

**HERITAGE IMPACT ASSESSMENT FOR THE
TRANSMISSION LINE FOR UNIKA I WIND FARM,
ZAMBIA**

**ARCHEOLOGICAL AND CULTURAL
HERITAGE SPECIALIST STUDY**

CLIENT: MPHEPO POWER LIMITED



By

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EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

Mphepo Power Limited (“Mphepo”) proposes to develop a wind farm facility near Katete, Eastern Province, Zambia (Unika I Wind Farm). As part of this Unika I Wind Farm project it is also proposed to build a 330 kV power transmission line running from the on-site substation (to be built) to the existing Msoro substation located approximately 30 km north-west of the wind farm project. This transmission line is expected to be constructed by Mphepo and then handed over to ZESCO for ownership, operations and maintenance.

The major components of the transmission line and associated infrastructure are presented in Figure 1. SLR Consulting (Africa) (Pty) Ltd (SLR), in collaboration with DH Engineering Consultants Ltd, have been appointed as the independent Environmental Assessment Practitioner to conduct the Environmental and Social Impact Assessment (ESIA) process for this project.

In line with the Zambia Environmental Management Act 2011 and the Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997 and as instructed by the Zambia Environmental Management Agency (ZEMA), Mphepo is required to carry out an Environmental and Social Impact Assessment (ESIA) for the project and Envirodynamics Consulting Limited, an independent EIA Consulting Firm has been sub-contracted by DH Engineering to undertake the Heritage Impact Assessment (HIA)

The task at hand is to ensure that Mphepo Power is assisted in managing the discovered and documented heritage resources in appropriate manner, protect, preserve the resources in line with the National Heritage Conservation Commission (NHCC) Act and propose/consider viable appropriate alternatives for managing unavoidable adverse impacts, lessen/minimize any possible negative impacts to important archaeological sites or areas of cultural significance by the proposed project including a preliminary programme to implement and schedule impact management actions, where necessary; and conduct surveillance and/or monitoring.

As part of the Unika I Wind Farm (WF) project it is proposed to build a 330 kV transmission line running from the wind farm project substation at the existing Msoro substation located approximately 30 km north-west of the Unika I Wind Farm project site. The proposed project is generally located in an area which lies between latitudes 13°47'53"S, 14°4'50"S, longitudes 32°0'8"E, 32°9'48"E. This proposed TL will start at the Unika I WF substation (to be built) and will terminate at the Msoro substation (prior to the distribution network) located approximately 30 km north-west of the WF site.

This report presents the Archaeological and Cultural Heritage Resources’ findings of the study area, impacts identified mitigations, a management and monitoring programme arising from the proposed transmission line project.

FINDINGS

The survey which took 3 days found total of 11 graveyards which are in proximity to the proposed power line area. Of the 11 sites, only one categorised as MP5 is the closest (82 m) to the proposed power line. There are no paleontological and archaeological sites found in the area. This report recommends a forensic archaeologist on site during construction to ascertain chance finds during digging/excavations. The non-existence of archaeological sites/artefacts in the project area in the project area can be attributed to past and present farming activities. No archaeological site was recorded in the Proposed transmission line project area (for all the TL route alternatives).

No cultural traditional ceremonies were recorded in the project area apart from the Malaila and Kulamba cultural traditional ceremony which is associated with the Kunda and Chewa people in the area and these are held annually in Chief Nsefu area, Mambwe and Katete at Mkaika palace respectively.

CONCLUSION

The survey that was undertaken in December, 2021 covered the area in Mambwe and Katete districts, Msoro and Mbang'ombe areas earmarked for the development of the Transmission Line. Whilst no archaeological resource was recorded along the T-Line routes or within the 55 m Right of Way (RoW), various research works in the wider environment of the project area by several archaeologists/researchers, the NHCC register shows the existence of numerous sites associated with the Middle Stone Age, Late Stone Age and Iron Age sites in the wider environment of the project area. It is therefore probable that archaeological and other cultural resources could be recorded in the project area if an intensive archaeological survey coupled with archaeological excavation test pits was undertaken. Significantly, there are two graves in close proximity to the power line, one of whom is still active, and the other is not. The inactive grave (MP7) is located approximately 40 m from the T-Line centre line (i.e. outside the RoW) and the active grave (MP5) is located approximately 80 m from the T-Line centre line

The study further revealed that the proposed project area had no major cultural traditional ceremonies associated with the land space to be used for the T-Line apart from the Malaila and Kulamba Ceremony which is held annually in Mambwe and Katete at Chief Nsefu and Mkaika.

The survey also clearly showed that, several archaeological sites that could have existed in the area were destroyed by decades of farming activities and it is also possible that, other cultural heritage resources could still exist in the ground. It can therefore be presupposed that the envisaged project infrastructure related developmental activities (mainly limited to the placement of the pylons/towers) may reveal the existence of these resources.

The Heritage Impact Assessment (HIA) study has further outlined possible expected impacts and possible mitigation measures which should be undertaken or should be adhered to during the implementation of this project. In the event that, during the pre-construction phase or during construction, any archaeological or cultural heritage resources are encountered (e.g. graves, stone and iron tools, and animal and human skeletal remains), the operations must cease immediately and necessary steps outlined in the mitigation strategies to deal with such are applied and only continue after a salvage by a qualified archaeologist has been made (if required) and the 'chance finds' procedures stipulated by NHCC should be applied.

REASONED OPINION

From a cultural heritage resources perspective, since no archaeological resources were recorded apart from modern burial sites outside the T-Line RoW, with appropriate proposed mitigation measures for possible inadvertently discovered archaeological remains/chance finds, etc. and the modern burial sites, it is the considered opinion of the independent cultural heritage resources specialist that, the cultural heritage impacts resulting from the proposed project can be effectively managed and reduced to acceptable levels, and consequently the benefits arising from the project would outweigh the negative cultural heritage impacts, if the above recommendations are adhered to and based on approval from ZEMA. The Heritage Specialist is therefore of the opinion that, despite the eleven heritage resources and numerous modern burial sites recorded in the area, the project can be commenced.

TABLE OF CONTENT

EXECUTIVE SUMMARY	i
TABLE OF CONTENT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vi
Abbreviations and Acronyms	viii
1.0 INTRODUCTION	1
1.1 Background to the Archaeological and Cultural Heritage Environmental Impact Assessment	1
1.2 Purpose of the Study	3
2.0 PROJECT DESCRIPTION	5
2.1 Nature of Project	5
2.1.1 Project Components	5
2.1.2 Towers	6
2.1.3 Conductors (power lines)	7
2.1.4 Substations	8
2.1.5 Rights-of-Way (RoWs)	9
2.1.6 Access Roads	10
2.2 Project Location	10
2.4 Project Description	10
2.5 Relief and Drainage	11
2.6 The Geological Outline of Eastern Zambia	10
2.7 Vegetation	10
2.8 Soil	11
2.9 Fauna	12
2.10 Human Settlements and Cultural Practices	12
2.11 Paleontological Context	14
2.12 Project Aims and Objectives	14
3.0 POLICY INSTITUTIONAL AND ORGANISATIONAL FRAMEWORK	16
3.1 Policy and Administrative Framework	16
3.2 Pertinent International Conventions, Agreements, Standards and Guidelines	24
3.3 UNESCO Recommendations and other Standards	25
3.4 National Policy	30
3.4.1 Zambia Vision 2030	30
3.5 Revised Seventh National Development Plan (R-SNDP)	30
3.5.1 Strategy 1: Improve production of Power	30
3.6 Corporate Standards and Guidelines	30
3.7 Institutional Framework	31
4.0 STUDY METHODOLOGY	33
4.1 Literature Review	34
4.2 Field Research	35
4.2.1 Archaeological survey	35

4.2.2 Ethno-historical Research	36
4.3 Stakeholder consultations	37
4.3.1 Project Area Local Community	37
4.4 Limitations	39
5.0 BASELINE: SOCIO-ECONOMICS – MAMBWE/KATETE DISTRICTS.....	41
5.1 Socio demographic and economic Assessment	41
5.2 Brief History of the ethnic groups of Project Area	41
5.2.1 Project area Cultural and Linguistic Characteristics	42
5.2.2 Religious Practices and Beliefs.....	42
5.2.3 Land Use and Economic Activities.....	43
5.2.4 Services and infrastructure.....	44
6.0 BASELINE: ARCHAEOLOGICAL AND CULTURAL HERITAGE RESOURCES	45
6.1 Archaeological Heritage Resources	45
6.2 General Pre-history of Zambia.....	45
6.3 Regional overview earlier Archaeological and Cultural Heritage Resources Studies	47
6.4 Archaeological and Cultural Heritage Assessment.....	48
6.4.1 Archaeological	51
6.5 List of Surveyed Area whose GPS Were Taken in the Project Area	53
6.6 Anthropological Heritage Resources	69
6.6.1 Anthropological/Traditional Heritage	69
6.6.2 Anthropological Intangible Heritage	69
6.7 Historical Burial sites	70
6.8 Modern Burial Sites/Cemeteries	70
7.0 SIGNIFICANCE OF ARCHAEOLOGICAL/ CULTURAL AND NATURAL HERITAGE RESOURCES	72
7.1 Criteria for Determining Cultural Significance	72
7.2 Levels of Significance Cultural and Natural Heritage Resources	74
7.2.1 Cultural Heritage significance	74
7.3 Significance of Natural Heritage Resources	75
7.4 Accuracy and Reliability of Data	75
8.0 IMPACTS EVALAUTION METHODOLOGY.....	76
8.1 Method of Assessing Impact Significance	76
8.2 Identification and Description of Impacts	76
8.3 Evaluation of Impacts and Mitigation Measures.....	76
8.3.1 Introduction	76
8.4 Criteria for Impact Assessment	77
8.5 Determining Consequence	79
8.6 Determining Significance.....	80
9.0 IMPACT ASSESSMENT OF THE PROPOSED DEVELOPMENT ON ARCHAEOLOGICAL/CULTURAL AND GEOMORPHOLOGICAL HERITAGE RESOURCES	82
9.1 Archaeological and Cultural Heritage Resources in the Proposed Project Area.....	82
9.1.1 Archaeological Heritage Resources	82
9.1.2 Chance Find Historical Burials/Graves sites.....	82
9.1.3 Anthropological (Tangible/Intangible) Heritage Resources	83
9.1.4 Cultural Traditional Ceremonies.....	83

10.0 HERITAGE IMPACT ASSESSMENT OF THE PROPOSED DEVELOPMENT OF THE PROJECT AREA	84
10.1 Negative Impacts on Unknown/Undiscovered Archaeological Sites/Artefacts and Cultural Heritage Sites.....	84
10.2 Negative Impacts on Chance Find Historical Burials/Graves Sites.....	84
11.0 SUMMARY OF NEGATIVE IMPACTS AND MITIGATIONS	87
11.1 Impact on unknown/discovered Archaeological Sites/Artefacts and Cultural Heritage Sites – Chance Finds	87
11.1.1 Mitigation Measures on Archaeological Sites/Artefacts discovered During Project Implementation.....	87
11.2 Chance Find Historical Burials/Graves Sites	88
11.2.1 Mitigation Measures for Chance Finds Burial/Graves.....	88
11.3 Impacts on the Burial Sites	89
11.3.1 Mitigation Measures for the two Burial Sites	89
11.4 Operational Phase	89
11.4.1 Unknown Archaeological Sites/Artefacts and Cultural Heritage Sites	89
11.4.2 Historical Burials/Graves sites: Chance Find Burials/Graves sites.....	89
11.4.3 Modern Burial Sites	89
11.5 Decommissioning/Closure Phase	90
11.6 General Management Objectives and Commitments	90
11.7 Summary of Specific Mitigation and Residual Impacts	90
12.0 MANAGEMENT PLAN	94
12.1 Overall Objectives and Targets (Priorities)	94
12.2.1 Training for Archaeological and cultural Resources Management	94
12.3 Contractor compliance	95
12.5 Management Programme	95
13.0 REPORT OF MITIGATION MEASURES	97
13.1 Monitoring and Review	97
13.1.1 Monitoring	97
13.1.2 Review	98
14.0 CONCLUSION	99
15.0 DECLARATION OF THE AUTHENTICITY OF THE REPORT	101
16.0 REFERENCES	102
17.0 REPORT PREPARERS	106
18.0 ANNEXES/APPENDICES	107
Appendix 1 Table of Earlier Studies	108
Appendix 2: Archaeological and Cultural Resources Monitoring Kit Inventory (CRMKI)	109
Appendix 3: List of Interviewees	110
Appendix 4: National Heritage Conservation Commission (NHCC) ACT (1989)	115
Appendix 5: Chance Find Procedures	125

LIST OF TABLES

<i>Table 1: The proposed power line options (Coordinates)</i>	<i>8</i>
<i>Table 2: Regulatory Setting</i>	<i>16</i>
<i>Table 3: International conventions Zambia is a party</i>	<i>25</i>
<i>Table 4: Archaeological and other cultural heritage frameworks/guidelines</i>	<i>26</i>
<i>Government ministries, departments and local authorities work on behalf of the public to ensure that ecological, cultural, social and economic issues are addressed in line with existing government policy and legislation.</i>	
<i>Institutions with a supervisory and monitoring role relevant to the Project are described in Table 5 below: Table</i>	
<i>5: Institutions relevant to the Mphepo Power line Project</i>	<i>31</i>
<i>Table 6: The nearest heritage sites in Katete District. Source: NHCC, Register 2019</i>	<i>43</i>
<i>Table 7: The Criteria for Impact Assessment</i>	<i>77</i>
<i>Table 8: Consequences determination</i>	<i>80</i>
<i>Table 9: Consequence Rating</i>	<i>81</i>
<i>Table 10: Summary of Specific Mitigation and Residual Impacts</i>	<i>91</i>
<i>Table 11: Cultural Heritage - Disturbance or destruction of known grave sites.....</i>	<i>92</i>
<i>Table 12: Cultural Heritage - Disturbance or destruction of unknown/discovered Archaeological Sites/Artefacts or Cultural Heritage Sites</i>	<i>93</i>
<i>Table 13: Key HIA Objectives and Targets</i>	<i>94</i>
<i>Table 14: Training and competence awareness</i>	<i>94</i>
<i>Table 15: Environmental and Social Management Program</i>	<i>95</i>

LIST OF FIGURES

<i>Figure 1: Main components of a power transmission and distribution network</i>	<i>5</i>
<i>Figure 2: Typical 330 kV TL tower design. Source: World Bank EHS Guidelines for Electric Power Transmission and Distribution (2007).</i>	<i>6</i>
<i>Figure 3: Technical drawings for typical substation infrastructure</i>	<i>9</i>
<i>Figure 4: Unika Wind Farm, Roads and the proposed power line</i>	<i>6</i>
<i>Figure 5: Project Location on Google Earth Pro view.</i>	<i>7</i>
<i>Figure 6: Map of the proposed Transmission Route Options</i>	<i>9</i>
<i>Figure 7: Unika Wind Farm Site Boundary and Proposed Transmission Line Route Alternatives</i>	<i>10</i>
<i>Figure 8: Typical pylon designs. Source: World Bank EHS Guidelines for Electric Power Transmission and Distribution (2007).</i>	<i>10</i>
<i>Figure 9: Msoro Substation</i>	<i>11</i>
<i>Figure 10: Map of the drainage system of the proposed Project Area showing (Source: Ministry of Mines, Energy and Water Development Lusaka, Zambia).</i>	<i>12</i>
<i>Figure 11: Topographic map of Zambia showing the proposed TL and cultural heritage sites identified (Source: Survey Department GRZ).</i>	<i>10</i>
<i>Figure 12: Geological Outline of the proposed project area</i>	<i>10</i>
<i>Figure 13: Part of Map of Zambia showing the soil type of the country, the proposed project area is circled in Green.</i>	<i>12</i>
<i>Figure 14: Consultative meeting with Msoro Chiefdom Indunas</i>	<i>37</i>
<i>Figure 15: Consultative/Awareness meeting in Kasamanda Area.</i>	<i>37</i>
<i>Figure 16: Consultative and awareness meeting in Wazaza area</i>	<i>38</i>
<i>Figure 17: Consultative/awareness meeting in Chivyololo, Msoro Substation Area</i>	<i>38</i>
<i>Figure 18: Consultative/awareness meeting with Mambwe District Administrator at his office</i>	<i>38</i>
<i>Figure 19: Consultative/Awareness meeting with the Mambwe Area Chiefs and Traditional Affairs officer</i>	<i>39</i>
<i>Figure 20: Consultative/Awareness meeting with the Mambwe district Acting Council Secretary</i>	<i>39</i>
<i>Figure 21: Mphepo Power Proposed Power line Heritage Impact Assessment (Surveyed cultural Heritage.</i>	<i>49</i>

Figure 22: Recently dug toilet pit checked for archaeological sites and artefacts 52
Figure 23: A bush thicket on the eastern parts of the wall fence of the project site checked for archaeological sites and artefacts 52
Figure 24: One of numerous anthills checked for archaeological artifacts 52
Figure 25: Old charcoal kilns checked for area checked for archaeological artefacts 52
Figure 26: Pits where soil for making pan bricks were checked for archaeological sites and artefacts 52

Abbreviations and Acronyms

ACCNNR	African Convention on the Conservation of Nature and Natural Resources (Algiers, 1968)
AESC	Armitage Environmental and Social Consulting Limited
BC	Burra Charter
BP	Before Present
CFP	Chance Finds Procedure
CHS	Cultural Heritage Specialist
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CPCHV	Charter for the Conservation of Places of Cultural Heritage Value
CRMK	Cultural Resources Monitoring Kit Inventory
DC	District Commissioner
DSA	District Situational Analysis
DRC	Democratic Republic of Congo
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
ESA	Early Stone Age
GMA	Game Management Area
GPS	Global Positioning System
HIA	Heritage Impact Assessment
IASS	Iron Age Smelting Site
IFC	Compliance with International Finance Corporation
IDC	Industrial Development Corporation
ICAHM	Charter for the Protection and Management of the Archaeological Heritage

ICOMOS	International Council of Monuments and Sites
LIA	Later Iron Age
LSA	Late Stone Age
MP	Mphepo Power
MW	Megawatts
MSA	Early Stone Age
NCC	The National Council for Construction
NHCC	National Heritage Conservation Commission
R-SNDP	Revised Seventh National Development Plan
RoW	Right of Way
RTSA	Road Transport and Safety Agency
SDA	Seventh Adventist
TL	Transmission Line
TCLC	Tripartite Consultative Labour Council
UNESCO	United Nations Educational and Scientific Organization
UNGPID	United Nations Guiding Principles on Internal Displacement
WARMA	Water Resources Management Authority
ZDA	Zambia Development Agency
ZESCO	Zambia Electricity Supply Corporation
ZEMA	Zambia Environmental Management Agency

1.0 INTRODUCTION

1.1 Background to the Archaeological and Cultural Heritage Environmental Impact Assessment

Mphepo Power Limited (“Mphepo”) proposes to develop a wind farm facility near Katete, Eastern Province, Zambia (Unika I Wind Farm). As part of this Unika I Wind Farm project it is also proposed to build a 330 kV power transmission line running from the on-site substation (to be built) to the existing Msoro substation located approximately 30 km north-west of the wind farm project. This transmission line is expected to be constructed by Mphepo and then handed over to ZESCO (or Private Developer) for ownership, operations and maintenance.

The major components of the transmission line and associated infrastructure are presented in Figure 1. and the typical tower constructions are presented in Figure 2. SLR Consulting (Africa) (Pty) Ltd (SLR), in collaboration with DH Engineering Consultants Ltd, have been appointed as the independent Environmental Assessment Practitioner to conduct the Environmental and Social Impact Assessment (ESIA) process for this project.

In line with the Zambia Environmental Management Act 2011 and the Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997 and as instructed by the Zambia Environmental Management Agency (ZEMA), Mphepo is required to carry out an Environmental and Social Impact Assessment (ESIA) for the project and Envirodynamics Consulting Limited, an independent EIA Consulting Firm has been sub-contracted by DH Engineering to undertake the HIA and prepare an EIS for submission to ZEMA for its consideration and approval. The EIA is intended to objectively assess and evaluate environmental and social impacts that may arise (due to change in project design) as a consequence of implementing the project and to propose mitigation measures to avoid, reduce, restore or compensate for negative impacts or enhance positive benefits of the project.

This report presents the Archaeological and Cultural Heritage Resources’ findings of the study area, impacts identified mitigations, a management and monitoring programme arising from the proposed power project.

The objective of the Archaeological and Cultural Heritage Resources study was to:

- Reviewing existing heritage reports;

- Undertaking a non-intrusive ground survey of the Project area to identify and describe the tangible cultural heritage resources, particularly graveyards;
- Obtaining co-ordinates/GPS readings to delineate site boundaries so that accurate data sets could be created for GIS applications;
- Providing analysis which characterizes the significance of the entire cultural heritage resources identified and to define appropriate chance find procedures;
- Gather information on the proposed project area so as to provide a background setting of the archaeology that can be expected in project area;
- Extensively and systematically survey the proposed project area to locate; identify, document, photograph and describe sites of archaeological, anthropological, historical or cultural interest;
- Assess and determine the level of significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious and aesthetic value documented in the proposed project area;
- Assess and determine the level of significance of the History or Contemporary History (some as represented by historical graves and settlements), Living heritage and Intangible heritage;
- Examine the following: Linguistics of the people in the project area; cultural heritage traditions; and the ethnic group concerned with the project area and their lifestyles;
- Report on the identification of anticipated and cumulative impacts on the various proposed project activities may have on archaeological and other cultural heritage resources at the pre-construction, construction, operations and post-closure stages, pre-operational, operational and post-operational stages;
- Ensure that Mphepo Power is assisted in managing the discovered and documented heritage resources in appropriate manner, protect, preserve the resources in line with the National Heritage Conservation Commission (NHCC) Act; and
- Propose/consider viable appropriate alternatives for managing unavoidable adverse impacts, lessen/minimize any possible negative impacts to important archaeological sites or areas of cultural significance by the proposed project including a preliminary programme to implement and schedule impact management actions, where necessary, and conduct surveillance and/or monitoring.

1.2 Purpose of the Study

The purpose of the assessment study by the Heritage Specialists is to describe cultural and natural heritage resources that could be present in the proposed project areas and highlighting specific issues or concerns and probable impacts on the identified heritage resources that could result from activities of the proposed Unika Wind Farm project, in Katete District, in the Eastern Province of Zambia. The Heritage Specialist also provides compliance recommendations accordingly.

Specifically, the Heritage Specialist was tasked to:

- a. undertake a desktop study to review reports and other available information about heritage resources within the proposed project area and its environs;
- b. undertake field surveys and interviews with communities to physically identify cultural and natural heritage resources along the TL route options;
- c. review any available documents on inventory of cultural and natural heritage resources (within and around the proposed project area);
- d. undertake a preliminary evaluation of the significance of the identified cultural and natural heritage resources; and generally;
- e. identify the potential impacts the proposed project would probably have on the heritage resources; and
- f. propose possible mitigation measures that could arrest the impacts where necessary and enhancement options.

The developer, Mphepo Power Limited, plans to set up a Transmission Line to transport power to Msoro Substation into the ZESCO grid. The project aims to contribute to electricity generation in the country particularly to diversify electricity production from the current reliance on hydro sources of power. The creation of wind-turbines is seen as not only preferable but environmentally and socially beneficial.

Electricity production from wind power is a viable alternative to existing models in Zambia. For purposes of setting up wind-turbines, it will be necessary to have baseline data on the expected electricity production.

This overall development model will require partnerships with lending institutions, development agencies, and other key stakeholders in Zambia including the local communities.

The Heritage Impact Assessment conducted by the Consultant also analysed both the technical and legal aspects of the Project in line with the National Heritage Commission (Amendment) Act No. 19 of 2021 CAP 173 to assist the Client determine whether the proposed project would be feasible.

2.0 PROJECT DESCRIPTION

2.1 Nature of Project

As part of the Unika I Wind Farm (WF) project it is proposed to build a 330 kV transmission line running from the wind farm project substation to the existing Msoro substation (31.5 km long with a way leave of 55 m (i.e. 27.5 m on either side of the center line). This equates to a total area of approximately 173.25 ha).

2.1.1 Project Components

The major components of the transmission line and associated infrastructure are described below and displayed in Figure 1, 2 and 3 and the typical tower construction for a 330 kV Transmission Line (TL).

This proposed TL will start at the Unika I WF substation (to be built) and will terminate at the Msoro substation (prior to the distribution network) located approximately 30 km north-west of the WF site.

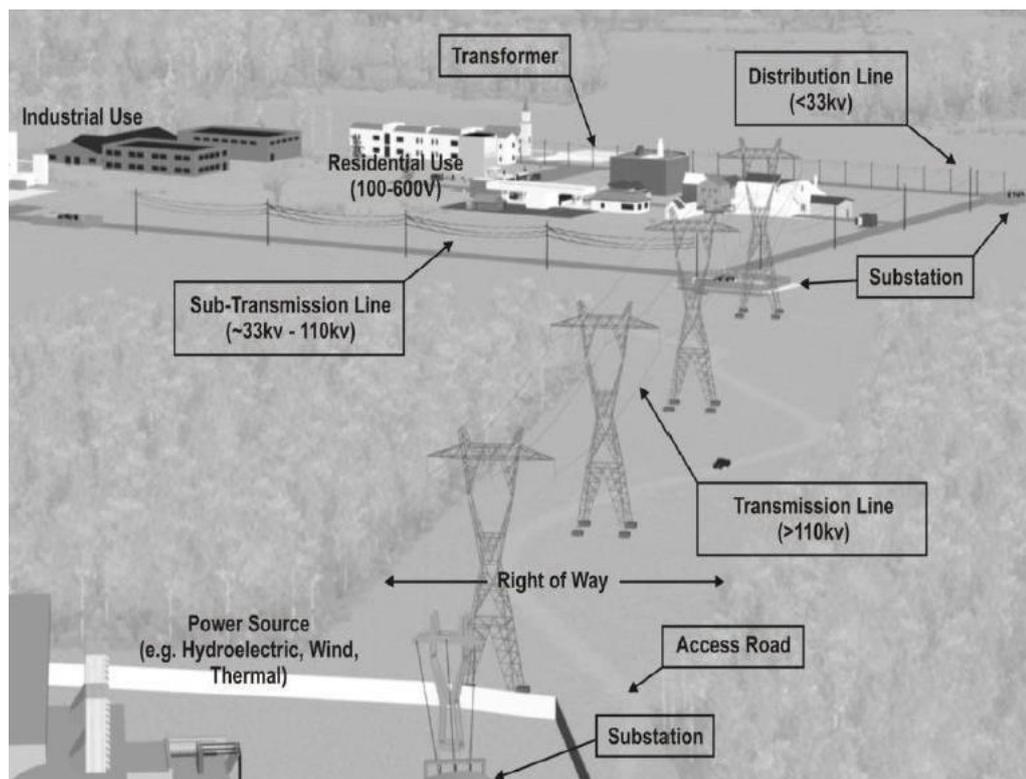


Figure 1: Main components of a power transmission and distribution network

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SCALE:- 1:100

NOTE:
ALL DIMENSIONS ARE TO THE CENTRELINE UNLESS OTHERWISE SPECIFIED.

