

Silvercorp Metals Inc. China
Peer Review: Environmental
Health Safety and Labour Due
Diligence Assessment, ESD
China Ltd

Prepared for:



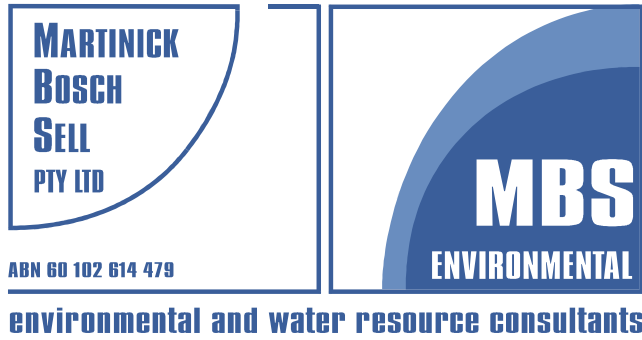
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SILVERCORP METALS INC. CHINA
PEER REVIEW: ENVIRONMENTAL HEALTH SAFETY AND
LABOUR DUE DILIGENCE ASSESSMENT, ESD CHINA LTD

PREPARED FOR

SRK CONSULTING ENGINEERS AND SCIENTISTS

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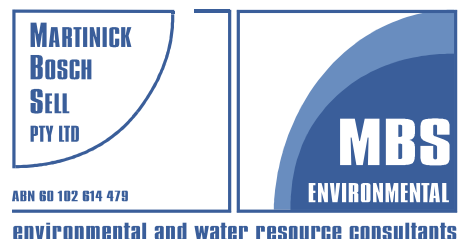


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1. INTRODUCTION

Silvercorp Metals Inc. (Silvercorp) is a Canadian public listed company engaged in acquisition, exploration and development of mining projects within China. Silvercorp, through its subsidiaries, currently have the following exploration, mining and minerals processing projects within the Henan province of China:

- Luoning County – Ying Silver-Lead-Zinc Project (Ying) with exploration, operating underground mine and processing plant, and a smelter development project (Luoning Smelter), and the Hao Ping Guo Silver-Gold-Lead Project (HPG) with exploration, operating underground mine and processing plant.
- Nanzhao County – NZ Gold-Silver Exploration Project (previously operated underground mine and processing plant).

In November 2007, Silvercorp commissioned ESD China Ltd (ESD) to undertake an environmental, health, safety and social (EHSS) assessment of the Ying and HPG mining and mineral processing projects. This assessment did not include the Luoning Smelter Project and the NZ Exploration Project. In December 2007, Silvercorp requested that MBS Environmental undertake a peer review of the completed ESD assessment.

1.1 OBJECTIVE

The objective is to provide a peer review of the ESD EHSS assessment, through assessing the adequacy and appropriateness of the ESD review process and findings, against current internationally recognised standards and practices.

1.2 ESD EHSS ASSESSMENT SCOPE AND STANDARDS

The ESD EHSS assessment was undertaken against:

- Chinese Legislation.
- World Bank/International Finance Corporation (IFC) environmental standards and guidelines.
- Equator Principles.

The ESD assessment also aimed to identify *'areas where opportunities for improvement in EHSS management, could be achieved that would benefit the overall performance of Silvercorp'*.

The ESD assessment comprised a two day site inspection and half day documentation review and discussion with Silvercorp representatives.

The ESD EHHS assessment addresses the following issues:

- **Environmental Issues:**
 - Administration – the site (i.e. project environmental approvals and compliance).
 - Environmental management (i.e. environmental management system).
 - Air emissions.
 - Water supply.
 - Waste water management.
 - Waste and hazardous management.
 - Noise – environmental and occupational.
 - Ozone depleting substances (ODS).
 - Polychlorinated biphenyls (PCBs).
 - Ionising radiation.
 - Asbestos.
 - Soil and groundwater (i.e. potential contamination areas).
- **Health and Safety Issues:**
 - Administration – the site (i.e. safety compliance).
 - Health and safety management.
 - Electrical safety.
 - Machine guarding.
 - Working at height and working surface.
 - Hazardous substance management.
 - Confined space.
 - Occupational noise.
 - Occupational exposure.
 - Lighting.
 - Fire and emergency response.
- **Labour and Social Issues:**
 - Wages and benefits.
 - Hours of work.
 - Medical surveillance.
 - Freedom of association and collective bargaining.
 - Harassment and abuse.
 - Non-discrimination.
 - Forced labour.

