

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT FRAMEWORK

HSE Organization; HSE Infrastructure; HSE Training, Awareness & Promotion;
HSE Communication; Operational Control Procedures; HSE Audits; HSE
Evaluation Parameters; Safety During the Operation Phase.

MALAWI EMERGENCY
POWER RESTORATION
PROJECT

Electricity Supply
Corporation of Malawi

[ESCOM]



ELECTRICITY SUPPLY CORPORATION OF MALWI LIMITED

Name of Project: Malawi Emergency Power Restoration Project

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OCCUPATIONAL HEALTH, SAFETY AND WORK ENVIRONMENT MANAGEMENT FRAMEWORK FOR THE EMERGENCY POWER RESTORATION PROJECT

Occupational Health and Safety Management Framework for the Malawi Emergency Power Restoration

THE ELECTRICITY SUPPLY CORPORATION OF MALAWI [ESCOM]
OCCUPATIONAL HEALTH, SAFETY AND WORK ENVIRONMENT
MANAGEMENT FRAMEWORK

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1.0 PURPOSE

- 1.1 The purpose of this OHSE Framework is to provide guidance for the systematic identification, evaluation, prevention and control of general workplace hazards, specific job hazards, potential hazards and environmental impacts that may arise from foreseeable conditions during the implementation of the Malawi Emergency Power Restoration project.
- 1.2 This document shall be followed by ESCOM's Contractors and Sub-contractors at all project implementation sites. In case World Bank specific documents are to be implemented, this document will be followed in conjunction with World Bank's specific documents.
- 1.3 Although every effort has been made to make the procedures and guidelines in line with statutory requirements, in case of any discrepancy, relevant statutory guidelines must be followed.
- 1.4 In case World Bank, the financier, has any specific requirement, the same is to be fulfilled.

2.0 SCOPE

The document is applicable for ESCOM's Contractors and Sub-contractors at all project sites during the implementation of the Malawi Emergency Power Restoration Project activities as per the relevant contractual obligations.

3.0 OBJECTIVES AND TARGETS

The OHSE Framework reflects that ESCOM places high priority upon the Occupational Health, Safety and Environment at workplaces;

- Ensure that the Health and Safety of all persons at work site is not adversely affected by the work;
- Ensure protection of environment of the work site and adjacent community;
- Comply at all times with the relevant statutory and contractual OHSE requirements;
- Provide trained, experienced and competent personnel. Ensure medically fit personnel only are engaged at work;
- Provide and maintain plant, places and systems of work that are safe and without risk to health and the environment;
- Provide all personnel with adequate information, instruction, training and supervision on the safety aspect of their work;
- Effectively control, co-ordinate and monitor the activities of all personnel on the Project sites including Contractors in respect of HSE;
- Establish effective communication on HSE matters with all relevant parties involved in the Project works;
- Ensure that all work planning takes into account all persons that may be affected by the work;

- Ensure fitness testing of all T&Ps/Lifting appliances like cranes, chain pulley blocks etc. are certified by competent persons;
- Ensure timely provision of resources to facilitate effective implementation of OHS requirements;
- Ensure continual improvements in OHS performance;
- Ensure conservation of resources and reduction of wastage;
- Capture the data of all incidents including near misses, process deviation etc. Investigate and analyze the same to find out the root cause;
- Ensure timely implementation of correction, corrective action and preventive action.

OHS TARGETS

Explosion	zero
Fatality	zero
Lost time injury	zero
Fire vehicle incidents	Zero

4.0 TERMS AND DEFINITIONS

4.1 Definitions

4.1.1 Incident

Work- related or natural event(s) in which an injury, or ill health (regardless of severity), damage to property or fatality occurred, or could have occurred.

4.1.2 Near Miss

An incident where no ill health, injury, damage or other loss occurs, but it had a potential to cause, is referred to as “Near-Miss”.

4.1.3 Man-Hours Worked

The total number of man hours worked by all employees including Contractors working in the premises. It includes managerial, supervisory, professional, technical, clerical and other workers including contract laborers. Man-hours worked shall be calculated from the payroll or time clock recorded including overtime. When this is not feasible, the same shall be estimated by multiplying the total man-days worked for the period covered by the number of hours worked per day. The total number of workdays for a period is the sum of the number of men at work on each day of period. If the daily hours vary from department-to-department separate estimate shall be made for each department and the result added together.

4.1.4 First-Aid Cases

First aids are not essentially all reportable cases, where the injured person is given medical treatment and discharged immediately for reporting on duty, without counting any lost time.

4.1.5 Lost-Time Injury

Any work injury which renders the injured person unable to perform his regular job or an alternative restricted work assignment on the next scheduled work day after the day on which the injury occurred.

4.1.6 Medical Cases

Medical cases come under non-reportable cases, where owing to illness or other reason the employee was absent from work and seeks medical treatment.

4.1.7 Types of Incidents & Their Reporting:

The three categories of Incident are as follows:

Non-Reportable Cases:

An incident, where the injured person is given medical help and discharged for work without counting any lost time.

Reportable Cases:

In this case the injured person is disable for 48 hours or more and is not able to perform his duty.

Injury Cases:

These are covered under the heading of non-reportable cases. In these cases, the incident caused injury to the person, but he still continues his duty.

4.1.8 Total Reportable Frequency Rate

Frequency rate is the number of Reportable Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula read as:

$$\frac{\text{Number of Reportable LTI} \times 1,000,000}{\text{Total Man Hours Worked}}$$

4.1.9 Severity Rate

Severity rate is the Number of days lost due to Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula reads as:

$$\frac{\text{Days lost due to LTI} \times 1,000,000}{\text{Total Man Hours Worked}}$$

4.1.10 Incidence Rate

Incidence Rate is the Number of LTI per one thousand manpower deployed. Mathematically, the formula reads as:

Number of LTIx1000

Average number of manpower deployed

5.0 HSE ORGANIZATION

Number of Safety Officers:

The Contractor must deploy one safety officer for every 500 workers or part thereof in each package. In addition, there must be one safety-steward/safety-supervisor for every 100 workers.

Deployment: The Contractor should deploy sufficient safety officers and safety-steward/Safety-supervisor, as per requirement given above, since initial stage and add more in proportion to the added strength in work force. Any delay in deployment will prompt ESCOM to order temporary suspension of works until the issue is resolved.

5.1 Qualification for OHS Personnel

No	Designation	Qualification	Experience
1.	Health and Safety officer	Degree in Engineering or Public Health/ Environmental Health	Minimum two years in the field of Construction or Occupational Health and safety.
2	Health and Safety Supervisor	Degree or diploma in any discipline with full time diploma in Industrial Safety with construction safety as one of the subjects	Minimum two years

5.2 Responsibilities

5.2.1 Site In -Charge of Contractor

- Shall engage qualified safety officer(s) and steward (s) as per clause;
- Shall adhere to the rules and regulations mentioned in this code, practice very strictly in his area of work in consultation with his concerned engineer and the safety coordinator;
- Shall screen all workmen for health and competence requirement before engaging for the job and periodically thereafter as required;
- Shall not engage any employee below 18 years of age;
- Shall arrange for all necessary PPEs like safety helmets, belts, full body harness, shoes, face shield, hand gloves etc. before starting the job;
- Shall ensure that no person lifts, carries or move any load which, by reason of its weight, is likely to injure his health or jeopardize his safety as stipulated in the Occupational Safety, Health and Welfare Act of the Republic of Malawi;

- Shall ensure that all Tools & Plants (T&Ps) engaged are tested for fitness and have valid certificates from competent person;
- Shall ensure that provisions for the welfare of the employees such as canteen, rest rooms/washing facilities are provided for at the site;
- Shall adhere to the instructions laid down in Operation Control Procedures (OCPs) available with the site management;
- Shall ensure that person working above 2.0 meter should use Safety Harness tied to a life line/stable structure;
- Shall ensure that materials are not thrown from height. Cautions to be exercised to prevent fall of material from height;
- Shall report all incidents (Fatal/Major/Minor/Near Miss) to the Site engineer /HSE officer of ESCOM;
- Shall ensure that Horseplay is strictly forbidden;
- Shall ensure that adequate illumination is arranged during night work;
- Shall ensure that all personnel working under Contractor are working safely and do not create any Hazard to self and to others;
- Shall ensure display of adequate signage/posters on HSE;
- Shall ensure conductance of HSE audit, mock drills, medical camps, induction training and training on HSE at site;
- Shall ensure full co-operation during ESCOM/External HSE audits;
- Shall ensure submission of look-ahead plan for procurement of HSE equipment's and PPEs as per work schedule;
- Shall ensure good housekeeping;
- Shall ensure adequate valid fire extinguishers are provided at the worksite;
- Shall ensure availability of sufficient number of toilets /restrooms and adequate drinking water at work site and labor colony;
- Shall ensure adequate emergency preparedness;
- Shall be member of site HSE committee and attend all meetings of the committee;
- Temporary fencing should be done for open edges if Hand – railings and Toe-guards are not available.

5.2.2 Health, Safety and Environment Officer of Contractor

- Carry out safety inspection of Work Area, Work Method, Men, Machine & Material, processes and materials (P&M) and other tools;
- Facilitate inclusion of safety elements into Work Method Statement;
- Highlight the requirements of safety through Tool-box talks/ other meetings;
- Help concerned heads of sections to prepare Job Specific instructions for critical jobs;
- Conduct investigation of all incident/dangerous occurrences & recommend appropriate safety measures;

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- Advice & co-ordinate for implementation of HSE permit systems;
- Convene HSE meeting & minute the proceeding for circulation & follow-up action;
- Plan procurement of PPE & Safety devices and inspect their healthiness;
- Report to ESCOM's OHS specialist on all matters pertaining to status of safety and promotional program at site level;
- Facilitate administration of First Aid;
- Facilitate screening of workmen and safety induction;
- Conduct fire Drill and facilitate emergency preparedness;
- Design campaigns, competitions & other special emphasis programs to promote safety in the workplace;
- Notify site personnel non-conformance to safety norms observed during site visits / site inspections;
- Recommend to Site In-Charge, immediate discontinuance of work until rectification of such situations warranting immediate action in view of imminent danger to life or property or environment;
- To decline acceptance of such PPE / safety equipment that do not conform to specified requirements;
- Encourage raising Near Miss Report on safety along with, improvement initiatives on safety.

6.0 PLANNING BY THE CONTRACTOR

Monthly planning and review of HSE activities shall be carried out by Contractor jointly along with ESCOM

6.1 Mobilization of Machinery/Equipment/Tools by Contractor

- As a measure to ensure that machinery, equipment and tools being mobilized to the construction site are fit for purpose and are maintained in safe operating condition and complies with legislative and owner requirement, inspection shall be arranged by in-house competent authority for acceptance as applicable.
- The machinery and equipment to be embraced for this purpose shall include but not limited to the following:
 - Mobile cranes.
 - Side Booms.
 - Forklifts.
 - Grinding machine.
 - Drilling machine.
 - Air compressors.
 - Welding machine.

