THIS CIRCULAR IS IMPORTANT AND REQUIRES YOUR IMMEDIATE ATTENTION

If you are in any doubt as to any aspect of this circular or as to the action to be taken, you should consult your licensed securities dealer, bank manager, solicitor, professional accountant or other professional adviser.

If you have sold or transferred all your shares in China Molybdenum Co., Ltd., you should at once hand this circular and the accompanying form of proxy and the reply slip to the purchaser or transferee or to the bank, licensed securities dealer or other agent through whom the sale or transfer was effected for onward transmission to the purchaser or the transferee.

洛陽欒川鉬業集團股份有限公司
China Molybdenum Co., Ltd. *

(a joint stock company incorporated in the People's Republic of China with limited liability)

(Stock Code: 03993)

DISCLOSEABLE AND CONNECTED TRANSACTION

Independent Financial Adviser to
the Independent Board Committee and the Independent Shareholders

Access Capital

A letter from the Board is set out on pages 1 to 15 of this circular and a letter from the Independent Board Committee is set out on page 16 of this circular. A letter from Access Capital, the independent financial adviser to the Independent Board Committee and the Independent Shareholders, containing its advice to the Independent Board Committee and the Independent Shareholders in relation to the Acquisition is set out on pages 17 to 35 of this circular.

A notice convening an extraordinary general meeting of the Company to be held at 9:00 a.m. on Sunday, 31 October 2010 at the International Conference Room of Mudu-Lee Royal International Hotel at No.239, Kaiyuan Street, Luonan District, Luoyang City, Henan Province, PRC is set out on pages 177 to 178 of this circular. Whether or not you are able to attend the extraordinary general meeting, you are advised to read the notice and complete the enclosed form of proxy in accordance with the instructions printed thereon and return the same to the Company's H share registrar in Hong Kong, Computershare Hong Kong Investor Services Limited at 17M Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong (for holders of H Shares only) or to the Secretariat of the Board at the Company's principal place of business in the PRC at North of Yihe, Huamei Shan Road, Chengdong New District, Luanchuan County, Luoyang City, Henan Province, the PRC (for holders of Domestic Shares only), as soon as possible but in any event not less than 24 hours before the time appointed for holding the extraordinary general meeting. Completion and return of the form of proxy will not preclude you from attending and voting at the extraordinary general meeting or any adjourned meeting should you so wish.

If you intend to attend the EGM in person or by proxy, you are required to complete and return the reply slip in accordance with the instructions printed thereon to Computershare Hong Kong Investor Services Limited (for holders of H Shares only) at 17M Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong, or the Secretariat of the Board at the Company's principal place of business in the PRC at North of Yihe, Huamei Shan Road, Chengdong New District, Luanchuan County, Luoyang City, Henan Province, the PRC (for holders of Domestic Shares only) on or before Sunday, 10 October 2010.

* *For identification purposes only*

14 September 2010

CONTENTS

Page

Definitions ii

Letter from the Board 1

Letter from the Independent Board Committee 16

Letter from Access Capital 17

Appendix I - Technical Report on Shangfanggou Mine 36

Appendix II - Business Valuation Report on the Borrower and Huqi Mining 154

Appendix III - General Information 172

Notice of EGM 177

In this circular, the following expressions shall have the meanings set out below unless the context requires otherwise:

"Access Capital"	Access Capital Limited, a corporation licensed to carry on Type 1 (dealing in securities), Type 4 (advising on securities), Type 6 (advising on corporate finance) and Type 9 (asset management) regulated activities under the SFO, and the independent financial adviser to the Independent Board Committee and the Independent Shareholders in relation to the Acquisition
"Acquisition"	the transfer of 100% of the equity interest in the Borrower and Huqi Mining from LMG to the Company pursuant to the Arbitration Award
"Arbitration"	an arbitration presented by the Company to Luoyang Arbitration Commission on 12 April 2010 in accordance with the terms of the Supplemental Agreement
"Arbitration Award"	the award granted by the Luoyang Arbitration Commission dated 19 April 2010 in respect of the Arbitration
"associate"	has the meaning ascribed to it under the Listing Rules
"Board"	the board of Directors
"Borrower"	洛陽建投礦業有限公司 (Luoyang Construction Investment and Mining Co., Ltd.*), a company incorporated in the PRC with limited liability
"CFC"	鴻商產業控股集團有限公司 (Cathay Fortune Corporation*), a limited liability company established in the PRC
"Company"	洛陽欒川鉬業集團股份有限公司 (China Molybdenum Co., Ltd.*), a joint stock company incorporated in the PRC with limited liability, whose H Shares are listed on the Stock Exchange
"Consideration"	the consideration of approximately RMB276.3 million (equivalent to approximately HK$315.0 million) paid by the Company for the Acquisition
"controlling shareholder"	has the meaning ascribed to it under the Listing Rules

"Directors"	the directors of the Company
"Domestic Shares"	ordinary shares in the capital of the Company with nominal value of RMB0.20 each, other than the H Shares
"EGM"	an extraordinary general meeting to be held by the Company to confirm, approve and ratify the Acquisition
"Fuchun"	欒川縣富淳鉬鎢精選有限責任公司(Luanchuan Fuchun Molybdenum and Tungsten Concentration Company Limited*), a company incorporated in the PRC with limited liability
"Grant Sherman"	Grant Sherman Appraisal Limited, the independent valuer of the equity interest in the Borrower and Huqi Mining, appointed by the Company for the purpose of this circular
"Group"	the Company and its subsidiaries
"Guarantor"	洛陽市建設投資有限公司 (Luoyang Municipal Construction and Development Investment Co., Ltd.*), a company incorporated in the PRC with limited liability and an Independent Third Party which owned the Borrower before the LMG's acquisition of the Borrower pursuant to the administrative allocation by the Luoyang SASAC
"Hexinyuan"	河南省合鑫源礦業有限公司 (Henan Province Hexinyuan Mining Company Limited*), a company incorporated in the PRC with limited liability
"HK$"	Hong Kong dollars, the lawful currency of the Hong Kong Special Administrative Region of the PRC
"H Shares"	overseas listed foreign shares in the ordinary share capital of the Company with nominal value of RMB0.20 each, which are listed on the Stock Exchange
"Hualong"	欒川縣華隆選礦有限公司 (Luanchuan Hualong Ore Concentration Company Limited*), a company incorporated in the PRC with limited liability

"Huanyu Transfer Agreement"	an equity transfer agreement dated 22 December 2009 between the Borrower (as transferee), Jiangsu Tianyu (as transferor) and LMG (as guarantor) in relation to the transfer of 50% equity interest in Xuzhou Huanyu
"Huqi Mining"	欒川縣滬七礦業有限公司 (Luanchuan Huqi Mining Company Limited*), a company incorporated in the PRC with limited liability and owns 10% equity interest in Luoyang Fuchuan
"Huqi Transfer Agreement"	an equity transfer agreement in October 2009 between LMG, Mr Yang Zhisen (楊植森), the Luoyang SASAC and the Luanchuan County Government in relation to the transfer of 100% equity interest in Huqi Mining
"Independent Board Committee"	an independent committee of the Board comprising the independent non-executive Directors to advise the Shareholders in relation to the Acquisition
"Independent Shareholders"	Shareholders other than LMG and its associates
"Independent Third Party(ies)"	any person(s) or company(ies) and their respective ultimate beneficial owner(s) that, to the best of the Directors' knowledge, information and belief having made all reasonable enquiries, are third parties independent of the Group and its connected persons in accordance with the Listing Rules
"Jiaoshuao Villagers Committee"	欒川縣陶灣鎮蕉樹凹村民委員會 (Luanchuan County Taowan Town Jiaoshuao Villagers Committee*), an organisation established under the laws of the PRC and an Independent Third Party, which owns 3% equity interest in Qixing Mining
"Jiangsu Tianyu"	江蘇天裕能源化工集團有限公司 (Jiangsu Tianyu Energy Chemical Group Limited*), a company incorporated in the PRC with limited liability and an Independent Third Party which owned 50% in Xuzhou Huanyu and 90% in Qixing Mining before the completion of the Huanyu Transfer Agreement and Qixing Transfer Agreement respectively
"Jinfeng"	欒川縣金峰礦業有限公司(Luanchuan Jinfeng Mining Company Limited*), a company incorporated in the PRC with limited liability

"Jinhanyuan"	欒川縣金漢源礦業有限公司(Luanchuan Jinhanyuan Mining Company Limited*), a company incorporated in the PRC with limited liability
"Latest Practicable Date"	9 September 2010, being the latest practicable date prior to the printing of this circular for ascertaining certain information for inclusion in this circular
"Listing Rules"	the Rules Governing the Listing of Securities on the Stock Exchange
"LMG"	洛陽礦業集團有限公司(Luoyang Mining Group Co., Ltd.*), a company incorporated in the PRC with limited liability and one of the Company's controlling shareholders
"Loan"	the loan in an aggregate amount of RMB1,150,000,000 (equivalent to approximately HK$1,311,000,000) agreed to be made by the Company to the Borrower under the Loan Agreement
"Loan Agreement"	the loan agreement dated 22 December 2009 entered into between the Company, the Borrower and the Guarantor in respect of the Loan
"Longxing Mining"	欒川龍興礦業有限公司(Luanchuan Longxing Mining Company Limited*), a company incorporated in the PRC with limited liability and an Independent Third Party which owns 7% equity interest in Qixing Mining
"Luanchuan County Government"	欒川縣人民政府(People's Government of Luanchuan County*)
"Luoyang Fuchuan"	洛陽富川礦業有限公司 (Luoyang Fuchuan Mining Co., Ltd.*), a company incorporated in the PRC with limited liability
"Luoyang SASAC"	the State-owned Assets Supervision and Administration Commission of the People's Government of Luoyang City
"percentage ratios"	has the meaning ascribed to it under the Listing Rules
"PRC"	the People's Republic of China
"PRC GAAP"	the generally accepted accounting principles in the PRC

"Qixing Mining"	欒川縣啟興礦業有限公司(Luanchuan Qixing Mining Company Limited*), a company incorporated in the PRC with limited liability
"Qixing Transfer Agreement"	an equity transfer agreement dated 22 December 2009 between the Borrower (as transferee), Jiangsu Tianyu (as transferor) and LMG (as guarantor) in relation to the transfer of 90% equity interest in Qixing Mining
"RMB"	Renminbi, the lawful currency of the PRC
"SFO"	Securities and Futures Ordinance (Cap. 571)
"Shangfanggou Mine"	Shangfanggou (上房溝) molybdenum mine located in Luanchuan County, Luoyang City, the PRC
"Shareholder(s)"	the shareholder(s) of the Company
"Stock Exchange"	the Stock Exchange of Hong Kong Limited
"Supplemental Agreement"	the supplemental agreement dated 25 February 2010 entered into between the Company, the Borrower and LMG
"Wardrop"	Wardrop Engineering Inc, the independent technical adviser appointed by the Company for the purpose of this circular
"Xuzhou Huanyu"	徐州環宇鉬業有限公司 (Xuzhou Huanyu Molybdenum Co., Ltd.*), a company incorporated in the PRC with limited liability
"Xuzhou Jiaxun"	徐州佳迅貿易有限公司 (Xuzhou Jiaxun Trading Company Limited*), a company incorporated in the PRC with limited liability and an Independent Third Party
"Yongcheng Group"	永城煤電控股集團有限公司 (Yongcheng Coal and Electrical Holding Group Company Limited*), a company incorporated in the PRC with limited liability which owns 50% equity interest in Xuzhou Huanyu
%	per cent

Note: For the purposes of this circular, the exchange rate of RMB1 = HK$1.14 has been used for currency translation, where applicable. Such an exchange rate is for illustration purposes only and does not constitute representation that any amount in RMB or HK$ has been, could have been or may be converted in such rate.

* *For identification purposes only*

洛陽欒川鉬業集團股份有限公司
China Molybdenum Co., Ltd. *

(a joint stock company incorporated in the People's Republic of China with limited liability)

(Stock Code: 03993)

Registered office:
North of Yihe
Huamei Shan Road
Chengdong New District
Luanchuan County
Luoyang City
Henan Province
The People's Republic of China

Principle place of business in Hong Kong:
Level 28
Three Pacific Place
1 Queen's Road East
Hong Kong

14 September 2010

To the Shareholders

Dear Sir or Madam,

DISCLOSEABLE AND CONNECTED TRANSACTION

INTRODUCTION

On 17 May 2010, the Board announced that the Company has completed the Acquisition pursuant to the Arbitration Award.

The purpose of this circular is to provide, among other things, (i) further details about the Acquisition; (ii) a letter from Access Capital containing its advice to the Independent Board Committee and the Independent Shareholders in relation to the Acquisition; (iii) the recommendation of the Independent Board Committee to the Shareholders in relation to the Acquisition; (iv) the notice of the EGM; and (v) other information as required under the Listing Rules.

THE LOAN AGREEMENT AND THE SUPPLEMENTAL AGREEMENT

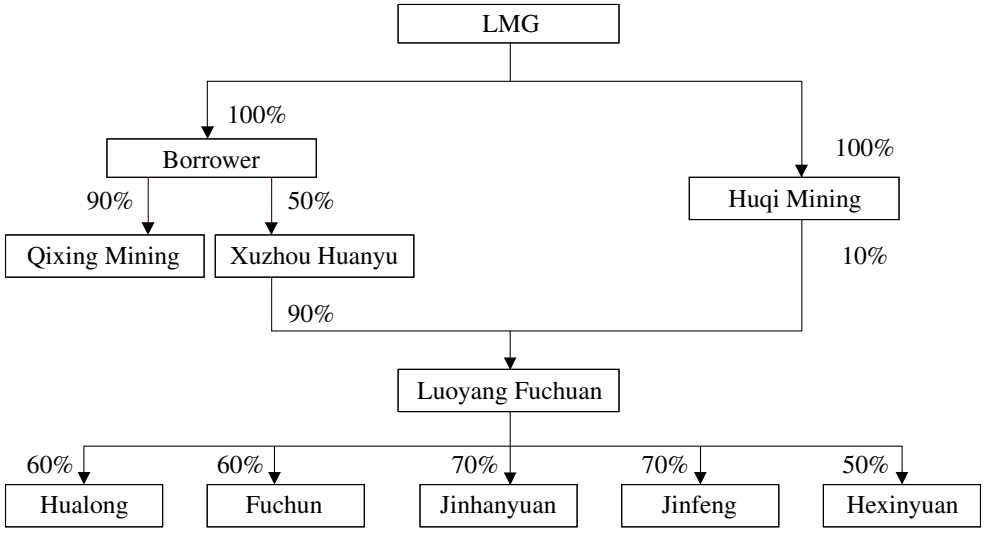
On 27 December 2009, the Board announced that the Company entered into the Loan Agreement with the Borrower to advance the Loan in the aggregate amount of RMB1,150,000,000 (equivalent to approximately HK$1,311,000,000) to the Borrower for financing its acquisition of the equity interest in Xuzhou Huanyu and Luoyang Fuchuan. As at the Latest Practicable Date, the Company has advanced a sum of RMB1,105,000,000 (equivalent to approximately HK$1,259,700,000) to the Borrower under the Loan Agreement.

On 14 April 2010, the Board announced that the Borrower had acquired 50% equity interest in Xuzhou Huanyu together with other assets and interest. Xuzhou Huanyu held 90% of the equity interest in Luoyang Fuchuan and the remaining 10% of the equity interest in Luoyang Fuchuan was held by Huqi Mining which was, in turn, wholly-owned by LMG. In order for the Borrower and LMG to acquire all the equity interest in Luoyang Fuchuan and transfer it to the Company, the Company entered into the Supplemental Agreement pursuant to which, among other things, (i) the Company agreed to the allocation of all the equity interest in the Borrower from the Guarantor to LMG pursuant to the administrative allocation by the Luoyang SASAC; (ii) the Company has the right to take over the Borrower's 50% equity interest in Xuzhou Huanyu and to exercise all the rights of a holder of the equity interest in Xuzhou Huanyu for the Borrower upon written notice from the Company; and (iii) LMG agreed that it shall acquire the remaining 50% equity interest in Xuzhou Huanyu, and that it shall transfer 100% equity interest in Luoyang Fuchuan to the Company by 10 April 2010. If LMG failed to acquire the remaining 50% equity interest in Xuzhou Huanyu by 1 April 2010, LMG agreed that it shall transfer the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% equity interest in Luoyang Fuchuan to the Company by 10 April 2010.

If LMG or the Borrower breached the above obligations under the Supplemental Agreement, LMG agreed to transfer, as remedial measures, all of its equity interest in the Borrower and Huqi Mining to the Company for a total consideration of RMB260 million (equivalent to approximately HK$296.4 million), or at any higher value basing on an independent appraisal of the equity interest in the Borrower and Huqi Mining as at 31 March 2010. If LMG or the Borrower failed to transfer the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% equity interest in Luoyang Fuchuan to the Company, LMG shall pay an amount equal to 20% of the loan advanced to the Borrower as compensation to the Company.

ARBITRATION AND COMPLETION

Immediately prior to the Acquisition, the shareholding structure of the Borrower and Huqi Mining was as follows:



As LMG had not transferred 100% of the equity interest in Luoyang Fuchuan to the Company by 10 April 2010 or the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% interest in Luoyang Fuchuan to the Company, on 12 April 2010, the Company presented the case to the Luoyang Arbitration Committee for arbitration in accordance with the terms of the Supplemental Agreement.

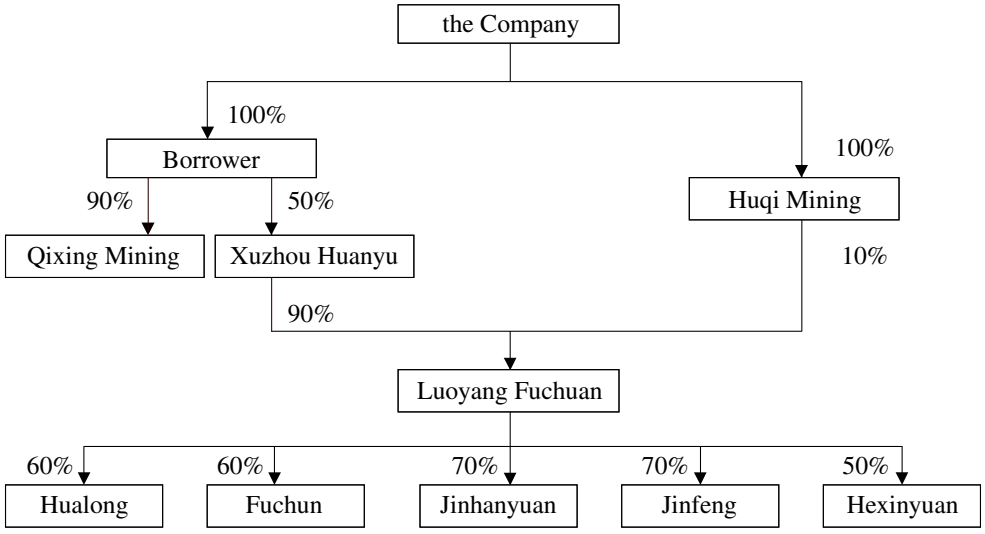
On 19 April 2010, the Luoyang Arbitration Commission granted an award in favour of the Company pursuant to which LMG shall, among other things, transfer all of the equity interest in the Borrower and Huqi Mining to the Company for the Consideration within 30 days of LMG's receipt of the Arbitration Award (that is on or before 18 May 2010). The Arbitration Award does not provide for any other terms for the Acquisition.

The Consideration is determined based on the aggregate appraised value of approximately RMB276.3 million (equivalent to approximately HK$315.0 million) of the equity interest in the Borrower and Huqi Mining as at 31 March 2010, prepared by an independent third party appraiser based on cost approach and market approach in accordance with the terms of the Supplemental Agreement. The Consideration has been confirmed by the Luoyang Arbitration Commission in the Arbitration Award.

LMG did not pay any consideration for the acquisition of 100% equity interest in the Borrower as the acquisition was carried out pursuant to an administrative allocation by the Luoyang SASAC. The original cost of LMG's acquisition of Huqi Mining was RMB180,000,000 (equivalent to approximately HK$205,200,000) pursuant to the Huqi Transfer Agreement.

After the issue of the Arbitration Award, the Company considered whether the transfer should be effected pursuant to an equity transfer agreement conditional upon Independent Shareholders' approval for the transfer or the transfer can be effected without entering into such a conditional equity transfer agreement. As the Company is obliged to acquire all the equity interest in the Borrower and Huqi Mining pursuant to the Arbitration Award on or before 18 May 2010 and no separate conditional equity transfer agreement is required, the Company has completed the Acquisition and acquired 100% equity interest in the Borrower and Huqi Mining on 22 April 2010 and 5 May 2010, respectively, in accordance with the Arbitration Award without first obtaining Independent Shareholders' approval. Had the Company failed to comply with the Arbitration Award, LMG would have had the right to enforce the Arbitration Award.

Immediately after completion of the Acquisition, the shareholding structure of the Borrower and Huqi Mining is as follows:



At the completion of the Acquisition, the Company has also released the guarantee obligations of the Guarantor and LMG pursuant to the Supplemental Agreement.

INFORMATION ON THE PARTIES TO THE ACQUISITION

The Group

The Group is one of the leading molybdenum producers in the PRC. The Group's primary business operations involve molybdenum mining, flotation, roasting, smelting and downstream processing.

LMG

LMG is a state-owned enterprise which principally engages in investment in mineral resources. LMG, which held the 100% equity interest in the Borrower and Huqi Mining immediately prior to the Acquisition, is a controlling shareholder holding 1,796,593,475 Domestic Shares representing approximately 36.84% of the total issued share capital of the Company as at the Latest Practicable Date.

The Borrower

The Borrower engages in the construction and investments in mineral resources projects in the PRC. In March 2010, LMG acquired 100% equity interest in the Borrower pursuant to an administrative allocation by the Luoyang SASAC.

In January 2010, the Borrower acquired 50% equity interest in Xuzhou Huanyu, which in turn owns 90% equity interest in Luoyang Fuchuan, pursuant to the Huanyu Transfer Agreement. In February 2010, the Borrower also acquired 90% equity interest in Qixing Mining pursuant to the Qixing Transfer Agreement. Yongcheng Group holds the remaining 50% equity interest in Xuzhou Huanyu, and Jiaoshuao Villagers Committee and Longxing Mining together hold the remaining 10% equity interest in Qixing Mining. The key terms of the Huanyu Transfer Agreement and the Qixing Transfer Agreement are set out below:

Huanyu Transfer Agreement

Pursuant to the Huanyu Transfer Agreement, the Borrower acquired 50% equity interest in Xuzhou Huanyu for a consideration of RMB950,000,000 (equivalent to approximately HK$1,083,000,000). The following, among other things, were also agreed by the parties under the Huanyu Transfer Agreement and, where applicable, the figures shown below are those as shown in the audited accounts of the Borrower as at 31 March 2010:

(a) the Borrower acknowledged that the Luanchuan County Government (欒川縣人民政府) is entitled to a dividend payment in the amount that is equal to 8% of the annual net profit (after-tax) of Luoyang Fuchuan each year and undertook and guaranteed that Xuzhou Huanyu or Luoyang Fuchuan will continue to make such payment to the Luanchuan County Government after the completion of the Huanyu Transfer Agreement;

(b) Immediately before the completion of the Huanyu Transfer Agreement, there was an estimated outstanding dividend payment of approximately RMB25,000,000 (equivalent to approximately HK$28,500,000) payable by Xuzhou Huanyu to the Luanchuan County Government. As at 31 December 2009, the unaudited amount of such outstanding dividend payable to Luanchuan County Government is estimated to be approximately RMB21.9 million (equivalently to approximately HK$25.0 million). The Borrower undertook to make such outstanding dividend payment to the Luanchuan County Government. As at 31 March 2010, the Borrower owed LMG an amount of RMB20,000,000 (equivalent to approximately HK$22,800,000) which was paid by LMG to the Luanchuan County Government on behalf of the Borrower. This financial assistance provided by LMG, a controlling shareholder of the Company and therefore a connected person of the Company, to the Borrower, which has become a member of the Group as a result of the Acquisition, is provided for the benefit of the Borrower on normal commercial terms (or better to the Borrower) where no security over the assets of the Group is granted as described under Rule 14A.65(4) of the Listing Rules. As such, the granting of the loan and its repayment are exempted from the reporting, announcement and independent shareholders' approval requirements of Chapter 14A of the Listing Rules pursuant to Rule 14A.65(4) of the Listing Rules;

(c) Immediately before the completion of the Huanyu Transfer Agreement, Jiangsu Tianyu and Xuzhou Jiaxun owed Luoyang Fuchuan an aggregate of approximately RMB16,000,000 (equivalent to approximately HK$18,240,000). The Borrower agreed to assume the obligations to repay such loans to Luoyang Fuchuan;

(d) Immediately before the completion of the Huanyu Transfer Agreement, Luoyang Fuchuan owed Jiangsu Tianyu an amount of approximately RMB52,000,000 (equivalent to approximately HK$59,280,000). The Borrower had repaid such loan to Jiangsu Tianyu. Jiangsu Tianyu's interest as the lender of such loan was transferred to the Borrower upon completion of the Huanyu Transfer Agreement;

(e) The Borrower guaranteed that it would acquire from Jiangsu Tianyu 90% equity interest in Qixing Mining and Jiangsu Tianyu's interest in a loan to Qixing Mining for an aggregate consideration of RMB100,000,000 (equivalent to approximately HK$114,000,000). Details of such acquisition is disclosed under paragraph headed "Qixing Transfer Agreement" below;

(f) Jiangsu Tianyu had provided a guarantee for a loan to Luoyang Fuchuan amounting to RMB100,000,000 (equivalent to approximately HK$114,000,000). Jiangsu Tianyu was released from this guarantee upon completion of the Huanyu Transfer Agreement;

(g) The Borrower acknowledged the fact that, while Luoyang Fuchuan has the right to conduct mining activities at the Shangfanggou Mine, there are at least two other mining companies that also conduct mining activities in the same mine. These mining activities existed prior to the grant of the Arbitration Award. It is the understanding of the Company that (i) three companies, namely Luanchuan Longgou Mining Company Limited* (欒川縣龍溝礦業有限公司), Luanchuan Xinyuan Mining Company Limited* (欒川縣信源礦業有限公司) and Tiangang Mining Company Limited* (天罡礦業有限公司), all of which are Independent Third Parties, are conducting mining activities at the east part of the Shangfanggou Mine with an estimated aggregate daily ore production rate of 5,000 tonnes; and (ii) no payment is made by these companies to Luoyang Fuchuan for the mining activities. According to the opinion of the Company's PRC legal advisers, Luoyang Fuchuan's mining licence for the Shangfanggou Mine, which to the Company's knowledge is the only valid mining licence issued for the Shangfanggou Mine, gives Luoyang Fuchuan an exclusive mining right to the Shangfanggou Mine. The Company is investigating the basis pursuant to which these companies conduct mining activities at the Shangfanggou Mine and the legality of such mining activities, and will negotiate with these companies with a view to reaching a settlement with these companies in a manner that is satisfactory to the Company; and

(h) Xuzhou Huanyu pledged its 10% equity interest in Luoyang Fuchuan for securing a loan owed by Jiangsu Tianyu. This pledge was agreed to be released before the completion of the Huanyu Transfer Agreement.

The Huanyu Transfer Agreement was completed and the Borrower acquired 50% equity interest in Xuzhou Huanyu in January 2010.

Qixing Transfer Agreement

Pursuant to the Qixing Transfer Agreement, the Borrower acquired 90% equity interest in Qixing Mining for a consideration of RMB42,643,636 (equivalent to approximately HK$48,613,745). Immediately before the completion of the Qixing Transfer Agreement, Qixing Mining owed Jiangsu Tianyu an amount of RMB57,356,364 (equivalent to approximately HK$65,386,255). The Borrower had repaid this loan to Jiangsu Tianyu and Jiangsu Tianyu's interest as the lender of the loan was transferred to the Borrower pursuant to the Qixing Transfer Agreement. The Qixing Transfer Agreement was completed and the Borrower acquired 90% equity interest in Qixing Mining in February 2010.

Financial information of the Borrower, Xuzhou Huanyu and Qixing Mining

Based on the unaudited consolidated accounts of the Borrower prepared under PRC GAAP, as at 31 December 2008 and 31 December 2009:

(a) the unaudited consolidated total assets of the Borrower was approximately RMB1,054.9 million (equivalent to approximately HK$1,202.6 million) as at 31 December 2009;

(b) the unaudited consolidated total net asset value of the Borrower was approximately RMB4.9 million (equivalent to approximately HK$5.6 million) as at 31 December 2009;

(c) the unaudited consolidated net loss (before tax) of the Borrower for the two years ended 31 December 2008 and 31 December 2009 were approximately RMB2,393 (equivalent to approximately HK$2,728) and approximately RMB105,647 (equivalent to approximately HK$120,438) respectively; and

(d) the unaudited consolidated net loss (after tax) of Borrower for the two years ended 31 December 2008 and 31 December 2009 were approximately RMB2,393 (equivalent to approximately HK$2,728) and approximately RMB105,647 (equivalent to approximately HK$120,438) respectively.

A business valuation on the Borrower and Huqi Mining has been prepared by Grant Sherman, the content of which is set out in Appendix II to this circular.

Based on the unaudited consolidated accounts of Xuzhou Huanyu prepared under PRC GAAP, as at 31 December 2008 and 31 December 2009:

(a) the unaudited consolidated total assets of Xuzhou Huanyu was approximately RMB750.0 million (equivalent to approximately HK$855.0 million) as at 31 December 2009;

(b) the unaudited consolidated total net asset value of Xuzhou Huanyu was approximately RMB371.5 million (equivalent to approximately HK$423.5 million) as at 31 December 2009;

(c) the unaudited consolidated net profit (before tax and minority interest) of Xuzhou Huanyu for the years ended 31 December 2008 and 31 December 2009 were approximately RMB469.5 million (equivalent to approximately HK$535.3 million) and approximately RMB6.7 million (equivalent to approximately HK$7.7 million) respectively; and

(d) the unaudited consolidated net profit (after tax and minority interest) of Xuzhou Huanyu for the years ended 31 December 2008 and 31 December 2009 were approximately RMB280.4 million (equivalent to approximately HK$319.7 million) and approximately RMB3.4 million (equivalent to approximately HK$3.9 million) respectively.

Based on the unaudited accounts of Qixing Mining prepared under PRC GAAP, as at 31 December 2009:

(a) the unaudited total assets of Qixing Mining was approximately RMB67.0 million (equivalent to approximately HK$76.3 million) as at 31 December 2009; and

(b) the audited total net asset value of Qixing Mining was approximately RMB1.2 million (equivalent to approximately HK$1.4 million) as at 31 December 2009.

As Qixing Mining has not begun its operation, there is no profit and loss statement for Qixing Mining for the two years ended 31 December 2008 and 31 December 2009.

Huqi Mining

Huqi Mining engages in molybdenum flotation and molybdenum concentrate and oxide processing. In October 2009, LMG acquired Huqi Mining, which in turn holds 10% equity interest in Luoyang Fuchuan, pursuant to the Huqi Transfer Agreement. The key terms of the Huqi Transfer Agreement are set out below:

Huqi Transfer Agreement

Pursuant to the Huqi Transfer Agreement, LMG acquired 100% equity interest in Huqi Mining for a consideration of RMB180,000,000 (equivalent to approximately HK$205,200,000) from Mr Yang Zhisen (楊植森), an Independent Third Party. The assets of Huqi Mining covered by this transfer only included its 10% equity interest in Luoyang Fuchuan and its interest in a loan of RMB21,200,000 (equivalent to approximately HK$24,168,000) in relation to an advance payment for Luoyang Fuchuan's mining right (together the "**Acquired Interests**"). All other assets and liabilities (including but not limited to financial liabilities, operating liabilities and liabilities or contingent liabilities arising from guarantees provided by Huqi Mining for others) of Huqi Mining (the "**Excluded Assets and Liabilities**") were excluded from the transfer under the Huqi Transfer Agreement and assumed by Mr Yang Zhisen, and will not be included in the Group's financial statements. LMG has also guaranteed to the Company against any loss incurred by the Company from the breach, if any, of the Huqi Transfer Agreement by Mr Yang Zhisen in respect of his assumption of responsibilities for the Excluded Assets and Liabilities.

Financial information of Huqi Mining

Based on the unaudited accounts of Huqi Mining prepared under PRC GAAP as at 31 December 2009 in respect of the Acquired Interests, which excluded all other assets and liabilities of Huqi Mining not forming part of the Huqi Transfer Agreement:

(a) the unaudited total assets of Huqi Mining was approximately RMB26.2 million (equivalent to approximately HK$29.9 million) as at 31 December 2009; and

(b) the unaudited total net asset value of Huqi Mining was approximately RMB26.2 million (equivalent to approximately HK$29.9 million) as at 31 December 2009.

In respect of the Acquired Interests, no profit and loss was recorded except Huqi Mining's share in the profits of Luoyang Fuchuan through its 10% equity interests in Luoyang Fuchuan. Financial information of Luoyang Fuchuan can be found at the section headed "Luoyang Fuchuan" of this letter below. A business valuation on the Borrower and Huqi Mining has been prepared by Grant Sherman, the content of which is set out in Appendix II to this circular.

Luoyang Fuchuan

Luoyang Fuchuan mainly engages in the mining of molybdenum and manufacture of molybdenum products in Luoyang, the PRC. Xuzhou Huanyu and Huqi Mining own 90% and 10% equity interest in Luoyang Fuchuan respectively. The structure of the subsidiaries of Luoyang Fuchuan is shown in the structure chart under paragraph headed "Arbitration and Completion" above.

Luoyang Fuchuan owns the mining right for the Shangfanggou Mine under a mining permit issued by the Ministry of Land and Resources of the PRC, with an annual mining capacity of 1.65 million tonnes. It plans to make an application to the relevant PRC authorities to increase the annual mining capacity of the Shangfanggou Mine. Luoyang Fuchuan and its subsidiaries, Hualong, Hexinyuan, Jinfeng and Jinhanyuan, own and operate a number of primary process plants for the processing of the ores from the Shangfanggou Mine to produce molybdenum concentrates with an estimated total daily capacity of approximately 5,800 tonnes. The primary process plant operated by Jinhanyuan produces molybdenum concentrates containing approximately 40% to 45% molybdenum, while other primary process plants produce molybdenum concentrates containing approximately 12% to 16% molybdenum. Most of these primary process plants also produce magnetite concentrates from the ores extracted from the Shangfanggou Mine. Luoyang Fuchuan also operates a separate cleaner plant, Heyu Cleaner Plant* (合峪精選廠), which upgrades the molybdenum concentrates produced by its own primary process plants to approximately 40% to 45% molybdenum. The concentrates from other primary process plants are sold directly to various smelters or cleaner plants within the PRC. The tailings produced by the Heyu Cleaner Plant are further processed by a hydrometallurgical plant owned by Fuchun. Mining activities of Luoyang Fuchuan and its subsidiaries at the Shangfanggou Mine and operations of the abovementioned plants were suspended at the time of the Acquisition. Mining activities and the operation of some of the process plants were resumed in June 2010.

As at the Latest Practicable Date, the Company was in the process of collecting financial information of Jinhanyuan, a subsidiary of Luoyang Fuchuan. As Jinhanyuan is a limited liability company and it is the understanding of the Company that Luoyang Fuchuan and its subsidiaries have not guaranteed any liabilities of Jinhanyuan, Grant Sherman, in consideration of the views of the Company and the opinion of the Company's PRC legal advisers, has taken a conservative approach and assumed Jinhanyuan has zero value in its business valuation set out in Appendix II to this circular.

Based on the audited consolidated accounts, as at 31 December 2008 and the unaudited consolidated accounts as at 31 December 2009 of Luoyang Fuchuan prepared under PRC GAAP:

(a) the unaudited consolidated total assets of Luoyang Fuchuan was approximately RMB749.5 million (equivalent to approximately HK$854.4 million) as at 31 December 2009;

(b) the unaudited consolidated total net asset value of Luoyang Fuchuan was approximately RMB371.1 million (equivalent to approximately HK$423.0 million) as at 31 December 2009;

(c) the audited consolidated net profit (before tax and minority interest) of Luoyang Fuchuan for the year ended 31 December 2008 and the unaudited consolidated net profit (before tax and minority interest) for the year ended 31 December 2009 were approximately RMB444.2 million (equivalent to approximately HK$506.3 million) and approximately RMB6.8 million (equivalent to approximately HK$7.8 million) respectively; and

(d) the audited consolidated net profit (after tax and minority interest) of Luoyang Fuchuan for the year ended 31 December 2008 and the unaudited consolidated net profit (after tax and minority interest) for the year ended 31 December 2009 were approximately RMB294.1 million (equivalent to approximately HK$335.2 million) and RMB3.9 million (equivalent to approximately HK$4.4 million) respectively.

SOURCE OF FUNDING FOR THE ACQUISITION

The Consideration was satisfied by the Company from its internal resources.

FINANCIAL INFORMATION RELATING TO THE ACQUISITION

Taking into account of the Consideration of approximately RMB276.3 million (equivalent to approximately HK$315.0 million) and the sum of RMB1,105 million (equivalent to approximately HK$1,259.7 million) advanced by the Company to the Borrower under the Loan Agreement, a total cash outlay of approximately RMB1,381.3 million (equivalent to approximately HK$1,547.7 million) was incurred by the Company. The loan of RMB1,105 million (equivalent to approximately HK$1,547.7 million) advanced to the Borrower was determined by reference to (i) the total consideration of RMB1,050 million (equivalent to approximately HK$1,197 million) (including the loan of approximately RMB57.4 million (equivalent to approximately HK$65.4 million) owed by Qixing Mining to Jiangsu Tianyu and agreed to be repaid by the Borrower under the Qixing Transfer Agreement) payable by the Borrower under the Huanyu Transfer Agreement and the Qixing Transfer Agreement; (ii) the loan of RMB52.0 million (equivalent to approximately HK$59.3 million) owed by Luoyang Fuchuan to Jiangsu Tianyu and agreed to be repaid by the Borrower under the Huanyu Transfer Agreement; and (iii) an intra-Group loan of RMB3.0 million (equivalent to approximately HK$3.42 million) from the Borrower to Qixing Mining.

The Borrower, Qixing Mining and Huqi Mining will become subsidiaries of the Company and their financial statements will be consolidated into the Group's financial statements. The Loan of RMB1,105 million being a loan receivable for the Company and a loan payable for the Borrower, will be completely eliminated in the Group's consolidated financial statements.

On the other hand, as the Borrower only holds 50% equity interest in Xuzhou Huanyu which in turn holds 90% equity interest in Luoyang Fuchuan, the Company does not have an absolute control in Luoyang Fuchuan even though Huqi Mining holds the remaining 10% equity interest in Luoyang Fuchuan. The financial statements of Xuzhou Huanyu and Luoyang Fuchuan (and its subsidiaries) will not be consolidated into the Group's financial statements. Xuzhou Huanyu and Luoyang Fuchuan (and its subsidiaries) will be treated as jointly controlled entities in the Group's financial statements.

REASONS AND BENEFITS OF THE ACQUISITION

The Shangfanggou Mine is located in an area which contains significant mineral deposits and about half of the known molybdenum resources in the PRC. According to the technical report prepared by Wardrop, the text of which is set out in Appendix 1 to this circular:

(a) the total estimated resource, at a 0.03% molybdenum cut-off, at the Shangfanggou Mine is 469 million tonnes at an average molybdenum grade of 0.14%. The measured, indicated and inferred resource levels are estimated, at a 0.03% molybdenum cut-off, as follows:

  (i) measured resource - 17 million tonnes at a molybdenum grade of 0.17%;

  (ii) indicated resource - 291 million tonnes at a molybdenum grade of 0.14%; and

  (iii) inferred resource - 161 million tonnes at a molybdenum grade of 0.13%; and

(b) the Shangfanggou Mine contains a total proven and probable reserves of 47,821 kilotonnes with a diluted molybdenum grade of 0.173%.

As a result of the Acquisition, the Company is able to conduct mining activities and further develop the resources in the Shangfanggou Mine and to make use of the processing capacities of Luoyang Fuchuan and its subsidiaries. The Directors are of the view that, if Luoyang Fuchuan applies for an increased annual mining capacity under the mining right at the Shangfanggou Mine, it is possible that the daily mining and processing capacity of Luoyang Fuchuan and its subsidiaries could reach 20,000 to 30,000 tonnes. The Group has sought to increase Shareholders' return through the Acquisition. The Acquisition provides an opportunity for the Group to reinforce its position as one of the leading molybdenum producers in the PRC. The Acquisition will also enable the Company to recover any available value from the loan advanced to the Borrower under the Loan Agreement and Supplemental Agreement.

The Shangfanggou Mine is located within an area commonly referred to as the Nannihu (南泥湖) ore district. This area contains three principal molybdenum deposits, namely Shangfanggou (上房溝), Nannihu (南泥湖) and Sandaozhuang (三道莊), each separated by a distance of approximately 1 km. Luanchuan County has a long history of molybdenum production where many mineral process plants of various capacities are located. Major plants are currently operated by Group in the area for processing molybdenum ore obtained from the Sandaozhuang mine. The Group also owns two scheelite process plants with an aggregate daily capacity of 15,000 tonnes. The Company has engaged Changsha Engineering and Research Institute of Non-Ferrous Metallurgy (長沙有色冶金設計研究院) to conduct feasibility study on the improvements of the development of the Shangfanggou Mine and the Sandaozhuang mine. Taking into consideration the proximity of the Shangfanggou Mine and the processing capacities of Luoyang Fuchuan and its subsidiaries with the Group's Sandaozhuang molybdenum mine and associated facilities, the Directors are of the opinion that the Group will be benefited from the synergies resulted from the shared and coordinated operations between these two mines such as management, distribution and transportation. The Company is of the opinion that the Shangfanggou Mine is of strategic value to the Company and the acquisition of interests in the Shangfanggou Mine is important in reinforcing the Company's position as a leading molybdenum manufacturer in the PRC. The Company considered that the Arbitration Award and the implementation of the Acquisition would effectively allow the Company to acquire LMG's interests in Xuzhou Huanyu and Huqi Mining, and therefore their interests in the Shangfanggou Mine.