- Child labour.

The ESD assessment presented the review findings in a summary table. This table lists, for each relevant issue, the:

- Assessment findings.
- Current compliance/management status.
- Actions and recommendations.
- Cost estimates (to complete recommended actions).

2. PEER REVIEW OF ESD EHSS ASSESSMENT

2.1 SUMMARY AND GENERAL COMMENTS

The ESD EHSS assessment makes general high level comments regarding the environmental management performance of the Ying and HPG mining and mineral processing projects. The emphasis is mainly on defining Chinese legislative compliance, rather than conformance with international guidelines.

The ESD EHSS assessment provides a comprehensive listing of technical sources and permits/approval documentation for the Ying and HPG mining and mineral processing projects. The assessment adequately addresses the status of the following EHSS management issues, as at November 2007:

- **Environmental issues:**
 - Water supply.
 - Chemicals management.
 - Noise – environmental and occupational.
 - Ozone depleting substances.
 - Polychlorinated biphenyls.
 - Ionising radioactivity.
 - Asbestos.
- **Health and safety issues** – all issues are adequately addressed with the exception of Occupational exposure.
- **Labour and social issues** – all issues are adequately addressed.

MBS Environmental makes the following comments in regards to perceived deficiencies in the ESD EHSS assessment:

- The assessment makes the summary statement that *'No high risk issue was identified for both Ying Project and HPG Project during the assessment'*, yet no risk analysis process is provided as part of the review, to support this statement. The assessment also does not emphasise or adequately address the recognised inherent environmental risks associated with the mining and mineral processing of lead/heavy metals (i.e. the potential for lead/heavy metal contamination in air and surface water/sediment emissions).
- The ESD assessment does not address mine/site closure planning (i.e. a component of the IFC Environmental, Health and Safety Guidelines for Mining).
- The following EHSS management issues are not adequately addressed within the review:
 - Environmental issues – administration/site compliance, air emission, wastewater management, waste and hazardous waste management, chemicals management, and soil and groundwater (site contamination).

- Health, safety and social issues – occupational exposure.

The following sections provide additional supporting comments in respect of the adequacy of the above EHSS management issues.

2.2 ENVIRONMENTAL ISSUES

2.2.1 Administration Situation

This item of the ESD EHSS assessment covers the environmental approval and compliance status for the Ying and HPG projects.

The item provides a high level assessment of the status with the relevant impact assessment and approval documentation. The assessment makes the following summary statement '*Silvercorp has developed projects by complying with Chinese EHSS laws and regulations, including project pre-assessments and approvals (EIA and approvals, Safety assessment and approval, fire fighting inspection and approval)*'. However, the assessment does not adequately define the projects' current compliance status with regards to individual specific environmental approval conditions. Some of these management areas (i.e. water and waste management) are addressed in separate items, but their current compliance status against the relevant approval conditions is not clearly defined.

2.2.2 Air Emissions

Whilst the ESD assessment acknowledges that there was no ambient air monitoring data available for review, the assessment also makes the statement '*no obvious dust was observed at the both mining and milling sites*'. This statement reflects a lack of understanding of what can constitute a significant dust emission. Significant environmental and occupational exposure levels of suspended particulates are not necessarily able to be observed, but require sampling/measurement to determine the significance of the emission.

The assessment also makes the statement that '*air emission monitoring report was only available for the incinerator used in Ying mining area. No other ambient air monitoring reports and air emission reports were available for review during site visit. Therefore compliance status of air emission can not be confirmed*'. The assessment however, does not emphasise or expand on the significance of this issue (i.e. in terms of the risk that the operational dust emissions present and the potential to result in the generation of significant environmental and occupational exposure impacts).

2.2.3 Wastewater Management

The assessment refers to the management of wastewater as having '*Potential Compliance*' (i.e. *further details and review needed to determine if it is a non-compliance*). Yet the assessment makes the following statements '*Extracted water in HPG mine area: the extracted water was discharged to surface river directly at approximately 30 cubic metres per day without any treatment*', and '*Wastewater must be treated to meet the Integrated Wastewater Discharge*

Standard prior to discharge'. These statements suggest this wastewater management practice for the HPG mine is currently non-compliant.