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- Generator sets.
- Dump Trucks.
- Excavators.
- Dozers
- Grit Blasting Equipment.
- Hand tools.
- Contractor shall notify the Engineer, of his intention to bring on to site any equipment or any container, with liquid or gaseous fuel or other substance which may create a hazard. The Engineer shall have the right to prescribe the condition under which such equipment or container may be handled and used during the performance of the works and the Contractor shall strictly adhere to such instructions. The Engineer shall have the right to inspect any construction tool and to forbid its use, if in his opinion it is unsafe. No claim due to such prohibition will be entertained.

6.2 Mobilization of Manpower by Contractor

- The Contractor shall arrange induction and regular health check of their employees as per requirement in the Occupational Health and Safety Act.
- The Contractor shall take special care of the employees affected with occupational diseases. The employees not meeting the fitness requirement should not be engaged for such job.
- Ensure that the regulatory requirements of excessive weight limit (to carry/lift/ move weights beyond prescribed limits) for male and female workers are complied with.
- Appropriate accommodation to be arranged for all workmen in hygienic condition.

6.3 Provision of PPEs

- Personnel Protective Equipment (PPEs), in adequate numbers, will be made available at site & their regular use by all concerned will be ensured
- The following matrix recommends usage of minimum PPEs against the respective job.

No	Type of Work	PPE
1	Concrete and asphalt mixing	Nose mask, hand glove, apron and gum boot
2	Welders/Grinders/ Gas cutters	Welding/face screen, apron, hand gloves, nose mask and ear muffs if noise level exceeds 90dB. Helmet fitted with welding shield is preferred for welders
3	Stone/ concrete breakers	Ear muffs, safety goggles, hand gloves
4	Electrical Work	Rubber hand glove, Electrical Resistance shoes
5	Insulation Work	Respiratory mask, Hand gloves, safety goggles
6	Work at height	Double lanyard full body harness, Fall arrestor (specific cases)
7	Grit/Sand Blast suit,	Blast suit, blast helmet, respirator, leather gloves
8	Painting	Plastic gloves, Respirators (particularly for spray painting)

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- Where workers are employed in sewers and manholes, which are in use, the Contractor shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into manhole, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent incident to the public
- Besides the PPEs mentioned above, the persons shall use helmet and safety shoe. The visitors shall use Helmet and any other PPEs as deemed appropriate for the area of work.

Color scheme for Helmets:

1. Workmen: Yellow
2. Safety staff: Green or white with green band
3. Electrician: Red
4. Others including visitors: White

- All the PPEs shall be checked for its quality before issue and the same shall be periodically checked. The users shall be advised to check the PPEs themselves for any defect before putting on. The defective ones shall be repaired/ replaced.
- The issuing agency shall maintain register for issue and receipt of PPEs.
- The Helmets shall have logo or name (abbreviation of agency name permitted) affixed or printed on the front.
- The body harnesses shall be serial numbered.

6.4 Arrangement of Infrastructure

6.4.1 Drinking water

- Drinking water shall be provided and maintained at suitable places at different elevations.
- Container should be labeled as “Drinking Water”

6.4.2 Washing Facilities

- In every workplace, adequate and suitable facilities for washing shall be provided and maintained.
- Separate and adequate cleaning facilities shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition and dully illuminated for night use.
- Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the painters and other workers to wash during the cessation of work.

6.4.3 Latrines and Urinals

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- Latrines and urinals shall be provided in every work place.
- They shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times, by appointing designated person.
- Separate facilities shall be provided for the use of male and female worker if any.

6.4.4 Provision of Shelter During Rest

Proper Shed & Shelter shall be provided for rest during break

6.4.5 Medical Facilities

6.4.5.1 Medical Centre

- A medical center shall be ensured/identified at site with basic facilities for handling medical emergencies. The medical center can be jointly developed on proportionate sharing basis with permission from ESCOM
- A qualified medical professional shall be deployed at the medical center
- The medical center shall be equipped with one ambulance, with trained driver and oxygen cylinder.
- Medical waste shall be disposed as per prevailing legislation.

6.4.5.2 First Aider

- Ensure availability of Qualified First-aider throughout the working hours.
- Every injury shall be treated, recorded and reported.
- Refresher course on first aid shall be conducted as necessary.
- List of Qualified first aiders and their contact numbers should be displayed at conspicuous places

6.4.5.3 First Aid Box

- The Contractor shall provide necessary first aid facilities at every work place.
- The first aid box shall be kept by first aider who shall always be readily available during the working hours of the work place. His name and contact number to be displayed on the box.
- The first aid boxes should be placed at various elevations so as to make them available within the reach and at the quickest possible time.
- The first aid box shall be distinctly marked with a Green Cross on white background.
- Details of contents of first aid box are given in Annex No. 01
- Monthly inspection of First Aid Box shall be carried out by the owner.
- The Contractor should conduct periodical first –aid classes to keep his supervisor and Engineers properly trained for attending to any emergency.

6.4.5.4 Health Check Up

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The persons engaged at the site shall undergo health checkup before induction. The persons engaged in the following works shall undergo health checkup at least once in a year:

- a) Height workers
- b) Drivers/crane operators/riggers
- c) Confined space workers
- d) Shot/sand blaster
- e) Welding and NDE personnel

6.4.5 Provision of Canteen Facility

- Canteen facilities shall be provided for the workmen of the project inside the project site.
- Proper cleaning and hygienic condition shall be maintained.
- Proper care should be taken to prevent biological contamination.
- Adequate drinking water should be available at the canteen.
- Fire extinguisher shall be provided inside the canteen.
- Regular health check-up and medication to the canteen workers shall be ensured.

6.4.6 Provision of Accommodation/Labor Colony

- The Contractor shall arrange for the accommodation of workmen at nearby localities or by making a labor colony.
- Regular housekeeping of the labor colony shall be ensured.
- Proper sanitation and hygienic conditions to be maintained.
- Drinking water and electricity to be provided at the labor colony. Bathing/ washing bay Room ventilation and electrification.

6.4.7 Provision of Emergency Vehicle

Dedicated emergency vehicle shall be made available at workplace by the Contractor to handle any emergency.

6.4.8 Pest Control

Regular pest control should be carried out at all offices, mainly laboratories, canteen, labor colony and stores.

6.4.9 Scrapyard

- Scrapyard shall be developed to store metal scrap, wooden scrap, waste, hazardous waste.
- Scrap/Waste shall be segregated as Bio-degradable and non-bio-degradable and stored separately.

6.4.10 Illumination

- The Contractor shall arrange at his cost adequate lighting facilities e.g. flood lighting, hand lamps, area lighting etc. at various levels for safe and proper working operations at dark places and during night hours at the work spot as well as at the pre-assembly area.
- Adequate and suitable light shall be provided at all work places & their approaches including passage ways.
- Lamp (hand held) shall not be powered by mains supply but either by 24V or dry cells.
- Lamps shall be protected by suitable guards where necessary to prevent danger, in case of breakage of lamp.
- Emergency lighting provision for night work shall be made to minimize danger in case of main supply failure.

If the Contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions issued by the authorized ESCOM official, ESCOM shall have the right to take corrective steps at the risk and cost of the Contractor.

7.0 HSE TRAINING AWARENESS

7.1 HSE Induction Training

All persons entering into project site shall be given HSE induction training by the HSE officer of ESCOM /Contractor before being assigned to work.

- In-house induction training subjects shall include but not limited to:
 - Briefing of the Project details.
 - Safety objectives and targets.
 - Site HSE rules.
 - Site HSE hazards and aspects.
 - First aid facility.
 - Emergency Contact No.
 - Incident reporting.
 - Fire prevention and emergency response.
 - Rules to be followed in the labor colony (if applicable)
- Proper safety wear & gear must be issued to all the workers being registered for the induction (i.e., Shoes/Helmets/Goggles/Leg guard/Apron etc.)
- They must arrive fully dressed in safety wear & gear to attend the induction.
- Any one failing to conform to this safety wear & gear requirement shall not qualify to attend.
- On completing attending Contractor's in-house HSE induction, each employee shall sign an induction training form to declare that he/she had understood the content and shall abide to follow and comply with safe work practices. They may only then be qualified to be issued with a personal I.D. card, for access to the work site

7.2 HSE Toolbox Talk

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- HSE tool Box talk shall be conducted by frontline foreman/supervisor of Contractor to specific work groups prior to the start of work. The agenda shall consist of the followings:
 - Details of the job being intended for immediate execution.
 - The relevant hazards and risks involved in executing the job and their control and mitigating measures.
 - Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.
 - Recent non-compliances observed.
 - Appreciation of good work done by any person.
 - Any doubt clearing session at the end.
- Records of Tool box talk shall be maintained as per the format in annex 06.
- Tool box talk to be conducted at least once a week for the specific work.

7.3 Training on Working at Height

Training on height work shall be imparted to all workers working at height by in-house/external faculty at least twice in a year. The training shall include the following topics:

- Use of PPEs
- Use of fall arrester, retractable fall arrester, life line, safety nets etc.
- Safe climbing through monkey ladders.
- Inspection of PPEs.
- Medical fitness requirements.
- Mock drill on rescue at height.
- Dos & Don'ts during height work.

7.4 HSE Training During Project Execution

- Other HSE training shall be arranged by ESCOM/ Contractor as per the need of the project execution and recommendation of HSE committee of site.
- The topics of the HSE training shall be as follows but not limited to:
 - Hazards identification and risk analysis (HIRA)
 - Work Permit System
 - Incident investigation and reporting
 - Fire fighting
 - First aid
 - Fire-warden training
 - T & Ps fitness and operation
 - Electrical safety
 - Welding & Radiological safety
 - Storage, preservation & material handling

- A matrix shall be maintained to keep an up-to-date record of attendance of training sessions carried out.

7.5 HSE Promotion-signage, Posters, Competition, Awards etc

7.5.1 Display of HSE posters and banners

Site shall arrange appropriate posters, banners, slogans in local languages at work place

7.5.2 Display of HSE signage

Appropriate HSE signage shall be displayed at the work area to aware workmen and passersby about the work going on and dos and don'ts to be followed

7.5.3 Competition on HSE and award

Contractor shall arrange HSE awareness program periodically on different topics including medical awareness for all personnel working at site

8.0 HSE COMMUNICATION

8.1 Incident Reporting

- The Contractor shall submit report of all incidents, fires and property damage etc to the Engineer immediately after such occurrence, but in any case, not later than 24 hours of the occurrence. The Engineer shall report the same to ESCOM OHS Specialist immediately. Such reports shall be furnished in the manner prescribed by ESCOM. (Refer to HSE procedure for incident investigation, analysis and reporting for details)
- In addition, periodic reports on safety shall also be submitted by the Contractor to ESCOM from time to time. Compiled monthly reports of all kinds of incidents, fire and property damage to be submitted to ESCOM Specialist as per prescribed formats.
- HSE incidents of site shall be reported to ESCOM site Management as per Procedure for Incident Investigation and Reporting in format in Annex 15. Corrective action shall be immediately implemented at the work place and compliance shall be verified by ESCOM OHS Specialist and until then, work shall be put on hold by Construction Manager.

