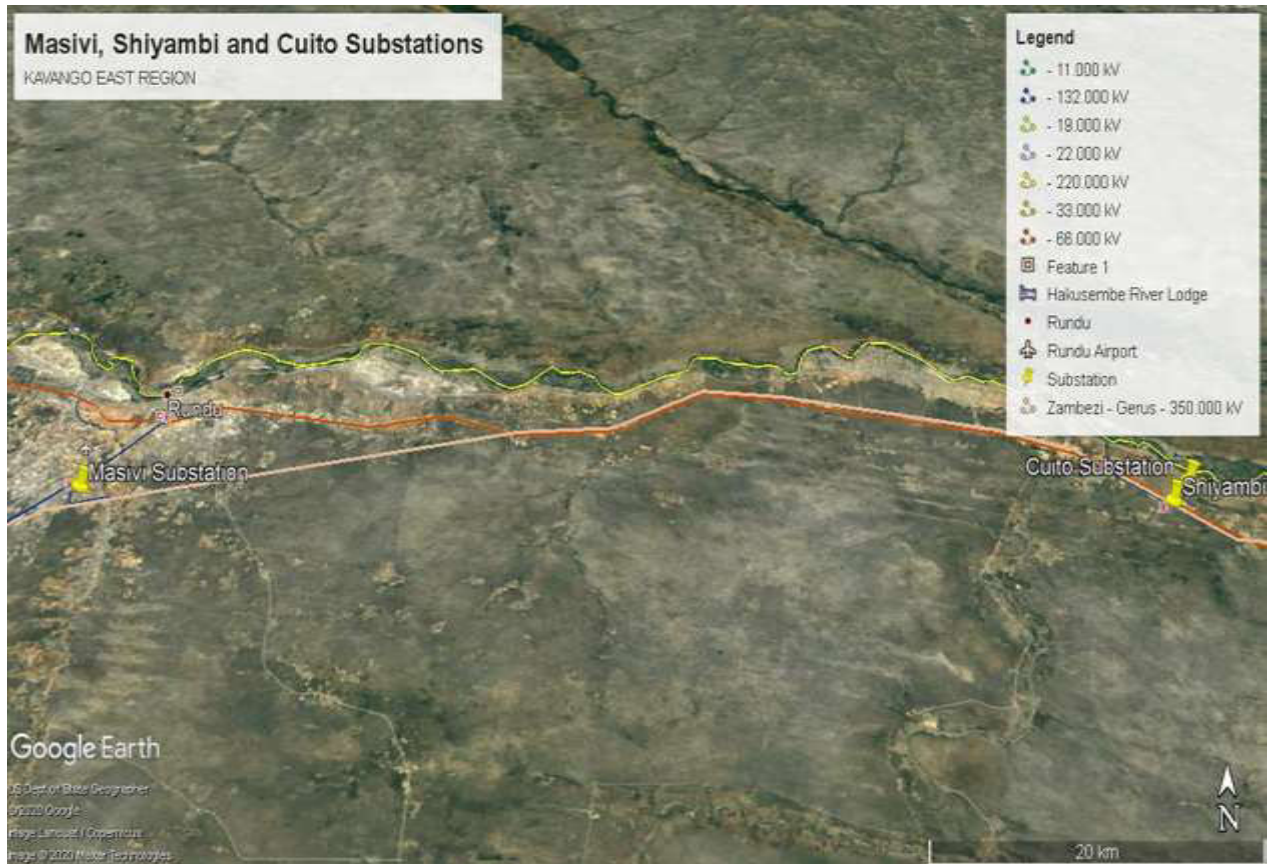


**ENVIRONMENTAL MANAGEMENT PLAN FOR THE CONSTRUCTION AND OPERATION OF THE 132kV TRANSMISSION LINE FROM MASIVI TO SHIYAMBI SUBSTATION AND 33kV TRANSMISSION LINE FROM SHIYAMBI TO CUITO SUBSTATION AND RELATED INFRASTRUCTURE.**



**THE DOCUMENT IS PREPARED BY  
NAMPOWER'S SHEW SECTION. MAY  
2023**

**NAMIBIA POWER CORPORATION (PTY)  
LTD**

**P.O. BOX 2864**

**WINDHOEK,**

**15 LUTHER STREET**

**TEL: +264 205 4111**



## Table of Contents

<b>1</b>	<b>LIST OF TERMS, ACRONYMS AND ABBREVIATIONS</b> .....	<b>3</b>
<b>2</b>	<b>INTRODUCTION</b> .....	<b>4</b>
<b>3</b>	<b>OBJECTIVES AND SCOPE OF THIS ENVIRONMENTAL MANAGEMENT PLAN (EMP)</b> .....	<b>5</b>
<b>4</b>	<b>POLICY AND LEGISLATIVE FRAMEWORK</b> .....	<b>6</b>
<b>5</b>	<b>ROLES AND RESPONSIBILITIES</b> .....	<b>11</b>
<b>6</b>	<b>DESCRIPTION OF OPERATIONAL ACTIVITIES TO BE UNDERTAKEN AND ASSOCIATED IMPACTS</b> .....	<b>13</b>
<b>7</b>	<b>MANAGEMENT AND MITIGATION MEASURES</b> .....	<b>16</b>
<b>8</b>	<b>REPORTING, MONITORING AND AUDITING</b> .....	<b>27</b>
<b>9</b>	<b>NON-COMPLIANCE AND CONFLICT MANAGEMENT PROCEDURES</b> .....	<b>27</b>
<b>10</b>	<b>RECORD KEEPING</b> .....	<b>27</b>
<b>11</b>	<b>CONCLUSION</b> .....	<b>28</b>

## 1 LIST OF TERMS, ACRONYMS AND ABBREVIATIONS

EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act no 7 of 2007
EMP	Environmental Management Plan]
GIS	Geographical Information System
HIV/AIDS syndrome.	Human immunodeficiency virus/ acquired immunodeficiency
MEFT	Ministry of Environment, Forest and Tourism
NHC	National Heritage Council
SHE	Safety, Health and Environment
SHEW	Safety, Health, Environment and Wellness
kV	Kilovolt

## 2 INTRODUCTION

To carry out its mandate of transmission and distribution of electricity, NamPower has transmission and distribution networks across all regions countrywide. The total footprint of the developments covers 446.45 hectares inclusive of substations and lines.

### 2.1 Project description

Masivi Substation is located 10km south of Rundu and Shiyambi and Cuito Substations are located approximately 88km from Rundu towards Divundu, in the vicinity of Ndonga Linena Irrigation scheme . NamPower completed the construction of the Masivi -Shiyambi 132kV transmission line in 2015, the Shiyambi-Cuito 33kV distribution line was completed in 2028. Masivi Substation and Shiyambi substation are under construction and envisaged to be completed later in 2023.

The Operational Environmental Management Plan will cover the following:

1. Masivi Substation
2. Shiyambi Substation
3. Cuito Substation
4. Masivi-Shiyambi 132kV Transmission line ( Approximately 90km distance).
5. Shiyambi –Cuito 33kV distribution line and associated rural electrification in the surrounding area( Approximately 3km).
6. Existing Otjiko-Rundu 132kv Transmission line Masivi Substation tie in ( 1 km distance covered).
7. Existing Rundu-Mahango 66kV Transmission line Shiyambi tie in ( approximately 1km distance covered).

### **3 OBJECTIVES AND SCOPE OF THIS ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

The construction and operational activities of the transmissions lines and substations can have a negative impact on the receiving environment. However, the impacts are limited to the line servitude and fenced off substation areas. It is thus important that good management measures are implemented to ensure that environmental damage is minimised. This Environmental Management Plan (EMP) seeks to manage and keep to a minimum the negative impacts and at the same time, enhance the positive impacts.

The scope of this EMP include all activities associated with the construction and operation of the associated transmission lines, access roads and Substations, namely Masivi Substation, Shiyambi substation and Cuito Substation. It is necessary to highlight that the EMP is a living document that should be periodically reviewed and updated. It must also be noted that the EMP should be read in conjunction with laws and regulations.

The aim of this EMP is to detail the management actions required to implement the mitigation measures identified thereby ensuring that any construction activities operational phase activities are carried out in a manner that takes cognisance of environmental protection and is in line with legal.

This EMP has the following objectives:

- To outline mitigation measures to be implemented during the operation phase, in order to manage and minimize the extent of environmental impacts.
- Minimize negative impacts and enhance positive impacts associated with the operations.
- To ensure that the operational activities do not result in undue or reasonably avoidable adverse environmental impacts and ensure that any potential environmental benefits are enhanced.
- To identify key personnel who will be responsible for the implementation of the measures, outline functions and responsibilities.
- To propose mechanisms for monitoring compliance and preventing long term or permanent environmental degradation.
- To ensure that the concerns and complaints of Interested and Affected Parties (I&APs) with regards to the operational and maintenance activities are addressed effectively

and timely.

- Ensure compliance to legislative requirements.

#### 4 POLICY AND LEGISLATIVE FRAMEWORK

**Table 1: The legislative requirements which are applicable to the operational and maintenance activities include but not limited to:**

<b>Legislation:</b>	<b>Section (s) applicable:</b>	<b>Implications:</b>
Environmental Management Act no 7 of 2007	Section 3  Section 27  Section 33 onwards  And all other applicable sections.	<ul style="list-style-type: none"><li>• All activities performed should be in line with the following principles:<ul style="list-style-type: none"><li>○ Interested and affected parties should have an opportunity to participate in decision making</li><li>○ Listed activities should be subject to an EIA</li><li>○ Polluter should pay for rehabilitation</li><li>○ Pollution should be minimized</li></ul></li><li>• Environmental assessments should be carried out for listed activities. The proposed activity can be classified under the following range of activities:<ul style="list-style-type: none"><li>○ Generation of electricity</li><li>○ Transmission of electricity</li></ul></li><li>• These sections details the process to be followed in order to obtain a clearance certificate.</li><li>• All existing listed activities must obtain a clearance certificate within one year</li></ul>

		of the law coming into effect. Therefore, all existing activities which can be considered a listed activity should apply for clearance.
EMA Regulations GN 28-30 (GG 4878) (February 2012)	<ul style="list-style-type: none"> <li>Listed activity:</li> <li>5.1</li> <li>6 – 9; 13; 15; 21 -24</li> <li>Any other applicable sections</li> </ul>	<ul style="list-style-type: none"> <li>This activity can be considered as electricity generation and transmission.</li> <li>These sections details the process to be followed in terms of producing an Environmental Assessment and this process should be adhered to during the generation of information for this document.</li> </ul>
No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work .	All applicable regulations	All regulations applicable to different activities must be complied to.
Labour Act no 11 of 2007	<ul style="list-style-type: none"> <li>Section 3</li> <li>Section 4</li> <li>Section 9</li> <li>Section 39 – 42</li> <li>All other applicable sections</li> </ul>	<ul style="list-style-type: none"> <li>Children under the age of 16 may not be employed</li> <li>Forced labour may not be used.</li> <li>Basic conditions of employment as stipulated by the law must be met.</li> <li>The employer shall ensure the health and safety of all employees and non-employees on site. Employees must fulfil their duties in order to ensure their own health and safety and that of other employees and persons. Employees may leave the work site if reasonable measures to protect their health are not taken.</li> </ul>
Electricity Act no 4 of 2007	<ul style="list-style-type: none"> <li>Section 33</li> </ul>	<ul style="list-style-type: none"> <li>Installations used for the provision of electricity should be operated with due</li> </ul>

		<p>compliance with the requirements of laws relating to health, safety and environmental standards. Therefore – any company involved within the Electricity Supply Industry must adhere to the laws covering the previously stated aspects or stand to lose their licenses to operate.</p>
Water Act no 54 of 1956	<ul style="list-style-type: none"> <li>• Section 21 and 132</li> <li>• Section 23</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Conditions in terms of the disposal and management of effluent are to be adhered to.</li> <li>• Any person causing pollution to a water source shall be guilty of an offence.</li> </ul>
Public and Environmental Health Act no 1 of 2015	<ul style="list-style-type: none"> <li>• Section 52</li> <li>• Section 53</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• A person generating waste must ensure that the waste generated is kept and stored under conditions that causes no harm to human health or damage to the environment.</li> <li>• Waste must only be disposed of at a waste disposal site, including an incinerator approved by the local authority concerned.</li> </ul>
Water Resources Management Act no 24 of 2013	<ul style="list-style-type: none"> <li>• Section 89</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• The owner or occupier or other person in control of land where an incident that causes or is likely to cause a water resource to be polluted must take all reasonable measures to contain and minimize the effects of the incident; and to clean up polluted areas and remedy the effects of the incident.</li> </ul>
Hazardous Substances Ordinance 14 of 1974	<ul style="list-style-type: none"> <li>• Section 27</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• To provide for the control of substances which may cause injury or ill-health to or death of human beings, by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the</li> </ul>



