

# MINISTRY OF COMMERCE, TRADE AND INDUSTRY

# ZAMBIA AGRIBUSINESS AND TRADE PROJECT ASBESTOS MANAGEMENT PLAN

FEBRUARY 2024 FINAL VERSION

| Definitionsii   |
|---|
| 1.0 INTRODUCTION  |
| 1.1 Aim of the Asbestos Management Plan1                              |
| <b>1.2</b> Objectives of the Asbestos Management Plan (AMP)1          |
| 1.3 Scope of the Asbestos Management Plan2                            |
| 1.4 Proposed Activities under the Asbestos Management Plan2           |
| <b>1.5 Operationalization of the Asbestos Management Plan (AMP)</b> 2 |
| 1.6 Site Description2   |
| 2.0 POLICY LEGAL AND INSTITUTIONAL FRAMEWORK                          |
| 2.1 Policy Framework  |
| 2.2 Legal Framework4  |
| 2.2 Institutional Framework6  |
| 2.3 World Bank Environmental and Social Standards6                    |
| 2.5 World Bank Group Environmental, Health, Safety Guidelines (ESHG)7 |
| 2.6 International Convections and Treaties7                           |
| 3.0 PROCEDURES FOR ASBESTOS REMOVAL                                   |
| 3.1Personal Protective Equipment and Clothing8                        |
| <b>3.2 Disposal of Personal Protective Equipment (PPE)</b> 10         |
| 3.3 Removal Processor Responsibility11                                |
| 3.4 Packaging Procedure   |
| 3.5 Temporary Storage of Asbestos Roofing Sheets12                    |
| 3.6 Transportation of Asbestos13                                      |
| 4.1 Risk Assessment and Mitigation Measures14                         |
| 4.2Asbestos Related Incidences14                                      |
| 5.0 DISPOSAL OF ASBESTOS ROOFING SHEETS                               |
| 5.1 Sub-Contractors15   |
| 5.2 Proposed Dump Site15  |
| 6.0 TRACEABILITY OF THE ASBESTOS ROOFING SHEETS                       |
| 7.0 MONITORING IMPLEMENTATION OF THE AMP16                            |
| 8.0 ANNEXES   |

## List of Tables

| Table 1: Coordinates of the Zabs Laboratory Site | 3 |
|--|---|
| Table 2: World Bank Safeguard Policies           | 6 |

# List of Figures

| Figure 1: Goggle Image Of | Zabs Laboratory Co | nstruction Site3 |
|---------------------------|--------------------|------------------|
|---------------------------|--------------------|------------------|

## Definitions

| Asbestos            | Asbestos is a naturally occurring mineral that occurs in rock and soil composed of long, thin, needle |
|---------------------|---|
|                     | like fibrous crystals   |
| Asbestos Containing | Any material, object, product or debris that contains asbestos.                                       |
| Material (ACM)      |   |
| Bonded ACM          | Asbestos containing material containing a bonding compound reinforced with asbestos fibers.           |
| Un Bonded ACM       | Asbestos containing material that does not contain a bonding compound reinforced with asbestos        |
|                     | fibers.   |
| Friable ACM         | Un-bonded asbestos containing material that, when dry, is or may become crumbled pulverized or        |
|                     | reduced to powder by hand pressure  |
| Fixed               | This is asbestos that is attached or secured in position such as asbestos cement sheet screwed or     |
|                     | nailed.   |
|                     |   |
| Foreman/Project     | Also means contractor and sub-contractor  |
| Manager             |   |
| Installed           | Where it has been specifically placed for a purpose such as asbestos containing refractory bricks     |
|                     | placed on top of each other or loose asbestos containing insulation blown into a ceiling space.       |
| Removal             | Asbestos removal work requires the appointment of a Principal Contractor authorized by ZEMA           |
|                     | because asbestos removal work is a high-risk construction activity.                                   |
| Asbestos Material   | A report by an appropriately qualified person (Principal Contractor or ZEMA Inspector) which states:  |
| Report              | <ul> <li>Where and what the types of materials that were found.</li> </ul>                            |
|                     | The form of the materials.  |
|                     | <ul> <li>The condition of the material (i.e., friable, poorly bonded, unstable).</li> </ul>           |
|                     | <ul> <li>The potential health risks to site workers.</li> </ul>                                       |
|                     | <ul> <li>Where the asbestos has been disposed.</li> </ul>   |
|                     |   |
| Asbestos Register   | A register that must be kept by the owner of the site and which must:                                 |
|                     | <ul> <li>Contain information, including any changes/updates, from the Asbestos Report.</li> </ul>     |
|                     | Be available for inspection by any person requiring inspection.                                       |
|                     | Be available to all site workers.   |
|                     | Be available to any contractors.  |
| Competent Person    | A competent person is a person who possesses adequate qualifications, such as suitable training       |
|                     | and sufficient knowledge, experience or skill, to perform a specific task safely                      |
| ESHG                | Environmental Safety and Health Guidelines  |
| GIIP                | Good International Industry Practices   |
| Hygienist           | A person having attained training and experience to undertake Occupational Hygiene services to the    |
|                     | Asbestos removal industry   |
| HEPA                | High Efficiency Air Filters   |
| RTSA                | Road Transport and Safety Agency  |
| PPE                 | Personal Protective Equipment   |
| ZEMA                | Zambia Environmental Management Agency  |

### **1.0 INTRODUCTION**

The Ministry of Commerce, Trade, and Industry (MCTI) is implementing the Zambia Agribusiness and Trade Project (ZATP), with funding from the World Bank. Component 2 of the ZATP is supporting the construction of a laboratory for the Zambia Bureau of Standards (ZABS) in Chongwe District of Zambia. During routine monitoring of the ZABS laboratory construction site by the ZATP Project Implementation Unit (PIU), two (2) asbestos roofing sheets were spotted placed as roofing material for the workers resting shelter. The presence of asbestos roofing sheets within the ZABS construction site poses a health risk to the workers on site. Asbestos is a known carcinogen that can cause mesothelioma, lung cancer and asbestosis. Asbestos fibres inhaled deep into the lungs can result in damage to mesothelial cells in the body and lead to the development of a type of cancer called mesothelioma. Lung cancer, which differs from mesothelioma and specifically affects the lungs, can also result from asbestos exposure. Asbestosis, a non-cancerous condition, caused by the scarring of the lung tissue from asbestos fibres, which results in a reduced ability of the lungs to transfer oxygen to the blood. The latency periods range between 35-40 years for mesothelioma, 20-30 years for lung cancer and 15-20 years for asbestosis.

The presence of asbestos roofing sheets at the ZABS laboratory site has given rise to the formulation and implementation of this Asbestos Management Plan (AMP). Even though this AMP is a standalone plan, it shall be annexed by the contractor to the Contractor Environmental and Social Management Plan (CESMP) that acts as a framework for managing environmental and social impacts during the construction of the ZABS laboratory.

The asbestos from the ZABS laboratory site is intended for safe disposal by the contractor at a dump site registered with a local authority and Zambia Environmental Management Agency (ZEMA) which is yet to be identified. Hence, the scope of this AMP involves temporary storage and disposal at a dump site to be identified.

