



Republic of Zambia

## Ministry of National Development and Planning

### The Zambia Integrated Forest Landscape Project

#### LUAMBE SUB-PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN



*Luambe National Park Gate Site*

August 20, 2020

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## **ACRONYMS**

DMT	District Multi-Sectoral Team
DNPW	Department of National Parks and Wildlife
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GMA	Game Management Area
GMP	General Management Plan
FGRM	Feedback and Grievance Redress Mechanism
PPE	Personal Protective Equipment
PIU	Project Implementation Unit
PPU	Provincial Planning Unit
WARMA	Water Resources Management Authority
ZEMA	Zambia Environmental Management Authority
ZIFLP	Zambia Integrated Forest Landscape Project

## INTRODUCTION

The Zambia Integrated Forest Landscape Project's (ZIFLP) objective is to improve landscape management and increase the flow of benefits for targeted rural communities in the Eastern Province. As part of its mission, the project is supporting the development of diverse infrastructure activities in Luambe National Park which should support Park management providing environmental benefits as well as income generation.

As per the ZIFLP Environmental and Social Management Framework (ESMF) this Environmental and Social Management Plan (ESMP) presents the measures put in place for the management of environmental and social impacts of the construction of a gate with connected structure to serve as the guardhouse, revenue and communications room. A borehole will also be drilled. The procedures will be in agreement with national and World Bank safeguard provisions.

This ESMP includes:

1. Screening of proposed subproject interventions, identifying potential environmental and social impacts and management of safeguard policies implications;
2. Arrangements by the Provincial Planning Unit (PPU), and other relevant institutions for implementation and their capacity building;
3. Monitoring ESMP implementation;
4. Community consultations;
5. Budget coverage for the ESMP.

This ESMP will be carried out in accordance with the ZIFLP ESMF.

### **Brief description of work/s**

A gate, revenue house, guard house and communication room (all one structure) along with a 50m deep borehole are to be built and drilled in the tourism and buffer zone of the Lumimba Game Management Area (GMA) as prescribed in the General Management Plan (GMP). This will be on the Northern part of the Luambe National Park and this will be the main gate at the main entrance to the park. The dimensions, are as provided in **Annex 1. Chipuka Gate Diagram, Annex 2. Guard House Floor Plan and dimensions and Annex 3. Gate Borehole. Schematics and Diagrams.**

The gate and building structure costs 5.4 million Kwacha (US\$ 10,000) and the borehole cost is K50,000 (US\$2,800.00).

### **Environmental and Social Impact Assessment**

This activity has been screened for likely impacts. The completed activity Screening form is located in **Annex 3** Likely environmental impacts and risks include: occupational health and safety risks to the workers, earth moved from drilling of the borehole, ground water being accessed once the borehole is completed. All physical impacts are minor (i.e. not significant) site-specific which can be easily mitigated and are reversible.

There are not many social risks since these minor works are in the Game Management Area (GMA) away from any communities that could have been disturbed by the construction noise, dust or traffic detours. No land ownership will change hands and the construction will not restrict access to any parties that currently have authorized access although it does

strengthen park management by restricting entrance to the park. Only a few workers are needed so there are few labor influxes concerns.

## **Requirements**

All works will be undertaken in accordance with Zambian laws and regulations as well as World Bank Safeguard Policies and Environmental, Health and Safety Guidelines and the ZIFLP Environmental and Social Management Framework. Under Zambia Environmental Management Authority (ZEMA) this undertaking does not require an Environmental Impact Assessment (EIA) as it is a small undertaking. It is considered Category B under World Bank Classification because it will cause site-specific physical impacts which are not significant, can be easily mitigated and are reversible. There will be no displacement of people as this is in the Tourism Zone of the Lumimba GMA. No permits and licenses are required, what is needed is a consent letter from the chief in this case Chief Chitungulu. He has already been engaged and consent has been given.

The contractor will have an Environmental and Social Safeguards Officer on site with prescribed environmental and social qualification of not less than 2 years.

Finally, the borehole will be registered with the Water Resources Management Authority (WARMA) which safeguards water quality by ensuring boreholes are not too close to sources of contamination and existing boreholes. In accordance with national guidelines, the contractor will conduct hydrogeological studies using a pumping test once the borehole is drilled to establish baseline information on the aquifer being tapped. The test yields information on how easily water moves through the aquifer, how much water is stored, and how efficiently the borehole produces water.

## **Consultations**

The date of consultation was on June 16, 2020. These consultations were done under COVID-19 and the team that participated is the Lundazi District Multisectoral Team (DMT)<sup>1</sup>, the two district administrators for Lundazi and Lumezi. Provincial Planning unit, Department of National Parks and Wildlife (DNPW), Ministry of Chiefs and traditional affairs.

## **Environmental and Social Restrictions and Activities**

This being an undertaking outside the park, there are no park restrictions but the general management plan guides as it prescribes land use in the GMA. The Contractor is guided by the General Management Plan rules and the Contractor's Safeguards Clauses which are in Annex 5. in the Contract/bid document and will provide Health and Safety Training to workers at appropriate intervals along with appropriate personal protective equipment (PPE) to include safety boots (with steel toe cap), hard hat and high visibility vest. Eye and ear protection will be required if operating power tools and dust masks if mixing concrete on site. Borehole drilling will require the same (head, feet, eye, ear, visibility vest and mask

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<sup>1</sup> The DMT is a district team of project key stockholder government departments at district level who are the district key implementing partners which include the Local authority, District Commissioner, Agriculture, Forestry, Wildlife, Community Development, Chiefs and Traditional Affairs, Buildings, etc.

if there are fine dusts, etc.). All boreholes have a standard procedure which include water quality testing and pump tests these are conducted to assess the chemical composition and yield just after drilling and a year after use. The water quality test will reveal whether the water is safe for consumption.