8.2 Work Permit System

The following activities shall come under Work Permit System

- Height working above 2 meters
- Hot working at height
- Confined space

- Radiography
- Excavation more than 4-meter depth
- Heavy lifting above 50 ton
- “HSE Procedure for Work Permit System” shall be followed while implementing permit system.
- Permit applicant shall apply for work permit of particular work activity at particular location before starting of the work with Job Hazard Analysis.
- Permit signatory shall check that all the control measures necessary for the activity are in place and issue the permit to the permit holder.
- Permit holder shall implement and maintain all control measures during the period of permit. He will close the permit after completion of the work.
- The closed permit shall be archived in HSE Department of site.

8.3 Safety During Work Execution

Respective Operation Control Procedures (OCPs) are to be followed and adhered to and the same would be contractually binding.

8.3.1 Welding Safety

All safety precautions shall be taken for welding and cutting operations. All safety precautions shall be taken for foundation and other excavation marks as required.

8.3.2 Rigging

Rigging equipment shall not be loaded in excess of its recommended safe working load. Rigging equipment, when not in use, shall be removed from the original work area so as not to present a hazard to employees.

8.3.3 Cylinder Storage and Movement

All gas cylinders shall be stored in upright position. Suitable trolley shall be used. There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends. Damaged tube and regulators must be immediately replaced. Number of cylinders shall not exceed the specified quantity as per OCP.

Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dragged, struck or permitted to strike each other violently. When cylinders are transported by powered vehicle they shall be secured in a vertical position.

8.3.4 Demolition Work

Before any demolition work is commenced and also during the process of the work the following shall be ensured:

- All roads and open areas adjacent to the work site shall either be closed or suitably protected.

- No electric cable or apparatus which is liable to be a source of danger nor a cable or an apparatus used by the operator shall remain electrically charged.
- All practical steps shall be taken to prevent danger to persons employed from the risks of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render them unsafe

8.3.5 Tools and Plants (T&Ps)

All T&Ps should be of reputed brand/appropriate quality & must have valid test/calibration certificates bearing endorsement from competent authority. Contractor to also submit monthly reports of T&Ps deployed and validity test certificates to ESCOM OHS Specialist.

8.3.6 Chemical Handling

Displaying safe handling procedures for all chemicals such as lube oil, acid, alkali, sealing compounds etc, at work place. Where it is necessary to provide and/or store petroleum products or petroleum mixture & explosives, the Contractor shall be responsible for carrying out such provision / storage in accordance with the rules & regulations. All such storage shall have prior approval, if necessary, from the Malawi Energy regulatory Authority (MERA).

8.3.7 Electrical Handling

Providing adequate number of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts.

- Fulfilling safety requirements at all power tapping points.
- High/ Low pressure welders to be identified with separate color clothing. No welders will be deployed without passing appropriate tests and holding valid welding certificates. Approved welding procedure should be displayed at work place.
- The Contractor shall not use any hand lamp energized by Electric power with supply voltage of more than 24 volts in confined spaces like inside water boxes, turbine casings, condensers etc.
- All portable electric tools used by the Contractor shall have safe plugging system to source of power and be appropriately earthed. Only electricians licensed by appropriate statutory authority shall be employed by the Contractor to carry out all types of electrical works. Details of earth resource and their test date to be submitted to ESCOM OHS specialist.
- The Contractor shall use only properly insulated and armored cables which conform to the requirement.
- ESCOM reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the cost of the Contractor.
- All electrical appliances used in the work shall be in good working condition and shall be properly earthed.
- No maintenance work shall be carried out on live equipment.

- The Contractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations.
- Area wise Electrical safety inspection is to be carried out on monthly basis as per “Electrical Safety Inspection checklist’ and the report is to be submitted to ESCOM safety officer
- Adequate precautions shall be taken to prevent danger for electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public
- The Contractor shall carefully follow the safety requirement of ESCOM/ the purchaser with the regard to voltages used in critical areas.

8.3.8 Fire Safety

- Providing appropriate firefighting equipment at designated work place and nominate a fire officer/warden adequately trained for his job.
- Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in labor colony etc. Such fire protection equipment shall be easy and kept open at all times.
- The fire extinguishers shall be properly refilled and kept ready which should be certified at periodic intervals. The date of changing should be marked on the Cylinders.
- All other fire safety measures as laid down in the emergency preparedness and response plan shall be followed.
- Non-compliance of the above requirement under fire protection shall in no way relieve the Contractor of any of his responsibility and liabilities to fire incident occurring either to his materials or equipment or those of others.
- Emergency contact numbers must be displayed at prominent locations
- Tarpaulin being inflammable should not be used (instead, only non-infusible covering materials shall be used) as protective cover while preheating, welding, stress relieving etc. at site.

8.3.9 Scaffolding

- Suitable scaffolds shall be provided for workman for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration of work which can be done safely from ladders.
 - When a ladder is used, it shall be of rigid construction made of steel. The steps shall have a minimum width of 45 cm and a maximum rise of 30 cm. Suitable handholds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper than ¼ horizontal and 1 vertical.
 - Scaffolding or staging more than 3.6 m above the ground floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly bolted, braced or otherwise secured, at least 90 cm above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof
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with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from savor, from swaying, from the building or structure.

8.3.10 Work at Height

- Guardrails and toe-board/barricades and sound platform should be provided.
- Wherever necessary, life-line (pp or metallic) and fall arrestor along with Polyamide rope or Retractable lifeline should be provided.
- Safety Net should be used extensively for prevention/ arrest of men and materials falling from height. The safety nets shall be fire resistant, duly tested and the nets shall be located as per site requirements to arrest or to reduce the consequences of a possible fall of persons working at different heights.
- Reaching beyond barricaded area without lifeline support, moving with support of bracings, walking on beams without support, jumping from one level to another, throwing objects and taking shortcut must be discouraged.
- Use of Rebar steel for making Jhoola and monkey-ladder (Rods welded to vertical or inclined structural members), temporary platform etc. must be avoided.
- Monkey Ladder should be properly made and fitted with cages.
- Jhoola should be made with angles and flats and tested like any lifting tools before use.
- Lanyard must be anchored always and in case of double lanyard, each should be anchored separately.
- In case of pipe-rack, persons should not walk on pipes and walk on platforms only.
- In case of roof work, walking ladder/ platform should be provided along with lifeline and/ or fall arrestor.
- Empty drums must not be used.
- For chimney or structure painting, both hanging platform and men should be anchored separately to a firm structure along with separate fall arrestor. Rope ladder should be discouraged.

8.3.11 Working Platform

Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform gangways provided is more than 3.6 m above ground level or floor level, they shall be closely boarded and shall have adequate width which shall not be less than 750 mm and be suitably fenced as described above. Every opening in the floor or a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 90 cm.

8.3.12 Excavation

Wherever there is open excavation in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.

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8.3.13 Ladder Safety

Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m in the length while the width between side rails in rung ladder shall in no case be less than app. 29.2 cm for ladder up to and including 3 m in length. For longer ladders this width shall be increased at least ¼” for each additional foot of length.

A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to Construction.

8.3.14 Lifting Safety

- It will be the responsibility of the Contractor to ensure safe lifting of the equipment, taking due precaution to avoid any incident and damage to other equipment and personnel.
- All requisite tests and inspection of handling equipment, tools & tackle shall be periodically done by the Contractor by engaging only the Competent Persons as per law.
- Defective equipment or uncertified shall be removed from service.
- Any equipment shall not be loaded in excess of its recommended safe working load.

8.3.15 Hoisting Appliances

- Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe guards.
- Hoisting appliance should be provided with such means as will reduce to the minimum risk of any part of a suspended load becoming incidentally displaced.
- When workers employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided.
- The worker should not wear any rings, watches and carry keys or other materials which are good conductor of electricity.

8.4. Environmental Control

Environment protection has always been given prime importance by ESCOM. Environmental damage is a major concern of the principal Contractor and every effort shall be made, to have effective control measures in place to avoid pollution of Air, Water and Land and associated life. Chlorofluorocarbons such as carbon tetrachloride and trichloroethylene shall not be used. Waste disposal shall be done in accordance with the guidelines laid down in the Waste Management Plan.

Any chemical including solvents and paints, required for construction shall be stored in designated bonded areas around the site as per Material Safety Data Sheet (MSDS).

In the event of any spillage, the principle is to recover as much material as possible before it enters drainage system and to take all possible action to prevent spilled materials from running off the site. The Contractor shall use appropriate MSDS for clean-up technique
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All Contractors shall be responsible for the cleanliness of their own areas.

The Contractors shall ensure that noise levels generated by plant or machinery are as low as reasonably practicable. Where the Contractor anticipates the generation of excessive noise levels from his operations the Contractor shall inform the Construction Manager of ESCOM accordingly so that reasonable and practicable precautions can be taken to protect other persons who may be affected. It is imperative on the part of the Contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, conversion of packing woods to school furniture, keeping good relation with local populace etc. The Contractor shall carry out periodic air and water quality check and illumination level checking in his area of work place and take suitable control measure.

8.5 Housekeeping

- Keeping the work area clean/ free from debris, removed scaffoldings, scraps, insulation/sheeting wastage /cut pieces, temporary structures, packing woods etc. will be in the scope of the Contractor. Such cleanings have to be done by Contractor on daily basis by an identified group. If such activity is not carried out by Contractor or ESCOM is not satisfied, then ESCOM may get it done by other agency and actual cost along with ESCOM overheads will be deducted from contractor's bill. Such decisions of ESCOM shall be binding on the Contractor.
- Proper housekeeping to be maintained at work place and the following are to be taken care of on daily basis.
 - All surplus earth and debris are removed/disposed of from the working areas to identified locations.
 - Unused/Surplus cables, steel items and steel scrap lying scattered at different places/elevation within the working areas are removed to identified locations.
 - All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from workplace to identified locations. Sufficient waste bins shall be provided at
 - Different work places for easy collection of scrap/waste. Scrap chute shall be installed to remove scrap from high location.
 - Access and egress (stair case, gangways, ladders etc.) path should be free from all scrap and other hindrances.
 - Workmen shall be educated through tool box talk about the importance of housekeeping and encourage not to litter.
 - Labor camp area shall be kept clear and materials like pipes, steel, sand, concrete, chips and bricks, etc. shall not be allowed in the camp to obstruct free movement of men and machineries.
 - Fabricated steel structures, pipes & piping materials shall be stacked properly.
 - No parking of trucks/trolleys, cranes and trailers etc. shall be allowed in the camp, which may obstruct the traffic movement as well as below LT/HT power line.

- Utmost care shall be taken to ensure overall cleanliness and proper upkeep of the working areas

8.6 Waste Management

Take suitable measures for waste management and environment related laws/legislation as a part of normal construction activities. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained.

8.6.1 Bins at a Workplace

- Sufficient rubbish bins shall be provided close to workplaces.
- Bins should be painted yellow and numbered.
- Sufficient numbers of drip trays shall be provided to collect oil and grease.
- Sufficient quantities of broomsticks with handle shall be provided.
- Adequate strength of employees should be deployed to ensure daily monitoring and service for waste management.