		<p>generation of pressure thereby in certain circumstances;</p> <ul style="list-style-type: none"> <li>• To provide for the division of such substances into groups in relation to the degree of danger;</li> <li>• To provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and</li> <li>• To provide for matters connected therewith.</li> </ul>
<p>Fertilizers, farm feeds, agricultural remedies and stock remedies Act no 36 of 1947</p>	<ul style="list-style-type: none"> <li>• Definitions</li> <li>• Section 7</li> <li>• Section 10</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Arborocide application is defined as an agricultural remedy under this Act</li> <li>• Only registered pesticide may be used.</li> <li>• May only buy herbicides in a container that complies with the prescribed requirements and is sealed and labelled.</li> <li>• Only allowed to use herbicides in the prescribed manner.</li> <li>• Land owners must be notified about applications, and the following information must be supplied: <ul style="list-style-type: none"> <li>○ Purpose of administration</li> <li>○ Registered name and number of the product</li> </ul> </li> <li>• Precautions to be taken before, during and after each administration.</li> </ul>
<p>The Nature Conservation Ordinance (1975) as</p>	<ul style="list-style-type: none"> <li>• Chapter 11: Game Parks, Nature</li> </ul>	<ul style="list-style-type: none"> <li>• Permits are required to enter the National Park. Permits are also required for the</li> </ul>

amended through the Nature Conservation Amendment Act of 1996.	Reserves, Conservancies and Wildlife Councils	removal of any protected plant or tree. It also stipulates that no damage may be done to any object of geological, ethnological, archaeological, historical or other scientific interest without the appropriate permits.
National Heritage Act No 27 of 2004	<ul style="list-style-type: none"> <li>• Section: 46, 48, 55</li> <li>• All other sections applicable to different activities.</li> </ul>	<ul style="list-style-type: none"> <li>• All heritage resources are to be identified and either protected or removed/mitigated with a permit from the National Monuments Council, before any development may take place</li> <li>• A chance find procedure should be followed in case of discovery of a heritage resource.</li> </ul>
Soil Conservation Act no 76 of 1969	<ul style="list-style-type: none"> <li>• Section 4</li> <li>• Section 13</li> <li>• Section 21</li> <li>• And other applicable sections</li> </ul>	<ul style="list-style-type: none"> <li>• Institutions may be ordered by the relevant Minister to construct soil conservation works when and where necessary.</li> <li>• Fire protection schemes may be implemented to regulate the prohibition of veld burning as well as the prevention, control and extinguishing of veld and forest fires.</li> <li>• It is illegal to damage, destroy / fail to maintain any soil conservation works; fire belts; works constructed in terms of a fire protection scheme.</li> </ul>
Forest Act no 12 of 2001	<ul style="list-style-type: none"> <li>• Section 132</li> <li>• Section 41</li> <li>• And other applicable sections</li> </ul>	<ul style="list-style-type: none"> <li>• Vegetation may not be removed within 100 m of a river, stream or water course</li> <li>• A person shall be liable for damage caused by any fire which arises as a result of activities carried out on site without having taken reasonable measures to prevent a fire.</li> </ul>

## 5 ROLES AND RESPONSIBILITIES

It is the responsibility of NamPower and/or contractor to ensure that all the environmental management actions are carried out effectively and timeously. It is important to note that the successful implementation of the EMP is, however dependent on clearly defined roles and responsibilities by several stakeholders. Below are the key employees that are responsible for the management of environmental and social issues during the operational phase:

**Table 2: The roles and responsibilities for construction and operational activities:**

Responsible person	Responsibilities
The Area Superintendent	<ul style="list-style-type: none"> <li>• Is responsible for the enforcement of the EMP.</li> <li>• To ensure that environmental requirements are adequately covered in any external service provider contracts.</li> <li>• To ensure that SHE requirements are included in the tender documents sent to the contractors. A copy of this EMP should also form part of the tender documents.</li> <li>• To ensure that corrective actions are implemented for non-compliances.</li> <li>• To ensure that appropriate records and information regarding compliance with environmental requirements are maintained.</li> <li>• To ensure that the line and substation remain in compliance with the requirements of this EMP, through regular communication and monitoring.</li> <li>• To ensure that all incidents, accidents, and complaints are reported. To also ensure that incidents and accidents are investigated to prevent re-occurrence.</li> <li>• Ensuring that the work being done does not create a nuisance to any being working, residing, or living on adjacent properties or within the immediate surroundings of the site.</li> </ul>
Project Manager	<ul style="list-style-type: none"> <li>• Is responsible for the enforcement of the EMP.</li> </ul>

	<ul style="list-style-type: none"> <li>• To ensure that SHE requirements are included in the tender documents sent to the contractors.</li> <li>• Must ensure that the contractor remains in compliance with the requirements of this EMP.</li> <li>• Ensuring that the work being done does not create a nuisance to any being working, residing or living on adjacent properties or within the immediate surroundings of the site.</li> <li>• To ensure that all incidents, accidents and complaints are reported. To also ensure that incidents and accidents are investigated to prevent re-occurrence.</li> </ul>
NamPower SHEW	<ul style="list-style-type: none"> <li>• To ensure that all requirements with regards to this EMP are enforced by contractors/NamPower's employees.</li> <li>• Communicate NamPower SHEW requirement to the contractors and NamPower employees.</li> <li>• Provides SHEW inductions to NamPower and contractor employees.</li> <li>• Implement monitoring, conduct inspections and audits in consultation with the Project Manager/Area Superintendent.</li> <li>• Document and communicate monitoring, audit and inspection findings to project manager and area superintendent.</li> <li>• Communicate the final inspection report to the Project manager on contractor compliance to the EMP before the project close-off and final payment is made to the contractor.</li> </ul>
Contractor	<ul style="list-style-type: none"> <li>• Is responsible for the enforcement of the EMP.</li> <li>• To appoint a SHE officer responsible for the implementation of this EMP.</li> <li>• To ensure that all tasks undertaken under the scope of work, are in accordance both with NamPower's SHEW policies</li> </ul>

	<p>and procedures as well as to the requirements of this EMP.</p> <ul style="list-style-type: none"> <li>• Ensure that employees are regularly trained, and awareness built relating to environmental and social management.</li> <li>• To ensure that all incidents, accidents, and complaints are reported to the project manager. The contractor to ensure that incidents and accidents are investigated to prevent re-occurrence.</li> <li>• Ensuring that all employees receive a SHEW induction before the start of the project.</li> <li>• Ensuring that the work being done does not create a nuisance to any being working, residing, or living on adjacent properties or within the immediate surroundings of the site.</li> </ul>
--	--

## 6 DESCRIPTION OF CONSTRUCTION AND OPERATIONAL ACTIVITIES TO BE UNDERTAKEN AND ASSOCIATED IMPACTS

The table below outlines the summary of the operational activities and associated socio-economic and environmental impacts.

**Table 3: The operational activities include but not limited to:**

Activity	Description	Associated potential impacts
<b>General functioning of the transmission lines and substations.</b>	<ul style="list-style-type: none"> <li>• Physical presence and functional characteristics of the line.</li> <li>• Transmission of electricity.</li> <li>• Communication via OPGW installation on the</li> </ul>	<ul style="list-style-type: none"> <li>• Animal (including birds) mortalities through collisions and electrocution.</li> <li>• Death of avifauna, especially protected spp.</li> <li>• Visual impact.</li> <li>• Community impacts in a form fatalities or injuries caused by electrocution.</li> <li>• Meeting electricity demand (positive</li> </ul>

	<p>transmission lines.</p> <ul style="list-style-type: none"> <li>• Road access and servitude.</li> </ul>	<p>impact).</p>
<p><b>Construction / upgrades and Maintenance of the line and substation</b></p>	<p>The maintenance of the line entail but not limited to:</p> <ul style="list-style-type: none"> <li>• Repairing of line components.</li> <li>• Maintenance of electrical equipment/ line's components.</li> <li>• civil work, mechanical installations and electrical testing and commissioning.</li> <li>• Construction of temporary or permanent buildings (digging and setting of foundations, digging of cable, Extension of boundary fences, extension and upgrade of the substation, construction of additional feeders, upgrade</li> </ul>	<ul style="list-style-type: none"> <li>• Soil and water contamination</li> <li>• Waste generation leading to filling up of landfill space.</li> <li>• Destruction of vegetation; vertebrate fauna; avifauna especially protected spp. and sensitive habitats.</li> <li>• Social issues such as introduction of new workers in the area, e.g., HIV/AIDS spreading.</li> <li>• Loss of human life (through electrocution).</li> </ul>

	of electrical equipment (either in size, capacity, or technology	
<b>Refurbishment/Construction</b>	<ul style="list-style-type: none"> <li>• Refurbishment of the line components and substations.</li> <li>• Construction and/or repair of excess roads.</li> </ul>	<ul style="list-style-type: none"> <li>• Noise emissions.</li> <li>• Air emissions.</li> <li>• Introduction of new people in the area leading to the spread of diseases such as HIV/AIDS.</li> <li>• Soil and water contamination.</li> <li>• Waste generation leading to filling up of landfill space.</li> <li>• Employment of casual workers.</li> <li>• Loss of biodiversity reduces habitat availability and food sources for many animals.</li> <li>• Loss of sensitive plants and habitats.</li> <li>• Loss or damage of heritage resources.</li> </ul>
<b>Periodic inspections and monitoring</b>	Periodic inspections and monitoring of the line.	<ul style="list-style-type: none"> <li>• Soil and ground water contamination because of oil spills</li> <li>• Soil contamination because of improper waste handling and disposal.</li> <li>• Loss of biodiversity if existing access roads are not use.</li> </ul>
<b>Installation of Optic Fibre networks</b>	<ul style="list-style-type: none"> <li>• Design, Supply, Delivery, Installation and Commissioning of</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of biodiversity</li> <li>• Soil contamination because of improper waste handling and disposal.</li> </ul>

	Optic Fiber networks for communication purposes.	<ul style="list-style-type: none"> <li>• Loss of sensitive plants and habitats.</li> </ul>
<b>Vegetation Management</b>	<ul style="list-style-type: none"> <li>• Removal of trees, bushes or grass to maintain access to the line servitude.</li> </ul>	<ul style="list-style-type: none"> <li>• Destruction of vegetation; vertebrate fauna; avifauna especially protected spp. and sensitive habitats.</li> <li>• Conflict with landowners.</li> <li>• Loss of topsoil.</li> <li>• Soil and water contamination.</li> <li>• Loss or damage of heritage resources.</li> <li>• Soil erosion.</li> <li>• Destruction of sensitive habitats.</li> </ul>

## 7 MANAGEMENT AND MITIGATION MEASURES

To ensure that the potential impacts are eliminated and/or minimised, it is necessary to ensure that the various activities related to the operation of the powerline are adequately managed and monitored. Table 4 below outline mitigation measures as well as objectives to be achieved. A responsible person (s) has been assigned to each mitigation measure (s).