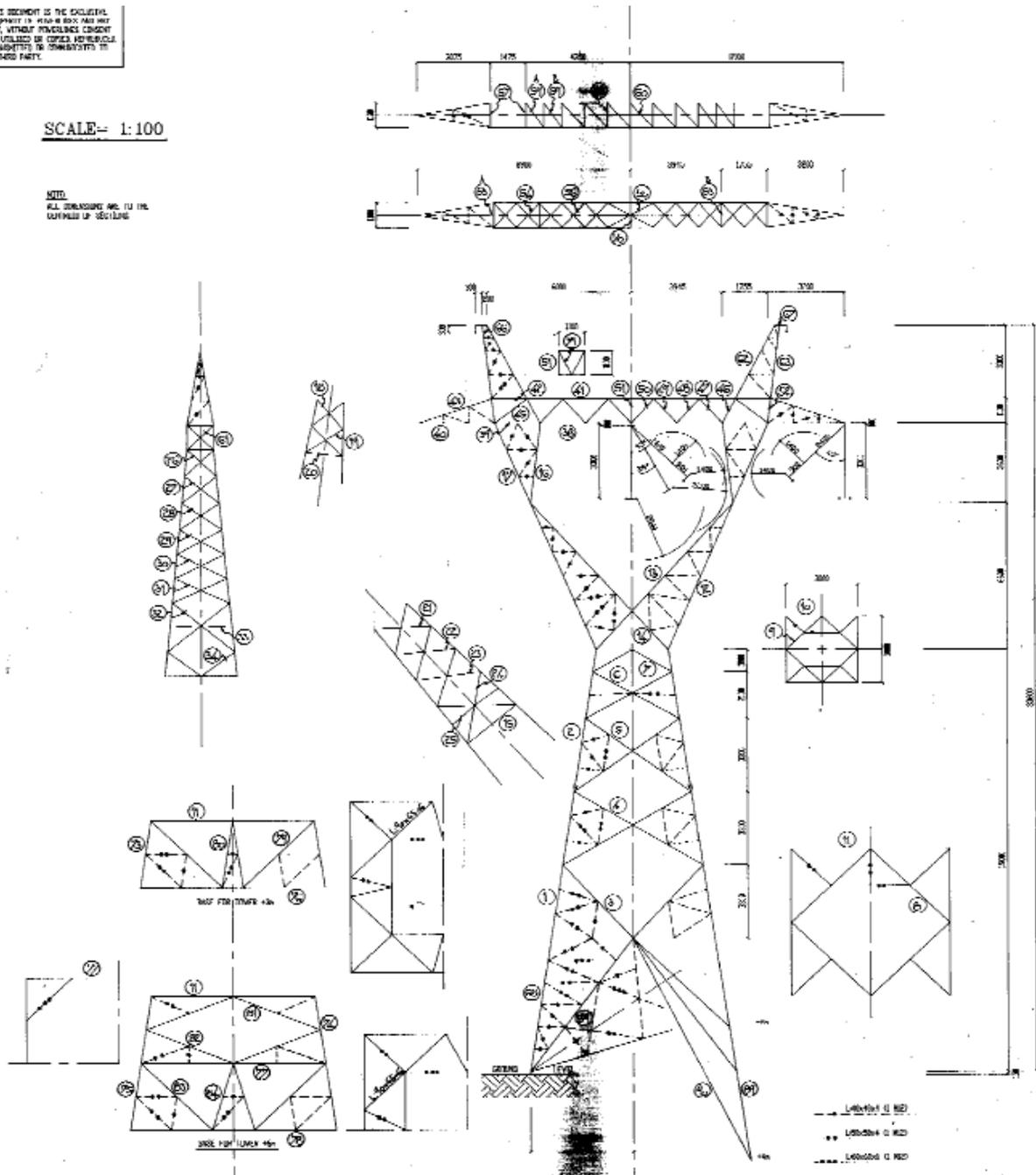


Figure 2: Typical 330 kV TL tower design. Source: World Bank EHS Guidelines for Electric Power Transmission and Distribution (2007).

2.1.2 Towers

There are three main types of transmission towers (or pylons) used in a transmission system. Suspension towers support straight stretches of a transmission line. Deviation towers are located at points where a transmission line changes direction. Terminal towers are located at the end of overhead transmission lines where they connect with substations or underground cables. The most common type of transmission tower or pylon used for high-voltage power lines is a steel lattice structure.

The towers are the most visible component of the power transmission line. Their function is to keep the high-voltage conductors (power lines) separated from their surroundings and separated from each other.

A variety of tower designs exist that generally employ an open lattice work or a monopole, but in generally they are tall metal structures.

Higher voltage lines require greater separation. The unintended transfer of power between a conductor and its surroundings, known as a fault to ground, can occur if an energized line comes into direct contact with the surroundings or comes close enough for an electric arc to jump.

Where a change of direction is required, the conductor tension is unbalanced, and a deviation tower is required. This tower is likely to have a broader footprint than the other towers along the transmission line.

In order to establish foundations for the towers activities such as excavation, concrete pouring and pile driving may be required. All of these tasks require access roads and service facilities with dimensions and strength sufficient to handle large, heavy tower components, earthmoving equipment, and maintenance equipment.

The tower construction for this Project will be steel lattice structures as shown in Figure 2

2.1.3 Conductors (power lines)

The conductors are the power lines that carry the electricity along the transmission line. Generally, several conductors are strung on a tower for each electrical circuit. Conductors are constructed primarily of twisted metal strands; however more modern conductors may incorporate ceramic fibers in a matrix of aluminum for added strength and less weight than conventional copper conductors.

A variety of conductor compositions and designs are in use to meet a variety of specific requirements. Originally, copper was used almost exclusively because of its high electrical conductivity, but cable diameters with copper were determined more by the need for mechanical strength than conductivity potential.

Modern aluminum conductors are more economical to use than copper, even though aluminum has only 60% of the conductivity of copper. Typical aluminum conductors

are composed of multiple \pm 1mm-thick strands twisted together. There are various varieties of multistrand conductor cables available.

While steel is a relatively poor conductor, its high strength makes it possible to increase span lengths, which reduces tower investments. These composite conductors are designated by stranding combinations. For example, a “84/7” conductor has 84 aluminum strands surrounding a central core of 7 steel strands.

A type of composite using ceramic fibers in a matrix of aluminum has been introduced which is lighter and stronger, and has the advantage of high strength, even at elevated temperatures, and the addition of zirconium to the aluminum alloy makes it more resistant to degradation at high temperatures.

2.1.4 Substations

The voltage required for economic transmission of electric power is much higher than the voltage appropriate for distribution to customers (domestic and industrial), so transformers are required to reduce voltage before the power is introduced to a distribution or sub-transmission system. These transformers mark the end of the power transmission line and are located at substations. Intermediate substations may also be required if there is a voltage change along the route (e.g. from 500 kV to 230 kV). Step-up transformers are used to increase voltage while decreasing current, while step-down transformers are used to decrease voltage while increasing current.

Substations vary in size and design, and the areas they occupy are usually flat, cleared of vegetation and typically surfaced with gravel. They are normally fenced off and reached by a permanent access road. In general, substations include a variety of building structures, transformers, switchgear, protection equipment, conductors, fencing, lighting and other features.

There are two main types of electrical substations. Transmission substations contain high-voltage switches used to connect high-voltage transmission lines or to allow specific systems to be isolated for maintenance. Distribution substations are used to transfer power from the transmission system to the distribution system. Typically, at least two transmission or sub-transmission lines enter a distribution substation, where their voltage is reduced to a value suitable for local consumption. Distribution

To avoid disruption to overhead power transmission lines and towers, regular maintenance of vegetation within the RoWs is required. Unchecked growth of tall trees and accumulation of vegetation within RoWs can result in several impacts including power outages through contact of branches and trees with transmission lines and towers; ignition of forest and brush fires; corrosion of steel equipment; blocking of equipment access; and interference with critical grounding equipment.

Typically, tall trees of approximately 4 m or more are not permitted within aboveground RoWs. Underground RoWs have far fewer vegetation restrictions, though trees with deep tap roots that may interfere with duct banks are usually prohibited from being grown within the RoWs.

Mowing with heavy-duty power equipment is usually used to control growth of ground covers and prevent the establishment of trees and shrubs in the RoWs. Herbicides, in combination with mowing, control fast-growing weedy species that have a potential to mature to heights over those permitted within the RoWs. Trimming and pruning is utilized at the boundaries of RoWs to maintain corridor breadth and prevent the encroachment of tree branches. Hand removal or removal of vegetation is costly and time-consuming but is often used in the vicinity of structures, streams, fences, and other obstructions making the use of machinery difficult.

2.1.6 Access Roads

Access routes to transmission line structures for both line construction and maintenance will be required. Access roads are often constructed in conjunction, or within, transmission line RoWs to provide access for maintenance and upkeep of the system during the operational phase. Where these are existing roads they will be used wherever possible. New roads constructed for access would most likely be a combination of gravel roads and jeep tracks. Vegetation clearing and/or recon touring of land may be required for access road construction. Additional temporary roads may also be needed during the construction and decommissioning phases. Access roads will be located within the RoW as much as possible, and existing access routes will be used where possible.

2.2 Project Location

The Transmission Line (TL) will start at the proposed Unika 1 Wind Farm (at the substation to be built). The Unika Wind I Farm site is located directly north of Katete

(Eastern Province, Zambia), and \pm 440 km east of Lusaka, Zambia. The Transmission Line will terminate at the Msoro Substation located approximately 30 km north of the wind farm site.

The Project site is largely rural and a number of small communities are near the RoW. There are no formal villages or settlements along the TL; however, some of villages are located nearby the route include Budula Siliya, Nkumba, Chinzewe and Msoro (approximately 6 km north of the Msosro substation).

The nearest town to the TL start point is Katete, which is a small but well-established town located immediately southwest of the Unika 1 Wind Farm project site. Msoro village is located near the TL end point. The main access road to the Project area is the T4 National Road (Great East Road), which is main route connecting the Zambian capital of Lusaka to the smaller towns of Nyimba, Katete and Chipata in the east.

The transmission line route alternatives are located partly on traditional land, controlled by Kalonga Gawa Undi Mkhomo V (the King/Paramount Chief of the Chewa people), partly on land managed as a Forest Reserve, and partly on traditional land controlled by Chieftainess Msoro.

The co-ordinates for the TL are presented in Table 1 and a map showing the detailed points is presented in Figure 5 and 6.

The traditional leaders and other social/cultural structures relevant to the Project include:

- a. Chewa King, Kalonga Gawa Undi;
- b. Chief M'bangombe;
- c. Chieftainess Msoro
- d. Headmen / headwomen of the villages within the Project area.
- e. Indunas of the Project area.

It is proposed project is generally located in an area which lies between latitudes 13°47'53"S, 14°4'50"S, longitudes 32°0'8"E, 32°9'48"E as shown in Figure below:

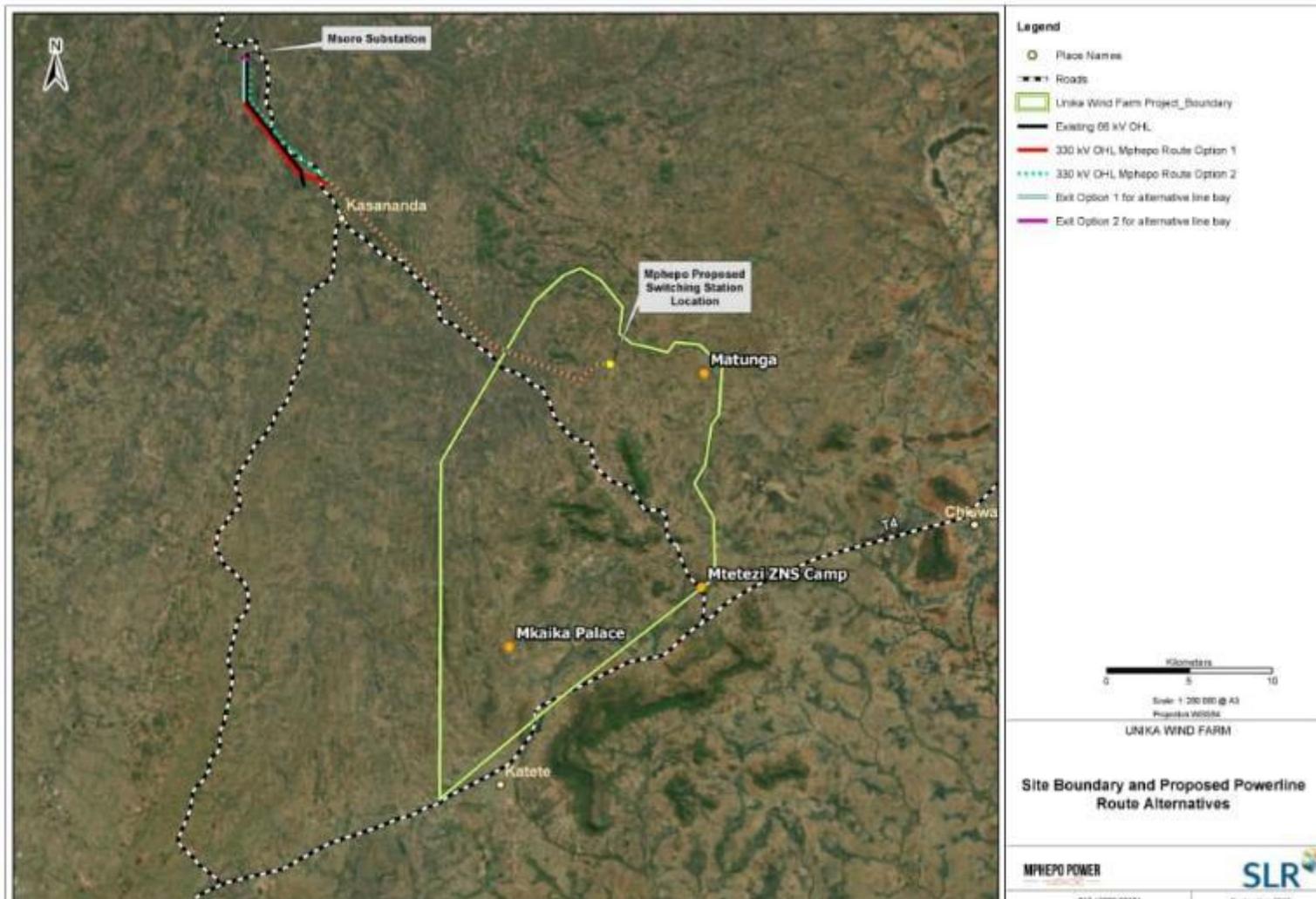


Figure 4: Unika Wind Farm, Roads and the proposed power line

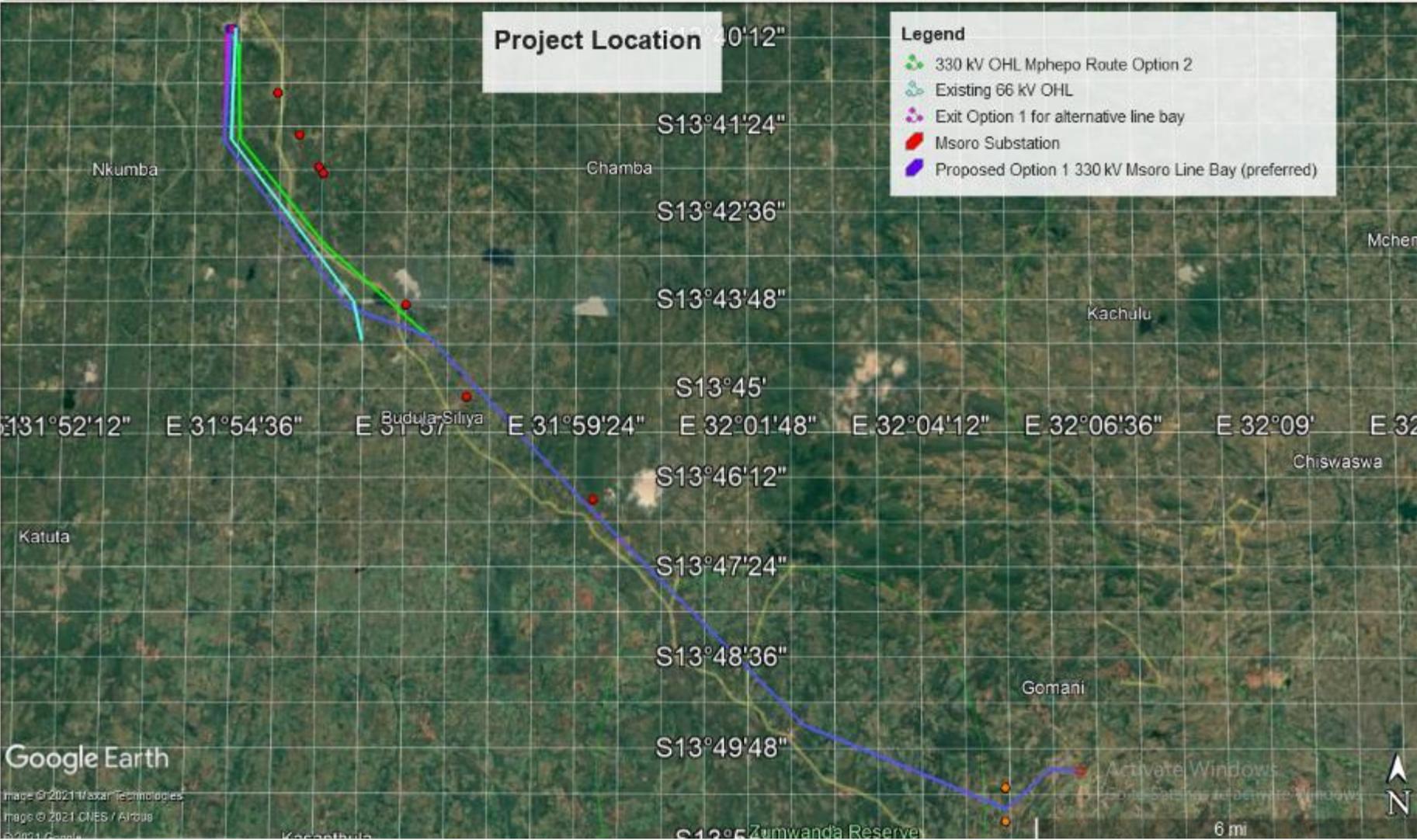


Figure 5: Project Location on Google Earth Pro view.

The Transmission Line project has the following route options as presented in coordinates and map below:

Table 1: The proposed power line options (Coordinates)

Route Option	Label on Map	Co-ordinates
Option 1	1	31°54'27.877"E; 13°40'5.758"S
	2	31°54'24.279"E; 13°41'36.729"S
	3	31°56'11.698"E; 13°43'52.416"S
Option 2	AA	31°54'27.877"E; 13°40'8.327"S
	BB	31°54'34.558"E; 13°40'15.523"S
	CC	31°55'49.083"E; 13°43'1.019"S
	DD	31°55'50.111"E; 13°43'1.019"S
Shared	A	31°57'19.541"E; 13°44'16.572"S
	B	32°2'35.114"E; 13°49'29.062"S
	C	32°5'19.583"E; 13°50'34.849"S
	D	32°5'57.616"E; 13°50'2.983"S
	E	32°6'17.661"E; 13°50'4.525"S

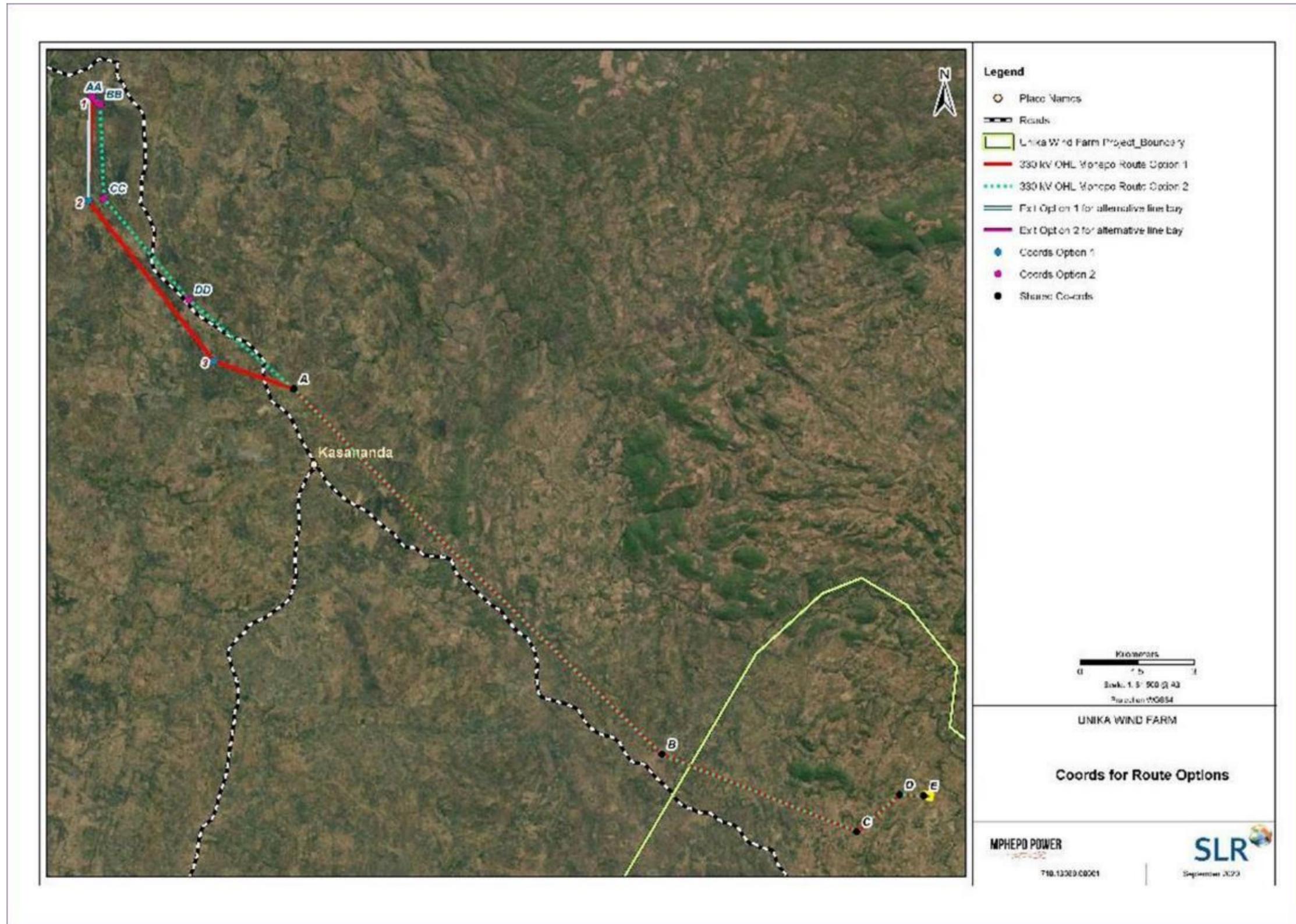


Figure 6: Map of the proposed Transmission Route Options

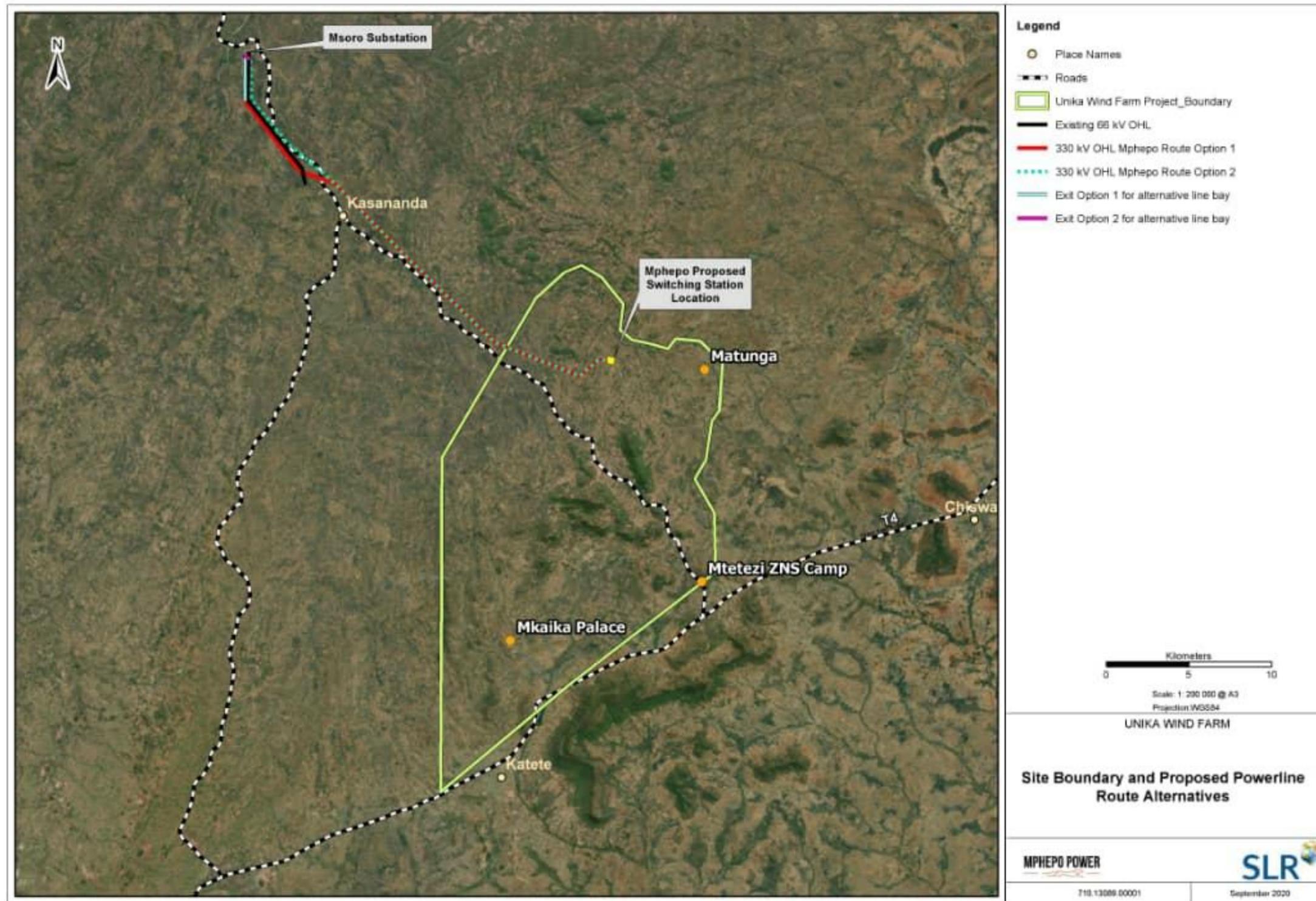


Figure 7: Unika Wind Farm Site Boundary and Proposed Transmission Line Route Alternatives

2.4 Project Description

The proposed project entails the construction of a 330 kV overhead transmission line (TL) from the on-site substation (to be built) at the proposed Unika I Wind Farm site to the existing Msoro Substation located approximately 30 km north-west of the wind farm project site. Some improvements (new feeder bay and exit line) will also be required at the Msoro substation to accommodate the new TL.

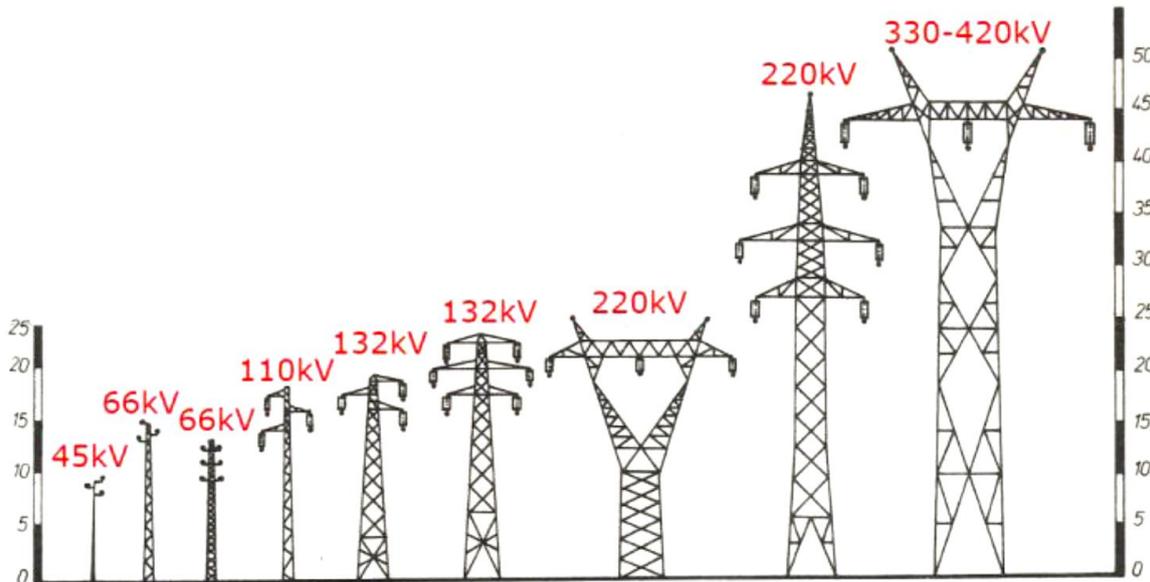


Figure 8: Typical pylon designs. Source: World Bank EHS Guidelines for Electric Power Transmission and Distribution (2007).