8.6.2 Storage and Collection

- Different types of rubbish/waste should be collected and stored separately.
- Paper, oily rags, smoking material, flammable, metal pieces should be collected in separate bins with close fitting lids.
- Rubbish should not be left or allowed to accumulate on construction and other work places.
- Do not burn construction rubbish near working site

8.6.3 Segregation

- Earmark the scrap area for different types of waste.
- Store wastes away from building.
- Oil spill absorbed by non-combustible absorbent should be kept in separate bin.
- Clinical and first aid waste stored and incinerated separately.

8.6.4 Disposal

- Sufficient containers and scrap disposal area should be allocated.
- All scrap bin and containers should be conveniently located.
- Provide self-closing containers for flammable/spontaneously combustible material.
- Keep drainage channels free from choking.
- Make schedule for collection and disposal of waste.

8.6.5 Warning and Signs

- Appropriate sign to be displayed at scrap storage area

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- No toxic, corrosive or flammable substance to be discarded into public sewage system.
- Waste disposal shall be in accordance with best practice.
- Comply with all the requirements of Pollution Control Board (PCB) for storage and disposal of hazardous waste.

8.7 Traffic Management System

8.7.1 Safe Workplace Transport System

- Traffic routes in a work place shall be suitable for the persons or vehicles using them. This shall be sufficient in number and of sufficient size. This shall reflect the suitability of traffic routes for vehicles and pedestrians.
- Where vehicles and pedestrians use the same traffic routes there shall be sufficient space between them. Where necessary all traffic routes must be suitably indicated. Pedestrians or vehicles must be able to use traffic routes without endangering those at work. There must be sufficient separation of traffic routes from doors, gates and pedestrian traffic routes.
- For internal traffic, lines marked on roads / access routes and between buildings shall clearly indicate where vehicles are to pass.
- Temporary obstacles shall be brought to the attention of drivers by warning signs or hazard cones.
- Speed limits shall be clearly displayed. Speed ramps preceded by warning signs or marker are necessary.
- The traffic route should be wide enough to allow vehicles to pass and re-pass oncoming or parked traffic and it may be advisable to introduce one-way system or parking restrictions.
- Safest route shall be provided between places where vehicles have to call or deliver.
- Avoid vulnerable areas/items such as fuel or chemicals tanks or pipes, open or unprotected edges and structures likely to collapse
- Safe areas shall be provided for loading and unloading.
- Avoid sharp or blind bends. If this is not possible hazard warning signs should be indicated e.g. “blind corner”.
- Ensure road crossings are minimum and clearly signed.
- Entrance and gateways shall be wide enough to accommodate a second vehicle without causing obstruction.
- Set sensible speed limits which are clearly sign posted.
- Where necessary ramps should be used to retard speed. This shall be preceded by a warning sign or mark on the road.
- Forklift trucks shall not pass over road hump unless of a type capable of doing so.
- Overhead electric cable, pipes containing flammable hazardous chemical shall be shielded by using goal posts height gauge posts or barriers.

- Road traffic signs shall be provided on prominent locations for prevention of incidents and hazards and for quick guidance and warning to employees and public. Safety signs shall be displayed as per the project working requirement and guideline of the state in which project is done. Vehicles hired or used shall not be parked within the 15m radius of any working area. Any vehicle, that is required to be at the immediate/near the vicinity, shall be approved by the person in-charge of the site.

8.7.2 Traffic Route for Pedestrians

- Where traffic routes are used by both pedestrians and vehicles, roads shall be wide enough to allow vehicles and pedestrians safely.
- Separate routes shall be provided for pedestrians to keep them away from vehicles. Provide suitable barriers/guard at entrances/exit and the corners of buildings.
- Where pedestrian and vehicle routes cross, appropriate crossing shall be provided.
- Where crowd is likely to use roadway e.g. at the end of shift, stop vehicles from using them at such times.
- Provide high visibility clothing for people permitted in delivery area.

8.7.3 Work Vehicles

Work vehicle shall be as safe stable efficient and roadworthy as private vehicles on public roads. Site management shall ensure that drivers are suitably trained. All vehicles e.g. heavy motor vehicle, forklift trucks, dump trucks, mobile cranes shall ensure that the work equipment conforms to the following:

- A high level of stability.
- A safe means of access/egress.
- Suitable and effective service and parking brakes.
- Windscreens with wipers and external mirrors giving optimum all round visibility.
- Provision of horn, vehicle lights, reflectors, reversing lights, reversing alarms.
- Provision of seat belts.
- Guards on dangerous parts.
- Driver protection - to prevent injury from overturning and from falling objects/materials.
- Driver protection from adverse weather.
- No vehicle shall be parked below HT/LT power lines.

8.7.4 Daily Check by Driver

- There should also be daily safety checks containing below mentioned points by the driver before the vehicle is used.
 - Brakes.
 - Tyers.
 - Steering.
 - Mirrors.

- Windscreen waters.
- Wipers.
- Warning signals.
- Specific safety system i.e. control interlocks
- Management should ensure that drivers carry out these checks.

8.7.5 Transportation of Personnel and Materials by Vehicles

- All drivers shall hold a valid driving License for the class of vehicle to be driven and be registered as an authorized.
- Securing of the load shall be by established and approved methods, i.e. chains with patented tightening equipment for steel/heavy loads. Sharp corners on loads shall be avoided when employing ropes for securing.
- All overhangs shall be made clearly visible and restricted to acceptable limits
- Load shall be checked before moving off and after traveling a suitable distance.
- On no account is construction site to be blocked by parked vehicles. Drivers of vehicles shall only stop or park in the areas designate by the stringing foreman.
- Warning signs shall be displayed during transportation of material. All vehicles used by ESCOM shall be in worthy condition and in conformance to the Land Transport requirement.

8.7.6 Maintenance

All Vehicles used for transportation of man and material shall undergo scheduled inspections on frequent intervals to secure safe operation. Such inspections shall be conducted in particular for steering, brakes, lights, horn, doors etc. Site management shall ensure that work equipment is maintained in an efficient, working order and in good repair. Inspections and services carried out at regular intervals of time and or mileage. No maintenance shall be carried below HT/LT power lines.

8.8 Emergency Preparedness and Response

Emergency preparedness and response capability of site shall be developed and implemented accordingly.

- Availability of adequate number of first aiders and fire warden shall be ensured with ESCOM and its Contractors
- All the Contractor’s supervisory personnel and sufficient number of workers shall be trained for fire protection systems. Enough number of such trained personnel must be available during the tenure of contract. Contractor should nominate his supervisor to coordinate and implement the safety measures.
- Assembly point shall be earmarked and access to the same from different location shall be shown
- Fire exit shall be identified and pathway shall be clear for emergency escape.

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- Appropriate type and number of fire extinguisher shall be deployed as per Fire extinguisher deployment plan and validity shall be ensured periodically through inspection
- Adequate number of first aid boxes shall be strategically placed at different work places to cater emergency need. Holder of the first aid box shall be identified on the box itself who will have the responsibility to maintain the same.
- First aid center shall be developed at site with trained medical personnel and ambulance
- Emergency contact numbers (format given in EPRP) of the site shall be displayed at prominent locations.
- Tie up with fire brigade shall be done in case Contractor is not having a fire station.
- Tie up with hospital shall be done in case Contractor is not having a hospital.
- Disaster Management group shall be formed at site
- Mock drill shall be arranged at regular intervals. Monthly report of the above to be given to ESCOM's OHS Specialist
- Mock drill shall be conducted on different emergencies periodically to find out gaps in emergency preparedness and taking necessary corrective action

9.0 HSE INSPECTION

Inspection on HSE for different activities being carried out at site shall be done to ensure compliance to HSEMS requirements. The Contractor shall maintain and ensure necessary safety measures as required for inspection and tests; HV test, Pneumatic test, Hydraulic test, Spring test, Bend test etc. as applicable, to enable inspection agency for performing Inspection. If any test equipment is found not complying with proper safety requirements, then the Inspection Agency may withhold inspection, till such time the desired safety requirements are met.

9.1 Daily HSE Checks

Both the Site Supervisors and safety officer of Contractor are to conduct daily site Safety inspection around work activities and premises to ensure that work methods and the sites are maintained to an acceptable standard. The following are to form the common subjects of a daily safety inspection:

- Personal Safety wears & gear compliance.
- Complying with site safety rules and permit-to-work (PTW).
- Positions and postures of workers.
- Use of tools and equipment etc. by the workers.

The inspection should be carried out just when work starts in beginning of the day, during peak activities period of the day and just before the day's work ends.

9.2 Inspection of PPE

- PPEs shall be inspected by HSE officer at random once in a week for its compliance to standard and compliance to use and any adverse observation shall be recorded in the PPE register.

9.3 Inspection of Tools and Plants (T&Ps)

A master list of T&Ps shall be maintained by the Contractor.

- All T&Ps being used at site shall be inspected by HSE officer once in a month as per format in Annex 08 for its worthiness and maintenance.
- The T&Ps which require third party inspection shall be checked for their validity during inspection. The third-party test certificate should be accompanied with a copy of the concerned competent person's valid qualification record.
- The validity of T&P shall be monitored as per "Status of T&Ps" format in the Annex 09.

9.4 Inspection of Cranes and Winches

- Cranes and winches shall be inspected by the operator through a daily checklist for its safe condition (as provided by the equipment manufacturer) before first use of the day.
- Cranes and Winches shall be inspected by HSE officer once in a month as per format no. HSEP:14-F09 for healthiness, maintenance and validity of third-party inspection.
- The date of third-party inspection and next due date shall be painted on cranes and winches.
- The operators/drivers shall be authorized by the Contractor based on their competency and experience.
- The operator should be above 18 years of age and should be in possession of a valid driving license, and should have minimum qualification so that he can read the instructions and checklist.

9.5 Inspection on Height Working

- Inspection on height working shall be conducted daily by supervisors before start of work to ensure safe working condition including provision of
 - Fall arrestor
 - Lifelines
 - Safety nets
 - Fencing and barricading
 - Warning signage
 - Covering of opening
 - Proper scaffolding with access and egress.
 - Illumination
- Inspection on height working shall be conducted once in a week by HSE officer as per format in Annex 11.
- Medical fitness of height worker shall be ensured.

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- Height working shall not be allowed during adverse weather.

9.6 Inspection on Welding and Gas Cutting Operation

- Supervisor shall ensure that no flammable items are available in near vicinity during welding and gas cutting activity.
- Gas cylinders shall be kept upright.
- Use of Flash back arrestor shall be ensured at both ends.
- Inspection during welding and gas cutting operations shall be carried out by HSE officer once a month as per format in Annex 12.
- Use of fire blanket to be ensured to avoid falling of splatters during welding or gas cutting operation at height.
- Availability of fire extinguisher at vicinity shall be ensured.