#### 1.1 Aim of the Asbestos Management Plan

The aim of the AMP is to ensure the safe removal, handling, storage, transportation and disposal of two (No.2) asbestos roofing sheets with length 3 m and width 0.95 m and thickness 5 mm that are currently located at the ZABS laboratory site in Chongwe, Zambia.

#### **1.2 Objectives of the Asbestos Management Plan (AMP)**

The objectives of this asbestos management and removal plan are:

- Provide guidance to manage asbestos roofing sheets and any asbestos contaminated material (ACM) discovered at the ZABS Laboratory site.
- Provide guidance and build capacity to Zoncor Investments Limited (the contractor) and subcontractors on the risks and impacts associated with removal, handling, storage, transportation, and disposal of asbestos.
- Ensure appropriate procedures are in place for safe removal, handling, packaging, transportation, storage, and disposal of asbestos.
- Provide guidance to manage incidents related to inappropriate management of asbestos.
- Ensure the appropriate record keeping for asbestos' disposal and incidents.

### 1.3 Scope of the Asbestos Management Plan

The scope of the AMP includes guidance on the handling, packaging, temporary storage, transportation, and disposal of the two asbestos roofing material measuring 3 m in length, width 0.95 m and thickness 5 mm that are currently located at the ZABS laboratory site located in Chongwe District of Zambia. It also covers resource allocations and stakeholder engagement aspects.

#### 1.4 Proposed Activities under the Asbestos Management Plan

The following proposed activities will be conducted under the asbestos management plan:

- Follow up with ZEMA on the request to provide further guidance on disposal of the asbestos roofing sheets.
- Ensure that the hazardous waste license for contractor that will may be engaged to transport hazardous waste is valid.
- Identify a suitable and licensed dump site for disposal of the Asbestos Containing Material (ACM) with guidance from ZEMA.
- Conduct a due diligence and site visit for identified contractor and dump site and ensure that they are fully licensed with ZEMA and have the required capacity for transportation and disposal of the asbestos roofing sheets.
- Identify resources including financial requirements for disposal of the asbestos roofing sheets locally.
- If there is no suitable dump site in Zambia for disposal of the asbestos roofing sheets, identify resources, country of disposal including export permits, prior informed consent (PIC) to the receiving country and financial requirements for disposal of the asbestos roofing sheets internationally.

## 1.5 Operationalization of the Asbestos Management Plan (AMP)

To operationalization the asbestos management plan, the following activities will be undertaken by Zoncor Investments Limited in conjunction with the ZATP:

- Train workers on how to wear appropriate Personal Protective Equipment (PPE) by Zoncor Investments Limited's Safety Officer (SO).
- Revise the Zoncor Investments Limited, Risk Assessment (RA) to ensure that all control measures and resources are in place.
- Update Zoncor Investment Limited's contractor environmental and social management plan (CESMP) to include this AMP and the risk assessment (RA).
- Secure the temporary storage room with barricades, red tape and label as hazardous material awaiting transportation to the dumpsite.

## **1.6 Site Description**

The asbestos roofing sheets at the ZABS Laboratory construction site were found on the roof of the workers resting shelter. The asbestos roofing sheets have been removed from the workers resting shelter and temporary stored at the ZABS construction site, because there is a risk that Zoncor Investments Limited may reuse the asbestos sheet if not disposed of and the workers may be exposed to health risks associated with exposure to asbestos. The roofing sheets are intact and non-friable. Prior

to the temporary storage of the asbestos roofing sheets, a risk assessment (RA) was conducted to identify and evaluate potential risks and impacts related to handling of the asbestos roofing sheets.

The ZABS laboratory construction site is located in Chongwe District, about 10 Km from the Central Business District (CBD) of Lusaka, off the Kenneth Kaunda International Airport (KKIA) Road.

The project area is defined by the corner coordinates in Table 1.

Table 1: Coordinates of the ZABS Laboratory Site

| Point ID | Latitude    | Longitude  |
|----------|-------------|------------|
| 1        | -15.785284° | 28.179096° |
| 2        | -15.787867° | 28.181727° |
| 3        | -15.789721° | 28.179632° |
| 4        | -15.787610° | 28.177446° |



Figure 1: Goggle Image of ZABS Laboratory Construction Site.

#### 2.0 POLICY LEGAL AND INSTITUTIONAL FRAMEWORK

#### 2.1 Policy Framework

#### 2.1.1 National Policy on Environmental 2009

The National Policy on Environment (NPE) of 2009) was developed to safeguard the environment and to ensure the sustainable use of natural resources in Zambia.

The objectives of this policy are to:

• Promote the sound protection and management of Zambia's environment and natural resources in their entirety, balancing the needs for social and economic development and environmental integrity to the maximum extent possible, while keeping adverse activities to the minimum; and

• Accelerate environmentally and economically sustainable growth to improve the health, sustainable livelihoods, income and living conditions of the poor majority with greater equity and self-reliance.

#### Relevance

This asbestos management plan (AMP) aims at promoting sound management and protection of the environment by developing guidelines for handling, storage and disposal of asbestos at the ZABS laboratory construction site.

#### Compliance

In compliance with the requirement of this policy, the ZATP and Zoncor Investments Limited will comply with all the policy requirements in terms of protecting Zambia's environmental and natural resources.

#### 2.2 Legal Framework

#### 2.2.1 Environmental Management (Amendment) Act No.8 of 2023

The Act is the supreme legislation for management of the environment in Zambia. The Act provides for integrated environmental management, protection and conservation of the environment, sustainable management and use of natural resources and conduct of strategic environmental assessments of proposed policies, plans and programmers likely to have an impact on environmental management in Zambia. The Act provides guidelines for guidelines for handling, storage, transportation and disposal of hazardous substances such as asbestos through subsequent regulations under the Environmental Management Licensing Regulations (SI.112 of 2013.). The Environmental Management Licensing regulations prohibits the disposal of hazardous substances such as asbestos substances such as asbestos without a disposal license issued by ZEMA.

#### Relevance

Two sheets of asbestos roofing materials were identified at the ZABS laboratory site and are currently under temporary storage awaiting disposal.

There is a potential risk to the environment if the asbestos are not handled and disposed of in environmentally sound manner as the asbestos roofing sheets may contaminate and pollute the environment if not properly disposed of.

#### Compliance

In compliance with the requirement of this Act, ZATP and Zoncor Investments Limited will follow guidelines under this Act and consult ZEMA on the safe handling, temporary storage, transportation, and disposal of asbestos roofing sheets that are located at the ZABS laboratory construction site.

#### 2.2.2 Environmental Management Licensing Regulations (SI.112 of 2013)

The Environmental Management (Licensing) Regulations (SI. No 112 of 2013) complements the Environmental Management Act 2011 and address a wide variety of matters regarding environmental

protection including air quality control, waste management, hazardous waste, and other substances harmful to the environment such as pesticides and ozone-depleting substances.