The Directors (including the independent non-executive Directors) are of the opinion that the terms of the Acquisition including the Consideration are normal commercial terms, fair and reasonable and the Acquisition is in the interest of the Company and its Shareholders as a whole. The view of the independent non-executive Directors is set out in the letter from the Independent Board Committee in this circular.

LISTING RULES IMPLICATIONS

As one of the applicable percentage ratios set out in the Listing Rules in respect of the Acquisition exceeds 5% but is less than 25%, the Acquisition constitutes a discloseable transaction for the Company under Rule 14.06 of the Listing Rules and is subject to the announcement requirements under Rule 14.34 of the Listing Rules.

LMG, which held the 100% equity interest in the Borrower and Huqi Mining immediately prior to the Acquisition, is a controlling shareholder of the Company holding 1,796,593,475 Domestic Shares representing approximately 36.84% of the issued share capital of the Company as at the Latest Practicable Date. LMG is therefore a connected person of the Company within the meaning of the Listing Rules. The Acquisition also constitutes a connected transaction of the Company subject to the reporting, announcement and independent shareholders' approval requirements for the purpose of Chapter 14A of the Listing Rules.

Rule 14A.18 of the Listing Rules requires that a connected transaction which is subject to independent shareholders' approval requirement is required to be made conditional on prior approval of the shareholders of the listed company in its general meeting. Rule 14A.52 of the Listing Rules requires that a connected transaction which is subject to independent shareholders' approval requirement must be made conditional on approval by the independent shareholders at the time when the listed company enters into the transaction.

In order to comply with the Arbitration Award, the Company has completed the Acquisition and acquired 100% equity interest in the Borrower and Huqi Mining on 22 April 2010 and 5 May 2010, respectively, before the Company was able to convene and hold an EGM for the Independent Shareholders to approve the Acquisition. Therefore, the Acquisition was not able to be made conditional upon Independent Shareholders' approval.

An application for a waiver from the requirements under Rules 14A.18 and 14A.52 of the Listing Rules was submitted to the Stock Exchange on 17 May 2010. The Company was informed by the Stock Exchange on 18 June 2010 that such a waiver will not be granted.

EGM

An EGM will be held for the Independent Shareholders to consider and, if thought fit, confirm, approve and ratify the Acquisition. A notice of the EGM to be held at 9:00 a.m. on Sunday, 31 October 2010 at the International Conference Room of Mudu-Lee Royal International Hotel at No.239, Kaiyuan Street, Luonan District, Luoyang City, Henan Province, PRC is set out on pages 177 to 178 of this circular.

A form of proxy is enclosed for use at the EGM. Whether or not you intend to attend the EGM, you are requested to complete the enclosed form of proxy in accordance with the instructions printed thereon and return the same to the Company's H share registrar in Hong Kong, Computershare Hong Kong Investor Services Limited at 17M Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong (for holders of H Shares only) or to the Secretariat of the Board at Company's principal place of business in the PRC at North of Yihe, Huamei Shan Road, Chengdong New District, Luanchuan County, Luoyang City, Henan Province, the PRC (for holders of Domestic Shares only), as soon as possible but in any event not less than 24 hours before the time appointed for holding the EGM. Completion and return of the form of proxy will not preclude you from attending and voting at the EGM or any adjourned meeting should you so wish.

Pursuant to Rule 14A.54 of the Listing Rules, any connected person with a material interest in the relevant connected transaction is required to abstain from voting on the relevant resolution at the EGM. Accordingly, LMG and its associates, holding in aggregate 1,796,593,475 Domestic Shares representing approximately 36.84% of the total issued share capital of the Company as at the Latest Practicable Date, will abstain from voting on the resolution to confirm, approve and ratify the Acquisition at the EGM. CFC, a controlling shareholder of the Company holding 1,736,706,322 Domestic Shares representing approximately 35.62% of the total issued share capital of the Company as at the Latest Practicable Date, is a disinterested and an Independent Shareholder for the purpose of the Acquisition under the Listing Rules and has indicated its intention to vote in favour of the Acquisition. CFC's interest represents approximately 56.39% of the interest of all Independent Shareholders entitled to vote on the Acquisition at the EGM.

Pursuant to Rule 13.39(4) of the Listing Rules, all votes at the EGM must be taken by poll. An announcement will be made by the Company after the EGM to inform Shareholders of the results of the poll pursuant to Rule 13.39(5) of the Listing Rules.

RECOMMENDATION

The Directors (including the independent non-executive Directors) are of the opinion that the terms of the Acquisition including the Consideration are on normal commercial terms, fair and reasonable and the Acquisition is in the interest of the Company and the Shareholders as a whole. Accordingly, the Directors recommend the Independent Shareholders to vote in favour of the relevant resolution to be proposed at the EGM.

The Independent Board Committee comprising all independent non-executive Directors has been formed to advise the Shareholders in relation to the Acquisition and Access Capital has been appointed as the independent financial adviser to advise the Independent Board Committee and the Independent Shareholders in relation to the Acquisition.

Your attention is drawn to the letter from the Independent Board Committee set out on page 16 of this circular which contains its recommendation to the Shareholders in relation to the Acquisition. Your attention is also drawn to the letter of advice from Access Capital set out on pages 17 to 35 of this circular which contains its advice to the Independent Board Committee and the Independent Shareholders in relation to the Acquisition and the principal factors and reasons considered by it in formulating its advice.

The Independent Board Committee, having considered the factors and reasons considered by and the opinion of Access Capital as stated in its letter of advice, is of the opinion that the terms of the Acquisition including the Consideration are on normal commercial terms, fair and reasonable and the Acquisition is in the interest of the Company and the Shareholders as a whole. Accordingly, the Independent Board Committee recommends the Independent Shareholders to vote in favour of the ordinary resolution relating to the Acquisition to be proposed at the EGM.

ADDITIONAL INFORMATION

Your attention is also drawn to the additional information set out in the appendices to this circular.

By Order of the Board
China Molybdenum Co., Ltd.*
Duan Yixian
Chairman

* *For identification purposes only*

洛陽欒川鉬業集團股份有限公司
China Molybdenum Co., Ltd. *

(a joint stock company incorporated in the People's Republic of China with limited liability)

(Stock Code: 03993)

14 September 2010

To the Shareholders

Dear Sir or Madam,

DISCLOSEABLE AND CONNECTED TRANSACTION

We refer to the circular of the Company to the Shareholders dated 14 September 2010 (the "**Circular**"), of which this letter forms part. Unless the context requires otherwise, capitalised terms used in this letter will have the same meanings given to them in the section headed "Definitions" of the Circular.

We have been authorised by the Board to form the Independent Board Committee to advise the Shareholders on whether the Acquisition is fair and reasonable so far as the Company and the Shareholders as a whole are concerned, and to advise Independent Shareholders on how to vote in relation to the Acquisition.

We wish to draw your attention to the letter of advice from Access Capital, the independent financial adviser appointed to advise the Independent Board Committee and the Independent Shareholders in relation to the Acquisition, as set out on pages 17 to 35 of the Circular and the letter from the Board set out on pages 1 to 15 of the Circular.

Having considered, among other matters, the factors and reasons considered by, and the opinion of, Access Capital as stated in its letter of advice, we consider that the terms of the Acquisition including the Consideration are on normal commercial terms, fair and reasonable and the Acquisition is in the interest of the Company and the Shareholders as a whole. Accordingly, we recommend the Independent Shareholders to vote in favour of the ordinary resolution relating to the Acquisition to be proposed at the EGM.

Yours faithfully,
The Independent Board Committee of
China Molybdenum Co., Ltd.*
Mr Gao Dezhu
Mr Zeng Shaojin
Mr Gu Desheng
Mr Ng Ming Wah, Charles
Independent non-executive Directors

* *For identification purposes only*

The following is the text of the letter of advice dated 14 September 2010 from Access Capital, the independent financial adviser to the Independent Board Committee and the Independent Shareholders in relation to the Acquisition, which has been prepared for the purpose of incorporation in this circular.

Access Capital

Suite 606, 6th Floor
Bank of America Tower
12 Harcourt Road
Central
Hong Kong

14 September 2010

To: The Independent Board Committee and the Independent Shareholders of China Molybdenum Co., Ltd

Dear Sirs,

DISCLOSEABLE AND CONNECTED TRANSACTION
ACQUISITION OF 100% EQUITY INTEREST IN
LUOYANG CONSTRUCTION INVESTMENT AND MINING CO., LTD.
AND LUANCHUAN HUQI MINING COMPANY LIMITED
PURSUANT TO AN ARBITRATION AWARD

I. INTRODUCTION

We refer to our appointment as the independent financial adviser to the Independent Board Committee and the Independent Shareholders with regard to the Acquisition, details of which are set out in the letter from the Board (the "Letter from the Board") contained in the circular of China Molybdenum Co., Ltd to the Shareholders dated 14 September 2010 (the "Circular"), of which this letter forms part. Unless otherwise stated, terms defined in the Circular have the same meanings in this letter.

The following summarizes the background of events leading to the Acquisition:

Date of events	Events and principal terms of agreements	Other information
22 December 2009	The Company entered into the Loan Agreement with the Borrower under which it provided the Loan in the amount of RMB1,150 million (equivalent to approximately HK$1,311 million) for the purpose of financing the Borrower's acquisition of 50% equity interest in Xuzhou Huanyu. Xuzhou Huanyu owns 50% equity in Luoyang Fuchan, which operates the Shangfanggou Mine. The Loan is interest bearing and has a term of one year. The Company also entered into the Equity Pledge Agreement with the Guarantor to pledge its entire equity interest of the Borrower as security against the Borrower's obligations and performance under the Loan Agreement. The Borrower also granted to the Company, during the term of the Loan, an option (but the Company is not obliged to exercise) to acquire the Borrower's interest in Xuzhou Huanyu or Luoyang Fuchan, at a consideration to be determined by reference to independent valuation (the "Option"). Pursuant to the Loan Agreement, a loan of RMB1,105 million (equivalent to approximately HK$1,259.7 million) (the "Advanced Loan") was drawn and the Borrower acquired 50% of the equity interest in Xuzhou Huanyu (under the Huanyu Transfer Agreement) and 90% in Qixing Mining (under the Qixing Transfer Agreement) respectively.	As stated in the Company's announcement dated 14 April 2010, LMG informed the Company the opportunity of acquiring 100% of the equity interest in Huqi Mining. The Company declined the opportunity as it considered that no evaluation and judgement could be made on its value and risk before conducting due diligence and that Huqi Mining only holds 10% interest in Luoyang Fuchan. Furthermore, as LMG promised to the Company that if LMG can control or acquire all the interest in Luoyang Fuchan, LMG will transfer such interest to the Company. LMG proceeded to acquire the equity interest in Huqi Mining in October 2009.

Date of events	Events and principal terms of agreements	Other information
25 February 2010	The Company, the Borrower and LMG entered into the Supplemental Agreement, where upon the parties agreed: (i) the allocation of all the equity in the Borrower from the Guarantor to LMG pursuant to the administrative direction by Luoyang SASAC (the "SASAC Allocation"); and the release of the Guarantor's pledge of the entire interest in the Borrower in favour of the Company as security for the Borrower's obligations and performance under the Loan Agreement.	The Company stated in its announcement on 14 April 2010 that as LMG owns 100% equity interest in the Borrower, any repayment of the Loan and interest payment would constitute a connected transaction for the Company under the Listing Rules. However as the Loan Agreement was entered into the Company and the Borrower before the SASAC Allocation, the loan repayment and interest payment are not subject to Independent Shareholders' approval requirement under the Listing Rules.
	(ii) the Borrower agreed to cooperate with the Company for its right to acquire the Borrower's equity interest in Xuzhou Huanyu under the Option. (iii) LMG agreed that during the term of the Loan and upon written notice from the Company, the Company has the right to takeover the interest in the Borrower and to exercise all the rights of a holder of the equity interest in the Borrower for LMG. (iv) LMG agreed that during the term of the Loan it shall not dispose of its interest in Huqi Mining and shall give the Borrower the first right of refusal on any sale of its interest in Huqi Mining. (v) LMG agreed to pledge all of its interest in Huqi Mining to the Company as security for the performance of the obligations of the Borrower under the Loan Agreement.	The terms of the Supplemental Agreement (including the consideration of RMB260 million (equivalent to approximately HK$296.4 million), or any higher appraisal value, for the transfer of equity interest in the Borrower and Huqi Mining under (ix)) constitutes a connected transaction for the Company under the Listing Rule, at the time the Supplemental Agreement was entered into. No approval was sought from the Company's Independent Shareholders at the time, and the Company is seeking Independent Shareholders' approval following the outcome of the Arbitration Award as announced by the Company on 17 May 2010.

Date of events	Events and principal terms of agreements	Other information
	(vi) LMG agreed that it shall acquire the remaining 50% equity interest in Xuzhou Huanzu by 1 April 2010 (so as to hold, together with its interest in the Borrower under the above-mentioned SASAC Allocation and LMG's interest in Huqi Mining, effectively 100% of the equity interest in Luoyang Fuchan), and that it shall transfer 100% of the equity interest in Luoyang Fuchan to the Company by 10 April 2010.	
	(vii) If LMG failed to acquire the remaining 50% equity interest in Xuzhou Huanyu by 1 April 2010, LMG shall transfer the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% interest in Luoyang Fuchan to the Company by 10 April 2010.	
	(viii) in the event of any breaches of obligations by the Borrower under (ii) above or by LMG under (iii to viii above), LMG agreed to transfer, as remedial measures, all of its equity interest in the Borrower and Huqi Mining (which together owns 55% effective equity interest in Luoyang Fuchuan) to the Company for a total consideration of RMB260 million (equivalent to approximately HK$296.4 million) (or at any higher appraisal value of such interests as at 31 March 2010) and at the same time the Company shall release the guarantee obligations of the LMG.	

Date of events	Events and principal terms of agreements	Other information
	(ix) In the event that the Company was not able to acquire the interest in Xuzhou Huanyu and Huqi Mining as provided under (vii) above, LMG agreed to pay an amount equal to 20% of the Advanced Loan as compensation to the Company. The Supplemental Agreement also provided for any dispute to be submitted to Luoyang Arbitration Committee. By 10 April 2010, LMG did not transfer 100% of the equity interest in Luoyang Fuchan to the Company (in accordance with vii above) or the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% interest in Luoyang Fichan to the Company (in accordance with viii above). On 12 April 2010, the Company presented the case to the Luoyang Arbitration Committee for arbitration in accordance with the terms of the Supplemental Agreement.	
19 April 2010	The Luoyang Arbitration Commission granted the Arbitration Award in favour of the Company. The Company and LMG are obliged to, among other matters, complete the Acquisition (i.e. 100% of the equity interest in the Borrower and Huqi Mining) for the Consideration of RMB276.3 million (equivalent to approximately HK$315.0 million) within 30 days of the Arbitration Award. Consequently, the Company completed the Acquisition and acquired 100% equity interest in the Borrower and Huqi Mining on 22 April 2010 and 5 May 2010 respectively.	

Since LMG is a controlling shareholder holding 1,796,593,475 Domestic Shares representing approximately 36.84% of the issued share capital of the Company, LMG is a connected person of the Company as defined by the Listing Rules and as asset and revenue percentage ratios in respect of the Acquisition exceeds 2.5% but below 25%, the Acquisition constitutes a discloseable and connected transaction which is subject to the reporting, announcement and Independent Shareholders' approval requirements for the purpose of Chapter 14A of the Listing Rules. Rules 14A.18 and 14A.52 of the Listing Rules also specify that a connected transaction which is subject to independent shareholders' approval requirement is required to be made conditional on prior approval of the shareholders of the listed company in its general meeting and such transaction should be made conditional on the independent shareholders' approval requirements when the transaction is entered into.

The Company has proposed to convene an EGM to seek Independent Shareholders' confirmation, approval and ratification of the Acquisition. Pursuant to Rule 14A.54 of the Listing Rules, LMG, the controlling shareholder of the Company, and its associates are required to abstain from voting on the resolution relevant to the Acquisition at the EGM.

II. THE INDEPENDENT BOARD COMMITTEE

The Board currently consists of eleven Directors, namely, Mr. Duan Yuxian, Mr. Li Chaochun, Mr. Wu Wenjun, Mr. Li Faben and Mr. Wang Qinxi as executive Directors; Mr. Shu Hedong and Mr. Zhang Yufeng as non-executive Directors; Mr. Gao Dezhu, Mr. Zeng Shaojin, Mr. Gu Desheng and Mr. Ng Ming Wah, Charles as independent non-executive Directors.

The Independent Board Committee comprising all the independent non-executive Directors has been established to advise the Independent Shareholders in respect of voting on the resolution to confirm, approve and ratify the Acquisition. As the independent financial adviser to the Independent Board Committee and the Independent Shareholders, our role is to give an independent opinion to the Independent Board Committee and the Independent Shareholders as to (i) whether or not the Acquisition is in the interests of the Company and the Shareholders as a whole; (ii) whether or not the terms of the Acquisition are fair and reasonable; and (iii) how the Independent Shareholders should vote in respect of the above resolution.

Apart from the normal advisory fee payable to us in connection with our appointment as the independent financial adviser to the Independent Board Committee and the Independent Shareholders, no arrangement exists whereby we shall receive any other fees or benefits from the Company. We are independent of the Company for the purposes of the Listing Rules.

III. BASES AND ASSUMPTIONS OF THE ADVICE

In formulating our advice, we have relied solely on the statements, information, opinions and representations contained in the Circular and the information and representations provided to us by the Company and/or the Directors. We have assumed that all such statements, information, opinions and representations contained or referred to in the Circular or otherwise provided or made or given by the Company and/or its senior management staff and/or the Directors and for which it is/they are solely responsible were true and accurate and valid at the time they were made and given and continue to be true and valid as at the date of the Circular. We have assumed that all the opinions and representations made or provided by the Directors and/or the senior management staff of the Company contained in the Circular have been reasonably made after due and careful enquiry. We have also sought and obtained confirmation from the Company and/or its senior management staff and/or the Directors that no material facts have been omitted from the information provided and referred to in the Circular.

We consider that we have reviewed all currently available information and documents which are available to enable us to reach an informed view and to justify our reliance on the information provided so as to provide a reasonable basis for our opinions. We have no reason to doubt the truth, accuracy and completeness of the statements, information, opinions and representations provided to us by the Company and/or its senior management staff and/or the Directors and their respective advisers or to believe that material information has been withheld or omitted from the information provided to us or referred to in the aforesaid documents. We have not, however, carried out any independent verification of the information provided, nor have we conducted any independent investigation into the business and affairs of the Company, the Acquisition or any of their respective subsidiaries.

IV. PRINCIPAL FACTORS AND REASONS CONSIDERED

In formulating our recommendation, we have taken into consideration the following principal factors and reasons:

1. Principal activities of the Group

The Group is one of the leading molybdenum producers in the PRC, primarily operating in molybdenum mining, flotation, roasting, smelting and downstream processing. The Group's Sandaozhuang molybedenum mine contains one of the largest defined reserves of molybdenum and the second largest defined reserves of tungsten in the world. The Group is principally engaged in production of molybdenum and tungsten which are important additives to production of steel and cemented carbides respectively.

As set out in the annual report of the Company for the year ended 31 December 2009 (the "2009 Annual Report"), the Company continues to pursue resource acquisition opportunities and seek to secure the Company's position as the largest molybdenum producer and provider in the PRC domestic market. It will also identify potential targets for acquisition and merger to improve profitability and maximise Shareholder value.

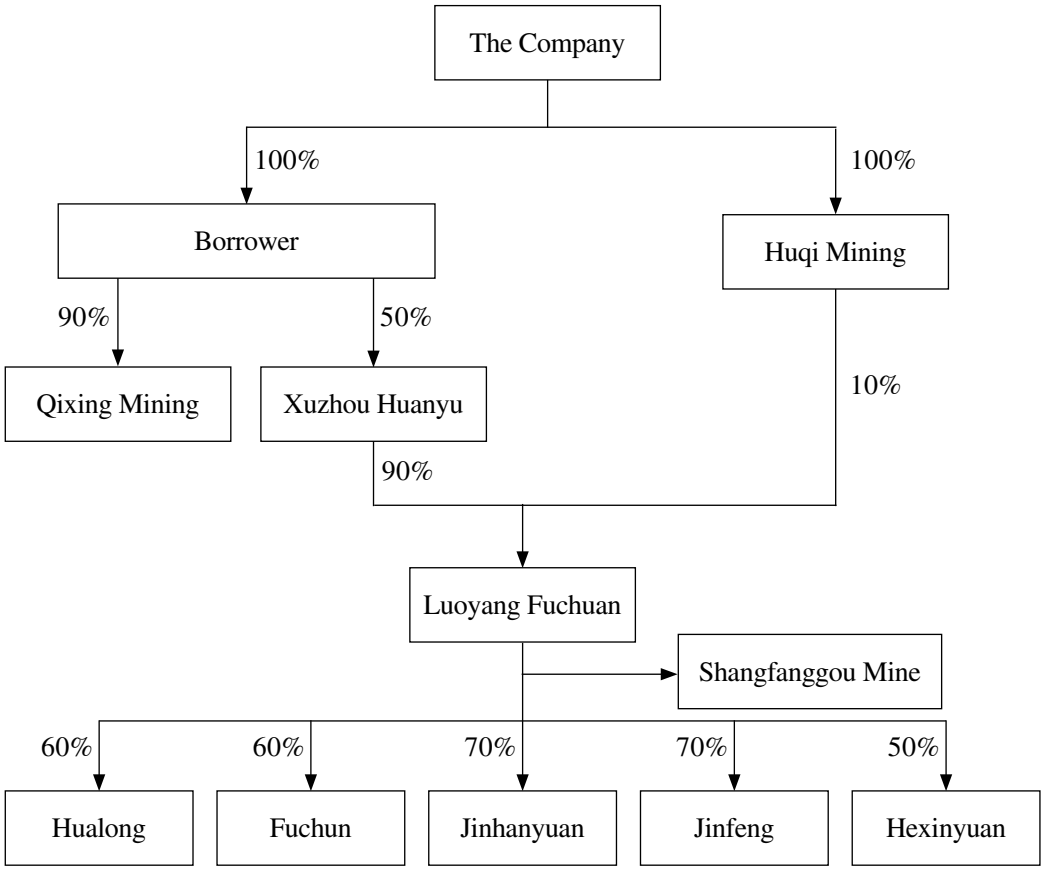
2. Background and principal activities of the companies included in the Acquisition

Pursuant to the Arbitration Award, the Acquisition consists of the transfer of 100% of the equity interest in the Borrower and in Huqi Mining from LMG to the Company. The Borrower is engaged in the construction of and investment in mineral resources projects in the PRC. It holds 90% equity interest in Qixing Mining, which has a molybdenum process facility under construction in the nearby area. The Borrower also holds 50% interest in Xuzhou Huanyu, which has a 90% equity interest in Luoyang Fuchuan. Huqi Mining holds the other 10% equity interest in Luoyang Fuchuan.

Luoyang Fuchuan is engaged in the mining of molybdenum and manufacture of molybdenum products in Luoyang. It owns and operates the Shangfanggou Mine which is located in an area which contains half of the known molybdenum resources in the PRC. Luoyang Fuchuan also holds, through its subsidiaries, eight molybdenum process facilities in the nearby area which include six primary process plants, one cleaner plant and one hydrometallurgical plant. Details of the capacity, processing flow and functions of each plant are elaborated in the independent Technical Report on Shangfanggou Mine (the "Technical Report") by Wardrop Engineering Inc. as set out in Appendix I to the Circular. The Borrower acknowledged that the Luanchuan County Government is entitled to a dividend payment equivalent to 8% of the annual after tax profit of Luoyang Fuchuan and guaranteed that such a payment will continue to be paid after the completion of the Huanyu Transfer Agreement. This factor has already been taken into consideration in the independent valuation report of the Acquisition.

As mentioned in the Technical Report, the operations at Shangfanggou Mine and the molybdenum process facilities were suspended between January and June 2010 due to the change in ownership and the relatively low molybdenum price. Operations at the Shangfanggou Mine and some molybdenum process facilities resumed in June 2010. According to the independent technical advisor, the reopening costs were insignificant.

Below is the organizational chart after the Acquisition.



The Company commissioned an independent valuation on the companies under the Acquisition, and which values the Acquisition at a fair value of RMB285 million (equivalent to approximately HK$324.9 million), as set out in Appendix II to the Circular. We note that the Advanced Loan has been included as a liability of the Borrower in the independent valuation and has been set off against the fair value of the assets included in the Acquisition. We believe the independent valuation is a more appropriate indication of the value of the companies included in the Acquisition.

3. Reasons for and benefits of the Acquisition

As stated in the Letter from the Board, the Acquisition will enable the Company to recover any available value from the Advanced Loan to the Borrower. Moreover, the Directors believe that the Acquisition would strategically assist the Company reinforce its position as one of the leading molybdenum producers in the PRC.

Luoyang Fuchuan operates the Shangfanggou Mine which has a mine area of 1.2073 square kilometer and is located one kilometre from the Sandaozhuang molybdenum mine operated by the Company. The independent technical adviser estimates that the Shangfanggou Mine has proved resource of 17 million tonnes and 291 million tonnes of indicated resource, while inferred resource is estimated to be 161 million tonnes. The total estimated resource is 469 million tonnes at an average molybdenum grade of 0.14% Mo.

According to the announcement of the Company dated 27 December 2009, under the terms of the Loan Agreement, the Company held the option to acquire the Borrower's interest in Xuzhou Huanyu or Luoyang Fuchuan. The Directors viewed the entering of the Loan Agreement as an opportunity for the Company to reinforce its position as one of the leading molybdenum producers in the PRC. Subsequently, pursuant to the SASAC Allocation, the entire equity interest of the Borrower was allocated to LMG. The Company entered into the Supplemental Agreement with LMG and the Borrower which laid out the arrangement for the acquisition of the Borrower's equity interest in Luoyang Fuchuan. Under the terms of the Supplemental Agreement, it was specified that LMG would procure to acquire 100% interest in Luoyang Fuchuan and transfer such interest to the Company. As LMG did not transfer 100% of the equity interest in Luoyang Fuchuan to the Company by 10 April 2010 or the Borrower's 50% interest in Xuzhou Huanyu and Huqi Mining's 10% interest in Luoyang Fuchuan to the Company, the Company applied for the Arbitration as stipulated in the Supplemental Agreement which resulted in the Company's obligation to pursue the Acquisition.

In view of the fact that the Borrower's principal asset is its interest in Xuzhou Huanyu and the allocation of the 100% equity interest in the Borrower to LMG pursuant to the SASAC Allocation as discussed above, the Directors believe that the Company could, through the award of the equity interests in the Borrower and Huqi Mining by the Arbitration, recover value under the Advanced Loan as well as the prospect of participation in the exploration of the molybdenum reserve at the Shangfanggou Mine. In addition, the Company also considered that the Arbitration Award and the implementation of the Acquisition would effectively allow the Company to acquire LMG's interests in Xuzhou Huanyu and Huqi Mining under the terms of the Supplemental Agreement.

As set out in the annual report of the Company for the year ended 31 December 2008, the People's Government of Henan Province issued the "Opinions on the Implementation of the Consolidation of Molybdenum Resources in Henan Province" (the "Opinion") in January 2008. The Opinion recommended preparation of consolidation plans and the principle of "only one mining right for one mining area". The Opinion also stated that the mining rights of molybdenum mines in closer regions should be consolidated. According to the Technical Report, the Shangfanggou Mine is located in an area commonly referred to as the Nannihu ore district. The area contains three principal molybdenum deposits: Shangfanggou, Nannihu and Sandaozhuang which are separated by a distance of about one kilometre (a map of the area is shown in Figure 6.2 of the Technical Report). Since the Company already owns the mining rights of the Sandaozhuang molybdenum mine, the Directors believe that the acquisition of partial interest in the Shangfanggou Mine offers important strategic benefits to the Company and is consistent with the Opinion provided by the People's Government of Henan Province.

In addition, the Company intends to increase the production output of Shangfanggou Mine beyond the current capacity and Luoyang Fuchuan plans to make an application to the relevant PRC authorities to increase its annual mining capacity. The Company has appointed external experts to conduct feasibility studies on the improvements of the development of the Shangfanggou Mine. The Board also considers that the Company's process facilities at its Sandaozhuang molybdenum mine, which is located at approximately one kilometer from the Shangfanggou Mine, can complement the production capacity of the process facilities included in the Acquisition. The Directors believe that the Company will benefit from synergies in terms of shared and coordinated operations in the areas of management, distribution and transportation between the two mines.

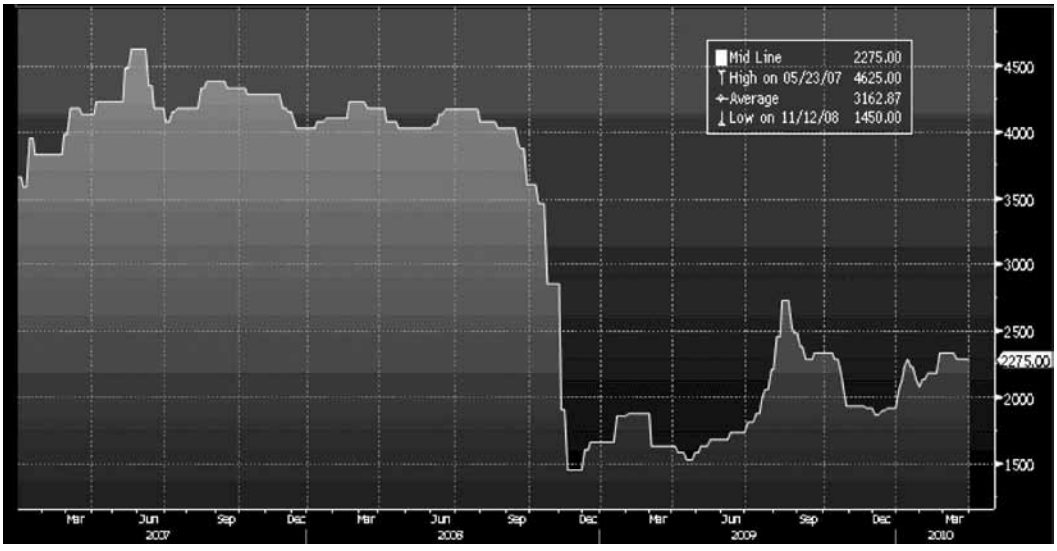
As mentioned under the paragraph headed "Huanyu Transfer Agreement" in the Letter from the Board, while Luoyang Fuchuan retains the right to conduct mining activities at the Shangfanggou Mine, there are presently at least three other parties conducting mining activities in the area, none of whom has made any payment to Luoyang Fuchuan for such activities. The management of the Company is investigating the basis and legality of their operations and activities and intends to engage these companies with a view to negotiating and settling the issue. Given that the Acquisition is also consistent with the Group's business development strategy, we concur with the Directors' views and consider the Acquisition to be in the interests of the Company and the Shareholders as a whole.

Having considered the aforementioned history and background pertaining to the Acquisition, and notwithstanding the presence of ongoing mining activities by the three other parties at the Shangfanggou Mine for which the Company has derived no benefit, we agree with the Directors that the Acquisition is the only practical way in which the Company could validly and successfully seek possession of the assets of the Borrower, and for it to implement all appropriate measures to extract value from such assets and extract value in the interest of recovery of the amount due under the Advanced Loan.

4. Outlook of the molybdenum industry in the PRC

Molybdenum is widely used in the steel industry due to its high melting point and durability. According to a molybdenum market report by CPM Group, a commodities market research firm, in March 2010 which discussed the demand and supply fundamentals and price outlook of the molybdenum market, the world's top three molybdenum production countries are the PRC, the United States of America and Chile. In 2009, the PRC produced 145.5 million pounds of molybdenum which accounted for 34% of global production. Although the PRC is the largest producer of molybdenum in the world, its output actually decreased in 2009 compared to 2008 as some of the high-cost molybdenum miners suspended operations in late 2008 and early 2009 due to the low molybdenum prices which were lower than their cost of production. Owing to the fiscal expansionary policy adopted by the PRC Government, demand for steel remains high. As molybdenum is a major additive in steel production, and the fact that the PRC has become a net importer of molybdenum since early 2009, these are encouraging developments for domestic producers such as the Company.

The following chart sets out the price of ferromolybdenum, the main product of the Company, from 1 January 2007 up to 31 March 2010, the valuation date of the Acquisition in the PRC domestic market. As set out in the 2009 Annual Report, the domestic and overseas molybdenum markets have the same reasons for the fluctuations in prices. Therefore, we have used the price of ferromolybdenum in the PRC domestic market for reference. Although the current price is still lower than the pre-financial crisis level, it has rebounded from the low in late 2008. The chart also reveals that the ferromolybdenum price increased by approximately 37.9 % from 1 January 2009 to 31 March 2010, i.e. the valuation date of the Acquisition, from RMB1,650 per metric tonne unit to RMB2,275 per metric tonne unit.



Source: Bloomberg

As stated in the 2009 Annual Report, the price of ferromolybdenum remained low in early 2009 due to low production capacity of domestic and overseas steel factories caused by low demand for steel products. Steel production picked up later in the year. Steel manufacturers restocked molybdenum and hence molybdenum prices increased. According to the research by CPM Group, a commodities market research firm, the restocking of molybdenum by steel producers is expected to continue with the expansionary global economic environment supported by fiscal stimulus measures in major economies. In the past, the molybdenum market has been experiencing a supply deficit (except 2009). In the future, growth in supply will be limited by the under-investment in new molybdenum capacity as potential producers face difficulties in obtaining project financing. The robust demand coupled with the marginal growth in supply capacity may restore supply deficit in 2011. The London Metal Exchange also launched molybdenum futures trading in February 2010 and availability of trading in molybdenum contracts may further spur investment interest in molybdenum.

5. Exploration and mining rights

In accordance with PRC laws, exploration permits and mining operation permits must be obtained from the relevant government bodies for exploration, mining and processing of minerals in the PRC.

We understand from the management of the Company that Luoyang Fuchuan has the right to conduct mining activities at the Shangfanggou Mine. We have also been informed by the Company that, while Luoyang Fuchuan has the right to conduct mining activities at the Shangfanggou Mine, there are at least three other mining companies that also conduct mining activities at the Shangfanggou Mine at an ore production rate of approximately 5,000 tonnes per day. These mining activities existed prior to the Arbitration Award being granted to the Company. As stated in the Letter from the Board, according to the opinion of the Company's PRC legal advisers, Luoyang Fuchuan's mining licence for the Shangfanggou Mine, which to the Company's knowledge is the only valid mining licence issued for the Shangfanggou Mine, provides Luoyang Fuchuan with the exclusive right to conduct mining activities at the Shangfanggou Mine. The Company is still evaluating the basis and legality of the mining activities currently conducted by the three other mining companies and the Directors intend to negotiate with these companies with a view to settling the issue.

As set out in the Technical Report, the mining licence issued to Luoyang Fuchuan for the Shangfanggou Mine is granted for a period from June 2006 to January 2016. Luoyang Fuchuan also plans to make an application to the relevant PRC authorities to increase production beyond its annual mining capacity of 1.65 million tonnes.

6. Principal terms of the Acquisition

6.1 Assets to be acquired

The background and financial information on the Acquisition is set out in the Letter from the Board. Details on the Borrower, and the identities and holding structure of the companies under the Acquisition are set out under the heading "Background and principal activities of the companies included in the Acquisition" of this letter.

The principal assets which are the subject of the Acquisition are the 90% equity interest of a molybdenum process facility under construction by Qixing Mining and partial interest in the Shangfanggou Mine and eight molybdenum process facilities held by Luoyang Fuchuan. The mining licence of Shangfanggou Mine runs for a period from December 2006 to January 2016. It covers a mine area of 1.2073 square kilometer with an authorized production capacity of 1.65 million tonnes (molybdenum ore to be processed) per annum. Based on the information from the Technical Report, in terms of molybdenum resource, Shangfanggou Mine is estimated to have measured resource of 17 million tonnes, indicated resource of 291 million tonnes and inferred resource of 161 million tonnes. Qixing Mining's molybdenum process facility under is under construction and the management of the Company is in the process of ascertaining the timeline and costs to completion.

Further information on the Shangfanggou Mine and the eight molybdenum process facilities under Luoyang Fuchuan is set out in the Letter from the Board and the Technical Report.

6.2 Consideration

The total cash outlay by the Company in repsect of the Acquisition was RMB1,381.3 million (equivalent to approximately HK$1,574.7 million), which is comprised of (i) the RMB1,105 million (equivalent to approximately HK$1,259.7 million) Advanced Loan initially provided to the Borrower, which had been used to acquire Qixing Mining and Xuzhou Huanyu, excluding any interest payable by the Borrower under the Loan Agreement; and (ii) the Consideration of RMB276.3 million (equivalent to approximately HK$315.0 million) paid to LMG pursuant to the Arbitration Award.

As stated in the Letter from the Board, the Consideration was based on the aggregate appraised value of the equity interest in the Borrower and Huqi Mining as at 31 March 2010. The appraised value was based on a valuation report prepared by an independent third party valuer in PRC and has been confirmed by the Luoyang Arbitration Commission in the Arbitration Award. Both the Advanced Loan and Consideration have been paid by cash from the Company's internal resources.

As stated in the Letter from the Board, LMG did not pay any consideration for the acquisition of 100% equity interest of the Borrower as the acquisition was carried out pursuant to the SASAC Allocation. The original cost of LMG's acquisition of Huqi Mining was RMB180 million (equivalent to approximately HK$205.2 million) pursuant to the Huqi Transfer Agreement. Notwithstanding the fact that the Consideration of RMB276.3 million (equivalent to approximately HK$315.0 million) exceeds the cost incurred by LMG for the acquisition of the Borrower and Huqi Mining, in assessing the fairness of the Consideration under the Acquisition, we have considered factors including the strategic benefits the of the Acquisition as well as the independent valuation as set out in the letter.

In assessing the fairness and reasonableness of the Consideration, the Company has appointed Grant Sherman, an independent valuer (the "Valuer") to value the companies under the Acquisition. Details of such valuation are set out in Appendix II to the Circular.

6.2.1 Evaluation of Consideration

For the purpose of the valuation, the Valuer has conducted site visits and discussions with the management of the Company. The Valuer reviewed the Technical Report and the historical financial information of the companies under the Acquisition, except Jinhanyuan which was unavailable. The Valuer also consulted other public information related to the business of the companies under the Acquisition and referred to other information provided by the management of the Company. The key issues considered by the Valuer in the valuation included, but were not limited to, the following:

— identification and recognition of the companies under the Acquisition;

— the operating results/situation of the companies under the Acquisition;

— total reserves of the Shangfanggou Mine;

— assets, liabilities, equity and financial condition of the companies under the Acquisition;

— extent, utility and capacity of the facilities, properties and mining equipment utilized by the companies under the Acquisition;

— past, current & forecasted operating results of other similar mines in the world; and

— the business risks to which the companies under the Acquisition are exposed.

We have discussed with the Valuer regarding, among other things, the methodology adopted for selecting comparables for the purpose of assessing the fair value of the Acquisition, particulars of which are contained in Appendix II to the Circular. The Valuer has identified eight companies that are engaged in the similar business as Luoyang Fuchuan. Out of these eight companies, the Valuer has selected three comparables according to attributes including, but not limited to, molybdenum reserves, products, markets and earnings for comparison. Based on our discussions with the Valuer in terms of their methodology and their selection process, we concur with the Valuer that the comparables selected are appropriate.

We have also discussed with the Valuer and understand that the Valuer has considered three different generally accepted valuation methods, namely income approach, market approach and cost approach in arriving at the fair value of the Acquisition. The Valuer has adopted two different valuation methodologies for Luoyang Fuchuan and the rest of companies included in the Acquisition.

For Luoyang Fuchuan, the Valuer adopts the market approach in arriving at the fair value. Although Luoyang Fuchuan was not in operation as at the date of valuation (e.g. 31 March 2010), the shutdown was temporary and operation was partly resumed in June 2010. Therefore, Luoyang Fuchuan was valued on the premise of continued use. The cost approach is deemed inappropriate by the Valuer as it measures the amount required to replace or reproduce the asset but does not consider the economic benefits which can be achieved by Luoyang Fuchuan as a continuing business. As the mining plan and feasibility study of the Shangfanggou Mine are not yet available, the income approach is also deemed inappropriate as it is based on a reasonable and justifiable financial forecast. The market approach is considered to be preferable by the Valuer as it relies on data from actual market transactions or market players. In applying the market approach to assess the fair value of Luoyang Fuchuan, the Valuer has taken into consideration, among other factors, the similarity of molybdenum reserve sizes and principal markets served in assigning the relative weights for the three comparable companies in the calculation of market multiples which are used to value Luoyang Fuchuan.