9.7 Inspection on Electrical Installation / Appliances

- Ensure proper earthing in electrical installation
- Use ELCB at electrical booth
- Electrical installation shall be properly covered at top where required
- Use appropriate PPEs while working
- Use portable electrical light < 24 V in confined space and potentially wet area.
- Monthly inspection shall be carried out as per format in Annex 13.

9.8 Inspection on Elevator

- Elevators shall be inspected by concerned supervisors once in a week as per format in Annex 14
- All elevators shall be inspected by competent person and validity shall be ensured.
- The date of third-party inspection and next due date shall be painted on elevator.

9.9 Inspection of Excavation

Excavation activities shall be inspected as per Format in Annex 15

10.0 HSE PERFORMANCE

- Contractor shall be assessed on monthly basis for HSE Compliance by ESCOM Safety In-charge at the site.
- ESCOM shall reserve the right to use this assessment for evaluating bidder's capacity for future tenders
- Suitable HSE reward system shall be developed at site level to promote HSE compliance amongst workmen by the Contractor. To decide HSE reward, performance towards HSE shall be evaluated for workmen and it shall be awarded regularly in public gathering.
- If safety record of the Contractor in execution of the awarded job is to the satisfaction of safety department of ESCOM, issue of an appropriate certificate to recognize the safety

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performance of the Contractor may be considered by ESCOM after completion of the job.

11.0 OTHER REQUIREMENTS

- In case of any delay in completion of a job due to mishaps attributable to lapses by the Contractor, ESCOM shall have the right to recover cost of such delay from the payments due to the Contractor, after notifying the Contractor suitably.
- If the Contractor fails to improve the standards of safety in its operation to the satisfaction of ESCOM after being given reasonable opportunity to do so and/or if the Contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instruction regarding safety issued by ESCOM, ESCOM shall have the right to take corrective steps at the risk and cost of the Contractor after giving a notice of not less than 7 days indicating the steps that would be taken by ESCOM.
- If the Contractor succeeds in carrying out its job in time without any fatal or disabling injury incident and without any damage to property, ESCOM may, at its sole discretion, favorably consider to reward the Contractor suitably for the performance.
- In case of any damage to property due to lapses by the Contractor, ESCOM shall have the right to recover the cost of such damages from the Contractor after holding an appropriate enquiry.
- The Contractor shall take all measures at the sites of the work to protect all persons from incidents and shall be bound to bear the expenses of defense of every suit, action or other proceeding of law that may be brought by any persons for injury sustained or death owing to neglect of the above precautions and to pay any such persons such compensation or which may with the consent of the Contractor be paid to compromise any claim by any such person, should such claim proceeding be filed against ESCOM, the Contractor hereby agrees to indemnify ESCOM against the same.
- The Contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
- The Contractor shall notify ESCOM of his intention to bring to site any equipment or material which may create hazard.
- ESCOM shall have the right to prescribe the conditions under which such equipment or materials may be handled and the Contractor shall adhere to such instructions.

12.0 NON-COMPLIANCE

NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND ESCOM HAS THE RIGHT TO IMPOSE PENALTIES ON THE CONTRACTOR FOR EVERY INSTANCE OF VIOLATION NOTICED:

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The following are some of the non-conformities that may attract a penalty:

- Not Wearing Safety Helmet
- Not wearing Safety Belt or not anchoring life line
- Not wearing safety shoe
- Not keeping gas cylinders vertically
- Not using flash back arrestors
- Not wearing gloves
- Grinding Without Goggles
- Not using 24 V Supply for Internal Work
- Electrical Plugs Not used for hand Machine
- Not Slinging properly
- Using Damaged Sling
- Lifting Cylinders Without Cage
- Not Using Proper Welding Cable with Lot of Joints and Not Insulated Property.
- Not Removing Small Scrap from Platforms
- Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting
- Not Maintaining Electric Winches Which are Operated Dangerously
- Improper Earthing of Electrical
- No or improper barricading
- Activity carried out without Safety work permit (Height work, Lifting activity, Hot work- each person/case)
- Incident Resulting in Partial Loss in Earning Capacity
- Fatal Incident Resulting in total loss in Earning Capacity

This list is not exhaustive

Any other non-conformity noticed not listed above will also be fined as deemed fit by ESCOM. The decision of ESCOM engineer is final on the above. The amount will be deducted from running bills of the Contractor. The amount collected above will be utilized for giving award to the employees who could avoid incident by following safety rules. Also, the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.

13.0 HSE AUDIT/INSPECTION

- Regular HSE Audit/inspection shall be carried out by Contractor as per Site HSE audit calendar.
- HSE checklist (Annexure 02) shall be used for carrying out audit/inspection and report shall be submitted to ESCOM site management
- All non-conformities and observations on HSE identified during internal or external HSE audit shall be disposed of by site in a time bound manner and reported back the implementation status

- Corrective action and Preventive action on HSE issues raised by certification body issued by Regional HQs shall be implemented by site and reported to Site management.

14.0 MONTHLY HSE REVIEW MEETING

- Site shall hold HSE review meeting every month to discuss and resolve HSE issues of site and improve HSE performance. It will also discuss the incidents occurred since previous meeting, its root cause and Corrective action and Preventive action. The agenda is given below:
 - HSE performance
 - HSE inspection
 - HSE audit
 - HSE training
 - Health check-up camp
 - HSE planning for the erection and commissioning and installation activities in the coming month
 - HSE reward and promotional activities
- The meeting shall be chaired by Construction Manager, convened by HSE coordinator and attended by all relevant staff including Site In-charge of Contractors and HSE officer of Contractors

15.0 ELECTRICAL SAFETY DURING THE OPERATION PHASE

15.1 Principles of Risk Management

No person must carry out, or be directed to carry out, any Electrical Work for which they are not:

- qualified, licensed and competent to perform; or
- which may subject them or others to the potential for harm; or
- which may cause infrastructure or property damage.

All Electrical work must be risk assessed prior to the start of the work and measures must be put in place to mitigate the risks of the hazards that may be identified.

15.2 Requirements for Electrical Workers

ESCOM must ensure that staff members that are employed to work on electrical infrastructure are well qualified for their job and that they are duly registered with relevant regulatory bodies of their field.

The following must be observed:

- The list of electrical workers should be kept up to date.
- Electrical workers should be provided with adequate training, supervision, tools and equipment appropriate to the nature of the task assigned to them.

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- Trained safety observers should be made available as required.
- Electrical workers and safety observers have current competency in cardiopulmonary resuscitation and low volt rescue. It is good practice to renew these competencies every six months.
- Electrical workers are not allocated work for which they are not trained, licensed and assessed as competent to perform.

15.3 Requirements for Electrical Work

A safe work method statement (SWMS) or a documented risk assessment must be completed for electrical work. The specific items below must be addressed in the SWMS or risk assessment.

15.3.1 Determine whether Equipment is Energized

Before electrical work is performed on electrical equipment it must be tested to ensure it is not energized. For high voltage equipment, conductors must also be earthed. All exposed parts must be treated as live until tested.

15.3.2 Isolate Equipment (Lock Out Tag Out)

Equipment isolation points must be physically locked out and a tag or notice must be affixed to the lock or isolation point describing why and by whom the isolation was implemented as per Lockout-Tagout guidelines.

15.3.3 Energized (Live) Electrical Work

Working on energized (live) electrical equipment is prohibited except under the following conditions:

- The electrical equipment worked on provides a vital health and safety function.
- The electrical equipment must be energized (live) in order for the work to be carried out properly.
- In order to test.
- There is no reasonably practicable alternative.

The following work practices must be in place if energized (live) electrical work is performed:

- A risk assessment in relation to the live work must be completed.
- The area where the electrical work is to be performed must be kept clear of obstructions to allow for access and egress.
- The isolation point must be clearly marked and access and egress to this point must be established and maintained.
- The isolation point must be capable of being operated quickly.
- It is imperative that no contact occurs between the person and live parts while working on electrical equipment. This is normally achieved by using mats, gloves and other personal protective equipment.

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- Controls must be in place to ensure that there is no unauthorized access to equipment being worked on while it is live or energized.
- A safety observer is required for live work.

15.3.4 Work Methods

Work must be performed in accordance with the SWMS. Tools must be appropriate for the work, have been tested and maintained in good working order.

15.4 Electrical Substations and Switchboards

Substations can only be entered by authorized staff and contractors. Any work in these stations can only be completed once a risk assessment or SWMS has been reviewed and training requirements have been met.

In order to comply with the electrical safety regulations, two permit systems should be established in relation to the electrical substations. An access permit and an entry permit.

The access permit is required to perform work on electrical equipment in the substations and the entry permit is required to gain entry into the sub-stations. An entry permit is required regardless of the requirement to perform work in the substation.

At all times the restrictions related to the performance of live Electrical work must be observed.

Access to switchboards shall be restricted to licensed electrical workers only.

15.5 Electrical Safety to the Public

ESCOM must use different locally accessible media to educate the public on electrical safety especially during the rain seasons when there are many incidences of broken lines and badly leaning poles.

The following are some of the messages that could be disseminated:

- Avoid fallen electricity poles and power lines or anything in contact with these.
- Do not lift up any low-lying power lines.
- Do not raise fallen or badly leaning electricity poles or support structures.
- Do not jump over, go under, or touch broken or low hanging electricity power lines.
- Do not drive over fallen power lines.
- Stay inside a car if it is in contact with a fallen power line and tell others to stay away from the car. If the car has caught fire, jump out of the car without contact with the car or any other metal part of the car.

- Be careful not to touch water—or anything in contact with water—near where there is a downed power line.
- Prevent access to an area where there is a fallen electricity pole, or a broken or low hanging power line by putting warning signs to warn others of the immediate danger.
- Never touch or come close to vandalized electricity equipment.
- Report all vandalized ESCOM equipment to ESCOM faults center or to the nearest ESCOM Offices.
- Do not climb any tree that is touching or is near to power lines.
- Do not attempt to free somebody who is in contact with an electrical power line; but inform and alert the nearest ESCOM office, faults center and Police or Fire Brigade.
- Desist from doing any illegal electricity connections and extensions.
- Do not use electrical appliances that are wet.