### **Emergencies and Accidents**

Any accidents are to be reported immediately to the construction supervisor and, in turn, to ZIFLP Project Implementation Unit (PIU).

The Department of National Parks and Wildlife has Emergency procedures in place which will be followed in case of accidents. There is a Health Center nearby in the area for any injuries beyond the treatment of the first aid kit.

### **Feedback and Grievances Redress Mechanism**

For workers and any others will be availed a phone number given by ZIFLP with someone from DNPW responsible for checking, recording and resolving reported complaints.

### **Monitoring Plan**

Monitoring will involve checking for at least the following:

1. First aid equipment on site for workers (to be supplied by contractor)
2. Proper personal protective equipment (PPE) for workers
3. Waste in designated areas and proper final disposition
4. Site restoration upon completion of works
5. COVID-19 Response and management
6. Contractor compliance overall with the Environmental and Social Management Plan in the Contract/bid document and any necessary corrective actions.

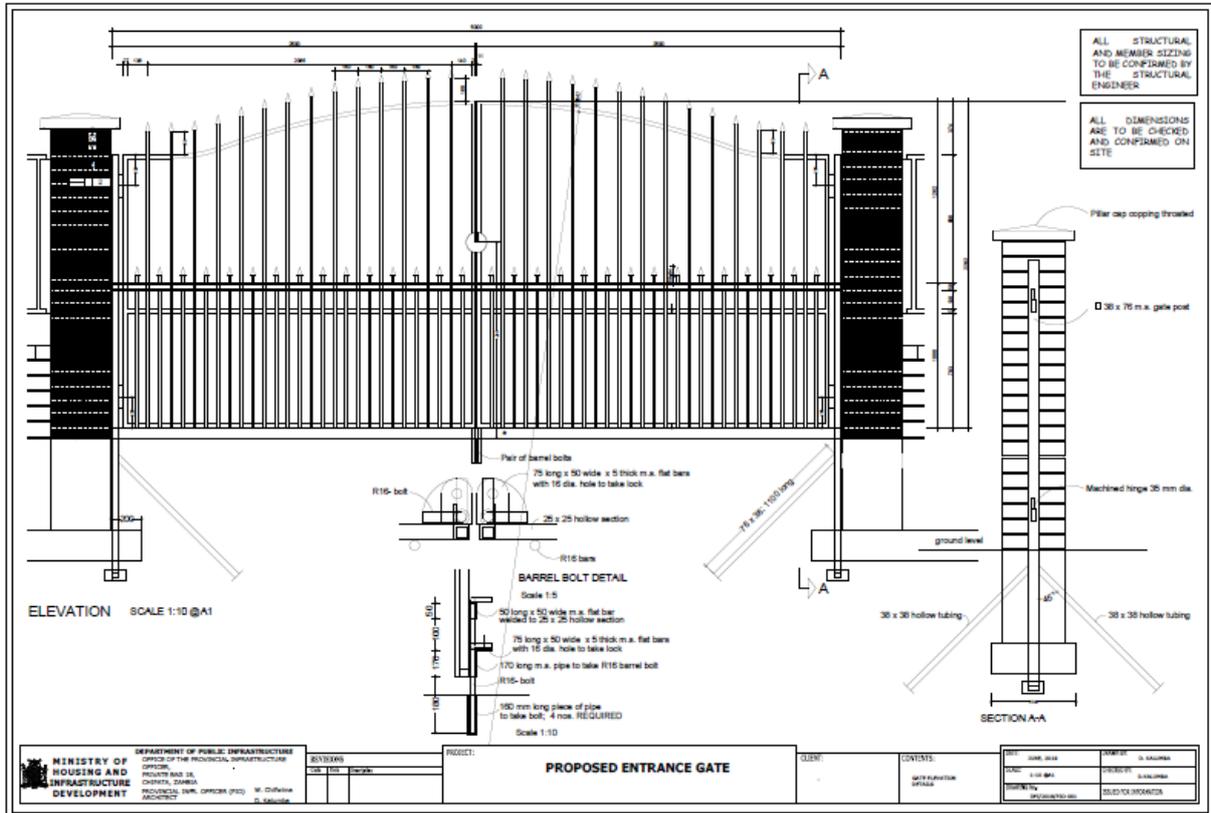
### **Reporting**

Contractor will furnish any requested information to ascertain the status of ESMP implementation. DNPW will likewise supply any needed information to ascertain the status of ESMP implementation. ZIFLP PIU will report on ESMP implementation for these works in the quarterly and annual progress reports.