As part of the Unika Wind Farm project a 330 kV transmission line, running from the wind farm project substation to the existing Msoro substation located approximately 30 km north-west of the Unika Wind Farm project site, is planned to be constructed.

This transmission line will be constructed by Mphepo and then handed over to ZESCO (or Private Developer) for operations and maintenance.

The transmission line route alternatives are located partly on traditional land, controlled by Kalonga Gawa Undi Mkhomo V partly on land managed as a Forest Reserve, and partly on traditional land controlled by Chieftainess Msoro. A Deed of Agreements has been signed with the Chewa Development Trust while a Heads of Agreement has been signed with Chieftainess Msoro. The preferred route of the transmission line mainly follows the D598 road which leads from the T4 main road to Msoro.



Figure 9: Msoro Substation

2.5 Relief and Drainage

The Luangwa valley extends to Mambwe District, Msoro chiefdom to be specific where the project site will be located, this however, is a minor arm of the rift system. The flat-bottomed valley runs from northeast to southwest and the Muchinga mountain range, which forms the northern escarpment, is a classic well-defined, steep-sloped block fault. The underlying rock of the central African region within which the Luangwa lies produces generally poor soils. However, over a long period of time weathering and erosion have shifted nutrient-rich soils from the East African Rift System down into the Luangwa valley. Thus, the floor of the Luangwa trough is overlain with a bed of fertile topsoil making it flat-bottomed, steep-sided and fertile. The meander belt of the Luangwa River and its associated floodplains, including the areas transversed by the main tributaries are overlain by alluvial soils. The geological structures modified by fluvial processes of the Luangwa River and its tributaries have resulted into various soil groups. Three major groups characterize the soils of the valley:

- Acrisols characterized by deep, fine textures, well-drained soils on the plateau;
- Lithosol-Cambisols, developed over the bedrock of the shallow to medium depth, generally poor in nutrients characterised by stony gravel ridges;
- Fluvial-vertisols are developed over the alluvial complex along the Luangwa River and its tributaries (Sichingabula, 1998).). The area of the proposed

project lies within the I and III water catchments of the Zambezi and Luangwa River respectively.

The general topography ranges from 1590 m to 890 m.

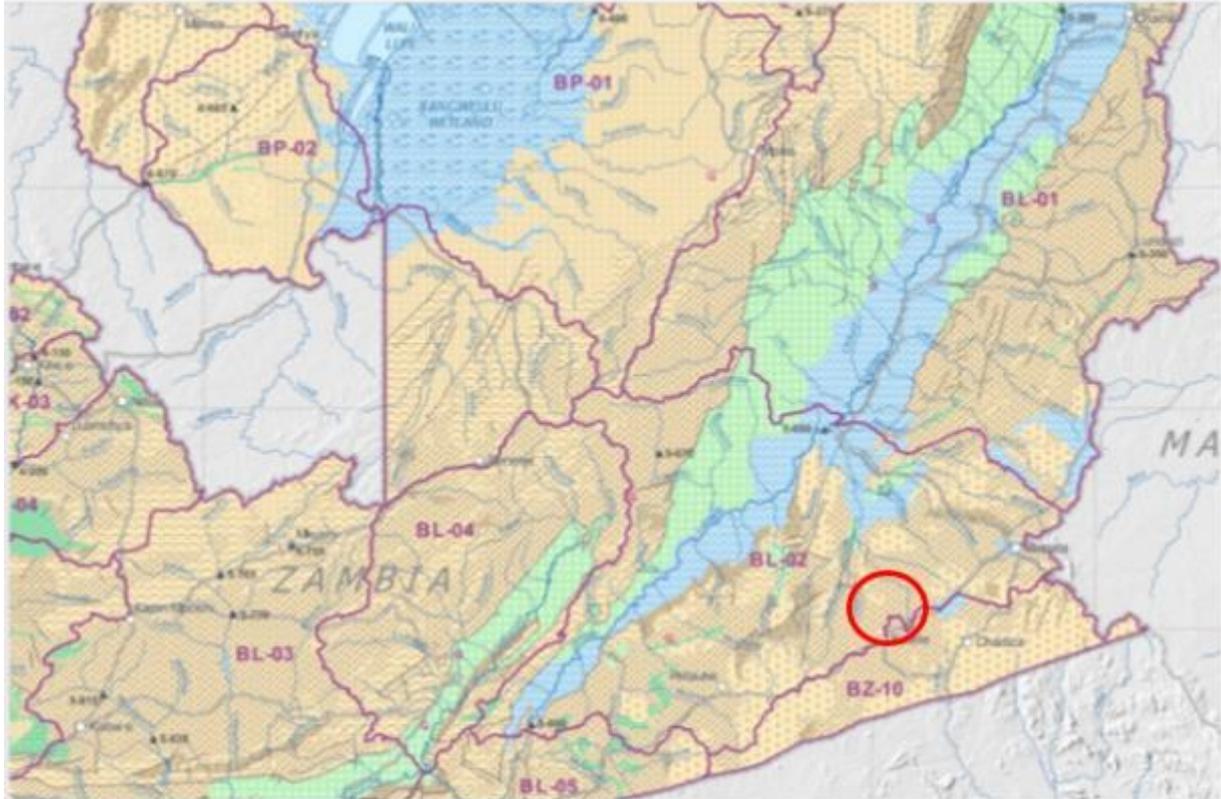


Figure 10: Map of the drainage system of the proposed Project Area showing (Source: Ministry of Mines, Energy and Water Development Lusaka, Zambia).

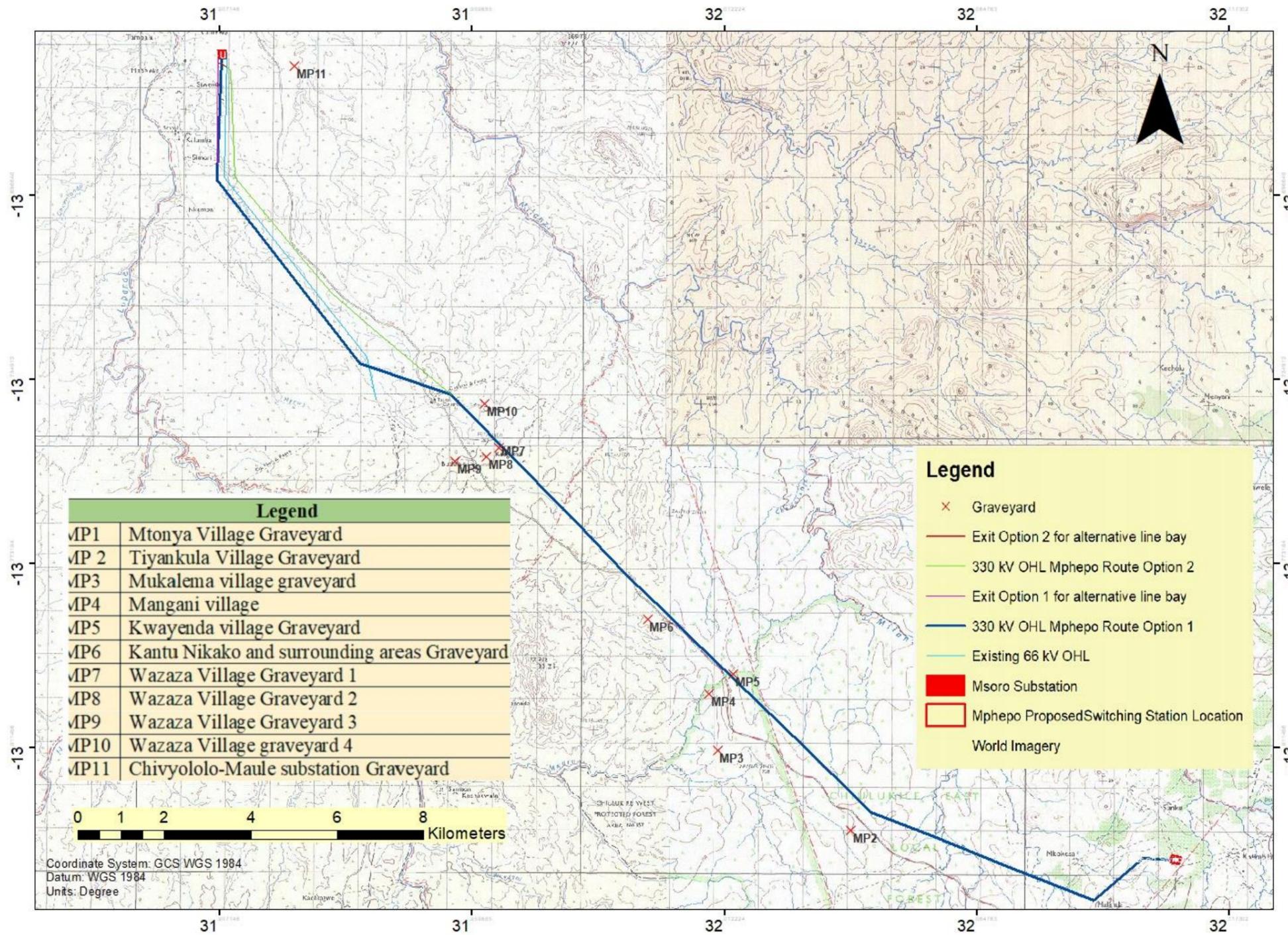


Figure 11: Topographic map of Zambia showing the proposed TL and cultural heritage sites identified (Source: Survey Department GRZ).

2.6 The Geological Outline of Eastern Zambia

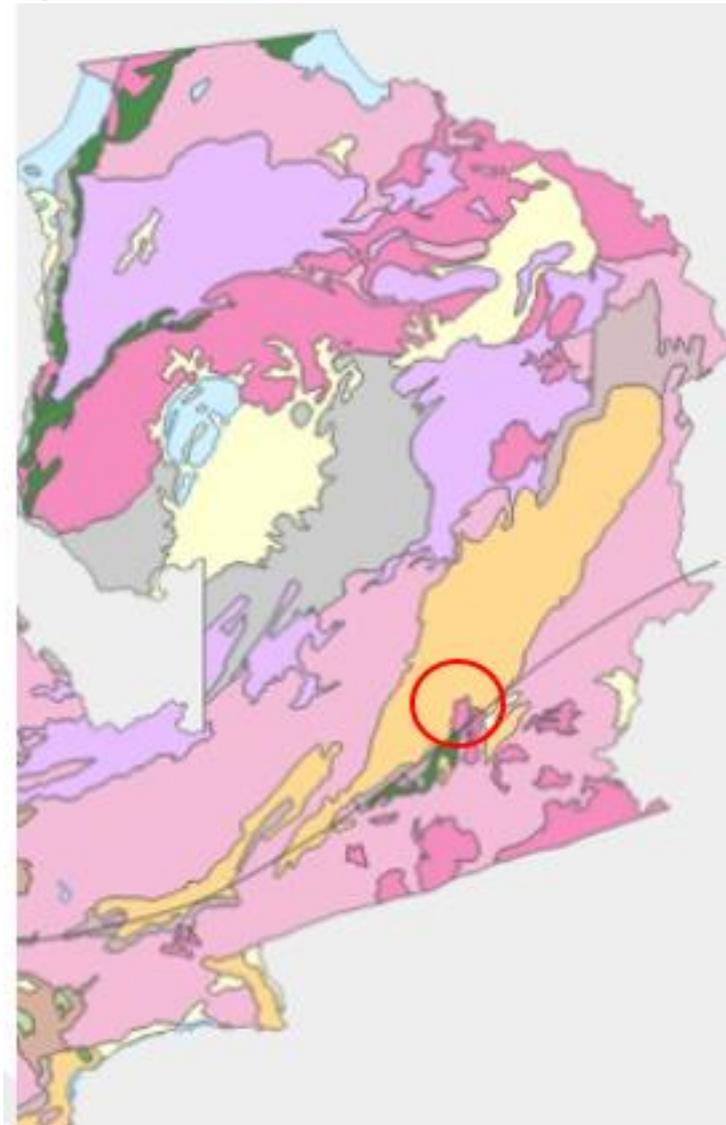


Figure 12: Geological Outline of the proposed project area

The proposed project site has a rock formation known as Lithological Units of Various Ages which comprises of a granite with charnokite in some areas. The larger area of the project site comprises undifferentiated Basement Complex rocks mainly granitic gneisses and migmatites with some granite which displays trends of banding. These are rocks assigned to probably Older Cambrian Age (Geological Survey Department, 1981).

2.7 Vegetation

The vegetation of the proposed project area falls with Region 1b which receives between 800-1000 mm. Miombo (*Brachystegia*) woodland is the major

vegetation type in the District. This is a two-storeyed woodland with an open and semi-evergreen canopy 10.20 m high. The predominant tree genera are *Brachystegia*, *Julbernardia* and *Isoberlinia*. The predominant grass species are *Themeda triandra*, *Hyparrhenia* spp. and *Heteropogon contortus*.

The natural vegetation is savannah woodland dominated by Munga vegetation. This includes woodland in the north sloping down plateau exposed to soil erosion and degradation in the south along the border with Mozambique into the Luangwa Valley, good farmland amid rocky hills in the centre, and deforested. Much of Eastern Province is covered by woodlands. Different types of woodlands are recognized depending on the species composition: Munga (*Acacia* spp.) woodland is dominated by acacias, often *A. polyacantha*, which form a park-like woodland with trees scattered or in groups. *Combretum* spp. and *Terminalia* spp. are other trees found in this type of woodland. Munga woodland is usually found on rich clayey soils. Mopane (*Colophospermum mopane*) woodland is usually a one-storeyed woodland dominated by that species. *Colophospermum mopane* is, however, also found mixed with Miombo and Munga woodland at dambo edges. Riparian woodland occurs in narrow strips on stream banks and along rivers. The common species are *Syzygium* spp., *Khaya nyasica* and *Trichilia emetica*. Orchids and ferns are common. Termitaria (anthill) woodland. Anthills are common in miombo, mopane and munga woodlands, and due to the termite activities certain species thrive there. Such species are *Strychnos* spp., *Diospyros* spp. and *Sterculia* spp.

The Chiulukire West and Chivuna Hills Forest Reserves are located along the southern portions of the TL Routes. Approximately 8 km of the TL route would need to be located within these Forest Reserves (5 km through Chivuna Hills and 3 km through Chiulukire West).

2.8 Soil

Red clays or red brown loams (Luvisols) found near Chipata (within 50 km), between Petauke and Nyimba, and in smaller areas near Seya and Vulamukuko in Katete District. These soils are heavy, difficult to till by hand, but rich in nutrients and have a good water-holding capacity.

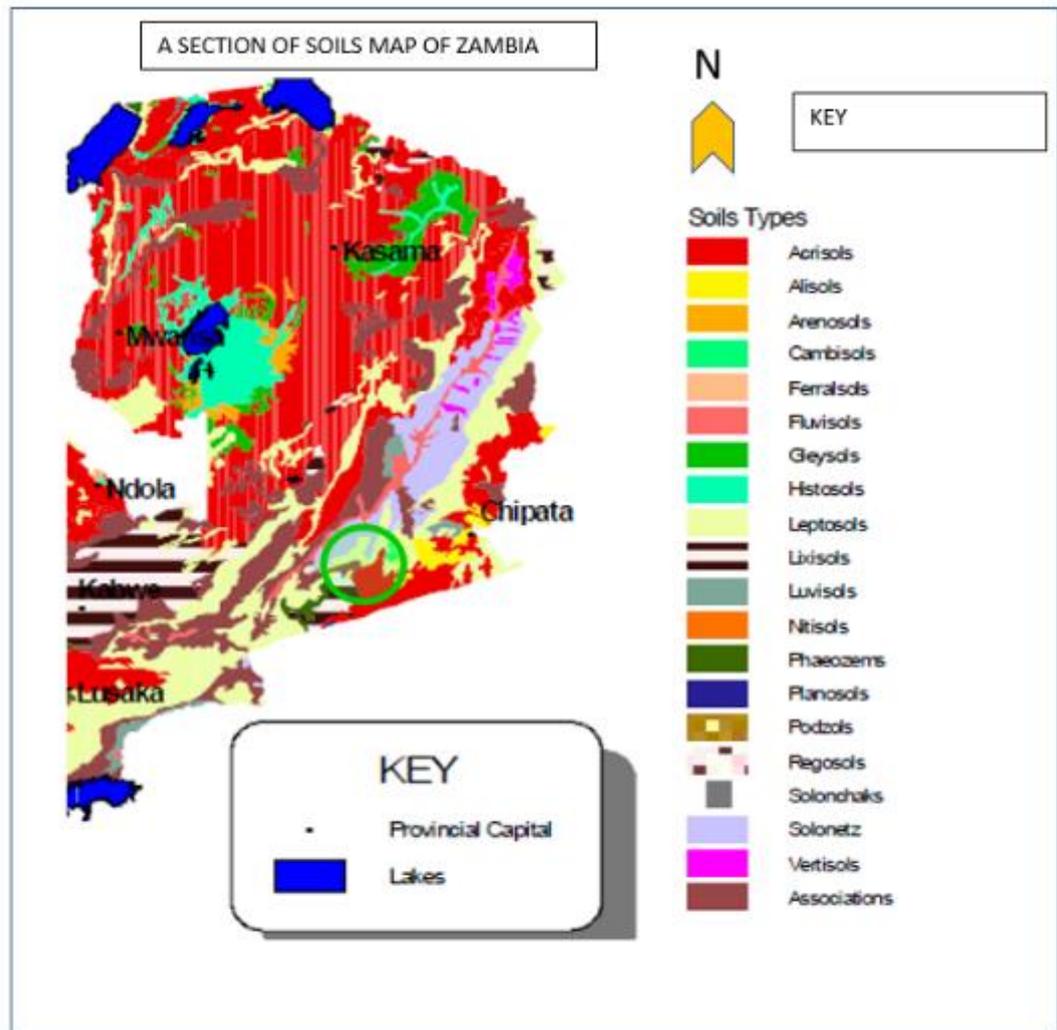


Figure 13: Part of Map of Zambia showing the soil type of the country, the proposed project area is circled in Green.

2.9 Fauna

Hares and Guinea fowls constitute the common fauna for the project area. It is important to note that there is not yet a report of any rare *fauna* which is according the NHCC Act falls under protection as heritage.

2.10 Human Settlements and Cultural Practices

There are over 150 villages in the general project area to which all of them have headman as a representative. They are categorised as follows:

- Kasamba Area with 30 villages;
- Kabila Area with 12 villages and 5 farms;

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

- Kasamba Central area with 31 villages/headmen;
- Wazaza Area with 45 villages; and
- Chivyololo area with 35 villages.

Other villages in the proposed project area include Gomani, Sunku, Mkokeza, katimba, Malanda, Mlangali, Phindani, Tambala, Sakoba all of which are concentrated on the north-eastern part of the access road to Msoro and especially on the eastern part of Zumwanda Hills.

It is these communities including those that travel from different parts of Zambia, Malawi and Mozambique for the Kulamba traditional ceremony, over time, who have shaped the landscape where this proposed project is earmarked for. Just like many other African Societies, these Chewa and Kunda people have graveyards/cemeteries where they burry their deceased members of the communities. Coincidentally, Gule wa Mkulu (believed to be spirits) typically emerge from these graveyards.

The culture of the Kunda and Chewa people is matrilineal driven and therefore focuses on the “*mbumba*” female members of the community. Their entertainment is centred on dances such as *chintali* and *chitele* as the apex of their totality. Thus, landscape of Mkaika Royal Village and its immediate surrounding villages is the centre of Gule wa Mkulu. The Mkaika Royal Village that houses the “King’s” Palace and that of the Queen Mother Nyangu as well as the Kulamba Cultural Arena the Gwalada-spiritual centre, the Dzimbabwe entertainment centre, where people converge to celebrate the good things relating to those that have transitioned, are some of the important aspects of the cultural landscape. Gule wa Mkulu is the emergence of the reincarnation in the form of spirits of the departed souls mimicking their deeds, lifestyles or achievements e.g. deceased was a farmer, a dancer etc. The emergence of Gule wa Mkulu is mainly associated with secrecy and in this case, they appear and disappear into thickets which are mainly associated with pristine forests and graveyards.

2.11 Paleontological Context

A standalone Paleontological study was not completed but preliminary observations from literatures and field surveys revealed no fossil finds in the study area.

Considering that the geology is generally metavolcanics and quartzites with some plentiful of granite in the proposed project area is not expected to yield any plant and/or animal fossils.

2.12 Project Aims and Objectives

Zambia's electricity supply shortage increased to 810 megawatts (MW) in November 2021 from around 750 MW in September 2020. The proposed project will essentially add more power to plug the gap of the power deficit the country and the region has been facing.

Zambia as Africa's no.2 copper producer has seen electricity supply dwindle due to low water levels at hydropower dams as a severe drought has swept through southern Africa for the second time in less than five years, largely due to a prolonged dry season caused by climate change.

With such a background, the main purpose of setting up this wind power project in Zambia is production of power for contribution to the national power grid to meet the local and regional market demands.

In this context, the project meets the various government's objectives for:

- Improving electricity supply distribution locally and nationally;
- Creation of employment opportunities for locals and other business opportunities;
- Increased trade opportunities in the community with increased population;
- General improvement in local livelihoods due to synergistic impacts of positive effects of the wind farm project;
- Increase in revenue to local authorities and institutions through mobile communications, land rates, licences and personal levy.
- Improving the local economy of the Eastern Province;

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

- Generation of direct and indirect jobs and working opportunities; and
- Contribute to increasing foreign exchange, creating urban jobs, transferring skills, improving livelihoods and lowering poverty levels in Zambia.

In summary, the main objective of the Project is to enable the proposed Unika I Wind Farm to export the generated electricity to the National Grid to meet existing and future demands.

3.0 POLICY INSTITUTIONAL AND ORGANISATIONAL FRAMEWORK

This section outlines the legal and administrative framework within which the project will be implemented. It outlines various key related and relevant pieces of national legislations, international agreements, standards and guidelines to the proposed development. The pieces of national legislations, international agreements, standards, protocols and guidelines are also relevant to the environmental management and protection of heritage resources as well as protection of the public.

3.1 Policy and Administrative Framework

The proposed Mphepo Power Line Transmission project site is located in the Eastern Province, in Mambwe and Katete districts. The site can be easily reached by travelling for 35.2km from Katete on the Katete – Chipata Road.

Table 2: Regulatory Setting

Name	Summary
Zambia Legislation	
The Environmental Management Act No. 14 of 2015	The Environmental Management Act is the principal national environmental legislation relating to environmental protection and management. Many environmental issues discussed and regulated by the Act, such as water and air pollution, waste management, natural resource management, etc. will arise during implementing the proposed project and will influence the environment.
Environmental Impact Assessment Regulations Statutory Instrument No. 28 of 1997	Requires that an Environmental Impact Assessment (EIA) must be undertaken prior to the development of the Project by Regulation 3 (1) of the Environmental Impact Assessment Regulations.
Electricity Act No. 11 of 2019	An Act to regulate the generation, transmission, distribution and supply of electricity so as to enhance the security and reliability of the supply of electricity; provide for the sale and purchase of