For evaluating the fair value of the companies under the Acquisition, other than Luoyang Fuchuan, the cost approach is adopted. These companies were either holding companies or not in operation, and as such, the income approach is inappropriate in the opinion of the Valuer. The Valuer also deems market approach to be unsuitable as it relies heavily on data from public trading comparable companies that are revenue generating and profit making which are different from the Borrower, Huqi Mining and the other companies (except Luoyang Fuchuan) under the Acquisition.

As such Valuer has adopted the net asset value as the fair value of the companies under the Acquisition other than Luoyang Fuchuan. The Valuer considers that the book values of the current assets, current and long term liabilities reasonably represent their fair value. Fixed assets are adjusted to fair value as at the date of valuation (i.e. 31 March 2010) and intangible assets are disregarded as the income stream solely attributable is uncertain. The Advanced Loan has been included as a liability of the Borrower.

As at the Latest Practicable Date, the Company was still collecting financial information regarding Jinhanyuan which is a subsidiary of Luoyang Fuchuan. A legal opinion has been issued by the Company's PRC legal advisers that Jinhanyuan is a limited liability company. The Company also understands that Luoyang Fuchuan and its subsidiaries have not guaranteed any of the liabilities of Jinhanyuan. Taking into consideration the PRC legal advisers' opinion and the Company's understanding, the Valuer takes a conservative approach and states the fair value for the 70% equity interest in Jinhanyuan as zero.

Based on our discussion with the Valuer, we consider that the market approach for Luoyang Fuchuan and cost approach for the rest of the companies under the Acquisition are appropriate for the valuation of the Acquisition.

Through the Borrower's 50% equity interest in Xuzhou Huanyu, which holds 90% equity interest in Luoyang Fuchuan, and the 10% equity interest in Luoyang Fuchuan held by Huqi Mining, the Company holds 55% effective equity interest in the Shangfanggou Mine on top of other molybdenum process facilities under Luoyang Fuchuan and its subsidiaries. The Advanced Loan is included as a liability of the Borrower's books. After taking into consideration the 8% dividend payment to which the Luanchuan County Government is entitled and the adjusted net asset value of other companies under the Acquisition, which is adjusted for fixed assets' fair value and includes the Advanced Loan as a liability, the fair value of the Acquisition as assessed by the Valuer of RMB285 million (equivalent to approximately RMB324.9 million) represents an excess of RMB8.7 million (equivalent to approximately of HK$9.9 million), or 2.8%, over the Consideration of RMB276.3 million (equivalent to approximately HK$315.0 million).

Having considered all of the above, we are of the opinion that the valuation of the Acquisition as opined by the Valuer provides a valid benchmark for assessing the fairness and reasonableness of the Consideration. On the basis that the fair value as assessed by the Valuer slightly exceeds the Consideration, we are of the opinion that the Consideration is fair and reasonable as the Independent Shareholders are concerned.

7. Possible financial effect as a result of the Acquisition

7.1 Accounting effect

Following completion of the Acquisition, the Borrower, Qixing Mining and Huqi Mining will become subsidiaries of the Company and their financials will be consolidated into the Group's financial statements. The assets and liabilities of the Group will increase as a result of the Acquisition and any profits/losses of these companies will be included in the Company's results.

However, since the Borrower only has 50% equity interest in Xuzhou Huanyu which holds 90% equity interest in Luoyang Fuchuan, despite Huqi Mining holding the other 10% equity interest in Luoyang Fuchuan, the Company does not exert absolute control on Luoyang Fuchuan. Therefore, Xuzhou Huanyu, Luoyang Fuchuan, and its fellow subsidiaries, will not be consolidated into the financial statements of the Company after the Acquisition. These companies will be accounted for as jointly controlled entities in the Group's financial statements and the results, assets and liabilities of these companies will be incorporated in the consolidated financial statements of the Company using the equity method of accounting as set out in the interim report of the Company for the six months ended 30 June 2010.

As stated in the 2009 Annual Report, part of the Advanced Loan of RMB1,050 million (equivalent to approximately HK$1,197 million) to the Borrower was a loan receivable in the consolidated balance sheet of the Group as at 31 December 2009. As the Borrower's financials will be consolidated into the financial statements of the Group, the Advanced Loan, which is a loan receivable on the books of the Company and a loan payable for the Borrower, will be offset in the consolidated financial statements of the Group as a whole.

7.2 Cash position

Based on the Company's audited consolidated balance sheet as at 31 December 2009 set out in the 2009 Annual Report, the Group had cash and cash equivalents of approximately RMB2,775.2 million as at 31 December 2009. Out of the Advanced Loan of RMB1,105 million (equivalent to approximately HK$1,259.7 million), RMB1,050 million (equivalent to approximately HK$1,197 million) had already been advanced to the Borrower before 31 December 2009. Therefore, the Company had to pay the remainder of the Loan of RMB55 million (equivalent to approximately HK$62.7 million) and the Consideration of RMB276.3 million (equivalent to approximately HK$315.0 million). As stated in the Letter from the Board, the Consideration has already been paid out of the Company's internal resources.

V. RECOMMENDATION

In summary, we have considered: (i) the background of the Advanced Loan as detailed in this letter and that the Directors' view that the Acquisition represents the only practical way to recover value due under the Advanced Loan; (ii) the strategic benefits the Acquisition provides to the Company; (iii) the prospects of the molybdenum mining industry; (vi) the value of the identifiable assets and liabilities included in the Acquisition as assessed by the Valuer which slightly exceeds the Consideration; and (v) the financial effects of the Acquisition on the Group as a whole.

Having considered the principal factors and reasons as set out above, we are of the opinion that the Acquisition is in the interests of the Company and the Shareholders as a whole and the terms of the Acquisition and the transactions contemplated thereunder are fair and reasonable. Accordingly, we advise the Independent Board Committee to recommend the Independent Shareholders to vote in favour of the relevant resolution to confirm, approve and ratify the Acquisition at the EGM.

Yours faithfully
For and on behalf of
Access Capital Limited

Ambrose Lam	**Jimmy Chung**
Principal Director	*Principal Director*

The following is the text of the report dated 14 September 2010 prepared for the purpose of incorporation in this circular received from Wardrop in connection with the Shangfanggou Mine.

TABLE OF CONTENTS

1.0 **SUMMARY** 46
- 1.1 INTRODUCTION 46
- 1.2 LOCATION AND INFRASTRUCTURE 47
- 1.3 GEOLOGY 47
- 1.4 MINERAL RESERVE 48
- 1.5 MINING 49
  - 1.5.1 MINING LICENSE AND OWNERSHIP 49
  - 1.5.2 CURRENT MINE STATUS 49
  - 1.5.3 PRODUCTION CAPACITY AND MINE LIFE 50
  - 1.5.4 MINING CONDITIONS 50
  - 1.5.5 MINE DEVELOPMENT POTENTIAL 50
- 1.6 METALLURGY AND PROCESS 50
- 1.7 CAPITAL COST AND OPERATING COST 53
- 1.8 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS 53
- 1.9 CONCLUSIONS AND RECOMMENDATIONS 54
  - 1.9.1 GEOLOGY AND MINERAL RESOURCES 54
  - 1.9.2 RESERVES 54
  - 1.9.3 MINING 55
  - 1.9.4 PROCESS 55
  - 1.9.5 ENVIRONMENTAL 56

2.0 **INTRODUCTION AND SCOPE OF REPORT** 57
- 2.1 INTRODUCTION 57
- 2.2 TERMS OF REFERENCE 58
- 2.3 WARDROP TECHNICAL TEAM 58
- 2.4 STATEMENT OF WARDROP INDEPENDENCE 59
- 2.5 RELIANCE ON OTHER EXPERTS 59

3.0 **PROGRAM OBJECTIVES AND WORK PROGRAM** 59
- 3.1 ASSESSMENT OBJECTIVE 59
- 3.2 ASSESSMENT SCOPE AND METHODOLOGY 60

4.0 **PROPERTY DESCRIPTION, LOCATION, ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY** 60
4.1 PROPERTY DESCRIPTION AND LOCATION 60
4.2 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY 62

5.0 **HISTORY** 63

6.0 **GEOLOGY** 64
6.1 REGIONAL GEOLOGY 64
6.2 PROPERTY GEOLOGY 66

7.0 **DEPOSIT TYPES** 67

8.0 **MINERALIZATION** 68

9.0 **EXPLORATION** 69

10.0 **MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES** 70
10.1 MINERAL RESOURCE EVALUATION 70
10.1.1 1982 RESOURCE ESTIMATE 70
10.1.2 2004 RESOURCE ESTIMATE 70
10.1.3 2005 BLOCK MODEL 71
10.1.4 WARDROP RE-CALCULATION 71
10.2 MINERAL RESERVE EVALUATION 74
10.2.1 MINERAL RESERVE STATEMENT 75
10.2.2 MINERAL RESERVE IN 2005 PRELIMINARY DESIGN 75
10.2.3 MINERAL RESERVE EVALUATION 77

11.0 **MINING ASSESSMENT** 79
11.1 INTRODUCTION 79
11.2 MINING LICENSE AND PRODUCTION SAFETY PERMIT 80
11.3 MINING CONDITIONS 81
11.3.1 OREBODY OCCURRENCE 81
11.3.2 HYDROGEOLOGY 82
11.3.3 GEOTECHNICAL EVALUATION 84
11.4 MINING DESIGN OUTLINE OF THE 2005 PRELIMINARY DESIGN 86
11.4.1 MINING METHOD 86
11.4.2 PIT OPTIMIZATION 87
11.4.3 PIT DESIGN BY PHASE 90
11.4.4 PRODUCTION CAPACITY 91
11.4.5 MINE LIFE 91
11.4.6 PRODUCTION SCHEDULING 92
11.4.7 MINING EQUIPMENT 93
11.4.8 BLASTING 94
11.4.9 DEWATERING 94
11.5 CURRENT MINE STATUS 95
11.5.1 OPERATING STATUS 95
11.5.2 PRODUCTION CAPACITY 97
11.5.3 MINE LIFE 98
11.5.4 MAJOR MINING EQUIPMENT 98
11.5.5 OBSERVATIONS 98
11.5.6 OTHER MINES NEARBY 99

12.0 **METALLURGICAL PROCESS ASSESSMENT** 101
12.1 INTRODUCTION 101
12.2 METALLURGICAL TESTWORK 101
12.2.1 PREVIOUS TESTWORK (BEFORE 2007) 102
12.2.2 2007 TESTWORK 103
12.3 PROCESS 107
12.3.1 PROCESS PLANTS AND MILL FEED 107
12.3.2 PROCESS FLOWSHEET 111
12.3.3 FLOTATION REAGENTS 116
12.3.4 TAILING HANDLING 116
12.3.5 PROCESS EQUIPMENT 117
12.3.6 METALLURGICAL PERFORMANCE 118
12.4 ADJACENT PROCESS OPERATIONS 121

13.0 **CAPITAL AND OPERATING COST ESTIMATE** 122
13.1 CAPITAL COST 122
13.2 OPERATING COSTS 122
13.2.1 MINING 122
13.2.2 PROCESS 123
13.2.3 GENERAL AND ADMINISTRATION 125

14.0 **ENVIRONMENTAL REVIEW** 125
14.1 ENVIRONMENTAL REVIEW OBJECTIVE 125
14.2 ENVIRONMENTAL REVIEW SCOPE AND METHODOLOGY 125
14.3 APPLICABLE ENVIRONMENTAL APPROVALS AND PERMITS 126
14.4 HISTORICAL ENVIRONMENTAL COMPLIANCE 127
14.5 MAIN MINING COMPONENTS 127
14.5.1 OPEN PIT 127
14.5.2 WASTE ROCK DUMP 131
14.5.3 TRANSPORTATION OF VARIOUS MATERIALS 133
14.5.4 PROCESS PLANTS 135
14.5.5 TAILING FACILITIES 137

15.0 **SOCIAL IMPACT ASSESSMENT** 141
15.1 SOCIAL AND COMMUNITY INTERACTION 141
15.1.1 RELATIONSHIP WITH LOCAL COMMUNITIES 142
15.2 RELATIONSHIP WITH LOCAL GOVERNMENT 142
15.2.1 LAND OWNERSHIP 143

16.0 **RISK ANALYSIS** 143
16.1 INTRODUCTION 143
16.2 GEOLOGY 144
16.3 MINING 144
16.4 PROCESS 144
16.5 ENVIRONMENTAL 147

17.0 **CONCLUSIONS AND RECOMMENDATIONS** 148
17.1 INTRODUCTION 148
17.2 GEOLOGY AND MINERAL RESOURCES 148
17.3 RESERVE 148
17.4 MINING 149
17.5 PROCESS 150
17.6 ENVIRONMENTAL 151

18.0 **REFERENCES** 152

LIST OF TABLES

Table 1.1	Mineral Reserve	49
Table 4.1	Shangfanggou Mining Licence Boundary Coordinates	61
Table 10.1	Shangfanggou Resource Tabulation (Wardrop, 2010)	73
Table 10.2	Mineral Reserve Statement	75
Table 10.3	Mineral Reserve Estimated in Preliminary Design of 2005	76
Table 10.4	Mineral Reserve and Other Materials	79
Table 11.1	Key Permit Information	80
Table 11.2	Normal and Maximum Discharge Above 1154 masl	84
Table 11.3	Typical Rock Physical and Mechanic Parameters	85
Table 11.4	Slope Angles and Safety Factors	86
Table 11.5	Production Schedule for Waste Rocks and Ore	93
Table 11.6	List of Shangfanggou Major Mining Equipment	94
Table 11.7	Monthly Production Capacity	97
Table 11.8	Daily Production Capacity	97
Table 11.9	Major Mining Equipment	98
Table 11.10	Inventory of Major Mining Equipment	100
Table 12.1	Test Results Before 2007	102
Table 12.2	Chemical Analysis Results - Pilot Plant Test Sample, 2007	104
Table 12.3	Main Minerals of Pilot Plant Test Sample	105
Table 12.4	Main Process Equipment	117
Table 12.5	Molybdenum Flotation Production Data - Primary Flotation	119
Table 12.6	Molybdenum Flotation Production Data - Cleaner Flotation	120
Table 12.7	Magnetite Concentrate Production	121
Table 13.1	Mining Operating Cost Breakdown - 2008 and 2009	122
Table 13.2	Operating Costs including Mill Feed Costs - Jiaoshuwa, Sanchuan, and Heyu Cleaner Plants	123
Table 14.1	List of Environmental Permits for the Shangfanggou Mine	127
Table 16.1	Risk Assessment - Geological	144
Table 16.2	Risk Assessment - Mining	145
Table 16.3	Risk Assessment - Process	146
Table 16.4	Risk Assessment - Environmental	147

LIST OF FIGURES

Figure 4.1 Shangfanggou Property Location 61
Figure 6.1 Shangfanggou Regional Geology 65
Figure 6.2 Shangfanggou Property Location 66
Figure 6.3 Shangfanggou Property Geology 67
Figure 10.1 Ore Dilution and Loss Factors 78
Figure 11.1 Perspective View of the Shangfanggou Deposit and Ultimate Pit 80
Figure 11.2 Plan View of the Shangfanggou Ultimate Pit and Licence Boundaries 81
Figure 11.3 3D View of Orebody Occurrence 82
Figure 11.4 Relationship between the Main Zone and the Ultimate Pit 89
Figure 11.5 Current Pit Status - Whole Pit 96
Figure 11.6 Current Pit Status - West 96
Figure 11.7 Current Pit Status - East 97
Figure 11.8 Current Status in the Area of Sandaozhuang Mine 99
Figure 12.1 Process Rates of Process Plants 110
Figure 12.2 Process Plant and Pit Location 110
Figure 12.3 Pre-concentration Flowsheet 113
Figure 12.4 Low Grade Molybdenum Concentrates 115

GLOSSARY

ABBREVIATIONS AND ACRONYMS

acid rock drainage	ARD
ammonium nitrate fuel oil	ANFO
Beijing General Research Institute of Mining and Metallurgy	BGRIMM
Changchun Gold Design Institute	CCGDI
Changsha Engineering and Research Institute of Non-Ferrous Metallurgy	CNIF
China Molybdenum Co. Ltd.	China Moly
Council for Scientific and Industrial Research	CSIR
Dollar (United States)	USD
Environmental Impact Assessment	EIA
Environmental Protection and Management Plan	EPMP
Environmental Protection Bureau	EPB
General and Administration	G&A
Henan Bangtai He Li Management Consulting Ltd.	HBMC Ltd.
Henan Coal Chemical Industry Group Co., Ltd.	HNCC
Henan Province Environmental Protection Bureau	HPEPB
internal rate of return	IRR

Jiaoshuwa plant	JSW
Joint Ore Reserves Committee	JORC
Luanchuan Huqi Mining Company Limited	Huqi Mining
Luanchuan Tiangang Mining Ltd	Tiangang
Luoyang City Environmental Protection Bureau	LCEPB
Luoyang City Water Resource Bureau	LCWRB
Luoyang Construction Investment and Mining Co., Ltd.	the Borrower
Luoyang Fuchuan Mining Co. Ltd.	Luoyang Fuchuan
magnesium oxide	MgO
magnetite iron	Fe(mag)
magnetite	Fe_3O_4
molybdenite	MoS_2
Mudu Mining Ltd.	Mudu Mining
net present value	NPV
oxide molybdenum mineralization	OM
Renminbi	RMB
run-of-mine	ROM
Sanchuan plant	SC
scheelite	$CaWO_4$
Shangfanggou Molybdenum Property	Shangfanggou Property, or the Property
sulphide molybdenum mineralization	SM
tailing storage facility	TSF
the Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited (HKEx)	the Listing Rules
the Stock Exchange of Hong Kong Limited	HKEx
total iron	TFe
tungsten-molybdenum mineralization	W-Mo
universal hardness coefficient	f coefficient
Wardrop Engineering Inc.	Wardrop
Xuzhou Huanyu Molybdenum Co., Ltd.	Xuzhou Huanyu
Zhengzhou Institute of Multi-purpose Utilization of Mineral Resources	IMU

UNITS OF MEASURE

Above mean sea level	amsl
Acre	ac
Ampere	A
Annum (year)	a
Billion	B
Billion tonnes	Bt
Billion years ago	Ga
British thermal unit	BTU
Centimetre	cm
Cubic centimetre	cm^3
Cubic feet per minute	cfm
Cubic feet per second	ft^3/s
Cubic foot	ft^3
Cubic inch	in^3
Cubic metre	m^3
Cubic yard	yd^3
Coefficients of Variation	CVs
Day	d
Days per week	d/wk
Days per year (annum)	d/a
Dead weight tonnes	DWT
Decibel adjusted	dBa
Decibel	dB
Degree	°
Degrees Celsius	°C
Diameter	ø
Dollar (United States)	USD
Dollar (Renminbi)	RMB
Dry metric ton	dmt
Foot	ft
Gallon	gal
Gallons per minute (US)	gpm
Gigajoule	GJ
Gigapascal	GPa
Gigawatt	GW
Gram	g
Grams per litre	g/L
Grams per tonne	g/t

Greater than	>
Hectare (10,000 m^2)	ha
Hertz	Hz
Horsepower	hp
Hour	h
Hours per day	h/d
Hours per week	h/wk
Hours per year	h/a
Inch	”
Kilo (thousand)	k
Kilogram	kg
Kilograms per cubic metre	kg/m^3
Kilograms per hour	kg/h
Kilograms per square metre	kg/m^2
Kilometre	km
Kilometres per hour	km/h
Kilopascal	kPa
Kilotonne	kt
Kilovolt	kV
Kilovolt-ampere	kVA
Kilovolts	kV
Kilowatt	kW
Kilowatt hour	kWh
Kilowatt hours per tonne (metric ton)	kWh/t
Kilowatt hours per year	kWh/a
Less than	<
Litre	L
Litres per minute	L/m
Litres per second per metre	L/s·m
Megabytes per second	Mb/s
Megapascal	MPa
Megavolt-ampere	MVA
Megawatt	MW
Metre	m
Metres above sea level	masl
Metres Baltic sea level	mbsl
Metres per minute	m/min
Metres per second	m/s
Metric ton (tonne)	t
Microns	μm

Milligram	mg
Milligrams per litre	mg/L
Millilitre	mL
Millimetre	mm
Million	M
Million bank cubic metres	Mbm^3
Million bank cubic metres per annum	Mbm^3/a
Million tonnes	Mt
Minute (plane angle)	’
Minute (time)	min
Month	mo
Ounce	oz
Pascal	Pa
Centipoise	mPa·s
Parts per million	ppm
Parts per billion	ppb
Percent	%
Pound(s)	lb
Pounds per square inch	psi
Revolutions per minute	rpm
Second (plane angle)	”
Second (time)	s
Specific gravity	SG
Square centimetre	cm^2
Square foot	ft^2
Square inch	in^2
Square kilometre	km^2
Square metre	m^2
Thousand tonnes	kt
Three Dimensional	3D
Three Dimensional Model	3DM
Tonne (1,000 kg)	t
Tonnes per day	t/d
Tonnes per hour	t/h
Tonnes per year	t/a
Tonnes seconds per hour metre cubed	ts/hm^3
Volt	V
Week	wk
Weight/weight	w/w
Wet metric ton	wmt
Year (annum)	a

1.0 SUMMARY

1.1 INTRODUCTION

The Shangfanggou Molybdenum Property (Shangfanggou Property or the Property) is owned by Luoyang Fuchuan Mining Co. Ltd. (Luoyang Fuchuan). Luoyang Fuchuan is owned by Xuzhou Huanyu Molybdenum Co., Ltd. (Xuzhou Huanyu) and Luanchuan Huqi Mining Company Ltd. (Huqi Mining) as to 90% and 10%, respectively. Xuzhou Huanyu is owned by Luoyang Construction Investment and Mining Co., Ltd. (the Borrower) as to 50%. Both the Borrower and Huqi Mining are wholly-owned subsidiaries of China Molybdenum Co. Ltd. (China Moly).

The principal components of the Property are:

- an open-pit molybdenum-iron-tungsten mine with current resources of about 469 Mt at an average grade of 0.14% Mo
- two wholly-owned primary process plants (Jiaoshuwa and Sanchuan plants; 2,200 t/d total nominal capacity)
- one wholly-owned cleaner plant (Heyu cleaner plant; 30 t/d nominal capacity)
- majority interest in 4 other primary process plants with an aggregate nominal capacity of about 3,600 t/d (Hualong, Hexinyuan, Jinfeng and Jinhanyuan plants)
- majority interest in one hydrometallurgical plant (Fuchun hydrometallurgical plant, to process the tailing from Heyu cleaner plant).

China Moly has retained Wardrop Engineering Inc. (Wardrop) to review the significant components of the Property and prepare an Independent Technical Report that describes the results of the review. This Technical Report is to be included as part of an information circular that will be distributed to shareholders of China Moly as part of the acquisition process of the Property.

This Independent Technical Report has been written in compliance with Chapter 18 of the Listing Rules of the Stock Exchange of Hong Kong Limited, (HKEx) (the "Listing Rules").

This report is based upon information China Moly provided to Wardrop, as well as observations and information obtained by Wardrop during the site visit to the Property. Information obtained by Wardrop is referenced within this report, and is listed in Section 18.0.

1.2 LOCATION AND INFRASTRUCTURE

The property is located in Shangfang Village, Lengshui Township, Luanchuan County, Henan Province, China. The Mining Licence (No. 1000000620134) is 1.2073 km^2 in area and the mine is located about 30 km by an all-weather road from the county capital of Luanchuan and about 235 km from Luoyang, the nearest major city. The coordinates of the centre of the mining licence are approximately 111°20' East and 33°54' North.

The pit and the process plant sites are serviced by well developed infrastructure, including roads, power supply and communications.

1.3 GEOLOGY

The Shangfanggou property is located in the eastern Qinling Mountains, which mark the collisional boundary between the North China Block to the north and the Yangtze Craton to the south. This tectonic belt is the locus of many significant mineral deposits, including the East Qin Ling - Dabie Molybdenum Belt that contains about half the known molybdenum resources in China. Shangfanggou is a large tonnage primary molybdenum deposit with comparable grades to operating mines.

The Property is located within an area commonly referred to as the Nannihu ore district. This area contains three principal molybdenum deposits: Shangfanggou, Nannihu and Sandaozhuang, which are separated by a distance of about 1 km. The area is underlain by the Luanchuan Group of Neoproterozoic age, which here is subdivided into dolomitic marble of the Meiyaogou formation, marble and schist of the Nannihu formation, metasandstone, and biotite-bearing marble of the Sanchuan formation. Quartzite, dolomitic marble, and intercalated schist of the Mesoproterozoic-age Guandaokou Group are also present.

The Shangfanggou deposit contains molybdenum and tungsten mineralization that are present primarily as molybdenite (MoS2) and scheelite (CaWO4). The main zone of mineralization is largely contained within skarnified and hornfelsed carbonate and clastic sedimentary rocks of the Meiyaogou group and is conformable with the enclosing strata. The deposit strikes about 290°, dips about 60° to the southwest, is about 1,000 m in length, varies in width from about 400 m to 750 m, and varies in thickness from about 100 m to 500 m.

In 2005, the Changsha Engineering and Research Institute of Non-Ferrous Metallurgy (CNIF) prepared a block model resource estimate of the deposit. At a 0.03% Mo cut-off, this estimate amounted to about 480 Mt at an average grade of 0.131% Mo. Although the block model and the underlying drill database were made available to Wardrop, the methodology of the estimate and the assumptions used to produce the estimate are not available and therefore could not be reviewed by Wardrop. Also, this estimate did not include any classification of the resource so that it was not possible to determine from the block model, what portion of the resource qualified as the basis of a reserve estimate.

Therefore, Wardrop used the dataset to re-estimate the resource and, at the same time, carried out a classification of the calculated resource. This procedure resulted in the following tabulation of the total resource: at a 0.03% Mo cut-off, the resource contains about 469 Mt at an average grade of 0.140% Mo. This global resource was categorized as:

- Measured - 17 Mt at 0.17% Mo
- Indicated - 291 Mt at 0.14% Mo
- Inferred - 161 Mt at 0.13% Mo.

In comparison with CNIF, the Wardrop estimate resulted in approximately 2% more resource tonnage, approximately 6% higher molybdenum grade, and approximately 6% more contained metal.

1.4 MINERAL RESERVE

CNIF made a mineral reserve estimate in the preliminary design prepared in 2005 consistent with Chinese standards. The preliminary design contained comprehensive information that is more detailed than that of a prefeasibility study. The total tonnage of the estimated mineral reserve was 61,888 kt within the ultimate pit. It is Wardrop's opinion that the mineral reserve is reliable on the basis of Chinese standards. However, the estimate does not meet the Joint Ore Reserves Committee (JORC) standard because the preliminary design did not consider mining loss, mining dilution, and reserve classification.

Wardrop estimated the mineral reserve in this technical report according to JORC standards and used the following procedures to carry out the mineral reserve evaluation:

- reviewed CNIF's 2005 preliminary design
- validated geological block model using borehole information supplied by the owner
- built category block model based on geological confidence levels
- manipulated a Mo dilution grade model for reserve evaluation after considering ore loss and dilution factors
- estimated the mineral reserve using the commercial mining plan software Gemcom GEMS™ 6.2.3.

The JORC-compliant mineral reserves within the ultimate pit as estimated by Wardrop are summarized in Table 1.1.

Table 1.1 Mineral Reserve

Reserve	Proven	Probable	Total
Tonnage *(kt)*	6,336	41,485	47,821
Diluted Mo Grade *(%)*	0.194	0.170	0.173

The tonnage of Wardrop's reserve estimation is 22.7% lower than that of CNIF's reserve estimation, due to the use of different estimation standards.

1.5 MINING

1.5.1 MINING LICENSE AND OWNERSHIP

The Shangfanggou deposit has been mined for more than 20 years. Luoyang Fuchuan, a private company, holds the sole valid mining license for the Shangfanggou Mine. On 22 April 2010, China Moly acquired 100% equity interest in the Borrower, which in turn holds 50% equity interest in Xuzhou Huanyu. On May 5, 2010, China Moly acquired 100% equity interest in Huqi Mining. Xuzhou Huanyu and Huqi Mining holds 90% equity interest and 10% equity interest in Luoyang Fuchuan, respectively.

1.5.2 CURRENT MINE STATUS

The Shangfanggou mining operation was officially suspended in January 2010 because of the change in ownership of Luoyang Fuchuan and was partly resumed in June 2010. As indicated by Luoyang Fuchuan during the site visit, the new shareholders are planning to resume the open pit mining operation after reviewing up-to-date mining conditions and establishing a proper mining design.

During the site visit, Wardrop observed that mining activities including the operations by Luanchuan Tiangang Mining Ltd. (Tiangang) were being conducted in the east part of the Shangfanggou pit. Wardrop understands that the situation is attributable to the decisions that were made in the past but that must be reasonably resolved before further exploitation of the Shangfanggou Mine can proceed in a rational manner.

1.5.3 PRODUCTION CAPACITY AND MINE LIFE

Wardrop estimated that total ore production capacity has reached approximately 10,000 t/d in the Shangfanggou pit; the remaining ore reserve is 47,821 kt. Mine life will be approximately 15 years within the current ultimate pit.

1.5.4 MINING CONDITIONS

Mining conditions in the Shangfanggou Mine are favourable; the mine is comprised of a large-scale (veinlet and disseminated) molybdenum deposit, which is suitable for extraction by open pit mining. The wall rock of the open pit is stable. There was no water in the pit at the time of the site visit, which may prove that underground water inflow is negligible.

1.5.5 MINE DEVELOPMENT POTENTIAL

The estimated mineral reserve is restricted to the limit of the ultimate pit, which represents only 15.5% of the estimated Measured and Indicated resources in the Shangfanggou deposit. Therefore, Wardrop believes that the current ultimate pit is a temporary one, and recommends that Luoyang Fuchuan retain an engineering firm to conduct further pit optimization using internationally acceptable software (such as Whittle™ 4.2), in order to establish a feasible ultimate pit limit within the mining license. It can reasonably be expected that the reserve may be increased as production capacity and mine life are mainly related to mineral resource, equipment size, mine development and mining method, and are selected through comprehensive technical and economic comparisons. The expected production capacity could possibly range from 20,000 to 30,000 t/d or higher.

Based on information supplied by the owner, in the last few years, Luoyang Fuchuan did not fully follow the production schedule recommended in the 2005 preliminary design. The stripping ratio is unbalanced and the bench height is too high, especially in the east part of the pit. This situation may cause high ore dilution, high operating cost and safety concerns. Wardrop recommends that Luoyang Fuchuan use the successful experience of Sandaozhuang mine, one of China Moly's mine, to build and expand the Shangfanggou Mine into a highly efficient, safe and modern mine.

1.6 METALLURGY AND PROCESS

During the site visit, Wardrop visited the plants that processed the ore from the Shangfanggou Mine, reviewed the available information, and communicated with Luoyang Fuchuan technical personnel.

Several metallurgical testing programs have been conducted on mineral samples from the Shangfanggou deposit. The key testwork available for review was conducted in 2007 by Zhengzhou Institute of Multi-Purpose Utilization of Mineral Resources (IMU). This testwork was conducted on a pilot plant scale. As reported, the mineralization is refractory to conventional processes and the mineral components are complex. The molybdenum minerals are finely disseminated in the host minerals and, more importantly, the ore contains a significant amount of hydrophobic silicates with magnesium, one of which is talc. The hydrophobic silicates have a similar floatability as molybdenite, the main molybdenum mineral. Because of presence of talc and finely disseminated molybdenite, the ore from the deposit was considered to be difficult to process. However, the bench scale tests conducted before 2007 appeared to produce better metallurgical performance. Further testwork is recommended to improve the metallurgical performance.

At the time of the Wardrop site visit, none of the process plants were in operation. As reported by Luoyang Fuchuan, the plant operation had been suspended for almost five months due to the change in ownership of Luoyang Fuchuan.

The process plants visited include:

- six primary process plants (Jiaoshuwa, Sanchuan, Hexinyuan, Hualong, Jinfeng, and Jinhanyuan), directly processing ore from the pit
- the Heyu cleaner plant, processing the molybdenum concentrates from Jiaoshuwa plant and Sanchuan plant
- the Fuchun hydrometallurgical plant, processing the tailing from the Heyu cleaner plant.

In general, all the primary process plants used similar conventional processes to recover molybdenum and iron. The total process capacity of these primary plants is estimated at 5,800 t/d. The primary process plants produced low grade molybdenum concentrates containing approximately 12% to 16% Mo. Jinhanyuan plant was the exception and produced a high molybdenum concentrate with approximately 40% to 45% Mo. Most of the plants used magnetic separation to produce a low grade magnetite concentrate (40% to 50% Fe).

Heyu cleaner plant upgraded the low grade molybdenum concentrates (12% to 16% Mo) from Jiaoshuwa plant and Sanchuan plant to approximately 40% to 45% Mo. The total molybdenum recovery including the primary concentration and the cleaner concentration was approximately 60%. The process included:

- two or three stages of crushing in closed circuit with screening to reduce the run-of-mine (ROM) to less than 15 mm to 20 mm

- primary grinding to 60% to 70% passing 74 μm
- rougher flotation, multi-stages of scavenger flotation and multi-stages of cleaner flotation to produce a low grade molybdenum concentrate (12% to 16% Mo)
- magnetic separation to recover magnetite from the flotation tailing or prior to the molybdenum flotation
- regrinding the low grade molybdenum concentrate by stirred mills to 90% passing 325 mesh (43 μm)
- refloating the reground concentrate following by multi-stages of cleaner flotation and scavenger flotation to produce the final concentrate with approximately 40% Mo
- molybdenum concentrate dewatering by pressure filtration and drying
- rougher flotation being pumped to the tailing storage facilities (TSFs).

The reagents used in these flotation plants for molybdenum recovery were very similar. The main reagents included:

- molybdenum collector: diesel or gasoline
- talc and sulfide mineral suppressants: sodium silicate (water glass), hydrated potassium aluminum sulfate (alum)
- frother: No.2 oil (mainly terpene alcohol)
- pH regulator: lime (mainly for tailing settlement).

The process equipment used in all the process plants is similar but differs in size from plant to plant. Generally all the equipment is small but in good working condition.

The process rates and the locations of the process plants are not optimal for the best economic and metallurgical performances. The current process plant capacity cannot meet the mining capacity. Although some similar process plants are available in Luanchuan County to process ore from the pit, it is difficult to ensure optimum metallurgical performance.

It is recommended to investigate the feasibility of building a central plant with energy efficient and metallurgical efficient equipment to process the ore. The plant should be located close to the pit. It is expected that the new plant should produce better metallurgical performances and substantially reduce process and tailing handling operating costs.

The recovery of scheelite from the mineralization should be further studied. Also the rhenium recovery from the molybdenum concentrate should add additional value for the project.

The integration of the Shangfanggou deposit with the China Moly mineral resource is expected to improve the economic efficiency and benefit in developing the Shangfanggou deposit because of China Moly's strong technical strength, and advanced mining and process facilities.

1.7 CAPITAL COST AND OPERATING COST

According to monthly operating cost reports supplied by Luoyang Fuchuan, the mining operating cost in 2009 was RMB 42.66/t ore mined or USD 6.25/t ore mined (based on an exchange rate of USD 1:RMB 6.83).

Excluding the ore cost and the mill feed unloading charge, the average process operating cost was RMB 87.11/t milled or USD 12.75/t milled for the 2009 operation.

As reported, the annual general and administration (G&A) costs for Luoyang Fuchuan were RMB 60,047,000 (USD 8,792,000) in 2008 and RMB 55,026,000 (USD 8,057,000) in 2009.

No capital costs were reviewed for this study. However, China Moly indicated that there is the potential to optimize the pit operation, upgrade mining equipment, and build a central process plant. No detailed plans were available at the time of the site visit.

1.8 ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

The primary objective of the environmental review of the Shangfanggou Mine was to identify potential environmental liabilities and risks of the mining operation and the related facilities, and review the adequacy of existing management and mitigation measures. The environmental assessment focused on providing relevant and material information that meet the requirements of Chapter 18 of the Listing Rules.

The methodology for performing the environmental review involved the following elements:

- site visit to see the mine and related facilities

- meetings and discussion with Luoyang Fuchuan personnel during the site visit
- review of existing reports and information made available to Wardrop.

The areas of the Shangfanggou Mine that were reviewed for environmental consideration were the open pit mine, waste rock dump, process plants, TSFs, as well as the transportation of various materials.

Luoyang Fuchuan operated the Shangfanggou Mine since 2005 and it appears that the company had a very good understanding of relevant laws, regulations, and practices.

As indicated by Luoyang Fuchuan, the funding for the closure of the mine and related facilities will be the responsibility of the owner. In the meantime, the owner is responsible for progressive reclamation of the mine and related facilities.

1.9 CONCLUSIONS AND RECOMMENDATIONS

1.9.1 GEOLOGY AND MINERAL RESOURCES

The deposit has been explored to the extent necessary to obtain a thorough understanding of the distribution and grade of mineralization.

Wardrop has independently recalculated the resource using the computer-based dataset and has concluded that the previous estimate is reasonable.

The Wardrop estimate of total contained resources at a 0.03% Mo cut-off is about 469 Mt at an average grade of 0.14% Mo.

1.9.2 RESERVES

It is Wardrop's opinion that there are several opportunities to increase mineral reserves, such as:

- performing further exploration programs to upgrade the inferred resource to measured or indicted resources
- carrying out pit optimization within the mining license
- conducting feasibility studies for underground mining to increase mineral reserve below and outside of the ultimate pit limit within mining license.

1.9.3 MINING

Attention should be closely paid to following specific problems:

- The pit slope angle may be improved by further geotechnical studies.
- The current bench height of 15 m is not compatible with the current equipment size, and may cause safety problems and a higher ore dilution rate. Wardrop recommends that Luoyang Fuchuan retain an engineering firm to optimize the bench height parameters.
- Wardrop believes that the current ultimate pit is a temporary pit limit and recommends that Luoyang Fuchuan retain an engineering firm to conduct further pit optimization.
- Production capacity and mine life are mainly related to mineral resource, equipment size, mine development and mining method, and are selected through comprehensive technical and economic comparisons. Wardrop recommends that Luoyang Fuchuan retain an engineering firm to optimize production capacity and mine life. Production capacity can be optimized on 20,000 t/d, 30,000 t/d or higher.
- Wardrop recommends that Luoyang Fuchuan operate the Shangfanggou Mine following the requirements of their mining license and safety production permit.
- Wardrop recommends that Luoyang Fuchuan use the successful experience of Sandaozhuang mine of China Moly to build and expand the Shangfanggou Mine into a highly efficient, safe and modern mine.

1.9.4 PROCESS

Process conclusions and recommendations are as follows:

- The metallurgical testwork indicates that the mineralogy of the ore is complex; more importantly, the ore contains a significant amount of hydrophobic silicate minerals, mainly talc, that have a similar floatability as molybdenite and cause a low concentrate grade and recovery. Results from bench-scale tests suggest that recoveries in excess of those obtained from actual production can be achieved.
- Potential exists to improve process operating efficiencies by consolidating process operations into a single, modern plant.

- The distances between the pit and most of the process plants are more than 6 km, while two of the primary process plants locate more than 20 km away from the pit. The process rates and the locations of the process plants have not been optimized to provide the best economics and metallurgical performances. In addition, the multiple locations of the tailing storage facilities may cause environmental concerns. The current process plant capacity cannot meet the mining capacity. Although some of the similar process plants are available in Luanchuan County to process the ore from the pit, it is difficult to ensure the optimum metallurgical performances.

- Further testing investigations on improving metallurgical performance is recommended.

- Wardrop recommends investigating the feasibility of building a central plant with energy efficient and metallurgical efficient equipment to process the ore. The plant should be located close to the pit. It is expected that the new plant should produce better plant metallurgical performances and substantially reduce process and tailing handling operating costs.

- The recovery of scheelite from the mineralization should be studied further. Rhenium recovery from the molybdenum is expected to add an additional value for the project.

1.9.5 ENVIRONMENTAL

Conclusions and recommendations for the environmental review are as follows:

- Based on the current environmental consideration of the open pit, transportation of materials, and process plants, any environmental liability identified can be mitigated through environmental protection and management practices that are in place during operation (those proposed in this study and those acceptable as industry practice).

- The TSFs visited and reviewed seem to be in good condition. The Jiaoshuwa TSF was designed according to Chinese standards, and the Sanchuan TSF seemed to meet safety expectations during inspection.

- A major concern for public safety is the presence of houses located within 200 m of the toe of the Hexinyuan tailing dam. There may not be sufficient time to warn occupants in the event of dam failure or unexpected discharge.

- A review or inventory of key available information and reports should be performed to include all permits, Environmental Impact Assessment (EIA), closure plans, health and safety plans, safety inspection reports, tailing design reports, and Environmental Protection and Management Plans (EPMPs).

- All the plans that are found to be unsatisfactory should be updated.

- Conduct very limited sampling and testing for acid rock drainage (ARD) for the open pit, waste rock dump and tailing, to verify that ARD will not occur in the future.

- Conduct an assessment of the waste rock dump to evaluate the cause of the stability of the cracking and settlement. In the interim, signs indicating potential danger should be posted below the dump so that people will stay away. Also, the waste rock dumping procedure will have to include a process for ensuring the safety of the workers on top. As a minimum, this would include a spotter or spotters who would monitor the stability of the dump.

- For all the TSFs, the designs and factors of safety must be reviewed by a third party to see that they are conformance with Chinese standards. This is especially true for the Sanchuan TSF, where the slopes are steeper than designed, and the Jiaoshuwa TSF, which is going to be a very high structure built with the upstream method.