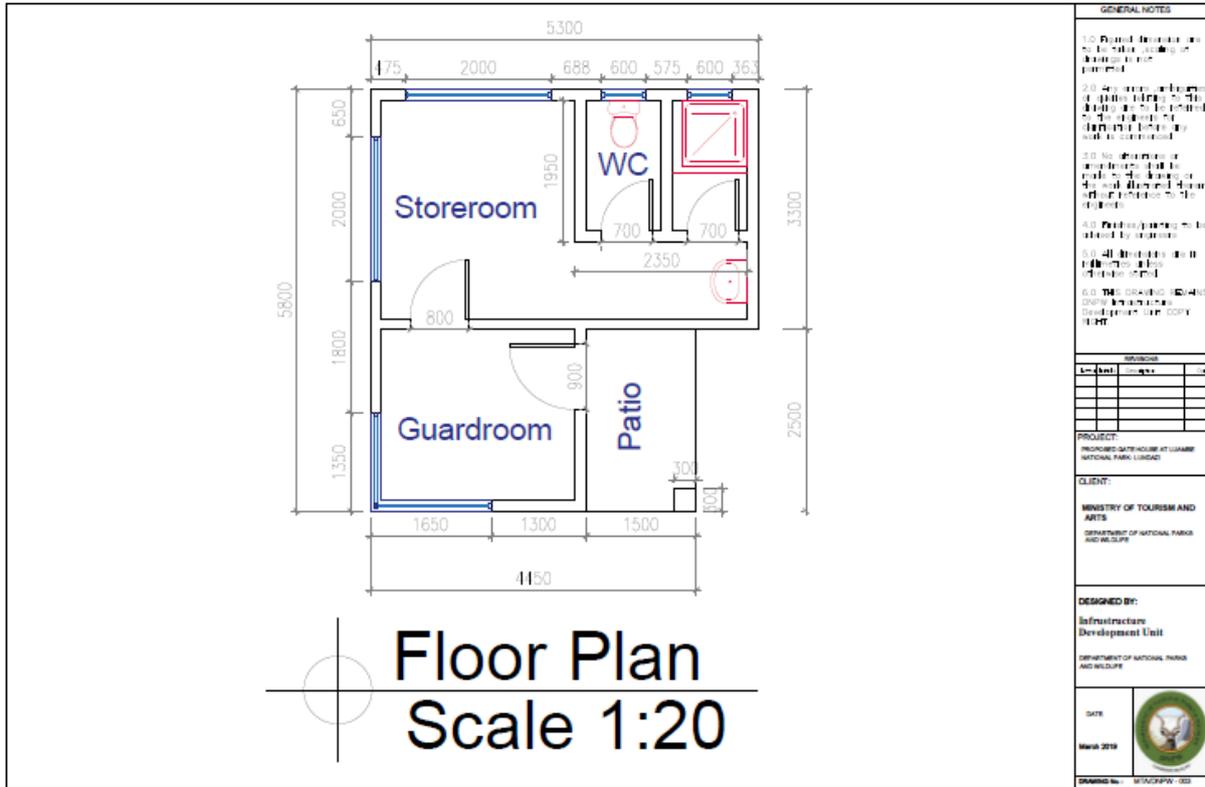
### **Budget**

All ESMP costs will be borne by the contractor except for some monitoring which will be carried out by ZIFLP PIU and Feedback and Grievance Redress Mechanism (FGRM) oversight to be borne by DNPW. Contractor will be responsible for particular actions and activities to resolve any FGRM matters.