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<p>electricity within and outside the Republic; facilitate the achievement of the efficient, effective, sustainable development and operation of electricity infrastructure; provide the roles and responsibilities of various participants in the electricity sector; facilitate adequate levels of investment in the electricity sector; provide for a multi-year tariff framework; promote transparency in the identification and allocation of risks, costs and revenues within and between participants in the electricity sector; ensure the protection and safety of consumers of electricity and the public; repeal and replace the Electricity Act, 1995; and provide for matters connected with, or incidental to, the foregoing.</p> <p>The proposed project will involve the construction of a transmission line which is envisaged to start at the Unika I Wind Farm substation (to be built) and will terminate at the Msoro substation</p> <p><i>The developer will ensure that the implementation of the proposed project is compliant to this Act.</i></p>
<p>Roads and Traffic Control Act No. 11 of 2002</p>	<p>The Act established the Road Transport and Safety Agency mandated to provide for a system of roads safety and traffic management. Parts V to XIV of the Road and Road Traffic Act CAP 464 of the Laws of Zambia. It established the Road Transport and Safety Agency (RTSA) of which its main function is to implement policy on road transport, traffic management and road safety.</p> <p>Access to the project site will be through the existing public road, the Lusaka - Kabwe road during site preparation, construction, operation and demolition. <i>To this effect, Mphepo Power will ensure the use of the road in accordance with these regulations. The proposed project, during its construction and operational phase will adhere to the Road Traffic Act regarding the haulage of construction materials and equipment.</i></p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
The Land Act No. 29 Cap 184 of 1995 and Land Acquisition Act	<p>The Land Act of 1995 was enacted to guarantee peoples' right to land while enhancing development. Under this Act, land has been divided into the following categories: state, local authority and traditional land. The Act provides for the alienation, transfer, disposition and charge of land. Although the Act does not refer to matters of conservation, it is important in that land is one of the basic natural resources. The Act recognizes the holding of land under customary tenure and the Chief's role has been legally recognized, such that land cannot be converted or alienated without approval of the Chief.</p> <p><i>Mphepo Power ought to comply with this Act as part of the land is customary land.</i></p>
The Chief's Act No. 13 of 1994	<p>Provides for the recognition, appointment and functions of Chiefs and Deputy Chiefs; for the exclusion of former Chiefs and Deputy Chiefs from specified areas in the interests of public order; for the appointment and functions of Indunas; and for matters incidental to or connected with the foregoing.</p> <p>Since the Wind project is located in Katete under His Royal Highness Chieftainess Mungule, in Mbangombe and Msoro Chiefdoms.</p> <p><i>Mphepo Power project management shall always consult and work with the tradition arrangement in area during the life of the project</i></p>
The Local Government Act, No. 2 of 2019	<p>This Act provides for the establishment of Councils in districts which function as Local Authorities. The Act defines the functions of Local Authorities. Some of their functions relate to control of the development, use of land and buildings, erection of buildings, conservation of natural resources, prevention of soil erosion, protection of life, property and natural resources from damage by fire, control of grass weeds and wild vegetation, and maintenance of environmental health services. Other functions include control of the storage, sale and use of petroleum, extermination of insects, rodents</p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<p>and snakes, dealing with all kinds of refuse and effluent, controlling the provision of drains and sewers, and conservation and the prevention of the pollution of supplies of water.</p> <p>The developer has to ensure that the project does not pollute the project area.</p> <p><i>The developer is obligated to ensure the infrastructure construction in the project area is approved by Katete District Council. Operation of the Wind project will also have to meet the Council's standards in terms of use of facilities, protection of life and property wildlife, vegetation, and refuse management.</i></p>
The Local Administration (Fire Services) Regulations Statutory Instrument No. 121 of 1991	<p>These Regulations are also made under the Local Government Act Cap 281 of the Laws of Zambia. Regulation 4(1) prohibits all persons from occupying or using any designated premises in respect of which there is no Fire Certificate. In terms of Regulation 4 (2), designated premises are those used for the following purposes:</p> <ul style="list-style-type: none"> • Provision of medical treatment or care; • Provision of sleeping accommodation; • Entertainment, recreation for club, society or association activities; • Teaching, training, instruction or research; • Access to the premises by members of the public whether on payment of a fee or otherwise; and • Premises used as office premises or shop premises where more than ten persons are employed to work either within or outside the buildings or Plant. <p><i>Mphepo Power shall adhere to the provisions of this Act.</i></p>
The Urban and Regional Planning Act No. 3 of 2015	<p>An Act to provide for development, planning and administration principles, standards a requirements for urban and regional planning processes and systems; provide for a framework administering and</p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<p>managing urban and regional planning for the Republic; provide for a planning framework, guidelines, systems and processes for urban and regional planning for the Republic; establish a democratic, accountable, transparent, participatory and inclusive process for urban and regional planning that allows for involvement of communities, private sector, interest groups and other stakeholders in the planning, implementation and operation of human settlement development; ensure functional efficiency and socio-economic integration by providing for integration of activities, uses and facilities; establish procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning; ensure sustainable urban and rural development by promoting environmental, social and economic sustainability in development initiatives and controls at all levels of urban and regional planning; ensure uniformity of law and policy with respect to urban and regional planning; repeal the Town and Country Planning Act, 1962, and the Housing (Statutory and Improvement Areas) Act, 1975; and provide for matters connected with, or incidental to, the foregoing.</p> <p><i>The project will operate within the confines of this Act and all necessary applications to be made to the local council before commencement of any project activities</i></p>
<p>The National Heritage Conservation Commission Act, Cap 123 of 1989</p>	<p>The Act sets up the National Heritage Conservation Commission and supports the conservation of ancient, cultural and natural heritage, relics and other objects of aesthetic, historical, pre-historical, archaeological or scientific interest. It also supports the regulation of archaeological excavations and export of relics and other incidental matters (refer in part V Section 33. Sub sections 1 and 2)</p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<p><i>Any new discoveries of items of historical or archaeological interest during implementation of the project shall be handled by Mphepo Power in accordance with the provisions of the NHCC Act and the required procedures for the reporting of such discoveries shall be followed.</i></p>
<p>The National Council for Construction Act No. 13 of 2003.</p>	<p>Regulates all those who are involved in construction</p> <ul style="list-style-type: none"> • Part II, Section 5 (i), set and promote safety standards in the construction industry • Part III, Registration of contractors Section 7(1) an application for the registration as a contractor shall be made to the council in the prescribed form and shall be accompanied by the prescribed fee <p><i>Mphepo Power management will only engage international contractors with reputable track record for the development of the project. In an in vent that a local contractor is involved in the works. Mphepo Power will only engage contractors that are registered with national council for construction with the right grade to carry out the works and it will also establish Health and Safety Committees at various levels during the Construction phase to ensure to ensure safety and welfare of employees.</i></p>
<p>The Public Health Act Cap 295 of 2017</p>	<p>The Act supports the prevention and suppression of diseases and regulates all matters connected with public health in Zambia. Public health falls under the authority of local authorities in districts, which act as enforcement agencies through health inspectors.</p> <p><i>Mphepo Power will adhere to the provisions of the Act and obtain all the necessary licenses and permits as required by the Act and will endeavour, within the limits of the project budget, to help improve the lives of the lives of the affected people to levels better than currently are.</i></p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
<p>The Registration and Development of Villages Act (CAP 289)</p>	<p>The Act provides for the registration of villages and of the inhabitants thereof, the establishment of Village Productivity Committees, Ward Councils and Ward Development Committees, and for matters connected with or incidental to the foregoing.</p> <p>The Ward Development Committee shall be the executive committee of the Ward Council, and shall be responsible for the administration and development of the ward as a whole. One of its functions and duties is to organise an efficient and effective utilisation of the ward's natural and human resources in order to increase the capacity of the villagers in the ward to raise their standards of living.</p> <p>The Ward Development Committee shall assess the total needs of the ward, working out priorities and harmonising them with overall Government priorities in order to achieve for the ward maximum advantage from the implementation of the projects under the management of the ward and those under Government control. Another function is to ensure that there is proper cleanliness and sanitation in each village in the area of a ward.</p> <p><i>Mphepo Power will have to work with the Ward Development Committee in implementing the project concerning some concerns which may be identified by the committee.</i></p>
<p align="center">International Standards – Adopted by the Project</p>	
<p>IFC Performance Standards (2012)</p>	<p>International Finance Corporation (IFC) performance standards (PS) for social and environmental sustainability were developed by the IFC and were last updated on 1st of January 2012. The overall aims of the IFC PS are:</p> <ul style="list-style-type: none"> ▪ To fight poverty; ▪ To do no harm to people or the environment; ▪ To fight climate change by promoting low carbon development;

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<ul style="list-style-type: none"> ▪ To respect human rights; ▪ To Promote gender equity; ▪ To give information prior to project development, free of charge and free of external manipulation; ▪ To collaborate with the project developer to achieve the PS; ▪ To give advisory services; and ▪ To notify countries of any trans-boundary impacts because of a project. <p>The PS form of eight performance standards namely:</p> <ul style="list-style-type: none"> ▪ Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts; ▪ Performance Standard 2: Labour and Working Conditions; ▪ Performance Standard 3: Resource Efficiency and Pollution Prevention; ▪ Performance Standard 4: Community Health, Safety and Security; ▪ Performance Standard 5: Land Acquisition and Involuntary Resettlement; ▪ Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ▪ Performance Standard 7: Indigenous Peoples; and ▪ Performance Standard 8: Cultural Heritage
The IFC Performance Standard 8 (2012):	<p>Cultural Heritage Definition:</p> <ul style="list-style-type: none"> ▪ Tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values;

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Name	Summary
	<ul style="list-style-type: none"> ▪ Unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and ▪ Certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles (para. 3)
Equator Principles	<p>The Equator Principles are a set of voluntary guidelines for managing environmental and social issues. By doing so, negative impacts on project-affected ecosystems and communities can be avoided where possible. If these impacts are unavoidable, they can then be reduced, mitigated and/or compensated for accordingly.</p> <p>These principles were adopted in June 2003 by Ten (10) international commercial banks and by June 2006, forty-one (41) Equatorial Principles Financial Institutions (EPFI) had adopted these Principles, representing approximately 80% of global project Financial Institutions.</p>

3.2 Pertinent International Conventions, Agreements, Standards and Guidelines

The Government Republic of Zambia is a party to a number of multilateral regional and international agreements, protocols and conventions and these include:

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Table 3: International conventions Zambia is a party

Aspect	Convention	Summary of aims or relevant conditions	Status
Biodiversity and Protected Areas	Convention on Biological Diversity (29 December 1993)	Develop strategies, plans or programs for conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programs which shall reflect the measures set out in this Convention. Biological resources of significant conservation value that will be identified during Project implementation will be conserved and protected.	Party to.
Natural Resources Conservation	African Convention on the Conservation of Nature and Natural Resources (Algiers, 1968) ACCNNR	The objective of the convention is to encourage individual and joint actions for the conservation, utilization and development of soil, water, flora and fauna for the present and future welfare of mankind. Areas of concerns include: This economic, nutritional, scientific, educational, cultural and aesthetic	Party to

3.3 UNESCO Recommendations and other Standards

The United Nations Educational and Scientific Organization (UNESCO) have promoted various Conventions and other instruments for the conservation of the cultural heritage. Over recent decades the growing international recognition of the importance of cultural heritage has led to the establishment of a number of high-level protocols and standards for managing archaeological resources.

Zambia is also a party to a number of these conventions signed for addressing common environmental concerns including the following:

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Table 4: Archaeological and other cultural heritage frameworks/guidelines

Aspect	Convention	Summary of aims or relevant condition
Protection and Management of the Archaeological Heritage	Charter for the Protection and Management of the Archaeological Heritage (ICAHM) 1990	Considers the subject of archaeology under the following headings: definitions, integrated protection policies, legislation, survey, maintenance and conservation, presentation, re-construction, and international co-operation
Application of methodology and technology of conservation to monuments, historic areas and sites	International Council of Monuments and Sites (ICOMOS)	ICOMOS promotes the study of the theory, methodology and technology of conservation applied to monuments, historic areas and sites
Conservation of Places of Cultural Significance	The Burra Charter 1981	The Burra Charter (BC) develops the principles detailed in the Venice Charter to suit local Australian requirements. It includes a comprehensive list of definitions of items such as place, fabric, conservation maintenance, preservation, restoration, reconstruction, adaptation and compatible use
Conservation and principles for conservation of places of cultural heritage value	Charter for the Conservation of Places of Cultural Heritage Value (CPCHV), 1992	The provides comprehensive definitions of the processes involved in conservation, and sets out principles to guide the conservation of places of cultural heritage value
Protection and excavation of archaeological sites and removal of archaeological artefacts	Charter: Recommendation on International Principles Applicable to Archaeological Excavations (1956)	Charter establishes international principles governing the protection and excavation of archaeological sites. It also recommends the provision of funds for site maintenance; the careful supervision of the restoration of archaeological remains; a prohibition against removal of monuments without consent; and a provision in the deed of concession to excavate, for the guarding,

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

		<p>maintenance, and conservation of the site and its associated objects.</p>
Cultural Heritage	<p>Convention concerning the Protection of the World Cultural and Natural Heritage, 1972</p>	<p>The convention is concerned with the protection of Cultural and natural heritage.</p> <p>Cultural and natural heritage sites that may be identified during implementation of the proposed Project will be protected and conserved in accordance with the provisions of the Convention to which Zambia is party to.</p>
Protection of Rights of Indigenous Peoples – sacred sites (UNDRIP)	<p>United Nations Declaration on the Rights of Indigenous Peoples 2008</p>	<p>(UNDRIP) is an important benchmark in protection of rights of indigenous peoples. Article 12 in particular provides significant political leverage for developing appropriate policies for the protection and recognition of sacred natural sites at the national level and states that:</p> <p>Indigenous peoples have the right to manifest, practice, develop and teach their spiritual and religious traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to the use and control of their ceremonial objects; and the right to the repatriation of their human remains.</p>
Safeguarding of the Intangible Cultural Heritage	<p>the Convention for the Safeguarding of the Intangible Cultural Heritage of 2003</p>	<p>The purposes of this Convention as presented in the UNESCO Text are:</p> <ul style="list-style-type: none"> (a) to safeguard the intangible cultural heritage; (b) to ensure respect for the intangible cultural heritage of the communities, groups and individuals concerned; (c) to raise awareness at the local, national and international levels of the importance of the intangible cultural heritage, and of ensuring mutual appreciation thereof; (d) to provide for international cooperation and assistance. <p>Article 2 – Definitions</p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

		<p>For the purposes of this Convention,</p> <p>1. The “intangible cultural heritage” means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For the purposes of this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and of sustainable development.</p> <p>2. The “intangible cultural heritage”, as defined in paragraph 1 above, is manifested inter alia in the following domains:</p> <p>(a) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;</p> <p>(b) performing arts;</p> <p>(c) social practices, rituals and festive events;</p> <p>(d) knowledge and practices concerning nature and the universe;</p> <p>(e) traditional craftsmanship.</p> <p>3. “Safeguarding” means measures aimed at ensuring the viability of the intangible cultural heritage, including the identification, documentation, research, preservation, protection, promotion, enhancement, transmission, particularly through formal and non-formal education, as</p>
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MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

	<p>well as the revitalization of the various aspects of such heritage.</p> <p>4. “States Parties” means States which are bound by this Convention and among which this Convention is in force.</p> <p>5. This Convention applies mutatis mutandis to the territories referred to in Article 33 which become Parties to this Convention in accordance with the conditions set out in that Article. To that extent the expression “States Parties” also refers to such territories.</p> <p>Article 3 – Relationship to other international instruments</p> <p>Nothing in this Convention may be interpreted as:</p> <p>(a) altering the status or diminishing the level of protection under the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage of World Heritage properties with which an item of the intangible cultural heritage is directly associated; or</p> <p>(b) affecting the rights and obligations of States Parties deriving from any international instrument relating to intellectual property rights or to the use of biological and ecological resources to which they are parties.</p> <p><i>Gule wa Mkulu of the Chewa from Malawi, Mozambique and Zambia was inscribed in 2008 (3.COM) on the Representative List of the Intangible Cultural Heritage of Humanity (originally proclaimed in 2005) through Nomination file No. 00142.</i></p> <p><i>It is expected that Zambia through this project will work towards the protection and preservation of this intangible heritage.</i></p>
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3.4 National Policy

Key National Policy instruments include:

3.4.1 Zambia Vision 2030

Vision 2030 expresses Zambia’s aspirations in terms of economic growth, good governance, and development of the people. One key basic principle of Vision 2030 seeks to increase the rural electricity access rate from the current 4.5 percent to 51 percent by 2030. In urban areas, the target access rate by 2030 is 90 percent compared to the current 67 percent. These are ambitious plans given Zambia’s rapidly growing population and a population density among the lowest in southern Africa.

3.5 Revised Seventh National Development Plan (R-SNDP)

The 7th National Development Plan (SNDP) recognises the energy sector as one of the important sectors in Zambia’s economy development. The proposed project is therefore in line with the SNDP objectives. (R-SNDP, 2017):

3.5.1 Strategy 1: Improve production of Power

The National Electrification Program is seen as a pillar for achieving the broader development goals of Vision 2030, helping Zambia become a “strong and dynamic middle-income industrial nation that provides opportunities for improving the well-being of all, embodying values of socio-economic justice.” (Government of Zambia) and the SDGs.

3.6 Corporate Standards and Guidelines

For purpose of this Project, Mphepo aims to align with the Equator Principle and IFC Performance Standards on Environmental and Social Sustainability (2012). In addition, Mphepo has the following policies currently in place that will guide the Project development:

- Health and Safety Policy;
- Anti-Bribery & Anti-Corruption Policy;
- Employment Equity Policy;
- HIV/AIDS Policy and
- Sexual Harassment Policy.

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

In addition, the Engineering, Procurement and Construction (EPC) contractor will need to have detailed standards and guidelines in place for environmental, health, safety and social management prior to construction commencing

3.7 Institutional Framework

The Zambia Environmental Management Agency (ZEMA) is a statutory body under the Ministry of Green Economy and Environmental Protection which expedites at the national level the coordination of the various Ministries and regulatory bodies that play a role in in the management and conservation of the environment. Zambia Environmental Management Agency (ZEMA) is an independent environmental regulator and coordinating agency, established through an Act of Parliament, the Environmental Management Act no 12 of 2011. It is mandated to do all such things as are necessary to protect the environment and control pollution, so as to provide for the health and welfare of persons, animals, plants and the environment.

Government ministries, departments and local authorities work on behalf of the public to ensure that ecological, cultural, social and economic issues are addressed in line with existing government policy and legislation. Institutions with a supervisory and monitoring role relevant to the Project are described in Table 5 below: Table 5: Institutions relevant to the Mphepo Power line Project

Institution	Relevance
Zamia Environmental Management Agency (ZEMA)	<p>ZEMA is responsible for the enforcement of the provisions of the EMA on environmental impact assessment, pollution control, natural resources management and solid waste management which includes establishment of landfill sites.</p> <p>The services provided by the ZEMA specifically in relation to EIA studies include:</p> <ol style="list-style-type: none"> i. Assisting the developer to determine the scope of EIA studies; ii. Reviewing project briefs, terms of reference, and environmental impact statements (EIS) and decision-making; iii. Disclosure of the EIS to the public through the media; iv. Holding public hearing meetings to discuss the EIS with stakeholders; v. Conducting verification surveys of the affected environment; vi. Monitoring the project once implemented;

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

	<p>vii. Conducting compliance audits of the project between 12 and 36 months after implementation; and</p> <p>viii. General administration of all the Regulations under the EMA.</p> <p>In addition to the Project Environmental Permit, ZEMA is responsible for the issuing of licenses relating to:</p> <ul style="list-style-type: none"> i. Emissions (air and wastewater), ii. Waste management and iii. Hazardous waste management.
Department of Energy (DOE)	The DOE falls under the Ministry of Energy and its functions, among others, are to develop and implement a Policy on Energy, integrate the Energy sector into Zambia's national and regional development strategies; to regulate the Energy sector through appropriate legislation including the development of new laws and bye-laws.
The Energy Regulation Board (ERB)	The ERB is the statutory body under the Ministry of Energy which has the mandate of regulating the energy sector in line with the provisions of the Energy Regulation Act of 2003. To carry out this role, the ERB, among other functions, ensures that all energy utilities in the sector are licensed, monitors levels and structures of competition, and investigates and remedies consumer complaints. The unit price of that electricity generated by the Project and sold to the national grid will be regulated by the ERB. ERB issues licenses for electricity generation plants and energy related facilities such as bulk fuel storage facilities.
Zambia Electricity Supply Corporation Limited (ZESCO)	ZESCO Limited is a vertically integrated electricity utility, which generates, transmits, distributes and supplies electricity in Zambia. It is a public utility, with the Government of the Republic of Zambia being a sole shareholder.
Water Resources Management Authority (WARMA)	<p>A statutory body under the Ministry of Water, Sanitation and Environmental Protection which is responsible for the management of water resources and liaises with ZEMA on issues relating to water pollution.</p> <p>In accordance with the provisions of the Water Resources Management Act, WRMA will regulate and control the rates of water abstraction to ensure that available surface and underground water resources are not depleted and</p>

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

	is responsible for issuing of water permits (previously known as ‘water rights’).
Department of National Parks and Wildlife (DNPW)	The research permit requires supervision by an Area Ecologist during research fieldwork.
Ministry of Lands and Natural Resources: Forestry Department	Consent will be required from the Forestry Department for the construction of the power transmission line as parts of the current preferred route run through the Chiulukire West and Chivuna Hills Forest Reserves.
The National Heritage Conservation Commission (NHCC)	The NHCC, which falls under the Ministry of Tourism and Arts (MOTA), is responsible for the identification of sites of cultural and natural heritage significance (including areas of archaeological, historical and paleontological interest and their conservation. In the case of new discoveries of cultural or historical sites, the NHCC will be the first agency to be notified and give guidance on how to handle and preserve them. The NHCC is responsible for issuing permissions to Remove/Alter/Destroy heritage sites and for establishing concession agreements for the management of heritage sites.
Ministry of Health (MoH)	The Ministry of Health is concerned with issues of health of the human population. This ministry works hand in hand with local authorities to ensure quality good health of the residents through provision of health services and health risks awareness. As such the MoH is responsible for monitoring the health status and trends of the communities in the Project Site through the Health Management Information System.
Provincial Planning Office	Planning permission for the Project will be sought through the Provincial Planning Office (Eastern Province)

4.0 STUDY METHODOLOGY

This section sets out the framework principles of the methodology that was applied during the heritage impact assessment process. The framework methodology that was used is broadly consistent and was adopted and adhered to as much as possible. In implementing this, reference has also been made to currently available good practice guidance literature on Environmental Impact Assessment.

A number of methods were used in this study to gather, explore and analyse information related to the paleontological, archaeological, anthropological and

historical/cultural heritage resources impact assessment of the project area. Besides reviewing of literature, two complimentary field methods were used namely: Field transects for survey of paleontological and archaeological resources. An ethno-historical research method was used for anthropological/historical heritage resources. The other method used in the study to collect data was the consultations with relevant stakeholders.

4.1 Literature Review

A desktop study that utilized primary and secondary sources was conducted. An archival and background research whose purpose was to identify the heritage (archaeological and other cultural and natural heritage) resources and their baseline information within the proposed project area was undertaken prior to undertaking the field reconnaissance studies.

The desk study compiled information from diverse historic and contemporary documents. Relevant archival sources with literature that could help in the reconstruction of the cultural heritage landscape and pattern of the project the areas in terms of the prehistory, history and anthropology, geology, geomorphology, of the areas were consulted and reviewed. Searched and reviewed sources included:

- topographic background, geology, historical background, geotechnical information, national census, occupational patterns and patterns of land use, archives, maps, site plans of the proposed project and reports of previous archaeological/anthropological investigations in the area;
- relevant information from published and unpublished sources such as local and regional history, prehistory and ethnography;
- relevant paleoecological studies to assess past environmental conditions that may have influenced cultural adaptations.

Undertaken also was the examination and interpretation of air photographs and geomorphological and pedological information (as an aid for assessing the potential for human habitation).

Other relevant sources included the National Heritage Conservation Commission Heritage register and field site reports. Consulted also were various Katete and Mambwe Districts databases, including historical and geological sources.

Besides undertaking a comprehensive field study, literature review was very important as it helped the Cultural Heritage Specialist in formulating appropriate strategies for the field work.

A review of data on the existence of archaeological, anthropological and historical resources in the area indicated that there are no known sites of archaeological, paleontological, historical and any cultural and natural heritage value near or within the vicinity of the project site.

4.2 Field Research

The study was conducted according to generally accepted Heritage Impact Assessment (HIA) practices (ICOMOS, 2010) and aimed at locating all possible objects, sites and features of archaeological and cultural heritage resources of significance in the area of the proposed development. The location/position of all sites, features and objects was determined by means of a Global Positioning System (GPS), recording their individual coordinates using them UTM Easting, Northing (Longitude, Latitude) system and photographs were also taken.

4.2.1 Archaeological survey

This archaeological survey was done according to generally accepted archaeological practices, and involved the conducting of a systematic exploration in the project area to locate and document possible archaeological sites, objects and structures, imprints or signatures left by the inhabitants in the area, assess their significance, condition, authenticity, integrity, and sensitive/risk to the proposed project activities.

Selected areas of the project site in particular those proposed for the project infrastructure development was examined using survey traverses by the cultural heritage specialists a research assistant and field assistant from the project area. The study team spaced at intervals between 5 metres (m) and 10 m, depending on topographic and other considerations, such as observed potential, visibility constraints.

To ensure comprehensive survey coverage, traverses followed natural features associated with high archaeological potential in terms of archaeological sites and artefacts (Kabiru, 2012), old charcoal production areas, new and old agricultural fields, anthills, bush thickets, old and new pan brick soil pits, disturbed grounds due to recent construction of works of access roads and installation of a fence in the project area.

Survey coverage varied according to the archaeological site potential observed within the development area. In areas identified as having high potential, survey coverage included thorough inspection of the ground surface. The surface was examined for structural, artefactual, and other evidence of past human settlement and land use, such as lithic scatters, cultural depressions, burial sites and any historic remains.

Individuals with knowledge of archaeological and cultural heritage resources in the study area were also interviewed to compile information concerning possible the location, distribution and significance of any archaeological and cultural heritage resources. The interview was aimed at eliciting information which may facilitate reconstructing or confirming ethnographic and historic patterns of settlement, land use and subsistence. Among those consulted were Her Royal Highness Chieftainess Msoro, Indunas, Headmen and the community people; the office of Chief and traditional affairs officer, the DAO, Forestry and Health in Mambwe District.

Since some old and recent pits had been dug in the site for extraction of soil for making pan bricks, as part of the geological study of the area, the heritage specialist undertook a thorough strata examination to ascertain possible presence of ancient or recent archaeological remains. Some of the surveyed areas were documented using handheld Global Positioning System (GPS) which included old human settlements/features.

4.2.2 Ethno-historical Research

To record the history of the ethnic groups in the project area and gather pertinent aspects of their diverse anthropological (intangible and tangible heritage cultural

traditions) heritage resources and their possible continuity in the project areas - an ethno-historical methodological approach was used.

Oral interviews to assist the cultural heritage specialist to be able to explore, analyse and examine cultural traditions variables perceived as significant by the inhabitants in the project area were held with several people in the project including traditional leaders.

4.3 Stakeholder consultations

4.3.1 Project Area Local Community

Stakeholder consultation with the local people in the project area formed a key part of the cultural heritage resources assessment and on the proposed project. A consultative/awareness meeting was held within the Mphepo Power project area. Off-sites consultative meetings/interviews were held with residents and Headmen of Msoro, Chivyololo and Wazaza Areas.

CONSULTATIVE MEETINGS



Figure 14: Consultative meeting with Msoro Chiefdom Indunas



Figure 15: Consultative/Awareness meeting in Kasamanda Area.

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS



Figure 16: Consultative and awareness meeting in Wazaza area



Figure 17: Consultative/awareness meeting in Chivyololo, Msoro Substation Area



Figure 18: Consultative/awareness meeting with Mambwe District Administrator at his office

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS



Figure 19: Consultative/Awareness meeting with the Mambwe Area Chiefs and Traditional Affairs officer



Figure 20: Consultative/Awareness meeting with the Mambwe district Acting Council Secretary

4.4 Limitations

Some constraints and limitations were experienced during the study:

- Harsh weather in terms of high temperatures made the undertaking of field work difficult especially walking in overgrown grass leading to poor visibility challenges;
- There has been a limited research and availability of published archaeological data about the proposed project area;
- Parts of the proposed project area (in particular the eastern parts of the proposed project infrastructure development) had been highly disturbed over some time due to anthropogenic activities (e.g. small scale subsistence

agricultural activities). The above activities may have resulted in the possible destruction of sites and artefacts such as potsherds etc.

5.0 BASELINE: SOCIO-ECONOMICS – MAMBWE/KATETE DISTRICTS

5.1 Socio demographic and economic Assessment

The primary purpose of undertaking the socio-demographic and economic study of the project area survey was to gather data on the socio-economic conditions and examine how the proposed Wind power project and its power line would positively and negatively impact the socio-economic aspects and lifestyle of the local people and their environment.

5.2 Brief History of the ethnic groups of Project Area

Mambwe District is the home of abundant wildlife and the Kunda and Chewa people. The Kunda and the Chewa represent about 80 and 20 percent respectively of the Mambwe District population.

The Kunda are believed to be of Bisa origin, but have closer affinities with the Nsenga.

However, the Chewa, who originated from Nyasaland (Malawi) spill over from the plateau.

And a number of Thumbuka are moving into the Nsefu area from the north. The Kunda are the *defacto* original occupants of the land and are said to have entered Zambia from the Luba-Lunda Kingdom with Senior Chief Nsefu as their leader.

Chief Nsefu is being subordinated by chiefs Kakumbi, Mnkhanya, Msoro, Malama and Jumbe.¹

The district hosts the Malaila annual ceremony for the Kunda speaking people, in October which celebrates the killing of the “beast” that terrorized people. The Kunda people are matrilineal; therefore, the nieces succeed the chieftaincy.

Many people are engaged in subsistence farming. According to the Mambwe 2010 Status Quo Report; farmers in Kasamanda and Mphomwa reach as much as three hectares per household. The households mainly use oxen to assist with cultivation. Although the average family size is six persons per household, between two and four people are usually engaged in work to support the family. Most farmers

¹ Darlington Mwendabai, Zambia Daily Mail. July 29, 2015.

spend on average four to five hours in the field with the rest doing other chores. The report indicates that maize and sorghum are processed into mealie-meal for household consumption.

Millet is used to brew beer while some sunflower and groundnuts are used for making cooking oil. Some of these crops are sold. All the cotton grown is sold. Some of the beer brewed and the cooking oil made from groundnuts and sunflower are sold for cash while portions of these products are reserved for household consumption.

Areas such as Nsefu, Ncheke, Katemo, Lugomo and Chipako have indigenous and predominantly illiterate people while other areas like Cropping, Msoro, Jumbe and Masumba have a mixture of literate, semi-literate and illiterate populations.

The district has only three private schools which offer primary education, but has 34 primary, 5 secondary and 28 community schools in total. With the projects that the government is implementing and increased attention tourism, Mambwe is headed for a bright future.

5.2.1 Project area Cultural and Linguistic Characteristics

The Kunda speaking people living in the extreme eastern zone of Zambia, northwestern Zimbabwe, Malawi, and Mozambique. They share many cultural features with their Bemba kinsmen to the west. Their language, Chewa, is also called Chichewa, Nyanja, or Chinyanja and is important in Malawi. The economy here is primarily dependent on agriculture, major crops being corn (maize) and sorghum. Considerable hunting and fishing are done.