**Table 4: Proposed mitigation measures for the general operational activities**

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
<b>Safety Health and Environmental (SHE) Awareness</b>	<ul style="list-style-type: none"> <li>• All employees should undergo SHE induction before work commences onsite.</li> <li>• All employees are to be made aware of their individual roles and responsibilities in achieving compliance with the EMP.</li> <li>• SHE toolbox talks to be conducted and records to kept onsite.</li> <li>• Signage must be placed on and around the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project manager</li> <li>• SHEW</li> <li>• Contractor</li> </ul>
<b>Safety Management</b>	<ul style="list-style-type: none"> <li>• Develop and implement an occupational health and safety system that comprises key elements such as risk assessment and safe working procedure.</li> <li>• NamPower SHEW requirements must be complied with.</li> <li>• All work activities to be done under the supervision of a competent person.</li> <li>• Appropriate warning signs must be placed on the facilities.</li> <li>• SHE file to be submitted in case of projects in accordance with NamPower SHE requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project manager</li> <li>• Contractor</li> </ul>
<b>Fire Management</b>	<ul style="list-style-type: none"> <li>• Eliminate the presence of potential sources of ignition and provide appropriate equipment to minimize fire risk.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> </ul>

<b>ASPECT</b>	<b>MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS</b>	<b>RESPONSIBLE PERSON</b>
	<ul style="list-style-type: none"> <li>• Fire extinguishers to be readily available in vehicle or onsite in case of camping.</li> <li>• Regular servicing of fire extinguishers.</li> <li>• Firefighting training to be provided to employees.</li> <li>• Maintain fire breaks.</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager</li> <li>• Contractor</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Dust generation from all activities must be minimised.</li> <li>• Excavation, handling and transportation of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present.</li> <li>• Speed limit to be enforced to control dust emissions.</li> <li>• Dust suppression measures shall be implemented when necessary.</li> <li>• Vehicle, machinery and equipment shall be maintained in good working order in order to minimise exhaust fume emissions.</li> <li>• Vehicle, machinery and equipment must be serviced by competent personnel and records must be kept onsite</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project manager</li> <li>• Contractor</li> </ul>
<b>Resources Efficiency</b>	<ul style="list-style-type: none"> <li>• Minimise water wastage and record water usage.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	<ul style="list-style-type: none"> <li>• Avoid wasteful use of materials.</li> <li>• Source goods and services locally where possible</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager</li> <li>• Contractor</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>• Minimise the generation of waste by applying the waste hierarchy.</li> <li>• Line servitude to be kept free of waste.</li> <li>• No burning, burying or dumping of any waste materials shall be permitted onsite.</li> <li>• Labelled waste bins with lids must be provided at campsites (in case of a project) for all waste streams and ensure that waste is disposed at nearest approved waste disposal site.</li> <li>• Ensure that waste segregation is done at source.</li> <li>• Waste must be disposed at a licensed waste facility.</li> <li>• Hazardous waste shall be disposed of at a registered hazardous waste disposal site.</li> <li>• Safe disposal certificates for hazardous waste must be kept in the SHE file.</li> <li>• Concrete waste must not be dumped on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project manager</li> <li>• Contractor</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
<b>Wastewater management</b>	<ul style="list-style-type: none"> <li>• Water containing environmental pollutants shall be collected and removed from site.</li> <li>• No wastewater runoff or uncontrolled discharges from the site/working areas shall be permitted.</li> <li>• Mobile toilets or septic tanks should be used in remote areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Project manager</li> <li>• Contractor</li> <li>• Area superintendent</li> </ul>
<b>Hazardous Substances</b>	<ul style="list-style-type: none"> <li>• The use, handling, storage and disposal of the hazardous chemical must be in accordance with the MSDS.</li> <li>• Containers must be clearly marked to indicate contents and quantities.</li> <li>• Hazardous substances storage areas must be bunded. A bund should be able to contain 110% of the volume of the largest container stored within it.</li> <li>• Diesel and other liquid fuel must be stored in appropriate storage tanks or in bowsers with secondary containment.</li> <li>• Inspect and maintain hazardous storage areas to avoid overflows.</li> <li>• Ensure that drip trays are available, to be use in case of leaking equipment.</li> <li>• Spill kit and absorbents must be available onsite at campsite.</li> <li>• Hazardous substance storage areas must display safety symbolic signs.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project manager</li> <li>• Contractor</li> </ul>

<b>ASPECT</b>	<b>MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS</b>	<b>RESPONSIBLE PERSON</b>
	<ul style="list-style-type: none"> <li>All spills must be reported, cleaned and remediated to in compliance with SHEW requirements.</li> </ul>	
<b>Social Impact</b>	<ul style="list-style-type: none"> <li>NamPower/ Contractor must sign land permission form and agreement with land owners 14 days prior to commencement of work onsite.</li> <li>Employees should limit their contact with permanent residents of the area.</li> <li>Employees should be properly educated about the impact of HIV / AIDS and pregnancies.</li> <li>The use of intoxicating liquor or drugs of any kind by the employees is strictly prohibited.</li> <li>Ensure that all queries and complaints are documented, investigated and dealt with.</li> <li>A register shall be kept of all complaints from stakeholders, this should also the actions taken to rectify the complaints.</li> </ul>	<ul style="list-style-type: none"> <li>Area Superintendent</li> <li>Project Manager</li> <li>All NamPower employees</li> <li>Contractor</li> </ul>
<b>Archaeology</b>	<ul style="list-style-type: none"> <li>Should a heritage site or archaeological site be uncovered or discovered during the operation phase, a “change find” procedure in appendix 5 should be applied.</li> <li>Any chance finds must be reported to NamPower environmental section.</li> </ul>	<ul style="list-style-type: none"> <li>Area superintendent</li> <li>Project Manager</li> <li>SHEW</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
		<ul style="list-style-type: none"> <li>• Contractor</li> </ul>
<b>Fauna and Flora</b>	<ul style="list-style-type: none"> <li>• Ensure that the site is kept clean and free of waste.</li> <li>• Ensure that the line structures are maintained such that the conductors do not hang low to avoid potential human life and animal life losses.</li> <li>• No harvesting or damaging of plants is allowed.</li> <li>• Poaching or capturing of any animal (wild or domestic) is prohibited.</li> <li>• Bird nests may not be disturbed unless interfering with the normal operation of the line/station.</li> <li>• No domestic animals may be kept onsite (in case of camping) as they can introduce diseases or interbreed with the animals occurring naturally in the area.</li> <li>• Vehicles driving along the lines should engage four wheel drive to prevent spinning and consequent impacts on soil surface.</li> <li>• Do not destroy, damage, collect any protected flora species that may be encountered servitude operations unless interfering with the normal operation of the line.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• Contractor</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	<ul style="list-style-type: none"> <li>• Avoid disturbing the rocky/mountainous areas. Rocky areas potentially have high plant and high vertebrate fauna diversity.</li> <li>• Only remove/prune flora directly affecting the transmission line;</li> <li>• Avoid disturbing the rocky, pans and ephemeral drainage lines and other sensitive areas. sections.</li> <li>• Identify potential bird collision prone areas (i.e. habitats).</li> <li>• Install bird flight diverters (BFD's) and anti-perching devices (APD's) to the identified collision potential areas.</li> <li>• Monitor all bird mortalities encountered under the transmission line.</li> <li>• All wildlife and electrical infrastructure interactions such as (animal/bird deaths) must be reported to the SHEW section.</li> </ul>	
<b>Water Resources</b>	<ul style="list-style-type: none"> <li>• Care must be taken to ensure that pollution of water does not occur.</li> <li>• Naturally occurring water resources may not be used for any personal hygiene.</li> <li>• Water may only be taken from a private or government property based on an agreement between the NamPower, contractor and custodian of the water source.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• Contractor</li> </ul>
<b>Erosion</b>	<ul style="list-style-type: none"> <li>• Implement and maintain erosion control measures along the access route in</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	<p>erosion prone areas.</p> <ul style="list-style-type: none"> <li>• Rehabilitate eroded areas</li> </ul>	<ul style="list-style-type: none"> <li>• Project Manager</li> <li>• Contractor</li> </ul>
<p><b>Campsite Establishment</b>  (Should there be a need for camping, mostly during projects)</p>	<ul style="list-style-type: none"> <li>• Adequate ablution facilities must be provided onsite in relation to the number of employees.</li> <li>• Ablution facilities must not be located within 100m of any river, stream channel, pan, dam or borehole.</li> <li>• Non-employees are not allowed to reside at the campsite.</li> <li>• Fire extinguishers, first aid kits, assembly point, and emergency numbers must be available onsite.</li> <li>• Waste must be managed in accordance with waste management requirements outlined in this EMP.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• Contractor</li> </ul>
<p><b>Manual and Mechanical Vegetation Removal</b></p>	<ul style="list-style-type: none"> <li>• Obtain a permit from the Ministry of Environment, Forestry and Tourism to remove protected trees as per the Forest Act No. 12 of 2001.</li> <li>• Measures must be put in place to avoid erosion especially at rivers, stream channel crossings, and at places where existing erosion scars and dongas are encountered to avoid any further erosion.</li> <li>• Avoid mechanical bush clearing in sensitive areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• SHEW</li> <li>• Contractor</li> </ul>



ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	<ul style="list-style-type: none"> <li>• Measures must be put in place to preserve the topsoil structure</li> <li>• The disturbed soil must be levelled.</li> <li>• Do not remove wood cut on site as this would affect the recycling of nutrients locally as well as lead to a potential industry in firewood targeting the better quality tree species.</li> <li>• Where clearing is done near a river, the contractor/NamPower must ensure that no felled bushes/branches/shrubs are left behind in the riverbed.</li> <li>• No burning of bush cleared materials is allowed onsite.</li> <li>• Manual and mechanical vegetation removal should be done in accordance with NamPower Procedures.</li> <li>• Avoid the cutting down of protected tree species [Forestry Ordinance No. 37 of 1952) not directly affecting the power lines during the line clearing operation.</li> </ul>	
<b>Herbicide Use</b>	<ul style="list-style-type: none"> <li>• Prevent the application of selected herbicide(s) in sensitive areas – e.g. “high” &amp; “medium” sensitivity areas (See annexure 1). Sensitive areas are known/expected to have higher biodiversity.</li> <li>• Avoid the spraying of protected tree [Forestry Ordinance No. 37 of 1952) not directly affecting the power lines during the line clearing operation.</li> <li>• Eradicate all invasive alien species potentially associated with the line/station.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• SHEW</li> <li>• Contractor</li> </ul>

ASPECT	MANAGEMENT AND MITIGATION MEASURES/COMMITMENTS	RESPONSIBLE PERSON
	<p>This would indicate overall environmental commitment.</p> <ul style="list-style-type: none"> <li>• Avoid spraying herbicide during windy days/periods (See the general product requirements for herbicide used) as this could affect non-target areas and species.</li> <li>• Avoid spraying, removing and/or approaching trees with vulture (and other larger raptors) nests along the route (if they are not affecting the line).</li> <li>• Implement strict control over the storage, protective measures &amp; application of the selected herbicide(s) throughout.</li> <li>• Always consult and adhere to the MSDS requirements for the herbicide</li> <li>• Herbicide must be handled in accordance with the requirements outlined in NamPower Procedures.</li> </ul>	
<p><b>Site Rehabilitation (progressive and post rehabilitation)</b></p>	<ul style="list-style-type: none"> <li>• Progressive rehabilitation especially when there is project work is in progress.</li> <li>• Post projects rehabilitation must also be done.</li> <li>• All materials, equipment and waste must be removed from site.</li> <li>• A post construction audit prior to the contractor leaving site must be conducted.</li> <li>• SHEW to sign site close off or take over certificate once remedial corrective actions have been implemented.</li> </ul>	<ul style="list-style-type: none"> <li>• Area superintendent</li> <li>• Project Manager</li> <li>• SHEW</li> <li>• Contractor</li> </ul>

## **8 REPORTING, MONITORING AND AUDITING**

The environmental monitoring, inspections and audits must be conducted in line with legislation, supporting procedures and requirements of this plan. Monitoring, inspection and audit reports detailing the monitoring, inspection and audit results shall be prepared by the SHEW section and communicated to the Area Manager, Superintendent or Project Manager.

## **9 NON-COMPLIANCE AND CONFLICT MANAGEMENT PROCEDURES**

The Area Superintendent, Project manager and Contractor shall ensure that the employees and external service providers comply with the requirements outlined in this EMP. In the event of non-compliance, the following recommended process shall be followed:

- Non – compliances will be identified during inspections or audits carried out by the SHEW Section and reported to the Area manager, Superintendent and Project Manager for corrective actions.
- Area Superintendent / Project Manager shall notify the responsible stakeholders about the non-compliance .
- Corrective and preventative actions must be implemented on an agreed timeframes.
- Area Superintendent / Project Manager to report back on how the non-conformances have been rectified.
- Follow – up inspections/audits shall be conducted to assess whether the corrective and preventative actions were implemented effectively.

The contractor/Area Superintendent / Project Manager shall notify NamPower of the following:

- Conflicts arising with any landowner / representative and other stakeholders.
- Any special conditions requested by a landowner / representative.

NamPower has the right to stop certain line activities if it is found that a gross violation of the EMP is taking place.

## **10 RECORD KEEPING**


Record keeping is important for the effective functioning and implementation of an EMP. EMP documentation must be kept in both the hard copy and electronic format for safe keeping and must be available during SHE audits.


