# RISK PROCESS AND ASSESSMENT FORM

## 1. Risk Assessment Methodology

The Form indicates the risk assessment methodology/steps used in assessing the risks associated with the implementation of the project. The methodology used to assess safety risks associated with the activities shall be available to sites. The methodology shall take the following into consideration, among others:

a) Legal requirements.
b) Responsibilities
c) Planning
d) The Layered Risk assessment approach
e) Hazard and Risk Identification
f) Risk Evaluation
g) Preventive and Corrective Control development
h) Monitoring and Review

### 1.1 Provision for Risk Assessment in EHSGs

The risk assessment include the identification of potential hazards to project workers, particularly those that may be life-threatening; provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; training of project workers and maintenance of training records; documentation and reporting of occupational accidents, diseases and incidents; emergency prevention and preparedness and response arrangements to emergency situations; and remedies for adverse impacts such as occupational injuries, deaths, disability, and disease.

The EHSGs elaborate on detailed preventive and protective measures that ought to be taken to improve OHS. The following are the stipulated preventive measures in order of priority:

a) Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes, etc.
b) Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating, etc.
c) Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training in safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
d) Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE.

## 1.2 Provision for Risk Assessment in Zambian Legislation

Zambia's OSH legislation, particularly the Occupational Health and Safety Act and the Factories Act place upon the employer the duty to "ensure, so far as is reasonably practicable, the health, safety and welfare of the employees of the employer at a workplace."
Section 15 of the Occupational Health and Safety Act states that in determining what is, or was, at any particular time, reasonably practicable in relation to ensuring health and safety at a workplace, regard shall be had to the following matters:

a) The likelihood of the hazard or risk concerned occurring.
b) The degree of harm that would result if the hazard or risk occurred.
c) What the person concerned knows, or ought reasonably to know, about the hazard or risk and any ways of eliminating or reducing the hazard or risk.
d) The availability and suitability of ways to eliminate or reduce the hazard or risk
e) The cost of eliminating or reducing the hazard or risk.

The provisions of EHSG and Zambian OSH legislation alluded to above constitute risk assessment, an active, rather than reactive, monitoring tool that is used world-wide for the effective management of occupational health and safety.
Risk assessment is the tool technical supervisors shall use to effectively ensure the health, safety and welfare of workers as provided for in the EHSG and Zambian OHS legislation.

The methodology that shall be used in carrying out risk assessment is the five-step risk assessment procedure outlined in Figure 1 below:

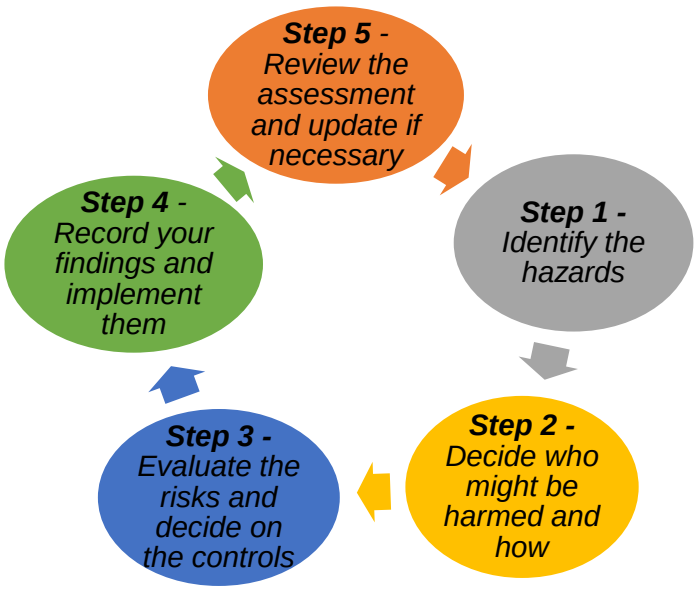


Figure 1: Five-Step Risk Assessment Methodology

Hazard Identification Table

| Type of hazard | Hazard identified on the project site/task |
|---|---|
| Biological | - Diarrheal transmission<br>- Dust inhalation<br>- Exposure to mosquitos (Malaria) and other biting insects<br>- Exposure to sewage or human and animal faeces (E. coli, Hep A)<br>- Airborne pathogens such as common colds and Covid 19 |
| Chemical | - Fuel handling<br>- Exposure to wet cement<br>- Exposure to other harmful substances<br>- Refuse and waste sites |
| Physical | - Hot and cold temperature extremes throughout the year<br>- Noise from machinery, power tool or vehicle<br>- Electric shock from direct contact with overhead lines, underground cables or faulty machinery<br>- Fall from heights (into an excavation, from vehicles, bridge)<br>- Hit by moving objects (plant, vehicles – on site and off site)<br>- Hit by flying objects (shards from grinder, stones etc)<br>- Hit by falling material (from a vehicle)<br>- Trapped or caught in a moving object (plant machinery working parts of a machine working parts)<br>- Vibration from the use of equipment or vehicles<br>- Burns |
| Safety | - Slips, trips and falls (obstructions on site, spills left unattended, poor condition of footwear)<br>- Equipment breakdown<br>- Material and manual handling<br>- Collapsing excavations<br>- Failure to use PPE<br>- Over exertion (lifting, pulling, pushing, carrying, repetitive motions) |
| Other | - Working alone<br>- Working at night<br>- Driving off site and on public roads<br>- Violent situation<br>- New equipment or vehicle<br>- Fire (caused by smoking, electrical faults, fuel ignition etc)<br>- Chemical spill or release (i.e. fuel spill)<br>- Worker welfare (sanitary, washing facilities, drinking water, rest facilities) |

## 2. Risk Assessment Matrix

The tools used in carrying out risk assessment is the Three-point (or 3 x 3) matrix. The 3-point risk matrix outlined in Table 1 is used in determining the risk rating of hazards. The risk matrix is a block diagram with two axes, each ranked Low, Medium and High. The vertical axis represents the likelihood or probability of the event occurring while the horizontal axis represents the severity or seriousness of injury/illness/damage arising from exposure to the hazard. Each of the rankings is numbered as follows: Low – 1; Medium – 2; and High – 3.

To get the risk rating, one multiplies the value representing the likelihood of the event occurring (vertical axis) by the value representing the severity of the injury, illness or damage (horizontal axis). For example, if the likelihood of meeting with a road traffic accident when driving on a poorly maintained road is High - 3 (accidents are a frequent occurrence on the road in question) and the severity of exposure to such an accident is also High - 3 (potentially fatal or serious injury), a risk rating of 9 (3 x 3) would be obtained.

Table 1: Three-Point Risk Matrix

| | | | | | |
|---|---|---|---|---|---|
| High | Common, regular or frequent occurrence. | **3** | **3 Med** | **6 High** | **9 High** |
| Medium | Occasional occurrence. | **2** | **2 Low** | **4 Med** | **6 High** |
| Low | Rare or improbable occurrence. | **1** | **1 Low** | **2 Low** | **3 Med** |
| **Risk Matrix Likelihood X Severity** | | | **1** | **2** | **3** |
| | | | Minor injury or illness. | Serious injury or illness. | Fatalities, major injury or illness. |
| | | | Low | Medium | High |

Table (2): Hazard Ranking and Accompanying Recommended Action

| HAZARD RANKING | RECOMMENDED ACTION |
|---|---|
| **High** | Rigorous scrutiny of control measures required to ensure risk is as low as reasonably practicable (ALARP), improve control measures where possible; consider stopping work. Conducting activities at this level of risk may require formal approval from the appropriate management level. |
| **Medium** | Review control measures and improve if reasonably practicable to do so, consider alternative ways of working. |
| **Low** | Maintain control measures and review regularly or if there are any changes. |

After risk assessing each of the hazards identified on the project, the hazards were grouped into the three (3) zones illustrated in Table 2 above. Hazards with a High-risk rating of 6 – 9 (Red Zone) will receive immediate attention and be subjected to the corresponding recommended action in the table. Hazards with a Medium risk rating of 3 – 4 (Orange/Amber Zone) will be rectified as soon as possible, and Hazards with a Low-risk rating of 1 – 2 (Green Zone) will receive attention once the hazards posing higher risks have been dealt with.

## 2.1 Transferring Hazards to Risk Assessment Form

In Annex A is a risk assessment template that was used for carrying out a systematic risk assessment. Once the risk assessment was done, the hazards were transferred onto the Risk Assessment Form.

Following the identification and listing of all the hazards on the Project, the next step is to utilise the risk matrix outlined in Table 1 above to complete the risk assessment by filling the details in Table 3 below.