2.0 INTRODUCTION AND SCOPE OF REPORT

2.1 INTRODUCTION

The Shangfanggou Mine is operated by Louyang Fuchuan. Luoyang Fuchuan is owned by Xuzhou Huanyu and Huqi Mining, as to 90% and 10%, respectively. Xuzhou Huanyu is owned by the Borrower, as to 50%. Both the Borrower and Huqi Mining are wholly-owned subsidiaries of China Moly. The principal components of the Property are:

- an open-pit molybdenum-iron-tungsten mine with current resources of about 469 Mt at an average grade of 0.14% Mo

- two wholly-owned primary process plants (Jiaoshuwa and Sanchuan plants; 2,200 t/d total nominal capacity)

- one wholly-owned cleaner plant (Heyu cleaner plant; 30 t/d nominal capacity)
- majority interest in 4 other primary process plants with an aggregate nominal capacity of about 3,600 t/d (Hualong, Hexinyuan, Jinfeng and Jinhanyuan plants)
- one hydrometallurgical plant (Fuchun hydrometallurgical plant, to process the tailing from Heyu cleaner plant).

2.2 TERMS OF REFERENCE

China Moly has retained Wardrop to review the significant components of the Property and prepare an Independent Technical Report that describes the results of that review. This technical report is to be included as part of an information circular the will be distributed to shareholders of China Moly as part of the acquisition process of the Property.

This Independent Technical Report has been written in compliance with Chapter 18 of the Listing Rules.

This report is based upon information China Moly provided to Wardrop, as well as observations and information that were obtained by Wardrop during the site visit to the Property. Information obtained by Wardrop is references within this report and is listed in Section 18.0.

2.3 WARDROP TECHNICAL TEAM

This technical report was prepared by the following specialists:

- Jianhui (John) Huang (Ph.D., P.Eng.), Senior Metallurgist
- Charles Masala (P.Eng.), Senior Water Resources Engineer
- Greg Mosher (P.Geo.), Senior Geologist
- Wenchang Ni (P.Eng.), Senior Mining Engineer.

All members of this team are "Competent Persons" as defined in the Listing Rules. All members of the technical team visited the Property between May 25 and May 26, 2010.

2.4 STATEMENT OF WARDROP INDEPENDENCE

Neither Wardrop nor any of the authors of this report have any material, present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could reasonably be regarded as being capable of affecting their independence or that of Wardrop.

Wardrop's fee for completing this report is based upon nominal professional daily rates plus reimbursement of incidental expenses. Payment of that professional fee is not contingent upon the outcome of this report.

Neither Wardrop nor any of the authors of this report have any direct or indirect economic or beneficial interest in any of the assets being reported, including the Shangfanggou Mine.

Neither Wardrop nor any of the authors of this report has any shareholding, directly or indirectly in China Moly or any of its subsidiaries or any right (whether legally enforceable or not) to subscribe for or to nominate persons to subscribe for securities of China Moly or any of its subsidiaries.

None of the authors of this report is an officer, employee, or proposed officer of China Moly or any group holding or associated company of China Moly.

2.5 RELIANCE ON OTHER EXPERTS

Wardrop has undertaken a technical review of information provided and obtained during the site visit. This review excluded all legal issues, commercial and financial matters, land titles, and agreements. Wardrop has reviewed this information pertaining to various operating licences and permits but cannot confirm their validity.

3.0 PROGRAM OBJECTIVES AND WORK PROGRAM

3.1 ASSESSMENT OBJECTIVE

Wardrop has been retained by China Moly to review the significant components of the Shangfanggou Property and to prepare an Independent Technical Report that describes the results of that review. This Technical Report is to be included as part of an information circular that will be distributed to shareholders of China Moly in accordance with the Listing Rules.

3.2 ASSESSMENT SCOPE AND METHODOLOGY

The scope of work to address the above objective involved assessing the mine and related facilities of the Shangfanggou Mine in order to confirm and review:

- geological resources
- mining reserves
- mining
- mineral process
- environmental and social considerations.

The methodology for performing the assessment involved:

- site visit to observe the mine and related facilities
- meetings and discussions with site personnel during the site visit
- review of existing reports and information made available to Wardrop.

4.0 PROPERTY DESCRIPTION, LOCATION, ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

4.1 PROPERTY DESCRIPTION AND LOCATION

The Property is located in Shangfang Village, Lengshui Township, Luanchuan County, Henan Province, China. The Property is located approximately 30 km by an all-weather road from the county capital of Luanchuan, and approximately 235 km from Luoyang, the nearest major city (Figure 4.1). The mining licence (No. 1000000620134) is 1.2073 km^2 in area; the coordinates of the centre of the mining licence are approximately 111°20' East/33°54' North. Coordinates for the boundary of the mining licence are shown in Table 4.1.

Figure 4.1 Shangfanggou Property Location

Table 4.1 Shangfanggou Mining Licence Boundary Coordinates

Inflection Point	Easting (X)	Northing (Y)
1	37,542,500	3,754,110
2	37,542,810	3,753,930
3	37,543,810	3,753,940
4	37,543,875	3,754,330
5	37,543,790	3,754,770
6	37,542,625	3,754,940
7	37,542,500	3,754,890
UTM Zone 49S		

Luoyang Fuchuan holds 100% interest in the Shangfanggou mining licence. The licence was issued on December 7, 2006, and remains in good standing until January 1, 2016.

The licence has been surveyed and turning points are marked with cairns.

The mining licence contains all the known areas of mineralization and all of the mine workings. Sixty-two separate zones of molybdenum mineralization have been identified but the main Shangfanggou zone contains 98% of the known resources and is the only zone of significance. Mine waste is disposed of at a site about 2 km south of the pit.

There are eight process plants located at distances from the mine ranging from a minimum of about 2 km to a maximum of 40 km. Each process plant has its own tailing disposal site.

The Property is not subject to any royalties or other financial encumbrances other than normal taxes payable on operating revenues.

Permits required for operation of the mine and processing plants are all in place.

4.2 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Property is located in the eastern Qin Ling Mountains in western Henan province. The topography is rugged with a well-developed dendritic drainage pattern. Elevations range from about 1300 to 1500 masl. Flat terrain is rare and confined to river valleys. The fabric of both the terrain and drainages is heavily influenced by the orientations of bedrock stratigraphy and structure.

Despite the terrain, there is an extensive network of all-weather roads. Two all-weather roads pass within about 100 m of the open pit and all of the mills are also located on all-weather roads. The mine waste dump area is accessed by an unpaved road.

The pit and the process plants are serviced by well developed infrastructure. The pit is located about 30 km from Luanchuan, the county capital, and about 235 km from Luoyang, the nearest major city. A four-lane highway connects Luanchuan town and Luoyang. The city has a fully equipped airport and railways, which are a part of the Chinese National Railway Network. The pit is connected by road to the town of Linbao, 140 km northwest of the pit. Linbao is also connected to the Chinese National Railway Network.

The mine and plant sites obtain electrical power from the China National Grid.

Local wireless and fixed-line phones have been used in the pit and the plant sites for daily communication. Internet service is also available at the sites.

The area has four distinct seasons; freezing temperatures can occur between November and February. Precipitation ranges between 600 to 800 mm/a and falls mostly as rain between July and September. Temperatures vary from below freezing to a maximum of about 30°C. Mining activity is conducted on a year-round basis.

This area has been a major mining centre since the 1960s, and all the operators have secured sufficient surface rights for mining and milling operations, mine waste, and tailing disposal. There is adequate water for all current and anticipated mining and processing activities. A large, skilled workforce exists in the immediate area.

5.0 HISTORY

All exploration and development of the Property has been undertaken by, or under the auspices of, one or more levels of the government of China.

The first formal exploration of the property area took place in 1956, with 1:200,000 scale regional mapping. During this program the Sandaozhuang and Nannihu deposits were discovered; the Shangfanggou deposit was discovered in 1957.

Detailed exploration of the Property was carried out in 1959 and 1960; the exploration included a 1:2,000-scale geological mapping, the drilling of 64 holes with an aggregate length of 19,680 m, the excavation of 11 adits with an aggregate length of 2,793 m, and the digging of about 330 trenches and pits with an aggregate volume of about 27,000 m^3. A total of 20,452 samples were collected for assaying.

A metallurgical test was conducted in 1961.

The first resource estimate was completed in 1965 and contained an estimated 160 Mt at an average grade of 0.181% Mo, and 5.6 Mt of tungsten ore at an average grade of 0.129% WO_3. The reliability and significance of this estimate is not known; it is included in this report for completeness only and has been superseded by the 1982 estimate described in detail later in this report.

Between 1979 and 1982, detailed exploration was carried out on the Shangfanggou deposit; minor detailed mapping was conducted but the major work was the drilling of 61 holes with an aggregate length of 23,032 m. A minor amount of pitting and trenching was also completed. A total of 10,352 samples were collected for assay.

Approximately 860 density measurements were made during the 1959-1960 and 1979-1982 exploration programs.

The 1979-1982 exploration program culminated the resource estimation that forms the basis of the current reserve estimate. The 1982 estimate is described in a report entitled “Detailed Exploration Geological Report for Shangfanggou Molybdenum (Iron) Deposit in Luanchuan County, Hunan Province” (Henan Geology Bureau, December 1982).

The total resource in all categories (B+C+D) from surface to 825 masl was estimated to be about 526 Mt with an average grade of 0.134% Mo. This estimate is considered relevant and reliable but has been superseded by the 2004 estimate noted below.

In 2004, an updated reserve estimate was completed by the Henan Mineral Resources Bureau. This estimate took depletion into account because of official and unofficial mining since the completion of the 1982 estimate. The total estimated resource in all categories (B+C+D) from surface to 1025 masl is 526 Mt at an average grade of 0.134% Mo, which is essentially unchanged from the 1982 estimate. This estimate is considered relevant and reliable, and its derivation is discussed in greater detail in Section 11.0.

In 2005, a preliminary design for a 5,000 t/d mining operation was completed.

Mining has been conducted at various scales at the Property since the mid-1980s when informal mining was commenced by local villagers. Informal mining was terminated at the end of the 1980s. Minor underground mining was subsequently carried out by Mudu Mining Ltd. (Mudu Mining), a state-owned firm. Both underground and open-pit mining were conducted between 1996 and 2004; underground mining ceased in 2004.

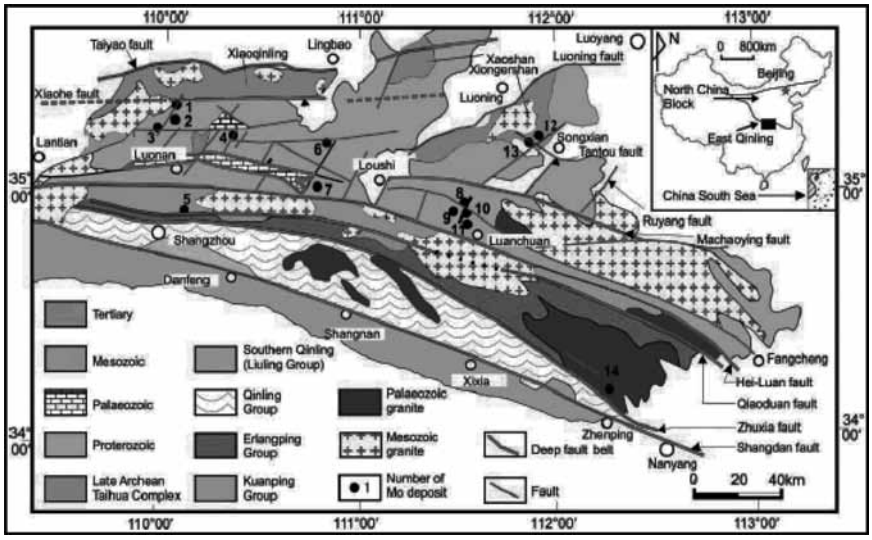
The present mining operation under Luoyang Fuchuan began in 2005.

6.0 GEOLOGY

6.1 REGIONAL GEOLOGY

The Shangfanggou Property is located in the eastern Qinling Mountains, which tectonically mark the collisional boundary between the North China Block to the north and the Yangtze Craton to the south (Figure 6.1). This tectonic belt is the locus of many significant mineral deposits, including the east Qinling - Dabie Molybdenum Belt that contains about half the known molybdenum resources in China (Zhang et al., 2009). Shangfanggou is a large tonnage primary molybdenum deposit with comparable grades to operating mines.

Figure 6.1 Shangfanggou Regional Geology



Source: Zhang et al., 2009.

The oldest rocks in the area are crystalline gneisses of Archean age. These are discordantly overlain by Proterozoic strata that belong to the Xiong'er, Guandaokou, Luanchuan, Luoyu, and Ruyang Groups. The Xiong'er and Guandaokou Groups are of middle Proterozoic age and are comprised of volcanic and marine clastic and carbonate rocks. The Luanchuan Group, which hosts the molybdenum deposits in the Shangfanggou area, is of late Proterozoic age and is comprised of terrestrial to shallow marine clastic and carbonate rocks. The overlying Luoyu and Ruyang Groups are of similar composition. The Proterozoic strata are overlain principally by marine sedimentary strata of Paleozoic age.

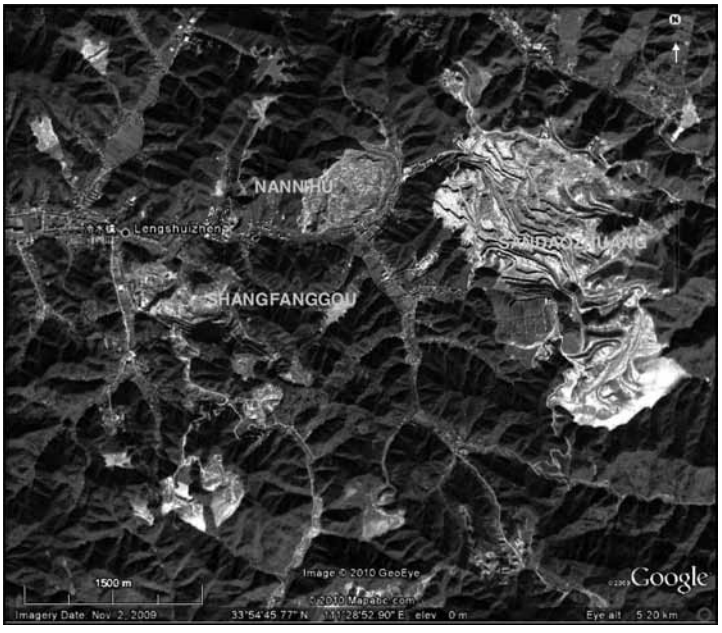
Six separate phases of granitoid magmatism have been recognized in the east Qinling - Dabie Orogen, spanning the interval from Late Archean to the late Mesozoic. The formation of the molybdenum deposits is associated with intrusives emplaced during the Cretaceous (120 M to 140 M years ago).

Major faults in the area follow two principal trends: northwest-southeast and northeast-southwest. The northwest-southeast trend reflects the deformation associated with the collision between the North China Block and the Yangtze Craton. This trend controls the distribution of the major sedimentary and intrusive rocks. The northeast-trending set of faults appears to have exerted a significant influence on the distribution of molybdenum mineralization as many of the deposits are localized at the intersection of the two major sets of faults.

6.2 PROPERTY GEOLOGY

The Shangfanggou Property is located within an area commonly referred to as the Nannihu ore district. This area contains three principal molybdenum deposits: Shangfanggou, Nannihu, and Sandaozhuang, each separated by a distance of approximately 1 km (Figure 6.2). The area is underlain by the Luanchuan Group of Neoproterozoic age, which is subdivided into dolomitic marble of the Meiyaogou formation, marble and schist of the Nannihu formation, and metasandstone and biotite-bearing marble of the Sanchuan formation. Quartzite, dolomitic marble and intercalated schist of the Mesoproterozoic-age Guandaokou Group are also present.

Figure 6.2 Shangfanggou Property Location

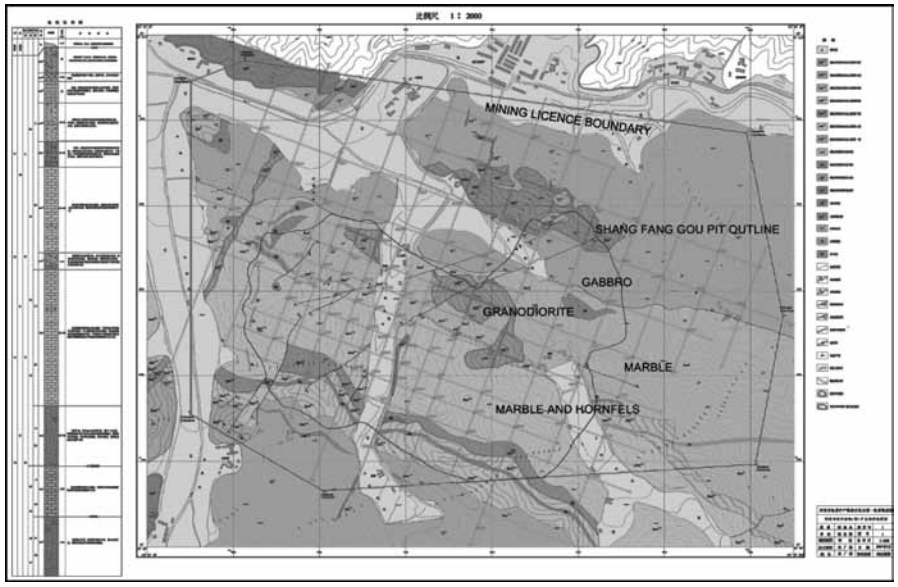


The Meiyaogou formation is the principal ore host and, in the area of the Property, is divided into three lithological members that are described in terms of their metamorphic state rather than their protolith:

- a lower quartz-mica, feldspathic, two-mica schist with marble lenses
- a middle unit of thick-bedded, greyish-white to greenish dolomitic marble
- an upper layer of calcareous metasediments that contains several recognizable members comprised of schist, marble, and phyllite.

The strata strike northwest-southeast (about 290º) and dip about 60° to the southwest (Figure 6.3).

Figure 6.3 Shangfanggou Property Geology



The Shangfanggou Property also contains two lenses of diabase that were deposited during the Paleozoic era and are now in fault contact with the Proterozoic-age sedimentary rocks.

All the granitic rocks that host molybdenum and tungsten mineralization in the Nannihu ore district are shallow-level, small stocks comprised of granodiorite, monzogranite, and granite porphyry.

Emplacement of the intrusive rocks has resulted in widespread contact metamorphism. Because of the composition of the host strata, metamorphism has largely altered the clastic sedimentary rocks to hornfels and the carbonate rocks skarn.

Major faults have orientations consistent with the principal regional trends: major structures trend northwest-southeast and cross-cutting faults trend northeast-southwest.

7.0 DEPOSIT TYPES

Genesis of the molybdenum and tungsten mineralization within the Nannihu ore district is closely associated, temporally and spatially, with the emplacement of granitic intrusives during the Mesozoic. The molybdenum is presumed to have been derived both from the igneous magma and from the incorporation of country rocks by the ascending magma. Formation of the intrusives themselves is attributed to subduction and melting associated with the collision of the North China and Yangtze tectonic plates.

The molybdenum-(tungsten) deposits of the Nannihu district are commonly described as porphyry types but, in fact, the majority of the molybdenum and tungsten mineralization is contained within the metamorphosed country rocks adjacent to the intrusives, rather than within the igneous intrusive rocks.

Mineralization has been subdivided into five self-explanatory types on the basis of host rock: porphyry, transitional, skarn, hydrothermal, and vein-breccia. The porphyry, transitional, and skarn types are most significant and account for almost all the known mineralization of economic significance in the district.

The three main molybdenum deposits in the Nannihu ore district vary with respect to this classification. Within the Shangfanggou deposit, molybdenum and tungsten mineralization occurs within intrusive granoporphyry, endoskarn, and within the diabase that is in fault contact with the south side of the intrusive. About 70% of the known mineralization is contained within the skarn; mineralization contained within the intrusive is both of lower abundance and lower grade compared to the adjacent skarn zone.

The majority of the mineralization within the Nannihu deposit occurs as several lenticular bodies hosted by altered Nannihu formation carbonates. Mineralization also occurs both at and within the margin of the intrusive porphyritic monzonitic granite that was responsible for both the alteration and the mineralization.

The largest deposit in the area - Sandaozhuang - differs from Shangfanggou and Nannihu in that the intrusive body responsible for the genesis of molybdenum and tungsten mineralization is deeply-buried (in excess of 1,000 m below surface). All mineralization that is currently defined occurs as two horizontal lenses exclusively within skarnified carbonates of the Sanchuan and Baishugou Formations.

8.0 MINERALIZATION

The Shangfanggou deposit contains molybdenum and tungsten mineralization that are present primarily as molybdenite and scheelite. There are 62 separate occurrences of mineralization that have been documented within the property but, of these, 61 are insignificant. The main zone contains about 98% of the known resource.

The main zone of mineralization is largely contained within skarnified and hornfelsed carbonates and clastic sedimentary rocks of the Meiyougou group and is conformable with the enclosing strata, striking about 290° and dipping about 60° to the southwest.

The mineralized zone is about 1,000 m in length, varies in width from about 400 m to 750 m, and varies in thickness from about 100 m to 500 m.

Mineralization occurs as veinlets and less-commonly as disseminations.

9.0 EXPLORATION

Exploration of the Shangfanggou Property was undertaken during two campaigns: 1959 - 1960 and 1979 - 1982. The work was undertaken by the Henan Geology Bureau. Neither Luoyang Fuchuan nor China Moly has carried out any exploration on the Property.

These exploration programs included: 1:2,000-scale geological mapping of the Property, the drilling of 125 vertical drillholes with an aggregate length of 42,700 m, the excavation of 11 adits with an aggregate length of 2,793 m, and the excavation of 330 trenches and pits with an aggregate volume of about 27,000 m^3. About 30,800 samples were collected for analysis and 860 density measurements were made.

Drillholes were surveyed for deviation and dip. In addition to logging for geological features, core was measured for percent recovery. The majority of holes drilled had core recoveries in excess of 90%. Twelve holes used in resource estimates had recoveries below 75%; most of these holes were drilled in the early stages of exploration of the deposit.

Detailed information with respect to sample collection is available only for the 1979 - 1982 exploration work: core was split into halves; one half was sent for analysis and the other was retained for reference. Channel samples were collected from adits, pits, and trenches. The channels from which these samples were extracted measured 10 cm in width by 5 cm in depth. Sample length for both channels and core ranged from 0.5 to 1.5 m; most samples were 1 m in length.

Assaying of samples from the 1979 - 1982 exploration program was done by three different laboratories: the main laboratory was attached to the Henan Geology Bureau central laboratory, the second was the Number One Brigade, Henan Bureau central laboratory, and the third was the Shaanxi Geology Bureau central laboratory.

In addition to internal checks of assay results that were routinely applied to approximately 10% of the samples, approximately 5% of the assay results of each laboratory were cross-checked by one of the other laboratories. Where discrepancies between assay results arose, the initial results were abandoned and the samples re-assayed. Assaying was predominantly colorimetric.

These investigations formed the basis of the 1982 resource estimate and the updated 2004 resource estimate, discussed in Section 10.0. Based on documented descriptions of this work and the subsequent substantiation of the resource estimates by results obtained by mining, Wardrop considers the exploration work to be reliable and the resulting interpretations of the geology and mineralization to be credible and accurate.

10.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

10.1 MINERAL RESOURCE EVALUATION

10.1.1 1982 RESOURCE ESTIMATE

Wardrop has reviewed two resource estimates that were prepared for the Shangfanggou property; the first was prepared by the No. 1 Geological Brigade of the Henan Geological Bureau in 1982. This estimate was made following the government guidelines with respect to resource estimation that were in effect at that time: the cut-off grade was 0.03% Mo; the industrial grade was 0.06% Mo; minimum mining thickness was 2 m and maximum internal dilution was 4 m. Volumes of polygons were calculated on vertical sections and polygons with an average grade less than 0.06% Mo were excluded for the resource tabulation. The resultant resource estimate was about 526 Mt with an average grade of 0.132% Mo. The estimate was divided into the then current system of B, C, and D categories on the basis of the spacing of the drill holes: Category B resources were based upon drill holes at a spacing of 50 x 50 m; C upon holes with a spacing of 100 x 100 m, and D upon a hole spacing of 200 x 200 m.

10.1.2 2004 RESOURCE ESTIMATE

The Reserve Verification Report prepared by the First Geological Exploration Institute, Henan Geological Mineral Resource Exploration Bureau, dated April 2004 is the most recent resource estimate for the Shangfanggou deposit. The purpose of this estimate was to account for resource losses due to mining that occurred between 1982 and 2003.

This estimate was based on the same drillhole data as the 1982 estimate and included 108 holes, of which 104 were used for the estimate. This estimate included new survey data for both surface and underground data and was generated, as in 1982, using weighted average grades and volumes based upon polygons projected between vertical sections, as well as the same criteria that were used in the 1982 estimate. The resultant global resource estimate was essentially the same as the 1982 estimate: about 526 Mt at an average grade of 0.132% Mo.

10.1.3 2005 BLOCK MODEL

Shortly after the completion of this estimate, CNIF prepared a block model resource estimate using Datamine software. At a 0.03% Mo cut-off, this estimate amounted to about 480 Mt at an average grade of 0.131% Mo. Although the block model and the underlying drill database were made available to Wardrop, the methodology of the estimate (other than that samples were composited into 1 m lengths) and the assumptions used to produce the estimate, are not available and therefore could not be reviewed by Wardrop. Also, this estimate did not include any classification of the resource so it was not possible to determine from the block model what portion of the resource qualified as the basis of a reserve estimate. Therefore, Wardrop carried out a subdivision of the calculated resource on the basis of a series of assumptions that are described in Section 10.1.4.

10.1.4 WARDROP RE-CALCULATION

Wardrop divided the resource into three JORC-compliant categories - measured, indicated, and inferred - on the following basis:

- Three search ellipses were constructed:
  - The measured ellipse has a radius of 100 m.
  - The indicated ellipse has a radius of 200 m.
  - The inferred ellipse has a radius of 300 m.
  - All three ellipses have a strike of 110° and a dip of 60° in the direction 200°.
- Measured resources are those blocks that are located within 100 m of four drill holes (i.e. four holes within the area of the measured search ellipse).

- Indicated resources are those blocks that are located within 200 m of three drill holes (i.e. three holes within the area of the indicated search ellipse).

- Inferred resources are those blocks within 300 m of two drill holes (i.e. two holes within the area of the inferred search ellipse).

- These categories are exclusive:

  — The blocks that qualify as measured are excluded from the indicated and inferred tabulations

  — The measured and indicated blocks are excluded from the inferred tabulation.

Both the CNIF and Wardrop estimates used a rock density of 2.84 t/m^3.

This procedure resulted in the following tabulation: at a 0.03% Mo cut-off, the resource contains about 469 Mt at an average grade of 0.140% Mo and is subdivided into measured, indicated, and inferred, as shown in Table 10.1. In comparison with CNIF, Wardrop produced an estimate approximately 2% higher in resource tonnage, approximately 6% higher in molybdenum grade, and approximately 6% higher in contained metal.

Wardrop considers these differences to be within the limits of acceptability.

Table 10.1 Shangfanggou Resource Tabulation (Wardrop, 2010)

Mo Cut-off *(%)*	**Tonnes**	**Mo** *(%)*
Measured		
1.00	63,797	1.068
0.50	956,669	0.631
0.10	8,245,390	0.282
0.06	12,435,643	0.213
0.05	13,833,767	0.197
0.04	15,678,038	0.179
0.03	16,682,604	0.171
0.02	17,555,829	0.163
0.01	18,053,106	0.159
Indicated		
1.00	1,871,941	1.184
0.50	9,532,763	0.759
0.10	134,481,034	0.234
0.06	211,904,898	0.177
0.05	244,564,449	0.161
0.04	268,674,600	0.150
0.03	291,488,013	0.141
0.02	300,702,535	0.138
0.01	302,371,226	0.137
Total M+I	308,170,618	0.144

Mo Cut-off (%)	Tonnes	Mo (%)
Inferred		
1.00	1,800,740	1.094
0.50	3,039,463	0.899
0.10	80,155,173	0.199
0.06	131,243,409	0.152
0.05	146,622,533	0.142
0.04	155,191,467	0.137
0.03	160,679,285	0.133
0.02	164,642,745	0.131
0.01	164,840,714	0.131
Total M+I+I	468,849,903	0.140

10.2 MINERAL RESERVE EVALUATION

The JORC Code uses the following general definitions for proved and probable ore reserves:

Proved ore reserve is the economically mineable part of a measured mineral resource. It includes diluting materials and allowance for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental factors.

Probable ore reserve is the economically mineable part of an indicated, and in some circumstances, a measured mineral resource. It includes diluting materials and allowance for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

10.2.1 MINERAL RESERVE STATEMENT

Wardrop used the following procedures to carry out its mineral reserve evaluation:

- reviewed CNIF's preliminary design in 2005
- validated geological block model using borehole information supplied by the owner
- built a category block model based on geological confidence levels
- manipulated a Mo dilution grade model for reserve evaluation after considering ore dilution and loss factors
- estimated the mineral reserve using Gemcom GEMS™ 6.2.3 software.

The JORC-compliant mineral reserve is summarized in Table 10.2.

Table 10.2 Mineral Reserve Statement

Reserve	**Proven**	**Probable**	**Total**
Tonnage *(kt)*	6,336	41,485	47,821
Diluted Mo grade *(%)*	0.194	0.170	0.173

Note: Mineral reserve within the ultimate pit (current pit).

10.2.2 MINERAL RESERVE IN 2005 PRELIMINARY DESIGN

The preliminary design prepared by CNIF in 2005 contained comprehensive information that is more detailed than that of a prefeasibility study. In order to define the mineral reserve that can be feasibly extracted, CNIF used the following methods and assumptions:

- the cross-sectional method of calculating mineral resources and classified mineral resource according to the Chinese government standard
- a 3D block model with Gemcom SURPAC™ mine-planning software to evaluate the mineral reserve but did not classify the resource and did not take into account mining loss and mining dilution

- calculated ore cut-off grade based on the project financial model
- considered mineral processing, legal, environmental, social, and governmental factors
- carried out a financial analysis.

It is Wardrop's opinion that the mineral reserve in the 2005 preliminary design is reliable on the basis of Chinese standards. However, because this study did not consider mining loss, mining dilution, and reserve classification, the estimate does not meet JORC standards. The 2005 mineral reserve is shown in Table 10.3.

Table 10.3 Mineral Reserve Estimated in Preliminary Design of 2005

Benches *(m)*	**Ore** *(t)*	**Mo Grade** *(%)*	**Mo Metal** *(t)*
Above 1,380	55,619	0.200	111
1,365	430,635	0.158	680
1,350	1,557,729	0.220	3,425
1,335	3,362,878	0.168	5,640
1,320	5,039,614	0.180	9,066
1305	6,035,023	0.206	12,420
1,290	6,428,442	0.163	10,472
1,275	6,595,707	0.156	10,316
1,260	6,089,414	0.167	10,182
1,245	5,268,223	0.205	10,816
1,20	4,720,216	0.179	8,426
1,215	4,331,704	0.193	8,365
1,200	3,674,915	0.165	6,056
1,185	3,710,085	0.169	6,281
1,170	2,578,902	0.222	5,733
1,155	2,008,403	0.203	4,071
Total	61,887,509	0.181	112,059

According to the government-approved reserve report of 2009 (supplied to Wardrop by Luoyang Fuchuan), during the period 2004 to 2009, about 6.1 Mt of ore with an average grade of 0.15% Mo was removed from the total reserve presented in Table 10.3.

10.2.3 MINERAL RESERVE EVALUATION

As discussed in Section 10.1.4, Wardrop has reviewed CNIF's geological block model, built a category block model based on the confidence levels of mineral resources, and classified measured, indicated and inferred resources in compliance with JORC standards.

Wardrop assumed that for a massive orebody, the dilution would be equal to the ore loss so that tonnage would be conserved but the grade would be affected. The dilution block model is based on the following manipulation:

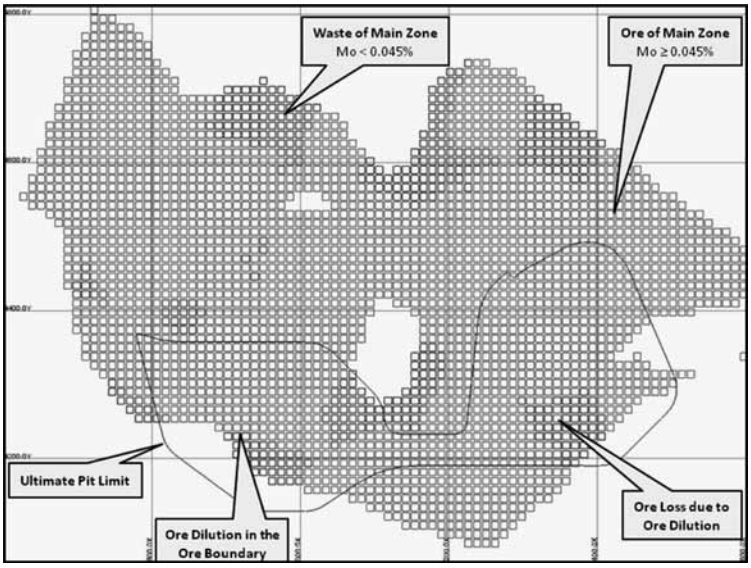
D_Mo% = [(1-Dilution%)*Mo% + (Dilution%*NB_Mo%)]*Recovery%

Where:

- Mo% Mo grade before block dilution and recovery applied
- D_Mo% Mo grade after block dilution and recovery applied
- NB_Mo% Mo grade of a contact block
- Dilution% Dilution percentage from a contact block
- Recovery% Block recovery percentage based on rock type and grade

Dilution for the model was calculated in an individual block basis because, in a massive deposit, using an average value would not be representative of the reality of mining. The blocks that are surrounded by ore would not encounter dilution. The contact blocks below the cut-off grade would cause dilution, and the stand-alone blocks would have the greatest amount of dilution. These stand-alone blocks typically would not be considered mineable due to a higher dilution or insufficient space for mining. Using this manner, a block-by-block calculation removes these stand-alone blocks from the reserve. Figure 10.1 demonstrates this situation.

Figure 10.1 Ore Dilution and Loss Factors



Note: at the elevation of 1280 m.

Each block measured 12 m × 12 m × 6 m. Based on the 15 m bench height and small equipment sizes, Wardrop estimated that 3 m of dilution was likely to occur on any side of a block. A cut-off grade of 0.045% Mo was applied. The number of contact dilution blocks, the grade of which is below the cut-off grade and surrounds each block, was recorded in the model. This number was then used to determine the dilution percentage.

To determine the diluted molybdenum grade in the dilution block model, Wardrop developed a program in Gemcom GEMS™ 6.2.3 mine-planning software. After diluted molybdenum grades were determined, an incremental mineral reserve and other resources using diluted molybdenum grades were estimated in the ultimate pit. The results are listed in Table 10.4.

The estimated ore dilution rate is 4.6%, which is very close to the actual rate experienced in mining operations to date. The overall stripping ratio is 1.89:1 in the ultimate pit as of the end of 2009.

Table 10.4 Mineral Reserve and Other Materials

	Mineral Reserve					
Material	Proven	Probable	Total	Waste	Unclassified Resource Previously Mined	Inferred Resource
Density *(t/m³)*	2.84	2.84	2.84	2.79	2.84	2.84
Tonnage *(kt)*	6,336	41,485	47,822	87,788	5,103	2,790
Insitu Mo Grade *(%)*	0.203	0.178	0.181	0.003	0.273	0.108
Diluted Mo Grade *(%)*	0.194	0.170	0.173	0.000	0.266	0.102
Insitu Mo Metal *(t)*	12,843	73,784	86,627			
Diluted Mo Metal *(t)*	12,315	70,328	82,643			

Note: 2,790 kt classified inferred mineral resource is not eligible to be converted to mineral reserve; 5,103 kt unclassified resource was mined out by using underground method before 2004.

Only measured and indicated mineral resources can be converted to mineral reserves. Besides the mineral reserve, the ultimate pit includes waste, inferred resource, and unclassified resource; however, all mineral resource was converted to mineral reserve in the 2005 preliminary design.

For this Technical Report, Wardrop used JORC standards to estimate the 47,822 kt mineral reserve within the ultimate pit. CNIF used Chinese standards to estimate the mineral reserve within the ultimate pit in the 2005 preliminary design, and estimated a tonnage of 61,888 kt. The tonnage of Wardrop's estimate is 22.7% lower than the CNIF estimate.

11.0 MINING ASSESSMENT

11.1 INTRODUCTION

Mudu Mining was established in 1996, and owned the sole mining license in the area of Shangfanggou Mine. In 2003, Luoyang Fuchuan, a company incorporated in the PRC with limited liability, acquired Mudu Mining and inherited the sole mining license for the Shangfanggou Mine area. On April 22, 2010, China Moly acquired 100% equity interest in the Borrower, which in turn holds 50% equity interest in Xuzhou Huanyu. On May 5, 2010, China Moly acquired 100% equity interest in Huqi Mining. Xuzhou Huanyu and Huqi Mining holds 90% equity interest and 10% equity interest in Luoyang Fuchuan, respectively.

In 2005, Luoyang Fuchuan engaged CNIF to conduct a preliminary mine design. The mining operation had a capacity of about 5,000 t/d using conventional shovel-truck methods and multi-bench mining. The ultimate pit's typical sizes were 1,000 m long, 500 m wide, and 200 m deep.

Wardrop estimated that the remaining ore reserve is 47,821 kt. Based on the current actual production capacity of 10,000 t/d, the mine life will be approximately 15 years within the current ultimate pit.

11.2 MINING LICENSE AND PRODUCTION SAFETY PERMIT

During the site visit from May 25 to May 27, 2010, Wardrop was shown a valid mining license and a valid safety production permit. The key information indicated in both license and permit is summarized in the Table 11.1.

Table 11.1 Key Permit Information

Name of Permits	Permit No.	Expiry Date	Area	Issued by
Mining License	1000000620134	Jan. 1, 2016	1.2073 km^2	Ministry of Land and Resources of the People's Republic of China
Safety Production Permit	[2007]CL000022 *(see Note)*	Aug. 5, 2010	n/a	Production Safety Supervision & Administration Bureau of Henan Province

Note: As advised by China Moly, application for renewal of permit has been submitted to the authorities and is being processed.

The relationship between the mining licence boundaries, geological resource, and the current pit mining reserve are shown in Figure 11.1 and Figure 11.2.

Figure 11.1 Perspective View of the Shangfanggou Deposit and Ultimate Pit

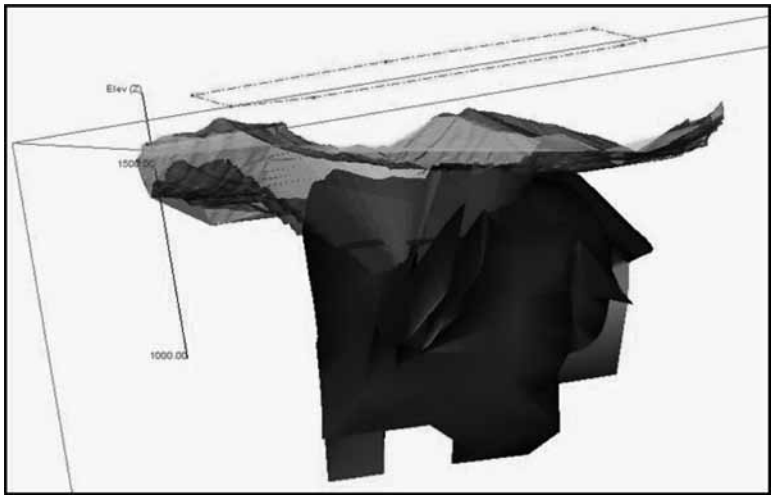
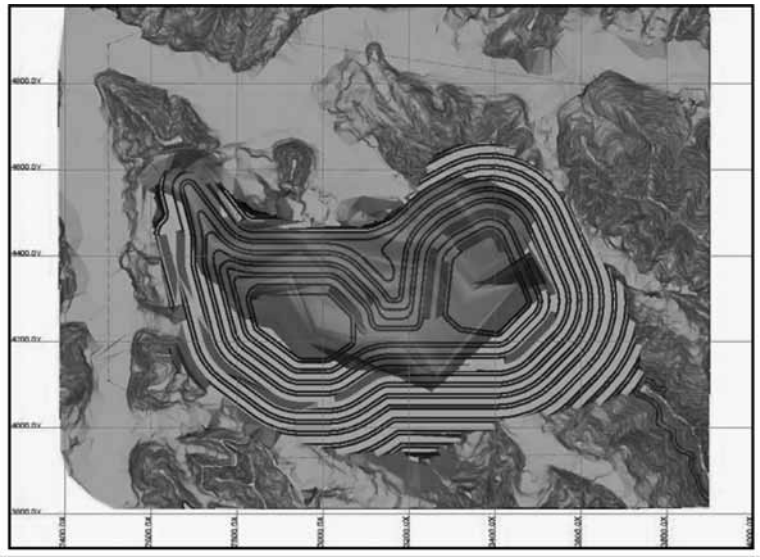


Figure 11.2 Plan View of the Shangfanggou Ultimate Pit and Licence Boundaries



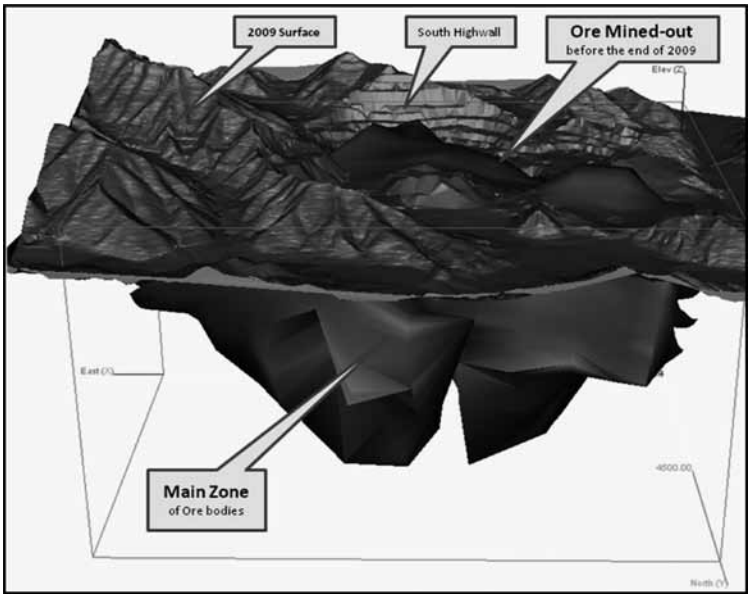
11.3 MINING CONDITIONS

11.3.1 OREBODY OCCURRENCE

The Shangfanggou Mine is comprised of a large-scale (veinlet and disseminated) molybdenum deposit hosted in granite porphyry intrusive, surrounding altered carbonate rock (skarn), hornfels, and gabbro. Sixty-two separate occurrences of mineralization have been documented within the property; only one occurrence - the main zone which contains approximately 98% of the known resource - is significant.