## **11 CONCLUSION**

All management measures and legal requirements outlined in this EMP should be implemented to ensure environmental compliance by all parties undertaking the operational activities. This will ensure that potential negative impacts are identified, avoided or mitigated and positive impacts are enhanced.



**CONTRACTORS SHEW INDUCTION ATTENDANCE REGISTER**

**Name of Facilitator:** Calvin Sisamu  **Signature:**








**Project Manager:** Eino Nanyemba  **Signature:**

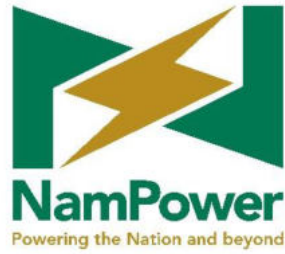
**Work Site:** Masivi and Shiyambi substation

**Scope of Work:** Construction of the Masivi and Shiyambi substation

**Venue:** Rundy Substation

**Date:** 26 APRIL 2021

Print Name	Organization/BU	Title	Cellphone	E-mail	Signature
1. Silas Nshungwa	RADIAL-DEKA-NGC	RESIDENT ENGINEER	0813877078	smshungwa@gmail.com	
2. Ambrosius Mwangeni	Radial-Deka-NGC	Contract Manager	0812960503	amulongeni@gmail.com	
3. FELIX KAZIYA	"	SITE AGENT MASIVI	0818282152	felixkaziya1@gmail.com	
4. Eino T. Hangwe	"	HR OFFICER MASIVI'S	0812380233	eino8405@gmail.com	
5. Linea Shitenge	"	Safety officer	0816084222	lshitenga18@gmail.com	
6. ANTONIAS JOHANNES	Radial-PEKA-NGC	SITE AGENT SHIYAMBI	0814929495	kambwa94@gmail.com	
7. Absalom David	Radial-PEKA-NGC	SAFETY officer	0810459669	absalomdavid@gmail.com	
8.					
9.					



## **Location: Shiyambi Substation and Masivi Substation Site Inspections**



**Date of Inspection : 18 and 19 May 2021**

---

**By Calvin Sisamu**



## 1. INTRODUCTION

Radial Truss Industries, DEKA Consulting Engineers and NGC Investment CC Consortium are the main contractor on the Shiyambi Substation and Masivi Substation construction projects.

On the 26<sup>th</sup> of April 2021, NamPower Safety, Health, Environment and wellness induction was conducted in Rundu for both projects. Furthermore, the NamPower project team introduced the contractor to the community via the Councillor (Ndonga Linena Constituency Office) and Traditional Authority in relation to the Shiyambi Substation project. A brief meeting was also held with the local community to introduce the contractor to the community prior to site handover still on the 26<sup>th</sup> of April 2021.

On the 27<sup>th</sup> of April 2021, the NamPower project team introduced the contractor to the community via the Councillor (Rundu Urban Constituency) and Traditional Authority in relation to Masivi substation and site handover took place the same day.

As part of the SHEW files requirement, the contractor notified the Ministry of Labour in relation to regulation 20 (Notice of building or construction works) and the Environmental Clearance Certificate for the projects is valid up to 2 September 2023. It is important to note that Shiyambi and Masivi Substation are covered by one Environmental Clearance certificate.

A site inspection was conducted on the 18<sup>th</sup> of May 2021 at Shiyambi Substation and on the 19<sup>th</sup> of May 2021 at Masivi Substation project site by the NamPower project team and contractor representatives in relation to site establishment and setting out activities onsite. Site camps were established at both sites and were deemed to be in good condition, with provision of toilets and showers connected to septic tanks. The toilets ratio will be in line with the stipulated ratio at both sites. The septic tanks are to be emptied at regular intervals to avoid overflows. Fire extinguishers and First aid boxes were observed at both sites.

## FINDINGS/SITE OBSERVATIONS

Observations	Control measures	Timescale
	Immediate and longer term actions	
1. Health and safety signs and signals  - No signage onsite.  - This is a risk as there are no warning signs of potential	<ul style="list-style-type: none"><li>- Prohibition, mandatory, warning signs and safe condition signs to be implemented onsite.</li><li>- Controlled access to sites.</li><li>- Assembly point to be in place in case of emergency.</li><li>- Site rules</li><li>- Emergency contact numbers and responsible persons.</li><li>- First aid station signs.</li><li>- Fire extinguishers signs.</li></ul>	<ul style="list-style-type: none"><li>- Within two weeks.</li></ul>



<p>hazards onsite, sign instructions, site rules and this may result in confusion in relation to emergency situations, over speeding onsite and putting pedestrian at risk when interfacing with plant and equipment.</p>	<ul style="list-style-type: none"> <li>- Prohibition signs indicating speed limit, no smoking and no cell phones in certain areas.</li> <li>- Information ,training, instruction and supervision</li> <li>- Competent person to be in charge such as SHE representatives, supervisors and emergency service worker such as fire marshals and first aiders.</li> <li>- Mandatory sign at the entry gate of the construction site and controlled access to site to be in place.</li> <li>- Prohibitive, Safe Condition, Mandatory and caution signs to be placed at strategic sections of the site e.g. speed limits , unauthorized entry, construction site, site office and site rules and open excavations.</li> </ul>	
<p>2. Risk assessment reviews.</p>	<ul style="list-style-type: none"> <li>- Issue/task based risk assessment to be conducted prior to the start of each activity onsite.</li> <li>- To protect persons present at or in the vicinity of the site from all risks which may arise from the site.</li> <li>- Near misses and incidents and accident to be recorded , reported and investigated and discussed as part of tool box talks.</li> </ul>	<ul style="list-style-type: none"> <li>- Ongoing for the duration of the project.</li> </ul>
<p>3. Housekeeping</p> <p>Poor housekeeping was noted at the interim camping sites both at Shiyambi and Masivi sites.</p>	<ul style="list-style-type: none"> <li>- A suitable housekeeping programme should be established and continuously implemented onsite to ensure proper storage of materials and equipment.</li> <li>- Consider removing waste and debris at appropriate intervals as the site develops.</li> </ul>	<ul style="list-style-type: none"> <li>- Ongoing for the duration of the project.</li> </ul>
<p>4. COVID -19 regulations.</p> <ul style="list-style-type: none"> <li>- Hand sanitizing was not done at Shiyambi substation.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure the sites are compliant in relation to Covid-19 regulations.</li> <li>- Sanitising and taking temperature to be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>- In line with COVID-19 Government updates for the duration of the project.</li> </ul>
<p>5. Medicals fitness certificates</p>	<ul style="list-style-type: none"> <li>- Ensure all employees working onsite have valid Medical fitness</li> </ul>	<ul style="list-style-type: none"> <li>- Provide Medicals of all employees</li> </ul>

<ul style="list-style-type: none"> <li>- Medical fitness certificates were not submitted to NamPower for the new employees from local communities for both sites.</li> </ul>	<p>certificates as per NamPower SHEW requirement and Labour Act 11 Of 2007 and regulations.</p> <ul style="list-style-type: none"> <li>- Employees found onsite without Valid Medical Fitness Certificates will be removed from sites until , fitness certificates are provided.</li> </ul>	<p>onsite by 4 June 2021.</p>
<p>6. Social Security Commission Cover.</p> <ul style="list-style-type: none"> <li>- Not all employees are registered with Social Security for both sites.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure all employees working onsite are registered with social Security Commission as per the Social Security Commission Act and NamPower SHEW requirements.</li> </ul>	<ul style="list-style-type: none"> <li>- Provide outstanding documents or list by 4 June 2021.</li> </ul>
<p>7. Personal Protective Equipment (PPE)</p> <ul style="list-style-type: none"> <li>- PPE not enforced at both sites.</li> <li>- Employees observed without wearing safety boots.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure PPE requirements are enforced onsite in line with the risk assessment and construction site rules.</li> <li>- Mandatory PPE signage for the site to be in place.</li> </ul>	<ul style="list-style-type: none"> <li>- For the duration of the project.</li> </ul>
<p>8. SHEW manager for the consortium to be actively involved in the project.</p> <ul style="list-style-type: none"> <li>- The Safety Officers for both sites require to work under someone who is experienced.</li> </ul>	<ul style="list-style-type: none"> <li>- Assist the consortium to ensure compliance in relation to the Labour Act 11 Of 2007 and application regulations.</li> <li>- Mentor the site Safety Officers.</li> <li>- Implement a health and Safety system onsite as per the submitted SHEW file documents.</li> <li>- To be involved with progress meetings and inspections at both sites.</li> <li>- Implement the SHEW file and regularly review and update.</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- For the duration of the project.</li> </ul>
<p>9. Fire Prevention</p> <ul style="list-style-type: none"> <li>- Naked fire observed at</li> </ul>	<ul style="list-style-type: none"> <li>- Comply with the Environmental Management plan on fire.</li> <li>- No smoking notices be prominently displayed in all places containing</li> </ul>	<ul style="list-style-type: none"> <li>- Ongoing , for the duration of the project.</li> </ul>

<p>Masivi interim campsite.</p>	<p>readily combustible or flammable materials.</p> <ul style="list-style-type: none"> <li>- Secure storage areas should be provided for flammable liquids, solids and gases.</li> <li>- Dedicated smoking areas must demarcate and signage should be in place.</li> <li>- Fire-extinguisher should be properly maintained and inspected at suitable intervals by a competent person.</li> </ul>	
<p>10. Sites or work areas not demarcated or barricaded.</p>	<ul style="list-style-type: none"> <li>- Work are to be barricaded and demarcated.</li> <li>- Areas outside the work area must be treated as no go areas.</li> <li>- Visitors should not be allowed access to the site unless accompanied by or authorized by a competent person and provided with the appropriate protective equipment.</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- As soon as possible.</li> </ul>
<p>11. Chemical agents Use of chemicals is anticipated as part of the project.</p> <ul style="list-style-type: none"> <li>- This is a risk as misuse, improper handling, transportation and storage of chemicals may result in acute or chronic health effects to staff exposed to these chemical onsite. This may result in serious long term health hazards such as cancer.</li> </ul>	<ul style="list-style-type: none"> <li>- Use product Material Safety data sheet( MSDS).</li> <li>- Wear Eye protection</li> <li>- Avoid release to the environment</li> <li>- Health surveillance</li> <li>- Take into account all relevant routes of exposure when developing control measure.</li> <li>- Apply hierarchy of control when developing controls.</li> <li>- Reduce exposure time.</li> <li>- Change work methods</li> <li>- Good housekeeping and provision of welfare facilities e.g. eye station.</li> <li>- Provide information ,instruction, training and adequate supervision.</li> <li>- PPE /RPE</li> </ul>	<ul style="list-style-type: none"> <li>- For the duration of the project.</li> </ul>
<p>12. Hazardous substance</p>	<ul style="list-style-type: none"> <li>- Comply with the Environmental Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>- For the duration of the project.</li> </ul>

<ul style="list-style-type: none"> <li>- Generators were observed placed directly on the ground, with no drip tray or impermeable surface to contain any spill at both sites.</li> <li>- Potential to cause oil spills during the refuelling of plant and equipment, as there is no impermeable surface dedicated for refuelling onsite.</li> </ul>	<ul style="list-style-type: none"> <li>- Dedicated impermeable surface for refuelling purposes.</li> <li>- 110% bunding for all storage for hazardous substance onsite.</li> <li>- Safe system of work</li> <li>- Competent staff</li> <li>- Spill kits readily available</li> <li>- Information, Training , instructions and supervision .</li> <li>- Repair the plant and equipment and must be fit for use.</li> <li>- NPre-use checklist or inspection</li> <li>- Daily inspections to check for any leaks</li> <li>- Use of drip trays</li> <li>- Provision of spill kits onsite.</li> <li>- Park machinery on impermeable surface.</li> <li>- Competent staff</li> </ul>	
<p>13. Use of Machinery</p>	<ul style="list-style-type: none"> <li>- Pre-start inspections.</li> <li>- Maintained in good working conditions.</li> <li>- Used for work for which they were designed.</li> <li>- Valid Operator Certificates</li> <li>- Health surveillance ( Medical Fitness Certificates)</li> <li>- Fixed guards</li> <li>- Manufacturer's instruction and manual</li> <li>- Written operation procedures</li> <li>- PPE.</li> <li>- Information,instruction,training and supervision.</li> </ul>	<p>For the duration of project.</p>
<p>14. Waste disposal</p> <ul style="list-style-type: none"> <li>- No waste bins were observed at both sites. This in in contravention with the site specific Environmental Management plan.</li> </ul>	<ul style="list-style-type: none"> <li>- Appropriate waste bins as per waste streams onsite e.g. hazardous , general and recyclables.</li> <li>- Regular emptying and disposal of waste</li> <li>- Disposal of waste at approved waste disposal sites.</li> <li>- Disposal certificate for hazardous waste</li> <li>- Spill kits and absorbents to be readily available onsite.</li> <li>- Competent staff</li> </ul>	<p>For the duration of project.</p>

<ul style="list-style-type: none"> <li>- Improper waste management onsite might attract animals to site and may result in outbreaks of diseases onsite, littering and soil contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Good housekeeping by daily clean-up at the end of each shift.</li> <li>- Information ,instruction and supervision</li> </ul>	
<p>15. Progressive site rehabilitation as the project progresses.</p> <ul style="list-style-type: none"> <li>- Water pipe trench was observed to be open along the access road to site.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure that site rehabilitation is considered during the phases of the project.</li> </ul>	<p>Through the duration of the project.</p>

**2. RECOMMENDATIONS AND CONCLUSION**

During the inspection on the 18<sup>th</sup> and 19<sup>th</sup> of May 2021 at Shiyambi and Masivi Substations , it was observed that a number of health , safety and environmental issues onsite require urgent attention and corrective action must be implemented within two weeks. Some listed items constitutes legal breaches of Health , Safety and Environmental regulations,NamPower SHEW requirements and best practices.