Descent, inheritance, and succession are matrilineal in general. The Kunda and Chewa occupy compact villages, which are commonly stockaded. Each settlement has a hereditary headman and an advisory council of elders.

5.2.2 Religious Practices and Beliefs

Interviews and field survey showed that most of the local people in the project area embrace the Christian faith which has resulted in loss of a number of cultural traditions such as rain ritual practices². A number of churches established and denominations include: (1) United Church, Methodist (2) Evangelical Church of

² Source: Senior Induna Msoro, 13/12/2021.

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Zambia; (3) Roman Catholic Church; (4) Open Church; (5) Seventh Day Adventist Covenant Church; (6) Christian Community Church; (7) Christian Brethren (8) New Apostolic Church; (9) Baptist; (10) Jehovah’s Witnesses; and (11) Pentecostal Assemblies of God.

5.2.3 Land Use and Economic Activities

Population surrounding the Project area predominantly comprises subsistence/peasants farmers. Land ownership is by traditional or customary law, with households practicing *Chitemene*, or shifting slash and burn cultivation, in fields located away from their villages. The main important cash crops grown by the inhabitants include maize, soya beans, groundnuts, water-melons, tomatoes, etc.

Other sources of livelihood include rearing of livestock such as chickens, goats, pigs and running of formal retail shops mainly located in the project area or outside in places such as around Mambwe and Katete towns.

In the field of tourism, Mambwe and Katete districts has a lot of potential. Mfuwe National Park is one such destinations offering packaged game viewing. The nearest heritage sites to the proposed project area as recorded in the National Heritage Register include:

Table 6: The nearest heritage sites in Katete District. Source: NHCC, Register 2019

NAME	GPS	TYPE	STATUS	PERIOD
Katete Bridge	13-59S 32-08E	Archaeological	Protected	PH Middle Stone Age and Later Stone Age
Katete Linga		Archaeological	Protected	PH Later Iron Age
Kondwelani	14-22S 31-57E	Archaeological		PH Middle Stone Age
Kondwelani smelter	14-22S 31-57E	Archaeological	Protected	PH Later Iron Age to Modern
Makwe rock shelter	14-24S 31-56E	Archaeological	PROT.NAT.MON	PH Middle, LSA EIA, LIA
Mancheula hilleast	14-24S 31-55E	Archaeological	Protected	PH Later Stone Age
Mancheula old village	14-24S 31-55E	Historical	Protected	PH Later Iron Age
Mpalalio	14-17S 32-27E	Archaeological		PH Later Iron Age

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

Songwe hill	14-20S 32-10E	Archaeological	Protected	PH Later Iron Age
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The other site of national significance within the region is that of Doole which happens to be the burial place of the first and fourth Gawa dated about 1600. However, the said burial place is far from the proposed project site and therefore the project will not have any impact on the same.

Most of these sites are outside the proposed project area. However as for the Katete Bridge site, this was assessed but no archaeological traces were found possibly due to destruction arising from the road contraction works during its upgrading.

5.2.4 Services and infrastructure

The project area has the following infrastructure and services: a motorable road, the main road being the Katete – Chipata road several motorable roads within the project area and the villages. The area does have a rural health post or clinic in Kasamanda area and one mini hospital (though not yet operational) at Msoro Substation. Though the area has supply of electricity not every house is powered due to lack of funds to pay ZESCO for connection (according to the villagers interviewed).

There are shops at the Msoro Chiefdom Central Business District where there is a lot of trading by the local people going on. The CBD provides refreshments, hot meals mostly for passer-by's transiting to Mfuwe or Katete. There are also bars that serve beverages, alcohol and general entertainment ventures ranging to dances and music.

Water and sanitation in the project area services include dug up wells and boreholes and water borne and pit latrines. Msoro Chiefdom has numerous Boreholes which were installed by a government, NGOs and Private sectors. The project area has no public sewerage system installed by the council and pit latrines are most prevalent, whilst a few individuals have soak away toilets.

6.0 BASELINE: ARCHAEOLOGICAL AND CULTURAL HERITAGE RESOURCES

6.1 Archaeological Heritage Resources

An archaeological heritage resource or site comprises all vestiges of human existence and consists of (the physical remains and contextual setting) places relating to all manifestations of human activity, abandoned structures, and remains of all kinds (including subterranean and underwater sites), together with all the portable cultural material associated with them which tell us much about the lives, behaviour and attitudes of past generations (ICAHM, 1990).

The above resources provide insight into the cosmology of past societies as well as the way contemporary communities relate to this cosmology and to the places themselves (ICOMOS 1990; Lewis-Williams 2004; Taruvinga 2007). These resources exist in terms of artefacts; some are 'single finds' whilst others may exist as assemblages. Some sites represent a multi occupational layers, i.e. a site that could represent more than one archaeological period indicating long human occupation of the area from Stone Age, Iron Age to the very recent past.

As a general rule, archaeological resources should be managed *in situ* unless removal or rescue of artefacts or physical disturbance is justified by research, consultation, preservation protection or interpretive requirements.

6.2 General Pre-history of Zambia

Archaeological resources range from the earliest period of man's existence (known by stone tools made) Early Stone Age (ESA) about 2 million years before present (BP) to the very recent past (Mitchell, 2002). In Zambia, signs of the Palaeolithic - Early Stone Age (ESA) which is characteristic of the Acheulian Industrial Complex is associated with both Hominids called *Austrolopthecines* and *Homo habilis* who made heavy duty chopper tools, larger flakes and stone hammers. This industry dates to more than two and half million years ago and the industry may have continued up to 70,000 years ago based on excavations from the Victoria and Kalambo waterfalls sites.

The Middle Stone Age (MSA) referred to as the Sangoan dates between 50,000 years and 38,000 years ago and is associated with *Homo rhodensiensis* who made tools from wood, smaller flakes, hand axes, scrapers, and spear point types. This

period may have continued up to 26,000 to 20,000 years ago based on excavations from Mumbwa Caves (near Kafue National Park).

The Late Stone Age (LSA) also known as Microlithic Industries were present in eastern and central Zambia by 15,000 years ago whilst in western Zambia along the Zambezi River, this industry only began there during the late three millennia B.C. This period is associated with the BaTwa a hunter gatherer and fishing people (Clark, 1950 and 1970, Miller 1969, Barham, 2006) who made small single or composite tools made from stone (blade scrapers, discoidal scrapers, nosed scrapers, microlithic crescents, backed micro blades, large crescents, notched blades, adze-flakes, core borers, etc), bone and wood for scrapping, cutting, boring, arrow points and barbs (the bow and arrow). This group of people is also believed to have been the executioners of schematic/geometric and naturalistic rock art motifs at Mwela Rock art sites comprising of the following sites - Sumina, Mwankole, Namulundu, Changa mwibwe and Lwimbo in Kasama District. Other rock art paintings believed to have been executed by the Later Stone Age peoples include those at Ntumbachushi and Kundabwika waterfalls in Kawambwa and Kaputa Districts.

The Iron Age prehistory of southern Africa has traditionally been divided into two periods, the Early Iron Age and the Later Iron Age (LIA). Iron Age technology was introduced to Zambia in two distinct stages. The first wave of Bantu-speaking migrants from North Africa brought rather simple smelting techniques early in the first millennium. Later, between 700 and 1200 AD, more complex iron working techniques arrived and spread. Since the new comers were cultivators who kept domesticated animals, they mined and worked metals and made pottery by the thirteenth century the most people of Zambia exhibited a relatively advanced material culture and social structure based on agricultural production.

The origins of trade can be found in the latter half of the first millennium, with foreign objects appearing in the archaeological record. The first half of the second millennium saw a significant increase in trade and also development of wealth and social status within tribes. Evidence is found in settlement sites and

grave goods in particular the Ing'ombe Ilede (Phillipson, D.W. & Fagan, 1969, and Lishiko *et al* 2016).

6.3 Regional overview earlier Archaeological and Cultural Heritage Resources Studies

The National Heritage Conservation Commission National Register indicates the existence of several protected archaeological sites in the wider environment of the project area (Appendix 1), but not within the project area of influence. These sites range from Stone Age (Sangoan, sedimentary and open), Iron Age (settlements and smelting), Fortified villages, Rock art paintings (open sites).

One of the most important archaeological discovery in the region, in Kabwe (cradle of early hominids) during Zinc and Lead mining activities in 1921 is the skull of the Broken Hill man – Rhodesian or Kabwe man or the *Homo heidelbergensis* belonging to the Middle Stone Age Period site and about 125000 and 300,000 years old. Found at the site also, were numerous stone and bone artefacts associated with the hominid and may be the oldest evidence of bone tool working in the archaeological record (Barham, et al, 2002).

The other important archaeological site is the Nsalu Rock Art National Monument is located about 30km north of Kanona and a further fourteen kilometre south. Archaeological investigation done by Clark in 1949 showed that the site was first inhabited by the Middle Stone Age folks perhaps as long as 20,000 year or more (Phillipson, 1972). Stone material evidence also shows that the site was also occupied by the Late Stone Age people from around 12,000 to about 1000 AD., who were later replaced by the Iron Age farmers (first millennium AD) as evidenced from two skeletons found at the site.

Most of the paintings in the rock cave are mainly schematic in nature and designs include grids parallel, ladders concentric circles, elongated loops, inverted semi-circular designs boat-shaped designs and radiating lines, etc. The schematic paintings are believed to be the works of the Iron Age peoples and date from within the last 2000 years.

6.4 Archaeological and Cultural Heritage Assessment

The primary purpose of archaeological survey was to search for evidence of past human occupation or activity in the area proposed for the wind power project.

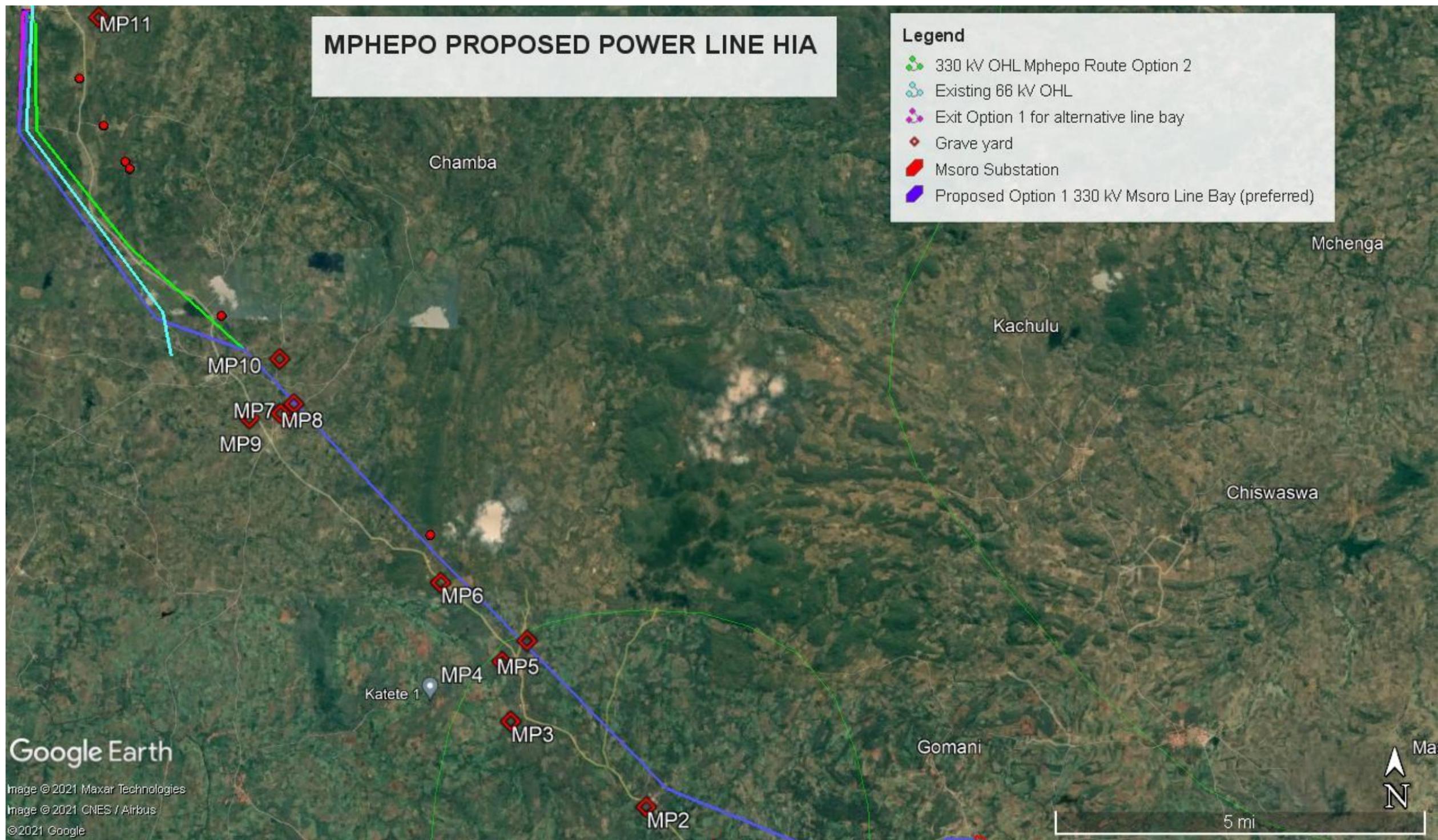
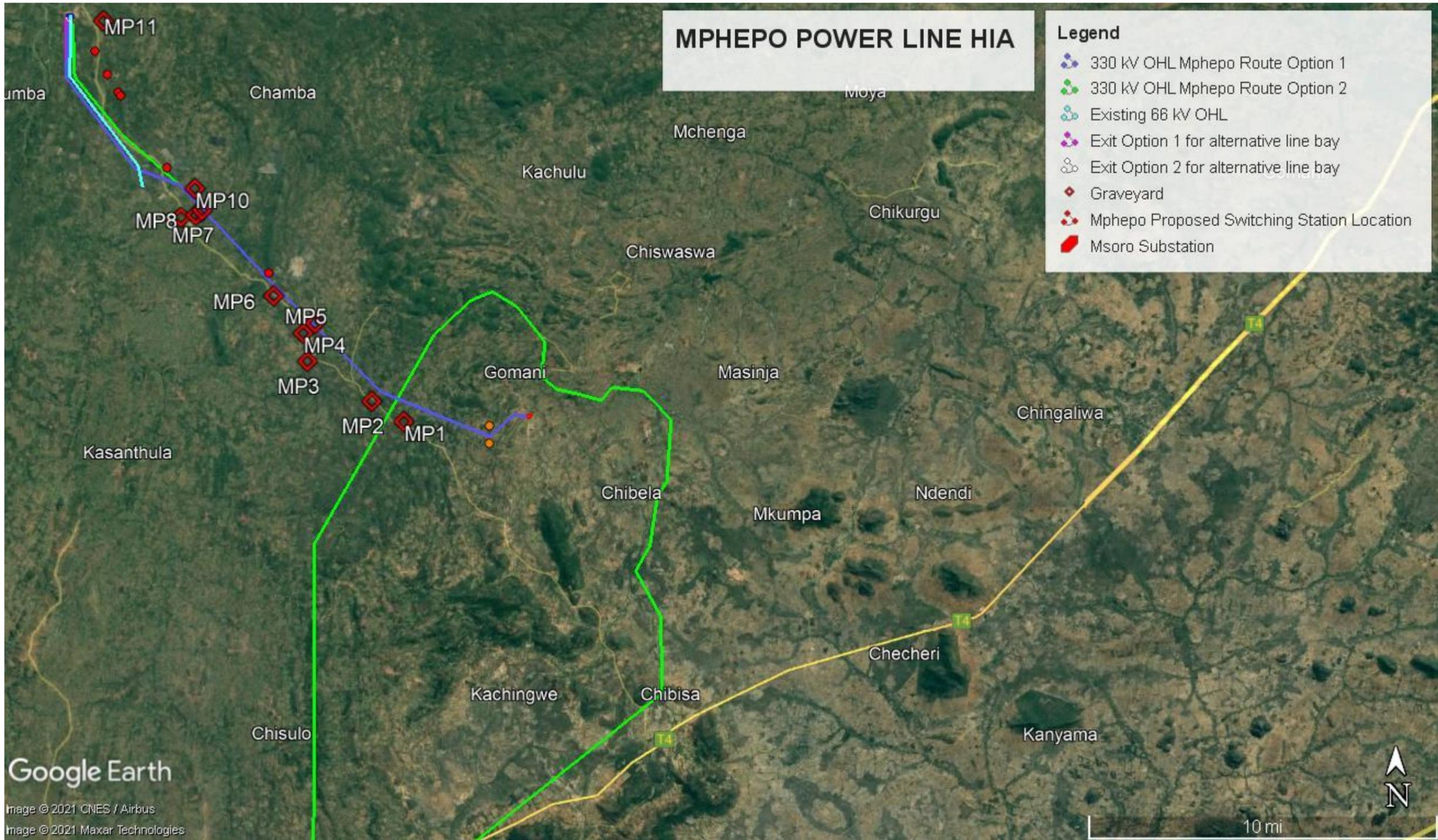


Figure 21: Mphepo Power Proposed Power line Heritage Impact Assessment (Surveyed cultural Heritage).



6.4.1 Archaeological

The proposed TL route and adjacent areas were surveyed for possible archaeological and cultural heritage resources. Areas thoroughly examined to check for any archaeological sites, artefacts or cultural heritage sites within the route of the proposed TL project. ancillary project infrastructure and adjacent areas included:

- Anthills, old and new agricultural fields, possible old human settlements, new and old areas on which charcoal is being produced or had once been produced
- Selected anthills
- Old and new pan brick making areas

Several photographs of prominent features were taken and so were GPS recordings.

The survey of the entire project area of the proposed area (including the area proposed for infrastructure development) did not yield any archaeological sites or artefacts within the project area of influence.

Despite not recording any archaeological site in the immediate project area the NHCC site Register shows strong evidence of long history of human occupation (as shown in Appendix 1), it can be assumed that, if any archaeological and historical sites, features or artefacts did exist in proposed in the past, they would have been severely disturbed or destroyed by past and present agricultural activities.

Features recorded in Mphepo Power project area



Figure 22: Recently dug toilet pit checked for archaeological sites and artefacts



Figure 23: A bush thicket on the eastern parts of the wall fence of the project site checked for archaeological sites and artefacts



Figure 24: One of numerous anthills checked for archaeological artifacts



Figure 25: Old charcoal kilns checked for area checked for archaeological artefacts

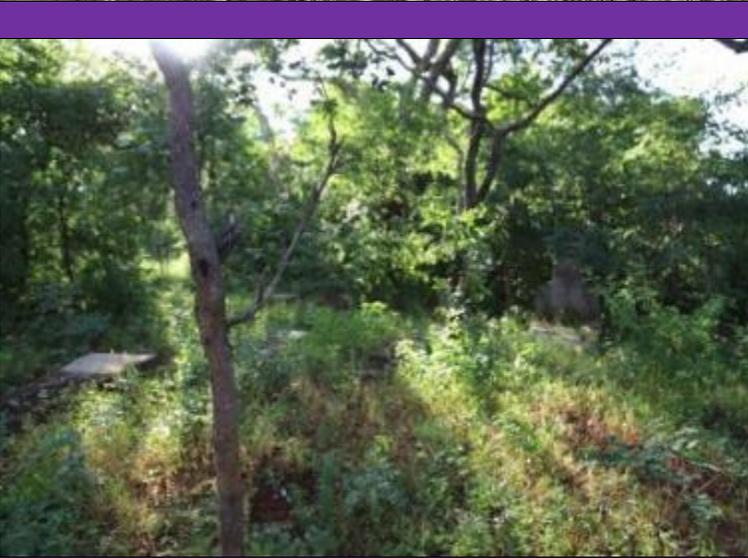


Figure 26: Pits where soil for making pan bricks were checked for archaeological sites and artefacts

6.5 List of Surveyed Area whose GPS Were Taken in the Project Area

S/N	LOCATION	NAME	HEREITAGE TYPE	STATUS & DISTANCE FROM THE PROPOSED POWER LINE	LEVEL OF SIGNIFICANCE	PICTURE
MP1	13°50'13.43"S 32° 3'8.57"E	Mtonya Village Graveyard	Cultural	Graveyard still active The tombs are inside the trees. There are over 25 graves covering an area of about 30X30m ² The Graveyard is approximately 850m from the proposed Mphepo Power line	Local	
MP 2	13°49'42.93"S 32° 2'19.07"E	Tiyankula Village Graveyard	Cultural	Graveyard still active. There are over 20 graves on site covering an area of about 30X40m ² The graveyard is approximately 620m away from the proposed Mphepo Power line	Local	

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

MP3	13°48'43.06"S 32° 0'39.50"E	Mukalema village graveyard	Cultural	Graveyard still active. There are over 20 graves on site covering an area of about 50X40m ² The graveyard is approximately 1.4km away from the proposed Mphepo Power line.	Local	
MP4	13°48'0.96"S 32° 0'32.91"E	Mangani village	Cultural	Graveyard still active. There are over 20 graves on site covering an area of about 60X40m ² The graveyard is approximately 650m away from the proposed Mphepo Power line.	Local	

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

MP5	13°47'46.03"S 32° 0'51.10"E	Kwayenda village Graveyard	Cultural	Graveyard still active. There are over 6 graves on site covering an area of about 20X40m ² The graveyard is approximately 82m away from the proposed Mphepo Power line.	Local	
MP6	13°47'4.86"S 31°59'46.97"E	Kantu Nikako and surrounding areas Graveyard	Cultural.	Graveyard still active. There are over 50 graves on site covering an area of about 100X500m ² The graveyard is approximately 400m away from the proposed Mphepo Power line. The surrounding areas that use this graveyard include Gwalaya farms, Chizula, Mikusu, Chikondi, Chimwemwe and Mukuza	Local	

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

MP7	13°44'56.52"S 31°57'56.04"E	Wazaza Village Graveyard 1	Cultural	Graveyard is inactive. There are over 10 graves on site covering an area of about 15X20m ² The graveyard is approximately 40m away from the proposed Mphepo Power line. This is closest graveyard to the proposed Power line	Local	
MP8	13°45'3.42"S 31°57'46.23"E	Wazaza Village Graveyard 2	Cultural	Graveyard is active. There are over 40 graves on site covering an area of about 40X30m ² The graveyard is approximately 400m away from the proposed Mphepo Power line.	Local	

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

MP9	13°45'6.99"S 31°57'23.11"E	Wazaza Village Graveyard 3	Cultural	Graveyard is active. There are over 30 graves on site covering an area of about 50X30m ² The graveyard is approximately 1.1km away from the proposed Mphepo Power line.	Local	
MP10	13°44'23.82"S 31°57'44.83"E	Wazaza Village graveyard 4	Cultural	Graveyard is active. There are over 15 graves on site covering an area of about 40X30m ² The graveyard is approximately 500m away from the proposed Mphepo Power line.	Local	

MPHEPO POWERLINE HERITAGE IMPACT ASSESSEMENT- KATETE-MAMBWE DISTRICTS

MP11	13°40'11.29"S 31°55'22.36"E	Chivyololo- Maule substation Graveyard	Cultural	Graveyard is active. There are over 15 graves on site covering an area of about 40X30m ² The graveyard is approximately 1.6km away from the proposed Mphepo Power line.	Local	
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6.6 Anthropological Heritage Resources

6.6.1 Anthropological/Traditional Heritage

Both interviews and field survey for anthropological sites/artefacts in the proposed in Mphepo Power line project revealed that there were no anthropological sites.

6.6.2 Anthropological Intangible Heritage

Traditional practices and knowledge serve to unite a community and to give it cohesion. Traditional dance, music, oral histories and stories, and common language are examples of intangible heritage that provide this type of internal cohesion for the communities in the project area. They represent an intangible resource that, once lost, would be hard to recover.

The major intangible cultural tradition resource associated with the people in the project area (which several them attend every year³) and held annually (outside the project area) and known as Kulamba in Katete at Paramount Chief Gawa Undi's Makaika's Village and at the Chief Nsefu's Malaila Ceremony in Mambwe in the month of October. Malaila is the celebration of a killing of a beast that used to torment people. Kulamba is celebrated towards the end of August each year in Mkaika. All the subordinate chiefs in Zambia, Malawi and Mozambique come to Katete at Mkaika to pay their tributes and join in the celebrations with their people.

The ceremony is a way of bringing together different Chewa chiefs from the three countries to present their reports of grievances to Paramount Chief Kalonga Gawa Undi. The name Kalonga means the one who installs subordinate chiefs. Gawa is the one who gives out land and Undi means the one who protects the subordinates. The Kalonga Gawa Undi is head of all the Chewa chiefdoms and takes care of all the installations of chiefs not only in Zambia but in Malawi and Mozambique as well.

Besides cultural traditional values of the ceremony, the *traditional ceremonies* are one of the major Cultural Heritage Tourism product not only in Katete, Eastern province but the entire country. For the locals and international scholars, the ceremony is also a point of historical and anthropological research.

Source: Senior Induna Msoro Chiefdom. 13th December 2021.

During their ceremony of the Chewa Gule wa Mkulu is the main Traditional ceremony manifestation and it is an intangible peace of heritage of world recognition under the 2003 UNESCO Convention.

6.7 Historical Burial sites

Burial sites document the lives of individuals, families and communities. Unlike other historical texts, they may provide direct historical links to the lives of all; the rich and the poor, the famous and the infamous. They are historical records of the society, providing physical evidence of past attitudes towards death, commemoration, and the developing cultural landscapes (Tasmanian Heritage Council, 2014). Cemeteries are therefore not just where the dead reside, nor are they static snap shots of older views and attitudes about death. Cemeteries are dynamic, reflecting changing cultural institutions, social values, and regional ethnic identity. All cemeteries encode social and cultural values reflecting specific choices; therefore, they provide insight into how people organized their social and physical landscape.

No historical burial sites were recorded in the study areas, however there is always a possibility that there could be some historical graves that belonged to the earlier communities that could have been destroyed due to subsistence and commercial farming activities in the area.

6.8 Modern Burial Sites/Cemeteries

Like historical cemeteries, modern cemeteries are important in several ways. Through their establishment and use, cemeteries document the settlement patterns and the development and growth of a community and provide genealogical data and information on the history of a particular place (Cemetery Preservation Manual, 2010). Graves in a cemetery provide important demographic data about the area.

Cemeteries also have important commemorative function as in some cases communities often attach attitudes and values to the graves, such as respect or reverence. Cemeteries or burial sites in the project area seem closely linked to the social and religious life of the populations. Destined to the burial of the dead, the cemeteries are places of memory where people maintain permanent contacts with the spirit of the dead.

A total of eleven (11) burial sites currently in use were recorded in the wider environment of the project area, but not within the project area of influence. The cemeteries in the project area are organised in line with the community clusters.

7.0 SIGNIFICANCE OF ARCHAEOLOGICAL/ CULTURAL AND NATURAL HERITAGE RESOURCES

The cultural heritage significance of an artefact or a site is the cultural value that it holds for the community or sections of the community - cultural sites, places and artefacts are therefore physical representations of the community. These values which are ascribed by the community to these resources at a particular time in history and may change with the passage of time may include archaeological, historic, aesthetic, social or spiritual qualities, scientific, economic or a combination of these qualities. These values have always been the reason underlying heritage conservation. It is self-evident therefore that no society makes an effort to conserve what it does not value (Marta de la Torre, 2002).

7.1 Criteria for Determining Cultural Significance

Cultural heritage resource significance assessment provides a framework for NHCC and the wider community to explore and appreciate the meanings of the resource or artefact. A statement of significance outlines the reasons why the resource was conserved or should be preserved and provides and guides conservation policy and treatment, so that key features of an object are conserved appropriately (Marta de la Torre, 2002).