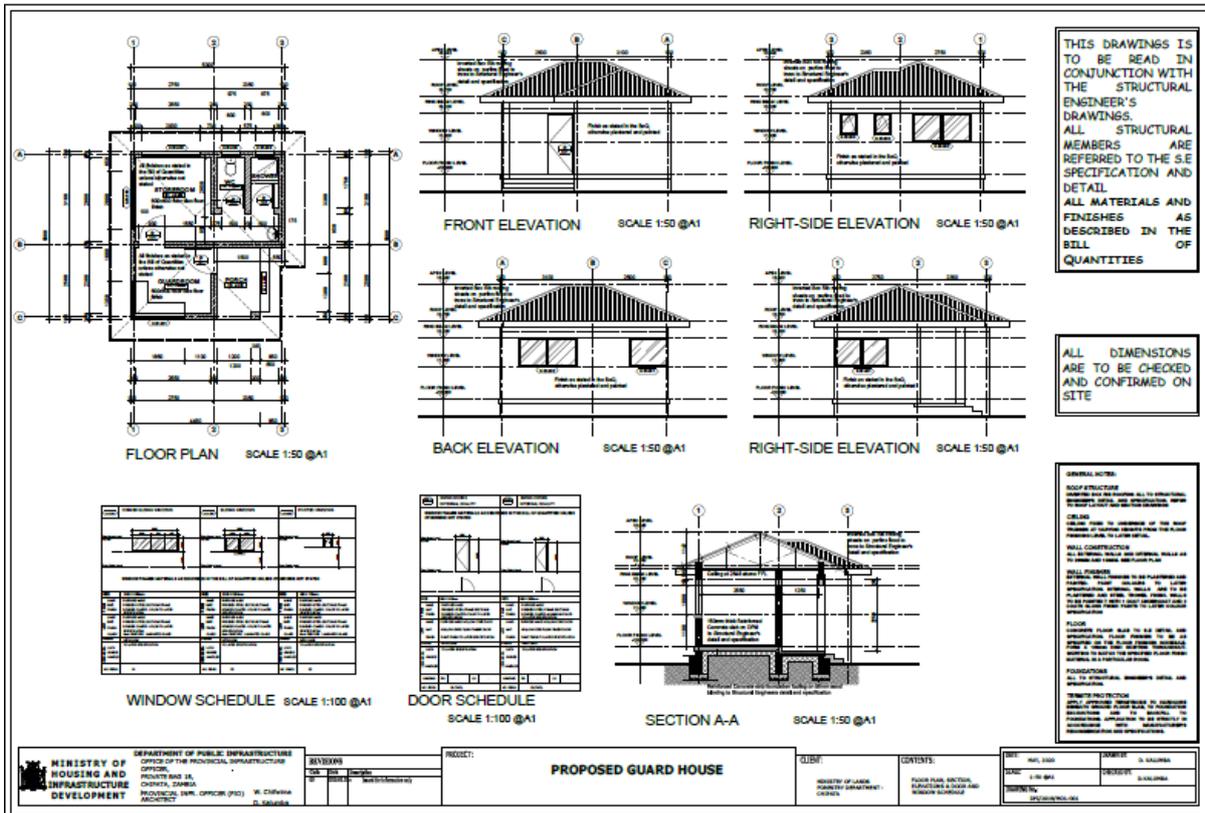
**Annex 1. Chipuka Gate Diagram,**



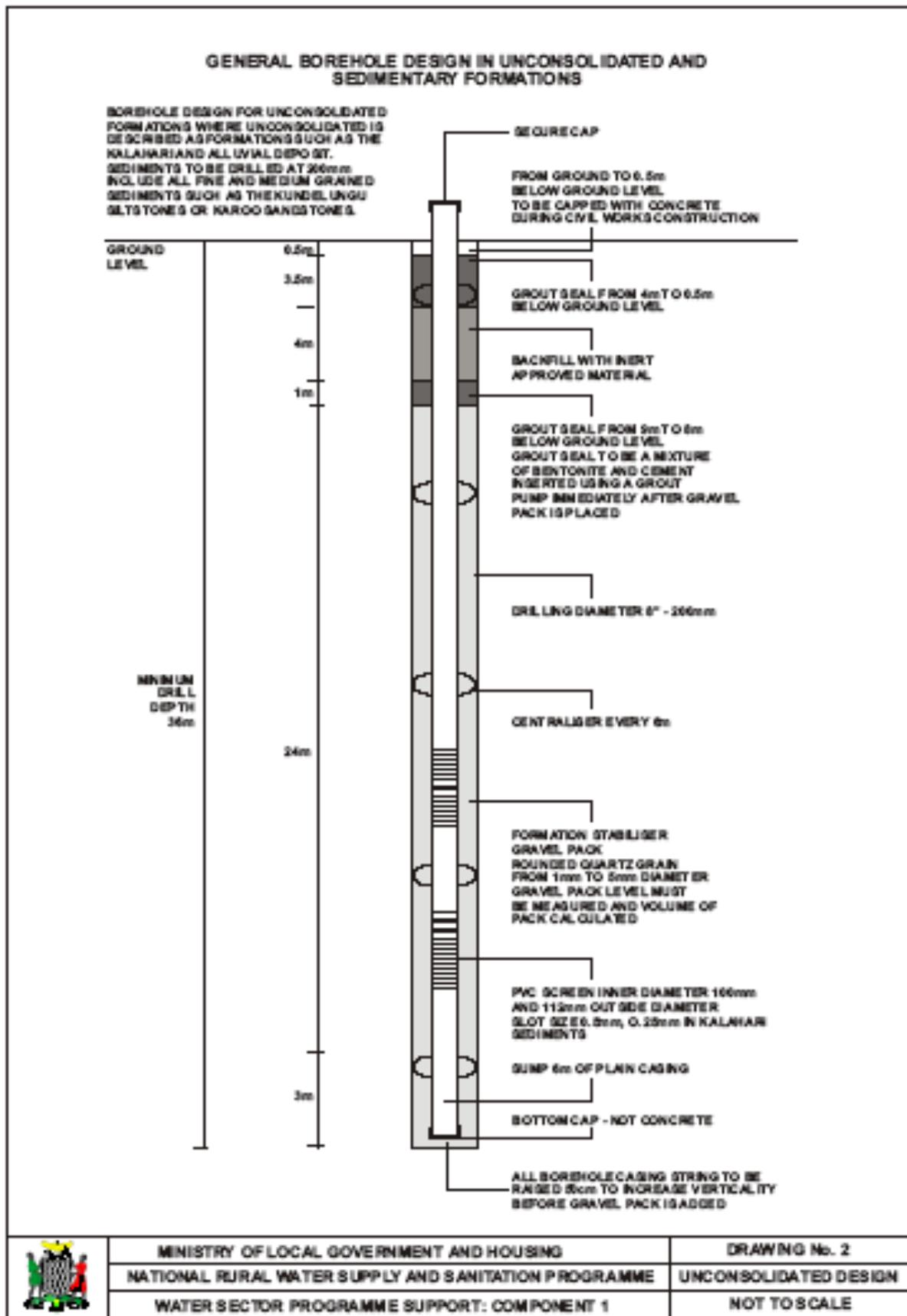
**Annex 2. Guard House Floor Plan and dimensions**



**Dimensions**



**Annex 3. Gate Borehole. Schematics and Diagrams.**



**Annex 4. Screening Forms**

**ZIFLP SUB-PROJECT SCREENING CHECKLIST FOR ENVIRONMENTAL AND SOCIAL ISSUES**

<b>1. Project Information: Name and Contact Details:</b>			
<b>Project Name CONSTRUCTION OF A MAIN GATE AT THE MAIN ENTRANCE OF LUAMBE NATIONAL PARK</b>	Location: (province/district/village) Eastern Province/ Lumezi/ Chipuka		
	If other, explain: Main Entrance Gate to Luambe National Park		
<b>FSD District Focal Point</b>	Emmanuel Mulenga (District Commissioner for Lumezi District)		
<b>Name of reviewer:</b>	Godfrey Phiri (Environmental and Social Inclusion Officer ZIFLP)	<b>Date of screening:</b>	16/06/2020