The spatial form of the main zone is similar in an inverted “cup”, and in horizontal section forms an irregular elliptical ring. The core of the ring is barren or contains low-grade mineralization. A 3D view of the main zone is provided in Figure 11.3.

Figure 11.3 3D View of Orebody Occurrence



The ore density is 2.84 t/m^3, and its universal hardness coefficient (f) is 10 to 14. Rock density is 2.81 t/m^3, and f coefficient is 8 to 12. A loose coefficient of ore and rock is about 1.5.

11.3.2 HYDROGEOLOGY

Characterization of Hydrogeology

Quaternary Pore Water

Quaternary strata are predominantly distributed within ravines and are comprised of alluvium and gravel, with thickness varying from 1 m to 4 m. The water-bearing properties of this material vary greatly.

Water-Bearing Fractures in Weathering Rock

The weathering zone is associated with exposed areas of bedrock and generally is not water permeable and is of variable thickness.

Water-Bearing Fractures in Alteration Zones

Skarnification and silification are the principal alteration types and the degree of alteration is highly variable. Water content varies in relation to proximity to the ore zone and can be divided on the basis of alteration rock type.

- Dolomite marble: Karst has not been developed. The drill hole unit water discharge is 0.0138 L/s·m; the permeability coefficient is 0.249 m/d. The quantity of groundwater diminishes with depth.

- Magnetite diopside-tremolite: This is the main water-bearing rock in the mine area and retains more water below the weathering zone. Water inflow was measured at 0.074 L/s at the mouth of a near surface adit. But drill hole unit discharge was in the range of 0.0255 L/s·m to 0.0276 L/s·m. The permeability coefficient is 0.055 m/d to 0.075 m/d. Accordingly, it appears that groundwater is relatively abundant.

- Phlogopite-actinolite: The plasticity of this rock type is relative high and permeability is relative low.

Water Contained in Fault Zones

Fourteen major faults have been noted in the property area. Some of these fault zones have significant water discharge; recorded rates vary from 0.038 L/s·m to 0.169 L/s·m.

Impermeable Rocks

Granite porphyry, gabbro, and shale are generally impermeable and a granite-porphyry dyke on the west side of the mine constitutes an impervious boundary. Gabbro constitutes an impervious boundary on the north and south sides; shale constitutes an impervious boundary in the south side. The F_{11} fault, one of fourteen major faults, constitutes an impervious boundary in the north side.

Water Discharge Forecast

The mine is located in the north limb of the of Shangfanggou syncline. The orebody is hosted by igneous and metamorphic rocks. Impervious strata occur on the north, south and west sides of the mine, and major karst and fractures are not developed. The topography of this region is favourable to the run-off of surface water; rainfall is the only recharging source of groundwater, which migrates from east to west. Groundwater is largely confined to fractures and therefore the mine area is considered to have a simple hydrogeological regime.

Normal and maximum discharge above 1154 masl of the open pit are predicted in Table 11.2.

Table 11.2 Normal and Maximum Discharge Above 1154 masl

Elevation of Open Pit	Unit	Underground Run-off	Normal Rainfall Run-off	Design Storm Run-off	Normal Discharge	Maximum Discharge
Above 1154 masl	m^3/d	1,280	1,365	27,300	2,645	28,580

11.3.3 GEOTECHNICAL EVALUATION

Geotechnical Data

Many factors influence pit slope stability, including geological structures, rock properties, strata stress, and groundwater flow.

Geological Structures

The primary geological structures include regional-scale anticlines and synclines that control the strike and dip of strata as well as a number of faults that transect the area of the designed open pit.

Rock Properties

The principal rock types are marble, magnetite-bearing diopsite-tremolite, gabbro, and granite. The natural slope attained by these rocks varies from about 30° to more than 45°.

Typical rock physical and mechanic parameters are listed in Table 11.3.

Table 11.3 Typical Rock Physical and Mechanic Parameters

Rock Names	Absorption Rate (%)	Porosity Rate (%)	SG (g/cm^3)	Compressive Strength (MPa)	Tensile Strength (MPa)	Shear Strength Cohesion (MPa)	Shear Strength Angle (°)
Marble	0.66	1.1	2.84	89.9	3.14	13.1	40.00
Gabbro	0.68	1.0	3.11	193.3	5.39	33.1	34.10
Granite-Porphyry	4.59	5.6	2.56	155.2	4.22	25.0	36.30
Skarn	0.73	1.7	2.98	155.6	8.24	27.1	37.90

Pit Slope Stability Analysis

Dip Direction of Rock Formation

Strata in the area of the Shangfanggou Mine generally strike about 220°, and dip between about 50° and 70°. The walls of the pit intersect bedding and fracture surfaces at wide angles, which is generally favourable to pit slope stability.

Faults and Fractures

F_2 and F_{11} faults that intersect on the northern wall of the initial pit form wedges of rock that may potentially lead to slope failure. However, these wedges need to be studied further in order to take effective and feasible measurements.

Groundwater

Groundwater is generally confined to strata above 1300 masl, which is higher than the pit bottom elevation. However, groundwater in this area is not abundant and rainfall is favourable for natural discharge. Therefore, groundwater should have little effect on slope stability.

Earth Stress

Because the bottom of the pit is located below the local base of weathering and some of the boreholes were deformed, there may be structural stress in the mining area, in addition to gravity stress.

Overall Pit Slope Angle

To reasonably select an overall pit slope angle, CNIF used the Council for Scientific and Industrial Research (CSIR) method to conduct a general classification for the rocks in the open pit and set up a slope stability model. The classification parameters and the stability model were used to calculated slope angles and safety factors shown in Table 11.4.

Table 11.4 Slope Angles and Safety Factors

Rock Names	Slope Angle	Safety Factor
Marble	50°	1.7
Marble	57°	1.3
Magnetite Diopside - Tremolite	45°	1.3

As a general engineering rule, a safety factor of 1.3 is acceptable. An overall slope angle of 45° was conservatively selected.

11.4 MINING DESIGN OUTLINE OF THE 2005 PRELIMINARY DESIGN

The CNIF 2005 preliminary design involved the considerations discussed in the following section.

11.4.1 MINING METHOD

Because of the favourable mining conditions of this deposit, open-pit mining was expected to extract more than 80% of total mineral resource without ground restrictions. In comparison with underground mining, open-pit mining has the following obvious advantages:

- higher ore recovery rate
- lower ore dilution rate
- lower capital cost
- lower operation cost due to a low stripping ratio
- safer operation environment

- shorter pre-mining construction period.

Therefore, open pit mining was considered to be the favourable mining method within the mining license.

11.4.2 PIT OPTIMIZATION

Pit optimization was conducted using computer-based Lerchs-Grossman and floating cone algorithms on the basis of underground, surface, and geotechnical constraints, the geological block model, and the mine financial model.

Underground Constraint

The mining license required that mining activity should be above 1154 masl.

Surface Constraints

Surface constraints included:

- the mining status at the end of 2004 (including topography and mining platforms)
- that the mining license required that mining activity should be within the mining license boundary
- that pit and blasting security range did not influence the important buildings and facilities that Luoyang Fuchuan was required to protect (e.g. China Moly's 4,000 t/d mill, Shangfang village where population density is very high, etc.)

Geological Block Model

A 3D block model based on the approved geological report was built using Gemcom Surpac™ software. Block sizes were 12 m long, 12 m wide and 6 m high.

Geotechnical Constraint

Overall slope angle was 45° for the whole pit.

Mine Financial Model

A financial model was constructed and included mining recovery rate, mining dilution rate, mining cost, milling recovery rate, milling cost, smelting charge, selling cost, metal price, etc.

Breakeven Cut-off Grade

Based on the above financial model, breakeven cut-off grade was calculated to be 0.045% Mo. Once the block model and geotechnical constraints were given, using revenue factors to scale metal prices down or up could have created dozens or hundreds of different pit shells. The following criteria were used to select the optimized ultimate pit shell:

- meets underground constraint
- meets ground constrains
- provides highest net present value (NPV) value
- provides highest internal rate of return (IRR) rate.

Based on the optimized ultimate pit shell, Gemcom Surpac™ software was used to conduct the ultimate pit design with the following bench parameters and ramp features:

- bench height: 15 m
- security platform width: 3 m
- slope face angle: 70°
- ramp width: 14.5 m (10.1 m below elevation 1,230 m in phase 1)
- clean platform width:
  - — 16.08 m (above elevation 1,365 m)
  - — 11.94 m (below elevation 1,365 m)

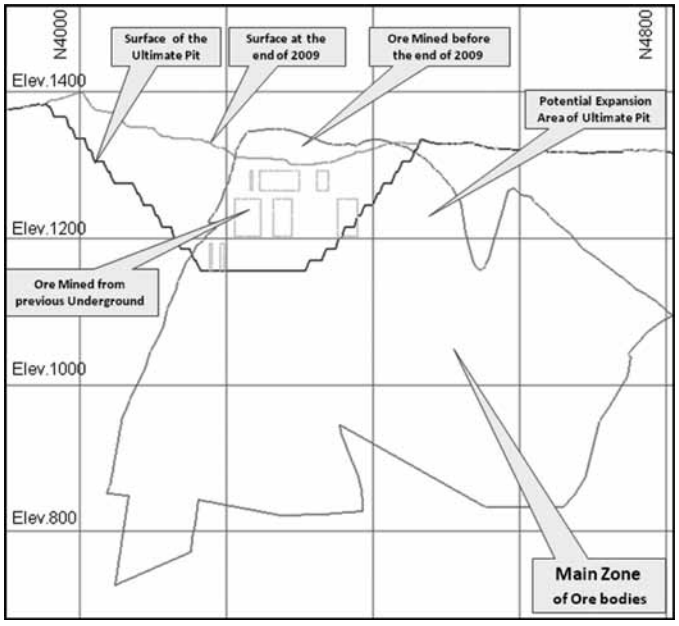
- ramp gradient:
  - — 9% (above elevation 1,185 m)
  - — 10% (below elevation 1,185 m)
- overall slope angle: 45°.

A clean platform was placed following every two benches.

In the ultimate pit, total waste material and ore were 110.0 Mt and 61.9 Mt, respectively. The average Mo grade was 0.181%. The average stripping ratio was 1.78:1 t/t. The ultimate pit's typical sizes were: 1,000 m long, 500 m wide and 200 m deep.

Figure 11.4 shows a section view of the relationship between the main zone and the ultimate pit.

Figure 11.4 Relationship between the Main Zone and the Ultimate Pit



11.4.3 PIT DESIGN BY PHASE

In the ultimate pit, the ore reserve is very abundant but the average ore grade is low and the pre-stripping ratio is very high. To effectively reduce the capital and operating cost in the initial period, it was necessary to divide the ultimate pit into two or more mining phases.

To achieve optimum operational efficiency and profit, phased mining should use the following principles:

- Each phase should have sufficient ore reserve to maintain a stable operation for a necessary period.
- A minimum mining width of 50 m or wider should be maintained in order to facilitate the normal operation of mining equipment.
- To maximize profit, mining schedule of the different phases should consider ore grade balance.
- To avoid operational interference with the development of mine benches during succeeding phases, the directions of push-backs should be carefully planned.
- The as-built bench situation (2004) should be fully considered in order to make reasonable relationships with phase mining.

According to the above principles, the ultimate pit design can be divided into the following two phases.

Phase I - Initial Economic Pit

Phase I is the first pit that was designed from the initial economic shells that prioritize the mining of high grade ore in the top portion of the orebody at the lowest amount of waste stripping. The objective of this prioritizing was to maximize cash flow and speed capital recovery during the initial period.

The methodology that determined the initial economic shell was the same methodology that was used to optimize the ultimate pit shell. The proper initial economic shell was selected by using a revenue factor of 60%, after considering the sufficiency of ore reserves and working platform.

Based on the proper initial economic shell, Gemcom Surpac™ was used to conduct the Phase I pit design with the bench parameters and ramp features provided. In Phase I, 37.9 Mt ore at 0.195% Mo will be mined; a total of 53.1 Mt of material will be mined. The average stripping ratio will be 1.40:1 t/t.

Phase II - Ultimate Pit

Phase II was designed push back and mine the remaining ore inside the ultimate pit to achieve the highwall of the ultimate pit. In Phase II, 24.0 Mt ore at 0.155% Mo will be mined. The total material mined will be about 56.8 Mt; the average stripping ratio will be 2.36:1 t/t.

Phase II was designed to begin nine years after the initiation of Phase I, once Phase I has been mined to the bench elevation of 1315 masl. Below the bench elevation of 1315 masl, the Phase I stripping ratio was designed to decrease significantly so a portion of the Phase I shovel fleet could be moved to the upper bench of Phase II for pushing back.

11.4.4 PRODUCTION CAPACITY

Working System

The mine was designed to operate 330 d/a, 3 shifts/day, and 8 h/shift.

Mining Capacity

The mine was designed for a capacity of 5,000 t/d, and 1,000 t/d during the 2-year construction period. .

11.4.5 MINE LIFE

The mine life will total 40 years, including a 2-year pre-stripping period, a 36-year normal operation period, and a 2-year production depletion period. The mine life is outlined in Table 11.5.

11.4.6 PRODUCTION SCHEDULING

Pre-stripping Period

At the end of 2004, Shangfanggou Mine had a mining capacity of 1,000 t/d. From the beginning of 2005, the mine maintained a mining capacity of 1,000 t/d and conducted pre-stripping. During the 2-year pre-stripping period, the total amount of stripped material was 14.37 Mt, and the total amount of mined ore was 660,000 t; pit benches were developed from 1,485 m down to 1,350 m, and the stripping ratio was 2:1 t/t.

Normal Production Period

From Year 3 to Year 38, the mine was designed produce ore at a nominal operating capacity of 1.65 Mt/a, with a stripping ratio of 2.5:1 to 0.65:1. In Year 9, Phase I will have developed to the 1,315 m bench where the stripping ratio was expected to have a significant reduction and some of the shovels could be moved to the upper bench of the Phase II. In Year 23, Phase I will reach the final bench at the 1155 m level, and Phase II will be full-scale mine production.

Three important principles must be followed during this period:

- a balanced stripping ratio
- a reasonably arranged mining sequence to ensure that operations on the upper benches do not adversely influence the safety of operations on lower benches
- an efficient dispatch of shovels and trucks to achieve high working efficiency.

Production Depletion Period

During Years 39 to 40, the mine production will gradually decline due to the limited working space. The average stripping ratio will be below 0.32:1.

Table 11.5 lists detailed production schedule for waste rocks and ore.

Table 11.5 Production Schedule for Waste Rocks and Ore

Period	Year	Pre-stripping Waste		Total Production	Production Stripping	Waste	Low Grade Ore	Grade of Low Grade Ore	Ore	Mo Grade	Stripping Ratio
		m^3 (000)	kt	(kt)	(kt)	(kt)	(kt)	(%)	(kt)	(%)	(t/t)
Pre-production	1	2,205	6,196	990	660	649	11	0.04	330	0.16	2.00
	2	2,205	6,196	990	660	649	11	0.04	330	0.19	2.00
Production	3			49,500	3,300	3,231	69	0.04	1,650	0.20	2.00
	4			49,500	3,300	3,286	14	0.04	1,650	0.16	2.00
	5			4,950	3,300	3,293	7	0.04	1,650	0.17	2.00
	6			5,050	3,400	3,284	116	0.04	1,650	0.17	2.06
	7			4,950	3,300	3,149	151	0.04	1,650	0.18	2.00
	8-10			14,850	9,900	8,596	1,304	0.04	4,950	0.20	2.00
	11-15			28,875	20,625	19,722	903	0.04	8,250	0.17	2.50
	16-20			28,875	20,625	19,929	696	0.04	8,250	0.16	2.50
	21-25			26,793	18,543	17,751	793	0.04	8,250	0.22	2.25
	26-30			13,495	5,245	4,406	839	0.04	8,250	0.18	0.65
	31-40			19,851	4,823	3,735	1,088	0.04	15,028	0.16	0.32
Total		4,410	12,391	159,569	97,682	91,679	6,003	0.04	61,888	0.18	1.78

11.4.7 MINING EQUIPMENT

As both ore and waste rock are hard, the bench height was designed to be 15 m; high pressure drilling, multi-millisecond blasting and hydraulic shovel loading were proposed by Changsha for the mining operation. Production practices had proven that this stripping method is reasonable.

Major mining equipment includes hydraulic shovels, dump trucks, blasting drills, bulldozers, and other support units. Table 11.6 lists the major mining equipment.

Table 11.6 List of Shangfanggou Major Mining Equipment

Name	Model	Units	Notes
Hydraulic Shovel	PC400-6	4	Bucket 1.8 m^3
Dumping Truck	BJZ3530	25	Load 32 t
Drill	CS-165E	2	D150 mm
Drill	KQD150	2	D150 mm
Drill	KQD100	2	D100 mm
Wheel Loader	ZL-50	2	Bucket 3.0 m^3
Bull Dozer	T320	1	
Bull Dozer	T220	1	
Oil Truck	FL	1	6 t
Water Truck	BJZ5360GSS	1	
Explosive Truck	BCLH-8	1	
Material Truck		2	5 t
Compactor		1	
Grader	VOLVO		1
Crane		1	16 t
Water Pump	100D45x3	1	55 kW

11.4.8 BLASTING

Because of the number of caved mined-out areas existing in the pit, large pieces of ore are easily created when blasting ore is located in surrounding areas. To control the size of broken ore, all waste rock and ore should be broken using the same blasting design (e.g. by using D150 mm drilling, multi-row holes and millisecond blasting, and fill with granular ammonium nitrate fuel oil [ANFO]).

11.4.9 DEWATERING

To prevent water from outside the pit limits to flow into the pit, a diversion ditch was developed at 1365 masl bench. Different methods were used for pit dewatering during the early period and the later period of mining.

The early period of mining at above 1245 masl used a one-stage dewatering method. The later period of mining below the elevation of 1245 masl will use a two-stage dewatering method.

11.5 CURRENT MINE STATUS

During the site visit, Luoyang Fuchuan technical staff introduced the history and current operation of the Shangfanggou Mine. Wardrop performed field inspections in the area of the Shangfanggou Mine and reviewed geological reports, preliminary design and mining plan. Wardrop also visited the area of the Sandaozhuang Mine, approximately 5 km northeast of the Shangfanggou Mine.

China Moly is the sole shareholder of the Sandaozhuang Mine. It is Wardrop's expectation that China Moly will rely heavily upon the successful experience in the development and operation of the Sandaozhuang Mine in order to optimize and expand the Shangfanggou Mine.

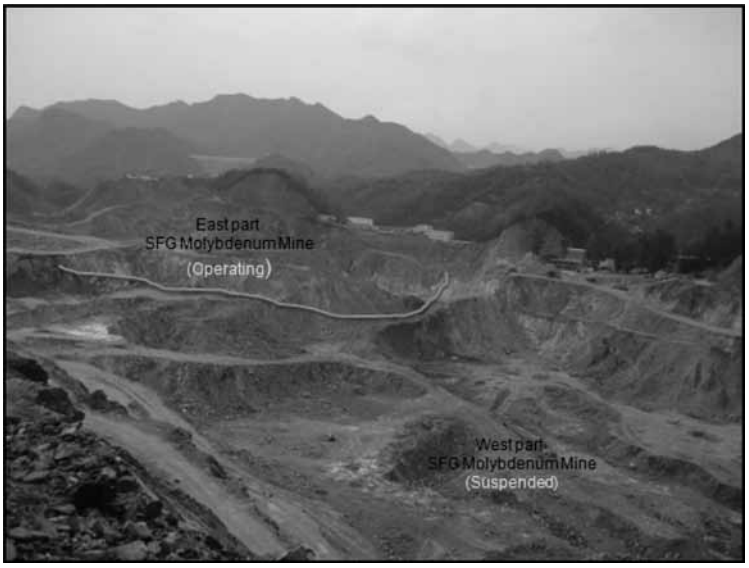
11.5.1 OPERATING STATUS

The Shangfanggou mining operation was officially suspended in January 2010 because of the change in ownership of Luoyang Fuchuan. As indicated by Luoyang Fuchuan during the site visit, the new shareholders are planning to resume the open pit mining operation after reviewing up-to-date mining conditions and establishing a proper mining design.

During the site visit, Wardrop observed that another company or companies, including Tiangang, were currently operating in the east part of the Shangfanggou pit. According to the Shangfanggou mining license, the area is within the license. Wardrop understands that the situation is attributable to decisions that were made in the past, but that must be reasonably resolved before further exploitation of the Shangfanggou Mine can proceed in a rational manner.

Figure 11.5, Figure 11.6, and Figure 11.7 describe the current mining status in the area of the Shangfanggou Mine.

Figure 11.5 Current Pit Status - Whole Pit



Note: suspended by Luoyang Fuchuan since January 2010.

Figure 11.6 Current Pit Status - West

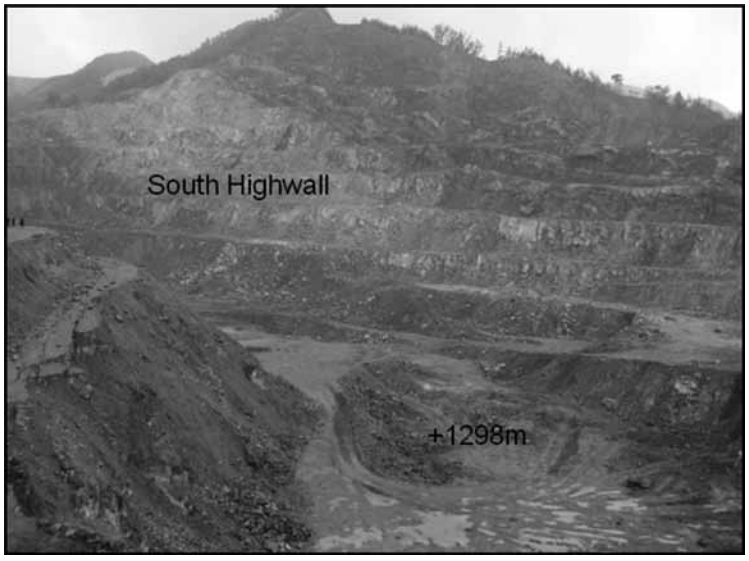
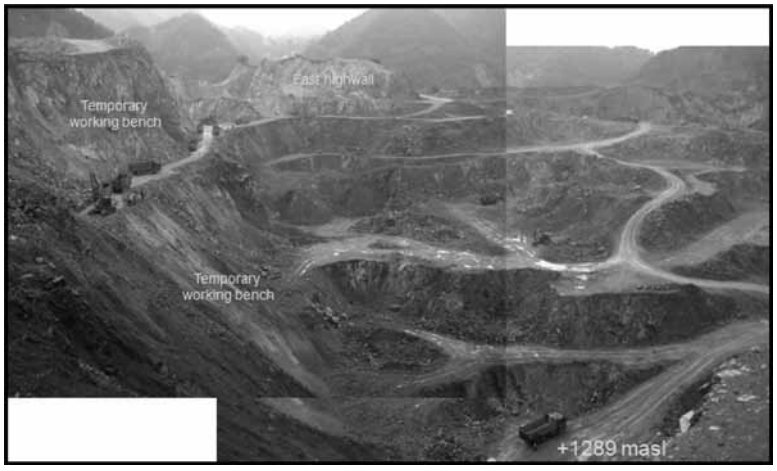


Figure 11.7 Current Pit Status - East



Note: Tiangang was operating during the site visit.

11.5.2 PRODUCTION CAPACITY

Wardrop estimates that Shangfanggou Mine has exceeded the designed production capacity of 5,000 t/d, according to four monthly reports and four daily reports supplied by Luoyang Fuchuan (Table 11.7 and Table 11.8) (excluding any other mining operations of Tiangang and others).

Table 11.7 Monthly Production Capacity

Month	**September 2008**	**November 2008**	**May 2009**	**September 2009**
Ore Production *(t/m)*	346,670	200,757	102,079	228,744
Average Ore Grade *(%)*	0.196	0.188	0.209	0.159

Table 11.8 Daily Production Capacity

Date	**Aug. 21/08**	**Nov. 15/08**	**May 12/09**	**Nov. 19/09**
Ore Production *(t/d)*	4,772	10,961	5,804	3,926

Wardrop further assumed, on the basis of its field inspection, that the production capacity of Tiangang and others is close to 5,000 t/d.

It is therefore Wardrop's opinion that total ore production capacity has reached approximately 10,000 t/d in the pit of the Shangfanggou Mine.

11.5.3 MINE LIFE

Working System

The mined is currently designed to operate 330 d/a, 1 shift/day, and 12 h/shift.

Mine Life

Wardrop estimated that the remaining ore reserve is 47,821 kt. Based on the current actual production capacity 10,000 t/d, mine life will be approximately 15 years within the current ultimate pit.

11.5.4 MAJOR MINING EQUIPMENT

The size and quantity of the mining equipment last used at the Shangfanggou Mine did not follow CNIF's recommendations in the preliminary design of 2005. Most of the major and support mining equipment was supplied by mining contractors. The major mining equipment currently owned by Luoyang Fuchuan is shown in Table 11.9.

Table 11.9 Major Mining Equipment

Name	Model	Units	Notes
Hydraulic Shovel		2	Bucket 1.2 m^3
Drill	CS-165E	3	D150 mm
Drill	KQD150	2	D150 mm
Drill	KQD100	2	D100 mm
Portable Compressor		6	

11.5.5 OBSERVATIONS

Other than the fact that Tiangang was still operating in the east part of the pit, Wardrop observed the following important facts:

- In the last few years, Luoyang Fuchuan did not fully follow the production schedule recommended in the preliminary design of 2005. Loading and hauling of ore and waste were carried out by mining contractors; drilling and blasting works were done by the owner. The stripping ratio is unbalanced and the bench height is too high, especially in the east part of the pit.

- Generally, the high wall is stable and no slope failure has occurred. The dip direction of the wall rock is opposed to the pit slope as the CNIF 2005 preliminary design report delineates.

- Currently, the elevation of bottom of the pit is 1289 masl in the east part of the pit and 1298 masl in the west part of the pit. There is no water in the pit, which proves that underground water inflow is negligible.

11.5.6 OTHER MINES NEARBY

There are two large open pit mines nearby: Nannihu mine and Sandaozhuang mine.

Sandaozhuang Mine

Sandaozhuang mine is currently operated by China Moly. Extraction in the mine is based upon conventional shovel-truck methods with multi-benches. The pit has been operating at a capacity of 30,000 t/d since 2006, and the remaining mine life is approximately 29 years.

The pit is 2,350 m long, 1,385 m wide and 516.8 m high, from elevation 1631 masl to 1114 masl. Wardrop inspected the operation and observed that the mine uses well-maintained, modern mining equipment as well as technology and mining methods typical of advanced Chinese operations. Figure 11.8 demonstrates the current pit operation status of Sandaozhuang mine.

Figure 11.8 Current Status in the Area of Sandaozhuang Mine

The company has 960 employees, including 130 technical staff. The mine operates 330 d/a, 3 shifts/day and 8 h/shift.

Wardrop was informed that Sandaozhuang mine has a systematic mine design, periodically updated production schedule and short term mining plans. Major mining equipment is listed in Table 11.10.

Table 11.10 Inventory of Major Mining Equipment

Name	Model	Units	Notes
Electric Shovel	WK-10B	1	Bucket 10 m^3
Electric Shovel	WK-4C	6	Bucket 4 m^3
Dumping Truck	TR-50	25	Load 32 t
Dumping Truck	BJZTR-3530	15	
Dumping Truck	BJZTR-3364	8	
Drill	KY-250D	2	
Drill	KY-310B	3	
Drill	CLQ-10	1	
Bull Dozer	SD220	1	
Bull Dozer	T220	1	
Crusher		3	Diameter 1,200 mm
Water Truck		2	20 m^3
Water Truck		1	40 m^3
Explosive Truck		1	10 t

In addition, the mine engages a few contractors to effectively outsource some low-technology, labour-intensive tasks including waste loading and transportation, which has resulted in substantially lower capital expenditure requirements for the mobile fleet.

Nannihu Mine

Nannihu mine is owned by Luanchuan Longyu Molybdenum Co, Ltd, which is mainly owned by Henan Coal Chemical Industry Group Co., Ltd. (HNCC). Extraction in the mine is based upon conventional shovel-truck methods with multi-benches. Wardrop did not obtain further information as it was beyond Wardrop's scope of work.

12.0 METALLURGICAL PROCESS ASSESSMENT

12.1 INTRODUCTION

The objective of the metallurgy and process assessment was to review the metallurgical performance of the Shangfanggou ore and process related information, including the process flowsheet and rate, the equipment used, and the process operating costs.

The assessment methodology involved:

- a visit to the six primary process plants, one cleaner plant (processing the molybdenum concentrates from two of the primary process plants), one hydrometallurgical plant (processing the tailing from the cleaner process plant), and their related TSF and the open pit
- meetings and discussions with China Moly and Luoyang Fuchuan personnel during the site visit
- a discussion with Luoyang Fuchuan personnel after site visit
- a review of existing reports and information made available to Wardrop
- a discussion of potential risks and related mitigation measures and opportunities.

A summary of the findings of the metallurgy and process assessment are provided in this section.

12.2 METALLURGICAL TESTWORK

Several testing programs have been conducted on mineral samples from the Shangfanggou deposit. The key testwork available for the review was conducted in 2007 by IMU. This testwork was conducted to pilot scale. As reported, the mineralization is refractory to conventional processes. The mineral components are complex. The molybdenum minerals are finely disseminated in the host minerals; more importantly, the ore contains a significant amount of hydrophobic silicates with magnesium. One of the hydrophobic silicate minerals is talc. The hydrophobic silicates have a similar floatability as molybdenite, which is the main molybdenum carrier. Because of present of talc and finely disseminated molybdenite, the ores from the deposit were considered to be difficult to process. However, the bench scale tests conducted before 2007 appeared to produce much better metallurgical performances.

12.2.1 PREVIOUS TESTWORK (BEFORE 2007)

As reported in April 2004 by the First Geological Exploration Institute, Henan Geological Mineral Resource Exploration Bureau, a testing program was conducted by Jilin Metallurgical Research Institute on various samples from underground tunnels (No.2, No.3, No.4, No.5, and No.2/7), testing shaft (No.65 and No.144) and drill cores (CK701, CK604, CK704, and CK708). A total of 12 samples were collected. Three composite samples were generated from the samples collected in 1970 from underground tunnels (No.3, No.4, No.5, No.7, and No.2/7). The master composites were representative of sulfide molybdenum mineralization (SM), oxide molybdenum mineralization (OM), and tungsten-molybdenum mineralization (W-Mo). The samples used for the pilot plant test were duplicate SM samples collected in 1970.

The report indicates that using a conventional flotation flowsheet with regrinding rougher concentrate followed by multi-stages of cleaner flotation, a concentrate of 50% Mo was produced by a bench test from the SM sample with a molybdenum recovery of between 84% and 87%. Further magnetic separation produced an iron concentrate from the molybdenum flotation tailing. The iron concentrate grade was 63% Fe and the iron recovery was 53%. As summarized by CNIF in 2005, the test results are presented in Table 12.1.

The testwork summary also included data obtained by the Beijing General Research Institute of Mining and Metallurgy (BGRIMM) in August 1992.

Table 12.1 Test Results Before 2007

Ore Type		Altered Carbonate		Granite Porphyry	Hornfels	Graniton	Sulfide Composite	Sulfide Composite	Sulfide Composite*
Test Scale			Bench	Bench	Bench	Bench	Bench	Pilot Plant	Bench
Tested by			Jilin Metallurgical Research Institute					BGRIMM*	
Head Grade *(%)*	Mo		0.127	0.114	0.073	0.070	0.109	0.176	0.27
	TFe						13.4	10.9	12.5
	S		2.6						2.2
Concentrate Grade *(%)*	Mo Conc		52.5	51.1	47.2	49.4	50.3	46.2	47.1
	Fe Conc						62.8	56.6	60.7
Recovery *(%)*	Mo		84.1	89.5	83.7	84.4	87.2	89.7	90.5
	TFe						52.8	55.9	62.3

* Beijing General Research Institute of Mining and Metallurgy.

The locked cycle tests showed a significant variation in the metallurgical performance for different mineralogical samples; however, the test results were comparable to the results from the master composite.

Using similar flowsheets, pilot plant tests generated a 46% Mo concentrate with a molybdenum recovery of 88% to 90%. The subsequent magnetic separation produced a 56.6% Fe concentrate with an iron recovery of 56%.

It was noted that the sulfide molybdenum minerals and magnetite in the mineralization were amendable to conventional flotation-magnetic separation, but the magnetite concentrate grade was low. Pyrite, scheelite, and oxide molybdenum minerals were not considered to be recoverable. Rhenium in the molybdenum concentrate (approximately 0.0058%) was an additional value element which may be recoverable during smelting.

12.2.2 2007 TESTWORK

Samples

Two samples were collected, one for the bench scale verification tests and the other for the pilot scale tests. A total of 110 t of samples was collected for the pilot plant tests from 7 different locations within the pit:

- southeast high wall at 1320 masl
- east high wall at 1320 masl
- south high wall at 1342 masl
- central high wall at 1342 masl
- south high wall at 1350 masl
- middle section of north high wall at 1350 masl
- south area of the Wangjiawa mining zone.

Mineralogy

Chemical analysis results on the pilot plant sample are presented in Table 12.2.

Table 12.2 Chemical Analysis Results - Pilot Plant Test Sample, 2007

Element	**Content** *(%)*
Mo	0.15
TFe	9.92
S	0.75
Cu	0.0017
Pb	0.0011
Zn	0.026
P	0.061
SiO_2	46.0
CaO	9.46
MgO	17.3
Al_2O_3	1.66
K2O	1.62
Na_2O	0.13
WO_3	0.025
Fe(mag)	7.15
As	0.0016
Bi	0.012

Note: TFe = total iron; Fe(mag) = magnetite iron.

The molybdenum content of the ore is approximately 0.15%. The molybdenum mineralogical phase determination indicates that approximately 13% of the molybdenum in the sample of the pilot plant testing is present in oxide forms. It was indicated that the oxidation degree was relatively high. The magnesium oxide (MgO) content is 17.3%, which is lower than the average data of the samples used for bench scale testing. The main minerals present in the pilot plant test sample are detailed in Table 12.3.

Table 12.3 Main Minerals of Pilot Plant Test Sample

Mineral	**Content** *(%)*
Molybdenite	0.27
Talc	22.5
Magnetite	9.9
Pyrite	1.1
Quartz	14.5
Mica, Sericite	11.7
Sulfate	<0.2
Actinolite, Tremolite, Dolomite, Amphibole	2.2
Calcite	6.1
Chlorite	3.1
Others incl. Pyrrhotite, Powellite, Epidote, Potassium Feldspar, Serpentine; Galena, Sphalerite, Chalcopyrite, Scheelite, Fluorite	n/a

More than 80% of molybdenite occurs with quartz; some molybdenite is finer than 0.01 mm and is enclosed within the quartz. It appears that some molybdenite intergrows with talc and pyrite, and there are gangue minerals occurring between molybdenite layers. Most of the molybdenite grains range from 0.003 mm to 0.27 mm with an average size of 0.025 mm. It appears that, to achieve optimal metallurgical performance, fine regrinding is required.

Magnetite (Fe_3O_4) mainly occurs with talc and pyrite. In general, the particle size of magnetite is within a range of 0.003 mm and 0.45 mm. It was observed that pyrite and chalcopyrite fill the fractures between magnetite grains or occur within the magnetite.

Ore Hardness

The test data indicate that, compared to the ore from the Sandaozhuang pit (neighbouring the Shangfanggou pit and operated by China Moly), the relative grindability of the ore from the Shangfanggou pit is softer. The grindability factor is 1.41 (Sandaozhuang ball mill work index/Shangfanggou ball mill work index). No grindability data from the Sandaozhuang mineralization was available when this report was prepared.

Testwork

Pilot plant tests were conducted at a process rate of 10 t/h. The flowsheet included:

- rod mill grinding on the crushed feed to 40% to 45% passing 74 μm
- magnetic separation (rougher separation followed by regrinding and cleaner separation)
- classifying the magnetic separation tailing into three different particle size products: coarse fraction, fine fraction and slime (discarded)
- ball mill grinding on the coarse magnetic separation tailing to 65% passing 74 μm
- separate rougher flotation on coarse and fine fractions with three stages of scavenger flotation
- rougher concentrate cleaner flotation
- regrinding on the cleaner concentrate (1st stage of cleaner flotation) to 60% passing 25 μm
- additional five stages of cleaner flotation and three stages of cleaner scavenger flotation
- further regrinding on the cleaner concentrate (6th stage of cleaner flotation) to 80% to 85% passing 25 μm
- additional four stages of cleaner flotation.

The reagents used included:

- collector: gasoline and CMO (a proprietary reagent)
- talc and sulfide mineral suppressants: sodium silicate (water glass), hydrated potassium aluminum sulfate (alum), zinc sulfate, and sodium thioglycolate
- frother: No.2 oil (mainly terpene alcohol).

The pilot plant testing campaign produced a 40% Mo concentrate with a molybdenum recovery of 71%. Although the flowsheet also recovered the magnetite prior to the molybdenum flotation, iron recoveries were not shown in the report. It appears that the iron concentrate contained approximately 52% Fe.

The testwork compared the effect of the mechanical flotation cell and column flotation cell on the metallurgical performance of molybdenum minerals. It appears that no significant difference was noticed in metallurgical performance between the two different types of the flotation cells.

The testwork also investigated the settling rate of the tailing sample. It was found that the tailing samples were very difficult to settle without the addition of lime, aluminum sulfate, or ferrous sulfate.

12.3 PROCESS

12.3.1 PROCESS PLANTS AND MILL FEED

During the Wardrop site visit, no process plants were in operation. As reported by Luoyang Fuchuan, the plant operation had been suspended for almost five months due to the change in ownership in Luoyang Fuchuan. There are many process plants in the county.

Process Plants

There is more than 20 years of mining activity history at the Shangfanggou deposit. Luoyang Fuchuan was established in 1987 and began production operation by 1993. Early in the mining period, the plants were mainly fed from underground mining. In 1998, the magnetic separation process was incorporated in the molybdenum recovery process to recover magnetite. In 2004, there were three process plants with a total process capacity of 2,025 t/d. The plants produced a molybdenum concentrate and a magnetite concentrate. The molybdenum concentrate grade was 45% Mo with a recovery of 60% to 80%. The recovered magnetite concentrate contained approximately 48% to 60% Fe. Iron recovery was approximately 75% at a concentrate grade of 48% Fe.

Currently, there are six primary process plant processing ore from the Shangfanggou pit. They are named:

- Jiaoshuwa
- Sanchuan
- Hualong
- Hexinyuan
- Jinfeng
- Jinhanyuan.

Only two of the process plants, Jiaoshuwa and Sanchuan, are owned and directly managed by Luoyang Fuchuan.

Luoyang Fuchuan is one of shareholders of the Hualong plant (60% share), the Hexinyuan plant (50% share), the Jinfeng plant (70% share) and the Jinhanyuan plant (70% share).

In general, the process plants produced low grade molybdenum concentrates containing approximately 12% to 16% Mo. The Jinhanyuan plant was the exception; it produced a molybdenum concentrate with approximately 40% to 45% Mo. Most of the plants used magnetic separation to produce a magnetite concentrate.

A separate cleaner plant (Heyu cleaner plant) upgrades the low grade molybdenum concentrates (12% to 16% Mo) from the Jiaoshuwa and Sanchuan plants to approximately 40% to 45% Mo. The concentrates from the other primary process plants were sold directly to various smelters or cleaner plants within China.

Fuchun hydrometallurgical plant further recovered molybdenum from the tailing generated from the Heyu cleaner plant. Fuchun hydrometallurgical plant produced molybdenum acid.

The process rates of the plants range from 700 t/d to 1,500 t/d. The total process capacity of these primary plants is estimated at 5,800 t/d. The balance of the mine production was sold to other process plants that are not directly related to Luoyang Fuchuan. The process rates of the plants are detailed in Figure 12.1.

These process plants are located in different places. The distances from the plants to the pit range from approximately 2 km to 43 km, excluding the Heyu cleaner plant and Fuchun hydrometallurgical plant, which are located approximately 71 km west of the pit. The process plant and pit locations are presented in Figure 12.2.