Understanding heritage significance helps to establish those resources that are important and to determine the most appropriate level of statutory protection to preserve those resources for the current and future generations.

According to the National Heritage Conservation Commission, Heritage Management Policies, Guidelines and Standards of 1996, the significance of a site or resources will be determined on the following basis:

- (a) Archaeological sites that have produced information of major scientific importance by revealing new cultures or shedding light upon periods of occupation over large areas of Zambia. Such sites are those which have produced, or which may reasonably be expected to produce, data affecting theories, in demonstrating the evolution or pattern of Zambia's history, contribute to an understanding of Zambia's history, concepts and ideas to a major degree.

- (b) To possess national significance, a historic or prehistoric structure, site or object must possess integrity. Integrity requires authenticity in design, location, workmanship and elements of feeling and association.
- (c) Heritage to which events have significantly contributed to, or represent, the broad cultural, political, economic, military or social history of the nation, and from which an understanding and appreciation of the large patterns of Zambian Heritage may be gained.
- (d) Birth places, graves, burials and cemeteries as a general rule, are not eligible for consideration except in cases of historical figures of transcendent importance.
- (e) Properties associated with actual careers and contributions of persons of outstanding historical importance usually are more significant than their birth places and burial places.
- (f) Heritage achieving historical importance within the past 50 years will not as a general rule be considered unless associated with persons or events of transcendent significance (NHCC Policies 1996)
- (g) Anthropological/Traditional (Tangible and intangible heritage) - traditional ceremony locations, mythological sites, sacrifice locations, cultural buildings or relics, sacred sites, important meeting places, practices of communities embodying traditional knowledge, lifestyle, rituals, living arrangements, religious practices, etc. These sites are important because they have special meaning for any group or community due to their social, cultural or spiritual associations. As observed by Jepson and Canney (2003) these sites are ‘sets of ideals and beliefs to which people individually and collectively aspire and to which they desire to uphold. They structure the traditions, institutions and laws that underpin society.’

7.2 Levels of Significance Cultural and Natural Heritage Resources

7.2.1 Cultural Heritage significance

Any heritage proposed for its cultural values must possess outstanding international, local, regional or national significance.

- (a) **International significance:** is heritage resources whose value is exceptional and transcends national boundaries and to be of common importance for present and future generations of all humanity. Its contribution could be to the Sub-region of Africa or the world at large (Jokilehto, 2008).
- (b) **National Significance:** National Significance is heritage resources which individually possess national significance, in terms of criteria for evaluating proposed National Monument.
- (c) **Regional Significance:** Regional significance heritage resources which meet the criteria for listing in the National Register and are of regional significance. Region as referring to “Province as per current national administrative arrangement and/or an area considered as provincial unit for geographical functional, social or cultural reasons at inter-provincial levels within the nation.”
- (d) **Local Significance:** Local significance heritage resources which meet basic criteria for listing in the National Register and are of local significance. Local refers to ‘a district as per current national administrative arrangement and/or to an area considered as a unit of geographical functional, social and cultural reasons at inter district level within a specific geographical area’ (Chikumbi, 1997).

As observed by Chikumbi (2006), while the cultural heritage resources being assessed in this study may meet some of the criteria listed above, it is important to bear in mind that in assessing the cultural value of the site or artefact, the level of significance is also affected by other considerations. In this case, issues of whether the community attaches any value to the sites come in.

While it is generally argued that archaeological sites are unique and therefore will contribute unique information, it is important to also bear in mind that the scientific or research value of a place will depend on the importance of the data involved or its rarity, authenticity, quality or if it is representative and on the degree to which the place may contribute further substantial information. Where this cannot be established, a site will then have low significance. This was assentation applicable to this study.

7.3 Significance of Natural Heritage Resources

The natural heritage significance of an artefact or a site is the value that it holds for the community or sections of the community - natural sites, places and artefacts are therefore physical representations of the community. According to the NHCC Act, Natural heritage include (NHCC Act 1989):

- (a) Natural features consisting of physical and biological formations or groups of such formations, which are of outstanding natural and/or universal value from the aesthetic or scientific point of view, including areas of land consisting rare or distinctive or beautiful flora or fauna;
- (b) Also geological and physical formations of outstanding natural value from the point of view of science or conservation, and
- (c) Natural sites or precisely delineated natural areas of outstanding national value from the point of view of science, conservation or natural beauty to include waterfalls (tourisms/recreational), outstanding landscape features like gorges, grottos, trees etc.

From the above definition, it is clear that the significance and value of natural heritage lies in the feature or artefact itself and the above criteria was taken into consideration in this study.

7.4 Accuracy and Reliability of Data

The data in this study is very accurate and reliable due to the fact it was obtained through published sources, interviews with people living in and around the project area whilst core data on the presence and absence of archaeological and cultural heritage resources in the project was obtained through extensive field surveys.

8.0 IMPACTS EVALAUTION METHODOLOGY

8.1 Method of Assessing Impact Significance

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgment to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, *inter alia*: the purpose and need for the project; views and concerns of interested and affected parties (I&APs); social and political norms, and general public interest.

8.2 Identification and Description of Impacts

Identified impacts are described in terms of the nature of the impact, compliance with legislation and accepted standards, receptor sensitivity and the significance of the predicted environmental change (before and after mitigation). Mitigation measures may be existing measures or additional measures that were identified through the impact assessment and associated specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of mitigation.

8.3 Evaluation of Impacts and Mitigation Measures

8.3.1 Introduction

Impacts are assessed using the standard convention for assessing the significance of impacts, a summary of which is provided below. In assigning significance ratings to potential impacts before and after mitigation the approach presented below is to be followed.

1. **Determine the impact consequence rating:** This is a function of the “intensity”, “duration” and “extent” of the impact (see Section 8.4). The consequence ratings for combinations of these three criteria are given in Section 8.4 below.
2. **Determine impact significance rating:** The significance of an impact is a function of the consequence of the impact occurring and the probability of occurrence (see Section 8.4). Significance is determined using the tables below.

3. **Modify significance rating (if necessary):** Significance ratings are based on largely professional judgment and transparent defined criteria. In some instances, therefore, whilst the significance rating of potential impacts might be “low”, the importance of these impacts to local communities or individuals might be extremely high. The importance/value which interested and affected parties attach to impacts will be highlighted, and recommendations should be made as to ways of avoiding or minimizing these perceived negative impacts through project design, selection of appropriate alternatives and / or management.
4. **Determine degree of confidence of the significance assessment:** Once the significance of the impact has been determined, the degree of confidence in the assessment will be qualified (see Section 2.2). Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact.

8.4 Criteria for Impact Assessment

The criteria for impact assessment are provided below.

Table 7: The Criteria for Impact Assessment

Criteria	Rating	Description
Criteria for ranking of the INTENSITY (SEVERITY) of environmental impacts	ZERO TO VERY LOW	Negligible change , disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People / communities are able to adapt with relative ease and maintain pre-impact livelihoods.
	LOW	Minor (Slight) change , disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people’s livelihood.
	MEDIUM	Moderate change , disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support.

	HIGH	Prominent change , disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods.
Criteria for ranking the DURATION of impacts	SHORT TERM	< 5 years.
	MEDIUM TERM	5 to < 15 years.
	LONG TERM	> 15 years , but where the impact will eventually cease either because of natural processes or by human intervention.
	PERMANENT	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.
Criteria for ranking the EXTENT / SPATIAL SCALE of impacts	LOCAL	Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its immediate surroundings.
	REGIONAL	Impact is confined to the region, e.g. coast, basin, catchment, municipal region, etc.
	NATIONAL	Impact is confined to the country as a whole, e.g. South Africa, etc.
	INTERNATIONAL	Impact extends beyond the national scale.
Criteria for determining the PROBABILITY of impacts	IMPROBABLE	Where the possibility of the impact to materialize is very low either because of design or historic experience, i.e. $\leq 30\%$ chance of occurring.
	POSSIBLE	Where there is a distinct possibility that the impact would occur, i.e. > 30 to $\leq 60\%$ chance of occurring.
	PROBABLE	Where it is most likely that the impact would occur, i.e. > 60 to $\leq 80\%$ chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. $> 80\%$ chance

Criteria	Rating	Description
Criteria for determining the DEGREE OF CONFIDENCE of the assessment	LOW	≤ 35% sure of impact prediction.
	MEDIUM	> 35% and ≤ 70% sure of impact prediction.
	HIGH	> 70% sure of impact prediction.
Criteria for the DEGREE TO WHICH IMPACT CAN BE MITIGATED - the degree to which an impact can be reduced / enhanced	NONE	No change in impact after mitigation.
	VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
	LOW	Where the significance rating drops by one level, after mitigation.
	MEDIUM	Where the significance rating drops by two to three levels, after mitigation.
	HIGH	Where the significance rating drops by more than three levels, after mitigation.
Criteria for LOSS OF RESOURCES - the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is	LOW	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected.
	MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way.
	HIGH	Where the activity results in an irreplaceable loss of a resource.

8.5 Determining Consequence

Consequence attempts to evaluate the importance of a particular impact, and in doing so incorporates extent, duration and intensity. The ratings and description for determining consequence are provided below:

Table 8: Consequences determination

Rating	Description
VERY HIGH	Impacts could be EITHER: of <i>high intensity</i> at a <i>regional level</i> and endure in the <i>long term</i> ; OR of <i>high intensity</i> at a <i>national level</i> in the <i>medium term</i> ;
HIGH	Impacts could be EITHER: of <i>high intensity</i> at a <i>regional level</i> and endure in the <i>medium term</i> ; OR of <i>high intensity</i> at a <i>national level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>national level</i> in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>national level</i> in the <i>long term</i> ; OR of <i>high intensity</i> at a <i>local level</i> in the <i>long term</i> ; OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>long term</i> .
MEDIUM	Impacts could be EITHER: of <i>high intensity</i> at a <i>local level</i> and endure in the <i>medium term</i> ; OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>medium term</i> ; OR of <i>high intensity</i> at a <i>regional level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>national level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>local level</i> in the <i>long term</i> ; OR of <i>low intensity</i> at a <i>national level</i> in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>regional level</i> in the <i>long term</i>
LOW	Impacts could be EITHER of <i>low intensity</i> at a <i>regional level</i> and endure in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>national level</i> in the <i>short term</i> ; OR of <i>high intensity</i> at a <i>local level</i> and endure in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>short term</i> ; Impacts could be EITHER
VERY LOW	of <i>low intensity</i> at a <i>local level</i> and endure in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>regional level</i> and endure in the <i>short term</i> ; OR of <i>low to medium intensity</i> at a <i>local level</i> and endure in the <i>short term</i> . OR Zero to very low intensity with any combination of extent and duration.

8.6 Determining Significance

The consequence rating is considered together with the probability of occurrence in order to determine the overall significance using the table below.

Table 9: Consequence Rating

		PROBABILITY			
		IMPROBABLE	POSSIBLE	PROBABLE	DEFINITE
CONSEQUENCE	VERY LOW	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	LOW	VERY LOW	VERY LOW	LOW	LOW
	MEDIUM	LOW	LOW	MEDIUM	MEDIUM
	HIGH	MEDIUM	MEDIUM	HIGH	HIGH
	VERY HIGH	HIGH	HIGH	VERY HIGH	VERY HIGH

In certain cases, it may not be possible to determine the significance of an impact. In these instances, the significance is **UNKNOWN**.

9.0 IMPACT ASSESSMENT OF THE PROPOSED DEVELOPMENT ON ARCHAEOLOGICAL/CULTURAL AND GEOMORPHOLOGICAL HERITAGE RESOURCES

For a proposed related Power transmission line project; impacts on visible archaeological and other cultural resources (sites and artefacts/relics), in the project are expected at both active and non-active i.e. during construction, operation and after closure respectively. In the absence of visible or known archaeological and other cultural resources of significance in the proposed project area, the following project activities can still have potential impacts on the hitherto known and unknown resources:

- vegetation clearing, excavations for the construction of vital project infrastructure, access roads and vehicular parking areas.

Other activities project that can still have potential impacts on the hitherto unknown resources include:

- Dumping of waste during construction and operation phases
- Trenching for power line poles, etc.

9.1 Archaeological and Cultural Heritage Resources in the Proposed Project Area

9.1.1 Archaeological Heritage Resources

No archaeological site was recorded in the Proposed Mphepo Power line project area (In all the alternatives). The non-existence of archaeological sites/artefacts in the project area can be attributed to past and present farming activities.

9.1.2 Chance Find Historical Burials/Graves sites

Even though there were no historical graves recorded in the project area, there is a possibility that there could be unmarked graves in the area (those which might have been disturbed by subsistence farming and charcoal making). Human graves can occur at any place in the landscape in form of a lone grave or prehistoric burial. In most cases they are usually exposed during construction activities. Such graves/burials are all protected by a plethora of legislations in Zambia by National Heritage Conservation Commission CAP 173 of 1989, Zambia Police Act no 13 of 1994 Public Health Act No 22 of 1995, which apply to graves and their contents.

9.1.3 Anthropological (Tangible/Intangible) Heritage Resources

Interviews in both areas of the project area revealed non-existence of areas for communal rituals, ceremonies or functions, or objects traditional sites which could have been used for rituals or any anthropological activities apart from one reported by Headman Mtonya at Mtonya Village graveside where the Gule Wamukulu rituals are conducted, according to him; the practicing area can always be shifted to another sacred bush if need be. No other anthropological site was therefore recorded by the cultural heritage specialist in the project area.

9.1.4 Cultural Traditional Ceremonies

No cultural traditional ceremonies were recorded in the project area apart from the Malaila and *Kulamba cultural traditional ceremony* which is associated with the Kunda and Chewa people in the area and these are held annually in Chief Nsefu area, Mambwe and Katete at Mkaika palace respectively.

10.0 HERITAGE IMPACT ASSESSMENT OF THE PROPOSED DEVELOPMENT OF THE PROJECT AREA

The following activities of the project can have potential impacts on the Heritage aspects of the people in the project area:

10.1 Negative Impacts on Unknown/Undiscovered Archaeological Sites/Artefacts and Cultural Heritage Sites

For the unknown and undiscovered/unrecorded archaeological sites/artefacts and other cultural heritage resources in the project area, impacts would arise from the activities below:

- Clearing of vegetation and excavating/trenching for the construction of the various vital project infrastructure;
- Clearing of vegetation for installation of power lines for electricity transmission;
- Clearing of vegetation and preparing for non-gravel and gravelled, internal and access roads etc.

From the above activities, any archaeological materials on the surface or buried in the ground may be impacted negatively due to compression as a result of the use of heavy earth moving equipment. Some artefacts may be mixed, crushed, their integrity compromised whilst compaction of soil may lead to changes in the moisture content of the soil or may affect the soil matrix (Ardito, 1993) which may consequently affect the natural decay process of archaeological remains. In addition, exposure of archaeological remains through clearing and foundation trenching may expose some artefacts making them more susceptible to both chemical and biological degradation process.

Whilst impacts above may be restricted to cultural heritage materials which may be encountered during the pre- construction and construction phases, the impact expected can be said to be minimal or low as the type or number of archaeological in the project is unknown but the impact would be high for the artefacts on the surface.

10.2 Negative Impacts on Chance Find Historical Burials/Graves Sites

The closest grave yard recorded in the project area is Wazaza Graveyard 1 (13°44'56.52"S, 31°57'56.04"E) recorded as MP5 which is approximately 40 m away from the TL centre line (but outside the 27.5 m RoW). The graveyard is no longer active and it only has about 6 unmarked graves. The second closest one to the proposed power line is Kwayenda Village graveyard (13°47'46.03"S, 32° 0'51.10"E) recorded as MP5

harbouring about 6 graves on site and still active (approximately 80 m away for the TL centre line). It should be noted that human graves can occur at any place in the landscape. In most cases they are usually exposed during various agricultural construction activities, either through the disturbance of lonely or prehistoric burials.

Such graves are all protected by a plethora of legislations in Zambia by National Heritage Conservation Commission Cap 173 of 1989, Zambia Police Act no 13 of 1994 and Public Health Act no 22 of 1995 which apply to graves and their contents. The disturbance and destruction of graves can have a local impact of permanent duration and intense social consequences and impacts to families or communities. Impacts to these sites are expected to arise from construction of the Power line activities.

i. Frequency of Activity

Should any burial sites be encountered in the project during project activities it would be a once for all activity.

ii. Frequency of the Impact

Putting up of weirs/canals, powerhouses and related project infrastructure on burials or graves encountered would be a once for all impact.

iii. Severity of the Impact

The impact on ‘chance find’ burials/graves would lead to their total destruction and all the tangible connections by the community would be lost.

iv. Spatial scope of the Impact

If the burial sites would be impacted upon the loss of burial ground/graves would be localized and affect communities with historical connections to the sites. Additionally, if the interred were relocated to another new cemetery, alternative land will have to be found and the entire cemetery relocation will be expensive, and stressful and emotional on the part of the community with attachment to the site and the interred.

In case the human remains have no existing living claimants, they would need to be deposited at NHCC Lusaka office or Lusaka Museum in Lusaka which so ever would be applicable. This process will incur some expenses as removal, reburial relocation is at the cost by the developer. Loss of project time may apply as the exercise is being undertaken.

v. Duration of the Impact

If the burial sites would be lost, the impact would be permanent and if relocated it would still lose its context. If the area is disturbed or destroyed by the project activities, then the site would be lost forever so would be historical connections.

As indicated in the analysis of the baseline data, 11 graveyards were surveyed and there are two of high concern given their close proximity to the proposed power line; one currently in use by the local people and the surrounding villages and the other is not being used. All the graves fall outside the proposed project area and may not be affected by the proposed power line project activities such as dumping of waste.

i. Frequency of Activity

If the two burial sites would be affected, either through dumping activities and other project activities would be a one-time activity.

i. Frequency of the Impact

Loss and desecration of the burial sites would also entail as once for all impact. The impact will be incurred during construction (infrastructure development) and possibly during operation phase from other dumping of waste.

ii. Severity of the Impact

The impacts on these burials sites would be great as burial sites would be desecration and destroyed completely and all the tangible connections by the relatives/community would be lost.

iii. Spatial scope of the Impact

If the burial sites would be impacted upon the loss of burial grounds would be localized and affect communities with historical connections to the sites. The loss and desecration would be stressful and emotional on the part of the community with attachment to the site and persons interred.

iv. Duration of the Impact

If the burial sites are desecrated and damaged by project activities the two burial sites would be lost forever so would be historical connections and the impact would be permanent. If the burial sites are relocated, they would still lose their context.

11.0 SUMMARY OF NEGATIVE IMPACTS AND MITIGATIONS

Mitigation measures outlined below are intended to reduce effects from interactions of the project with archaeological sites as well as currently unknown archaeological sites and other cultural heritage resources that may exist within the proposed project area and it is likely that many potential significant impacts during both construction and operational phases can be adequately mitigated with an appropriate remedial strategy and construction management practices.

11.1 Impact on unknown/discovered Archaeological Sites/Artefacts and Cultural Heritage Sites – Chance Finds

11.1.1 Mitigation Measures on Archaeological Sites/Artefacts discovered During Project Implementation

Though some parts of the project area did not yield any archaeological sites and artefacts, it is possible some could be encountered and impacted upon by several project activities during the construction phase. It is recommended that to minimize the chance of destruction of potential sites/artefacts not apparent from surface finds, the removal of topsoil and earth excavations on all construction sites should be monitored by a qualified archaeologist (by an archaeologist capable of recognizing bones of fossils, human, animal, Stone Age and Iron Age artefacts) so that any exposed artefacts may be recovered. All trenches greater than one metre should be monitored for artefacts. The National Heritage Conservation Commission may need to be engaged as the first step of consultation as any discovery of such is according to the NHCC Act supposed to be reported to the aforementioned.

In the event of archaeologically significant features or material being uncovered during the construction phase, a temporary exclusion zone is to be established, machine work should cease in the immediate area to allow the archaeologist/s to inspect any such material and undertake an appropriate salvage, if required.

Monitoring by a qualified archaeologist should be continuous but random (during excavations) at first but decreased in frequency. Besides the rescue and reporting of the finds which would contribute to the pool of archaeological and other heritage resources knowledge in the project area, the presence of an archaeologist will help in reducing unnecessary stoppages of the work should any artefacts of significance be unearthed.

During construction, a 'Chance Finds Procedure' complying with international best practice will be implemented to address any finds encountered during ground disturbing activities. The Chance Finds Procedure will include:

- training relevant staff and contractors in recognition, handling, and response to archaeological chance finds;
- deploying archaeologists to monitor all construction fronts to guide the recognition of and response to archaeological finds made during ground disturbance;
- establishing protocols for responding to Chance Finds, including cessation of work for finds deemed significant by an archaeologist;
- use of expedited procedures for evaluation and treatment of significant chance finds in order to limit impacts while minimizing construction delays; and
- keeping of an auditable record of monitoring activities.

The 'Chance Finds Procedure' will continue during operation of the TL project when new ground disturbance is required for the development of new infrastructure or for maintenance activities.

11.2 Chance Find Historical Burials/Graves Sites

11.2.1 Mitigation Measures for Chance Finds Burial/Graves

Even though, no historical human graves were recorded in the project area, it should be noted that human graves can occur at any place in the landscape. In most cases they are usually exposed during various agricultural construction activities, either through the disturbance of lonely or prehistoric burials.

The discovery of human remains on sites undergoing development is a common occurrence. Developers may feel that this may be problematic in terms of work schedules. However, with the involvement of professional field forensic archaeologist from an early stage, the recovery of human remains can be dealt with efficiently and appropriately.

In the event of the unexpected discovery of a buried/graves, the site will be made secure and safe and works will cease. A report should immediately be made to NHCC as stated earlier, and Zambia Police services. If the remains are pre 1924 or older than 1500 AD

they should be treated as archaeological and handled through normal archaeological process (Ossafreelance, 2012)⁴, and if not, the Zambia Police Services should handle the exhumation process. Further project works should only proceed in this area with appropriate authority from NHCC or the Police.

11.3 Impacts on the Burial Sites

11.3.1 Mitigation Measures for the two Burial Sites

To avoid any impact on burial sites which fall outside the proposed project area, a non-development option should be undertaken, no project activities such as dumping of waste should take place in and around the burial sites.

The developer including all the workers must be sensitized on the importance of the burial sites and they should follow the cultural traditions associated with them such as no trespassing, cutting of trees, dumping of waste, use of abusive language/insults and having sexual activities.

11.4 Operational Phase

Impacts that may be associated with project activities during operation phase are identified as follows:

11.4.1 Unknown Archaeological Sites/Artefacts and Cultural Heritage Sites

During operations after all infrastructure development have been done or put in place, impacts are not expected as they would have had occurred in the construction stage and dealt with.

11.4.2 Historical Burials/Graves sites: Chance Find Burials/Graves sites

During operations after all infrastructure development have been done or put in place, impacts are not expected as they would have had occurred in the construction stage and dealt with.

11.4.3 Modern Burial Sites

During operations, Mphepo Power management and staff would have been sensitized on the importance of the burial sites and given designated areas for dumping of waste hence no impacts are expected.

⁴ An experienced forensic archaeologist should be able to implement the necessary procedures to ensure that human remains are excavated, recorded, removed as required and in addition, that post-excavation handling and eventual storage or reburial complies to standards recommended by the Institute for Archaeologists (IFA) and English Heritage.

11.5 Decommissioning/Closure Phase

Decommissioning of the proposed project developments is not envisioned. However, in case decommissioning is required, the activity will need to comply with the appropriate environmental legislation and best practices at that time. Should decommissioning occur, the main activity during phase would be ceasing of operations, removal from site of used power line equipment, demolition of buildings on the site and restoration of the site to near pre-project conditions. The project area should also be re-vegetated using indigenous vegetation species found in the area.

Buildings and other infrastructure may not be demolished if alternative use for them is agreed upon with other stakeholders. The above activities are unlikely to disturb sensitive receptors, hence there will be no impacts on archaeological and cultural heritage resources unless to areas that were not subjected to archaeological assessment previously such as land fill that may be opened for dumping of various waste. If such an activity is undertaken, it is recommended that the land fill proposed area be checked for possible archaeological sites.

11.6 General Management Objectives and Commitments

To avoid disturbing sites of heritage importance that may be encountered inadvertently, the following shall apply:

- The project workers should be notified that archaeological sites might be exposed during construction.
- Under no circumstances shall any artefacts be removed, destroyed or interfered with anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the National Heritage Conservation Commission (Act No. 173 of 1989).

11.7 Summary of Specific Mitigation and Residual Impacts

A summary of negative impacts are outlined and summarized in Table 10 below:

Table 10: Summary of Specific Mitigation and Residual Impacts

HERITAGE RESOURCES TYPE/DESCRIPTION	PROJECT IMPACT	UNMITIGATED IMPACT SIGNIFICANCE	SPECIFIC MITIGATION SUGGESTIONS	RESIDUAL IMPACT
Unknown/discovered Archaeological Sites/Artefacts and Cultural Heritage Sites	Loss of archaeological and historic resources through development of associated facilities and logistics	Risk of critical impacts	Rigorous implementation of the archaeological chance finds programme including expert monitoring and localised cessation of construction when needed; Consultation with NHCC, Local community and Police in the event of significant finds; Avoidance or mitigation techniques, potentially including rescue excavation; Publication of archaeological findings.	Residual impact cannot be determined at this stage but the aim will be to avoid significant impacts where possible and mitigate remaining impacts so that they are no more than minor or moderate.
Chance Find Historical/ Burial/Graves	Loss and damage to the graves and loss of historical attachment to the site by the living communities with persons interred therein	Risk of critical impacts	Rigorous implementation of the archaeological chance finds programme including field forensic archaeologist monitoring and localised cessation of construction when needed; Consultation with NHCC, Local community and Police in the event of significant finds; Avoidance or mitigation techniques, potentially including rescue excavation; Publication of archaeological findings.	Residual impact cannot be determined at this stage but the aim will be to avoid significant impacts where possible and mitigate remaining impacts so that they are no more than minor or moderate.
Burial Sites	<ul style="list-style-type: none"> • Loss and desecration of the burial sites • Loss of attachment to the site by the living communities with persons interred therein • Disturbance or destruction of unknown/discovered Archaeological Sites/Artefacts or Cultural Heritage Sites 		<p>Rigorous implementation of avoidance mitigatory measures to avoid any impacts on the burial sites</p> <p>*All the workers must be sensitized on the importance of the burial sites and they should follow the cultural traditions associated with them such as no trespassing, cutting of trees, dumping of waste, use of abusive language/insults and having sexual activities.</p>	Residual impact cannot be determined at this stage but the aim will be to avoid significant impacts where possible and mitigate remaining impacts so that they are no more than minor or moderate

Table 11: Cultural Heritage - Disturbance or destruction of known grave sites

Type of Impact	Negative Impact			
Impact Criteria	Construction		Operations	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Intensity/Severity	High	High	High	High
	Medium	Medium	Medium	Medium
	Low	Low	Low	Low
	Very Low	Very Low	Very Low	Very Low
	Zero-Very Low	Zero-Very Low	Zero-Very Low	Zero-Very Low
Geographic Extent	Local	Local	Local	Local
	Regional	Regional	Regional	Regional
	National	National	National	National
	International	International	International	International
Duration	Short Term	Short Term	Short Term	Short Term
	Medium Term	Medium Term	Medium Term	Medium Term
	Long Term	Long Term	Long Term	Long Term
	Permanent	Permanent	Permanent	Permanent
Probability	Improbable	Improbable	Improbable	Improbable
	Possible	Possible	Possible	Possible
	Probable	Probable	Probable	Probable
	Definite	Definite	Definite	Definite
Consequence	Very High	Very High	Very High	Very High
	High	High	High	High
	Medium	Medium	Medium	Medium
	Low	Low	Low	Low
	Very Low	Very Low	Very Low	Very Low
Significance	Insignificant	Insignificant	Insignificant	Insignificant
	Very Low	Very Low	Very Low	Very Low
	Low	Low	Low	Low
	Medium	Medium	Medium	Medium
	High	High	High	High
	Very High	Very High	Very High	Very High

Table 12: Cultural Heritage - Disturbance or destruction of unknown/discovered Archaeological Sites/Artefacts or Cultural Heritage Sites

Type of Impact	Negative Impact			
Impact Criteria	Construction		Operations	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Intensity/Severity	High	High	High	High
	Medium	Medium	Medium	Medium
	Low	Low	Low	Low
	Very Low	Very Low	Very Low	Very Low
	Zero-Very Low	Zero-Very Low	Zero-Very Low	Zero-Very Low
Geographic Extent	Local	Local	Local	Local
	Regional	Regional	Regional	Regional
	National	National	National	National
	International	International	International	International
Duration	Short Term	Short Term	Short Term	Short Term
	Medium Term	Medium Term	Medium Term	Medium Term
	Long Term	Long Term	Long Term	Long Term
	Permanent	Permanent	Permanent	Permanent
Probability	Improbable	Improbable	Improbable	Improbable
	Possible	Possible	Possible	Possible
	Probable	Probable	Probable	Probable
	Definite	Definite	Definite	Definite
Consequence	Very High	Very High	Very High	Very High
	High	High	High	High
	Medium	Medium	Medium	Medium
	Low	Low	Low	Low
	Very Low	Very Low	Very Low	Very Low
Significance	Insignificant	Insignificant	Insignificant	Insignificant
	Very Low	Very Low	Very Low	Very Low
	Low	Low	Low	Low
	Medium	Medium	Medium	Medium
	High	High	High	High
	Very High	Very High	Very High	Very High

12.0 MANAGEMENT PLAN

12.1 Overall Objectives and Targets (Priorities)

The key objectives and targets of the Heritage management are presented in 12.