<b>Subproject Details: Attach location map (longitude – latitude coordinates (GPS reading) if available):</b>	
Type of activity: <i>What will be done, who will do it, what are the objectives and outcomes</i>	Construction of one structure at the Main Gate comprising of the gate, revenue house and guard house and communication room. Find the accompanying drawings attached to this document
Estimated Cost:	US\$ 10,000.00 5.4 million Kwacha. Borehole = K50,000 US\$2,800.00
Proposed Date of Commencement of Work:	10 Days after contract is awarded
Expected Completion of Work	6 Months after site handover to contractor
Technical Drawing/Specifications Reviewed:	Yes/No – refer to Application Portfolio YES

<b>2. Physical Data:</b>	Comments
Subproject Site area in ha	To be determined more information needs to be provided
Existing land use in area	Game Management Area buffer zone of the Luambe National Park
Extension of or changes to existing land use	None
Any existing property to transfer to subproject	None
Any plans for construction, movement of earth, changes in land cover	Very negligible this will involve the digging of the foundation for the structures. There will be no change to Land cover
Number of households involved or affected by subproject	No Households will be affected as the targeted area is located in an area away from human settlement in wildlife zone according to the Lumimba GMP.

<b>3. Preliminary Environmental Information:</b>	Yes/No	Refer to Process Framework	Comments

Is there adjacent/nearby critical natural habitat?	Yes		It is adjacent to the Luambe National Park in the Game Management Area
Are there activities in Forest Reserve, National Park?	Yes		There are activities in the park like game viewing and educational tours
Is there activity adjacent to Forest Reserve, National Park?	Yes		Adjacent to the Luambe National Park there is Chitungulu Chiefdom
What is the land currently being used for? (e.g. agriculture, gardening, etc.)	Yes		List the key resources. It is a Game Management Area for Wildlife Management
Will the proposed activities have any impact on any ecosystem services, biodiversity issues or natural habitats?	No		There will be no impact on any ecosystem services, biodiversity issues or natural habitats.
Will there be water resource impacts?	Yes		One borehole will be sunk on site, this means some ground water will be drawn from the aquifer, but it will be very minimal.
Will there be soil impacts?	Yes		Very Minimal and negligible, the foundation will have to be dug for the structures. Some soil will be removed
Will the subproject require use of pesticides?	No		If Yes, refer to Pest Management Plan
Are there any new or changing forest or park management planning or activities?	No	✓	

<b>4. Preliminary Social and Land Information:</b>	<b>Yes/No</b>	<b>Refer to Process Framework</b>	<b>Comments</b>
Has there been litigation or complaints of any environmental nature directed against the proponent or subproject?	No	✓	
Will the subproject require the acquisition of land?	No	1.0	Only consent form His Royal Highness Chief Chitungulu
What is the status of the land holding (customary, lease, community lands, etc)?		✓	It is on customary Land held in trust for the community by the Chief
Is there evidence of land tenure status of farmers and/or occupants (affidavit, other documentation)?	No	✓	
Are there outstanding land disputes?	No	✓	
Has there been proper consultation with stakeholders?	Yes	✓	
Is there a grievance process identified for PAPs and is this easily accessible to these groups/individuals?	Yes	✓	ZIFLP had developed a Feedback Redress Grievance Mechanism (FRGM)
Will there be any changes to livelihoods?	No	✓	
What are the main issues associated with farmer benefits and community benefits?	None	✓	

Will any restoration or compensation be required with “admitted” farmers?	No	✓	
Will the project potentially involve an influx of workers to the project location?	No	If yes, refer to WB guidance on labour influx	It is only very few construction workers about 8 for the short construction period
Any cultural heritage/sacred sites in project area?	No	✓	
Will there be restrictions or loss of access to using natural resources in any traditional areas including	No	✓	

medicinal plants or those of economic value for

5. Social equity and participation	Comments
Who will participate in the project activities?	Community, Government, Traditional Authority and ZIFLP
Who are the vulnerable groups amongst the stakeholders? (e.g. landless/land-poor, elderly etc.)	None
What is the gendered nature of the resource use and access in the project area?	It is a Gender Inclusive activity
Identify constraints that may limit participation from specific groups or individuals	None
How would current resource allocation change under the project?	There will be no change as this is not a reallocation, but security measure for the park.
What are potential social risks that may be triggered by project activities? (short-medium-long term)	None

## 5. Impact identification and classification:

When considering the location of a subproject, rate the sensitivity of the proposed site in the following table according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects. The following table should be used as a reference.