As part of the project , it is important that the contractor ensures that the project complies with the applicable legislations, regulations and other requirements and that corrective actions are implemented immediately and proactively as the site develops.

**PHOTOGRAPHIC ILLUSTRATIONS OF THE RESPECTIVES SITES.**



**Figure 1 and 2 :** Campsite at Masivi Substation and Shiyambi substation.



**Figure 3:** First aid boxes observed at both sites.



**Figure 4:** Fire extinguishers observed at both sites.





**Figure 5:** Inspection of setting out at Shiyambi substation.



**Figure 6 :** Toilet at Shiyambi Substation.





**Figure 7 :** Septic tank ( Demarcation or signage around the septic tanks to avoid to drive over incident) at both sites.



**Figure 8 and 9 :** Generators placed directly on the ground at Shiyambi and Masivi sites.



**Figure 10:** Open Water pipe trench along the Masivi access road.



**Figure 11:** Open fire and unlabeled containers at Masivi site.





**Figure 13:** No waste bins onsite at Masivi site and Shiyambi site.

**Contractors' SHEW Audit Protocols**

**Project Information**

Project name: Shiyambi Substation			
Name of the Contractor: Radial Truss & NGC Consortium		Project shedule(start&end date):	
Contractor (S): Mr. Ambrosius Mulongeni	Number of employees		31
NamPower project Manager): Mr. Eino Nanyemba	Contact details	812960503	
Brief project s: Construction of Shiyambi Substation	Address and Project location:		Shiyambi Substation
Audit Date: 12 April 2022			
Auditors names: Tupa Iyambo and Martha Ndapona		Others in attendance:	Calvin Sisamu; Eino Haiping; Ambrosius Mulongeni; David Absalom; Eino Nanyemba



**Introduction**

The scope of this audit included a site visit and reviewing the SHE files with supporting documents for the project. The objective was to review the documentation and activities at the substation and determine whether the safety, Health and Environmental programs and documentation in place are in compliance with the SHEW requirements. To achieve these objectives, the audit included: Reviewing the SHE file; interviewed relevant staff members; review supporting documentation and a walk about around the project site. The audit protocol used was developed specifically based on NamPower contractor's SHEW requirements.

A detailed list of findings observed and recommendations are listed in the table below.

No	Audit Protocol	Total Score	Actual Score	Findings/Recommendations
<b>1</b>	<b>Legal and other requirements</b>			
1.1	Contract Agreement	1	1	Compliant
1.2	Mandatory Agreement with the Subcontractor/s	2	2	Compliant
1.3	Notification Of Construction Work To The Ministry Of Labour	1	1	Compliant
1.4	Indemnity Forms	1	0.5	Not all employees have signed the indemnity forms. Ensure that all employees onsite have signed the indemnity form.
1.5	Third Party Insurance/Compensation insurer?	2	2	
<b>Total</b>		<b>7</b>		
<b>2</b>	<b>Permits</b>			
2.1	Permission to Camp Form	1	1	Compliant
2.2	Parks Permits	0	0	Not Applicable
2.3	Bush Clearing Permit	0	0	Not Applicable
2.4	Environmental Clearance Certificate (including Environmental Management Plan)	2	2	Compliant
<b>Total</b>		<b>3</b>		
<b>3</b>	<b>SHEQ policies &amp; Procedures</b>			
3.1	SHEW Policy Statement (signed and dated) and programme details	2	1	The policy has been signed but there is no name to indicate the person who have signed. The name of the signatory must appear on the documents.
3.2	Detailed Scope Specific Method Statement	2	2	Compliant
3.3	SHEW Objectives, Targets and Plan	3	2	There is no plan in place. Ensure that there is a SHEW plan in place.

3.4	PPE Policy	1	0	The PPE policy is not in place. Ensure that there is a PPE policy in place.
3.5	Environmental Policy	2	0	There is no Policy not in place. Ensure that there is an environmental policy in place.
3.6	Procedure for Management of Change	1	0	Procedure not in place
3.7	Safe Work/Operating Procedures	5	3	The procedures in place are not detailed . Improve the SWP/SOP , to have enough details to ensure that work is conducted in a safe manner.
3.8	Waste management procedure	2	1	Incorrect reference document, not addressing issues on site. Use correct reference documents
3.9	Incident / Accident Notification, Reporting, Escalation and Investigation Procedure.	3	1	Incorrect reference document, not addressing issues on site. Use correct reference documents
	Fall protection procedures	2	2	Compliant
3.10	Alcohol and drug abuse policy/ procedure	3	3	Compliant
3.11	Permit To Work System (Lock Out Tag Out, Heights, Confined Spaces, High Voltage Yards, Etc.)	0	0	N/A .The next stage of work, it will be required. Ensure that the permit to work system is in place and are trained before the work at height commences.
<b>Total</b>		<b>26</b>		
<b>4</b>	<b>HAZARD IDENTIFICATION AND RISK ASSESSMENTS (HIRA),IMPACT AND ASPECT ASSESSMENTS</b>			
4.1	<b>HEALTH AND SAFETY MANAGEMENT</b>			
	i. Hazard Identification for Each Of The Activities Listed;	5	5	Compliant
	ii. Risk Analysis (List of High Risks, Matrix And Rating);	2	2	Compliant
	iii. Risk Mitigating / Controls / Safe Work Procedures / Method State	5	3	Inadequate/incorrect controls. Put controls in place in order to mitigate the risks identified in the HIRA in accordance with the control hierachy.
	iv. HIRA Monitoring Plan and	1	0	The HIRA Monitoring Plan is not in place. Compile and implement the HIRA Monitoring Plan
	v. HIRA Review Plan.	1	0	The HIRA Review Plan is not in place.Compile and implement the HIRA review Plan.
	vi. Fire and fall protection risk assessment	2	1	Control measures not fully implemented. Ensure that the controls identified are fully implemented.
<b>Total</b>		<b>16</b>		
4.2	<b>ENVIRONMENTAL MANAGEMENT</b>			
4,2,1	<b>Aspect / Impact Register and Plan</b>			
	Is there an Environmental aspects and impacts register?	5	5	Compliant.
	Is there an action plan in place to manage the aspects and minimise the impacts identified?	3	0	The action Plan is not in place. Compile and implement the action plan to manage the aspects and minimise the identied impacts.
4.2.2	<b>Air quality</b>			
	i. Are there measures identified and implemented to minimise dust and other air emissions?	2	1	Partly implemented. Ensure that all measures to minimise air emissions are indetified and implemented.
	ii. Vehicle, machinery and equipment maintainance plan? Provide proof of maintenance.	2	1	There is no maintainance plan. There is proof of maintenance but is completed by the SHE officer and not by the mechanic. The mechanic has not signed the maintenance sheets. Compile a maintenance plan. Ensure that the maintenance sheets are completed by the appointed mechanic and must be signed off.
4,2,3	<b>Waste Management</b>			



	ii. Is the waste management procedure being implemented?	2	1	Waste management not in compliance with the EMP. Ensure that waste management is in compliance with EMP and waste is disposed at the nearest approved and licensed disposal site.
	iii. Are hazardous waste disposed of at a registered waste disposal site? Provide the safe disposal certificates.	0	0	No hazardous waste disposed yet.
4,2,4	<b>Wastewater management</b>			
	i. Are toilets/ mobile toilets or septic tanks available onsite?	2	2	Compliant
	ii. Is there any evidence of wastewater runoff or uncontrolled discharges from the site?	1	1	Compliant
4,2,5	<b>Social Impact</b>			
	i. Provide proof of awareness and materials on HIV / AIDS provided to employees.	2	2	Compliant
	ii. Is there complaint register available onsite?	1	0	No Complaint register on site. Ensure that there is a complaint register on site and it must be completed when there is a complaint from a stakeholder.
	iii. Are all complaints investigated and handled immediately to ensure timely rectification?	0	0	Not applicable. No complaint lodged thus far
4,2,6	<b>Cultural and Heritage resource</b>			
	i. Is there a chance find procedure onsite? Are employees aware of it?	0	0	Not applicable. The project is constructed on a prepared platform.
	ii. Any chance finds recorded onsite ?	0	0	Not applicable. No chance finds recorded on site.
	iii. If any , was the chance find reported to NamPower project Manager or Supervisor?	0	0	Not applicable.
4,2,7	<b>Fauna and Flora</b>			
	i. Are there measures identified and implemented to protect flora and fauna?	3	3	Compliant
	ii. Is there evidence of poaching or capturing of any animal?	2	2	Compliant
4,2,8	<b>Water Resources</b>			
	i. Are there felled trees/bushes left in the riverbed that could block the natural flow of water?	0	0	Not applicable. No Bush clearing was done.
	ii. Are there measures identified and implemented to ensure that pollution of water does not occur?	3	3	Compliant
	iii. Is the evidence of water pollution occurring onsite?	2	2	Compliant
	iv. Is there any written agreement to take water from a private or government property?	0	0	Not applicable.
	v. Are there measures identified and implemented to conserve water resources?	0	0	Not applicable.
4,2,9	<b>Campsite</b>			
	i. Are the ablution facilities located within 100 m of any river, stream channel, pan, dam or borehole?	2	2	Compliant
4.2.10	<b>Progressive rehabilitation</b>			
	i. Are there measures put in place to avoid/minimise erosion?	2	2	Compliant
	ii. Is progressive rehabilitation taking place? Is it done satisfactorily?	2	2	Compliant
	iii. Is rehabilitation conducted satisfactory	2	2	Compliant
Total		38		
4.3	<b>EMERGENCY MANAGEMENT</b>			
	i) List of Potential Emergencies ( <i>Ref: Risk/Impact Assessment</i> )	2	2	Compliant
	ii) Emergency Response Plan	2	2	Compliant
	iii) Emergency Equipment and Facilities	2	2	Compliant
	iv) Emergency Response Procedures	2	2	Compliant
<b>Total</b>		8		
<b>5</b>	<b>SITE RULES</b>			
5.1	Health, Safety and Environmental Rules (Site Rules)	1	1	Compliant
	Enforcement of SHEW standards, procedures and safety rules	3	3	Compliant
5.2	Personnel Roles & Responsibilities	0	0	Not applicable. Part of the appointments
5.3	SHEW Assessments (Inspection and Audit)	2	1	No audits are conducted. Ensure that SHEW audits are conducted.
5.4	Housekeeping Standards/Protocols	2	2	Compliant
<b>Total</b>		8		
<b>6</b>	<b>SHEW INDUCTION/TRAINING</b>			