16.0 ANNEXES

Annex 01: FIRST AID BOX

(1) The first-aid box shall be distinctively marked with a Red Cross on a white background and shall contain the following items, namely:

(a) For establishments in which the number of contract laborers employed does not exceed fifty, each first aid box shall contain the following equipment:

(i) 6 small sterilized dressings

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- (ii) 3 medium size sterilized dressings
- (iii) 3 large size sterilized dressings
- (iv) 6 pieces of sterilized eye pads in separate sealed packets.
- (v) 6 roller bandages 10 cm wide.
- (vi) 6 roller bandages 5 cm wide.
- (vii) One tourniquet
- (viii) A supply of suitable splints
- (ix) Three packets of safety pins.
- (x) Kidney tray.
- (xi) 3 large sterilized burn dressings.
- (xii) One (30ml) bottle containing a two percent alcoholic solution of iodine
- (xiii) One (30 ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label
- (xiv) One snake bite lancet
- (xv) One (30gms) bottle of potassium permanganate crystals.
- (xvi) One pair scissors
- (xvii) A bottle containing 100 tablets (each of 5 grains) of aspirin
- (xviii) Ointment for burns
- (xix) A bottle of suitable surgical anti-septic solution

(b) For establishment in which the number of contract labor exceeds fifty each first-aid box shall contain the following equipment:

- i. 12 small sterilized dressings
- ii. 6 medium size sterilized dressings
- iii. 6 large size sterilized dressings.
- iv. 6 large size sterilized burn dressings
- v. 6 (15 grams) packets sterilized cotton wool
- vi. 12 pieces of sterilized eye pads in separate sealed packets.
- vii. 12 roller bandages 10 cm wide.
- viii. 12 roller bandages 5 cm wide.
- ix. One tourniquet.
- x. A supply of suitable splints.
- xi. Three packets of safety pins.
- xii. Kidney tray.
- xiii. Sufficient number of eye washes bottles filled with distilled water or suitable liquid clearly indicated by a distinctive sign which shall be visible at all times.
- xiv. 4 per cent Xylocaine eye drops, and boric acid eye drops and soda by carbonate eye drops.
- xv. One (60ml) bottle containing a two percent alcoholic solution of iodine
- xvi. One (two hundred ml) bottle of mercurochrome (2 per cent) solution in water.
- xvii. One (120ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label.

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- xviii. 2roll of adhesive plaster (6 cmX1 meter)
 - xix. 2rolls of adhesive plaster (2 cmX1 meter)
 - xx. A snake bite lancet.
 - xxi. One (30 grams) bottle of potassium permanganate crystals.
 - xxii. One pair scissors
 - xxiii. A bottle containing 100 tablets (each of 5 grains) of aspirin for burns
 - xxiv. A bottle of a suitable surgical anti septic solution.
- (2) Adequate arrangement shall be made for immediate recoupmnt of the equipment when necessary.

Annex 02: HSE AUDIT/INSPECTION CHECKLIST / COMPLIANCE REPORT

Project	Contractor
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Occupational Health and Safety Management Framework for the Malawi Emergency Power Restoration

Date				
Inspection by				
Item	Yes	No	Remarks	Action
Housekeeping				
Waste containers provided and used				
Passageways and walkways clear				
General neatness of working area				
Other				
Personnel Protective Equipment				
Goggles; shields				
Face protection				
Hearing protection				
Respiratory masks etc				
Safety belts				
Other				
Excavations / Openings				
Openings properly covered or barricaded				
Excavations shored				
Excavations barricaded				
Overnight lighting provided				
Other				
Welding, Cutting				
Gas cylinders chained upright				
Cable and hoses not obstructing				
Fire extinguisher (s) accessible				
Others				
Scaffolding				
Fully decked platforms				
Guard and intermediate rails in place				
Toe boards in place				
Adequate shoring				
Adequate access				
Others				
Ladder				
Extension side rails 1 m above				
Top of landing				
Properly secured				
Angle + 70 degrees from horizontal				
Other				
Hoists, Cranes and Derricks				

Condition of cables and sheaf OK				
Condition of slings, chains, hooks OK				
Inspection & maintenance log maintained				
Outriggers used				
Signals observed and understood				
Qualified operators				
Others				
Machinery, Tools & Equipment				
Proper instruction				
Safety devices				
Proper cords				
Inspection and maintenance				
Other				
Vehicle and Traffic				
Rules and regulations observed				
Inspection and maintenance				
Licensed drivers				
Other				
Temporary Facilities				
Emergency instructions posted				
Fire extinguishers provided				
First-aid equipment available				
General neatness				
Others				
Fire Prevention				
Personnel instructed				
Fire extinguishers checked				
No smoking in prohibited areas				
Hydrants				
Clearance				
Others				
Electrical				
Proper wiring				
ELCB's provided				
Ground fault circuit interrupters				
Protection against damage				
Prevention of tripping hazards				
Other				
Handling & Storage of Materials				
Properly stored or stacked				
Passageways clear				
Other				
Flammable Gases and Liquids				

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Containers clearly identified				
Proper storage				
Fire extinguisher nearby				
Other				
Working at Height				
Safety nets				
Safety belts				
Safety helmets				
Anchoring of safety belt to the life line rope				
Environment				
Lubricant waste/engine oils properly dispose.				
Waste from Canteen, disposed properly. offices, sanitation etc.				
Disposal of surplus earth, stripping materials, expired batteries, oily r				
Health Checks				
Hygienic conditions at labor camps O.K.				
Availability of first-aid facilities				
Proper sanitation at site, office & labor camps.				
Arrangement of medical facilities.				
Measures for dealing with illness.				
Availability of potable drinking water for workmen & staff				
Provision of crèches for children.				

Annex 03: INSPECTION OF FIRST AID BOX

Occupational Health and Safety Management Framework for the Malawi Emergency Power Restoration

Name of Site	
Name of Contractor	
Inspection by	
Date of Inspection	

Number of Employees on the Site.....

No	Item	No Available	Remarks
	No. of small sterilized dressings		
	No of medium sized sterilized dressings		
	No of large sized sterilized dressings		
	No of dressings large sized sterilized burn		
	No of (15 grams) packets sterilized cotton wool		
	No of pieces of sterilized eye pads in separate sealed packets		
	No of roller bandages 10 cm wide.		
	No of roller bandages 5 cm wide		
	Whether tourniquet available		
	Whether supply available. of Suitable P splints		
	No of packets of safety pins		
	Whether kidney tray available		
	Whether sufficient number of eye wash bottles, filled with distilled water or suitable liquid, clearly indicated by a distinctive sign which shall be visible at all times, available.		
	Whether 4%-xylocaine eye drops, and boric acid eye drops and soda by carbonate eye drops available		
	Whether (60ml) bottle containing a two percent alcoholic solution of iodine available		
	Whether (two hundred ml) bottle of mercurochrome (2 per cent) solution in water available.		
	Whether 120ml bottle containing Sal volatile having the dose and mode of administration indicated on the label, available		

	Whether roll of adhesive plaster (6 cm x 1 meter) available		
	No of rolls of adhesive plaster (2 cm x 1 meter)		
	Whether snake bite lancet available.		
	Whether (30 grams) bottle of potassium permanganate crystals available		
	Whether a pair of scissors available		
	Whether bottle containing 100 tablets (each of 5 grains) of aspirin available		
	Whether Ointment for burns available		
	Whether bottle of a suitable surgical anti-septic solution available		

Signature of Contractor’s Site Manager:

Percussion	:
Auscultation (Breath Sounds)	:
<u>Examination of Abdomen</u>	
Inspection	
Palpation	
Auscultation (Bowel Sounds)	
<u>Any Other</u>	
<u>Clinical Impression</u>	

Signature of examining doctor.....

Annex 05: HSE INDUCTION TRAINING REGISTRATION FORM

Name of Site	
Name of Contractor	
Date	
Name of Training Coordinator	

No	Name	Designation	Organization	Signature

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Name of Training Coordinator.....

Annex 06: TOOLBOX TALK

Name of Site	
Name of Contractor	

Date	Topic	Name of person delivered Tool Box Talk	No. of Participants attended	Remarks

Signature of Site Manager of Contractor:

Annex 07: PERSONAL PROTECTIVE EQUIPMENT

Name of Site:	
Name of Sub-Contractor	
Inspected by:	
Date of Inspection	

Item	Issued this Month	Nos. Issued up to the Month	Percentage of usage at site

Signature of Site Manager of Contractor:

Annex 08: INSPECTION OF T&Ps

Name of Site:	
Name of Sub-Contractor	
Date of Inspection	

No	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	
2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs / overhauls (Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	YES/NO
5.0	Document Submitted	YES/NO
6.0	Manufacturer’s test / guarantee certificate	Available/Not available
7.0	Performance test	Done/Not done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	
	Signature-Site Safety Officer 	

Annex 09: STATUS OF T&Ps

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

Item	Nos. Deployed	Identification No.	Nos. Tested by competent person	Validity of Test Certificate
Winches				
Chain Blocks				
Wire Rope Slings				
Man Cages				
D-Shackles				
Air Compressors				
Crawler Cranes				
Mobile Cranes				
Hydra Cranes				
Others				

Signature of site Manager of Contractor.....

Annex 10: INSPECTION OF CRANES AND WINCHES

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

Crane Reg. No (Make/Model)

Name of Driver/Operator.....

No	Description	Observation	Measures
1	Valid Driving license		
2	Hook & Hook Latch		
3	Over Hoist limit switch		
4	Boom limit switch		
5	Boom Angle Indicator		
6	Boom limit cutoff switch		
7	Condition of Boom		
8	Condition of ropes		
9	Number of load lines		
10	Size and condition of the slings		
11	Stability of the cranes		
12	Soil Condition		
13	Swing Break and Lock		
14	Proper Break and Lock		
15	Hoist Break and Lock		
16	Boom Break and Lock		

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17	Main Clutch		
18	Leakage in Hydraulic Cylinders		
19	Out riggers fully extendable		
20	Tyre pressure		
21	Condition of Battery and Lamps		
22	Guards of moving and rotating parts		
23	Load chart provided		
24	Number and position of pedant ropes		
25	Reverse Horn		
26	Load Test Details		
27	Operator's fitness		
28	Fire extinguisher of appropriate type.		
29	Training of the operator		

WINCH

No.	Description	Observation	Measures
1	Has the copy of Third-Party Inspection certificate been provided in winch machine shed?		
2	Is winch machine operator experienced enough to operate the winch machine?		
3	Is the winch machine operated by someone other than the winch machine operator?		
4	Is there guard provided in all moving parts like wheel and motor's shaft?		
5	Will it protect against unforeseen operational contingencies?		
6	Are brakes, clutch and locking arrangement working properly?		
7	Has it been ensured that the guard does not constitute a hazard by itself?		
8	Are the cranks and the connecting rods protected by guardrails?		
9	Is there provision for fully covered shed with wooden plank roof?		
10	Is wire rope free from any kind of damage or wear and tear?		
11	Is split pin provided for the protection of clutch and brake locking arrangement?		

12	Is pulley inspected by competent person and certified before use?		
13	Is pulley free from any wear and tear visually?		
14	Is winch rope barricaded with clipsheet for the protection of rope and person?		
15	Is the wire rope lubricated by cardio oil?		
16	Is there any friction in wire rope which may damage the wire rope rather than the rolling parts?		
17	Is there any oil leakage in the hydraulic system of the winch machine?		
18	Has it been ensured that the guard will not cause discomfort or inconvenience to operator?		
	Total Number of NO:		
	Total Number of N/A:		
	% Compliance :		
Signature of Site Manager of Contractor.....			

Annex I I: INSPECTION OF HEIGHT WORKING

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

No.	Descriptions	Observation (YES/NO)	Remarks
1	All the workers have been explained safe work method?		
2	An established communication system has been established and explained to the workers.		
3	Adequate illumination has been ensured.		
4	Work area inspected prior to the start of the work		
5	Area below the work place barricaded, particularly below hot work.		
6	Workers provided with bags /box to carry bolts, nuts and hand tools		
7	Arrangement for fastening hand tools made.		