Even though the regulations do not specifically mention asbestos, asbestos containing materials are classified as hazardous and hence belongs to the fifth schedule, under regulation 18 (1), that contains a list of hazardous materials. The regulations provide guidelines for transportation of hazardous which requires that authorization should be granted by ZEMA to licensed service providers to transport and dispose hazardous waste such as asbestos. '

#### Relevance

Two asbestos roofing sheets were identified at the ZABS laboratory site. Some of the activities that are yet to be undertaken include transportation and disposal of the asbestos roofing sheets. These activities have a potential to cause occupational health and safety risks during handling of the asbestos roofing sheets. In addition, the asbestos roofing sheets may contaminate and pollute the environment if not properly disposed.

#### Compliance

In compliance with the requirement of this Act, the ZATP and Zoncor Investments Limited will follow guidelines under these regulations, consult ZEMA and engage a licensed contractor who in turn shall dispose the asbestos roofing sheets at a ZEMA licensed disposal site.

#### 2.2.3 The Occupational Health and Safety Act No. 36 of 2010

This Act provides guidelines for the health, safety and welfare of persons at workplaces. The Act also provides for the duties of manufacturers, importers and suppliers of articles, devices, items and substances for use at workplaces; provide for the protection of persons, other than persons at workplaces, against risks to health or safety arising from, or in connection with, the activities of persons at workplaces.

The Act requires that an employer of ten or more persons at any workplace establishes a health and safety committee. The functions of the health and safety committee which among others is to promote cooperation between the employer and the employees in achieving and maintaining healthy and safe working conditions and share information about occupational health, safety and welfare with employees. Investigate and resolve any matter that may be a risk to the health and safety of employees at a workplace.

#### Relevance

The handling, temporary storage, transportation, and ultimate disposal of the asbestos roofing sheets may expose workers to occupational health and safety risks during handling of the asbestos roofing sheets.

#### Compliance

The ZATP and Zoncor Investments Limited will comply with the requirement of this Act and ensure that all the workers are provided with appropriate Personal Protective Equipment (PPE) for handling, removal and temporary storage of the asbestos roofing sheets. In addition, ZATP and Zoncor Investments Limited conducted a risk assessment for handling the asbestos roofing sheets and inducted workers through toolbox training on the risks related to handling asbestos.

#### 2.2 Institutional Framework

The key institutions that shall implement this AMP are:

- Ministry of Commerce, Trade and Industry (MCTI).
- Prism Architect (Z) Limited:
- Zambia Agribusiness and Trade Project (ZATP):
- Zambia Bureau of Standards (ZABS)
- Zambia Environmental Management Agency (ZEMA):
- Zoncor Investment Limited; and
- Zambia Revenue Authority (ZRA) in case the asbestos roofing sheets will be exported for disposal to Zimbabwe.

#### 2.3 World Bank Environmental and Social Standards

The Zambia Agribusiness and Trade Project (ZATP) is operating under the old-World Bank Safeguard Polices. The environmental and social polices require the borrowing government through its implementing agency to address environmental and social risks to receive World Bank support for investment project. Out of the ten (No.10) World Bank Safeguard Policies, three safeguards policies were triggered.

Table 2 below shows the World Bank safeguard policies that were triggered to mitigate potential environmental and social impacts during the implementation of the ZATP.

| No. | Safeguard Policy                    | Triggered |
|-----|-------------------------------------|-----------|
| 1   | Environmental Assessment OP/BP 4.01 | Yes       |
| 2   | Natural Habitats OP/BP              | No        |
|     | 4.04                                |           |
| 3   | Forests OP/BP 4.36                  | No        |
| 4   | Pest Management OP                  | Yes       |
|     | 4.09                                |           |
| 5   | Physical Cultural                   | No        |
|     | Resources OP/BP 4.11                |           |
| 6   | Indigenous Peoples                  | No        |
|     | OP/BP 4.10                          |           |
| 7   | Involuntary Resettlement OP/BP 4.12 | Yes       |
| 8   | Safety of Dams OP/BP                | No        |
|     | 4.37                                |           |

#### Table 2: World Bank Safeguard Policies

| 9  | Projects on International Waterways OP/BP 7.50 | No |
|----|--|----|
| 10 | Projects in Disputed Areas OP/BP 7.60          | No |

### 2.4.1 Environmental Assessment OP/BP 4.01

Of all the three policies triggered under the project, only OP/BP 4.01 is applicable to management of asbestos. An Environmental Project Brief (EPB) was prepared by the ZATP for the construction of the ZABS laboratory in line with the requirement of this safeguard policy to provide guidance on how to mitigate environmental and social impacts during the construction of the ZABS laboratory. The EPB included mitigation measures related to hazardous waste in general in which category the asbestos roofing sheet belong. In addition, the contractor prepared a Contractor Environmental and Social Management Plan (CESMP) that reflects any hazardous material such as asbestos roofing sheets may be managed.

In addition, a risk assessment (RA) was conducted for the asbestos roofing sheets that were identified at the ZABS laboratory construction site, prior to the temporary storage of the asbestos roofing sheets in order to identify potential risks and impacts related to handling of the asbestos roofing sheets and thus come up with measures to avoid, minimize and mitigate potential the risks and impacts. The AWP has been prepared to provide detailed mitigation measures specific for management of asbestos waste.

#### 2.5 World Bank Group Environmental, Health, Safety Guidelines (ESHG)

The EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group, and these are generally considered to be achievable in new facilities at reasonable costs by existing technology. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

Specifically, on Hazardous Materials Management, the ESH guidelines provides technical guidelines that apply to projects that use, store, or handle any quantity of hazardous materials covering:

- General Hazard Management Materials.
- Hazard Assessment
- Management Actions
- Preventive Measures
- Control Measures
- Emergency Preparedness and Response
- Community Involvement and Awareness

The implementation of this AMP will also adopt the requirements of the World Bank Environmental, Safety Health Guidelines (ESHG).

#### 2.6 International Convections and Treaties

# **2.6.1** Basel Convention on the Control of Trans-Boundary Movement of Hazardous Waste and their Disposal

Zambia is a signatory to the Basel Convention on the Control of Trans - boundary Movement of Hazardous Waste and their Disposal. The Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and their Disposal is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). The Convention is also intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate. This convention also requires from the party to ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes.

The Environmental Management Act of 2011 recognizes the requirements of the Basel Convection has provided licensing regulations for hazardous such as asbestos under the Environmental Management Licensing Regulations (SI.112 of 2013) that identifies asbestos roofing sheets as a hazardous waste.

#### 2.6.2 Rotterdam Convection

Zambia is a signatory to the Rotterdam Convection is an international treaty designed to facilitate informed decision making by countries with regard to trade in hazardous. The convection governs the management of hazardous substances and hazardous waste to which the asbestos roofing sheets belong. The hazardous substances are listed on Annex 3 of the Rotterdam Convection. In view of the above, the Environmental Management Act of 2011 recognizes the requirements of the Rotterdam Convection and has provided licensing regulations for hazardous such as asbestos under the Environmental Management Licensing Regulations (SI.112 of 2013) that identifies asbestos roofing sheets as a hazardous waste.

#### **3.0 PROCEDURES FOR ASBESTOS REMOVAL**

The asbestos roofing sheets that is temporary stored at the ZABS Laboratory site will be removed using the procedures outlined in this AMP. Zoncor Investments Limited and the subcontractor will follow the procedures that have been outlined in this AMP for removal, transportation and disposal of the asbestos roofing sheets. ZATP will oversee the handling and final disposal of the asbestos roofing sheets.