6.1	Job/Scope Specific Induction - Contractor	2	1	Not fully complaint not all people entering site are given induction before being exposed to hazards. Ensure that all people are provided with site induction before entering site.
6.2	General Induction – NamPower Safety Officer	2	2	Compliant
6.3	SHEW Training Needs Analysis and Training Plan	2	0	No evidence was provided for the training Needs Analysis and Training Plan. Compile and implement the training Needs Analysis and Training Plan.
6.5	PPE/C Training and Issue	2	1.5	Training for some PPE/C are not conducted.  It is very critical that employees are given training on the use, limitations and maintenance of the PPE/C issued to them before use. Ensure that training on PPE/C is given to employees at the time of issue.
6.6	Risk-Based SHEW Training – (First Aider, Fire Training, General Health & Safety And Environmental, Arrangements For Refresher Training, Induction, Incident Investigation And Root Cause Analysis, Hazard Identification And Risk Assessment, Working On Heights, Riggers, Crane / Lifting Equipment Operators, Electrical Installers and HCS training Etc Training Attendance Registers And Signatures.) Certificate of Competency To Operate (Certificate, Licence, Operating Permits). Only AIA [Approved Inspection Authority] certification accepted.	16	14	Some employees were working at height without training. Working at height poses a high risk that could lead to fatal incidents. Ensure that all employees working at height are training before exposed to this risk.
<b>Total</b>		<b>24</b>		
<b>7</b>	<b>INCIDENTS AND ACCIDENTS</b>			
7.1	Incident Records and Proof Of Investigations (SHEW Statistics for the past three (3) years / since inception). (Name, date, short description, type of incident, remedial action taken).	4	4	Compliant
<b>Total</b>		<b>4</b>		
<b>8</b>	<b>FALL PREVENTION AND PROTECTION</b>			
8.3	Testing And Maintenance Of Fall Protection Equipment	4	4	Compliant
<b>Total</b>		<b>4</b>		
<b>9</b>	<b>Medical Evaluations</b>			
9.2	Medical Evaluations of Physical Fitness Of Persons By A Registered Occupational Health Medical Practitioner (Originals)	5	3	All employees have gone for medical evaluations, however, some employees were not evaluated by a registered occupational health medical practitioner.  Medical evaluations must be conducted in accordance with the Labour Act and the Health and Safety regulations.
<b>Total</b>		<b>5</b>		
<b>10</b>	<b>GENERAL – (LOAD TEST AND CALIBRATION) CERTIFICATES AND CHECKLISTS</b>			
10.1	Scaffold Erectors And Inspectors	2	0	The scaffold Erectors And Inspectors audit checklist is not in place
10.2	Audits check list	1	0	The audit checklist are not available.
10.3	Maintenance Checklists and records	2	2	Compliant
10.4	Electrical Equipment	1	1	Compliant
10.5	Firefighting Equipment	2	0	No firefighting equipment checklist available.
10.6	Vehicles And Mobile Plant And Equipment	2	2	Compliant
10.7	Fall Arrest Equipment	1	1	Compliant
10.9	Explosive Power Tools	0	0	Not applicable. No explosive power tools are used onsite.
10.10	Materials Hoist	0	0	Not applicable. No material hoist are used onsite.
10.11	First Aid Box	1	1	Compliant
10.12	Radiographic Equipment	0	0	Not applicable. No radiographic Equipment are used onsite.



10.13	Housekeeping Checklist (camp and site)	1	1	Compliant
10.14	SHEW Inspection Checklists	1	1	Compliant
10.16	Planned Task / Job Observation (template)	2	0	No checklist for Planned Task Observation (PTO). Ensure there is a checklist for PTOs and that they are conducted.
10.17	Other	0	0	
Total		16		
<b>11</b>	<b>HAZARDOUS CHEMICAL SUBSTANCES (HCS)</b>			
11.1	HCS Inventory / Register Available	1	0.5	The register available onsite does not cover all the HCS. Update the HCS register to ensure that all the HCS are captured.
11.2	Material Safety Data Sheets Available	2	1	Some HCS do not have MSDS and some MSDS are outdated (more than 5 years old)
11.3	Is the use, handling, storage and disposal of the hazardous chemical in accordance with the MSDS?	2	1	Some HCS are not labelled and flammable chemicals are stored together with combustible materials. Ensure that all HCS are labelled and are stored in accordance with MSDS/EMP/ Health and Safety regulations
11.4	Spill Kits Available	1	0	No spill kits available onsite
Total		6		
<b>12</b>	<b>FIRE PREVENTION &amp; PROTECTION</b>			
12.1	Extinguishers on site and serviced	4	4	Compliant
Total		4		
<b>13</b>	<b>SHEQ COMMUNICATIONS</b>			
	Indicate the method or means you are be using to communicate the SHEQ information to your personnel on site.			
	i. Notice Boards	1	1	Compliant
	ii. Symbolic Safety Signs	1	1	Compliant
	iii. SHEW Committee meetings	0	0	Not applicable as it is not a legal requirement given the number of employees on site.
	iv. Notices and Labelling	1	1	Compliant
	v. Barricading	1	1	Compliant
	vi. Reports	1	1	Compliant
	viii. Toolbox Talks / Line Ups	3	3	Compliant
Total		8		
<b>14</b>	<b>APPOINTMENTS (competencies to each appointment)</b> An organogram stipulating the key positions proposed by the contractor who would hold legal appointments on the project. The expected roles and responsibilities of those who are proposed to receive legal appointments			
14.1	Designated Employer / Responsible Person/ CEO / MD	2	2	Compliant
14.2	Appointment as Principal – And - Or (Sub) Contractor (s)	0	0	Not Applicable
14.3	SHE Representatives	1	1	Compliant
14.4	Chairperson Of SHEW Committee	0	0	Not Applicable
14.5	SHEW Committee Members	0	0	Not Applicable
14.6	Risk Assessor	1	1	Compliant
14.7	Incident / Accident Investigator	1	1	Compliant
14.8	Competent Person e.g. For Machinery, Excavation Work, Demolition Work, Scaffolding, Material Hoist Operating, Batch Plant Operating, Inspecting/collector Of Explosive Power Tools, Mobile Equipment Operating (Trucks, Cranes, Forklift etc.)	1	1	Compliant
14.9	First Aider (s)	2	2	Compliant
14.10	Construction Site Agent	1	1	Compliant
14.11	(Construction) Supervisor for work	1	1	Compliant
14.12	Safety Officer, full/part time	1	1	Compliant
14.13	(Responsibilities and accountability should be reflected in the appointment letters)	4		
Total		15		
<b>15</b>	<b>COVID19 MANAGEMENT PLAN</b>			
15.1	Provide a structured approach how you plan to manage potential risks associated with COVID-19 executing the project scope	3	3	Compliant
15.2	Compliance to COVID 19 protocol	2	2	Compliant
Total		5		

	<b>Total</b>	<b>197</b>	<b>150.5</b>	
	<b>Compliance (%)</b>	<b>76.4</b>		
	<b>General Remarks</b>			
	Although there are procedures and policies in place, a lot of effort should be put on enforcement. In addition, the procedures and policies must be site specific.			
	<b>Auditor's Signature</b>			
	Martha Ndapona: <i>Martha Ndapona</i> Tupomukumo Iyambo: <i>Tupomukumo Iyambo</i>			
	<b>Annexure</b>			
				
	<b>Incorrect storage of chemicals</b>	<b>Flammable chemicals stored together with combustible materials</b>	<b>Observed good housekeeping</b>	
				
	<b>Incorrec waste disposal.</b>	<b>Damaged lifting sling</b>		

**Contractors' SHEW Audit Protocols**

**Project Information**

<b>Project name</b>	name: The construction of Masivi Substation		
<b>Name of the Contractor:</b>	Radial Truss & NGC Consortium	<b>Project shedule(start&amp;end date):</b>	
<b>Contractor (S</b>	Mr. Ambrosius Mulongeni	<b>Number of employees</b>	
<b>NamPower project Manager):</b>	Mr. Eino Nanyemba	<b>Contact details</b>	
<b>Brief project</b>	The construction of Masivi Substation including civil, excavation and steel fixing.	<b>Address and Project location:</b>	Masivi Substation
<b>Audit Date:</b>	13 April 2022		
<b>Auditors names:</b>	Tupa Iyambo and Martha Ndapona	<b>Others in attendance:</b>	P. Shivute; P. Hamunyela; W. Kashihalwa; C. Sisamu



**Introduction**

The scope of this audit included a site visit and reviewing the SHE files with supporting documents for the project. The objective was to review the documentation and activities at the substation and determine whether the safety, Health and Environmental programs and documentation in place are in compliance with the SHEW requirements. To achieve these objectives, the audit included: Reviewing the SHE file; interviewed relevant staff members; review supporting documentation and a walk about around the project site. The audit protocol used was developed specifically based on NamPower contractor's SHEW requirements.

A detailed list of findings observed and recommendations are listed in the table below.

No	Audit Protocol	Total Score	Actual Score	Findings/Recommendations
<b>1</b>	<b>Legal and other requirements</b>			
1.1	Contract Agreement	1	1	Compliant
1.2	Mandatory Agreement with the Subcontractor/s	2	2	Compliant
1.3	Notification Of Construction Work To The Ministry Of Labour	1	0.5	The notification letter must be updated. Its validity has lapsed.
1.4	Indemnity Forms	1	1	Compliant
1.5	Third Party Insurance/Compensation insurer?	2	2	Compliant
<b>Total</b>		7		
<b>2</b>	<b>Permits</b>			
2.1	Permission to Camp Form	1	1	Compliant
2.2	Parks Permits	0	0	Not Applicable
2.3	Bush Clearing Permit	0	0	Not Applicable

2.4	Environmental Clearance Certificate (including Environmental Management Plan)	2	2	Compliant
<b>Total</b>		<b>3</b>		
<b>3</b>	<b>SHEQ policies &amp; Procedures</b>			
3.1	SHEW Policy Statement (signed and dated) and programme details	2	2	Compliant
3.2	Detailed Scope Specific Method Statement	2	2	Compliant
3.3	SHEW Objectives, Targets and Plan	3	3	Compliant
3.4	PPE Policy	1	1	The PPE policy is in place but, Employees are not provided with some PPE e.g. ear plug. Provide PPE required.
3.5	Environmental Policy	2	2	Compliant
3.6	Procedure for Management of Change	1	1	Compliant
3.7	Safe Work/Operating (SWP/SOP) Procedures	5	4	There are some SOP/SWP in place however, The Safe/Operating procedures for Excavation, Working at height and steel fixing are not in place. Ensure that all activities onsite have SOP/SWP.
3.8	Waste management procedure	2	1	Incorrect reference document, not addressing issues on site. Ensure that correct reference documents are cited on procedures.
3.9	Incident / Accident Notification, Reporting, Escalation and Investigation Procedure.	3	1	Incorrect reference document, not addressing issues on site. Ensure that correct reference documents are cited on procedures.
	Fall protection procedures	2	2	Compliant
3.10	Alcohol and drug abuse policy/ procedure	3	3	Compliant
3.11	Permit To Work System (Lock Out Tag Out, Heights, Confined Spaces, High Voltage Yards, Etc.)	5	3	There is a Permit To Work form but the procedure is not in place. Ensure that the procedure is in place and is communicated to employees.
<b>Total</b>		<b>31</b>		
<b>4</b>	<b>HAZARD IDENTIFICATION AND RISK ASSESSMENTS (HIRA),IMPACT AND ASPECT ASSESSMENTS</b>			
<b>4.1</b>	<b>HEALTH AND SAFETY MANAGEMENT</b>			
	i. Hazard Identification for Each Of The Activities Listed;	5	4	Not all activities captured in the HIRA. Ensure that all activities are captured in the HIRA.
	ii. Risk Analysis (List of High Risks, Matrix And Rating);	2	2	Compliant
	iii. Risk Mitigating / Controls / Safe Work Procedures / Method Statement;	5	3	Some Risk mitigating/controls are not identified. E.g. some PPE are not specified. Specify PPE and include Medical examination as part of controls.
	iv. HIRA Monitoring Plan and	1	0	No HIRA Monitoring plan is in place. Ensure that the plan is in place.
	v. HIRA Review Plan.	1	0	No HIRA Review plan is in place
	vi. Fire and fall protection risk assessment	2	0.5	No detailed fire risk assessment. The fire risk assesement presented only covers cooking. Review the risk assessment to include fire protection.
<b>Total</b>		<b>16</b>		