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8	All work platforms ensured to be of adequate strength and ergonomically suitable.		
9	Fabricated makeshift arrangements are checked for quality and type of material welding, anchoring etc.		
10	Work at more than one elevation at the same segment is restricted		
Access/Egress			
1	Walkways provided with handrail, mid-rail and toe guard?		
2	All checkered plates, gratings properly welded/ bolted?		
3	Are ladders inspected and they are in good condition?		
4	Are ladders spliced?		
5	Are ladders properly secured to prevent slipping, sliding or falling?		
6	Do side rails extend 36" above top landing?		
7	Are built up ladders constructed of sound materials?		
8	Are rugs and cleats not over 12" on center?		
9	Metal ladders not used around electrical hazards		
10	Proper maintenance and storage.		
11	Ladders placed at right slope		
12	Ladders / staircases welded/ bolted properly.		
13	Any obstruction in the stairs.		
14	Are landing provided with handrails, knee rails, toe boards etc.?		
15	Whether ramp is provided with proper slope		
16	Proper hand rails / guards provided in ramps.		
Housekeeping			
1	Walkways, aisles & all overhead workplaces cleared of loose material.		

2	Flammable materials, if any, are cleared.		
3	All the de shuttering materials are removed after de shuttering is done		
4	Platforms and walkways free from oil/grease or other slippery material.		
5	Collected scrap are brought down or lowered down and not dropped from height.		
PPE And Safety Devices			
	Use of safety helmet, safety belts ensured for all workers		
	Anchoring points provided at all places of work		
	Common lifeline provided wherever linear movement at height is required.		
	Safety nets are use wherever required.		
	Proper fall arrest system is deployed at critical workplaces.		
	Crawler boards/Safety system or works on fragile roof are used.		
Signature of Site Manager of the Contractor:			

Annex 12: INSPECTION OF WELDING AND GAS CUTTING

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

Welding				
No	Description	YES	NO	Remarks

1	Is electric connection given through 30 mA ELCB/RCCB to welding m/c?			
2	Is electric cable fitted properly in junction box on m/c?			
3	Is electrical cable free from joints?			
4	Are the joints attached firmly & insulated with tape?			
5	Is double earthing given to body of m/c?			
6	Is the physical condition of the m/c good?			
7	Is ON/OFF switch connected to the m/c is working and in good condition			
8	Are indication lamps on m/c working?			
9	Is the electrode holder in good condition?			
10	Are the cables of the welding m/c lugged & tight properly?			
11	Are return lead connected properly (Rod, Angle, Channels shall not be used)			
	Total No of NO			
	Total No of YES			
Gas Cutting				
1	Are Cylinders kept on trolleys?			
2	Physical condition of Gas cylinders Good?			
3	Is there Oil/Grease on valve of the cylinder?			
4	Are pressure regulators in good condition?			
5	Condition of hose pipe OK?			
6	Are hose pipe clamped with hose clip?			
7	Is flash back arrestor & NRV fitted on torch both for O2 and LPG cylinder?			
8	Is nozzle of the torch cleaned?			
	Total Number of NO			
	Total No of YES			

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	% Compliance	
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Signature of Site Manager of Contractor.....

Annex 13: INSPECTION OF ELECTRICAL INSTALLATION

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

No	Contents	YES/NO	Remarks
A	Cable		
1	Whether the condition of cable is checked?		
2	Are cables received from other sites checked for insulation resistance before putting them into use?		
3	Are all main cables taken either underground / overhead?		

4	Are welding cables routed properly above the ground?		
5	Are welding and electrical cables overlapping?		
6	Is any improper joining of cables/wires prevailing at site?		
B	DBs/SDBs		
1	Is earth conductor continued up to DB / SDB?		
2	Whether DBs and extension boards are protected from rain / water?		
3	Is there any overloading of DBs / SDBs?		
4	Are correct / proper fuses & CBs provided at main boards and sub-boards?		
5	Is energized wiring in junction boxes, CB panels & similar places covered all times?		
C	ELCB		
1	Whether the connections are routed through ELCB?		
2	Is ELCB sensitivity maintained at 30 mA?		
3	Are the ELCB numbered and tested periodically & test results recorded in a logbook countersigned by a competent person?		
D	Grounding		
1	Is natural earthing ensured at the source of power (main DB at Generator or Transformer)?		
2	Whether the continuity and tightness of the earth conductor are checked?		
4	Mention the gauge of the earth conductor used at the site.		
5	Mention the value of Earth Resistance.		
E	Electrically operated Machines or Accessories.		
1	Whether the plug top is provided everywhere.		
2	Are all metal parts of electrical equipment and light fittings / accessories grounded?		
3	Is there any shed or cover for welding machines?		

4	Are halogen lamps fixed at proper places?		
5	Are portable power tools maintained as per norms?		
6	Any other information:		
Signature of Site Manager of Contractor			

Annex 14: INSPECTION OF ELEVATOR

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

No	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	

2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs / overhauls (Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	YES/NO
5.0	Document Submitted	YES/NO
6.0	Manufacturer's test / guarantee certificate	Available/Not available
7.0	Performance test	Done/Not done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	

Annex 15: INSPECTION OF EXCAVATION

Name of Site:	
Name of Contractor	
Inspected by:	
Date of Inspection	

No	Description	YES	NO	Remarks
.				

1	Precautions taken for Underground Electrical Cable			
2	Precautions taken for Under / Above ground sewer/ Drinking Water Line			
3	Precautions taken for Underground Telecommunication Line			
4	Precautions taken for Underground Product/Utility Line			
5	Precautions taken for Underground Fire Water Line			
6	Shoring / Shuttering / Sheet piling done to prevent collapse of excavation walls. Strength of Excavation wall ensured at all times			
7	Slope Cutting / Angle Maintained			
8	Hard Barricading & Edge Protection provided			
9	Separate Safe Access for Man and Vehicle			
10	Lighting arrangement			
11	Banksman Provided			
12	Required basic PPEs provided			
13	Excavated soil / Construction Material / equipment kept away from the edge			
14	First aid in attendance.			
	Other			
	Total number of YES			
	Total number of NO			
<p>Signature Contractor's Safety Officer.....</p> <p>Signature-Site Safety Officer (ESCOM).....</p>				

Annex 16: INCIDENT REPORTING FORM

Month	Emergency Power Restoration Project-ESCOM Accident/Incident Report Form		
i	Name of person involved in Accident		Occupation :
ii	Address:		
	Phone:		

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iii	Who was involved in the accident 1.Main Contractor employee 2. Sub-contractor employee 3.Vistor 4.Public		
iv	Particulars of accident/incident & circumstances under which the accident/incident occurred: <i>(use additional pages and/or photos if necessary)</i>		
v	Place:		
vi	Time:	Date	
vii	Witness name, phone no. and address:		
vii	Witness name, phone no. and address:		
viii	When and to whom the accident/incident was officially reported?		
ix	Details of injury/damage 1. Bruising, Contusion 2. Concussion. 3.Internal injuries 4.Open wound 5.Amputation 6. Abrasion/graze 7. Open fracture 8.Closed fracture 9. Dislocation 10.Infection 11. Sprain/torn ligaments 12. Suffocation 13.Poisoning 14.Burns,scalds 15.Electrical injury 16. Property damage 17Others (specify)_____		
x	Indicate part of body seriously injured 1. Head except eyes 2. Eyes 3.Neck 4.Back, Spine 5.Abdomen 6.Chest 7.Shoulder, upper arm, elbow 8.Lower arm, wrist, hand 9.Finger,one or more 10.Hip joint thigh, knee cap 11.Foot 12. Knee joint, lower leg, ankle 14. Toes, one or more 15.Multiple injuries 16.Extensive part of the body 17. Others (specify)		
xi	Consequences of the accident 1. Insignificant-injury requiring no treatment or first aid 2. Minor-minor injury, first aid only required 3. Moderate –injury requiring medical treatment and some lost time 4. Major-serious injury, hospital treatment required 5.Catastrophic-death or permanent disability		
xii	Treatment:		
xiii	Doctor’s report and recommendations:		

xiv	Accident Investigation Findings:	
xv	Steps taken to prevent reoccurrence of this type of accident/incident:	
	Signature of person completing the report:	Date:
	Name and Job Title :	

Annex 17: CHECKLIST FOR EVALUATION OF HSE PERFORMANCE

No	Parameter for Measurement	M/O	Supporting Documents
I	Induction training for new workers conducted through audio-visual medium & documented ?	M	Induction training records

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2	Tool box talk conducted regularly as per plan, and documented?	M	Toolbox records
3	Contractor in charge and safety in charge attended safety meetings?	M	Minutes of meetings
4	Whether observations in safety meetings are complied before next meeting	M	Minutes of meetings
5	Preparation and submission of Monthly HSE report within stipulated time	M	Report submission date
6	Preparation and submission of Incident/near-miss report and RCA Report (as applicable) within stipulated time	M	Incident/near miss records
7	Carrying out Inspections and submission of Inspection reports within stipulated time	M	Inspection records
8	Regular Job Specific Training ensured for High Risk Workers (through audio-visual medium) as per plan	M	Training and attendance records
9	Whether the contractor is registered under construction regulatory authority	M	Registration certificates
10	Availability of Qualified safety officer (1 for every 500 labour)	M	Safety officers' qualification and experience records
11	Availability of Qualified safety supervisor (1 for every 100 labour)	M	Safety supervisor qualification and experience records
12	All the workers are provided and using safety helmets and safety shoes/gum boots	M	PPE Issue Records, Inspection/ non-conformity records
13	Housekeeping done on regular basis and scrap removal at site	M	Housekeeping records, Inspection/ non-conformity records
14	Usage of Goggles/Face shields and Hand gloves for gas cutter and grinders		PPE Issue Records, Inspection/ non-conformity records
15	Wall openings & floor openings are guarded?		Inspection/ non-conformity records
16	Adequate illumination provided in all working area?		Inspection/ non-conformity records
17	Safety posters, sign boards and emergency contact numbers in all prominent location are displayed?		Inspection/ non-conformity records
18	Availability of automatic reverse horns, Main horn, hook latches for Vehicles, mobile cranes, Hydras		Inspection/ non-conformity records
19	Availability of Tags & Inspection Certificates for Cranes of all capacities		Master T&P List with internal & external test details