The following steps were followed in completing the risk assessment:

a) Completing a row for each of the hazards identified in the hazard identification table above by adding the hazard in column (a).

b) Identifying who might be harmed and how in column (b).
c) Entering all pre-existing control measures that are currently in place in column (c).
d) Calculate the risk from the matrix using the potential outcomes and enter in column (d).
e) To ensure the risk is as low as reasonably practical, additional control measures in column (e) were added.
f) Recalculating of the risk rating with the additional control measures effectively in place in column (f) then followed.
g) Assigning of responsibilities to responsible persons at various levels of the project who will be held accountable for any failure to implement the risk control measures.
h) Adding of all completed risk assessments as annexes to this OHS plan and or keeping of the assessment forms at the project site.
i) Hazards that are initially identified as High and are still classified as high after implementing control measures will require a method statement. All method statements will be attached as annexes to this plan or be made available as stand-alone documents.

## 2.2 Selection of Risk Control Measures

Risks are part of everyday life and one cannot eliminate all risks. What is important, however, is to ensure that the main risks are identified and managed responsibly to safeguard the health and safety of workers. The means by which this will be achieved is by using the hierarchy of controls illustrated in figure 3 below.

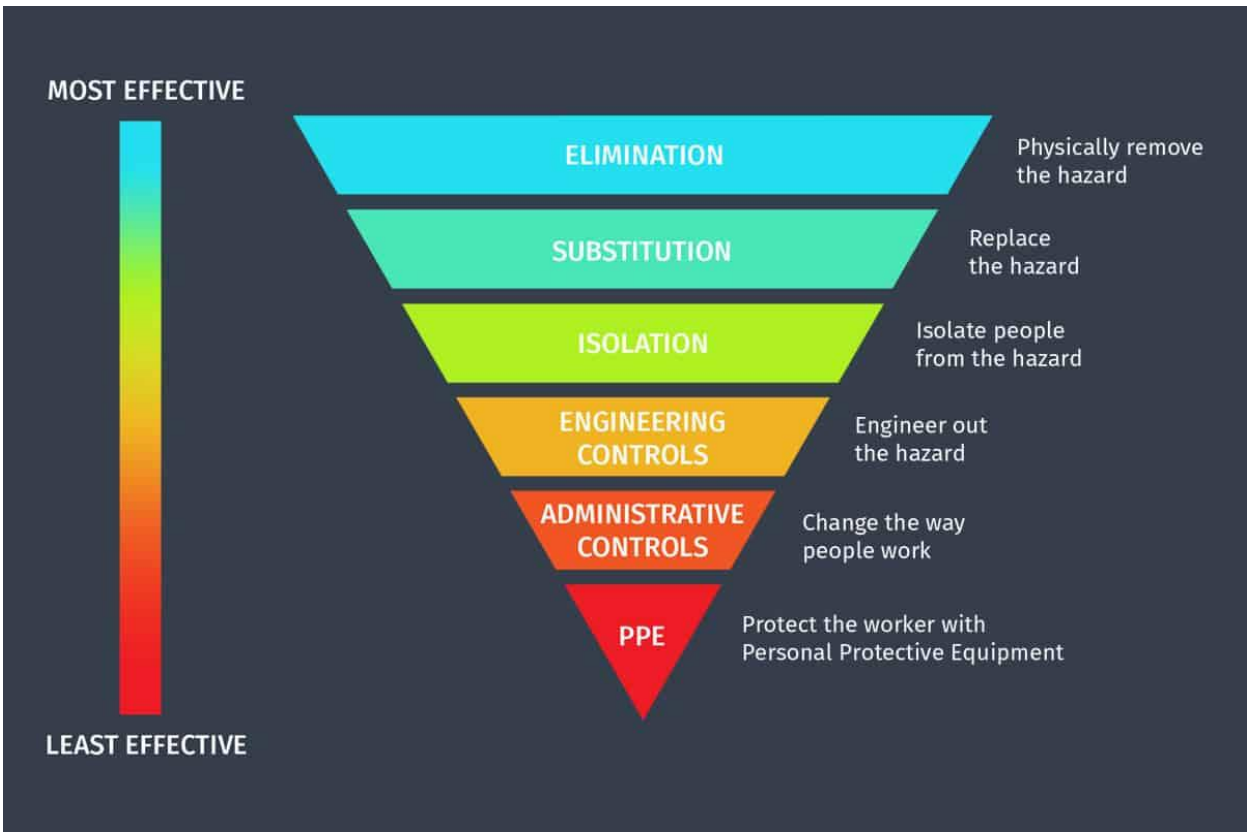

Figure 2: Hierarchy of Risk Control

When selecting measures to use as risk controls in the risk assessment tool outlined in Table 3 below, the risk hierarchy illustrated in Figure 2 above will be followed in order of priority starting from 'most effective' (Elimination) at the top and ending with 'least effective' (PPE) at the bottom. For those risks that cannot be mitigated through introduction of risk control measures **technical supervisors** shall consider eliminating the hazard altogether by not conducting the activity.

The logical approach to the selection of the risk control measures illustrated in Figure 2 above is explained in order of priority, starting with the most effective measure, below:

a) **Elimination**: Is it possible to physically eliminate the hazard? Using this control, the hazard becomes void and therefore, does not expose employees to a risk of injury or illness.

b) **Substitution**: Is it possible to replace the hazard. For example, by replacing sandstone grinding wheels (which cause severe respiratory illness due to silica) with synthetic grinding wheels such as aluminium oxide.

c) **Isolation:** Can we isolate or separate the hazard or hazardous work practices from people not involved in the work or the general work areas? For example, by marking off hazardous areas, installing screens or barriers.