The approximate distances between the each plant and the pit are as follows:

- Sanchuan plant: 6 km
- Hualong plant: 2 km
- Jiaoshuwa plant: 6 km
- Hexinyuan plant: 8 km
- Jinfeng plant: 20 km
- Jinhanyuan plant: 43 km
- Heyu cleaner plant: 71 km
- Fuchun hydrometallurgical plant: 71 km.

Figure 12.1 Process Rates of Process Plants

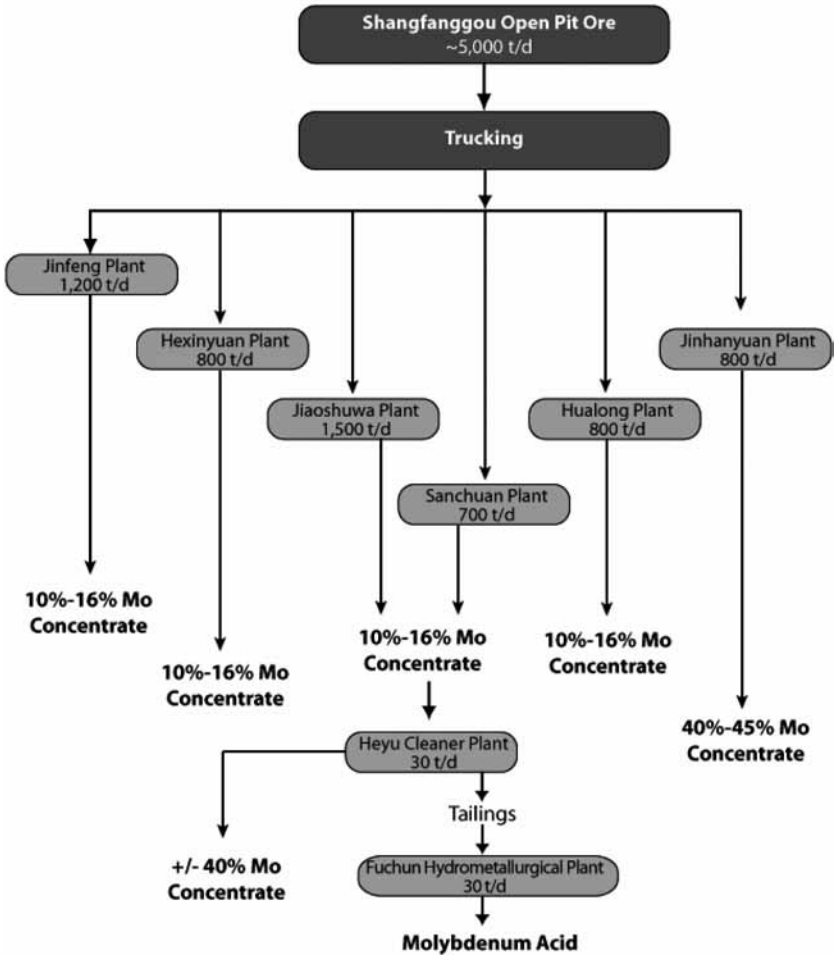
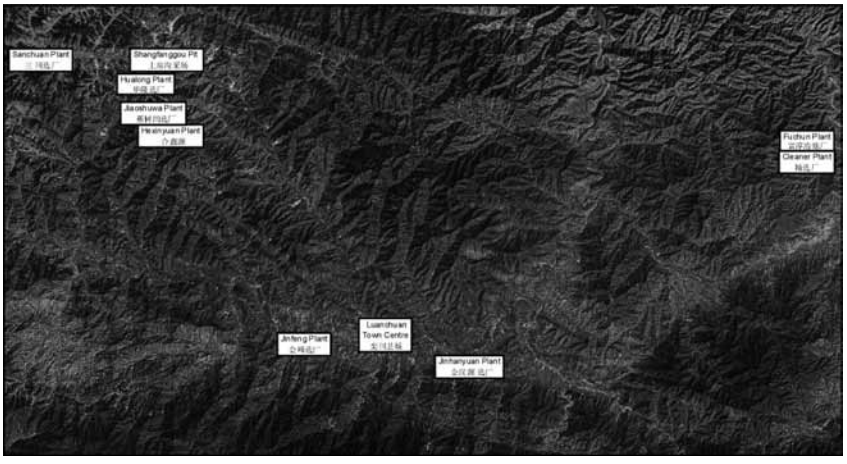


Figure 12.2 Process Plant and Pit Location



Mill Feed

The Shangfanggou pit supplied the mill feed for all six primary process plants. Ore was delivered to the process plants by contractors using 32 t trucks. Mill feed delivery was contracted out; the main delivery contractors were Sanli and Wujiao transportation companies.

There are well-maintained cement and asphalt pavement roads connecting the pit and the plants. There is no crushing station at the pit.

12.3.2 PROCESS FLOWSHEET

In general, the process plants used similar conventional processes to produce molybdenum concentrates. The process includes two separate processes:

- pre-concentration to produce a low grade concentrate with approximately 12% to 16% Mo
- cleaner concentration to upgrade the low grade concentrate to approximately 40% to 45% Mo.

A separate plant processed the tailing from the cleaner plant to produce molybdenum acid.

Pre-concentration

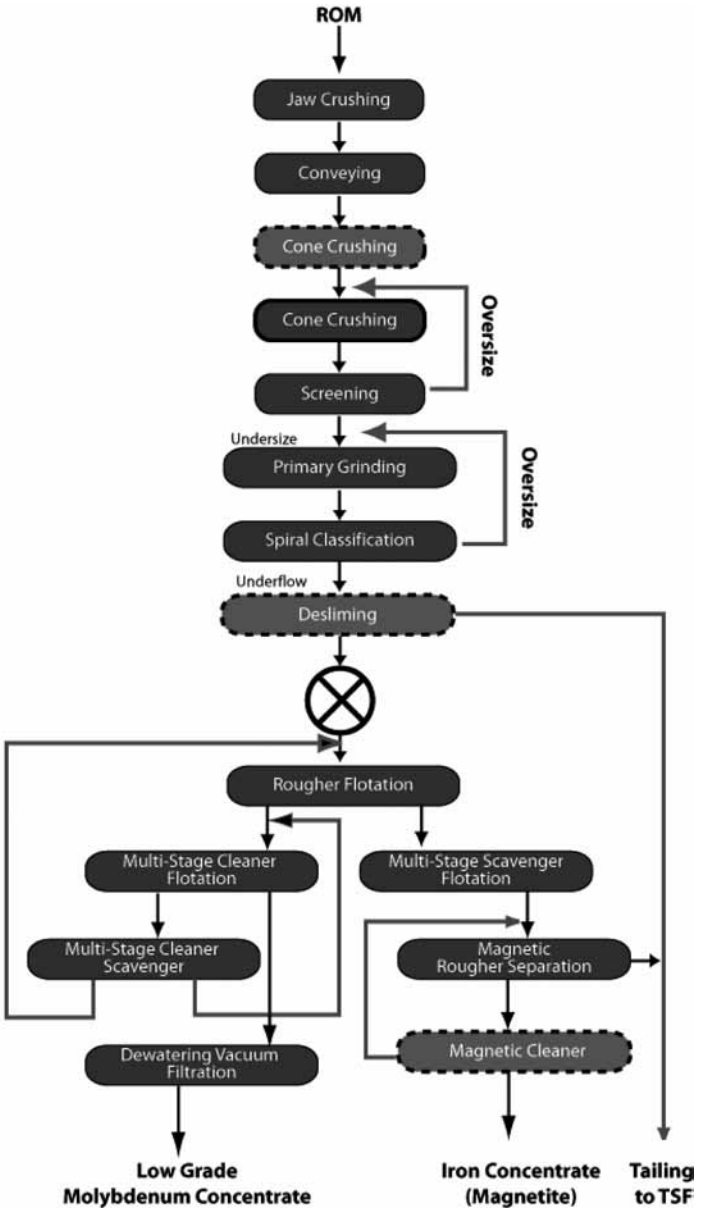
The ROM ore was received at the storage area at the plants and crushed to less than 15 mm to 20 mm by two stages of closed crushing (some of the plants used three stages of crushing). The crushed fine ore was reclaimed from surge bins and ground to 60% to 70% passing 74 μm by ball mills or a combination of rod and ball mill. Typically, spiral clarifiers were used in the primary plants to classify the grinding mill discharges. The spiral classifier overflow was floated by rougher flotation, multi-stages of scavenger flotation, and multi-stages of cleaner flotation to produce the low grade molybdenum concentrate (12% to 16% Mo). The molybdenum flotation tailing was further recovered for magnetite to produce an iron concentrate by magnetic separation (Sanchuan plant had the magnetite recovered in the primary grinding circuit). The magnetic separation tailing was pumped to the TSF. Each process plant had its own TSF.

The key processes for pre-concentration include:

- ROM stockpile
- primary crushing
- secondary crushing in closed circuit with vibrating screen (some with tertiary crushing)
- fine ore surge bin
- primary grinding in closed circuit with classifier (some plants with desliming or in open circuit)
- molybdenum rougher flotation
- multi-stages of rougher scavenger flotation
- multi-stages of cleaner flotation to produce a low molybdenum concentrate with 16% to 18% Mo
- multi-stages of cleaner scavenger flotation
- concentrate dewatering
- magnetic separation to produce a saleable iron concentrate (magnetite)
- final tailing delivering system
- TSF.

The flowsheet of the pre-concentration process is presented in Figure 12.3.

Figure 12.3 Pre-concentration Flowsheet



At the Sanchuan plant and the No.1 Jiaoshuwa plant, the magnetic separation to recover magnetite was processed prior to the molybdenum flotation. The Sanchuan plant used a more complex magnetic separation flowsheet to produce a high grade magnetic concentrate and a low grade magnetic concentrate. The magnetic separation included magnetic rougher concentrate regrinding and cleaner separation. The primary grinding process included two stages of grinding (primary and secondary) in open circuit. Magnetic separation was conducted between primary and secondary grinding.

Cleaner Concentration

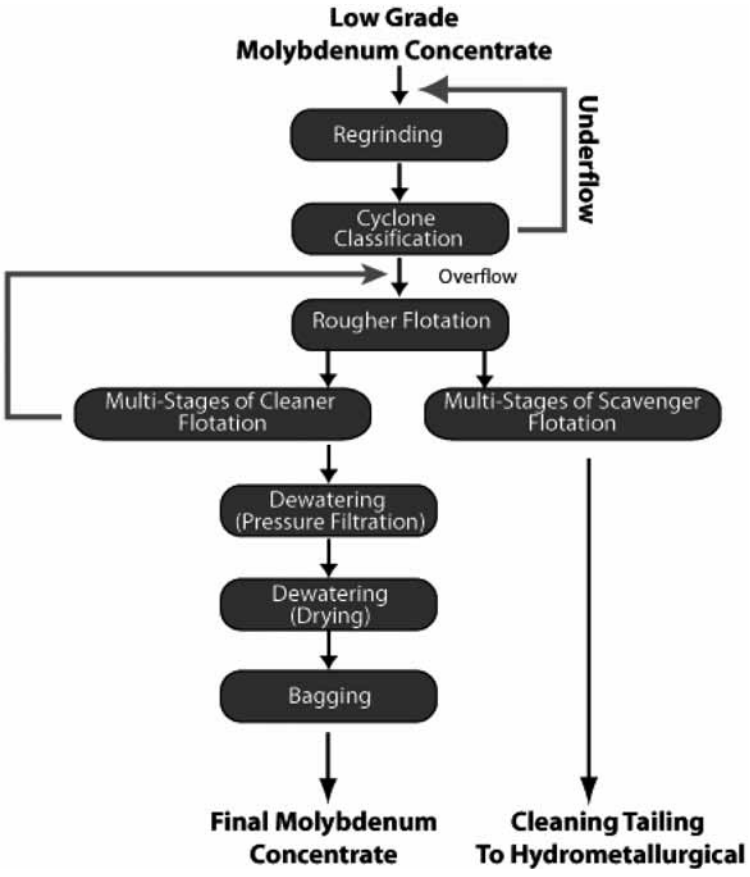
The low grade concentrates from the Sanchuan and Jiaoshuwa plants were upgraded at the central Heyu cleaner plant, 71 km east of the pit. The low grade concentrates received in bags were re-pulped and reground by stirred mills to 90% passing 325 mesh (43 μm). The reground concentrate was refloated and the tailing was scavenged by nine stages of scavenger flotation while the rougher concentrate was upgraded by eight stages of cleaner flotation. Prior to shipping to smelters, the final concentrate with approximately 40% Mo was pressure-filtered and dried to a moisture of approximately 6% to 8%.

The Heyu cleaner plant included:

- regrinding by tower mills
- rougher flotation
- multi-stages of rougher scavenger flotation
- multi-stages of cleaner flotation
- concentrate dewatering by pressure filtration and drying
- bagging.

The flowsheet of the Heyu cleaner plant is illustrated in Figure 12.4.

Figure 12.4 Low Grade Molybdenum Concentrates



Cleaner Tailing Treatment

The cleaner flotation tailing from the Heyu cleaner plant was pumped to the Fuchun hydrometallurgical plant, which is adjacent to the Heyu cleaner plant. The tailing was leached at 25% solid at 36°C to 40°C by sodium hypochlorite. The leachate was separated by pressure filtration from leach residues, which were washed and dry stacked. Then the filtrate was polish filtrated and acidified followed by ion-exchange and desorption. The molybdenum in the desorbed solution was precipitated to produce molybdenum acid by adding sulfuric acid. There was no detailed technical information available for the cleaner tailing treatment process.

12.3.3 FLOTATION REAGENTS

In general, the reagents used in these primary flotation plants for molybdenum recovery from the ROM ore were very similar.

The main reagents included:

- molybdenum collector: diesel or gasoline
- talc and sulfide mineral suppressants: sodium silicate (water glass), hydrated potassium aluminum sulfate (alum)
- frother: No.2 oil (mainly terpene alcohol)
- pH regulator: lime (main for tailing settlement).

The diesel or gasoline consumption was approximately 300 g/t mill feed. The frother dose was approximately 100 g/t mill feed. The water glass consumption varied substantially from 7 kg/t mill feed to 34 kg/t mill feed. The hydrated potassium aluminum sulfate consumption also fluctuated significantly from 0.65 kg/t mill feed to 2.7 kg/t mill feed. Lime consumption changed from 0.35 kg/t mill feed to 1.1 kg/t mill feed.

The significant variations in the reagent consumption may result from a difference in mineralogy, especially when the high talc ores were treated, or it may be due to a difference in the reagent quality.

As reported, sodium sulfide or sodium cyanide was used when the mill feeds contained an enhanced content of copper sulfide minerals.

12.3.4 TAILING HANDLING

Each of the primary process plants had their own tailing impoundment area. Normally, the tailing from the process plants were delivered to the TSF by pumping. The tailing dams were built using upstream construction technology. A combination of vertical decant tower and horizontal decant pipe is used for the TSF pond flood control. The supernatant from the TSF was pumped to the process tank located at the plant site for re-use. As indicated by Luoyang Fuchuan technical personnel, there was zero discharge from the TSF. The make-up water was obtained from local rivers.

It appears that most of the TSFs have a shorter service life than the projected mine life. More detailed information about the TSFs is presented in Section 14.0.

12.3.5 PROCESS EQUIPMENT

The equipment used in all the process plants was similar but differed in size from plant to plant. The key process equipment used at the Jiaoshuwa, Sanchuan, Hexinyuan, Hualong, and Heyu cleaner plants is listed in Table 12.4. Due to a lack of data, the major equipment used at the Jinfeng, Jinhanyuan, and Fuchun hydrometallurgical plants is not included in Table 12.4.

Table 12.4 Main Process Equipment

	Jiaoshuwa					
Plant	**No. 1**	**No. 2**	**Sanchuan**	**Hexinyuan**	**Hualong**	**Heyu Cleaner Plant**
Process Rate	750 t/d	750 t/d	700 t/d	800 t/d	800 t/d	30 t/d
Primary Crushing	One 500 mm x 750 mm jaw crusher, 75 kW	One C80 jaw crusher, 75 kW	One C80 jaw crusher, 75 kW	One C80 jaw crusher, 75 kW	One 500 mm x 750 mm jaw crusher, 55 kW	n/a
Secondary Crushing	One 250 mm x1,200 mm cone crusher, 30 kW	One 1,200 mm Dia. cone crusher (Short Head), 110 kW	One GP100 cone crusher, 90 kW	One GP110 cone crusher, 160 kW	One 1,200 mm Dia. cone crusher, 110 kW	n/a
Tertiary Crushing	One 1,200 mm Dia cone crusher (Short Head), 110 kW	n/a	n/a	n/a	n/a	n/a
Screening	One Vibrating Screen 1,500 mm W x 3000 mm L	One vibrating screen 1,500 mm W x 3,000 mm L	One Vibrating Screen 1,500 mm W x 2,500 mm L	One vibrating screen	One vibrating screen 1,200 mm W x 3,000 mm L	n/a
Primary Grinding	Two 2,100 mm Dia x 3,000 mm L ball mills, 210 kW	Two 2,100 mm Dia x 3,000 mm L ball mills, 210 kW	Two 2,100 mm Dia x 3,000 mm L ball mills, 155 kW	One 2,000 mm Dia x 4,500 mm L ball mill, 245 kW; One 2,400 mm Dia x 3,600 mm L ball mill, 320 kW	Two 2,100 mm Dia x 3,600 mm L ball mills, 185 kW; One 1,500 mm Dia x 3,000 mm L ball mill, 75 kW	Four 600 mm Dia x 3,000 mm H regrinding tower mills (two operation & two standby), 22 kW
Classification	Two 1,500 mm Dia Spiral Classifiers	Two 1,500 mm Dia Spiral Classifiers	n/a	Two Spiral Classifiers	Three Spiral Classifiers	Two 150 mm cyclones
Conditioner	One Dia 2,000 mm agitating tank	One Dia 2,000 mm agitating tank	One 1,500 mm Dia agitating tank	One 2,000 mm Dia agitating tank	Two 2,000 mm Dia agitating tank	One 1,500 mm Dia agitating tank
Secondary Grinding	n/a	n/a	Two 1,500 mm Dia x 3000 mm L ball mills, 95 kW	n/a	n/a	
Rougher Flotation	Three 2.8 m^3 cells	Four 4.0 m^3 cells	Eight 8.0 m^3 cells	Three 8.0 m^3 cells	Cell size and number need to confirm	Three 3 m^3 cells
Rougher Scavenger Flotation	Ten 2.8 m^3 cells; Nine 4.0 m^3 cells	Four 4.0 m^3 cells; Twenty-four 1.1 m^3 cells	Nine 8.0 m^3 cells	Nine 8.0 m^3 cells		Twelve 3 m^3 cells
Cleaner Flotation	One 2.8 m^3 cells; Eight 0.62 m^3 cells; Four 0.35 m^3 cells	Eight 1.1 m^3 cells; Six 0.62 m^3 cells; Ten 0.35 m^3 cells	Ten 1.2 m^3 cells	Five 4 m^3 cells; Ten 1.1 m^3 cells		Ten 1.1 m^3 cells
Cleaner Scavenger Flotation	Fourteen 0.62 m^3, eight 1.1 m^3 cells	Thirty-four 0.62 m^3 cells	n/a	Nine 4 m^3 cells		n/a
Magnetic Separation	Magnetic separator(s)	Magnetic separator(s)	One 1,000 mm Dia x 2,100 mm L magnetic separator; Two 700 mm Dia x 1,800 mm L magnetic separators; One 2,100 mm Dia x 5,000 mm L regrinding ball mill, 210 kW	One magnetic separator	1,200 mm Dia x 2,400 mm L magnetic separators	n/a
Dewatering	One vacuum filter	One vacuum filter	One vacuum filter	One vacuum filter	One vacuum filter	Two 100 m^2 plate & frame pressure filters, One steam heated screw dryer

12.3.6 METALLURGICAL PERFORMANCE

In general, the mineralization is not amendable to the conventional molybdenum flotation recovery process. The molybdenum content of the final concentrate produced was low, grading approximately 40% Mo according to monthly production reports. The total molybdenum recovery was approximately 60%, including the low molybdenum concentrate upgrading recovery, which was approximately 94%.

Primary Flotation Metallurgical Performance

The production data available for the review are mainly from Jiaoshuwa and Sanchuan plants, which were directly under the management of Luoyang Fuchuan. A summary of the monthly molybdenum metallurgical performances of the low molybdenum concentrate production from the primary flotation plants is provided in Table 12.5.

On average, the molybdenum grade of the mill feed was 0.185%, ranging from 0.13% to 0.22%. The low grade concentrate grade was approximately 14.1% with a molybdenum recovery of 63.8%. The data show a significant variation in molybdenum recovery from 49% to 79%. Possible reasons for the variation are not clear but it may be due to a mineralogical variation in the mill feeds, assay error, and unstable process control.

Cleaner Flotation Metallurgical Performance

The cleaner flotation plant mostly processed the low grade molybdenum concentrates from Jiaoshuwa and Sanchuan plants although it was reported that some of the upgrading mill feeds were from plants that are not in the reviewed plants. On average, the low grade concentrate can be upgraded from 14% Mo to approximately 40% Mo. The monthly average molybdenum cleaner flotation recoveries ranged from 90% to 98%, averaging at 94%. The key metallurgical production data of the cleaner flotation plant on a monthly basis are tabulated in Table 12.6.

Table 12.5 Molybdenum Flotation Production Data - Primary Flotation

	Process Rate *(t/month)*			Mill Feed Grade *(% Mo)*			Concentrate Grade *(% Mo)*			Mo Recovery *(%)*		
Month	**JSW No.1**	**JSW No.2**	**SC**	**JSW No.1**	**JSW No.2**	**SC**	**JSW No.1**	**JSW No.2**	**SC**	**JSW No.1**	**JSW No.2**	**SC**
2009												
December	24,162	20,905	14,093	0.198	0.218	0.138	14.1	12.2	13.3	57.4	58.8	63.2
November	26,496	24,885	19,844	0.167	0.169	0.145	14.1	14.4	12.4	60.4	62.1	57.4
October	24,679	27,700	22,732	0.164	0.177	0.135	11.4	11.3	12.3	48.5	52.7	59.9
September	29,300	28,894	21,863	0.156	0.158	0.164	10.4	11.9	13.9	67.4	62.1	61.8
August	14,472	13,650	23,485	0.164	0.159	0.178	11.8	11.7	14.4	63.7	52.3	73.0
July	19,898	142	17,628	0.198	0.180	0.191	12.4	10.3	14.8	63.2	49.4	60.1
June	n/a	n/a	22,954	n/a	n/a	0.175	n/a	n/a	14.9	n/a	n/a	66.3
May	29,238	24,518	21,860	0.207	0.203	0.219	12.4	12.3	14.8	57.8	62.1	61.4
April	31,251	28,416	24,735	0.168	0.174	0.180	16.4	12.7	16.0	73.2	70.4	72.1
March	28,964	24,565	23,935	0.165	0.172	0.176	12.4	10.5	15.0	63.4	68.3	67.1
February	15,408	12,391	11,074	0.165	0.165	0.163	10.4	9.0	13.4	60.8	59.6	66.3
January	26,708	28,602	21,815	0.192	0.194	0.204	13.1	11.3	14.7	64.9	56.9	61.3
Sub-total	270,574	234,668	246,018	0.177	0.180	0.174	12.7	11.8	14.3	62.0	60.9	64.5
2008												
December	27,068	25,334	24,915	0.195	0.210	0.210	11.6	12.3	15.8	55.9	57.5	61.0
November	31,527	27,184	25,902	0.190	0.195	0.179	13.8	12.6	15.0	64.5	64.3	67.1
October	29,099	28,497	25,178	0.163	0.165	0.158	13.6	13.3	14.1	61.2	58.8	69.9
September	32,211	30,612	27,107	0.194	0.197	0.197	14.6	14.6	15.6	70.4	66.5	65.0
August	26,342	23,069	20,560	0.166	0.164	0.169	12.6	12.5	15.8	64.7	67.9	57.3
July	29,315	26,178	23,787	0.178	0.184	0.198	14.4	13.6	16.0	63.8	62.2	59.2
June	29,372	30,555	29,283	0.195	0.193	0.197	15.0	14.4	16.9	79.0	69.1	70.0
May	31,830	31,213	26,681	0.170	0.170	0.180	12.2	16.3	16.4	65.6	61.7	64.6
April	33,032	30,322	26,749	0.202	0.206	0.212	14.3	15.5	17.3	61.4	63.8	65.2
March	31,704	31,382	27,419	0.208	0.206	0.196	17.7	17.4	17.1	60.9	63.9	64.0
February	31,735	31,928	27,587	0.195	0.200	0.195	18.1	16.9	17.2	72.0	60.7	64.1
January	32,280	32,076	23,756	0.201	0.197	0.202	16.9	14.7	16.5	65.2	65.3	70.0
Sub-total	365,515	348,350	308,924	0.189	0.191	0.192	14.5	14.5	16.2	65.5	63.5	64.9
Total	636,089	583,019	554,942	0.184	0.187	0.184	13.7	13.3	15.3	64.1	62.5	64.7

Notes:

JSW = Jiaoshuwa plant

SC = Sanchuan plant.

Table 12.6 Molybdenum Flotation Production Data - Cleaner Flotation

Month	Dec	Nov	Oct	Sep	Aug	Jul	Jun	May	Apr	Mar	Feb	Jan	Total
2009													
Feed *(t/month)*	515.6	492.1	549.9	695.4	432.9	336.3	178.9	733.4	710.9	705.5	370.8	719.6	6,441.4
Feed *(% Mo)*	13.2	13.8	11.6	11.7	13.1	13.4	14.9	13.0	14.8	12.4	10.6	12.8	12.9
Concentrate													
(% Mo)	40.5	40.7	40.1	39.7	41.1	41.3	41.0	40.8	42.5	41.9	38.6	40.2	40.8
Mo Recovery *(%)*	92.0	93.5	92.1	92.3	92.4	96.9	91.1	97.6	95.0	94.5	94.5	93.2	94.0
2008*													
Feed *(t/month)*	713.2	756.0	620.4	798.6	600.8	582.6	883.8	785.2	889.2	688.6	792.3	795.6	8,906.2
Feed *(% Mo)*	13.1	13.7	13.6	14.8	13.3	14.8	15.0	14.9	15.2	17.0	17.1	15.9	14.9
Concentrate													
(% Mo)	41.5	42.0	40.1	39.1	36.7	39.1	37.9	39.2	40.2	41.0	41.1	39.7	39.8
Mo Recovery *(%)*	93.5	94.1	93.5	94.1	90.5	94.0	92.2	94.0	95.5	95.1	96.2	94.4	94.1

* processed some low grade concentrate from plants other than Jiaoshuwa and Sanchuan.

Magnetite Concentrate Production

Magnetite concentrate was produced as a by-product from the ore. The magnetite concentrate was recovered either before the molybdenum flotation or from the molybdenum flotation tailing. Normally, the iron grade of the concentrates from the plants was low. Sanchuan plant produced two different iron grade concentrates: a low grade concentrate with an iron grade of approximately 40%, and a high grade concentrate with an iron grade of approximately 49%. However, the other process plants only produced low grade iron concentrates.

On average, the total iron content in the mill feeds in 2008 and 2009 was 14.9%. The magnetite concentrate production and iron recovery are summarized in Table 12.7.

Table 12.7 Magnetite Concentrate Production

	Head *(% TFe)*			Annual Concentrate Production *(t/a)*				Concentrate Grade (% TFe)		
	JSW			JSW		SC		SC		
Year	No.1	No.2	SC	No.1 Low Grade	No.2 Low Grade	Low Grade	High Grade	Low Grade	High Grade	Recovery Total (%) (SC)
2009	14.8	15.0	13.6	77,900	64,045	14,303	39,013	40.0	49.8	74.3
2008	15.6	15.8	14.3	106,900	103,230	23,828	51,478	41.4	47.9	85.6

Notes: JSW = Jiaoshuwa plant; SC = Sanchuan plant.

12.4 ADJACENT PROCESS OPERATIONS

Luan Chuan County has a long history of the molybdenum production. There are many mineral process plants of various capacities in the county. The major plants are operated by China Moly. The mineral process plants owned by China Moly processed the molybdenum ore from the Sandaozhuang pit. The Sandaozhuang pit and the Shangfanggou pit are two of three major deposits located at Lengshui town. China Moly also recovers scheelite from the molybdenum flotation tailing. The capacity of the scheelite process plant is 15,000 t/d.

The flowsheets used for processing both the Sandaozhuang and Shangfanggou ores are similar; however, the China Moly plants achieve greater metallurgical performances than the Luoyang Fuchuan plants. The average mill feeds contain approximately 0.12% Mo. The concentrate grades range from 47% to 57% Mo. The molybdenum recoveries range from 83% to 86% based on a concentrate grade of 47% Mo.

The key factor for better performance is the greater mineralogical amenability of the Sandaozhuang ore. However, larger scale equipment and improved process control at the plant also make a significant contribution to the better performance.

China Moly also owns a molybdenum smelter, located in Luoyang City, Henan Province. The smelter has a 20,000 t/a molybdenum concentrate roasting capacity; it is expected to expand to 40,000 t/a. The roasting system integrates sulfuric acid production from the roasting off-gas. The smelter also produces molybdenum alloys, such as ferro-molybdenum, and molybdenum chemicals.

13.0 CAPITAL AND OPERATING COST ESTIMATE

13.1 CAPITAL COST

No capital costs were reviewed during this study. However, China Moly indicated that by integrating the Sandaozhuang and Shangfanggou operations, there is potential to optimize the pit operation, upgrade the mining equipment, and build a central process plant with a large and optimized capacity. No detailed plans were available at the time of the site visit.

13.2 OPERATING COSTS

13.2.1 MINING

According to monthly operating cost reports (year-end) for ROM ore supplied by Luoyang Fuchuan, the mining operating cost in 2009 was RMB 42.66/t ore mined (USD 6.25/t ore mined). The exchange rate used in the report is USD 1:RMB 6.83. The operating cost breakdown for the 2008 and 2009 operations is shown in Table 13.1.

Table 13.1 Mining Operating Cost Breakdown - 2008 and 2009

Cost Breakdown	2008		**2009**	
	RMB	Cost Shares *(%)*	**RMB**	**Cost Shares *(%)***
Total Production	3,207,052		**1,669,009**	
Total Operating Cost	119,186,565	100.0	**71,197,462**	**100.0**
Direct Production Cost	40,259,964	33.8	**31,948,010**	**44.9**
Auxiliary Costs	69,932,310	58.7	**34,887,186**	**49.0**
Salary	4,774,364	4.0	**2,472,523**	**3.5**
Power	667,703	0.6	**192,921**	**0.3**
Material	3,552,224	3.0	**1,696,822**	**2.4**
Total Unit Operating Cost *(per t)*	37.16	100.0	**42.66**	**100.0**
Direct Production Cost *(per t)*	12.55	33.8	**19.14**	**44.9**
Auxiliary Costs *(per t)*	21.81	58.7	**20.90**	**49.0**
Salary *(per t)*	1.49	4.0	**1.48**	**3.5**
Power *(per t)*	0.21	0.6	**0.12**	**0.3**
Material *(per t)*	1.11	3.0	**1.02**	**2.4**

The mining operating cost includes direct production cost, auxiliary cost, salary, power, and consumable material costs; it excludes the haulage cost from the mine to the mills.

Direct production cost was 44.9% of the total operating cost, which included drilling, blasting, loading, and hauling to the dump or pit stockpiles. Auxiliary cost was 49.0% of the total operating cost, which included equipment rental, quality control, safety, employee benefits, etc.

Wardrop believes that the 2009 production cost was 12.8% higher than that of 2008 because:

- the ore production rate was down 48%
- the stripping ratio was up about 29% due to an unbalanced stripping ratio.

13.2.2 PROCESS

According to monthly operating cost reports, the average process operating cost for operation of the Jiaoshuwa and Sanchuan plant, and Heyu cleaner plant in 2009 was RMB 136.16/ t milled (USD 19.94/t milled). These costs include the ore cost, mill feed unloading charge, equipment depreciation, and resource tax. The operating cost breakdown for the 2008 and 2009 operations is shown in Table 13.2.

Table 13.2 Operating Costs including Mill Feed Costs - Jiaoshuwa, Sanchuan, and Heyu Cleaner Plants

	RMB/t Milled				
Cost Breakdown	**JSW No.1***	**JSW No.2***	**SC***	**Heyu Cleaner Plant**	**Average Cost***
2008**					
Mill Feed Cost	36.83	36.62	36.94	121.53	
Mill Feed Unloading Charges	1.58	2.55	0.84	0.10	
Consumables	28.21	34.11	27.01	1.93	
Power Cost	12.37	17.20	8.81	0.80	
Labour Cost incl. Burden	11.85	14.73	9.49	3.63	
Resource Tax	8.00	8.00	8.00	0.00	
Other Costs:	14.11	14.17	15.18	1.70	
— Rental	6.07	7.23	5.03	0.37	
— Maintenance	1.16	0.49	0.50	0.04	
— Depreciation	4.71	3.58	7.19	0.42	
— Others	2.16	2.86	2.46	0.87	
Total Cost	112.95	127.38	106.27	129.69	
Average Cost		115.84		8.16	RMB 124.00 (USD 18.16)

	RMB/t Milled				
Cost Breakdown	**JSW No.1***	**JSW No.2***	**SC***	**Heyu Cleaner Plant**	**Average Cost***
2009					
Mill Feed Cost	50.36	47.22	53.82	101.72	
Mill Feed Unloading Charges	2.42	2.50	0.85	0.03	
Consumables	20.33	29.32	27.11	1.34	
Power	14.14	19.90	10.92	0.62	
Labour Cost incl. Burden	7.96	11.30	7.07	2.40	
Resource Tax	8.00	8.00	7.78	0.00	
Other Costs:	17.75	19.03	19.58	3.69	
- Rental	0.07	0.00	0.04	0.62	
- Maintenance	0.56	0.53	0.70	0.05	
- Depreciation	6.83	5.75	10.21	0.91	
- Others	10.29	12.75	8.63	1.02	
Total Cost	120.96	137.28	127.14	109.81	
Average Cost		128.07		8.09	RMB 136.16 (USD 19.94)

Notes:

* Including cleaner flotation cost.

** In 2008, the Heyu cleaner plant processed some concentrates from other plants.

Compared to 2008, the operating cost in 2009 increased by RMB 12.16/t milled with mill feed cost, or RMB 1.52/t milled without mill feed cost. Excluding the ore cost and the mill feed unloading charge, the average process operating cost was RMB 87.11/t milled (USD 12.75/t milled) for the 2009 operation.

Manpower requirements varied from plant to plant. On average, approximately 100 to 110 personnel were required per plant (236 personnel were required for the Jiaoshuwa plant due to two process trains).

The process operating costs for the other plants were not available for review. According to Luoyang Fuchuan staff, the average costs from the Jiaoshuwa and Sanchuan plants together with the cost from the Heyu cleaner plant would fairly reflect the operating costs of the rest of the plants. However, due to substantially longer haulage distances for Jinhanyuan Plant and Jinfeng Plant, the additional ore transport costs should be accounted for in the operating costs.

13.2.3 GENERAL AND ADMINISTRATION

As reported by Luoyang Fuchuan in the monthly G&A cost reports, the annual G&A costs for Luoyang Fuchuan were RMB 60,047,000 (USD 8,792,000) in 2008, and RMB 55,026,000 (USD 8,057,000) in 2009. Labour accounts for one-third of the total G&A cost, which includes salary, pension, medical insurance, employment insurance, benefits, and others. The amortization of intangible assets and mineral resources compensation fee are also major items of the G&A costs.

14.0 ENVIRONMENTAL REVIEW

14.1 ENVIRONMENTAL REVIEW OBJECTIVE

The primary objective of the environmental review for the Shangfanggou Mine was to identify potential environmental liabilities and risks of the mining operation and the related facilities, and to review the adequacy of existing management and mitigation measures. The environmental assessment focused on providing relevant and material information, to meet the following requirements of the Listing Rules:

- compliance with Chinese environmental laws, regulations and permits (18.05 (6) (c))
- planning and funding for remediation, rehabilitation, closure, and removal of facilities in a sustainable manner (18.05 (6) (d)
- identification of environmental liabilities of the mine and related facilities (18.05 (6) (e))
- demonstration of the company's historical experience in dealing with Chinese laws and practices, including management of differences between national and local practice (18.05 (6) (f)).

14.2 ENVIRONMENTAL REVIEW SCOPE AND METHODOLOGY

The scope of work to address these objectives involved assessing the Shangfanggou Mine and related facilities in order to confirm the validity and reasonableness of the available environmental information, and to identify areas of potential concern. For the identified areas of potential environmental concerns, current and potential management and mitigation measures are presented below.

The methodology for performing the environmental review involved the following elements:

- site visit to observe the mine and related facilities

- meetings and discussions with Luoyang Fuchuan personnel during the site visit
- review of existing reports and information made available to Wardrop.

The mine and related facilities of the Shangfanggou Mine that were reviewed for environmental review were:

- open pit mine
- waste rock dump
- transportation of various materials
- process plants
- TSFs.

The environmental review of each of these components provides a brief description, addresses applicable elements of the objective, identifies environmental aspects assessed and areas of potential concerns, and presents current and potential management and mitigation measures.

Before conducting the environmental review of the mine and its related facilities, a review of the history of Shangfanggou Mine's compliance with Chinese regulations is presented in the following sections.

14.3 APPLICABLE ENVIRONMENTAL APPROVALS AND PERMITS

Environmental legal requirements in China include laws, regulations, and permits that are promulgated by National People's Congress, State Council, under several ministries such as the Ministry of the Environmental Protection, Ministry of Lands and Resources, or the local Environmental Protection Bureau (EPB). Environmental permits currently in effect at Shangfanggou Mine are listed in Table 14.1 along with the permit requirements and the regulatory body responsible for issuing and enforcing the permit.

Table 14.1 List of Environmental Permits for the Shangfanggou Mine

Permit Applicable to Shangfanggou Mine	Permit Requirements	Regulatory Body Responsible
Open Pit Mining License (2006) #1000000620134	Mine Area: 1.2073 km^2 Production: 1.65x10^6 t Effective: 2006 to 2016	Ministry of Lands and Resource - department of land and resources
Sanchuan Iron Mill Or Tailing Pond Permit (2008) #XCWC304Y	Capacity: 1.6475x10^6 m^3 Effective: 2008 to 2011	Henan Province Safety Production Administration Bureau
Production Safety Permit (2007) CL000022	Effective to: Aug. 5/10	Production Safety Supervision and Administration Bureau of Henan Province

Other key Chinese environmental standards that the mine and related facilities are required to comply with include:

- general wastewater discharge standards (GB8778-1996), which specify limits for physical-chemical parameters in discharge waters
- general air pollutant discharge standard (GB16297-1996), which limits the emission rate of particulate matter (dust) related to ore crushing and sieving processes
- noise standards at the industrial plant boundary (GB12348-90), which limits the noise a measured at the plant boundary to less than 60 dBA during daytime and less than 50 dBA at night.

14.4 HISTORICAL ENVIRONMENTAL COMPLIANCE

Luoyang Fuchuan has been operating the Shangfanggou Mine since 2005 and it appears that the company has a very good understanding of applicable laws, regulations, and practices.

14.5 MAIN MINING COMPONENTS

14.5.1 OPEN PIT

According to the mine permit in Table 14.1, the open pit covers an area of 1.2073 km2. Based on the regulations of Mineral Resource Management, mining activities should be restricted to the approved areas (Henan Province Environmental Protection Bureau [HPEPB], 2004). The environmental elements reviewed for the open pit are presented in the following sections.

Health and Safety

Protection of the health and safety of the employees as well as members of the public who work and live in the vicinity of the mine is very important. Since the mine was not operating during the site visit, the health and safety practices of the mine were not observed. In 2007, Henan Provincial Safety Production Supervision Management Bureau was in agreement with the project safety plan based on mine and related facilities construction completion inspection comments. Information on the current status of the project safety plan was not provided to Wardrop for review. Henan Provincial Safety Production Supervision Management Bureau requested that in the operation of the mine, Luoyang Fuchuan must follow all the regulations of National Safety production, emphasizing safety management and demonstrating safety in operation.

Physical Stability

Based on observations of the open pit, conversations with personnel during the site visit, and a review of existing information, the open pit appeared to be well managed and physically stable.

Geochemical Stability

Based on observations of conditions in the open pit and a review of existing information, no signs of ARD were observed. The mineralogy data indicate that the pit is unlikely to be a source of acid generation. Although the total sulphur concentration in the ore is 0.75% and pyrite (a potentially acid generating mineral) is 1.1%, there is a significant acid neutralization potential due to the ore containing 6.1% calcite (acid neutralization mineral).

Water Management

The mine area is located in the Water Resources Protection Area for the South-North Water Transfer Project, a major project proposed to convey water from the southern part to the northern part of the country. The comments from HPEPB (2004) on the project's Environmental Impact Assessment (EIA) stated that Luoyang Fuchuan must strictly follow the proposed area ecological environmental preservation plan in order to reduce the impact of mining activities on the surrounding environment and to ensure the safety of the water sources. The EIA document and ecological environmental preservation plan were not provided to Wardrop for review.

After monitoring and inspecting the project, the Luoyang City Environmental Protection Bureau (LCEPB) (2005) found that all the pollutant discharge met the discharge requirements as specified in National Regulations. The project satisfied all the requirements of environmental protection at the completion of the construction of the project. Information on the most current performance of the open pit in relation to discharge requirements was not provided to Wardrop for review.