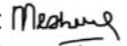

<b>4.2</b>	<b>ENVIRONMENTAL MANAGEMENT</b>			
<b>4,2,1</b>	<b>Aspect / Impact Register and Plan</b>			
	Is there an Environmental aspects and impacts register?	5	1	There is no Environmental aspects and impacts register available. Waste is the only environmental aspect covered in the HIRA. Ensure that there is register onsite.
	Is there an action plan in place to manage the aspects and minimise the impacts identified?	3	1	There is no action plan in place except the actions associated with waste management. Ensure that the action plan is in place.
<b>4.2.2</b>	<b>Air quality</b>			
	i. Are there measures identified and implemented to minimise dust and other air emissions?	2	0	There are no measures in place. Identify and implement the measures.
	ii. Vehicle, machinery and equipment maintenance plan? Provide proof of maintenance.	2	1	There is no maintenance plan. There is proof of maintenance but is completed by the SHE officer and not by the mechanic. The mechanic has not signed the maintenance sheets. The maintenance sheets must be completed and signed by the appointed mechanic.
<b>4,2,3</b>	<b>Waste Management</b>			
	ii. Is the waste management procedure being implemented?	2	1	Not in full compliance. Implement the waste management procedure
	iii. Are hazardous waste disposed of at a registered waste disposal site? Provide the safe disposal certificates.			
<b>4,2,4</b>	<b>Wastewater management</b>			
	i. Are toilets/ mobile toilets or septic tanks available onsite?	2	2	Compliant
	ii. Is there any evidence of wastewater runoff or uncontrolled discharges from the site?	1	1	Compliant
<b>4,2,5</b>	<b>Social Impact</b>			Compliant
	i. Provide proof of awareness and materials on HIV / AIDS provided to employees.	2	2	Compliant
	ii. Is there complaint register available onsite?	2	2	Compliant
	iii. Are all complaints investigated and handled immediately to ensure timely rectification?	2	1	There were complaints by the employees but have not rectified immediately. Ensure timely rectification of complaints from stakeholders.
<b>4,2,6</b>	<b>Cultural and Heritage resource</b>			
	i. Is there a chance find procedure onsite? Are employees aware of it?	0	0	Not applicable. The project is constructed on a prepared platform.
	ii. Any chance finds recorded onsite ?	0	0	Not applicable. No cultural and heritage resources found on site.
	iii. If any , was the chance find reported to NamPower project Manager or Supervisor?	0	0	Not applicable. No chance found on site.
<b>4,2,7</b>	<b>Fauna and Flora</b>			

	i. Are there measures identified and implemented to protect flora and fauna?	3	2	Measures have not been communicated to the employees. Awareness is key, the fauna and fauna protection measures must be communicated to employees.
	ii. Is there evidence of poaching or capturing of any animal?	2	2	Compliant
<b>4,2,8</b>	<b>Water Resources</b>			
	Are there measures identified and implemented to ensure that pollution of water does not occur?	0	0	Not applicable
	ii. Are there measures identified and implemented to ensure that pollution of water does not occur?	3	2	The plastic liner placed under the hi-ab truck is not in the position to contain an oil spill should there be any. Ensure that there is an effective soil contamination measures onsite.
	iii. Is the evidence of water pollution occurring onsite?	2	2	Compliant
	iv. Is there any written agreement to take water from a private or government property?	1	1	Compliant
	v. Are there measures identified and implemented to conserve water resources?	2	2	Compliant
<b>4,2,9</b>	<b>Campsite</b>			
	i. Are the ablution facilities located within 100 m of any river, stream channel, pan, dam or borehole?	2	2	Compliant
<b>4.2.10</b>	<b>Progressive rehabilitation</b>			
	i. Are there measures put in place to avoid/minimise erosion?	2	2	Compliant
	ii. Is progressive rehabilitation taking place? Is it done satisfactorily?	2	2	Area where the waste used to be temporarily stored needs to be properly rehabilitated.
	iii. Is rehabilitation conducted satisfactory	2	2	Compliant
<b>Total</b>		<b>44</b>		
<b>4.3</b>	<b>EMERGENCY MANAGEMENT</b>			
	i) List of Potential Emergencies ( <i>Ref: Risk/Impact Assessment</i> )	2	2	Compliant
	ii) Emergency Response Plan	2	2	Compliant
	iii) Emergency Equipment and Facilities	2	2	Compliant
	iv) Emergency Response Procedures	2	2	Compliant
<b>Total</b>		<b>8</b>		
<b>5</b>	<b>SITE RULES</b>			
<b>5.1</b>	Health, Safety and Environmental Rules (Site Rules)	1	1	Compliant
	Enforcement of SHEW standards, procedures and safety rules	3	2	PPE usage not fully enforced e.g. ear plugs are not available onsite. During the audit, the foreman was observed not wearing the reflective jacket. Enforce the usage of all required PPE .
<b>5.3</b>	SHEW Assessments (Inspection and Audit)	2	1	No Audits are being conducted, It is recommended that Audit reports to be part of reporting to Nampower.
<b>5.4</b>	Housekeeping Standards/Protocols	2	2	Compliant
<b>Total</b>		<b>8</b>		
<b>6</b>	<b>SHEW INDUCTION/TRAINING</b>			

6.1	Job/Scope Specific Induction - Contractor	2	1	General induction was conducted but task specific inductions are not conducted. Ensure that the employees are provided with task/job specific induction.
6.2	General Induction – NamPower Safety Officer	2	2	Compliant
6.3	SHEW Training Needs Analysis and Training Plan	2	2	Compliant
6.5	PPE/C Training and Issue	2	1.5	No training for some PPE was conducted. Employees must be given training on the use, limitations and maintenance of the PPE/C at the time of issue.
6.6	Risk-Based SHEW Training – (First Aider, Fire Training, General Health & Safety And Environmental, Arrangements For Refresher Training, Induction, Incident Investigation And Root Cause Analysis, Hazard Identification And Risk Assessment, Working On Heights, Riggers, Crane / Lifting Equipment Operators, Electrical Installers and HCS training Etc Training Attendance Registers And Signatures.) Certificate of Competency To Operate (Certificate, Licence, Operating Permits). Only AIA [Approved Inspection Authority] certification accepted.	16	16	Compliant
<b>Total</b>		<b>24</b>		
<b>7</b>	<b>INCIDENTS AND ACCIDENTS</b>			
7.1	Incident Records and Proof Of Investigations (SHEW Statistics for the past three (3) years / since inception). (Name, date, short description, type of incident, remedial action taken).	4	3	Control measures recommended for some incident investigations were not implemented. Ensure timely implementation of the outcomes from the investigations.
<b>Total</b>		<b>4</b>		
<b>8</b>	<b>FALL PREVENTION AND PROTECTION</b>			
8.1	Fall Protection Plan – Drawn Up, Implemented And Amended To Suit Site Requirements And Conditions			
8.3	Testing And Maintenance Of Fall Protection Equipment	4	4	Compliant
<b>Total</b>		<b>4</b>		
9.2	Medical Evaluations of Physical Fitness Of Persons By A Registered Occupational Health Medical Practitioner (Originals)	5	3	All employees have gone for medical evaluations, however, some employees were not evaluated by a registered occupational health medical practitioner.  Medical evaluations must be conducted in accordance with the Labour Act and the Health and Safety regulations.
<b>Total</b>		<b>5</b>		
<b>10</b>	<b>GENERAL – (LOAD TEST AND CALIBRATION) CERTIFICATES AND CHECKLISTS</b>			
10.1	Scaffold Erectors And Inspectors	2	1	The scaffold checklist is in place but not completed. The checklist must be completed when scaffolds are in use.
10.2	Audits check list	1	0	Audit checklist not in place. Compile and complete audit checklists.
10.3	Maintenance Checklists and records	2	0	Maintenance checklists and records are not in place. Compile and complete audit checklists.

10.4	Electrical Equipment	1	0.5	Electrical Equipment checklist in place but not completed. The checklist must be completed.
10.5	Firefighting Equipment	2	2	Compliant
10.6	Vehicles And Mobile Plant And Equipment	2	2	Compliant
10.7	Fall Arrest Equipment	1	1	Compliant
10.8	Personal Protective Equipment (PPE Issue And Maintenance Record)	1	1	Compliant
10.9	Explosive Power Tools	0	0	Not applicable. No explosive power tools are used onsite
10.10	Materials Hoist	0	0	Not applicable. No material hoist are used onsite.
10.11	First Aid Box	1	1	Compliant
10.12	Radiographic Equipment	0	0	Not applicable. No Radiographic Equipment are used onsite.
10.13	Housekeeping Checklist (camp and site)	1	1	Compliant
10.14	SHEW Inspection Checklists	1	1	Compliant
10.16	Planned Task / Job Observation (tamplate)	2	0	Not in place
10.17	Other			
<b>Total</b>		<b>17</b>		
<b>11</b>	<b>HAZARDOUS CHEMICAL SUBSTANCES (HCS)</b>			
11.1	HCS Inventory / Register Available	1	1	Compliant
11.2	Material Safety Data Sheets Available	2	1	Some HCS found on site do not have MSDS. Ensure that all HCS have MSDS.
11.3	Is the use, handling, storage and disposal of the hazardous chemical in accordance with the MSDS?	2	1	Incorrect storage of HCS, e.g. a container not labelled according to its content was observed on site. Ensure that HCS are stored correctly and labelled.
11.4	Spill Kits Available	1	0	No Spill kits available onsite.
<b>Total</b>		<b>6</b>		
<b>12</b>	<b>FIRE PREVENTION &amp; PROTECTION</b>			
12.1	Extinguishers on site and serviced	4	4	Compliant
<b>Total</b>		<b>4</b>		
<b>13</b>	<b>SHEQ COMMUNICATIONS</b>			
	Indicate the method or means you are be using to communicate the SHEQ information to your personnel on site.			
	i. Notice Boards	1	1	Compliant
	ii. Symbolic Safety Signs	1	0.5	Not in full compliance, Ensure full compliance.
	iii. SHEW Committee meetings	2	1	SHEW committee meeting took place but SHE Rep did not partake.
	iv. Notices and Labelling	1	1	Compliant
	v. Barricading	1	1	Compliant
	vi. Reports	1	1	Compliant
	vii. Were these policies communicated to your subordinates?	2	1	Not all policies are communicated. All policies must be communicated to the employees.
	viii. Toolbox Talks / Line Ups	3	3	Compliant
<b>Total</b>		<b>12</b>		
<b>14</b>	<b>APPOINTMENTS (competencies to each appointment)</b> An organogram stipulating the key positions proposed by the contractor who would hold legal appointments on the project. The expected roles and responsibilities of those who are proposed to receive legal appointments			



14.1	Designated Employer / Responsible Person/ CEO / MD	2	2	Compliant
14.2	Appointment as Principal – And - Or (Sub) Contractor (s)	2	2	Compliant
14.3	SHE Representatives	1	1	Compliant
14.4	Chairperson Of SHEW Committee	1	0	No proof of appointment was presented. The chairperson for the SHEW committee must be appointed.
14.5	SHEW Committee Members	1	0	No proof of appointment was presented. The SHEW committee members must be appointed.
14.6	Risk Assessor	1	1	Compliant
14.7	Incident / Accident Investigator	1	1	Compliant
14.8	Competent Person e.g. For Machinery, Excavation Work, Demolition Work, Scaffolding, Material Hoist Operating, Batch Plant Operating, Inspecting/collector Of Explosive Power Tools, Mobile Equipment Operating (Trucks, Cranes, Forklift etc.)	1	1	Compliant
14.9	First Aider (s)	2	2	Compliant
14.10	Construction Site Agent	1	1	Compliant
14.11	(Construction) Supervisor for work	1	1	Compliant
14.12	Safety Officer, full/part time	1	1	Compliant
14.13	<i>(Responsibilities and accountability should be reflected in the appointment letters)</i>	4	4	Compliant
<b>Total</b>		<b>19</b>		
<b>15</b>	<b>COVID19 MANAGEMENT PLAN</b>			
15.1	Provide a structured approach how you plan to manage potential risks associated with COVID-19 executing the project scope	3	3	Compliant
15.2	Compliance to COVID 19 protocol	2	2	Compliant
<b>Total</b>		<b>5</b>		
	<b>Overall Total</b>	<b>209</b>	<b>170.5</b>	
	<b>Compliance (%)</b>	<b>81.58</b>		
<b>General Remarks</b>				
Although there are procedures and policies in place, a lot of effort should be put on enforcement. In addition, the procedures and policies must be site specific.				
<b>Auditor's Signature</b>				
Martha Ndapona:  Tupomukumo Iyambo: 				
<b>Annexures</b>				



Poor housekeeping was observed on site



Signages around site



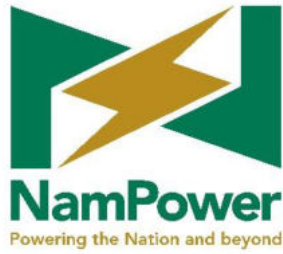
Defective tools observed onsite



Waste bins not labelled.



