponsors has declared pursuant to Rule 3A.08 of the Listing Rules that it is independent pursuant to Rule 3A.07 of the Listing Rules.

## **4. Preliminary Expenses**

Our preliminary expenses are estimated to be HK\$80,670 and are payable by us.

## **5. Taxation of Holders of Shares**

The sale, purchase and transfer of Shares registered on our register of members in Hong Kong will be subject to Hong Kong stamp duty, the current rate charged on each of the purchaser and seller is 0.1% of the consideration, or if higher, the fair value of the Shares being sold or transferred.

Profits from dealings in the Shares arising in or derived from Hong Kong by persons that are tax resident in Hong Kong may also be subject to Hong Kong profits tax.

The Shares are Hong Kong property for the purposes of the Estate Duty Ordinance (Chapter 111 of the Laws of Hong Kong) and, accordingly, Hong Kong estate duty may be payable in respect thereof on the death of an owner of Shares. The Revenue (Abolition of Estate Duty) Ordinance 2005 came into effect on February 11, 2006 in Hong Kong. No Hong Kong estate duty is payable and no estate duty clearance papers are needed for a grant of representation in respect of holders of Shares whose death occurs on or after February 11, 2006.

Prospective holders of Shares are recommended to consult their professional advisers as to the taxation implications of subscribing for, purchasing, holding, disposing of or dealing in Shares. It is emphasized that none of us, the Directors or the other parties involved in the Global Offering can accept responsibility for any tax effect on, or liabilities of, holders of Shares resulting from their subscription for, purchase, holding, disposal of or dealing in Shares or exercise any rights attaching to them.

## 6. Qualification of Experts

The following are the qualifications of the experts who have given opinion or advice which are contained in this prospectus:

<u>Name</u>	<u>Qualification</u>
UBS AG, Hong Kong Branch	Licensed to conduct Type 1 (dealing in securities), Type 4 (advising on securities), Type 6 (advising on corporate finance), Type 7 (providing automated trading services) and Type 9 (asset management) regulated activities under the SFO
China International Capital Corporation Hong Kong Securities Limited	Licensed to conduct Type 1 (dealing in securities), Type 4 (advising on securities) and Type 6 (advising on corporate finance) regulated activities under the SFO
J.P. Morgan Securities (Asia Pacific) Limited	Licensed to conduct Type 1 (dealing in securities), Type 4 (advising on securities), Type 6 (advising on corporate finance) and Type 7 (providing automated trading services) regulated activities under the SFO
Deloitte Touche Tohmatsu	Certified Public Accountants
JunZeJun Law Offices	PRC legal advisers
Corpus Legal Practitioners	Zambia legal advisers
Jones Lang LaSalle Corporate Appraisal and Advisory Limited	Property Valuer and Consultant
SRK Consulting (China) Ltd	Competent person
Wood Mackenzie (Australia) Pty Ltd.	Industry expert

## 7. Consents of Experts

Each of the experts set out in the above paragraph has given and has not withdrawn its written consent to the issue of this prospectus with the inclusion of its report and/or letter and/or opinion and/or the references to its name included herein in the form and context in which it is respectively included.

## 8. Binding Effect

This prospectus shall have the effect, if an application is made in pursuance hereof, of rendering all persons concerned bound by all of the provisions (other than the penal provisions) of Sections 44A and 44B of the Companies Ordinance so far as applicable.

## 9. Bilingual prospectus

The English language and Chinese language versions of this prospectus are being published separately, in reliance upon the exemption provided by section 4 of the Companies Ordinance (Exemption of Companies and Prospectuses from Compliance with Provisions) Notice (Chapter 32L of the Laws of Hong Kong).

**10. Compliance Adviser**

We have, pursuant to Rule 3A.19 of the Listing Rules, appointed Guotai Junan Capital Limited to act as our compliance adviser for the period commencing from the Listing Date and ending on the date that we publish our first full year results. Guotai Junan Capital Limited will, among other things, provide us with advice in relation to compliance with the Listing Rules and other applicable laws, regulations, rules, codes and guidelines in Hong Kong and will keep us informed on a timely basis of any changes in these laws, regulations, codes and guidelines.

**11. Miscellaneous**

(a) Save as disclosed in this prospectus:

- (i) within the two years preceding the date of this prospectus, no share or loan capital of us or any of our subsidiaries has been issued or agreed to be issued fully or partly paid either for cash or for a consideration other than cash;
- (ii) within the two years preceding the date of this prospectus, no share or loan capital of us or any of its subsidiaries is under option or is agreed conditionally or unconditionally to be put under option;
- (iii) we have no founder, management or deferred shares nor have we issued or agreed to issue any debentures;
- (iv) no commissions, discounts, brokerages or other special terms have been granted in connection with the issue or sale of any share or loan capital of us or any of our subsidiaries; and
- (v) no commission has been paid or is payable for subscription, agreeing to subscribe, procuring subscription or agreeing to procure subscription of any share in us or any of its subsidiaries.

(b) Since December 31, 2011 (being the date to which the latest audited combined financial statements of our Group were made up), there has been no material adverse change in the financial or trading position or prospects of our Group.

(c) None of the persons named in the sub-paragraph headed “— F. Other Information — 7. Consents of experts” in this Appendix is interested beneficially or otherwise in any shares of any member of our Group or has any right or option (whether legally enforceable or not) to subscribe for or nominate persons to subscribe for any securities in any member of our Group.

(d) There has not been any interruption in the business of our Group which may have or has had a significant effect on the financial position of our Group in the 12 months preceding the date of this prospectus.



**DOCUMENTS DELIVERED TO THE REGISTRAR OF COMPANIES**

The documents attached to a copy of this prospectus and delivered to the Registrar of Companies in Hong Kong for registration were (i) copies of the **WHITE**, **YELLOW** and **GREEN** Application Forms; (ii) copies of each of the material contracts referred to in paragraph (i) of this Appendix; and (iii) the written consents referred to in paragraph (j) under “— Documents Available for Inspection” below.

**DOCUMENTS AVAILABLE FOR INSPECTION**

Copies of the following documents will be available for inspection at the office of Davis Polk & Wardwell, 18<sup>th</sup> Floor, The Hong Kong Club Building, 3A Chater Road, Hong Kong during normal business hours up to and including the date which is 14 days from the date of this prospectus:

- (a) the Memorandum of Association and the Articles of Association;
- (b) the accountants’ report prepared by Deloitte Touche Tohmatsu, the text of which is set out in Appendix I to this prospectus;
- (c) the consolidated financial statements of our Group for the Track Record Period;
- (d) the accountants’ report prepared by Deloitte Touche Tohmatsu on the unaudited pro forma financial information of our Group, the text of which are set out in Appendix II to this prospectus;
- (e) the report prepared by SRK, the text of which is set out in Appendix III to this prospectus;
- (f) the Zambian legal opinion issued by Corpus Legal Practitioners, our legal advisor on Zambian law, dated Wednesday, June 20, 2012, in respect of our general matters and property interests;
- (g) the property due diligence report prepared by Jones Lang LaSalle Sallmanns referred to in the section headed “Business — Land and Buildings” in this prospectus;
- (h) the Wood Mackenzie Report;
- (i) the material contracts referred to in the section headed “Statutory and General Information — B. Further Information About Our Business — 1. Summary of Material Contracts” in Appendix V; and
- (j) the written consents referred to in the section headed “Statutory and General Information — F. Other Information — 7. Consents of Experts” in Appendix V.