Soil/water conservation proposal of Shangfanggou Mine Technical review was conducted by Luoyang City Water Resource Bureau (LCWRB), Luoyang City Water Resources Science Committee, LCEPB, Luoyang City Development and Reform Committee, Luoyang City Safety Production Management Bureau, and Luoyang Fuchuan. All the reviewers agreed that the report met the national soil and water conservation regulations and technical requirements. The report was complete and fulfilled all the requirements at that time (LCWRB, 2004).

Land Management, Rehabilitation, and Closure Plan

The main concern for the rehabilitation of the open pit is long-term physical stability. The ecological restoration of the mine will be completed in stages; Luoyang Fuchuan will be required to follow the stipulated timeline and report to the local environmental department, which will monitor, regulate, and approve the environmental protection program (HPEPB, 2004). The original or updated closure plan was not made available to Wardrop for review.

As indicated by Luoyang Fuchuan, the funding for the closure of the waste rock dump will be the responsibility of the proponent at the time of closure. In the interim, Luoyang Fuchuan will be responsible for progressive reclamation of the waste rock dump area.

Environmental Emissions

The open pit was not in operation during the site visit, and no air or noise emissions were observed. No information was reviewed on air and noise emissions of the open pit.

Environmental Protection and Management Plan

The purpose of the Environmental Protection and Management Plan (EPMP) for the open pit is to present proactive steps that Luoyang Fuchuan is taking or should be taking to manage environmental concerns and mitigate any environmental liabilities. The current EPMP was not made available for review by Wardrop.

Recommendations for environmental protection and management include:

- health and safety practices for all the employees
- safety education and training
- on-site dust prevention and management
- regulatory compliance management
- dangerous area and strategic point-source pollution management
- monthly check of safety and environmental protection
- management controls for handling, storage, and use of explosives and hazardous substances
- an updated closure plan.

In 2005, the comments of the assessment group - the LCEPB - agreed that the open pit had passed the inspection of the environmental protection facilities together with the open pit mining project of 5,000 t/d. According to the HPEPB, the open pit project environmental impact report prepared in 2004 was accepted and approved.

Based on the current environmental review of the open pit, it appears that any environmental liability identified can be mitigated through environmental protection and management practices, which are currently in place (those proposed in this study and those acceptable as industry practice).

14.5.2 WASTE ROCK DUMP

The waste rock dump is approximately 2-3 km from the open pit. When the open pit mine is in full operation, approximately 20,000 t of waste rock is expected to be generated and transported to the waste rock dump each day. The tonnage amount is expected to decline as the pit deepens. The waste rock will be transported from the open pit to the waste rock dump using 32 t trucks.

The waste rock dump is located on the side slope of a steep hill facing a valley floor. On an adjacent hill slope, there is another waste rock dump belonging to another owner. Both the waste dumps slope towards the same valley floor.

The environmental elements reviewed for the waste rock dump are presented in the following sections.

Physical Stability

The waste rock in the waste rock dump is placed at the angle of repose so that stability of the slopes is afforded by the angular nature of the rock. Cracking and settlement of the outer margin of the dump were observed on the site visit, which ran about 10 to 40 m from the edge of the downstream slope of the dump. There are a number of buildings located approximately 500 m from the waste rock dump toe. Mine personnel asserted that the buildings have been vacated. Signs of ongoing farming activities were also observed within approximately 200 m of the toe of the waste rock dump.

Wardrop recommends that the stability of the cracking and settlement should be investigated. In the interim, warning signs indicating potential danger should be posted below the dump. Also, the waste rock dumping procedure must include a process for ensuring the safety of the workers on top. As a minimum this would include a spotter or spotters who would monitor the stability of the dump as trucks work on it.

Geochemical Stability

No signs of ARD were observed at the dump site during the site visit. No mineralogy or geochemistry data for the waste rock dump reviewed. However, if the mineralogy of the waste rock is assumed to be similar to the ore, then the acid neutralization potential of the waste rock is significantly higher than the acid generating potential. Based on this limited information, this would indicate that that waste rock dump is not likely acid generating.

Water Management

There is no defined water management at the waste rock dump. Precipitation runoff is uncontrolled and allowed to run off into the lower valley. The waste rock dump appears to be geochemically stable, so that water management concerns are related to control of fines runoff from the dump. Installation of a sediment control basin at the bottom of the waste rock dump would control sediments transportation.

Based on the site visit, as long as the waste rock dump remains geochemically stable, water management and water quality discharge to the environment are not considered to be major environmental liabilities. However, sediment management should be installed to provide positive control of waste dump runoff.

Runoff from the waste rock dump could transport sediments from the waste rock dump. Installation of a sediment control basin at the bottom of the waste rock dump would control sediment transportation. Water should be diverted from the top of the dump. Water that is allowed to penetrate the cracks would promote instability.

Land Management, Rehabilitation, and Closure Plan

The main concern of the rehabilitation of the waste rock dump is long-term physical stability of the slopes. Also the steep slopes of the dumps lack finer particles which would limit vegetation growth on the side slopes.

According to the EIA (HPEPB, 2004), after completion of the waste rock dump, the Shangfanggou Mine must complete the ecological protection facilities in the waste rock dump and establish vegetation cover within the required time frame. The EIA report was not made available to Wardrop for review.

As indicated by Luoyang Fuchuan, the funding for the closure of the waste rock dump will be the responsibility of Luoyang Fuchuan. In the interim, Luoyang Fuchuan will also be responsible for progressive reclamation of the waste rock dump area.

Environmental Protection and Management Plan

The purpose of the EPMP for the waste rock dump is to present proactive steps the company is taking or should be taking to manage environmental concerns and mitigate any environmental liabilities. The current EPMP was not made available to Wardrop for review.

Recommendations for environmental protection and management include the following:

- waste rock inventory and record keeping
- perform a survey of the waste rock dump to develop a drawing/figure that accurately represents the dump
- conduct an investigation of the physical stability of the cracking and settlement near the edge of the downstream slope of the dump
- develop an offset distance at the base restricting other activities
- perform static geochemical test on very limited samples of the waste rock to verify that ARD will not be a problem in the future
- develop a water management plan for the waste rock dump to include sediments control basin at the bottom of the toe
- update the existing closure plan.

Based on the current environmental review of the waste rock dump, any environmental liability identified can be mitigated through environmental protection and management practices, which were in place (those proposed in this study and those acceptable as industry practice).

14.5.3 TRANSPORTATION OF VARIOUS MATERIALS

Due to the geographical dispersion of the main mining facilities, transportation of materials among the facilities is critical to the operation. The main materials requiring transportation during mining activities are ore, waste rock, low grade concentrates and mining and milling supplies. As described in Section 13.0, the Shangfanggou Mine serves several process plants in the vicinity, with the closest being 2 km from the mine and the furthest being 71 km from the mine. Ore is transported by road from the mine to the mills using trucks. This adds a significant traffic load on the local roads especially at the full ore production of 10,000 t/d, which will include waste rock tonnages of 20,000 t/d.

Since materials are transported on public roads, public safety is particularly important. The environmental elements reviewed for the transportation of various materials are presented in the following sections.

Transportation Vehicles

Both ore and waste rock are transported using 32 t capacity vehicles. During mining operations at the full ore production rate of 10,000 t/d, more than 330 round trips are required per day between the mine and the various mills. Waste rock production at the full ore production rate is approximately 20,000 t/d, resulting in more than 660 round trips.

Transportation Roads

The roads between the mine and the mills are all paved. However, due to the mountainous terrain, the roads are very steep and narrow with switch backs. Particular caution should be exercised when driving. Most of the roads are two-lane undivided highways.

Other Road Users

If the mine is in full operation, the presence of up to 990 extra vehicle round-trips on the roads may result in more congestion, especially with switch backs and narrow roads. Also, the vehicles transporting material are usually driven slowly. This may result in further road congestion. No information on road design capacity versus current capacity was made available to Wardrop for review.

Environmental Emissions

The main environmental emissions from transportation vehicles are air emissions and noise. According to the requirements (HPEPB, 2004), Luoyang Fuchuan is required to spray water on some sections of the roads in order to control dust and reduce the impact on the local community.

Environmental Protection and Management Plan

The purpose of the EPMP for the transportation of materials is to present proactive steps that Luoyang Fuchuan is taking or should be taking to ensure public safety, manage environmental concerns and mitigate any environmental liabilities. The current EPMP was not made available to Wardrop for review. Recommendations for environmental protection and management include:

- regular maintenance and inspection of motor vehicles
- hiring drivers who are properly trained and meet all legal requirements for driving

- enforcement of driving regulation and traffic laws
- regular refresher courses for drivers on defensive driving techniques
- ensuring that all vehicles are not overloaded.

Based on the current environmental review of the transportation of materials, any environmental liability identified can be mitigated through environmental protection and management practices, which are currently in place (those proposed in this study and those acceptable as industry practice).

14.5.4 PROCESS PLANTS

The Shangfanggou Mine fed into six primary process plants; there is also one cleaner flotation plant and one hydrometallurgical plant. The process capacities and distances from the mine site are presented in Section 13.0.

The environmental elements reviewed for the process plants are presented in the following sections.

Tailing Discharge

The primary discharge from all the primary process plants was tailing. Heyu cleaner plant is a small mill (30 t/d), which treated low grade concentrates from two of the primary process plants. A small amount of tailing was produced at Heyu cleaner plant and further treated at the adjacent Fuchun hydrometallurgical plant. The tailing produced from Fuchun hydrometallurgical plant were dry stacked, and were either collected by local residents for yard usage or buried away. The tailing from the six primary concentration plants were discharged to the TSF.

All TSFs are located upstream of the process plants, which requires each process plant to pump the tailing upstream.

Water Management

The primary source of water for process plants is the reclaimed water from the tailing pond. The secondary source of water for process plants is surface water.

According to the LCEPB (2005), the Shangfanggou mining process project had all the pollution prevention systems in place. After monitoring and inspection, all pollutant discharge met the discharge requirements specified in national regulations. The project satisfied all the requirements of environmental protection at the completion of the project.

Solid Waste Management

Based on information provided by site personnel, all solid waste was placed in the waste dump and collected by recycling companies.

Oil and Grease Management

All sources of oil and grease in the process plants were from machinery in the mill and, according to site personnel, were collected by a recycling company.

Regulation and Permits

The water quality and the discharge rate of the tailing were regulated by a permit for each process plant. None of the permits were reviewed by Wardrop.

Land Management, Rehabilitation, and Closure Plan

The funding for the closure of the process plants and progressive reclamation will be the responsibility of Luoyang Fuchuan.

Environmental Protection and Management Plan

The purpose of the EPMP for the process plants is to present proactive steps that Luoyang Fuchuan is taking or should be taking to manage environmental concerns and mitigate any environmental liabilities. The current EPMP was not made available to Wardrop for review. Recommendations for environmental protection and management include:

- continued good housekeeping of the solid waste produced by the mill and oil and grease
- enforcement of health and safety procedures
- regular maintenance of all equipment, etc.
- continued efficient use of water through minimization, recycling, and reusage.

Based on the current environmental review of the process plants, any environmental liability identified can be mitigated through environmental protection and management practices, which were in place (those proposed in the study and those acceptable as industry practice).

14.5.5 TAILING FACILITIES

Although there are several process plants associated with Shangfanggou Mine, six TSFs were identified to be associated with the mineral process plants: Jiaoshuwa, Hexinyuan, Sanchuan, Hualong, and Jinfeng, and Jinhanyuan.

Hualong, Jinhanyuan, and Jinfeng TSFs were not visited during the site visit and no information was provided for review. Reviews of Jiaoshuwa, Hexinyuan, and Sanchuan are provided in this section.

Jiaoshuwa Tailing Storage Facility

The Jiaoshuwa TSF was assessed during the site visit. The tailing dam is an upstream construction. The starter dam is a rock fill dam with an elevation of 1185 m and dam height of 29 m. At the final dam elevation of 1354 m, the pond capacity is 109,000 m^3 with effective capacity of 9,180 m^3, which can provide sufficient tailing storage capacity for 10 years. At this elevation, the dam height would be 196 m (Changchun Gold Design Institute [CCGDI], 2005).

The tailing dam is classified according to industrial standard for TSF design ZBJ1 90. At the final dam height (elevation 1342 m), the dam classification will be Grade 2. The factor of safety for the dam under normal operation is 1.4. In the flooding season the factor of safety is 1.19.

The factors of safety for the dam appear to be low. The seismic stability of any dam constructed using the upstream method must be carefully considered. Wardrop recommends that an independent third party review the design and stability of the dam.

No inspection records of this dam were provided to Wardrop for review. During the site visit, there was evidence that the TSF is well maintained.

There was no evidence of ARD observed during the site visit. There was no review of mineralogy or geochemistry of the tailing. However if the mineralogy of the tailing is assumed to be similar to the ore, the acid neutralization potential of the waste rock would be significantly higher than the acid generating potential. This limited information suggests that the tailing is not likely acid generating.

Buildings that are located downstream of the tailing dam present a public safety concern. In case of dam failure or unexpected discharge, there may not be sufficient time to provide warning to the occupants. The Operations, Maintenance, and Surveillance Manual was not supplied for review; this manual should be assessed to determine if this safety concern is adequately addressed.

Hexinyuan Tailing Storage Facility

The Hexinyuan TSF was observed during the site visit. No design information or reports were made available to Wardrop for review.

The tailing dam is an upstream construction. The starter dam was constructed of rock and cement, and interlocking rock. The length of the dam at the crest was estimated during the site visit to be approximately 75 m. The downstream slope of the dam is constructed in terraces.

Evidence obtained during the site visit suggests that the dam is maintained regularly. Several seepage collection wells have been installed on the downstream slope of the dam. The seepage collecting in the wells is pumped out and discharged into concrete drainage channels also installed on the downstream face of the dam, to help lower the phreatic surface of the dam.

Since the mill was not operating during the site visit, there was no discharge to the TSF; however, water was being discharged into the environment from the TSF. Site personnel indicated that, when the mill is operating, all water is collected and recycled to the process plant and not discharged into the environment. Two rectangular concrete ponds located downstream of the dam act as emergent discharge ponds during operation to avoid discharge to the environment.

In one section of the tailings dam, it appears that the dam crest width has narrowed. This condition should be assessed, and the crest should be widened as appropriate before operations recommence.

Sanchuan Tailing Storage Facility

The Sanchuan TSF has been operating since 2003, and was assessed during the site visit. The tailing dam is an upstream construction. The starter dam is a rock fill dam, with the height of 22 m. The current dam height is 32 m; the final dam height is expected to be 54 m with the total storage capacity of 354 x 104 m^3.

A Safety Conditions Assessment Report on the Sanchuan TSF was made available to Wardrop for review (Henan Bangtai He Li Management Consulting Ltd. [HBMC Ltd.], 2008). The assessment report states that based on "Directions about Monitoring and Management of the Major Hazards Sources," it was concluded that the tailing pond belongs to the major hazards source as defined in the regulations. The tailing pond should be registered and evaluated in accordance with the related national regulations.

The tailing dam is classified according to industrial standard for TSF design ZBJ1 90. The tailing dam is classified as a Class 4 Tailing Dam which is considered a safe classification. This TSF meets the requirements of "Tailing Pond Safe Work Technical Regulations".

Based on information reviewed, the Sanchuan TSF met all but one of the inspection requirements; the results of the inspection indicate the dam is in satisfactory condition. The only requirement the dam did not meet was that the slope of the dam was steeper than the design; however, the embankment was considered to be in satisfactory condition with no significant sinking, sliding, cracking soil loss, or piping.

During the site visit, there was evidence that the TSF is well maintained with the exception that the crest width appeared to be insufficient. This condition should be assessed and the crest widened as appropriate before any operations recommence.

There was no evidence of ARD observed during the site visit. There was no mineralogy or geochemistry data of the tailing reviewed. However, if the mineralogy of the tailing is assumed to be similar to the ore, the acid neutralization potential of the tailing would be significant higher than the acid generating potential. This limited information suggests that the tailing is not likely acid generating.

Closure of the Tailing Dams

The funding for closure of the TSFs will be the responsibility of the proponent at the time of closure. In the interim, the proponent is responsible for progressive reclamation of the TSFs.

Environmental Protection and Management Plan

The purpose of the EPMP for the TSFs is to present proactive steps that Luoyang Fuchuan is taking or should be taking to manage environmental concerns and mitigate any environmental liabilities. The current EPMP was not made available to Wardrop for review.

Recommendations for environmental protection and management include:

- regular monitoring of the TSFs, pond water level, distance of pond from the dam, rate of tailing discharge, and rate of seepage
- annual inspection of the TSF by a professional civil/geotechnical engineer
- adherence to proper procedure for construction and dam raise
- installation and maintenance of upstream diversion system
- a dam break analysis to determine potential impacts of a dam break
- a warning system for downstream population in the case of dam failure
- controlling elevation of the tailing pond through reclaim of water to the mill or through discharge when the mill is not in operation
- monitoring of any discharge from the TSF
- control of the phreatic surface in the tailing dam

- control of harmful factors during operation (health and safety)
- environmental protection of the tailing pond
- prevention and control of pollution sources
- dust control
- soil and water conservation

Based on the current environmental assessment, the TSFs visited and reviewed seem to be in good condition, with the exceptions as noted. The Jiaoshuwa TSF was designed according to Chinese standards and the Sanchuan TSF met safety expectations during inspection.

However, occupied houses located within 200 m of the toe of the Hexinyuan TSF present a major public safety concern. In case of dam failure or unexpected discharge, there might not be sufficient time to providing warning to the occupants.

The designs and factors of safety must be reviewed by a third party to ensure they meet Chinese standards. This is especially true for the Sanchuan TSF, where the slopes are steeper than designed, and the Jiaoshuwa TSF, which is going to be a very high structure and constructed using the upstream method.

15.0 SOCIAL IMPACT ASSESSMENT

15.1 SOCIAL AND COMMUNITY INTERACTION

The primary objective of the social impact assessment for the Shangfanggou Mine was to assess the effect of the mine and its related facilities on local communities, local government and non-governmental organizations. The dispersion of the mine and related facilities and the population density within the vicinity make the social impact assessment more important.

The main land use and activities in the vicinity of the mine related facilities are:

- farming
- small industries
- residential and commercial
- transportation.

The social assessment focused on providing relevant and material information that meet the following requirements of the "Listing Rules":

- its historical experience of dealing with concerns of local governments and communities on the sites of its mines, exploration properties, and relevant management arrangements (18.05 (6) (g))

- payments made to host country governments in respect of tax, royalties, and other significant payments on a country by country basis (18.05 (6) (c))

- any non-governmental organization impact on sustainability of mineral and/or exploration projects (18.05 (6) (b))

- any claims that may exist over the land on which exploration or mining activity is being carried out, including any ancestral or native claims (18.05 (6) (h)).

15.1.1 RELATIONSHIP WITH LOCAL COMMUNITIES

The Shangfanggou Mine has a good relationship with the local communities. Based in Luanchuan County area, it is one of major employers in the county. The project has improved the local economy.

When it was operating at full capacity, the mine employed approximately 2,000 people. Based on the 2005 Feasibility Study, Luoyang Fuchuan was the largest private company in the county (CCGDI, 2005).

15.2 RELATIONSHIP WITH LOCAL GOVERNMENT

Luoyang Fuchuan management indicated that the Shangfanggou Mine has a good relationship with the local governments. Luoyang Fuchuan pays taxes to the local government and central government.

Luoyang Fuchuan was to submit a total of RMB 200,000 payment of soil/water conservation compensation to the government, to be paid off in four years starting in 2004 (LCWRB, 2004).

15.2.1 LAND OWNERSHIP

Luoyang Fuchuan holds titles to all the land usages for the mine and the related facilities..

The construction of some of the mine facilities involved relocation of people. For example, the construction of the Jiaoshuwa TSF resulted in relocation of 24 families (144 people) (CCGDI, 2005).

Overall, Luoyang Fuchuan is thought to have had a positive impact on the local communities and local governments.

16.0 RISK ANALYSIS

16.1 INTRODUCTION

Historically, mining is a relatively high-risk industry for investment, operation, and environment. A better understanding of perceived technical risks would reduce or eliminate potential failures of the operation or loss of life or property.

Risk is evaluated based on likelihood of occurrence and magnitude of the damage. Risk has been classified from minor to major based on the following definitions:

- Major Risk: poses an immediate danger of a failure, which if uncorrected, will have a material effect (>15% to 20%) on the project cash flow and performance and could potentially lead to project failure.

- Moderate Risk: if uncorrected, could have a significant effect (10% to 15% or 20%) on the project cash flow and performance unless mitigated by some corrective action.

- Minor Risk: the factor, if uncorrected, will have little or no effect (<10%) on project cash flow and performance.

The likelihood of a risk within a seven-year time frame can be categorized as:

- Likely: will probably occur

- Possible: may occur

- Unlikely: unlikely to occur.

The consequence of a risk must also be considered, which is defined as:

- Major: has a significant impact on operations
- Moderate: has a modest impact on operations
- Minor: has little to no impact on operations.

16.2 GEOLOGY

The Shangfanggou resource has been well-defined by drilling and mining to date and has substantiated both the geological interpretation and estimations of the mineral resource (Table 10.1). The deposit area appears to be structurally sound and groundwater incursion, which could potentially disrupt the mining operation, has been determined to be of low volume. No major geological risks were noted.

Table 16.1 Risk Assessment - Geological

Geological Hazard/Risk Issue	Likelihood	Consequence	Risk	Comments/Mitigation
Lack of significant resource	Unlikely	Major	Minor	Deposit well-defined
Loss of significant reserve	Unlikely	Major	Minor	No likely causes known
Significant unexpected faulting	Possible	Minor	Minor	Faults are well mapped
Unexpected groundwater incursion	Possible	Major	Minor	Little water entering pit

16.3 MINING

Mining risks and mitigation measures are summarized in Table 16.2.

16.4 PROCESS

The process technique for the Shangfanggou ore is conventionally and widely used to process primary molybdenum ores, although the flowsheet is more complex compared to the other porphyry molybdenum ores. The abundant talc in the mineralization is one of key factors affecting the metallurgical performances. Inefficient operation by processing the ore in small concentration plants appears to result in a high operation cost and suboptimum recoveries.

The metallurgy and process risk analysis is focused on the potential impact of mineralogy, supplies, equipment failure, and metallurgical performance on production and economics. Table 16.3 presents the potential process risks and mitigation measures.

Table 16.2 Risk Assessment - Mining

Mining Hazard/Risk Issue	Likelihood	Consequence	Risk	Comments/Mitigation
Mining difficulties are experienced leading to substantially lower production levels being achieved.	Unlikely	Moderate	Minor	Utilizing large scale conventional open pit mining methods for the Simple deposit
Mining difficulties are associated with old underground mined-out areas leading to lower production levels being achieved.	Unlikely	Moderate	Minor	Stope locations are reasonably well understood and work is ongoing to further improve this knowledge base
Substantial increases in operating costs.	Unlikely	Moderate	Minor	(1) Current operations use small scale mining equipment. There is an opportunity to utilize larger scale mining equipment in the future with potentially lower unit operating costs. (2) Opportunity to optimize existing mine plan to reduce average stripping ratios, particularly in the short term.
Tiangang's operation may cause safety problems and influence Luoyang Fuchuan's long term mining plan.	Possible	Moderate	Moderate	Tiangang's operation is attributable to decisions that were made in the past. After transaction, new shareholders will gain local government support for solving this problem based on the Chinese resource laws.

Note: further assessment is required during optimizing mining capacity.

Table 16.3 Risk Assessment - Process

Mining Hazard/Risk Issue	Likelihood	Consequence	Risk	Comments/Mitigation
Process cannot achieve the projected metallurgical performances.	Unlikely	Moderate	Minor	The ore has been processed for many years. The current plant metallurgical performance is lower than the data obtained from the testwork. However, the effect of talc on the concentrate grade should be further investigated. It is expected that a large central process plant would produce better metallurgical performances if the plant is equipped with more efficient and large equipment and control systems.
Operating costs increase, especially the mill feed hauling cost.	Possible	Moderate	Moderate	Operating cost may increase with the increase in price index, especially the haulage cost. However, improve metallurgical performance or build a central large scale process plant close to the pit would reduce the risks.
Cannot meet the targeted production.	Unlikely	Minor	Minor	These plants should have a room to improve production capacity with improving plant efficiency and management.
Shortage of consumables and electrical power.	Unlikely	Minor	Minor	The area has traditionally mining supply network and has electrical power supplied by China National Grid.
Shortage of TSFs.	Possible	Moderate	Moderate	Although the life of most of the TSF is short than the mine life. To identify new TSF location(s) would reduce the risk. Also a new central plant may be built in future.

Mining Hazard/Risk Issue	Likelihood	Consequence	Risk	Comments/Mitigation
As understanding, China Moly may build a central process plant nearby the pit. The new plant may not be to deliver the metallurgical performance as the current performance.	Unlikely	Moderate	Minor	It is expected that if the new plant is built, the metallurgical performance should supersede the current performance due to using more efficient equipment and better control systems.
Limited market for the low grade molybdenum concentrate.	Possible	Moderate	Moderate	Molybdenum market varies significantly. A low market may result in a difficulty in selling the low grade concentrate. Upgrading of the low grade concentrate should be further studied, including hydrometallurgical processes.

Note: further assessment is required during the study of the feasibility of the central process plant.

16.5 ENVIRONMENTAL

Environmental risk assessment was evaluated for the mine and related facilities. The environmental risk assessment focused on providing relevant and material information that meets the following requirements of the "Listing Rules" - project risks arising from environmental, social, and health and safety issues (18.05 (a)).

Table 16.4 presents the environmental risk assessment of the Shangfanggou project and shows how the likelihood and consequences of risk are combined into an overall rating.

Table 16.4 Risk Assessment - Environmental

Environmental Hazard/Risk Issue	Likelihood	Consequence	Risk
Open Pit - Environmental Issues	Possible	Minor	Minor
Waste Rock Dump - Slope Failure	Possible	Minor	Minor
Transportation of Materials - Environmental Issues	Possible	Minor	Minor
Process Plants including Heyu cleaner plant and Fuchun hydrometallurgical plant - Environmental Issues	Unlikely	Minor	Minor
Tailing Facilities - Dam Failure or Flooding	Possible	Moderate	Moderate

Note: further assessment is required during optimizing mining and process capacity

17.0 CONCLUSIONS AND RECOMMENDATIONS

17.1 INTRODUCTION

According to the information obtained during the site visit, and the review of the available information, the conclusions and recommendations for the resources, mining, and process of the Shangfanggou open pit and the environmental concerns related to the mining activities are outlined in this section.

17.2 GEOLOGY AND MINERAL RESOURCES

The Shangfanggou deposit has characteristics of both skarn and porphyry-type deposits.

The deposit has been explored to the extent necessary to obtain a thorough understanding of the distribution and grade of mineralization.

Several estimates of the contained resource have been made - two by polygonal methods and one by computer-based methods. These estimates are reasonably similar given that mining has occurred between the times at which the estimates were made.

Wardrop has independently recalculated the resource using the computer-based dataset and has concluded that the previous estimate is reasonable.

The Wardrop estimate of total contained resources at a 0.03% Mo cut-off is about 469 Mt at an average grade of 0.14% Mo.

17.3 RESERVE

As shown in Figures 11.1 and 11.2, the estimated mineral reserve is restricted to the limits of the ultimate pit, which represents only 15.5% of the estimated measured and indicated resources.

It is Wardrop's opinion that there are several opportunities to increase mineral reserves, such as:

- performing further exploration programs to upgrade the inferred resource to measured or indicted resources
- carrying out pit optimization within the mining license
- conducting feasibility studies for underground mining to increase mineral reserve below and outside of the ultimate pit limit within mining license.

17.4 MINING

Shangfanggou Mine holds a large-scale, high-grade molybdenum deposit which has favourable mining conditions. The preliminary design of the mine is relatively systematic and comprehensive.

During the last few years, although the Shangfanggou mine has reached and exceeded the design production capacity, some technical problems have been exposed. Wardrop recommends that Luoyang Fuchuan retain an engineering firm to update the preliminary design of the Shangfanggou mine based on the current geological, geotechnical, financial and management conditions.

Attention should be closely paid to following specific problems:

- Since the geotechnical data and pit stability model were deficient, the overall slope angle that was chosen in the preliminary design may not be optimal. Wardrop recommends that Luoyang Fuchuan conduct further investigations and rock structure mapping on the exposed pit slopes, in order to build a sound stability model on the basis of different geotechnical domains.

- Bench height is an essential pit design parameter that is selected mainly on the basis of wall rock properties and loading equipment sizes. It is Wardrop's opinion that the current bench height of 15 m is not compatible with the current equipment size, and that an inappropriate bench height may cause safety problems and a higher ore dilution rate. Wardrop recommends that Luoyang Fuchuan retain an engineering firm to optimize the bench height parameters.

- Wardrop believes that the current ultimate pit is a temporary pit limit and recommends that Luoyang Fuchuan retain an engineering firm to conduct further pit optimization using internationally acceptable software (such as Whittle™ 4.2), in order to establish a feasible ultimate pit limit within the mining license. As a result, the reserve may obviously be increased.

- Production capacity and mine life are mainly related to mineral resource, equipment size, mine development and mining method, and are selected through comprehensive technical and economic comparisons. Wardrop recommends that Luoyang Fuchuan retain an engineering firm to optimize production capacity and mine life. Production capacity can be optimized on 20,000 t/d, 30,000 t/d or higher.

- During the site visit, Wardrop observed that Tiangang was still operating in the east part of the Shangfanggou Mine open pit. There are potential safety problems in the working area of the eastern portion of the pit because of the excessive height of the working benches. Wardrop recommends that Luoyang Fuchuan operate the Shangfanggou Mine following the requirements of their mining and safety production permits.

- Wardrop recommends that Luoyang Fuchuan use the successful experience of Sandaozhuang mine to build and expand the Shangfanggou Mine into a highly efficient, safe and modern mine.

17.5 PROCESS

According to the findings from the site visit, document review, and communications with site personnel, the process conclusions and recommendations are as follows:

- The metallurgical testwork indicates that the mineralogy of the ore is complex; more importantly, the ore contains a significant amount of hydrophobic silicate minerals, mainly talc. The hydrophobic silicates have a similar floatability as molybdenite. This similarity results in a low concentrate grade and recovery. However, the bench scale tests produced better results compared with the data from the pilot plant testing and the actual production.

- It appears that the mineralization is more difficult to process compared to the Sandaozhuang ore and other ores. Currently, approximately 60% of the molybdenum was recovered from the mill feed. The concentrate grade was low, averaging approximately 40%. The metallurgical performances are lower than the results obtained from the testwork. This may imply the potentials to improve operating efficiency. Currently, the ores are treated by eight small process plants, including one cleaner plant to upgrade the concentrates from two primary process plants and one hydrometallurgical plant to process the tailing from the cleaner plant. The primary concentration plants used similar conventional process flowsheets to recover molybdenum and iron.

- The distances between the pit and most of the process plants are more than 6 km, while two of the primary flotation plants locate more than 20 km away from the pit. The process rates and the locations of the process plants have not been optimized to provide the best economics and metallurgical performances. In addition, the multiple locations of the tailing storage facilities may cause environmental concerns. The current process plant capacity cannot meet the mining capacity. Although some of the similar process plants are available in Luanchuan County to process the ore from the pit, it is difficult to ensure the optimum metallurgical performances.

- Further testing investigations on improving metallurgical performance is recommended.

- Wardrop recommends investigating the feasibility of building a central plant with energy efficient and metallurgical efficient equipment to process the ore. The plant should be located close to the pit. It is expected that the new plant should produce better plant metallurgical performances and substantially reduce process and tailing handling operating costs.

- The recovery of scheelite from the mineralization should be studied further. Rhenium recovery from the molybdenum is expected to add an additional value for the project.

17.6 ENVIRONMENTAL

Conclusions and recommendations for the environmental review are as follows:

- Based on the current environmental consideration of the open pit, transportation of materials, and process plants, any environmental liability identified can be mitigated through environmental protection and management practices that are in place during operation (those proposed in this study and those acceptable as industry practice).

- The waste rock in the waste rock dump is placed at an angle of repose so that stability of the slopes is afforded by the block angular nature of the rock. During the site visit cracking and settlement was observed that ran about 10 to 40 m from the edge of the downstream slope of the dump.

- The TSFs visited and reviewed seem to be in good condition. The Jiaoshuwa TSF was designed according to Chinese standards, and the Sanchuan TSF seemed to meet safety expectations during inspection.

- A major concern for public safety is the presence of houses located within 200 m of the toe of the Hexinyuan tailing dam. There may not be sufficient time to warn occupants in the event of dam failure or unexpected discharge.

- A review or inventory of key available information and reports should be performed to include all permits, EIA, closure plans, health and safety plans, safety inspection reports, tailing design reports, and EPMPs.

- All the plans that are found to be unsatisfactory should be updated.

- Conduct very limited sampling and testing for ARD for the open pit, waste rock dump and tailing, to verify that ARD will not occur in the future.

- Conduct an assessment of the waste rock dump to evaluate the cause of the stability of the cracking and settlement. In the interim, signs indicating potential danger should be posted below the dump so that people will stay away. Also, the waste rock dumping procedure will have to include a process for ensuring the safety of the workers on top. As a minimum, this would include a spotter or spotters who would monitor the stability of the dump.

- For all the TSFs, the designs and factors of safety must be reviewed by a third party to see that they are conformance with Chinese standards. This is especially true for the Sanchuan TSF, where the slopes are steeper than designed, and the Jiaoshuwa TSF, which is going to be a very high structure built with the upstream method.

18.0 REFERENCES

Changchun Gold Design Institute, 2005 (CCGDI, 2005) "Feasibility Study on Siyuangou Tailings Dam Luoyang Fuchuan Mining Limited," Issued in September 5, 2005.

Changchun Gold Design Institute, Basic Engineering Report for Relocation and Upgrading of the Cleaner Plant, 2007.

Changsha Engineering and Research Institute of Nonferrous Metallurgy, Basic Engineering Report for the 5000 t/d Mining Engineering for Shangfanggou Mine, Aug 2005.

Comments from Luoyang City Water Resource Bureau, 2004 (LCWRB 2004) "Soli/Water Conservation Proposal of Luoyang Mudu Luanchuan Shangfanggou Molybdenum Mine Construction Project," Luoyang City Water Resource Bureau Document, May 25, 2004.

Government Comments, Henan Province Environmental Protection Bureau, 2004 (HPEPB 2004) "Luoyang Mudu Mining Processing Company - Shangfanggou."

Henan Bangtai He Li Management Consulting Ltd, 2008 (HBMC Ltd, 2008) "Existing Safety Conditions Assessment Report on Sanchuan Tailings Dam of Luoyang Fuchuan Mining Ltd.," Sep 2008 Document #: BTHL-XZ-2008-003.

Henan Geological Exploration Institute of CHEM, Annual Mine Resource and Reserve Monitoring Report for Henan Fuchuan Mining Ltd, Dec 25, 2009

Henan Provincial Safety Production Supervision Management Bureau, 2007 (HPSPSMB 2007) "Non-coal mines and related facilities construction completion inspection comments."

Liu, Xiaoshan; Wu, Chengyu; Huang, Biao, 1988 "Origin and Evolution of the Hydrothermal System in Nannihu - Sandaozhuang Molybdenum (Tungsten) Ore Deposit," Luanchuan county, Henan Province, Geochemistry, Vol. 7, No. 2.

Luoyang City Environmental Protection Bureau, 2005 (LCEPB 2005) "Document #32."

Mao, J.W. et al., 2008 "Tectonic implications from Re-Os dating of Mesozoic molybdenum deposits in the East Qinling-Dabie orogenic belt," Geochimica et Cosmochimica Acta 72, (2008), pp 4607 - 4626.

Monthly Operating Cost Reports (Dec 2008 and Dec 2009), Henan Luoyang Fuchuan Mining Ltd, Dec 2008 and Dec 2009.

Monthly Production Data Reports (2008 and 2009), Henan Luoyang Fuchuan Mining Ltd, 2008 and 2009

No.1 Geological Exploration Institute of Henan Provincial Bureau of Geology and Mineral Resources Exploration and Development, 2004 (GEIHPBGMRED, 2004) "Resource reserve verification report For Shangfanggou Molybdeum (Iron) Deposit In Luanchuan County, Henan Province April 2004"

Zhengwei, Zhang; Xiaoyong, Yong; You, Dong; Bingquan, Zhu; Duofu, Chen; 2009 "Molybdenum deposits in the eastern Qinling, central China: constraints on the geodynamics International Geology Review," Volume 1, pp 1 - 30.

Zhengzhou Institute of Multi-Purpose Utilization of Mineral Resourses (IMU). Pilot Plant Test Report - New Process Technology for Luanchuan Shangfanggou Refractory Molybdenum Ore, July 2007.

The following is the text of a letter dated 14 September 2010 prepared for the purpose of incorporation in this circular received from Grant Sherman in connection with its opinion on the value of the 100% equity interest in the Borrower and Huqi Mining as at 31 March 2010.

GRANT SHERMAN APPRAISAL LIMITED

14 September 2010

China Molybdenum Co., Ltd.
North of Yihe, Huamei Shan Road, Chengdong New District,
Luanchuan County, Luoyang City,
Henan Province, 471500, China

Dear Sirs/Madams,

In accordance with your instructions, we have made an appraisal of the fair value of the 100% equity interest in the business entity of Luoyang Construction Investment and Mining Co., Ltd. (the "Borrower") and Luanchuan Huqi Mining Company Limited ("Huqi Mining"). The principal asset of the Borrower was 90% equity interests in Luanchuan Qixing Mining Company Limited ("Qixing Mining") and 50% equity interest in Xuzhou Huanyu Molybdenum Co., Ltd. ("Xuzhou Huanyu") which in turn owns 90% equity interest in Luoyang Fuchuan Mining Co., Ltd. ("Luoyang Fuchuan"), while the principal asset of Huqi Mining was 10% equity interest in Luoyang Fuchuan. Luoyang Fuchuan is principally engaged in the mining of molybdenum and manufacture of molybdenum products in Luoyang, Henan Province, the PRC.

This appraisal report identifies the business entity appraised, describes the basis of valuation and assumptions, explains the valuation methodology utilized, and presents our conclusion of value.

We have conducted our valuation in accordance with the International Valuation Standards issued by the International Valuation Standards Committee (the "IVSC"). According to IVSC, fair value is defined as "The amount for which an asset could be exchanged or a liability settled, between knowledgeable, willing parties in an arm's length transaction". In this appraisal, fair value is established on the premise of continued use. Under the continued use premise, it is assumed that the buyer and the seller would be contemplating retention of the assets as part of the current operations. An estimate of fair value derived on the premise of continued use does not represent the amount that might be realized from piecemeal disposition of the assets in the marketplace or from an alternative use of the assets. The premise of continued use is generally appropriate when:

- The assets are fulfilling an economic demand for the service they provide.
- The assets have a significant remaining useful life expectancy.
- Responsible ownership and competent management may be expected.
- Diversions of the assets to an alternative use would not be economically feasible or legally permitted.

- Continuation of the existing use by present or similar users is practical.

- Due consideration is given to the assets' functional utility for their present use.

- The assets' economic utility is duly considered.

The fair value of the 100% equity interest in the business entity of the Borrower and Huqi Mining is derived through the application of the market approach and cost approach.

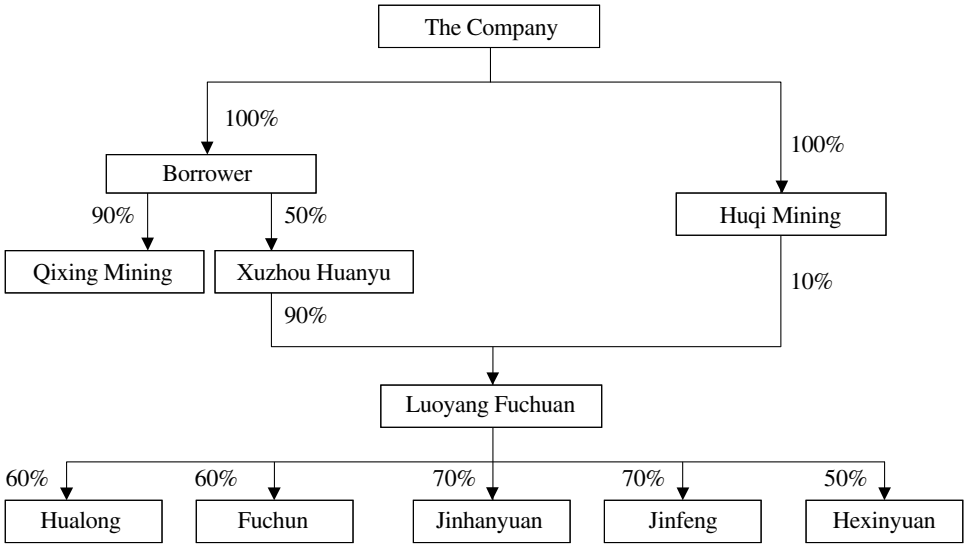
The purpose of this appraisal is to express an independent opinion of the fair value of the 100% equity interest in the Borrower and Huqi Mining as of 31 March 2010 (the "Date of Valuation"). It is our understanding that this appraisal will be used in connection with a circular of the Company to its shareholders.

INTRODUCTION

The Company and Background

China Molybdenum Co., Ltd ("the Company" or "China Moly") is a joint stock company incorporated in the PRC with limited liability, whose H Shares are listed on the Hong Kong Stock Exchange (Stock Code: 3993). The Company and its subsidiaries (the "Group") is principally engaged in molybdenum mining, flotation, roasting, smelting and downstream processing business in China.