#### **3.1Personal Protective Equipment and Clothing**

The Personal Protective equipment (PPE) shall meet the asbestos related requirement of the ZABS Standards, ZS 009:19773: Asbestos Cement Insulating Board and ZS006:1973: Asbestos Cement Flat Sheets: Semi and Fully Composed, ISO standards prEN ISO 13982–1, the World Bank Environmental Health and Safety Guidelines (ESHGs) and Good International Industry Practices (GIIP). The requirements of the World Bank ESHG and GIIP have taken precedent since they have a higher standard. All personnel must ensure appropriate PPE is worn when handling asbestos. PPE must be put on in the following order:

Safety goggles are a type of Personal Protective Equipment (PPE) that are worn on the eye for its protection. The goggles essentially fit tightly to the eye, with suction, and are secured with a strap that goes around the back of the head. The safety goggles will be used to protect workers from damage to the eye against asbestos particles that may strike the eye. For this AMP, the purpose of safety goggles is to protector the worker from particulate asbestos fibres that may strike the eye.

#### 2. Respirator or Mask

A Respirator mask is a device designed to protect the wearer from inhaling hazardous atmospheres that includes fumes, vapors, gases and particulate matter such as dusts and airborne pathogens such as viruses. There are two main categories of respirators: the air purifying respirator, in which respirable air is obtained by filtering a contaminated atmosphere, and the air supplied respirator, in which an alternate supply of breathable air is delivered. Within each of these category, different techniques are employed to reduce or eliminate noxious airborne contaminants. For this AMP, the purpose of respirators is to protector the worker inhaling particulate asbestos fibres that may penetrate and impregnate the body, through lack of appropriate PPE when handling asbestos roofing sheets.

#### 3. Disposable coveralls

Disposable coveralls are an item of personal Protective equipment (PPE) designed to cover the body and other clothing to protect against dirt and other contaminants. Coveralls are one piece and loose fitting for ease of movement, with sleeves, full legging and often with a hood to cover the head. For this AMP, the purpose of disposable coveralls is to offer protection from exposure to hazardous asbestos fine fibres particles that may penetrate and impregnate the skin, through lack of proper PPE when handling the asbestos roofing sheets.

#### 4. Disposable gloves

Disposable gloves are gloves that are used once and thrown away. The, recommended disposable gloves for asbestos handling are Ideal Grip gloves, 7.0 mil, 240mm long sleeves. The Ideal Grip Gloves are made using specifically formulated nitrile, offering superior strength and comfort stretch whilst maintaining levels of dexterity. For this AMP, the purpose of disposable coveralls is to offer protection from exposure to hazardous asbestos fine fibres particles that may penetrate and impregnate the skin, through lack of proper PPE when handling the asbestos roofing sheets.

#### 5. Disposable overshoes or washable boots

#### (i) Disposable overshoes

Disposable overshoes are single use soft, lightweight and durable protective shoe covering that can be worn to prevent possible exposure to contamination carried on the feet. They are ideal for workplaces that have a potential to expose workers to hazardous environment. The disposable overshoes are designed to use only once and their prolonged use or more that a single use will minimize the functions for which it had been manufactured.

#### (ii) Washable boot

A boot that protects from asbestos handling and can be decontaminated and reused. The washable boots have a strong thermal, chemical and mechanical resistance, but are also gas tight. The washable boots are non-skid on steel and ceramic tile floors and can be decontaminated. They are also quick drying as they have no inner lining. They are tear resistant and have a better grip on the floors than disposable overshoes.

## 3.2 Disposal of Personal Protective Equipment (PPE)

The following procedures shall apply for disposal of overalls and coverall that shall be used during the disposal of asbestos roofing sheets:

## (i)Disposal of overalls and coveralls

- All used overall and coverall used during asbestos disposal shall be disposed of as part of asbestos waste:
- Overall and coverall shall not be reused again due to potential contamination of asbestos:
- When the task is complete, the overalls and coverall shall be wrapped in a polythene plastic and disposed of together with the sheets.

## (ii)Disposable Gloves

- All workers must wash their hands and fingers thoroughly after removal and disposal of gloves:
- All used disposable gloves should be disposed of as part of the asbestos waste.

## (iii)Footwear

- All reusable footwear should be decontaminated and sealed in double polythene plastic bags:
- Any defect on footwear should be reported immediately for replacement or repair:
- All non-reusable footwear shall be sealed in double polythene plastic bags and disposed together with the asbestos roofing materials:
- All workers must wash their hands and fingers thoroughly after removal and disposal of footwear.

## (iv) Used Asbestos PPE

- All used asbestos PPE should be wrapped in a polythene plastic for disposal a dumpsite together with the asbestos containing roof sheets.
- All workers must wash their hands and fingers thoroughly after removal and disposal of used PPE.

## (v) Removal of PPE and Personal Decontamination

- A decontamination area shall be identified with water available to remove contaminated overalls and clean the boots with water:
- Separate work sections shall be provided for dressing up before and after work and this should include a facility for showering:
- Before removing the used PPE, any visible asbestos shall be removed from protective clothing using an asbestos vacuum or wet wiping:

- The removal of the PPE shall be as follows(a)Disposable overshoes and washable boots (b) Disposable coveralls (c)Disposable goggle and (d)Respirator or mask:
- Coveralls and overalls shall be removed by taking arms out of the sleeves and rolling the sleeves inside out and then rolling the coveralls down the body:
- Non disposable respirators should be thoroughly cleaned, and any contaminated filters removed for appropriate disposal:
- Used disposable PPE shall be placed in a sealed heavy duty 200µm (micrometers) (minimum thickness) polythene bag:
- The outside of the bag should be wiped down using a damp cloth:
- The bag shall be sealed with duct tape and labelled as "Asbestos Waste":
- After disposing the PPE, the workers should thoroughly clean their face, hands, and fingers with soapy water.

## 3.3 Removal Processor Responsibility

The Zambia Agribusiness and Trade Project (ZATP) and Zoncor Investments Limited with guidance from ZEMA is in the process of engaging a subcontractor to transport and disposal of the asbestos roofing sheets that is temporary stored at the ZABS laboratory construction site to a dump site yet to be identified despite ZEMA having recommended a site at TAP (Z) Limited which is nonexistence. ZATP will ensure that the following stakeholders play their role during the temporary storage, transportation and disposal of the asbestos roofing sheets:

#### (a) Site workers

- Attend Toolbox talks as required by ZATP and Zoncor Investment Limited:
- Wear appropriate PPE during the disposal of the asbestos roofing sheets:
- Alert ZATP and Zoncor Investment Limited of any new asbestos roofing sheets that may still be on site:
- Avoid at all costs entering the secured temporary storage where the asbestos roofing sheets are stored.