Issues	Site Sensitivity			Rating (L,M,H)
	Low	Medium	High	
<b>Natural habitats</b>	No natural habitats present of any kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present; within declared protected areas	<b>If High Refer to ZEMA High</b>
<b>Water resource availability and use</b>	Water flows exceed any existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues	Water flows balanced with existing demand	Water demand exceed existing flows	<b>Low</b>

<b>Water use</b>	Low intensity of water use; potential water use conflicts expected to be low	Medium intensity of water use; multiple water users; moderate potential water use conflicts	Intensive water use; multiple water users; potential for conflicts is high	<b>Low</b>
<b>Water quality</b>	No potential water quality issues	Water quality issues are important	Water quality issues are critical	<b>If High Refer to ZEMA High</b>
<b>Natural hazards vulnerability, floods, soil stability/ erosion</b>	Flat terrain; no potential stability/ erosion problems; no known flood risks	Medium slopes; some erosion potential; medium risks from floods	Mountainous terrain; steep slopes; unstable soils; high erosion potential; flood risks	<b>Low</b>
<b>Land and Farming Tenure</b>	No conflicts, disagreements around use of land, tenant farmer rights and location of admitted farms and farmers transparent	Process of land regularization and rights to natural resources being worked out with clear communication and grievance process in place	Land conflicts historically unresolved, admitted farmers being evicted, tenant farmers losing rights and no transparency or grievance redress available	<b>If Medium or High Refer to Process Framework</b>  <b>N/A</b>

**6. Environmental and Social assessment comments based on site visit:**

Summary Observations

**Determination of screening category based on findings of the screening: A \_\_\_ B X C \_\_\_**

- |                                     |                                                                |
|-------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/>            | Requires an EIA                                                |
| <input type="checkbox"/>            | Requires preparation of additional E&S information             |
| <input checked="" type="checkbox"/> | Does not require further environmental or social due diligence |
| <input type="checkbox"/>            |                                                                |

The main issue is that the ESMF has been invoked as it has informed the bid document preparation and environmental issues have been put into the contract for the contractor, e.g., inclusion of Environmental and Social Management plan inclusion in the bid and prescription of hiring an environmental and social management officer on site.

Prepared by: **Godfrey Phiri (ESIO- ZIFLP)**

Date: 16/06/2020

## ZIFLP SUB-PROJECT SCREENING CHECKLIST FOR ENVIRONMENTAL AND SOCIAL ISSUES

1. Project Information: Name and Contact Details:			
Project Name DRILLING OF A 50M DEEP BOREHOLE AT THE MAIN GATE ENTRANCE OF LUAMBE NATIONAL PARK	Location: (province/district/village) Eastern Province/ Lumezi/ Chipuka		
	If other, explain: This borehole will be located at the Main Entrance Gate to Luambe National Park for staff that will be stationed at the site		
FSD District Focal Point	Emmanuel Mulenga (District Commissioner for Lumezi District)		
Name of reviewer:	Godfrey Phiri (Environmental and Social Inclusion Officer ZIFLP)	Date of screening:	16/06/2020

Subproject Details: Attach location map (longitude – latitude coordinates (GPS reading) if available):	
Type of activity: <i>What will be done, who will do it, what are the objectives and outcomes</i>	Drilling of a 50m deep borehole at the Main Gate for staff who will be stationed on site
Estimated Cost:	Borehole = ZMK K50,000.00 - US\$2,800.00
Proposed Date of Commencement of Work:	10 Days after contract is awarded
Expected Completion of Work	6 Months after site handover to contractor
Technical Drawing/Specifications Reviewed:	Yes/No – refer to Application Portfolio YES

2. Physical Data:	Comments
Subproject Site area in ha	To be determined more information needs to be provided
Existing land use in area	Game Management Area buffer zone of the Luambe National Park
Extension of or changes to existing land use	None
Any existing property to transfer to subproject	None
Any plans for construction, movement of earth, changes in land cover	No soil movement is expected a hole will be drilled to the aquifer to access ground water, and there will be no change to Land cover
Number of households involved or affected by subproject	No Households will be affected as the targeted area is located in an area away from human settlement in wildlife zone according to the Lumimba GMP.

3. Preliminary Environmental Information:	Yes/No	Refer to Process Framework	Comments

Is there adjacent/nearby critical natural habitat?	Yes		It is adjacent to the Luambe National Park in the Game Management Area
Are there activities in Forest Reserve, National Park?	Yes		There are activities in the park like game viewing and educational tours
Is there activity adjacent to Forest Reserve, National Park?	Yes		Adjacent to the Luambe National Park there is Chitungulu Chiefdom
What is the land currently being used for? (e.g. agriculture, gardening, etc.)	Yes		List the key resources. It is a Game Management Area for Wildlife Management
Will the proposed activities have any impact on any ecosystem services, biodiversity issues or natural habitats?	No		There will be no impact on any ecosystem services, biodiversity issues or natural habitats.
Will there be water resource impacts?	Yes		One borehole will be sunk on site, this means some ground water will be drawn from the aquifer, but it will be very minimal.
Will there be soil impacts?	Yes		There will be very negligible soil impact which will come out of the drilling process
Will the subproject require use of pesticides?	No		If Yes, refer to Pest Management Plan
Are there any new or changing forest or park management planning or activities?	No	✓	

<b>4. Preliminary Social and Land Information:</b>	<b>Yes/No</b>	<b>Refer to Process Framework</b>	<b>Comments</b>
Has there been litigation or complaints of any environmental nature directed against the proponent or subproject?	No	✓	
Will the subproject require the acquisition of land?	No	1.0	Only consent form His Royal Highness Chief Chitungulu
What is the status of the land holding (customary, lease, community lands, etc)?		✓	It is on customary Land held in trust for the community by the Chief
Is there evidence of land tenure status of farmers and/or occupants (affidavit, other documentation)?	No	✓	
Are there outstanding land disputes?	No	✓	
Has there been proper consultation with stakeholders?	Yes	✓	
Is there a grievance process identified for PAPs and is this easily accessible to these groups/individuals?	Yes	✓	ZIFLP had developed a Feedback Redress Grievance Mechanism (FRGM)
Will there be any changes to livelihoods?	No	✓	
What are the main issues associated with farmer benefits and community benefits?	None	✓	