Pursuant to an arbitration award granted by the Luoyang Arbitration Commission on 19 April 2010, the Company has completed the acquisition and acquired 100% equity interests in the Borrower and Huqi Mining with a total consideration of approximately RMB276.3 million on 22 April 2010 and 5 May 2010, respectively. According to the management of the Company (the "Management"), the shareholding structure of the Borrower, and Huqi Mining is as follows:



Borrower

The Borrower is principally engaged in the construction and investments in mineral resources projects in China. In January 2010, the Borrower acquired 50% equity interest in Xuzhou Huanyu, which in turn owns 90% equity interest in Luoyang Fuchuan. In February 2010, the Borrower also acquired 90% equity interest in Qixing Mining. In addition, the Borrower acknowledged that Luanchuan County Government is entitled to a dividend payment in the amount that equals to 8% of the annual net profit (after-tax) of Luoyang Fuchuan each year and undertook and guaranteed that Xuzhou Huanyu or Luoyang Fuchuan will continue to make such payment to Luanchuan County Government.

Huqi Mining

Huqi Mining is principally engaged in molybdenum flotation and molybdenum concentrate and oxide processing. However, pursuant to the Huqi Transfer Agreement, the assets of Huqi Mining covered by the agreement only included the 10% equity interest in Luoyang Fuchuan and its interest in a loan of RMB21,200,000. All other assets and liabilities of Huqi Mining were excluded from the transfer under the Huqi Transfer Agreement.

Qixing Mining and Xuzhou Huanyu

Qixing Mining and Xuzhou Huanyu are companies incorporated in the PRC with limited liability. According to the Company, Qixing Mining has not started its operation till the Date of Valuation. Xuzhou Huanyu is a holding company which holds 90% equity interest in Luoyang Fuchuan.

Luoyang Fuchuan

Luoyang Fuchuan is principally engaged in the mining of molybdenum and manufacture of molybdenum products in Luoyang, Henan Province, the PRC. Luoyang Fuchuan has the right, expiring on 1 January 2016, to conduct molybdenum mining activities at the Shangfanggou Mine ("the Mine"). Luoyang Fuchuan and its subsidiaries own a number of process plants with a total daily capacity of approximately 5,800 tons. According to the Management, all of Luoyang Fuchuan's subsidiaries, including Hualong, Fuchun, Jinhanyuan, Jinfeng and Hexinyuan, had no operation as of the Date of Valuation.

Shangfanggou Mine

The Mine is located in Luanchuan County, Luoyang City, China. Luoyang Fuchuan has already obtained the mining license which, together with other relevant government approvals, confers it the mining right to exploit molybdenum resources at the designated mining area. A mining license generally has an expiry date and is renewable upon expiration. Details of the mining license are as follows:

License number	Holders of mining license	Mining area *(km^2)*	Expiry date
1000000620134	Luoyang Fuchuan Mining Co., Ltd.	1.2073	1 January 2016

The Company has engaged Wardrop Engineering, Inc. ("Wardrop"), an independent technical adviser, to conduct an assessment on the Mine. Wardrop estimated the mineral reserve of the Mine according to JORC standards. The JORC Code defines the Proved and Probable Ore Reserves as follows:

"A Proved Ore Reserve is the economically mineable part of a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors.

A Probable Ore Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors."

According to the technical report issued by Wardrop, the "Technical Report on Shangfanggou Mine" the following is the reserve information of the Mine:

Reserve	Proved	Probable	Total
Tonnage *(kt)*	6,336	41,485	47,821
Diluted Mo Grade *(%)*	0.194	0.170	0.173

Hualong, Fuchun, Jinhanyuan, Jinfeng, Hexinyuan

Luoyang Fuchuan has five non-wholly owned subsidiaries, including Hualong, Fuchun, Jinhanyuan, Jinfeng, and Hexinyuan (the "Luoyang Fuchuan Subsidiaries"). They are companies incorporated in the PRC with limited liability and primarily engaged in processing of the ore from the Mine. According to the Management, operations of these subsidiaries have been suspended since January 2010 and not been resumed as of the Date of Valuation.

INDUSTRY OVERVIEW

Molybdenum is a metallic, silvery-white element with a chemical symbol of Mo. Molybdenum is usually used as an alloying agent to make steel stronger and more highly resistant to heat because of its high melting temperature (4,730 degrees Fahrenheit)[1]. The steel industry accounts for approximately 75% to 80% of molybdenum consumption[2].

Global Molybdenum Market

China has the largest molybdenum reserves in the world. According to the U.S. Geological Survey ("USGS"), the total molybdenum reserves in China reached 3.3 million metric tons, accounting for 38% of the world reserves. The top three molybdenum producers by country are China, United States and Chile. These three largest molybdenum producers totally accounted for approximately 80% of the world molybdenum production in 2009. The USGS indicated that the world production of molybdenum in 2009 totaled 200,000 metric tons, a year-on-year decrease of 8%. China's molybdenum production in 2009 reached 77,000 metric tons, reducing 5% from that in 2008[3].

Exhibit 1: World Molybdenum Production by Country, 2005-2009

	2005	2006	2007	2008	2009e
Canada	7,667	7,117	6,819	7,720	7,200
Chile	48,041	43,278	44,912	33,700	32,000
China	40,000	43,900	66,700	81,000	77,000
Mexico	4,246	2,519	6,159	7,810	7,200
Peru	17,325	17,209	16,737	16,700	15,000
United States	58,000	59,800	57,000	55,900	50,000
World Production	186,000	186,000	213,000	218,000	200,000

Source: *2008 Minerals Yearbook of Molybdenum, U.S. Geological Survey*
Mineral Commodity Summaries, January 2010, U.S. Geological Survey
Note: *e Estimated.*

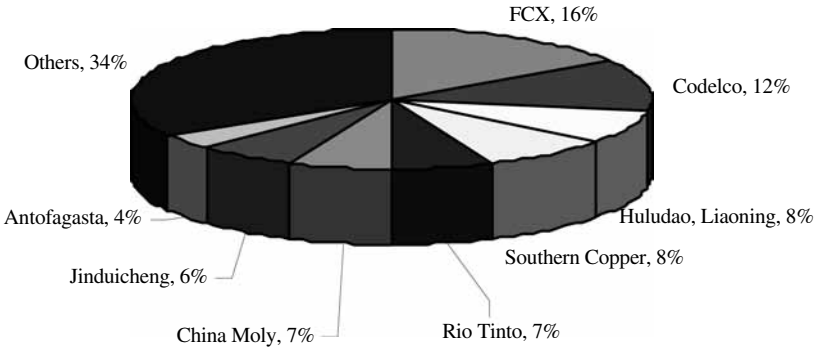
[1] Molybdenum, Mineral Information Institute, http://www.mii.org/Minerals/photomoly.html

[2] UBS Investment Research: China Molybdenum, 26 November 2009

[3] 2008 Minerals Yearbook of Molybdenum, U.S. Geological Survey
Mineral Commodity Summaries, January 2010, U.S. Geological Survey

According to UBS, one of the world's leading financial firms, Freeport-McMoRan Copper & Gold Inc., ("FCX"), is the largest molybdenum producers in the world, accounting for 16% of the world's production in 2008. Huludao city in Liaoning province, China Moly and Jinduicheng are the major molybdenum producers in China. The three largest Chinese molybdenum producers together generated 21% of global production in 2008[4].

Exhibit 2: World Major Molybdenum Producers, 2008



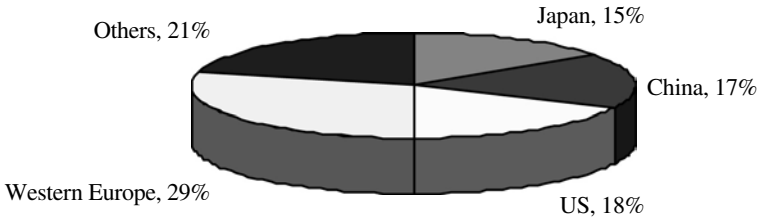
Source: Estimated by UBS

According to 2008 Annual Report of Moly Mines Limited ("MML"), Western Europe was the world's largest molybdenum consumers and China ranked third in the world as of 2007. However, MML forecasts that China will overtake Western Europe's position to become the largest molybdenum consumers in 2015[5].

[4] UBS Investment Research: China Molybdenum, 26 November 2009

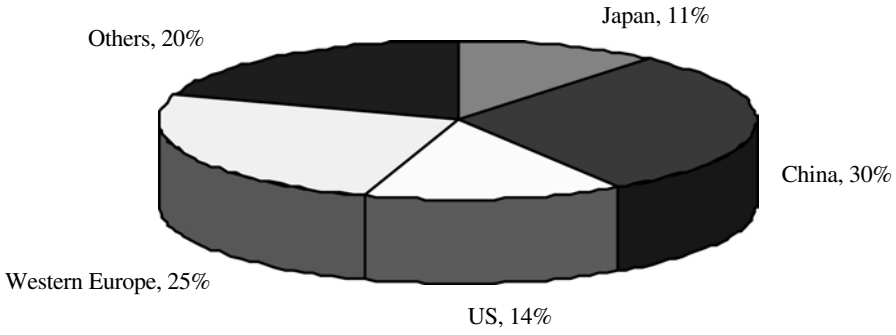
[5] Moly Mines Limited, 2008 Annual Report

Exhibit 3: World Molybdenum Consumption by Region, 2007



Source: Moly Mines Limited, 2008 Annual Report

Exhibit 4: The Forecasted Molybdenum Consumption by Region, 2015



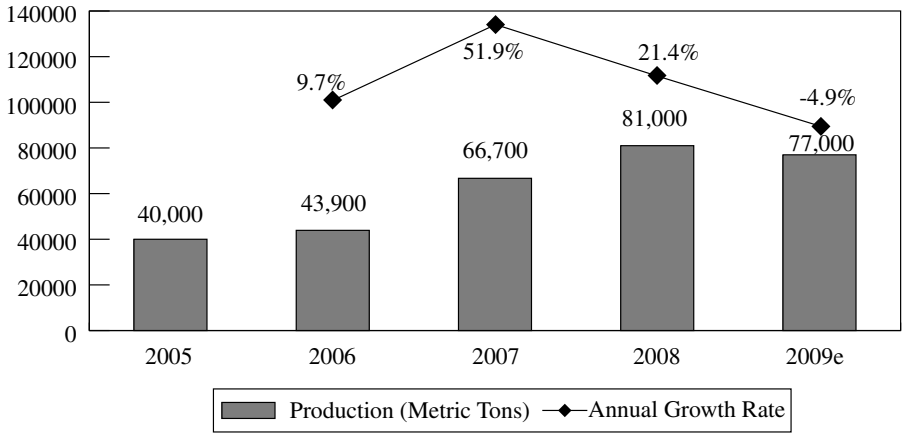
Source: Moly Mines Limited, 2008 Annual Report

Molybdenum Market in China

China has rich resources of molybdenum. According to the USGS, the estimated molybdenum production of China in 2009 reached 77,000 metric tons, accounting for 38.5% of the world's production. The USGS also reports that the total export of molybdenum ores and concentrates from China in 2008 totaled 23,626 metric tons, valued at USD867,249,000[6].

[6] 2008 Minerals Yearbook of Molybdenum, U.S. Geological Survey

Exhibit 5: Molybdenum Production in China, 2005-2009



Source: *2008 Minerals Yearbook of Molybdenum, U.S. Geological Survey*
Mineral Commodity Summaries, January 2010, U.S. Geological Survey
Note: *e Estimated.*

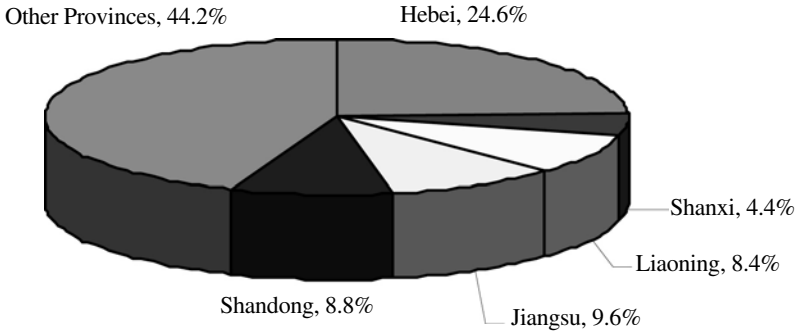
In order to eliminate unqualified molybdenum producers and maintain a healthy industry development in China, the Chinese government has implemented some standards in the industry. In February 2010, the Ministry of Industry and Information Technology of the People's Republic of China ("MIIT") issued a draft proposal of domestic molybdenum production standards ("鉬行業准入條件(徵求意見稿)"). The draft proposal states that the daily production capacity of open-pit and underground mines shall not be less than 10,000 tons and 5,000 tons, respectively. According to this proposal, small-sized molybdenum businesses are prohibited to develop in the country, which will benefit the large molybdenum producers like China Moly in the near future[7].

[7] 工信部9日發佈《鉬行業准入條件(征求意見稿)》, 上海證券報, 10-02-2010
http://finance.eastmoney.com/100210,1303191.html

Steel Production in China

Since molybdenum is one of the most important materials applied in steel production, an analysis of the steel market is helpful to the estimation of the market demand of molybdenum products. According to the World Steel Association, a global steel industry association, China is the largest steel producer in the world[8]. According to China Economic Information Network, a China-based market and industry research institution, the total production of crude steel in China during January to June 2009 reached 266.6 million tons, a year-on-year increase of 1.2%. Hebei, Jiangsu, Shandong, Liaoning and Shanxi were the five largest crude steel producers in the country and they totally accounted for 55.8% of the national crude steel production. The crude steel production in Henan during January to June 2009 reached 10.8 million tons, accounting for 4.1% of the total national production[9].

Exhibit 6: Share of Crude Steel Production in China, January - June 2009



Source: China Economic Information Network

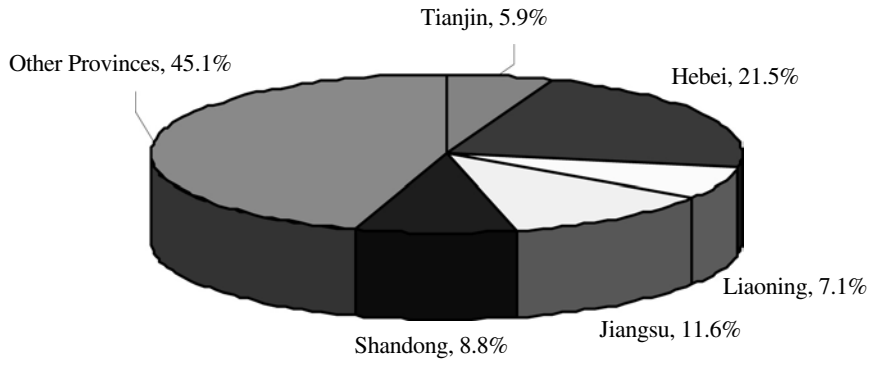
The total national production of steel materials between January and June 2009 reached 316.5 million tons, a year-on-year increase of 5.7% according to China Economic Information Network. The five largest steel material production regions in the country were Hebei, Jiangsu, Shandong, Liaoning and Tianjin and they totally produced 54.9% of steel materials in the country. The steel material production in Henan during January to June 2009 reached 13.0 million tons, accounting for 4.1% of the total national production[10].

8 World Steel Association, Crude Steel statistics Total 2009
http://www.worldsteel.org/?action=stats&type=steel&period=latest&month=13&year=2009

9 "Analysis Report on China Steel Industry (2nd Quarter 2009)", China Economic Information Network

10 "Analysis Report on China Steel Industry (2nd Quarter 2009)", China Economic Information Network

Exhibit 7: Share of Steel Material Production in China, January - June 2009



Source: China Economic Information Network

BASIS OF VALUATION AND ASSUMPTIONS

In this report, we have appraised the fair value of a 100% equity interest in the business entity of the Borrower and Huqi Mining. The principal asset of the Borrower was 90% equity interests in Qixing Mining and 50% equity interests in Xuzhou Huanyu which in turn owns 90% equity interest in Luoyang Fuchuan, while the principal asset of Huqi Mining was 10% equity interests in Luoyang Fuchuan. Luoyang Fuchuan has several subsidiaries, including Hualong, Fuchun, Jinhanyuan, Jinfeng and Hexinyuan. Therefore, in order to conclude the fair value of a 100% equity interest in the business entity of the Borrower and Huqi Mining, the valuations of the Borrower and Huqi Mining as well as Qixing Mining, Xuzhou Huanyu, Luoyang Fuchuan and their respective subsidiaries (the "Target Companies"), are required in this appraisal.

We have appraised the 100% equity interest in the business entity of the Borrower, and Huqi Mining on the basis of fair value. Fair value is defined as "The amount for which an asset could be exchanged or a liability settled, between knowledgeable, willing parties in an arm's length transaction" according to IVSC.

In this appraisal, fair value is established on the premise of continued use. Under the continued use premise, it is assumed that the buyer and the seller would be contemplating retention of the assets as part of the current operations. An estimate of fair value derived on the premise of continued use does not represent the amount that might be realized from piecemeal disposition of the assets in the marketplace or from an alternative use of the assets. The premise of continued use is generally appropriate when:

- The assets are fulfilling an economic demand for the service they provide.

- The assets have a significant remaining useful life expectancy.

- Responsible ownership and competent management may be expected.
- Diversions of the assets to an alternative use would not be economically feasible or legally permitted.
- Continuation of the existing use by present or similar users is practical.
- Due consideration is given to the assets' functional utility for their present use.
- The assets' economic utility is duly considered.

The valuation procedures we employed were based on the requirements set by the relevant IVSC. The issues considered include, but not limited to, the following:

- Identification and recognition of the business subject to the valuation
- The rights, privileges, or conditions that attach to the ownership interest
- The liquidity and relative size of the ownership interest to be valued
- The nature and prospect of the mining business
- The total reserve of the Mine
- The operating results/situation of the Target Companies
- Past, current and forecasted operating results of other similar mines in the world
- The economic outlook and national polices that may affect the business
- The assets, liabilities, and equity and financial condition of the business
- The normalized profit level of the Mine
- The business risks related to the operation of the business
- Extent, utility and capacity of the facilities, properties and mining equipments utilized by the business

Our investigation included site visits and discussions with the Management in relation to the history and nature of the business, a review of historical financial information of the Target Companies, as well as other relevant documents, particularly the "Technical Report on Shangfanggou Mine" issued by Wardrop. We have examined such information and have no reason to doubt its truth and accuracy, and hence have assumed that such information provided to us by the Management is true and accurate. We have also consulted other public information related to the business of the Target Companies to supplement the information provided by the Management. In arriving at our opinion of value, we have relied to a very considerable extent on the above-mentioned information.

Due to the changing environment in which the Target Companies are operating, a number of assumptions have to be established in order to sufficiently support our concluded value of the 100% equity interest in the business entity of the Borrower and Huqi Mining. The major assumptions adopted in this appraisal are:

- There will be no major changes in the existing political, legal, and economic conditions in China, in which the Target Companies carry on their business;

- There will be no major changes in the taxation law in China, that the rates of tax payable remain unchanged and that all applicable laws and regulations will be complied with;

- Exchange rates and interest rates will not differ materially from those presently prevailing;

- Industry trends and market conditions for related industries in the world will not deviate significantly from current status;

- The Target Companies will successfully maintain their competitiveness and market shares;

- The Target Companies can keep abreast of the latest technological development of the industry so that their operation and profitability can be sustained;

- The Target Companies will recruit and have competent management, key personnel, and technical staff to implement their operation plans;

- The Target Companies have obtained all necessary permits, license, certificates and approvals to carry out mining, processing and/or holding etc. related business operations;

- The current mining right owned by Luoyang Fuchuan will expire on 1 January 2016. We have assumed that Luoyang Fuchuan can renew the mining right until the reserve is exhausted;

- According to the Company and the technical report provided by Wardrop, it is assumed that the production capacity of the Mine will exceed 10,000t/d;

- Luanchuan County Government is entitled to a dividend payment in the amount that equals to 8% of the annual net profit (after-tax) of Luoyang Fuchuan; according to the Company, it is assumed this arrangement will remain unchanged; and

- The Target Companies have obtained all land use right certificates for the lands they need to occupy for their current and future operations.

VALUATION METHODOLOGY

In arriving at our concluded value of a 100% equity interest in the business entity of the Borrower and Huqi Mining, we have considered three generally accepted approached, namely income approach, market approach and cost approach.

Income Approach

In the income approach, the Discounted Cash Flow ("DCF") method is the most commonly used method. In this method, the value depends on the present worth of future economic benefits to be derived from ownership of equity and shareholders' loans. Thus, an indication of value was developed by discounting future free cash flow available for distribution to shareholders and for servicing shareholders' loans to their present worth at market-derived rates of return appropriate for the risks and hazards (discount rate) associated with the comparable business.

Market Approach

In the market approach, the Guideline Publicly Traded Company ("GPTC") method is considered to be applied to estimate the values of the target company. In this method, the value is based on prices at which stocks of similar companies are trading in a public market. A "value measure" is usually a multiple computed by dividing the price of the guideline company's stock as of the calculation date by some relevant economic variable observed or calculated from the guideline company's financial statements.

Cost Approach

This approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace or reproduce the future service capability of the subject asset, less depreciation from physical deterioration, functional and economic/external obsolescence, if present and measurable. The cost approach does not directly consider the amount of economic benefits that can be achieved or the time period over which they might continue. It is an inherent assumption with this approach that economic benefits indeed exist and are of sufficient amount and duration to justify the developmental expenditures.

Selection of Valuation Approach for Luoyang Fuchuan

The fair value of 100% equity interest in the Borrower and Huqi Mining is the aggregate of the fair values of the equity interest in the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu, Luoyang Fuchuan and its subsidiaries, among which Luoyang Fuchuan accounts for the biggest value. According to the Management, Luoyang Fuchuan has stopped its operation since January 2010. However, this shutdown is expected to be temporal and the operation will be resumed in the near future according to Wardrop's "Technical Report on Shangfanggou Mine". In fact, Luoyang Fuchuan and its subsidiaries have partly resumed their operation in June 2010. Therefore, we have derived the fair value of Luoyang Fuchuan on the premise of continued use.

In our opinion, both the market approach and income approach are appropriate for valuing the fair value of the equity interest in Luoyang Fuchuan. Since most companies have greater value on a continued use basis than they would if liquidated, the cost approach often serves as a valuation floor to value a liquidated business and thus we deem it is inappropriate in this appraisal.

Income Approach should be considered when valuing an operating mining business, however, Income Approach can only be applicable basing on a reasonable and justifiable financial forecast. According to the Management, since the mining plan and the feasibility study are still being processing, there is no basis for constructing a reasonable and justifiable financial forecast at this moment. We are in the opinion that once the basis for financial forecast is ready, Income Approach should be reconsidered.

Market approach is generally accepted as more preferable to the income because it relies on and uses data generated by actual market transactions or market players. In this appraisal, we relied on the guideline publicly traded company (GPTC) method to estimate the value of Luoyang Fuchuan. In GPTC, the fair value is based on prices at which stocks of similar companies are trading in a public market. A "value measure" is usually a multiple computed by dividing the price of the guideline company's stock as of the valuation date by some relevant economic variable observed (such as EBITDA, EBIT, net income and book value) or a multiple calculated from the guideline company's financial statements.

A major requirement in applying the GPTC method is to identify companies that are comparable to the subject companies in terms of business nature and associated risks. We have conducted research on related companies that are engaged in the similar business as Luoyang Fuchuan through Bloomberg. In this valuation, we have considered eight companies.

(1) China Molybdenum Co., Ltd. (3993.HK)

(2) Jinduicheng Molybdenum Co.,Ltd. (601958:CH)

(3) Thompson Creek Metals Company, Inc. (TC:US)

(4) Freeport-McMoRan Copper & Gold Inc. (FCX:US)

(5) Southern Copper Corporation (SCCO:US)

(6) General Moly Inc. (GMO:US)

(7) Moly Mines Ltd. (MOL:AU)

(8) Molibdenos y Metales, S.A. (MOLYMET:CI)

However, for company (4) and (5), operation of the molybdenum segment only constitutes an insignificant proportion to the total revenue of the company. For company (6) and (7), they were still under development and no revenue has been recorded. Company (8) manufactures molybdenum oxide, rhenium, iron molybdenum and other by products of these two chemicals, therefore, it is not directly comparable to the mining activities of Luoyang Fuchuan.

In particular, we have considered the molybdenum reserve, and selected the comparable companies based on relevant factors such as products, markets, and earnings etc., leaving three comparable companies that are closely comparable to Luoyang Fuchuan.

Following are description of the three selected comparable companies of Luoyang Fuchuan:

- China Molybdenum Co., Ltd. (3993.HK): The company explorers for molybdenum in the PRC.

- Jinduicheng Molybdenum Co.,Ltd. (601958:CH): The company is involved in molybdenum mining, dressing, smelting, processing, research and trade in Asia.

- Thompson Creek Metals Company, Inc. (TC:US): The company mines and processes molybdenum. The Company operates mines, mills, and metallurgical roasting facilities in Canada and the United States.

In applying the GPTC method, different value measures or market multiples of the comparable companies are calculated and analyzed to induce a series of multiples that are considered representative of the industry average. Then, we applied the relevant industry multiples to determine a value for the subject company that is on a freely-traded basis. Specifically, we applied the (1) price-to-revenue; (2) price-to-earnings before interest, taxes, depreciation and amortization ("EBITDA"); (3) price-to-earnings before interest and taxes (EBIT); (4) price-to-net income; and (5) price-to-book value multiples of comparable companies generated from the financial figures as at 31 March 2010 to appraise Luoyang Fuchuan.

Selection of Valuation Approach for other companies

The fair value of the equity interests in the business entity of the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu, and the subsidiaries of Luoyang Fuchuan was developed through the application of the cost approach. The income approach is considered to be inappropriate for this valuation since the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu and the subsidiaries of Luoyang Fuchuan either serve as holding companies or have no operation as of the Date of Valuation. In addition, according to the Management, they do not have a plan to resume the operations and some of them did not have any historical data, according to the Management, such kind of investments usually cannot provide reliable financial forecast for determining the fair value based on Income Approach. The Market Approach is also inappropriate since it relies heavily on data from public trading comparable companies that are revenue generating and profit making which are not the case with the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu, and the subsidiaries of Luoyang Fuchuan.

We have adopted the net asset value ("NAV") method which is Cost Approach for the valuation of the equity interest in the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu, and the subsidiaries of Luoyang Fuchuan. In this appraisal, we have defined the net asset value as total assets minus total liabilities.

After reviewing the financial statements of the Borrower, Huqi Mining, Qixing Mining, Xuzhou Huanyu, and the subsidiaries of Luoyang Fuchuan, we consider that the book values of the current assets, current and long term liabilities are reasonably representing their fair value. On the other hand, the values of the fixed assets were adjusted to fair value as of the Date of Valuation. We did not consider intangible assets of these companies since we are of the opinion that all possible intangible assets of these companies can be easily replaced at competitive prices and it is very difficult to identify an income stream that is solely attributable to the intangible assets, if any.

According to the Company and Huqi Transfer Agreement, the 100% equity interest of Huqi Mining includes only the 10% equity interest in Luoyang Fuchuan and its interest in a loan of RMB21,000,000. For the Borrower, the major liability on the financial statement is the outstanding loan of RMB1,105,000,000 owing to the Company. In this appraisal, we did not value Jinhanyuan since no necessary data for valuation has been provided by the Company. However, according to the legal opinion provided by PRC lawyer, Jinhanyuan is a limited liability company with registered capital of RMB3 million and should be liable for its debts. While Luoyang Fuchuan owns 70% equity interest in Jinhanyuan, the liability in the investment in Jinhanyuan is limited to the RMB2.1 million capital contribution invested by Luoyang Fuchuan. In addition, it is the understanding of the Company that Luoyang Fuchuan and its subsidiaries have not guaranteed any liability of Jinhanyuan. To be conservative, according to the Company, the value of the equity interest in Jinhanyuan is reasonably stated by the amount of zero.

Discount for Lack of Marketability

The concept of marketability deals with the liquidity of an ownership interest, that is, how quickly and easily it can be converted to cash if the owner chooses to sell. The lack of marketability discount reflects the fact that there is no ready market for shares in a closely held corporation. Ownership interests in closely held companies are typically not readily marketable compared to similar interests in public companies. Therefore, a share of stock in a privately held company is usually worth less than an otherwise comparable share in a publicly held company.

A number of empirical studies were conducted in an attempt to determine average levels of discounts for lack of marketability. These studies all fall into one of two basic categories, depending on the type of market transaction data on which they are based:

- Restricted ("letter") stock studies.

- Studies of transactions in closely held stocks prior to initial public offerings (pre-IPOs).

In this case, with reference to The Valuation Advisors Discount for Lack of Marketability Database, a lack of marketability discount of 20% is deemed to be reasonable for Luoyang Fuchuan.

CONCLUSION OF VALUE

Based upon the investigation and analysis outlined above and on the valuation method employed, it is our opinion that as of 31 March 2010 the fair values of a 100% equity interest in the Borrower and Huqi Mining is reasonably stated by the amount of **RENMINBI TWO HUNDRED AND EIGHTY FIVE MILLION (RMB285,000,000) ONLY**.

This appraisal was performed in accordance with the International Valuation Standards issued by IVSC and generally accepted valuation procedures and practices that rely extensively on the use of numerous assumptions and the consideration of many uncertainties, not all of which can be easily quantified or ascertained. We have not investigated the title to or any liabilities against the property appraised.

This appraisal has been prepared solely for the purpose stated herein. This appraisal report should not be referred to, in whole or part, or quoted in any document, circular or statement in any manner, or distributed in whole or in part or copied to any party without our prior written consent.

We hereby certify that we have neither present nor prospective interests in the Company and its subsidiaries or the value reported.

Respectfully submitted,
For and on behalf of
GRANT SHERMAN APPRAISAL LIMITED

Keith C.C. Yan, ASA	Jacqueline W. Huang, Ph.D
Managing Director	*Director*

Note: Mr. Keith C.C. Yan is an Accredited Senior Appraiser (Business Valuation) and he has been conducting business and intangible assets valuation in the Greater China region for various purposes since 1988. Jacqueline w. Huang is a Ph.D in real estate economics from the University of Hong Kong. She has been conducting business valuation for various purposes since 2005 and has extensive experience in transaction services.

Analyze and report by:
Keith C.C. Yan, ASA
Jacqueline W. Huang, Ph.D.
Ralph W. Y. Cheong, MBA
Cindy S.K Ho, MBA

1. RESPONSIBILITY STATEMENT

This circular, for which the Directors collectively and individually accept full responsibility, includes particulars given in compliance with the Listing Rules for the purpose of giving information with regard to the Group. The Directors, having made all reasonable enquiries, confirm that to the best of their knowledge and belief the information contained in this circular is accurate and complete in all material respects and not misleading and deceptive, and there are no other matters the omission of which would make any statement in this circular misleading.

2. DISCLOSURE OF INTERESTS

(a) Directors' Interests in Shares

As at the Latest Practicable Date, none of the Directors and chief executives has interests or short positions in the Shares, underlying Shares and debentures of the Company or any of its associated corporations (within the meaning of Part XV of the SFO) which are required to be notified to the Company and the Stock Exchange pursuant to Divisions 7 and 8 of Part XV of the SFO (including interests and short positions which they are taken or deemed to have under such provisions of the SFO) or which are required, pursuant to section 352 of the SFO, to be entered in the register referred to therein, or which are required, pursuant to the Model Code for Securities Transactions by Directors of Listed Companies, to be notified to the Company and the Stock Exchange.

(b) Substantial Shareholders

As at the Latest Practicable Date, so far as is known to the Board, the persons or companies (not being a Director or supervisor of the Company) who had an interests or short positions in the Shares or underlying Shares of the Company which would fall to be disclosed under the provisions of Divisions 2 and 3 of Part XV of the SFO or who were directly or indirectly deemed to be interested in 5% or more of the nominal value of any class of share capital carrying rights to vote in all circumstances at general meetings of the Company were as follows:

Name of substantial Shareholder	Number of shares held	Class of shares	Capacity in which interests are held	Approximate percentage of shareholding in relevant class of shares
Luoyang Mining Group Co., Ltd.	1,796,593,475 (L)	Domestic Share	Beneficial owner	50.40%
Cathay Fortune Corporation	1,736,706,322 (L)	Domestic Share	Beneficial owner	48.72%
National Council for Social Security Fund of the PRC	119,196,000 (L)	H Share	Beneficial owner	9.09%

Note:

(1) The letter "L" denotes a long position.

As at the Latest Practicable Date, none of the Directors was a director or employee of a company which had an interest or short position in the Shares or underlying Shares which would fall to be disclosed to the Company under the provisions of Divisions 2 and 3 of Part XV of the SFO.

3. DIRECTORS' SERVICE CONTRACTS

As at the Latest Practicable Date, none of the Directors had entered into a service contract with the Company which does not expire or which is not determinable by the Company within one year without payment of compensation, other than statutory compensation.

4. COMPETING BUSINESS INTEREST OF DIRECTORS

As at the Latest Practicable Date, none of the Directors or their respective associates was interested in any other business which competes or is likely to compete, either directly or indirectly, with the business of the Group as required to be disclosed pursuant to the Listing Rules.

5. OTHER INTERESTS

As at the Latest Practicable Date, none of the Directors nor any experts named in the paragraph headed "Experts" in this appendix had any direct or indirect interest in any assets which had been, since 31 December 2009, the date to which the latest published audited accounts of the Group were made up, acquired or disposed of by, or leased to, any member of the Group, or are proposed to be acquired or disposed of by, or leased to, any member of the Group.

None of the Directors have a material interest in the Acquisition and therefore no Director is required to abstain from voting on the board resolution approving the Acquisition.

6. DIRECTORS' MATERIAL CONTRACTS

There is no contract or arrangement subsisting as at the Latest Practicable Date in which any Director is materially interested and which is significant in relation to the business of the Group.

7. MATERIAL ADVERSE CHANGE

As at the Latest Practicable Date, the Directors are not aware of any material adverse change in the financial or trading position of the Group since 31 December 2009, being the date to which the latest published audited financial statements of the Company were made up.

8. EXPERTS

Each of Access Capital, Grant Sherman and Wardrop has given and has not withdrawn its written consent to the issue of this circular with the inclusion of its letter and report, and reference to its name in the form and context in which it appears.

The following are the qualifications of the experts who have given their respective opinion or advice which are contained in this circular:

Name	Qualification
Access Capital Limited	Access Capital Limited, a corporation licensed to carry on Type 1 (dealing in securities), Type 4 (advising on securities), Type 6 (advising on corporate finance) and Type 9 (asset management) regulated activities under the SFO
Grant Sherman Appraisal Limited	Independent appraiser
Wardrop Engineering Inc	Independent technical adviser

As at the Latest Practicable Date, Access Capital, Grant Sherman and Wardrop did not have (i) any shareholding 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, and (ii) any interest, either direct or indirect, in any assets which, since 31 December 2009 (the date to which the latest audited financial statements of the Group were made up), had been acquired, or disposed of by, or leased to any member of the Group, or are proposed to be acquired, or disposed of by, or leased to any member of the Group.

9. GENERAL

(a) The joint company secretaries of the Company are Ms Ho Siu Pik and Ms Lai Sharon Magdalene. Both Ms Ho and Ms Lai are members of both The Institute of Chartered Secretaries and Administrators and The Hong Kong Institute of Chartered Secretaries.

(b) The registered address of the Company is North of Yihe, Huamei Shan Road, Chengdong New District, Luanchuan County, Luoyang City, Henan Province, the PRC.

(c) The principal place of business of the Company in Hong Kong is at Level 28, Three Pacific Place, 1 Queen's Road East, Hong Kong.

(d) The H Share registrar of the Company in Hong Kong is Computershare Hong Kong Investor Services Limited.

(e) The English text of this circular shall prevail over their respective Chinese text for the purpose of interpretation.

10. DOCUMENTS AVAILABLE FOR INSPECTION

Copies of the following documents are available for inspection at the Company's principal place of business in Hong Kong at Level 28, Three Pacific Place, 1 Queen's Road East, Hong Kong during normal business hours from 9:00a.m. to 6:00p.m. on any weekdays, except public holidays, from the date of this circular up to and including the date of the EGM:

(a) the articles of association of the Company;

(b) the annual reports of the Company for each of the two years ended 31 December 2008 and 31 December 2009;

(c) the letter from the Independent Board Committee to the Shareholders, the text of which is set out on page 16 of this circular;

(d) the letter of advice from Access Capital, the independent financial adviser to the Independent Board Committee and the Independent Shareholders, the text of which is set out on pages 17 to 35 of this circular;

(e) the technical report prepared by Wardrop, the text of which is set out in Appendix I to this circular;

(f) the business valuation report prepared by Grant Sherman, the text of which is set out in Appendix II to this circular;

(g) the written consents referred to in the paragraph headed "Experts" in this Appendix;

(h) the Loan Agreement;

(i) the Supplemental Agreement;

(j) the Arbitration Award;

(k) the Huanyu Transfer Agreement;

(l) the Huqi Transfer Agreement;

(m) the Qixing Transfer Agreement; and

(n) this circular.

洛陽欒川鉬業集團股份有限公司
China Molybdenum Co., Ltd. *

(a joint stock company incorporated in the People's Republic of China with limited liability)

(Stock Code: 03993)

NOTICE IS HEREBY GIVEN that an extraordinary general meeting (the "**EGM**") of 洛陽欒川鉬業集團股份有限公司(China Molybdenum Co., Ltd.*) (the "**Company**") will be held at 9:00 a.m. on Sunday, 31 October 2010 at the International Conference Room of Mudu-Lee Royal International Hotel at No.239, Kaiyuan Street, Luonan District, Luoyang City, Henan Province, PRC for the purpose of considering and, if thought fit, passing the following resolutions:

ORDINARY RESOLUTION

1. **"THAT**:

(A) the acquisition of 100% equity interest of 洛陽建投礦業有限公司 (Luoyang Construction Investment and Mining Co., Ltd.*) and 欒川縣滬七礦業有限公司 (Luanchuan Huqi Mining Company Limited*) by the Company on 22 April 2010 and 5 May 2010, respectively, pursuant to an arbitration award granted by the Luoyang Arbitration Commission dated 19 April 2010 be and are hereby confirmed, approved and ratified; and

(B) any one director of the Company be and is hereby generally and unconditionally authorised to do all such acts and things, to sign and execute all such further documents for and on behalf of the Company by hand, or in case of execution of documents under seal, to do so jointly with any of a second director or a duly authorised representative of the directors of the Company and to take such steps as he may in his absolute discretion consider necessary, appropriate, desirable or expedient to give effect to or in connection with the acquisition under (A) above."

By Order of the Board of
China Molybdenum Co., Ltd.
Duan Yuxian
Chairman

Luoyang, the People's Republic of China, 14 September 2010

* *For identification purposes only*

Notes:

(1) All resolutions at the meeting will be taken by poll pursuant to the Listing Rules and the results of the poll will be published on the Stock Exchange's and the Company's website in accordance with the Listing Rules.

(2) H Shareholders who intend to attend the EGM in person or by proxy must complete and return the reply slip for the EGM to the Company's H Share registrar by facsimile or post no later than Sunday, 10 October 2010:

Address: 17M Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong
Tel: (852) 2862 8555
Fax: (852) 2865 0990 / (852) 2529 6087

(3) Each Shareholder of the Company who has the right to attend and vote at the EGM is entitled to appoint in writing one or more proxies, whether a Shareholder or not, to attend and vote on his behalf at the EGM. The instrument appointing a proxy must be in writing under the hand of the appointor or his attorney duly authorised in writing. In case that an appointer is a body corporate, the instrument must be either under the common seal of the body corporate or under the hand of its director or other person, duly authorised. If the instrument appointing a proxy is signed by an attorney of the appointor, the power of attorney authorising that attorney to sign, or other documents of authorisation, must be certified by a notary public. The form of proxy and the notarially certified power of attorney or other documents of authorisation must be delivered to the Company's H Share registrar at the address stated in note 2 above by post or facsimile (for holders of H Shares only), or to the Secretariat of the Board at the Company's principal place of business in the PRC at North of Yihe, Huamei Shan Road, Chengdong New District, Luanchuan County, Luoyang City, Henan Province, the PRC (for holders of Domestic Shares only), no less than 24 hours before the time appointed for holding the EGM. Completion and return of the form of proxy will not preclude a Shareholder from attending and voting at the EGM or any adjournment should he/she so wish.

(4) H Shareholders whose names appear on the Company's register of members maintained by Computershare Hong Kong Investor Services Limited after office hour on Thursday, 30 September 2010 are entitled to attend and vote at the EGM. The Company's register of members will be closed from Friday, 1 October 2010 to Sunday, 31 October 2010 (both days inclusive), during which time no transfer of shares will be registered. Transferees of H shares who wish to attend the EGM must deliver their duly stamped instruments of transfer, accompanied by the relevant share certificates, to Computershare Hong Kong Investor Services Limited at Shops 1712-1716, 17th Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong by no later than 4:30 p.m. on Thursday, 30 September 2010 for completion of the registration of the relevant transfer in accordance with the Articles of Association of the Company.

(5) Shareholders or their proxies must present proof of their identities upon attending the EGM. Should a proxy be appointed, the proxy must also present copies of his/her proxy form, or copies of appointing instrument and power of attorney, if applicable

(6) The EGM is expected to last not more than one day. Shareholders or proxies attending the EGM are responsible for their own transportation and accommodation expenses.