Table 13: Key HIA Objectives and Targets

Phase	Key Objective	Key Target
Construction	<p>Minimize construction impacts through:</p> <p>* Monitoring of all vegetation clearing, earth works, waste dumping activities by an archaeologist and offering of training to relevant staff and contractors in recognition, handling, and response to archaeological and other cultural heritage chance materials</p> <p>+ Monitoring of trenching project activities by a field forensic archaeologist.</p>	<ul style="list-style-type: none"> • Disturbances and destruction of unknown/discovered archaeological and cultural heritage resources • Damage and loss of chance finds historical burial sites and graves • Destruction and desecration of burial sites

12.2.1 Training for Archaeological and cultural Resources Management

To ensure minimal loss or damage to archaeological artefacts/cultural heritage resources during the construction and operation phase (and operation if earth excavation will be involved) project personnel will be given basic training to be able to recognise artefacts and inform NHCC for their appropriate action.

Table 14: Training and competence awareness

S/N	Type of training	Targeted Project Staff
1	Archaeological artefacts (iron and stone, ceramic) recognition skills	<ul style="list-style-type: none"> ▪ Project Manager/supervisor ▪ Earth Moving machines operators

		<ul style="list-style-type: none"> ▪ Worker force involved vegetation clearing, it manual excavation and trenching
2	Archaeological artefacts (human and animal bones) recognition skills	<ul style="list-style-type: none"> ▪ Project Manager/supervisor ▪ Earth Moving machines operators ▪ Worker force involved vegetation clearing, it manual excavation and trenching
3	Anthropological/traditional/sacred sites recognition (infrastructure material and paraphernalia)	<ul style="list-style-type: none"> ▪ Project Manager/supervisor ▪ Earth Moving machines operators ▪ Worker force involved vegetation clearing, it manual excavation and trenching

12.3 Contractor compliance

The contractor shall comply with a number of various national and international legal frameworks/conventions protocols, guidelines relevant to this proposed project. The contractor shall also comply and adhere to the suggested proposed mitigatory strategies. As regards the archaeological and cultural resources, the contractor is expected to comply with the attached Chance Find Procedure (CFP) and implement the monitoring strategy. (Please find the CFP in Appendix 5).

12.5 Management Programme

Below is a Management Programme to mitigate possible loss and damage to archaeological sites and artefacts, cultural heritage resources and historical graves (undiscovered), and modern burial sites during the implementation of various project developmental activities in the project area (Table15: Environmental and Social Management Program).

Table 15: Environmental and Social Management Program

ID	PHASE / TIMING	IMPACT SUMMARY	OBJECTIVE	DETAILED MEASURES	MITIGATION	PROCEDURES	MONITORING MECHANISM AND FREQUENCY	TARGET PERFORMANCE INDICATOR	RESPONSIBILITY	START	END	COST
01	Pre/ Construction/ Operation	Loss of archaeological and historic resources through development of associated facilities and logistics	To reduce loss or impact to unknown/unrecorded archaeological and historical heritage resource	<ul style="list-style-type: none"> + To minimize the chance of destruction of potential sites/artefacts not apparent from surface finds, the removal of topsoil and earth excavations project stages on all construction sites should be monitored by a qualified archaeologist (by an archaeologist so that any exposed artefacts may be recovered. + Offering of training to relevant staff and contractors in recognition, handling, and response to archaeological and other cultural heritage chance materials + A Chance Finds Procedure complying with international best practice should be operated to address any finds encountered during ground disturbing activities. + If required, exposed artefacts should be collected by NHCC 		Monitor all earth and excavations during pre and construction phases and rescue to be done in stages agreed with the developer.	Regular Only during earth removing activities and deep trenches	No or minimised loss and damage to archaeological/historical heritage resource	Project Archaeologist	When Commencement of Project developmental works	When project is in operational phase and there are no earth works	
02	Construction/ Operation	Loss and destruction of known and recorded sites and	To reduce loss or impact to known/recorded archaeological and	<ul style="list-style-type: none"> + The TL route must avoid the known/recorded archaeological and historical heritage resource. + A Chance Finds Procedure complying with international best 		Only NHCC and qualified archaeologist to	N/A	No or minimised loss and damage to archaeological/historical heritage	Qualified NHCC archaeologists	Before the project commences	Before project commences	

		artefacts through development of associated infrastructure/facilities and logistics	historical heritage resource	practice should be operated to address any finds encountered during ground disturbing activities.	undertake the salvage operation		resource by following archaeological sites acceptable salvage guidelines (by NHCC staff)				
03	Construction/ Operation	Loss and damage to the graves and loss of historical attachment to the site by the living communities with persons interred therein	To avoid loss and damage to historical graves that may be encountered inadvertently	A field forensic archaeologist should be on site to monitor excavation works and if a grave is found NHCC and Zambia Police Service should be involved and subsequent recovery undertaken	Monitor all earth and excavations during pre and construction phases and rescue to be done in stages agreed with the developer.	Only during earth removing activities and deep trenches	No or minimised loss and damage to historical burials	Site Forensic Archaeologist, NHCC and, if required, Police	When Commencement of Project developmental works	When project is in operational phase and there are no earth works	
04	Construction/ Operation	Destruction and desecration of the two burial sites	To avoid loss or damage or desecration and burial sites	All the workers must be sensitized on the importance of the burial sites and they should follow the cultural traditions associated with them such as no trespassing, cutting of trees, dumping of waste, use of abusive language/insults and having sexual activities.	Monitor all heavy machines vehicular movements and dumping	Only during earth removing activities and dumping of waste during operations	No or minimised destruction and desecration to burials sites	Project ECO	Before the project commences	When project is in operational phase and there are no earth works	

13.0 REPORT OF MITIGATION MEASURES

This Heritage Impact Assessment (HIA) archaeological and cultural heritage resources did not record any archaeological resource in the project area. Accordingly, several possible mitigation measures were identified to lessen any negative impact that may occur to the unknown or discovered archaeological/cultural heritage resources, historical and modern burial sites during the various phases of the proposed project. These mitigations have been briefly discussed and impacts assessed at the all the four (4) phases of the project of the likely results if applied. The mitigation measures will be followed up by a suggested report and monitoring requirement.

13.1 Monitoring and Review

13.1.1 Monitoring

As part of a mitigation strategy, a programme of monitoring will be devised to ensure that all activities relating to the project are being carried out in a manner that protects the cultural heritage resources.

This monitoring schedule will include an orientation for the crew and machine operators prior to initiating soil and sediment removal. Other project personnel will be made aware of the potentials of archaeological and other cultural heritage resources within the project area. They will be inducted on their responsibilities during archaeological monitoring, their obligations in case of an inadvertent discovery and they will be made aware of Chance Finds Procedure. The above induction should be done by a free-lance qualified archaeologist or preferably one from the National Heritage Conservation Commission.

This programme will entail, monitoring during the construction, operational and/or decommissioning phases of the project, depending on the risks of significant impacts during these phases and/or the need to monitor compliance with requirements. The outcomes of monitoring and evaluation process will provide a firm basis for reviewing and updating plans and systems and taking corrective action where required.

The vegetation clearing, excavation works of the project and movement of heavy earth moving machinery and for the construction of the main power line and other auxiliary project infrastructure may have potential impacts to known and unknown archaeological and other cultural heritage resources. It is therefore important that monitoring (at vegetation clearing and subsurface excavations/trenching levels) is undertaken to ensure that adverse impacts on archaeological sites and other cultural heritage resources which could not be predicted or evaluated prior to construction are addressed. Monitoring requires the presence of an

archaeologist during the construction phase of a project. This should take the form of scheduled site visits and on-call availability during a long-term project. This above approach will help in mitigating impacts that may arise during this phase of the project (Archaeological Services Inc., 2010).

13.1.2 Review

The heritage specialist (archaeologist) will be responsible for maintaining and reviewing management of monitoring prior to, during and following construction works and will have regular meetings with the construction manager, project manager, CLO, and environmental manager so as to report on progress and give highlight on any heritage issues. The monitor should have a 'cultural resources monitoring kit with a number of essential equipment and items (Please see appendix 2). There will be a shared function, with the Project ECO being based onsite, and guided by the heritage specialist.

As noted in the mitigation above, in the event of unexpected discovery or accidental damage to cultural heritage resources a temporary exclusion zone should be established and works stopped temporarily and only resume after mitigatory measures have been undertaken by an archaeologist if required.

Since NHCC has a regional office in Lusaka which is responsible for the management of all heritage resources in East Central and Lusaka Provinces, it is recommended that the regional office be involved in the monitoring of the project when required. Meetings between the Developer and NHCC as the authority in Heritage protection and Management in Zambia should be held to ensure that any materials of archaeological significance or cultural value which are encountered during the construction and operation phase of the project (i.e. chance finds) could be examined, evaluated and stored by the regional office. These periodic meetings and exchange of reports would further enhance co-operation between NHCC a national body institution responsible for the protection and management of heritage resources in the country and Mphepo Power.

14.0 CONCLUSION

The survey that was undertaken in December, 2021 covered the area in Mambwe and Katete districts, Msoro and Mbang'ombe areas earmarked for the development of a Transmission Line project. Whilst no archaeological resource was recorded in the proposed project area, various research works in the wider environment of the project area by several archaeologists/researchers, the NHCC register shows the existence of numerous sites associated with the Middle Stone Age, Late Stone Age and Iron Age sites in the wider environment of the project area. It is therefore probable that archaeological and other cultural resources could be encountered in the project area if an intensive archaeological survey coupled with archaeological excavation test pits was undertaken. Significantly, there are two graves in close proximity to the transmission line one of whom is still active, and the other is not; however, both of these fall outside the RoW.

The study further revealed that the proposed project area had no major cultural traditional ceremonies associated with the land apart from the Malaila and *Kulamba* ceremony which is held annually in Mambwe and Katete at Chief Nsefu and Mkaika.

The survey also clearly showed that, several archaeological sites that could have existed in the area were destroyed by decades of farming activities and it is also possible that, other cultural heritage resources could still exist in the ground. It can therefore be presupposed that the envisaged project infrastructure related developmental activities may reveal the existence of these resources.

The Heritage Impact Assessment (HIA) study has further outlined possible expected impacts and possible mitigatory measures which should be undertaken or should be adhered to during the implementation of this project. In the event that, during the pre-construction phase or during construction, any archaeological, paleontological or cultural heritage resources are encountered (e.g. graves, stone and iron tools, and animal and human skeletal remains), the operations must cease immediately and necessary steps outlined in the mitigation strategies to deal with such are applied and only continue after a salvage by a qualified archaeologist has been made (if required) and the 'chance finds' procedures stipulated by NHCC should be applied.

Reasoned Opinion

From a cultural heritage resources perspective, since no archaeological resources were recorded apart from modern burial sites outside the project area, with appropriate proposed mitigatory measures for possible inadvertently discovered archaeological remains/chance finds, etc. and the modern burial sites), it is the considered opinion of the independent cultural heritage resources specialist that, the cultural heritage impacts resulting from the proposed project can be effectively managed and reduced to acceptable levels, and consequently the benefits arising from the project would outweigh the negative social and environmental impacts, if the above recommendations are adhered to and based on approval by ZEMA. **The Heritage Specialist is therefore of the opinion that, despite the eleven heritage resources and numerous modern burial sites recorded in the area, the project can be commenced.**

15.0 DECLARATION OF THE AUTHENTICITY OF THE REPORT

We, the undersigned, declare that the information contained in this report is true and correct to the best of my knowledge and reflect the true findings of the desk study and field survey undertaken for the proposed Mphepo Power line Project in Mambwe and Katete district of Zambia.

We further declare that the study for the proposed project will be implemented in accordance with the appropriate Zambian legal and ZEMA framework.

Any other work undertaken by other experts has been quoted and referenced accordingly.

Consultant:

Signed:

Name: Kagosi Mwamulowe

(Natural Heritage Expert – Archaeology/Anthropology)

Consultant:

Signed:

Name: Geoffrey Mwanza

(Cultural Heritage Expert – Archaeology/Anthropology)

Date: December 2021

16.0 REFERENCES

1. Archaeological Services Inc., (2010) Planning for the Conservation of Archaeological Resources in the City of Kingston Planning and Development Department, City of Kingston, p.40.
2. Ardito, J. A. (1993) Reducing the Effect of Heavy Equipment Compaction through a programme of in-situ Preservation. New York State Office of Park, New York.
3. Barham, L. S. (2006). Batwa in the mist Before Farming 4, Article 9.
4. Barham, L. S. Stringer, C. B. & Pinto, L.C.A. (2002). Bone tools from Broken Hill (Kabwe) cave, Zambia, and their evolutionary significance, *Before Farming* 2 (3), p1.
5. BBOP. (2009). Biodiversity Offset Implementation Handbook.
6. Brundtland. (1987). Our Common Future, Report of the World Commission on Environment and Development. United Nations.
7. *Cemetery Preservation Manual*, The Maryland-National Capital Park and Planning Commission, Prince George's County, Maryland December (2010).
8. Central Statistical Office. (2013). *Zambia 2010 Census Atlas*. Lusaka: Government of the Republic of Zambia.
9. Chanda K.C. (200). Identification of Ntumbachushi National Monument Beacons and Boundaries, NHCC, Northern Region Unpublished report, pp. 10-14
10. Katete District Profile, (2018)
11. Chikumbi D. C. (1997) Cultural Resources in the Mosi-oa-Tunya National Park, EDF/NPWS Report, Chilanga.
12. Chikumbi D., (2006) Archaeology and Cultural Heritage Resources Specialist Study Environmental and Social Impact Assessment of the Proposed Konkola North Mine and Concentrator.
13. Chomba C & Sianjobo M. C. (2014) Tourism And Tourist Attractions In Zambia: Have We Fully Harnessed The Potential In The Last Fifty Years Of Independence, 1964-2014?, *Journal of Sustainable Development in Africa* (Volume 16, No. 8., p.130.
14. Clark, J. D. (1950) *The Stone Age Cultures of Northern Rhodesia*. Cape Town: South African Archaeological Society,
15. Clark, J. D. (1970) *The prehistory of Africa*. London: Thames and Hudson, p.122.
16. Environmental Impact Assessment – A Guide to Procedures (2000), E (Ref. 2.1).

17. “Green” Wind Power Understanding Impacts, Approvals, and Sustainability of Run-of-River Independent Power Projects in British Columbia (2007). Tanis Douglas Watershed Watch Salmon Society, p.12.
18. ICOMOS (1990). Charter for the Protection and Management of the Archaeological Heritage.
19. International Council of Monuments and Sites.
20. ICOMOS (2010). Heritage Impact Assessment for Cultural World Heritage Properties, Charter for the Protection and Management of the Archaeological Heritage International Council of Monuments and Sites.
21. IFC, International Finance Corporation, (2006), IFC Performance Standard, Guidance Note, April 2006, World Bank.
22. Illinois Historic Preservation Agency Illinois Historic Cemetery Preservation Handbook: A Guide to Basic Preservation www.illinois-history.gov. Accessed 20/7/18, p.2.
23. Jepson, P. & Canney, S. (2003) ‘Values-led conservation’, *Global Ecology and Biogeography*, vol., 12, pp.271–274.
24. Jokilehto, J., (2008), The World Heritage List What is OUV? Defining the Outstanding Universal Value of Cultural World Heritage Properties, p.12.
25. Lishiko B., and Chanda K.C., (2017) Heritage Documentation and Asserts Documentation Report, Lunzua Power Authority (LPA), Kalungwishi Wind power Project p.36.
26. Region, NHCC, unpublished,
27. (Management Policies (2001) National Park Services, US Department of the Interior, Washington DC, p.95.
28. Marta de la Torre (2002) Assessing the Values of Cultural Heritage Research Report. The Getty Conservation Institute, Los Angeles p.3.
29. Mitchell, P. J. (2002). The archaeology of Southern Africa. Cambridge: Cambridge University.
30. Miller, S. 'Contacts between the Later Stone Age and the Early Iron Age in southern Central Africa', *Azania* 4, (1969), 81-90.
31. Mwendabai Darlington, The Kunda people of Zambia. Zambia Daily Mail. July 2015.
32. Formulation of the National Adaptation Programme of Action on Climate Change, Ministry of Tourism, Environment and Natural Resources, 2017, p.24

33. National Heritage Conservation Commission Act Chapter 173 of the Laws of Zambia, (1989).
34. National Heritage Conservation Commission Policies, (1996) Livingstone.
35. National Heritage Conservation Commission (NHCC) Heritage Register (2003) Livingstone.
36. Ossafreelance, (June 2012) A Basic Overview for the Recovery of Human Remains from Sites under Development Guide 13, p.6.
37. Patterson, T. C., (1994) *The Theory and Practice of Archaeology*, Prentice Hall, p.57.
38. Peaty, D., (2011) *Sacred Sites, Conservation and Tourism*.
39. Phillipson, D.W. *The National Monuments of Zambia*. Ndola: Mission Press, 1972.
40. Phillipson, D.W. & Fagan, B. (1969). The date of the Ing'ombe Ilede burials. *Journal of African History*. (1969) 10(1).
41. Ministry of National Development Planning, Revised Seventh National Development Plan (R-SNDP), pp.73-74.
42. Sinkamba J. F., and Lishiko, B. B., (1992). *The Documentation of Northern Province Rock Art Report* National Heritage Conservation Commission, Livingstone.
43. Tasmanian Heritage Council: Practice Note No. 11 (November 2014) – Managing Cemeteries Version 2: p.3.
44. Taruvinga, P. (2007). Community participation and rock art management in Zimbabwe. In: Tasmanian Heritage Council: Practice Note No. 11 (November 2014) – Managing Cemeteries Version 2: p.3.
45. The International Committee on Archaeological Heritage Management (ICAHM), (1990). Lausanne, ICOMOS.
46. UNDRIP (2007) ‘Declaration on the rights of indigenous peoples, United Nations’, General Assembly, 61st session, agenda item 68, Report of the Human Rights Council
47. VISION 2030, “*A Prosperous Middle Income Nation by 2030*” (2006).
48. World Energy Resources Windpower (2016). World Energy Council, p.12.
49. Zambia Development Agency (ZDA). (2006) *Promoting Zambia’s Economic Growth and Development*, pp2, 7.
50. Zambia (2010) *Census of Population and Housing Lusaka Province Analytical Report*, Central Statistical Office, p.9, 2014.

Internet Sources:

51. Central Statistics Office 2013. <https://www.citypopulation.de/php/zambia-admin.php?adm2id=0605> Accessed 30/11/18
52. Central Statistics Office 2013. <https://www.citypopulation.de/php/zambia-wards-admin.php?adm2id=10120> Accessed 30/11/18

17.0 REPORT PREPARERS

Name	Role	Signature
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Geofrey Mwanza	CULTURAL/ANTHROPOLOGICAL HERITAGE EXPERT	

18.0 ANNEXES/APPENDICES

Appendix 1 Table of Earlier Studies GEOMORPHOLOGICAL HERITAGE RESOURCES IN KATETE DISTRICT (NHCC Register)

GEOMORPHOLOGICAL HERITAGE RESOURCES IN KATETE DISTRICT								
HERITAGE NAME	PROV	DIST	COORD	HERITAGE TYPE	SIGNF	LEGAL STATUS	PERIOD	HERITAGE TYPE
Kalingala South West No. 2	CTL	Katete		Geomorphological		Protected	N/A	Hot spring
Luano Valley Hotspring No2	CTL	Katete		Geomorphological		Protected	N/A	Hotspring
Malakata Limestone site	CTL	Katete		Geomorphological		Protected	N/A	Hotspring
Mwapula River No. 1	CTL	Katete		Geomorphological		Protected	N/A	Hotspring
Mwapula River No. 2	CTL	Katete		Geomorphological		Protected	N/A	Hotspring
Mwapula River No. 3	CTL	Katete		Geomorphological		Protected	N/A	Hotspring

Appendix 2: Archaeological and Cultural Resources Monitoring Kit Inventory (CRMKI)

- Plastic portable file box (case)
- Antibacterial hand and face wipes
- One pair of rubberized garden gloves
- Disposable dust masks
- First Aid Kit (including: first aid emergency directions; instant cold pack; rubber gloves; adhesive bandages [1" x 3" and ¾" x 3" size) benzalkonium chloride towelettes; alcohol pads; tweezers; scissors; pain reliever; cloth bandages; band aids)
- Plastic Ruler
- Paper bags
- Ziploc plastic bags
- Pencil case (including: pens, pencils, mini-note books; binder clips; pencil sharpener; paper clips)
- Manila Folder with Blank Daily Field Records, Graph Paper, Field Maps
- Digital Camera
- Black and White Photo Scale

Appendix 3: List of Interviewees

Annex A: The Management of Heritage Resources in Zambia

a. Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
SAKALA CHARLES	M	MORDO	INDUNA	MORDO	0973551060	11/12/21	
JOSEPH MBEKE	M	CHINYOLOLO	INDUNA	CHINYOLOLO	0955569531	11/12/21	J. MBEKE
SAKALA KILSON	M	KABILA	INDUNA	KABILA	09770129060	"	
EDWARD ZILU	M	KASAMANDA	INDUNA	KASAMANDA	-	"	EZULU
SHADRACK MWINZA	M	KIARAZA	INDUNA	KIARAZA	-	-	
BANDA NAWIWE	M	KASAMANDA	COUNCILOR	KASAMANDA	0979072105 0957405280	11/12/21	
JAMES HALLA	M	PALACE	CHIEF RETAINER	PALACE	0993162065	11/12/21	
DISMUS BANDA	M	MPEPO FWER	OFFICER	LUSAKA Chadema@gmail.com	097275404	"	
Geoffrey Mwinza	M	Environment	Researcher	geoffrey.mwinza@gmail.com	0975085036	17	
Jonus Mwinza	M	BHEC	Soc Manager	mwinza@gmail.com	0977909720	"	

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Munira Curley	m	D/Adm/Staff	41 DPO	munira.curley@gmail.com	0975848950	15/12/21	
Nize Ndawe	m	MAMBE TOWN COUNCIL	Ag. CS	ndawenize@gmail.com	0970137007	15/12/21	
Edwin Mwinza	m	Chief's Staff (M)	TAD	mwinzaedwin@gmail.com	0977238492	15/12/21	
Mwambiwe Mwinza	m	FORESTERS	D.F.O	mwinzaedwin@gmail.com	0977946223	15/12/21	

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Geoffrey Mwinza	M	DHEC	ENVIRONMENTAL OFFICER	LSK	0972530929	11/12/21	
Nicholas Banda	m	Zibanzaka	Headman	Zibanzaka	0917225658	13/12/21	
Phiri Dison	M	Chimwala	District Chair	Chimwala	0991040463	13/12/21	
Pickard Mwinza	M	Mkafya	Vice Chairman	Mkafya	0999491165	13/12/21	
Joseph Ngoma	m	Mundalila	Headman	Mundalila	0971227391	13/12/21	
Daniel Mwinza	m	Kasulu	Induna	Kasulu	0976329242	13/12/21	
Catherine Mwinza	f	Sani	Headwoman/ Chief Induna	Sani	0971923703	13/12/21	
Phiri Lemani	m	Mwinzochi	Headman	Mwinzochi	0970182559	13/12/21	
Phiri Aroni	m	Mwinzochi	Member	Mwinzochi	0995953121	13/12/21	
Mwale Elias	M	KASAMANDA FRI	TEACHER	KASAMANDA FRI	0979453526	13/12/21	

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
MIRILI CHIPALO	M	KASAMANDA RHC	EHT	KASAMANDA RHC	0999535311	13/12/21	[Signature]
MARGRET MWANZA	F	KALAMBWA	VILLAGER	KALAMBWA	0979104465	13/12/21	[Signature]
ILABILENYI MWANZA	F	KAMWENDO	VILLAGER	KAMWENDO	09774947425	13/12/21	[Signature]
CHARITY ZULU	F	TIPANASALA	Community Worker	TIPANASALA	0957424314	13/12/21	[Signature]
NORA MWANZA	F	MWANZA	Church Treasurer	MWANZA	0974388526	13/12/21	[Signature]
CATHERINE BANDA	F	NYAMALA	VILLAGER	NYAMALA	0955066427	13/12/21	[Signature]
NELLY SAKALA	F	ENOCK	VILLAGER	ENOCK	0978039130	13/12/21	[Signature]
CATHERINE MWANZA	F	MADALISO	VILLAGER	MADALISO		13/12/21	[Signature]
VERONICA MWANZA	F	MNDALILA	VILLAGER	MNDALILA	097598915	13/12/21	[Signature]
VICTORIA KONDOWE	F	TIPALELO	VILLAGER	TIPALELO	0950314719	13/12/21	[Signature]

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
ELIWA SAKALA	F	ELIMENJI	VILLAGER	ELIMENJI	0950339038	13/12/21	[Signature]
LINA KALINDA	F	KASAFYA	VILLAGER	KASAFYA		13/12/21	[Signature]
JANET MWANZA	F	NOTI	VILLAGER	NOTI	0950314778	13/12/21	[Signature]
VIOLET ZULU	F	WAZINGWA	VILLAGER	WAZINGWA		13/12/21	[Signature]
CHARITY KASABO	F	HOLY HOOD	Community Worker	HOLY HOOD	0975295631	13/12/21	[Signature]
DELIA WIBEWE	F	MUNDALILA	VILLAGER	MUNDALILA	0976310214	13/12/21	[Signature]
NEONICA KASHIKA	F	MWANZA	VILLAGER	MWANZA	0972851229	13/12/21	[Signature]
TRIPALIA BANDA	F	KALAMBWA	VILLAGER	KALAMBWA	0976411797	13/12/21	[Signature]
RITA TEMBO	F	SAMALANI	VILLAGER	SAMALANI	0927533785	13/12/21	[Signature]
MARTHA SAKALA	F	KACHAKWALA	VILLAGER	KACHAKWALA	0976160415	13/12/21	[Signature]