Will any restoration or compensation be required with “admitted” farmers?	No	✓	
Will the project potentially involve an influx of workers to the project location?	No	If yes, refer to WB guidance on labour influx	It is only very few construction workers about 8 for the short construction period
Any cultural heritage/sacred sites in project area?	No	✓	
Will there be restrictions or loss of access to using natural resources in any traditional areas including	No	✓	

medicinal plants or those of economic value for

5. Social equity and participation	Comments
Who will participate in the project activities?	Community, Government, Traditional Authority and ZIFLP
Who are the vulnerable groups amongst the stakeholders? (e.g. landless/land-poor, elderly etc.)	None
What is the gendered nature of the resource use and access in the project area?	It is a Gender Inclusive activity
Identify constraints that may limit participation from specific groups or individuals	None
How would current resource allocation change under the project?	There will be no change as this is not a reallocation, but security measure for the park.
What are potential social risks that may be triggered by project activities? (short-medium-long term)	None

## 7. Impact identification and classification:

When considering the location of a subproject, rate the sensitivity of the proposed site in the following table according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects. The following table should be used as a reference.

Issues	Site Sensitivity			Rating (L,M,H)
	Low	Medium	High	
<b>Natural habitats</b>	No natural habitats present of any kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present; within declared protected areas	<b>If High Refer to ZEMA High</b>
<b>Water resource availability and use</b>	Water flows exceed any existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues	Water flows balanced with existing demand	Water demand exceed existing flows	<b>Low</b>

<b>Water use</b>	Low intensity of water use; potential water use conflicts expected to be low	Medium intensity of water use; multiple water users; moderate potential water use conflicts	Intensive water use; multiple water users; potential for conflicts is high	<b>Low</b>
<b>Water quality</b>	No potential water quality issues	Water quality issues are important	Water quality issues are critical	<b>If High Refer to ZEMA High</b>
<b>Natural hazards vulnerability, floods, soil stability/ erosion</b>	Flat terrain; no potential stability/ erosion problems; no known flood risks	Medium slopes; some erosion potential; medium risks from floods	Mountainous terrain; steep slopes; unstable soils; high erosion potential; flood risks	<b>Low</b>
<b>Land and Farming Tenure</b>	No conflicts, disagreements around use of land, tenant farmer rights and location of admitted farms and farmers transparent	Process of land regularization and rights to natural resources being worked out with clear communication and grievance process in place	Land conflicts historically unresolved, admitted farmers being evicted, tenant farmers losing rights and no transparency or grievance redress available	<b>If Medium or High Refer to Process Framework</b>  <b>N/A</b>

**8. Environmental and Social assessment comments based on site visit:**

Summary Observations

**Determination of screening category based on findings of the screening: A \_\_\_ B X C \_\_\_**

<input type="checkbox"/>	Requires an EIA
<input type="checkbox"/>	Requires preparation of additional E&S information
<input checked="" type="checkbox"/>	Does not require further environmental or social due diligence
<input type="checkbox"/>	

The ZIFLP ESMF has been invoked as it has informed the bid document preparation and environmental issues have been put into the contract for the contractor, e.g., inclusion of Environmental and Social Management plan inclusion in the bid and prescription of hiring an environmental and social management officer on site.

Prepared by: **Godfrey Phiri (ESIO- ZIFLP)**

Date: 16/06/2020

## **Annex 5. Contractor's Safeguards Clauses**

These Environmental Rules for Contractors are prepared for all the contractors to be engaged for any ZIFLP civil works construction activities. The rules include provisions for proper management of construction sites, safe storage of construction materials and safe disposal of wastes.

### **General Considerations**

- The contractor shall, in all his activities ensure maximum protection of the environment and the socio-economic wellbeing of the people affected by the project, whether within or outside the physical boundaries of the project area.
- Before any construction works begin, the contractor shall ensure that the relevant environmental and land acquisition certificates of authorization for the works have been obtained from Zambia Environmental Management Authority.
- In general, the contractor shall familiarize himself with the ESMF, RPF and the PF for the project as well as the World Bank Group Environmental, Health and Safety (EHS) Guidelines applicable to this contract's activities, with the following specific guidelines to be adopted and utilized: General, Occupational Health and Safety, Community Health and Safety and Waste Management.. Specifically, the contractor shall make every effort to follow and implement the recommendations and mitigation measures of the ESMF, RPF and PF, applicable EHS Guidelines, and any supplemental safeguards document, to the satisfaction of the implementing entities, as applicable.
- The contractor shall always keep on site and make available to environmental inspectors or any authorized persons, copies of the ESMF, this ESMP and any other relevant documents for the monitoring and evaluation of environmental and social impacts and the level or progress of their mitigation.

### **Acquisition of Construction Materials**

The contractor shall ensure that construction materials such as sand, quarry stone, soils or any other construction materials are acquired from approved suppliers and that the production of these materials by the suppliers or the contractor does not violate the environmental regulations or procedures as determined by the Zambia Environmental Management Authority.

### **Movement and Transportation of Construction Materials**

The movement and transportation of construction materials to and within the construction sites shall be done in a manner that generates minimum impacts on the environment and on the community, consistent with the provisions of the ESMF.

### **Fencing of Construction sites**

Construction sites refer to all areas required for construction purposes, including equipment staging areas. The boundaries of the site shall be demarcated prior to any work commencing on the site. It is the responsibility of the contractor to decide on an appropriate system of protective fencing for the site. The site boundary demarcation fence shall be removed when construction is completed, if appropriate.