## (b) Safety Officer

- Implement, maintain and update the asbestos management plan:
- Ensure all workers on site are trained in the identification, handling, temporary storage, disposal of asbestos containing materials and are aware of the asbestos management plan:
- Ensure correct handling and disposal procedures are implemented:
- Maintain adequate supplies of appropriate PPE and ensure all workers have appropriate PPE:
- Maintain adequate supply of asbestos wrapping materials:
- Conduct Toolbox talks, briefings, training on to wear PPE correctly a procedure for handling and removal of asbestos roofing sheets namely wrapping the asbestos roofing sheets, handling the asbestos roofing sheets, incident management in case the PPE fails or the asbestos breaks:
- The Toolbox talks shall also include Health risks associated with asbestos, common sources of asbestos wastes and asbestos disposal procedures.

#### (c) Dump Site Operator

• Adhere to the requirement of the asbestos management plan:

- Wear appropriate PPE when handling asbestos roofing sheets:
- Ensure application of appropriate handling and disposal procedures:
- Maintain asbestos management register with clear traceability:
- Ensure the hazardous waste license is valid:
- Ensure the dump site is properly secured to avoid scavengers.

#### 3.4 Packaging Procedure

The packaging of the asbestos roof sheets will be done using the following steps:

- Avoid breaking of the asbestos roofing sheets as much as possible during packaging:
- Line the base of the transporting vehicle with a polythene plastic:
- Place the packaging asbestos roofing sheets gently onto the transporting vehicle:
- Cover the packaged asbestos roofing sheets right round with polythene sheeting and seal with adhesive tape:
- Label the asbestos roofing sheets "Asbestos Waste, No unauthorized opening":
- Take a photo of the packaged asbestos roofing sheets:
- Complete the waste register and have it signed by both the contractor and ZATP safeguard specialists.

#### **3.5 Temporary Storage of Asbestos Roofing Sheets**

- The asbestos roofing sheets are temporarily stored at the ZABS laboratory construction site in Chongwe District:
- A photo of the wrapped asbestos roofing sheet has been taken as indicated in Figure 2 in a secured confinement:
- The asbestos roofing sheets are completely covered with a polythene plastic and clearly labelled "Asbestos Waste, No unauthorized Opening" in a lockable secured confinement:
- A fresh polythene plastic was be used to line the inside of the secured confinement.



Figure 2: Temporary Storage of Asbestos Roofing Sheets

## **3.6 Transportation of Asbestos**

The transportation of hazardous waste such as the asbestos roofing sheets is regulated by ZEMA under the Environmental Management (Licensing) Regulations (S.I No.112 of 2013. Zoncor Investments Limited will only engage a ZEMA licensed transported as a subcontractor to, package and transport the asbestos roofing sheets to a dump site yet to be identified. The other requirements that the transporter must adhere to are:

- Use an enclosed vehicle that is easy to clean and lock.
- The vehicle should be lined with plastic material.
- All workers should wear appropriate PPE:
- The vehicle should be fully licensed with Road Traffic and Safety Agency (RTSA):
- The driver should be a holder of a valid driving license:
- The vehicle must ensure internal air circulation is used and windows are closed on arrival at the dump site:
- The driver must follow instructions of the dump site operator.

Zoncor Investments Limited has to date identified two subcontractors who are yet to be engaged pending verification of their ZEMA hazardous waste license. The hazardous waste license for the one of

the subcontractors (TAP Zambia Limited) has since expired and the subcontractor will need to renew the license.

#### 4.0 RISKS OF ASBESTOS CONTAINING MATERIALS 4.1 Risk Assessment and Mitigation Measures

A risk assessment (RA) has been conducted to identify the potential environmental and social risks and impacts related to management of asbestos roofing materials. Annex I provides the risk assessment that was conducted for the removal of asbestos roofing sheets from the workers shelter and temporary storage at the ZABS laboratory construction site.

#### 4.2Asbestos Related Incidences

Asbestos related incidents include the spillage and escape of asbestos fibers or exposure to asbestos through lack of appropriate Personal Protective Equipment (PPE) and clothing.

The following measures shall be undertaken in the event of no compliance and these incidents occurs.

#### (i)Accidental Asbestos Friable Release

In the event there is a release of non-friable asbestos during the handling, loading and unloading, the following must be done:

- Clear the area or site personnel and vehicles:
- Notify the Site Engineer immediately:
- Trained workers wearing appropriate Personal Protective Equipment (PPE) should manage the broken roofing sheets:
- All asbestos and dust should be wet down with a fine mist:
- All broken ACM should be wrapped and rewrapped and properly sealed:
- All broken parts of the roofing sheets are to be sealed in plastic and clearly labelled "hazardous material". This includes capturing and sealing of any small debris that may be found on the ground:
- The Site Safety Officer should complete an incident report and submit to the ZATP PIU within 24 hours:
- The ZATP PIU shall in turn inform the World Bank on the presence of asbestos through an incident report within 24 hours of receipts of such from the contractor.
- The ZATP PIU through the MCTI shall also inform ZEMA on the presence of asbestos at the site:
- The Incident report should include the following information:
  - Date
  - Personnel Involved
  - Quantity of asbestos
  - Description of incident
  - Actions and management measures undertaken.
  - Future preventative measures

#### 4.3 Exposure to Asbestos

If a site worker is exposed to asbestos without the use of appropriate Personal Protective Equipment (PPE), the following decontamination procedures must be undertaken:

- Immediately wet down the site worker affected with fine spray or mist of water:
- Avoid any water on the respiratory cartridge:
- The affected site worker must then walk to the onsite decontamination area nearest shower facility to avoid contamination of vehicles or machinery:
- Remove all disposable overalls and place them in a sealed bag that is clearly labelled" hazardous material":
- The affected worker should shower to remove all dust and asbestos fibers with particular focus on the hair, face, hands and fingernails.
- The affected worker must then change into clean clothing:
- The bag must be labelled with "Asbestos Hazardous Waste Material" and disposed of with the asbestos roofing sheets.

#### **5.0 DISPOSAL OF ASBESTOS ROOFING SHEETS**

#### 5.1 Sub-Contractors

The disposal of asbestos shall be conducted using sub-contractors licensed with ZEMA. In addition, the asbestos should be disposed at dump site licensed by ZEMA to manage asbestos. The following sub-contractors have been identified by Zoncor Investments Limited to transport the disposal of asbestos: Crownbit Environmental Solutions Limited, **ZEMA License No. LSK.HWL.02119.203.2023 and a** consultant acting on behalf of TAP(Z) Limited that is under liquidation has been identified (**Goldwyn Consultants Limited. ZEMA License No.LSK.HWL. 02564.Z04.2021** but their license expired on 13<sup>th</sup> January 2024.

The sub-contractors are licensed by ZEMA and the ZATP has conducted a due diligence on the authenticity of the transporters by verifying their practice licenses to transport hazardous wastes. However, the hazardous waste license for TAP(Z) Limited has since expired and the sub-contractor will be required to renewal this license.

#### 5.2 Proposed Dump Site

The proposed disposal site is the former TAP (Z) Limited site in Chilanga. However, the authenticity of this site is still under investigations since TAP(Z) Limited is under liquidation and it is not clear who's operating the site. In view of the above, the ZATP PIU has engaged ZEMA to establish the authenticity of this site. Once satisfied only then will the ZATP PIU facilitate the disposal of the asbestos roofing materials by Zoncor Investments Limited.