20	Availability of Tags & Inspection Certificates for Winches of all capacities		Master T&P List with internal & external test details
21	Availability of Tags & Inspection Certificates, color coding for Chain pulley blocks		Master T&P List with internal & external test details
22	Availability of Tags & Inspection Certificates for Vehicles - Trailers, Dozers, Dumpers, Excavators. Mixers etc.		Master T&P List with internal & external test details
23	Availability of Tags & Inspection Certificates for Welding machines, grinders, Drilling machines, etc.		Master T&P List with internal & external test details
24	Availability of Tags & Inspection Certificates, colour coding for Wire rope slings etc.		Master T&P List with internal & external test details
25	Availability of Tags & Inspection Certificates for Batching plants		Master T&P List with internal & external test details
26	Use of Lifting Permit as per requirement		Permit Records
27	Use of Height Permit as per requirement		Permit Records
28	Use of Hot Work Permit as per requirement		Permit Records
29	Use of Excavation permit as per requirement		Permit Records
30	Use of Confined space work permit as per requirement		Permit Records
31	Use of Grating removal and safety net removal permit as per requirement		Permit Records
32	Use of Lockout-Tag out permit as per requirement		Permit Records
33	Use of Radiography permit as per requirement		Permit Records
34	Use of Night/ Holiday Work Permit as per requirement		Permit Records
35	Use of Any other Applicable Permit as per requirement		Permit Records
36	Material safety data sheet (MSDS) available for all chemicals and displayed in usage and storage area?		Inspection/ non-conformity records
37	Spillages of oil/concrete and other chemical is controlled and cleaned by proper method in case of spill?		Inspection/ non-conformity records
38	Availability of adequate number of urinals in workplace and in elevations and maintained	M	Inspection/ non-conformity records
39	Availability of rest rooms for workers at site	M	Inspection/ non-conformity records
40	Availability of Drinking water facility at work spot		Inspection/ non-conformity records

41	Hygienic Labour colony is provided for workers		Inspection/ non-conformity records
42	Is heavy/complex critical lifting permit obtained for heavy, complex materials before handling/erection activity?		Work Permit records
43	Whether area below lifting activities barricaded		Inspection/ non-conformity records
44	Availability of experienced rigging foreman		Experience details of rigging foreman
45	If agency is following proper storage and handling procedure as per manufacturer standard for all hazardous material?		Procedure for storage & handling
46	Are oxygen and acetylene cylinders are transported to work place from storage area in trolleys		Inspection/ non-conformity records
47	Whether all deep excavation has been protected by barrier		Inspection/ non-conformity records
48	Sloping/benching & shoring provided for excavation as per requirement?		Inspection/ non-conformity records
49	Proper access and egress provided for excavations?		Inspection/ non-conformity records
50	Blasting is done in controlled manner?		Inspection/ non-conformity records
51	Whether Electrical booth is equipped with Co2 fire extinguishers and fire buckets filled with sand?		Inspection/ non-conformity records
52	Availability of Illumination lamp in electric booth?		Inspection/ non-conformity records
53	whether Caution Boards have been displayed?		Inspection/ non-conformity records
54	Usage of Metal Plug top for all hand power tools ?		Inspection/ non-conformity records
55	Usage of Insulated welding cables.		Inspection/ non-conformity records
56	Electrical Booth/Distribution Board to be covered by proper Canopy.		Inspection/ non-conformity records
57	Availability of functional & individual 30ma ELCB / RCCB and MCB for protection and conducting periodical check-up?		Inspection/ non-conformity records
58	Double earthing for panel boards and all machinery & proper earth pit with regular inspection available?		Inspection/ non-conformity records
59	Whether Electrician is qualified and experienced		Qualification & Experience records of electrician
60	Availability and usage of Rubber hand gloves by electrician?		Inspection/ non-conformity records

61	Whether Scaffolding pipes made with steel or aluminum, are being used and checked periodically by experienced/ certified scaffolder?		Inspection/ non-conformity records
62	8mm Stainless Steel wire rope with plastic cladding is provided for life line (Vertical / Horizontal) during height work?		Inspection/ non-conformity records
63	Availability of emergency lighting in case of power failure		Inspection/ non-conformity records
64	Whether all the openings are covered with Safety Nets made of fire proof Nylon?		Inspection/ non-conformity records
65	Whether MS pipe rails around staircases & platforms in usage are provided with top, middle rails and toe guard ?		Inspection/ non-conformity records
66	Whether Ladder with vertical life line /Fall arrestor is available to climb?		Inspection/ non-conformity records
67	Whether all workers deployed for working at height have been issued height pass after undergoing vertigo test?		Height Pass records
68	Whether all workers deployed for height work / climbing ladder are provided and using Double lanyard safety belt?		PPE Issue records, inspection/ nonconformity reports
69	Is all hand tools/Small material used by height workers is tied firmly to prevent fall?		Inspection/ non-conformity records
70	Flash back arrestors for all gas cutting sets is available on Torch side and cylinder side		Inspection/ non-conformity records
71	Oxygen/Acetylene/LPG cylinders not in use have caps in place and stored separately?		Inspection/ non-conformity records
72	Availability of Face screen, Hand gloves, and Apron, for welders		Inspection/ non-conformity records
73	Protection from falling hot molten metal during metal cutting / welding at height by providing GI sheet below the cutting area especially in fire prone areas		Inspection/ non-conformity records
74	Pre-employment medical check-up done for all workers and submitted		Medical check records
75	Availability of first aid center, with MBBS doctor (Own or Sharing basis)	M	
76	Availability of Ambulance facility 24 hours (Own or sharing basis)	M	
77	If First aid trained personnel are available and their names are displayed at site?	M	
78	Availability of Emergency vehicle at site		
79	Periodical medical check-up is conducted for all the workers and submitted?		Medical check records

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80	Availability of sufficient number of first aid box as per standard list and maintaining record		Inspection records
81	Availability of Fire extinguishers, buckets at all vulnerable points		Fire extinguisher records
82	Periodic fire mock drill conducted?		Fire, Mock drill records
83	Are all flammable materials are stored separately?		
84	Periodic grass cutting is done in material storage area?		
85	Availability of 24V DC lighting in confined space work area		
86	Availability of exhaust fan in confined space work area		

Note: M: Mandatory; O: Optional. Points other than mandatory can be excluded with appropriate justification (scope etc.) by ESCOM

Annex 18: BURNING/WELDING /HOT WORK PERMIT

Project	Permit No.
Contractor	Emergency contact numbers

Area : **Date:** **Time:**

Name of Site Engineer..... Signature.....

Work Supervisor.....

Description of the work.....

Work execution date.....

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work

The following precautions are to be taken:

No	Item	Yes	Not required
1	Proper Access/Exit available		
2	Proper ventilation and /or lighting provided		
3	Proper and safe scaffolding, platform, ladder provided.		
4	Welding machine located in a clean and dry area.		
5	Welding machine grounded at the equipment and proper leakage current protection device (ELCB) provided for welding machine.		
6	Emergency STOP buttons are in working condition. Welder /Helper knows how to operate it.		
7	Welding machine input/output cables, welding holder and weld return clamp (Holder) are insulated and in good condition.		
8	Welder & Fitter trained to connect ground/work return clamps (Holder) to work place prior to energization of welding machine.		
9	Gas cylinders are stacked vertically and not below the welding / cutting area. Regulator key is available with cylinder.		
10	Pressure gauges/Flash back arrestor provided and in working condition.		

11	Personal Protective equipment Minimum applicable: safety helmet, safety goggles, welding helmet, safety shoes, leather gloves, long sleeve and nose mask -provided		
12	In case of pits, water removed from the pit and wood/rubber insulation provided.		
13	Safety signboards are in place.		
14	Adequate and Suitable nos. of fire fighting extinguisher provided.		
15	Nearby combustible material removed. Housekeeping done.		
16	Other		

Name of Contractor Safety Officer: **Sign:**..... **Date:** **Time**.....

Reviewed and approved by Site Engineer (Permit Issuing Authority):

Name..... **Signature**..... **Date**..... **Time**.....

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority: **Sign:**..... **Date:** **Time:**.....

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition.

Name of Work performing Authority:..... **Sign**..... **Date**..... **Time**.....

Name of Site Engineer..... **Sign**..... **Date**..... **Time**.....

(This permit is valid only for the date it is issued)

Annex 19: LIFTING ACTIVITY PERMIT

Project	Permit No.
Contractor	Emergency contact numbers

Area : **Date:** **Time:**

Name of Site Engineer..... Signature.....

Work Supervisor.....

Description of the work.....

Work execution date.....

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work

The following precautions are to be taken:

No	Item	Yes	Not required
1	Crane used for lifting activity tested, certified and approved for rated lifting		
2	All lifting tackles, gears/appliances are tested and certified for lifting works		
3	Crane operator is trained and competent for lifting operation		
4	Lifting sling/ belt is protected against sharp edge of the jobs to be lifted.		
5	Access and exit marked and without obstruction		
6	Lifting arrangement adequate		
7	Unwanted rubbish material removed from work platform.		
8	Minimum 2 guidelins have been provided for balancing and guiding jobs to be lifted		

9	Periphery area of crane booms as well as lifting job is barricaded and unauthorized/no-entry sign board posted.		
10	Rigger and signal man is trained and competent for lifting work		
11	No lifting activity to be carried out during lightening, heavy wind/rain.		
12	If scaffolding to be used during lift, scaffolding with valid tag available for use.		
13	Double lanyards safety harness/belt checked an in working condition.		
14	Safety shoes (non-slip), helmet with chin strap available with employees.		
15	Others.		

Name of Contractor Safety Officer: **Sign:**..... **Date:** **Time**.....

Reviewed and approved by Site Engineer (Permit Issuing Authority):

Name..... **Signature**..... **Date**.....
Time.....

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority: **Sign:**..... **Date:**
.....**Time:**.....

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition.

Name of Work performing Authority:..... **Sign**.....
Date..... **Time**.....

Name of Site Engineer..... **Sign**..... **Date**.....
Time.....

(This permit is valid only for the date it is issued)

Annex 20: WORKING AT HEIGHT PERMIT

Project	Permit No.
Contractor	Emergency contact numbers

Area : **Date:** **Time:**

Name of Site Engineer..... Signature.....

Work Supervisor.....

Description of the work.....

Work execution date.....

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work

The following precautions are to be taken:

No	Item	Yes	Not required
	All workers on job are medically fit for working at height (Person should not have vertigo)		
	Scaffolding with valid tag available for use		
	Safety harness with life line support/ fall arrester are checked and in working condition		
	Safety shoes (non-slip), Helmet with chin strip available with employees		
	Safety nets are provided as per design and provided 25 ft. below working area & extending 8 ft beyond.		

	Horizontal life lines are provided to cater to design specification of 2300kg per person.		
	Ladders have been inspected and provided as per BHEL standard/contract.		
	All lifting / tightening tools, hand tools/equipment checked and in good condition		
	Access and exit marked and without obstruction.		
	Lighting arrangement adequate		
	Unwanted and rubbish material removed from working platform		
	Electrical cable, welding Hose/Compressed air hose properly secured and lay down without obstruction.		
	Signboards provided on working platforms		
	Hazards in the vicinity are identified and communicated to the worker.		
	Other		

Name of Contractor Safety Officer: **Sign:**..... **Date:** **Time**.....

Reviewed and approved by Site Engineer (Permit Issuing Authority):

Name..... **Signature**..... **Date**.....
Time.....

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority: **Sign:**..... **Date:**
.....**Time:**.....

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition.

Name of Work performing Authority:..... **Sign**.....
Date..... **Time**.....

Name of Site Engineer..... **Sign**..... **Date**.....
Time.....

(This permit is valid only for the date it is issued)