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Richard Mwanza	M	Elisha	Headman	Elisha	-	13/12/21	[Signature]
Edward Tembo	M	Enock	Member	Enock	-	13/12/21	[Signature]
Angeline Mwanza	M	Kalambwa	Member	Kalambwa	0992271516	13/12/21	[Signature]
Lazarus Banda	M	Musafale	Headman	Musafale	0955094580	13/12/21	[Signature]
Phiri Akhman	M	Enock	Headman	Enock	-	13/12/21	[Signature]
Phiri Nwafi	M	Bonzo	Headman	Bonzo	0991605498	13/12/21	[Signature]
Zulu Kaseke	M	Kasimbwe sect	Member	Kasimbwe	091706557	13/12/21	[Signature]
Steven D Nguru	M	Bonzo	Member	Bonzo	-	13/12/21	[Signature]
White Sakala	M	Jauli	Member	Jauli	-	13/12/21	[Signature]
Mwanza Taps	M	Kasimbo farm	Chairman	Kasimbo	0994021491	13/12/21	[Signature]

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
SARAH WESTON M.	M	KIBILA PRIMARY	HEADTEACHER	sarahweston@yopmail.com	0977890065	13/12/21	
Barnes Jeremiah	m	Kasamwaha pri	Facilitator		095764204	13/12/21	
Mwale Teresa	m	Kalamwaha	PTA Member	Kalamwaha	0999913057	13/12/21	
Kanchi Sandrum	m	Jeremah	Member	Jeremah	-	13/12/21	S. Anand
Austin Mwarwa	m	Mukoyanga	Member	Mukoyanga	0955903099	13/12/21	
Sakala Nicholas	m	Mundulila	Member		0990994922	13/12/21	
Edwin Banda	m	Muchacha	Headman	Muchacha	0995133246	13/12/21	
Peter Tembo	m	Kefa	Member	Kefa	0993463298	13/12/21	
Thomas Mwarwa	m	Mpeta	Headman	Mpeta	0998862749	13/12/21	
Terika Kennedy	m	Enock	Member	Enock	0999363099	13/12/21	

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Alkeni Honene	m	Substation	Member	Substation		13/12/21	
Clement Sakala	m	Substation	member	substation	0990837337	13/12/21	M. Banda
Semi Sakala	m	Substation	member	substation	096325889	13/12/21	S. Sakala
Charles Mwarwa	m	substation	member	substation	0965707355	13/12/21	
Gift Lambwe	m	Substation	member	substation	099760602	13/12/21	
Harison Phiri	m	Pachaka farm	member	pachaka farm	0	13/12/21	Y. D. Banda
MURATA MUMBA	m	Substation	v. Secretary	Substation	0979915737	13/12/21	
NOAH BANDA	m	kashimike fm	member	kashimike	0976969778	13/12/21	N. Banda
John Daka	m	Kashimike farm	Member	Kashimike farm	-	13/12/21	
Mwambi Mumba	m	Maua	member	Maua	0955451306	13/12/21	MW

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Funsani Daka	m	Kalyazi sec	Secretary	Kalyazi sec	0978810362	13/12/21	F. DAKA
Azon Banda	m	Kalyazi sec	V. Chairman	Kalyazi sec	0990597362	13/12/21	
Dickson Mumba	m	Maua	Secretary	Maua	-	13/12/21	
Charles MUSALE	m	Substation	member	Substation	-	13/12/21	MUSALE
Ezekiel yambumba	m	Substation	member	Substation	-	13/12/21	
KILSON PHIRI	m	kashimike farm	member	kashimike farm	095521204 09595	13/12/21	WPI
George Phiri	m	Substation	member	substation	0990639350	13/12/21	
Peter Mwarwa	m	pachaka farm	member	pachaka farm	0990656662	13/12/21	
Phiri Aaron	m	Maua	member	Maua	-	13/12/21	A. Phiri
A. Langa Tembo	m	Substation	member	Substation	-	13/12/21	

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Albert Sichweza	M	Substation	member	Substation	-	15/12/21	A.S. Sika
Mishael Phiri	M	Kalyazi farm	member	Kalyazi farm	-	15/12/21	M. Phiri
Daka Saka	M	Kashimike farm	Headman member	Kashimike	0959291839	15/12/21	S. I. Sika
Azale Phiri	M	Kazionale farm	member	Kazionale	-	15/12/21	A. Phiri
Mwanza Danel	M	Mauke	member	Mauke	-	15/12/21	D. Mwanza
Phiri Masau	M	Pachuka farm	member	Pachuka farm	-	15/12/21	M. Danel
Masitha Phiri	F	Kashimike farm	member	Kashimike farm	0962889242	15/12/21	M. Phiri
Doreen Mhale	F	Kashimike farm	member	Kashimike farm	0990636399	15/12/21	D. Mhale
Theresa Banda	F	Substation	member	Substation	0999453759	15/12/21	T. B.
Chawane Daka	F	Mauke	member	Mauke	095509534	15/12/21	C. Daka

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Jandira Banda	F	Substation	Member	Substation	0993926971	15/12/21	J. B.
Zeresi Phiri	F	Substation	member	Substation	0707266677	15/12/21	Z. Phiri
lelah Saka	F	Substation	member	Substation	-	15/12/21	A. S.
Retha Mwandu	F	Tusizi	member	Tusizi	0994838475	15/12/21	R. Mwandu
Christine Mhale	F	Substation	member	Substation	0967692004	15/12/21	C. Mhale
Lizabeta Banda	F	Substation	member	Substation	0969424502	15/12/21	L. Banda
Enelesi Banda	F	Substation	member	Substation	-	15/12/21	E. Banda
Doris Saka	F	Substation	member	Substation	0995666888	15/12/21	D. Saka
Alice Phiri	F	Substation	Member	Substation	0999705327	15/12/21	A. Phiri
Sulina Phiri	F	Aparimasa farm	member	Aparimasa farm	0953205942	15/12/21	S. Phiri
Dea Zimba	F	Substation	Member	Substation	0995616200	15/12/21	D. Zimba

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Lilium Abwe	F	Kapanda farm	member	Kapanda farm	-	15/12/21	L. Abwe
Evelyn Saka	F	Chimwala	member	Chimwala	-	15/12/21	E. Saka
Ketty Mumba	F	Chimwala	member	Chimwala	-	15/12/21	K. Mumba
Loren Mwanza	F	Chimwala	member	Chimwala	-	15/12/21	L. Mwanza
Frischi Zulu	F	Kampala	member	Kampala	0962343330	15/12/21	F. Zulu
Esaya Zulu	F	Kampala	"	Kampala	-	15/12/21	E. Zulu
Zulu Joseph	M	Kampala	member	Kampala	0955434230	15/12/21	J. Zulu
Fred Zulu	M	Nyawa	member	Nyawa	095571837	15/12/21	F. Zulu
Magaya Rabon	M	Twezze	member	Twezze	0994149515	15/12/21	M. Rabon
Shantec Mwanza	M	Chiwawa	member	Chiwawa	-	15/12/21	S. Mwanza

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Andrew Ziwa	M	Pitola	Headman	Pitola	0978669269	15/12/21	[Signature]
Christopher Banda	M	Chimasa	Headman	Chimasa	026921751	15/12/21	C. Banda
Bambi Luckson	M	Chimasa	member	Chimasa	0959491514	15/12/21	B. Banda
Mkandwe Sibus	M	Chikwanda farm	member	Chikwanda farm	0959420465	15/12/21	[Signature]
Mishack Mbewe	M	Chipungu	member	Chipungu	0992424217	15/12/21	M. Mbewe
Samuel F. Mwele	M	Kapsula farm	member	Kapsula farm	099745492	15/12/21	[Signature]
Zulu Isaac	M	Kampala	member	Kampala	0990999897	15/12/21	[Signature]
Sakala Jeremiah	M	Frock	member	Frock	0954240695	15/12/21	[Signature]
Lorraine Chumba	F	Kapsula farm	member	Kapsula farm	-	15/12/21	L. Chumba
Maretha Mbewe	F	Chiwano	member	Chiwano	-	10/12/21	M. Mbewe

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Matebali Akhama	F	Kamutala farm	Induna	Kamutala farm	0999405530	15/12/21	M. Akhama
Mwanza Absent	M	Kapilidazi	Secretary	Kapilidazi	0959490019	15/12/21	[Signature]
Jason Sakala	M	Chipipila farm	Chairman	Chipipila farm	-	15/12/21	J. Sakala
Rabson Mbewe	M	Chimasa	member	Chimasa	-	15/12/21	R. Mbewe
Josam Kawale	M	Nyawa	member	Nyawa	0955444244	15/12/21	[Signature]
Mwanza Solomon	M	Wazaza School	Headteacher	Box 44 MAMBWE	0999597772	15/12/21	[Signature]
Spyrriana Muchemba	M	Tipezye farm	Member	Tipezye farm	0998440129	15/12/21	[Signature]
Aaron Kawale	M	Nyawa section	member	Nyawa section	0999420521	15/12/21	[Signature]
Jeremiah Mbewe	M	Chutika farm	member	Chutika farm	0996548831	15/12/21	[Signature]
Conelius Tembwa	M	Wazaza	Teacher	Wazaza	0963927338	15/12/21	[Signature]

Stakeholder Consultation Register

Name	Gender	Organization/Village	Position	Address/Email	Phone Number	Date	Signature
Benjamin Nguzo	M	Tipezye farm	section leader	Tipezye farm	0971452632	15/12/21	[Signature]
Handson Banda	M	Nyawa section	Chairman	Nyawa section	-	15/12/21	A. B. Banda
Edward Mbewe	M	Chipungu	member	Chipungu	-	15/12/21	E. Mbewe
Lukas Mawazi	M	Chipungu	Headman	Chipungu	0997175326	15/12/21	[Signature]
Kilim Phiri	M	Chaweka cottage	Secretary	Chaweka Cottage	0972492625	15/12/21	[Signature]
John Mwanza	M	Chiwano	member	Chiwano	-	15/12/21	J. Mwanza
Samuel Mungu	M	Tipezye farm	member	Tipezye farm	0997359350	15/12/21	[Signature]
Betina Banda	F	Chiwano	member	Chiwano	-	15/12/21	B. Banda
Lilian Banda	F	Chiwano	member	Chiwano	-	15/12/21	L. Banda

Appendix 4: National Heritage Conservation Commission (NHCC) ACT (1989).

National Heritage Conservation Commission (NHCC) is a statutory body under the Ministry of Tourism and Arts, charged with the responsibility of conserving Zambia's natural and cultural heritage for research, sustainable tourism development, education and enjoyment of all the people now and in the future. The Commission was created to replace the Natural and Historical Monuments and Relics Act, Cap. 266 of the Laws of 1948, which itself succeeded the Bushman's Proclamation of 1912. It is therefore one of the oldest Statutory Bodies in Zambia, with the following powers and functions enshrined in the Act:

- a) To preserve, protect and manage Zambia's natural and cultural (i.e. the prehistoric, historic and contemporary monuments and relics) heritage. At present there are over 3,600 such sites recorded and hundreds of thousands of such relics inventoried, all of which are protected. Declaration of some of this heritage as national monuments ensures that they are protected in perpetuity. There are so far over 70 declared in monuments, and many more are due for declaration. Listing, recording and inventorying of this heritage is an on-going activity of the National Heritage Conservation Commission;
- b) To present Zambia's heritage to the public, this means to develop and provide facilities at national monuments for tourist purposes;
- c) To encourage and promote the preservation and protection of that heritage so as to create a more likely awareness of the public of the irreplaceable value of their heritage and the grave dangers which threaten it;
- d) To erect commemorative plaques and standard monuments at certain spots or places of importance in the nation's history, giving information about historic events which occurred at such places;
- e) To purchase or otherwise acquire any monument or relic if it is in the best national interest for its preservation;
- f) To assume guardianship of any monument or relic if so requested by the person owning or controlling such a monument or relic and as trustees for the government to accept any

such monument or relic which the owner desires to give or has bequeathed to the government;

g) To control the movement⁵ and export of heritage objects (relics) and to lend or donate such objects to any museum or public institution for the purpose of displaying to the public and preservation; and,

h) Finally, to co-ordinate all activities in connection with monuments and relics in order that monuments and relics are restored and exhibited to the public as tokens of the past and may serve as an inspiration for the future NHCC (1989).

Both cultural and natural heritage resources described above are important in many ways but especially as part of tourism programmes which contribute to economic development. Cultural and natural heritage conservation is based on a multidisciplinary knowledge base, drawing strategies and actions from a diverse array of stakeholder groupings. This then means that, heritage conservation requires a multi-sectoral approach. To achieve this, a very proactive-based approach, openness and team work are to be harnessed.

Heritage Resources and Properties are generally categorized in two (2) major or broad groups, namely, Cultural and Natural Heritage. In accordance with the National Heritage Conservation Commission (NHCC) Act Cap 173, Volume 12 of 1989 Cultural and Natural Heritage are respectively and further defined as follows (NHCC Act 1989):

⁵ In common with the majority of countries, Zambia has legislation to control the collection or removal from original site and the export of things which are part of her heritage; the possessions of all her people. Just as her mineral wealth, her forests and wildlife are protected, so are her less VISIBLE and less commercial possessions commonly known as relics or protected movable heritage (NHCC Act 1989).

A. Cultural Heritage Resources

The term “**Cultural Heritage**” or “**Cultural monuments or relics**” is used to refer particularly

to:-

- a) Architectural works, works of monumental sculpture and paintings, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding national value from the point of view of history, art or science;
- b) Any old building or groups of buildings, separate or connected which, because of their architectural, their homogeneity or their place in the landscape are of outstanding national value from the point of view of history, art or science;
- c) Sites that are works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding national value from the historical, aesthetic, ethnological or anthropological point of view;
- d) Relics; fossils of any kind; any pre-1890 petroglyphs, drawings, paintings on rock or stones; any object of archaeological, historical or scientific value or interest; any anthropological or archaeological contents of any monuments or ancient working and
- e) Anthropological heritage resources include traditional/ritual sites, regalia and paraphernalia used in ceremonies. These resources are important in the living traditions, norms and practices of communities. These resources would include sacred places such as shrines, burial grounds, and areas where certain rituals and ceremonies are performed.
- f) Under anthropological heritage there are also aspects of intangible heritage which include: traditions or living expressions inherited from people’s ancestors and passed on to their descendants, such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts.

B. Natural Heritage resources

On the other hand, “**Natural Heritage**” or “natural monument” is used to denote:

- a) Natural features consisting of physical and biological formations or groups of such formations, which are of outstanding natural and/or universal value from the aesthetic or scientific point of view, including areas of land consisting rare or distinctive or beautiful flora or fauna;
- b) Also geological and physical formations of outstanding natural value from the point of view of science or conservation, and
- c) Natural sites or precisely delineated natural areas of outstanding national value from the point of view of science, conservation or natural beauty to include waterfalls, outstanding landscape features like gorges, grottos, trees etc.

Source: NHCC Act, 1989

Annex B: Selected Elements of the National Heritage Legislation

The following selection of material from CAP 173 of the Laws of Zambia relate to national heritage and highlight important issues relevant to this study. However, note that the list is provided for guidance purposes only and is not necessarily exhaustive.

Section 33 states “Subject to section forty-one, no person shall, without the written consent of the Commission -

- (a) alter, remove, destroy, damage, excavate or export as the case may be, from Zambia, any ancient heritage or relic or part of it; or
- (b) disfigure, destroy, remove, alter or damage any national monument, memorial tablet, plaque, seal or sign erected or affixed by the Commission.”

Section 35 (1) requires a person “who intends to destroy, demolish, alter or remove from its original site any national monument, relic or ancient heritage shall apply to the Commission for permission.

(2) The applicant shall-

- (a) state the nature and extent of the intended alteration, removal, destruction or demolition and the locality of the area;
- (b) supply diagrams or sketch plans and any other relevant information; and
- (c) define the type of object, its age, where possible, size and what material it is made of.”

Section 40 requires:

“(1) No person shall excavate, collect or export, as the case may be, any ancient heritage, any relic or part thereof, or alter, destroy, damage or remove from its original site any ancient heritage, national monument or relic contrary to sections thirty-three to thirty-nine.”

Section 41 states “Nothing in sections thirty-three to thirty-seven, inclusive, shall be construed as prohibiting any person in the normal course of mining, engineering or agricultural operations from doing any act which would otherwise be an offence under those sections if that person:

- (a) was the owner of land acquired or held under customary law; or
- (b) was the holder of a valid mining license or certificate of title; and the ancient heritage or relic affected had not been known or the heritage had not been declared to be a national monument before the performance of that Act.”

Section 42 requires that “Any person, who discovers what appears to be an ancient heritage or relic shall-

- (a) report his discovery to the Commission within fourteen days;
- (b) suspend his operations in the immediate vicinity of his discovery until thirty days after the delivery of his report, unless the Commission authorizes their continuance; and (c) deliver to the Commission as soon as practicable, or request the Commission to examine and remove, any object which is, or appears to be, a relic.”

Section 43 states that “Upon receipt of a report under section forty-two the Commission may-

- (a) examine and remove any relic;
- (b) allow the person to continue his activities;

- (c) order suspension of the operations not in excess of thirty days to carry out an environmental impact assessment or archaeological survey or recovery analysis of the discovery areas; or
- (d) order the engineering, mining or agricultural project to pay for the costs of the assessment, survey, or analysis.”

Section 44 notes that ”If the Commission does not exercise any of its powers under section forty-three the person may resume his operations thirty days after delivery of his report.”

Section 47 states: “(1) Where a relic is owned by a person, the Commission shall have a right or option to acquire the ownership of the relic so discovered upon payment to the owner of a sum of money to be agreed upon as fair and reasonable compensation, or, failing agreement, by reference to two arbitrators in accordance with the Arbitration Act.

(2) If within six months after receipt of the first notice of any discovery in terms of section forty-two the Commission has failed to notify the owner of such ancient heritage or relic that it intends to exercise its option, such option shall be deemed to have lapsed.”

Section 48 establishes that “Where any heritage is located on land held by any person, the Commission may negotiate with the holder of the land to-

- (a) arrange for preservation, restoration, rehabilitation and reconstruction of the heritage;
 - (b) arrange times, terms, and conditions for admission of the public to the site;
 - (c) arrange for supervision, maintenance and protection of the site; (d) arrange for a lease of the site, access to it, and the terms and conditions of any right of entry;
 - (e) acquire the land or any part of it on such terms and conditions as the parties may agree upon;
- or
- (f) arrange any other matter connected with the conservation, use and enjoyment of the heritage.”

It is assumed that sections 47 and 48 treat communal persons (i.e. relicts on land under customary tenure, in the same manner as individual persons.

Section 49 requires that “The Minister, upon the recommendation of the Commission, may by statutory instrument make regulations-

- (a) regulating the access of the public to any heritage asset which is the property of the Commission or which by agreement with the owner is under its control; (b) fixing fees payable to the Commission for admission to any heritage;
- (c) safeguarding any heritage, national monument, tablet, or relic from disfigurement, alteration, destruction, unauthorized export or removal;
- (d) regulating the excavation of any ancient heritage and the removal export or collection of any relic;
- (e) regulating the conditions of use by any person of any area of land which has been declared to be a national monument and which is under the control of the Commission;
- (f) regulating the conditions for the erection of any building or structure on any area of land declared to be a national monument; or
- (g) prohibiting or regulating any specified acts in or in respect of any heritage.

(2) Any regulation may prescribe fines not exceeding two thousand five hundred penalty units for any contravention of, or non-compliance with the regulations.

(As amended by Act No. 13 of 1994)”

Annex C: Other Applicable International Standards:

The ESIA Process was undertaken in accordance with other International Finance Corporation (IFC) Performance Standards which basically set out the underlying principles for sustainable project management, including impact/risk assessment, mitigation strategies, public consultation and performance monitoring.

Their relevance to the proposed Project is hereby briefly summarised below:

Paragraph 6 - the client will identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented.

Paragraph 7 - “Where the risk and identification process determines that there is a chance of impacts to cultural heritage, the client will retain competent professionals to assist in the identification and protection of cultural heritage. The removal of nonreplicable cultural heritage is subject to the additional requirements of paragraph 10 below. In the case of critical cultural heritage, the requirements of paragraphs 13-15 will apply.”

Paragraph 8 - requires that the Developer’s environmental and social risk assessment process will determine whether cultural finds are likely within the project area and develop mechanisms to manage chance finds through a chance find procedure. Where chance finds are discovered the Developer will not disturb them until a professional has been engaged to assess the find and has made appropriate recommendations for its treatment.

Paragraph 9- establishes that the Developer shall, with the national cultural heritage regulatory organization, also consult with affected communities to identify cultural heritage and incorporate their thinking into the project’s decision-making process.

Paragraph 10 - states that where the project site contains elements of cultural heritage that will be impacted by the project, the Developer through consultation will ensure either continued, or alternative, access to the site(s), in accordance with best health, safety and security practice.

Paragraph 11 - states that “Where the client has encountered tangible cultural heritage that is replicable (i.e. commonly found elsewhere, or moveable) and not critical, the client will apply mitigation measures that favour avoidance. Where avoidance is not feasible, the client will apply a mitigation hierarchy as follows:

- Minimize adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any ecosystem processes (consistent with the conservation of ecosystem services and biodiversity) needed to support it;
- Where restoration in situ is not possible, restore the functionality of the cultural heritage, in a different location, including the ecosystem processes needed to support it;
- The permanent removal of historical and archaeological artefacts and structures is carried out according to the principles of paragraphs 6 and 7 above; and

- Only where minimization of adverse impacts and restoration to ensure maintenance of the value and functionality of the cultural heritage are demonstrably not feasible, and where the Affected Communities are using the tangible cultural heritage for long-standing cultural purposes, compensate for loss of that tangible cultural heritage.”

Of special importance to this Project are:

Removal of Non-Replicable Cultural Heritage

Paragraph 12 - establishes that most cultural heritage is best protected by preservation in place because removal and transfer are likely to cause damage. The Developer “will not remove any nonreplicable cultural heritage 22 unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal;
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
- Any removal of cultural heritage is conducted using the best available technique“

Critical Cultural Heritage

Paragraphs 13, 14 and 15 state that:

Paragraph 13 –“Critical cultural heritage consists of one or both of the following types of cultural heritage:

- (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; or
- (ii) legally protected cultural heritage areas, including those proposed by host governments for such designation.”

Paragraph 14 – “The client should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances when impacts on critical cultural heritage are unavoidable, the [Developer] will use a process of Informed Consultation and Participation (ICP) of the Affected Communities as described in Performance Standard 1 and which uses a good faith negotiation process that results in a documented outcome. The [Developer] will retain external experts to assist in the assessment and protection of critical cultural heritage.”

Paragraph 15 – “Legally protected cultural heritage areas (including World Heritage Sites and legislated Protected Areas) are important for the protection and conservation of cultural heritage, and additional measures are needed for any projects that would be permitted under the applicable national law in these areas. In circumstances where a proposed project is located within a legally protected area or a legally defined buffer zone, the [Developer], in addition to the requirements for critical cultural heritage cited in paragraph 14 above, will meet the following requirements:

- Comply with defined national or local cultural heritage regulations or the protected area management plans;
- Consult the protected area sponsors and managers, local communities and other key stakeholders on the proposed project; and

Implement additional programs, as appropriate, to promote and enhance the conservation aims of the protected area.”

Appendix 5: Chance Find Procedures

Purpose

The purpose of this Chance Find Procedure (CFP) is to provide the management actions in the event that tangible archaeological or cultural heritage finds are accidentally discovered.

Chance finds are defined as objects, commonly related to archaeological or historic sites (e.g. pottery, bones, and stone tools) which are unexpectedly encountered during project related activities. MPHEPO POWER is committed to compliance with Zambian legislation and international standards. As such it is not only important to fully adhere to and implement this CFP for legal and policy compliance but also to conserve and retain the archaeological and cultural heritage of Zambia.

A chance find procedure is a project-specific instruction that outlines the actions to be taken if archaeological objects are unexpectedly

The CFP should be issued to all relevant parties (staff and contractors) engaged in activities within the concession area during site induction (as per the requirements set out in the Environmental Management Plan).

The implementation of the CFP aims to ensure that accidental discoveries are managed in a clear and sustainable fashion throughout the lifetime of the Project. This procedure is intended for review on an annual basis so that content can be refined to take account of any new phases of project activity.

MPHEPO POWER will not disturb any chance find further until an assessment by competent professionals is made and actions consistent with the requirements of this Procedure are undertaken.

Outline

This CFP outlines the following:

- 1) Explanation of the potential for discovery of previously unknown archaeological sites;
- 2) Protocol for identifying a possible archaeological site, including a list of common visible identifying features;
- 3) Procedure to be followed in the event of chance find discovery, excluding human remains, including contact information; and
- 4) Procedure to be followed in the event of discovering what may be human remains, including contact information.

Potential for Discovery of Unknown Archaeological Sites

The following may be present in the entire area:

- Stone Age tools:
 - Burnt stones; or
 - Cut/worked on stones.
- Iron Age artefacts:
 - Bog Iron scatterings;
 - Ceramic pot shards;
 - Grinding stones; and/or
 - Stone utensils (grinding stones, pestles and mortars).
 - Evidence of smelting activities – slag and furnace remains
 - Iron implements
- Other:
 - Beads;
 - Human remains (bones);
 - Animal bones domesticated or wild
 - Anthills (which may indicate the presence of burial grounds or ancient habitation).

Pottery sherds



Animal Bone



Beads



Obsidian



Stone Tools



Bifacial Scraper



A knapped Flint

Human burials



Potential Chance Finds

Procedure to be followed in the Event of Discovering a Chance or evidence of smelting or extensive habitation) be identified or potentially identified the following must be undertaken:

- Immediate suspension of activities and area marked off as a temporary no-go area;
- Immediate notification to the Construction Supervisor and Safety, Health, Environment and Community (SHEC) Representative;
- Investigation by SHEC representative;

- If any artefact is found (excluding human remains or evidence of smelting or extensive habitation), the SHEC representative to record the following information:
 - GPS coordinates and Position (excavation position);
 - Depth of find in soil;
 - Digital image of the find showing vertical section (side); and
 - Digital image of the find.
- The find should be placed in a bag (e.g. a Ziploc bag), along with any fragments. A label must be included with the date of the find, position information, and depth;
- The SHEC representative is to inform the SHEC Manager who then contacts the archaeologist contracted to be on standby. The SHEC representative is to describe the occurrence and provide images;
- Once verified and authorised by the standby archaeologist and SHEC manager – works may recommence;
- No excavation or disturbance of archaeological sites should occur by persons without the appropriate permissions/licence granted by the National Heritage Conservation Commission (NHCC); and
- The artefacts are to be sent to NHCC Lusaka office for archiving and further analysis.

Procedure to be followed in the Event of Human Remains or a Large Find

Should what may be human remains, burial site or large find (i.e. smelting area or extensive amount of artefacts in one location) be identified the following must be undertaken:

- Immediate suspension of activities and area marked off as a temporary no-go area;
- Immediate notification to the SHEC Representative and Zambian Police Service;
- Investigation by SHEC representative;
 - If any human remains or large find is found the SHEC representative to record the following information:
 - GPS coordinates and Position (excavation position);
 - Depth of find in soil;
 - Digital image of the find showing vertical section (side); and
 - Digital image of the find.
 - The find should not be touched;
 - The SHEC representative is to inform the SHEC Manager who then contacts the archaeologist contracted to be on standby. The SHEC representative is to describe the occurrence and provide images clearly marked as human remains / large find;
- A detailed investigation including a site visit by the standby archaeologist and Zambian Police Service may be undertaken.
- The investigation will indicate the specific measures required by DRC law to manage the find. Measures may include, avoidance, *in-situ* stabilisation and conservation, excavation and or relocation as appropriate, in line with Zambian requirements as advised by the archaeologist and verified by the SHEC Manager;

- No excavation or disturbance of archaeological sites should occur by persons without the appropriate permissions/licence granted by NHCC; and
- Only once verified and authorised by the standby archaeologist and SHEC manager – works may recommence.