In view of the uncertainty of the liquidated TAP(Z) Limited dump site, ZEMA has proposed that the asbestos roofing sheets may have to be exported to Zimbabwe. The details of the dump site in Zimbabwe are yet be communicated to ZATP and Zoncor Investment Limited by ZEMA.

#### **6.0 TRACEABILITY OF THE ASBESTOS ROOFING SHEETS**

In order to ensure that the asbestos roofing sheets are not reused or disposed of inappropriately, a trace shall be made for the asbestos roofing sheets by ZATP as discussed in this section.

Traceability of asbestos roofing sheets will involve: a record indicating quantity and size of the asbestos roofing sheets, details of the subcontractor, vehicle registration, type of vehicle used, name of ZEMA Inspectors who sanctioned the disposal, name of safeguard specialist from ZATP, name of safety office from Zoncor Investment Limited, date and time name and receipt of the dump site.

The following steps will be undertaken to ensure part traceability of the asbestos roofing sheets:

- Zoncor Investments Limited herein the contractor shall verify the number and sizes of asbestos roofing sheets temporary stored at the ZABS laboratory site:
- The Safety Officer shall officer confirm the package and logs in the asbestos waste register in duplicate:
- The Safety Officer shall sign the asbestos waste register after completing the details in the register:
- The Safety Officer shall hand over a copy of the asbestos waste register to the receiving service provider for transportation:
- The sub-contractor shall sign the asbestos waste register to confirm receipt of consignment is in good order:
- The sub-contractor shall keep a copy of the asbestos waste register for audit purposes and purposes for evidence for execution of duty:
- ZATP safeguard specialist and ZEMA Inspector shall confirm the details of the asbestos waste register:
- The sub-contractor shall transport the asbestos roofing sheets to the dump site in presence of ZEMA, ZATP and Zoncor Investment Limited representatives:
- The dump site operator shall examine the physical consignment and asbestos waste register:
- The dump site operator shall weight the vehicle carrying the asbestos roofing sheets to establish the actual weight on the asbestos waste register and issues an invoice:
- Following disposal, ZEMA shall issue a disposal certificate including all documentation from the dump site operator.

## 7.0 MONITORING IMPLEMENTATION OF THE AMP

Monitoring will be done to ensure compliance with the site-specific Contractor Environmental and Social management plan (CESMP) that was submitted by Zoncor Investment Limited prior to commencement of works at the ZABS laboratory construction site. The monitoring will also ensure compliance to this AMP. Monitoring is the responsibility of ZATP Safeguard specialists who will ensure that Zoncor Investments Limited adheres to this AMP. The World Bank will provide overall monitoring of the AMP implementation during the Banks implementation support missions (ISM) and as when found may be necessary.

## 8.0 ANNEXES

## Annex 1: Risk Assessment for Asbestos Roofing Sheets at ZABS Laboratory Construction Site

| Location           | ZABS Laboratory Construction Site, off Kenneth Kaunda International Airport (KKIA (Road Chongwe, Zambia<br>RESPONSIBILITY |  |  |  |  |  |
|--------------------|---|--|--|--|--|--|
| Details of what is | emoval and disposal of Asbestos Containing Materials (ACM) involving:   |  |  |  |  |  |
| being assessed     | Handling  |  |  |  |  |  |
|                    | Removal   |  |  |  |  |  |
|                    | Storage   |  |  |  |  |  |
|                    | Transportation  |  |  |  |  |  |
|                    | Disposal  |  |  |  |  |  |
| Document           | Safety Officer: Zoncor Investment Reviewed and approved by Safeguard Specialists: ZATP                                    |  |  |  |  |  |
| Prepared By        | Limited.  |  |  |  |  |  |
|                    |   |  |  |  |  |  |
|                    |   |  |  |  |  |  |

|       | Likelihood |          |                 |        |             |  |
|-------|------------|----------|-----------------|--------|-------------|--|
|       |            | Unlikely | Slightly likely | Likely | Very likely |  |
| Conse | Negligible | 1        | 2               | 3      | 4           |  |
| quenc | Minor      | 2        | 4               | 6      | 8           |  |
| Ŕ     | Moderate   | 3        | 6               | 9      | 12          |  |
|       | Major      | 4        | 8               | 12     | 16          |  |

## Step-by-Step Guidance:

**Stage One:** Using the matrix above to carry out an initial assessment to determine the risk rating of each hazard(s) of the activity. To calculate the risk rating of a hazard, multiply the value of its consequence with the value for likelihood (note: here the hazard should be assessed without any control measures). Make sure relevant stakeholders are consulted and involved in the risk assessment.

The hierarchy of controls (elimination, substitution, engineering controls, administrative controls, personal protective equipment) should be applied when choosing controls, with more effective ones to be applied.

**Stage Two:** Use the results from the assessment in Stage One to prioritize control activities. Generally, if the risk is High, then the hazard must be eliminated and/or work activity prohibited, or mitigation measures put in place to reduce the risk. If the risk is Medium, then additional safety controls are required to eliminate/isolate/minimize the risk. If the risk is Low, then the work can proceed with the current standard site controls in place.

The hierarchy of controls (elimination, substitution, engineering controls, administrative controls, personal protective equipment) should be applied when choosing controls, with more effective ones to be applied.

**Stage Three**: Using the matrix to review again the hazards, this time with the safety controls proposed. If the risk rating remains Medium or High, then provide alternative or additional safety controls until the risk is assessed as Low.

The hierarchy of controls (elimination, substitution, engineering controls, administrative controls, personal protective equipment) should be applied when choosing controls, with more effective ones to be applied.

**Stage Four**: Review the risk assessment periodically in order to take account of changes in the environment. In each revision, <u>make sure new and</u> <u>modified content is easily identifiable</u> (by text highlighting, use of a different font, use of a different font color, and similar techniques).

The hierarchy of controls (elimination, substitution, engineering controls, administrative controls, personal protective equipment) should be applied when choosing controls, with more effective ones to be applied.

| Observations | Benchmarking | Safety tours, | Incident | Monitoring | Workflow and |
|--------------|--------------|---------------|----------|------------|--------------|
|              |              | • ••          | •        |            |              |

Note that more detailed assessments might be necessary for the risk assessment to evaluate the harm from exposure to chemical, biological and physical agents.