d) **Engineering Controls**: Can we use machinery and devices to remove the hazard? For instance, use mechanical devices such as trolleys or hoists to move heavy loads; place guards around moving parts of machinery; install residual current devices (electrical safety switches); set work rates on a production line to reduce fatigue; install sound dampening measures to reduce exposure to unpleasant or hazardous noise.

e) **Administrative Controls**: Is it possible to change the process or the way that employees perform a hazardous task? This type of control is highly dependent on workers following the preventative process, and they remain at risk of a workplace injury.

**Personal Protective Equipment (PPE)**: Is it possible to provide PPE that will protect employees from the hazard? Relying on PPE to protect employees is the last line of defence against a workplace injury. Too often, PPE is forgotten, ill-fitting or doesn't provide the appropriate level of protection. To ensure accountability for the PPE provided to workers, details of the recipients and the PPE issued will be recorded in the PPE register.

Table 3: Risk Assessment Form

**OHSE Risk Assessment Rating and Classification**

| | |
|---|---|
| **High Risk** | |
| **Moderate Risk** | |
| **Low Risk** | |

| | | | | |
|---|---|---|---|---|
| **Site Name:** | | **District:**<br>**Equipment used:** | | **Date of Risk Assessment:** |
| **Activity:** | | **Risk Rating:** | | |
| **Step 1**<br>**What are the Hazards?** | **Step 2**<br>**Who is at Risk and how?** | **Step 3**<br>**Control Measures to Manage this Hazard** | **Step 4**<br>**What else could you do to Manage this Hazard** | **How will you put the assessment into action?** |
| Spot hazards by:<br>• Performing a task observation;<br>• Walking around the workplace;<br>• Asking the workers around what they think;<br>• Checking the risk and mitigation measures in the guidelines and in the ESMP | Identify groups of people. Remember:<br>• The people working on-site at<br>• Some workers that may have particular needs;<br>• People who may not be in the construction site all the time like ABOs, DPOs etc;<br>• Members of the community; Say how the hazard could cause harm to people mentioned above | List what is already in place to reduce the likelihood of harm or make any harm less serious. | You need to make sure that you have reduced risks 'so far as is reasonably practicable'. An easy way of doing this is to compare what you are already doing with good practice. If there is a difference, list what needs to be done. | Remember to prioritize. Deal with those hazards that are high-risk and have serious consequences first. |

| List the Hazards | Who is at Risk and how? | Control Measures to Manage this Hazard | What else could you do to Manage this Hazard | Risk Ranking | Action by whom | Action by when | Done |
|---|---|---|---|---|---|---|---|
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| **Step 5 Review Date:** | • Review your assessment to ensure you are still improving, or at least not sliding back.<br>If there is a significant change in your activities, remember to check your risk assessment and where necessary, amend it. |

**Risk Assessment Team**

| NAME | JOB TITLE | DATE | DISTRICT | SIGNATURE |
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