The ESD EHSS assessment also does not address or emphasise the potential for off-site contamination from wastewater sediment discharges (i.e. potential lead/heavy metal contamination).

The ESD EHSS assessment makes the following summary statements in regards to tailings management:

- *The tailing starter dam at HPG milling site had been modified to meet the government requirements.* This statement is not expanded on within the main body of the report and it is unclear what this modification comprised, what are the government requirements and when the modification was undertaken.
- *The tailing storage facility (TSF) at Ying milling site was well designed, constructed and maintained.* This statement is not expanded on within the main body of the report. There is also a statement made under the Soil and Groundwater item that refers to the potential impact to groundwater from seepage of the collected tailings water/sediments (i.e. seepage through the unlined TSF seepage containment pond).

In addition to the above statements, there are also the following apparent contradictory statements made in regards to the condition of the HPG TSF:

- *Photo 26 – The general condition of the TSF starter dam and tailings embankment at HPG Milling Plant is good.*
- *Photo 27 – There is potential for erosion to occur on/near the left abutment (NB. Photo 27 shows significant erosion at the left abutment).*

2.2.4 Waste and Hazardous Waste Management

The ESD EHSS assessment makes the statement that '*No hazardous waste management program maintained onsite*', and then categorises this as '*Compliance*'. The key provided for the summary table states that '*Compliance = regulatory non compliance*', so the assessment is effectively categorising the lack of a hazardous waste management as being a non-compliant.

The ESD EHSS assessment makes the following statement in respect domestic and industrial solid waste management, '*Solid industrial and domestic wastes are disposed of directly to land. This practice is in line with provisions made in the Ying EIA for centralized disposal areas which are to be buried at the end of their service life. This solid waste disposal method is in line with international sanitary landfill practice*'. It is worth noting that the solid waste management practice of 'direct disposal to land and burial at the end of the service life' is not in line with international sanitary landfill practice. The recognised international sanitary landfill practice comprises disposal of solid waste below ground level within an open trench, with a minimal active dumping area that is covered with soil on a regular basis.

2.2.5 Chemicals Management

The ESD assessment identifies the following in respect to issues with the storage and handling of chemicals and hazardous materials:

- Lack of and / or poorly designed secondary containment.
- Lack of and / or incorrect labelling and signage.
- Lack of Material Safety Data Sheets for chemicals utilised on site.

It is worth noting that the summary table collectively lists these issues as ‘*Compliance*’. Utilising the definition of ‘compliance, provided for the table key, these issues are considered to be ‘regulatory non-compliances’.

2.2.6 Soil and Groundwater

The item refers to the potential areas of soil and groundwater contamination. A chemical spillage area and two hydrocarbon spillage areas at the Xiayu Mill Plant (Ying Project) were listed as areas of concern for soil and groundwater contamination. In addition the Xiayu tailings storage facility (TSF) seepage collection pond and the Ying mine water containment pond are listed as areas of concern. No potential contamination areas for the HPG project were listed; however, a photograph (Plate 22) of a contamination area around a chemical solution tank the HPG project is provided.

2.3 HEALTH, SAFETY AND SOCIAL ISSUES

2.3.1 Occupational Exposure/Medical Surveillance

The ESD EHSS assessment is not clear on the current status with potential risks and issues associated with occupational exposure to lead/heavy metal dust. The assessment states that ‘*Occupational exposure is monitored by the gas detector for carbon monoxide in mines twice a day*’. While this occupational exposure monitoring does not appear to include dust exposure, the corresponding recommended action is stated as ‘*Ensure the daily test for dust, carbon monoxide and wind speed complied*’. It is not clear from these two statements whether daily occupational dust monitoring is undertaken and if so, are the samples analysed for lead/heavy metals and the results assessed for occupational exposure levels.

In terms of the corresponding occupational exposure medical and health checks, the ESD EHSS assessment makes the following statements:

- ‘*No medical surveillance program had been developed for the company. No filing or database system to track individual employee’s occupational health status is in place*’.
- ‘*No comprehensive pre-employment, on-job/regular and before resignation health examination for all employees, particular for workers who works in occupational hazardous positions e.g. dust, harmful chemicals and noise*’.

These two statements support the assessment position that potential risks associated with occupational exposure to lead/heavy metal dust are not currently sufficiently recognised or addressed within Silvercorp's EHSS management. The ESD EHSS assessment, however, does not emphasise the significance of this issue.