When identifying hazards, consider among other things the following:

| Routine and | Any planned | All people | Human   | Design of | Legal       |
|-------------|-------------|------------|---------|-----------|-------------|
| non-routine | changes     | involved   | factors | work      | obligations |

The frequency of the task and the number of people that could be potentially affected should be considered. For the identification of hazards to be effective, a variety of sources should be investigated.

| ITEM | ACTIVITY                      | POTENTIAL HAZARD<br>AND RISK   | POTENTIAL VICTIM                      | RISK<br>RATING<br>(1-16) | HAZARD CONTROL<br>METHOD              | CONTROL<br>RISK<br>RATING (1-<br>16) | ACCOUNTABILITY             |
|------|-------------------------------|--|---------------------------------------|--------------------------|---------------------------------------|--------------------------------------|----------------------------|
| 1    | Removal of                    | Exposure to  | Zoncor Investments                    | 8                        | Wet sheets to                         | 2                                    | Zoncor Investments Limited |
|      | asbestos<br>roofing<br>sheets | carcinogenic substances<br>through inhalation of<br>asbestos fibres during | Limited engaged<br>workers            |                          | becoming airborne                     |                                      | ZATP                       |
|      |                               | handling.  | Zoncor Investments<br>Limited engaged | 16                       | Awareness training<br>on procedure of | 4                                    |                            |
|      |                               | Inhalation of chrysotile   | sub-contractors                       |                          | removal of                            |                                      |                            |
|      |                               | and the amphibole  |                                       |                          | asbestos roofing                      |                                      |                            |
|      |                               | which causes lung<br>cancer and ashestosis                                 |                                       |                          | sheets                                |                                      |                            |
|      |                               | during cutting of  |                                       |                          | Cordon off the                        |                                      |                            |
|      |                               | asbestos.  |                                       |                          | working area to                       |                                      |                            |
|      |                               |  |                                       |                          | prevent                               |                                      |                            |
|      |                               |  |                                       |                          | the local                             |                                      |                            |
|      |                               |  |                                       |                          | community                             |                                      |                            |
|      |                               |  |                                       |                          | Ensure no one in                      |                                      |                            |
|      |                               |  |                                       |                          | the building where                    |                                      |                            |
|      |                               |  |                                       |                          | the roof sheets are                   |                                      |                            |

|  |  |  |    | removed.   |   |                                    |
|--|--|--|----|--|---|------------------------------------|
|  |  |  |    | Wrap sheets in<br>plastic and seal<br>and secure the<br>roofing sheets.  |   |                                    |
|  |  |  |    | Use of personal<br>protective<br>equipment   |   |                                    |
|  |  |  |    | Special respirators,<br>safety goggles,<br>protective gloves<br>and disposable<br>overalls   |   |                                    |
|  | Occupational injuries<br>like cuts, trips, slips and<br>falls from broken<br>asbestos roofing sheets | Zoncor Investments<br>Limited engaged<br>workers.<br>Zoncor Investments<br>Limited engaged<br>subcontractors | 12 | Good<br>housekeeping of<br>all sites<br>Induct the working<br>team, and<br>communication of<br>the site safety<br>rules.<br>Risk assessments<br>Competent<br>personnel to carry<br>out the task. | 2 | Zoncor Investments Limited<br>ZATP |
|  |  |  |    | Use of personal protective   |   |                                    |

|   |  |  |   |    | equipment –  |   |                                    |
|---|--|--|---|----|--|---|------------------------------------|
|   |  | Musculoskeletal<br>disorders due to manual<br>handling of asbestos<br>roofing sheets<br>(ergonomics)         | Zoncor Investments<br>Limited engaged<br>workers.<br>Zoncor Investments<br>Limited engaged<br>sub-contractors | 8  | Compliance with<br>World Bank<br>Environmental<br>Health Safety<br>Guidelines<br>(Ergonomics,<br>Repetitive Motion,<br>Manual Handling)<br>requirements:<br>Incorporating rest<br>and stretch breaks<br>into work<br>processes, and<br>conducting job<br>rotation<br>Training on correct<br>lifting techniques | 2 | Zoncor Investments Limited<br>ZATP |
| 2 | Transporta<br>tion of<br>asbestos<br>roofing<br>sheets | Exposure to<br>carcinogenic substances<br>through inhalation of<br>asbestos fibres during<br>transportation. | Driver  | 12 | Encapsulation and<br>wetting during<br>transportation and<br>the use of PPE,<br>respirators,<br>goggles, gloves and<br>work suits.<br>Line the vehicle<br>with plastic.<br>Wrap roofing<br>sheets with plastic.  | 4 | Zoncor Investments Limited<br>ZATP |

|   |          |   |  |    | Use of an enclosed<br>vehicle during<br>transportation   |   |                                    |
|---|----------|---|--|----|--|---|------------------------------------|
|   |          | Use of unlicensed<br>vehicles that are non-<br>compliant to hazardous<br>waste transportation<br>requirements | Zoncor Investments<br>Limited<br>procurement   | 12 | Ensure licensed<br>vehicles are logged<br>and are the only<br>vehicles allowed to<br>transport the<br>hazardous waste  | 2 | Zoncor Investments Limited         |
|   |          | Accidental asbestos<br>exposure   | Driver<br>Workers loading<br>and unloading the<br>asbestos roofing<br>sheets onto the<br>transportation<br>truck | 12 | Immediately wet<br>down the person<br>with mist of water.<br>Gently remove all<br>contaminated<br>clothing and place<br>in a sealed bag.<br>Shower to remove<br>all dust and<br>asbestos fibres<br>with particular<br>focus on the hair,<br>face, hands and<br>fingernails. Change<br>into clean clothing. |   | Zoncor Investments Limited<br>ZATP |
| 3 | Disposal | Exposure to<br>carcinogenic substances<br>through inhalation of<br>asbestos fibres during<br>transportation.  | Zoncor Investments<br>Limited engaged<br>workers<br>Zoncor Investments<br>Limited engaged<br>subcontractors      | 16 | ACM needs to be<br>wrapped in plastic<br>and made airtight.<br>Do not crush any<br>ACM.  | 4 | Zoncor Investments Limited         |

| Risk of excavated<br>trenches for burying<br>asbestos caving in on<br>workers | Zoncor Investments<br>Limited engaged<br>workers<br>Zoncor Investments<br>Limited engaged<br>subcontractors | 8  | Keep the location<br>dry, maintain the<br>edge slope of<br>excavation so as<br>not to collapse<br>(side slope 1:2).   | 2 | Zoncor Investments Limited                                    |
|---|---|----|---|---|---|
| Community scavenging<br>disposed asbestos and<br>being exposed to<br>asbestos | Scavengers at<br>asbestos disposal<br>site  | 16 | Seal off disposed<br>asbestos with<br>concrete<br>Community<br>engagement<br>before removal<br>and disposal<br>activity begins to<br>highlight the risks<br>associated with<br>the reuse of<br>asbestos | 2 | Zoncor Investments Limited<br>ZATP<br>Dumpsite Operator/ ZEMA |

| - |                    |   | _  |    |   |   | [                                  |
|---|--------------------|---|--|----|---|---|------------------------------------|
| 4 | Handling           | Asbestos fibres sticking<br>to skin, specifically<br>hands, when handling<br>then hand to face<br>contact resulting in<br>inhalation of fibres. | Scavengers,<br>community<br>workers,   | 12 | Asbestos sheets<br>shall be wetted<br>before removal.<br>Removed asbestos<br>sheets to be<br>packaged in plastic<br>and airtight.<br>Use of adequate<br>PPE when handling<br>asbestos sheets<br>including coveralls<br>and washing of<br>hands after<br>handling asbestos<br>sheets | 4 | Zoncor Investments Limited<br>ZATP |
|   |                    |   |  |    | Donning of<br>asbestos  |   |                                    |
| 5 | Manual<br>Handling | Back Injuries, injuries if<br>asbestos roofing sheets<br>are not carried properly<br>and they fall on the<br>workers' feet                      | Workers carrying<br>the asbestos<br>roofing sheets to<br>the transportation<br>vehicle and also<br>when loading and<br>offloading them for<br>disposal | 12 | Training of workers<br>on correct manual<br>handling positions<br>Asbestos to be<br>carried by two<br>workers to reduce<br>the load.<br>Workers to be in<br>proper PPE  | 2 | Zoncor Investments Limited         |