Insufficient and ineffective bunded area



## **LOCATION: MASIVI SUBSTATION AND SHIYAMBI SUBSTATION SITE SINSPECTIONS.**



**Date of Inspection : 23-24 September 2021**  
**Inspection by: Calvin Sisamu ( Senior Environmentalist)**



## 1. INTRODUCTION

Radial Trust, Deka Consulting and NGC Consortium are the main contractor on Masivi Substation and Shiyambi Substation projects in the Kavango East region. Activities observed onsite during the site inspection on the 23-24th of September 2021. Activities were mainly excavation, steel fixing, concrete casting, control buildings and traces.

With ongoing activities onsite, it is important to note that working at height remains one of the biggest causes of fatalities and major injuries and Cement based products, like concrete or mortar, can cause serious skin problems such as dermatitis and burns. Considering the risks associated with working at height especially for the control buildings and casting concrete, putting in place practical and proportionate control measures to manage them is an important part of working safely.

On the 28<sup>th</sup> of September 2021, a complaint letter was received from the contractor's employees through the NamPower District Office in Rundu. Based on the letter an urgent meeting was arranged by NamPower's project manager with the contractor's employees, the contractor, traditional authority representative and Rundu constituency Office representatives on the 6<sup>th</sup> of October 2021 in order to address the raised issues. The meeting was held at Masivi area. A formal close-out report is to be provided by the contractor, highlighting corrective action taken to address the concerns or complaints contained in the letter.

The items contained in the report will be rated according to the following:



- A – Fully Compliant –
- B – Partially compliant
- C – Non compliant

## 2. FINDINGS/SITE OBSERVATIONS

Observation	Rating	Remark	Recommended Control measures
2.1 Notification to Ministry of Labour in relation to regulation 20 and other Legal Requirements.	A	For Shiyambi contractual issues were addressed.	<ul style="list-style-type: none"> <li>- The project to comply with the Labour Act and regulations for the duration of the project.</li> <li>- Ensure all employees onsite have valid medical fitness certificates and are registered with Social Security Commission.</li> <li>- Ensure employees for the contractor and subcontractors are paid according to the gazette rates.</li> </ul>
	C	Masivi Subation, complaint letter was received on the 28 <sup>th</sup> of September 2021 , titled : Re Treatment of contractual employees at Masivi Substation by the contract company NGC Investment.	<ul style="list-style-type: none"> <li>- A meeting/ meetings was/were held on the 6<sup>th</sup> of October 2021 to address the letter involving NamPower representatives, Contractor employees, the Contractor, Traditional Authority representative and Rundu Urban constituency Office representatives.</li> <li>- The contractor is to submit a formal response and corrective action implemented to ensure that the issues raised in the letter are adequately addressed.</li> </ul>
2.2 Permits and permission	C	Burrow pit agreement not yet submitted to NamPower for Masivi access road.	<ul style="list-style-type: none"> <li>- Submit documentation proof to NamPower in relation to where material were sourced or will be sourced.</li> <li>- All agreements are to be in writing.</li> </ul>
2.3 SHEW File	B	Ongoing throughout the duration of the projects ( Masivi and Shiyambi) .	<ul style="list-style-type: none"> <li>- <b>The SHEW file is to be regularly updated for the duration of the project as the site develops.</b></li> <li>- Subcontractors are to submit SHEW file as per the NamPower SHEW requirements prior to site establishment onsite.</li> </ul>

2.4 Risk Assessments	B	Ongoing throughout the duration of the project ( Masivi and Shiyambi) .	<ul style="list-style-type: none"> <li>- <b>Risk assessment to updated regularly as the site develops.</b></li> <li>- <b>Issue/task based risk assessment for steel fixing , concrete casting , working at height especially roof level and scaffolding and to be in place and to be discussed with employees as part of the tool box talks.</b></li> <li>- All subcontractors are to submit SHEW files for approval to the contractors 's Safety Officer prior to mobilizing onsite as per NamPower SHEW file requirements.</li> </ul>
2.5 Training Need Analysis		Training to facilitate competency, improvements and compliance especially for the Safety Officers at both sites.	<ul style="list-style-type: none"> <li>- <b>Ensure training need analysis is conducted to ensure that the workforce is competent and with valid competency certificates.</b></li> <li>- <b>Attached to the report is a List of Inspection Authority (AIA) from Ministry of Labour for required training.</b></li> </ul>
2.6 Personal Protective Equipment	A	In place.	<ul style="list-style-type: none"> <li>- <b>No wearing of shorts onsite will be allowed and appropriate clothing and recommended PPE in relation to the risk assessment, PPE policy , site activities and site conditions to be strictly enforced.</b></li> <li>- Only medical condition will warranty exemption of wearing full PPE and proof will be required.</li> </ul>
2.7 SHEW Monthly report to be submitted to NamPower.	C	Not submitted monthly ( Masivi and Shiyambi) .	<ul style="list-style-type: none"> <li>- Provide monthly SHEW report in relation to the <b>SHEW file submitted and on the level of compliance onsite. For example the following must be included in the report highlighting SHEW statistics</b> such as : <ul style="list-style-type: none"> <li>(a) Number of employees and subcontractors onsite and as per their respective roles e.g. number of general workers, riggers, welders, security , SHEW reps, first aiders, fire fighter, working at height and Supervisors etc.</li> <li>(b) Man hours worked without injury.</li> </ul> </li> </ul>

			<ul style="list-style-type: none"> <li>(c) Near misses, lost time incidents , Covid-19 cases, property damages and accidents. Record of corrective actions taken / implemented to prevent future re-occurrence.</li> <li>(d) Complaints and how complaints were addressed.</li> <li>(e) Risk assessments conducted and tool box talks topics discussed.</li> <li>(f) SHEW committee meetings held.</li> </ul>
2.8 Monthly Internal Inspection report / Audit in line with the SHEW File Submitted to be conducted by contractor and submitted to NamPower.	<b>C</b>	Not submitted monthly for both sites Masivi and Shiyambi .	- <b>Proof of internal site inspection / audit conducted monthly on the level of compliance onsite by the Safety Officer in line with NamPower 's SHEW file requirements.</b>
2.9 Incident and accidents  - Shiyambi Pedestrian Accident investigation report.	<b>C</b>	Shiyambi Site.	<ul style="list-style-type: none"> <li>- <b>Investigation report still outstanding.</b></li> <li>- <b>Following incidents and accidents full investigation must be conducted to ensure corrective action are implemented to prevent future re-occurrence.</b></li> <li>- <b>Risk assesement is to be reviewed and updated.</b></li> </ul>
- Steel fixing injury	<b>C</b>	Masivi Site	- <b>Medical report to clear the injured employee to be submitted to NamPower.</b>
2.10 Fall prevention and protection	<b>C</b>	Not in place at both sites Masivi and Shiyambi especially for the control buildings and when steel erection will commence.	<ul style="list-style-type: none"> <li>- Must make sure work is properly planned, supervised and carried out by competent people with the skills, knowledge and experience to do the job.</li> <li>- <b>Must use the right type of equipment for working at height.</b></li> <li>- <b>All working at height empoloyees are to be trained with relevant competence certificates.</b></li> </ul>

			<ul style="list-style-type: none"> <li>- <b>Scaffolding inspectors and erectors are to be legal appointed and to have competence certificates.</b></li> <li>- <b>Crane operators and riggers are to be legal appointed and with competency certificates.</b></li> <li>- <b>Valid Medical fitness certificates are to be in place.</b></li> </ul>
2.11 Hazardous substances		Take note, given the amount of concrete to be used onsite.	<ul style="list-style-type: none"> <li>- <b>Control the risk by:</b></li> <li>- <b>Gloves</b> – gloves should be waterproof and suitable for use with high Ph (alkaline) substances;. Gloves should be long and /or tight fitting at the end to prevent cement being trapped between the glove and the skin.</li> <li>- <b>Footwear</b> – suitable footwear, such as wellington boots, should be used where large concrete pours are taking place. If standing in cement, these should be high enough to prevent cement entering the top of the boot.</li> <li>- <b>Waterproof trousers</b> – when kneeling on wet products containing cement, appropriate waterproof trousers should be worn or, if screeding, use appropriate waterproof knee pads or knee boards. Minimise any time spent kneeling. Wear trousers over the top of boots. This stops cement getting into them.</li> <li>- <b>Washing</b> – wash off any cement on the skin as soon as possible. Workers should be encouraged to wash exposed skin at breaks and after work. Good washing facilities are essential. There should be hot and cold or warm running water, soap and towels. Basins should be large enough to wash forearms. Showers may be needed in some situations where workers could get heavily</li> </ul>



			<p>covered in cement. Use emergency eyewash to remove any cement that gets into eyes.</p> <ul style="list-style-type: none"> <li>- <b>Skin care products</b> – these can help to protect the skin. They replace the natural oils that help keep the skin’s protective barrier working properly.</li> <li>- <b>Train:</b> Workers need to know how to use the controls properly. They also need to be aware of the signs and symptoms of dermatitis. Finding skin problems early can stop them from getting too bad.</li> <li>- <b>Supervise:</b> Ensure that controls such as work methods, PPE and welfare are effective and used by the workers.</li> <li>- <b>Monitor:</b> Appropriate health surveillance is needed to check your controls are preventing dermatitis. This could be done by a ‘responsible person’ who can be an employee provided with suitable training.</li> </ul>
2.12 Emergency preparedness	A	Emergency numbers are to be displayed at the site notice board.	<ul style="list-style-type: none"> <li>- First aid boxes to be available onsite.</li> <li>- First aider/aiders to be legally appointed.</li> <li>- Competence certificate for the appointed first aider to be filed.</li> <li>- Emergency numbers are to be displayed at the site notice board.</li> </ul>
2.13 Safety Signage onsite	A	Signage is in place.	<ul style="list-style-type: none"> <li>- Consider other appropriate signage as the site develops.</li> </ul>
2.14 Ablution and welfare facilities onsite.	A	In place.	<ul style="list-style-type: none"> <li>- Poor welfare facilities can lead to ill health.</li> <li>- A tidy site and decent welfare are the basics of a good site.</li> </ul>
2.15 Waste Management	A	Waste is burned onsite at Masivi and Shiyambi , this is in contravention with the	<ul style="list-style-type: none"> <li>- Waste generated to be disposed at approved dump site.</li> <li>- Burning of waste onsite is prohibited.</li> </ul>

		Environmental Management plan.	
	A	Masivi Substation	
2.17 SHEQ Communication	A	Notice	<ul style="list-style-type: none"> <li>- Notice board to display company SHEW policies.</li> <li>- Emergency numbers</li> <li>- Site rules</li> <li>- Project Organogram</li> </ul>
2.18 Fire prevention and protection	B	Fire extinguishers not having next service date/ or proof of service.	<ul style="list-style-type: none"> <li>- Ensure fire extinguishers are serviced and inspected monthly.</li> </ul>
2.19 Competencies personnel : Construction vehicles and mobile plant.		Ongoing throughout the duration of the project.	<ul style="list-style-type: none"> <li>- Workplace transport incidents are the second most common causes of fatalities after falls from height.</li> <li>- Workplace transport incidents are the second most common causes of fatalities after falls from height.</li> <li>- To ensure vehicles and machinery are maintained , operators are legally appointed and trained with valid competence certificates.</li> <li>- Crane Operators and riggers to be legally appointed and supported competence certificates</li> </ul>
2.20 Legal appointments		Ongoing throughout the duration of the project.	<ul style="list-style-type: none"> <li>- An organogram stipulating key positions by the contractor who would hold legal appointment plan on the project.</li> </ul>

### 3. CONCLUSION

As part of the project , it is important that the contractor ensures that the project complies with the applicable legislations, regulations and other requirements and that corrective actions are implemented proactively as the site develops. The Safety Officers to be empowered and supported for them to be able to advise the employer accordingly and ensure that the projects are implemented safely.

### APPENDIX:



**Figure 1:** Meeting held at Masivi in relation to the employees complaint letter.





**Figure 2:** Burning of waste at Masivi project site ( this is prohibited according to the EMP).





Figure 3 : Signage at Masivi project site.



**Figure 4:** Control building progress at Shiyambi Substation project site.