The Contractor shall ensure that all their equipment and materials remain within the boundaries of the site and he shall ensure that materials used for construction on the site do not blow away or otherwise escape the site.

### **Storage of Construction Materials and Equipment**

Construction materials shall be stored in a manner to ensure that:

- There is no obstruction of service roads, passages, driveways and footpaths;
- Where it is unavoidable to obstruct any of the service paths, the contractor shall provide temporary or alternate by-passes without inconveniencing the flow of traffic or pedestrians;
- There is no obstruction of drainage channels and natural water courses;
- There is no contamination of surface water, ground water or the ground;
- There is no access by public or unauthorized persons, to materials and equipment storage areas;
- There is no access by staff, without appropriate protective clothing, to materials and equipment storage areas;
- Access by staff and public or unauthorized persons, to hazardous, corrosive or poisonous substances including sludge, chemicals, solvents, oils, asbestos cement dust or their receptacles such as boxes, drums, sacks and bags is prohibited.

### **Solid Waste Management**

The Contractor shall institute a waste control and removal system for the site. All wastes shall be disposed of offsite at an approved refuse disposal site in consultation with the Zambia Environmental Management Authority. Burning of any waste on any construction site is forbidden. The Contractor shall supply waste bins throughout the site at locations where construction personnel are working. The bins shall be provided with lids and an external closing mechanism to prevent their contents blowing out and shall be scavenger-proof to keep out any animals that may be attracted to the waste. The Contractor shall ensure that all personnel immediately deposit all waste in the waste bins for removal by the Contractor. Bins shall be emptied on a frequent basis and waste removed to a temporary storage site where it shall be properly contained in water and windproof containers until properly disposed of. The bins shall not be used for any purposes other than waste collection.

In performing his activities, the contractor shall use the best practical means for preventing emissions of noxious or offensive substances into the air, land and water.

He shall make every effort to render any such emissions (if unavoidable) inoffensive and harmless to people and the environment. The means to be used for making the emissions harmless or for preventing the emissions shall be in accordance with the ESMF and any other applicable safeguards document, and with the approval of the Zambia Environmental Management Authority and (if applicable) relevant Local Authority. Hazardous wastes shall be treated and disposed of in conformity with the national regulations and where applicable, with the supervision of qualified personnel.

### **Wastewater Management**

The Contractor shall construct and operate the necessary collection and treatment facilities for waste water to prevent pollution. In cases where water is mixed with oily waste, separators shall be installed. The oil should be stored in tanks or drums as hazardous waste and disposed of in approved manner. The Contractor shall dispose of collected waste water in a manner agreed with the Zambia Environmental Management Authority and respective local officials.

The Contractor may discharge “clean” silt laden water overland, preferably vegetated land at the construction site and allow this water to filter into the ground. However, the Contractor shall ensure that he does not cause soil erosion as a result of any overland discharge.

Water from washing operations shall be collected in a sturdy container and disposed of in a manner agreed with Zambia Environmental Management Authority. Trucks delivering concrete or other construction supplies or equipment shall not be washed at the project site, nor in any other environmentally sensitive areas. All washing operations shall take place at a location where wastewater can be disposed of in an acceptable manner. Sanitary wastes shall be disposed into septic tanks.

### **Site Restoration**

The Contractor shall ensure that all temporary structures, equipment, materials, and facilities used for construction activities are removed upon completion of the project. Any oil and fuel contaminated soil shall be removed and buried in waste disposal areas. Soak pits and septic tanks shall be covered and effectively sealed off and the sites shall be re-vegetated.

### **Health and Safety of Workers**

The contractor shall protect the health and safety of workers by providing the necessary and approved protective clothing and by instituting procedures and practices that protect the workers from dangerous operations. The contractor shall be guided by and shall adhere to the relevant national labor regulations for the protection of workers. In

addition, the contractors should indicate specific measures they will take during construction to prevent HIV-AIDS or other disease transmission by the work force.

### **Natural Habitats**

In all relevant civil works projects, the contractor shall locate project facilities (permanent and temporary) so as to avoid or minimize the clearing of natural vegetation. The contractor shall enforce a strict prohibition on the washing of vehicles or changing of lubricants in waterways or wetlands.

### **Chance Finds Procedures for Physical Cultural Resources**

If, during project construction, the contractor or project workers encounter archaeological relics, fossils, human remains, or other items of historical or other cultural value, the Contractor shall (i) temporarily suspend any works which might damage these items and (ii) notify the Supervising Engineer who will then notify the competent authority (National Heritage Conservation Commission) for guidance regarding the appropriate next steps to evaluate, salvage, recover, protect, and/or document the items found.

### **Worker Behaviour**

To help ensure that good environmental and social practices are consistently followed throughout project construction and operation, all workers, operational staff, and contract personnel shall be prohibited from (i) hunting, (ii) fishing, (iii) wildlife capture, (iv) bush-meat purchase, (v) plant collection, (vi) unauthorized vegetation burning, (vii) speeding, (viii) weapons possession (except by security personnel), (ix) working without Personal Protection Equipment (PPE), (x) inappropriate interactions with local people, (xi) disrespecting local customs and traditions, (xii) littering of the site and disposing trash in unauthorized places, (xiii) using alcohol on-site or during working hours, (xiv) sexual harassment, or (xv) setting unauthorized fires of any kind.