# Annex 2: Asbestos Personal Protective Equipment (PPE) Specifications

| ID | Objective       | PPE   | Specifications   |
|----|-----------------|---|--|
| 1  | Body protection | Full body disposable Suit with<br>covered arms and legs | <ul> <li>The disposable suit should:</li> <li>Type 5, category 3 (ZABS Standards, ZS 009:19773: Asbestos Cement Insulating Board and ZS006:1973: Asbestos Cement Flat Sheets: Semi and Fully Composed, and ISO standards prEN ISO 13982–1) Protective clothing for use against dry solid particulates)</li> <li>Good breathability</li> <li>Low thermal resistance</li> <li>Should have zippers.</li> <li>Should be hooded, the hood should be worn over respirator straps.</li> <li>Waterproof</li> <li>Tight fitting cuffs</li> <li>Coveralls should be one size too big to avoid potential ripping at seams, fitted with a hood and cuffs.</li> </ul> |
| 2  | Eye protection  | Safety goggles  | <ul> <li>Safety goggles or glasses protect your eyes from any falling or flying debris. Eyewear should be used when removing materials from overhead.</li> <li>Clear lens</li> <li>Adjustable elastic strap</li> <li>Direct Ventilation</li> <li>3M<sup>™</sup> 332 Impact Safety Goggles 40650-00000-10, Clear Lens</li> <li>Impact goggles have a direct venting system that circulates air and helps minimize fogging, allowing for use in varied environments and conditions.</li> <li>Wide opening to fit over prescription eyewear.</li> </ul>   |
| 3  | Foot protection | Disposable overshoes or                                 | Boots are preferable to disposable overshoes   |

|   |  | washable boots                                  | <ul> <li>which cannot cause slipping risk.</li> <li>Boots without laces will be used as these are easiest to clean.</li> </ul>   |
|---|--|---|--|
| 4 | Hand and arm<br>protection             | Single use gloves                               | <ul> <li>Finger type gloves</li> <li>Single use disposable gloves shall be used.</li> <li>If latex gloves are to be used, use only 'low protein powder-free' gloves.</li> <li>Superior dexterity &amp; flexibility</li> <li>Good fit &amp; tactile sensitivity</li> <li>Latex softness provide comfortability for extended use.</li> <li>Chlorinated or polymer powder free interior promote smooth donning &amp; doffing experience.</li> <li>Textured surface provides secure grip and adds handling precision.</li> <li>Dispose of used gloves as asbestos waste</li> </ul> |
| 5 | Head protection                        | Hard hats                                       | <ul><li>Tight fitting</li><li>Should be adjustable</li></ul>   |
| 6 | Respiratory<br>protective<br>equipment | Respirator with an inorganic<br>rated cartridge | <ul> <li>Respirator must be a half face, dual cartridge respirator.</li> <li>Respirators must be equipped with High Efficiency Particulate Air Filters (HEPA) filtered cartridges (color coded purple) or an N-100, P-100 or R-100 NIOSH rating. These cartridges are specific for filtering out asbestos fibers.</li> <li>Non-disposable respirators should be thoroughly cleaned, and any contaminated filters removed for appropriate disposal.</li> <li>People with prescription glasses must either wear modified spectacles or wear supply hoods instead.</li> </ul>     |

#### Annex 3: Asbestos Waste Register

## Asbestos Waste Register/Delivery Note

| Site:              |  |
|--------------------|--|
| Contractor's Name: |  |
| Name of Driver     |  |

Vehicle Registration Number \_\_\_\_\_

| Date | Source of<br>waste | Quantity<br>dispatched | Dispatched by | Delivery<br>Vehicle No. | Target<br>Destination | Received By<br>(Name) | Quantity<br>Received | Receiver's<br>Signature |
|------|--------------------|------------------------|---------------|-------------------------|-----------------------|-----------------------|----------------------|-------------------------|
|      |                    |                        |               |                         |                       |                       |                      | -                       |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |
|      |                    |                        |               |                         |                       |                       |                      |                         |

## Annex 4: Hazardous Waste Management License for TAP (Z) Limited

|   | Republic of Zambia   |
|---|--|
| 2 | Zambia Environmental Management Agency   |
|   | Environmental Management Act, No. 12 of 2011<br>SERIAL NO.: 000381   |
|   | LICENCE NO.: LSK/HWL/02564/204/2021  |
|   | HAZARDOUS WASTE MANAGEMENT LICENCE   |
|   | Holder's Name: TAP ZAMBIA LIMITED  |
|   | Address: FARM 411a/A/7, MAPEPE AREA, CHILANGA  |
| 1 | This licence relates to the Operation of a hazardous waste dumpsite.   |
|   | The licence is granted for a period of <b>3 Years</b> commencing on the <b>14</b> <sup>th</sup> day of <b>January</b> , <b>2021</b> to the <b>13</b> <sup>th</sup> day of <b>January</b> , <b>2024</b> .   |
|   | The conditions of grant of the licence are as shown in the Annexure attached<br>hereto.  |
|   | Issued at LUSAKA this 14 <sup>th</sup> day of January, 2021  |
|   | g Director-General   |
|   | ENDORSEMENT OF LICENCE   |
|   | This Hazardous Waste Licence has this <b>14<sup>th</sup> day of January, 2021</b> been entered<br>in the Register.   |
|   | A STATE AND A STAT |
|   |  |
|   | Official Stamp Director General  |

Annex 5: Hazardous Waste Management License for Crownbit Environmental Solutions Limited

| Repub   | lic of Zambia                           |                        |
|---|---|------------------------|
| Zambia Environm   | ental Management Ag                     | gency                  |
| Environmental M   | anagement Act, No. 12 of 2011           | 0                      |
|   | SERIAL NO.: LICENCE NO.: LSK/HWL/02119  | 0.: 000508<br>203/2023 |
|   | TH MANAGEMENT LICENCE                   |                        |
| HAZARDOUS   | TAL MAN                                 |                        |
| Holder's Name: CROWNBITENV  | TRONMENTAL SOLUTION LIMIT               | ED                     |
| Address: CAIRO ROAD, LUSAK  | •                                       |                        |
| This Licence relates to the Pretre  | atment and Treatment of Hazard          | jous Waste.            |
| The Licence is granted for a peri<br>June, 2023 to 20 <sup>th</sup> day of June | od of 3 Years commencing on the , 2026. | 21st day of            |
| The conditions of grant of the L<br>hereto                                      | icence are as shown in the Annex        | ure attached           |
| Issued at Lusaka this 21 <sup>st</sup> day (                                    | of June, 2023                           |                        |
|   | Charles 1                               |                        |
|   | Director-General                        |                        |
| ENDOF   | SEMENT OF LICENCE                       | the second second      |
| This Hazardous Waste Licence h  | as this 21st day of June, 2023 be       | en entered in          |
| (iic regimer.   |   | - Section              |
| Careconstenent and  | Meeting                                 |                        |
| E 20001 2   |   | RIA                    |
| Official Stamp  | G Dire                                  | ctor General           |