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DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT.

PREPARED BY

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For

Lutembwe Consulting Company Limited

EXECUTIVE SUMMARY

Lutembwe Consulting Company Limited is a Zambian owned private Company incorporated in 15th September 2023. The directors of the company have vast experience in the Construction and Consultancy Services.

The Katete – Chanida, start from Great East Road (T4) and Katete – Chanda Road Junction and stretches for 55 Km to Chanida Border post (Zambia – Mozambique) and comprises a bituminous flexible pavement with a two-lane surfaced carriageway and narrow unsurfaced shoulders, its total length is 55Km. The road was first upgraded to bituminous standard in the late-1970s. This section of road was first rehabilitated between 2008 and 2010 under ROADSIP II implemented by the Road Development Agency (RDA) with funding from the National Road Fund Agency (NRFA) with Raubex as Contractor. In 2020, the Government of the Republic of Zambia (GRZ), through the Road Development Agency (RDA), awarded the contract for the Emergency Maintenance Works on Katete – Chanida Road T6 (55kM) to Buildcon Investment Limited. This contract was later terminated in March 2023 on grounds of non-performance. Only the initial 2.8Km of the project road had works executed though not complete.

The road is considered as an important international gateway to Asia on the Indian Ocean as it provides easy access for export/import through the Beira port of Mozambique. Regionally, the road also provides an important link in the Beira Corridor which services Botswana, Zimbabwe, Malawi, Zambia, and Mozambique and acts as a catalyst for the development of agriculture, tourism, mining among these countries.

In October 2023, the Government of the Republic of Zambia through the Road Development Agency (RDA) signed a concession agreement with Messrs Lutembwe Consulting Company Limited under Public - Private Partnership Financing model for the Design, Finance, Build, Operate, Maintain and Transfer of the 55km of Katete to Chanida Road (T6) and Associated Border Infrastructure. Lutembwe Consulting Company Limited in turn commissioned Bicon Zambia Limited to provide Consultancy Services for the Detailed Engineering Design of the Katete – Chanida Road T6 (55km) and Associated Infrastructure at Chanida Border post

In line with the provisions of the Environmental Management (Amendment) Act No. 8 of 2023 as read with the EMA No.12 of 2011 and the Environmental Impact Assessment Regulations SI No. 28 of 1997, an Environmental and Social Impact Assessment (ESIA) for the proposed road upgrading, rehabilitation and construction of associated infrastructures by Lutembwe Consulting Company Limited has been prepared and the company has

engaged Tsalach Global Limited to undertake the ESIA study on their behalf. The ESIA of the project will involve incorporating views, concerns and contributions from interested and affected parties (stakeholders). Site location suitability studies for the project within the project area, hydrological studies, socio-economic studies and ecological surveys of the project area will be conducted to determine the feasible design of the proposed project.

Project Location

The proposed sites are located on along Katete-Chanida Road in Katete District and part of Chadiza District. The nearest landmarks to the site include, Katete Town Council which is located 20 metres to the southwest, Katete District Hospital located metres to the east, Katete Police Post which is located Adjacent to the the project site on Southeast boundary from the project site. The settlements along the road are Dole, Chimbundire, Kambila, kafumbwe, Mlolo which are located along the project site in the Northern Direction while Chanida Boarder in Chadiza district is north west direction. Katete CBD is located withing the project site while Chadiza CBD is about 28km from the project site.

The GPS Coordinates of the Nearest landmarks near the project site are as follows

No.	Town	Latitude	Longitude
1	Katete Town	14° 3'26.16"S	32° 2'49.40"E
2	Dole School	14° 9'3.78"S	32° 3'57.31"E
3	Chimbundire (St Johns Parish)	14°10'13.09"S	32° 5'41.52"E
4	Kambila Primary School	14°12'38.95"S	32° 8'38.04"E
5	Kafumbwe Secondary School	14°12'49.88"S	32°13'44.66"E
6	Mlolo	14°14'32.68"S	32°19'55.63"E
7	Chanida Border Area	14°17'56.63"S	32°20'49.63"E

Project Description

Lutembwe Consulting Company Limited is proposing to Construct, rehabilitate and upgrade the Katete-Chanida road in Katete and Chadiza Districts. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Years. The proposed project will involve the following activities:

The other project will involve the following activities to be carried out;

- The construction of a 2 Km dual carriageway with median of 1.5 minimum within the Chanida border area with new border facilities such as Police post, Houses, Border Post;
- Improving, rehabilitation/maintenance of the drainage capacity of the existing culvert;
- Hot-mix asphalt paving for the whole 55Km;
- Construction of new concrete lined drains;
- Construction of pedestrian walkways;
- Bus bays and truck laybys;
- Double seal Surface treatment for first 10km works and reconstructed shoulders for the entire road;
- Graded crushed stone base course to the first 2.8Km;
- Earthworks and pavement layer works for reconstruction scope;
- Installation of Ø 900mm and Ø 600mm culvert pipes;
- Furnishing and placing of deformed high yield steel reinforcement to culvert end structures;
- Provision of solar street lighting for major settlements along the 55km stretch; and
- Road line marking and installation of permanent signage.

Road Construction

Infrastructure for roads is outlined here at feasibility stage of the project. The provision of infrastructure will be phased with the development.

The project site has no proper road network system and sanitation infrastructure. Therefore, the project will develop a proper road network system through all the stages of construction by following the basic stages such as:

a) Formation or Sub-grade of the road

This will involve the removal of the existing soil by leaving the ground levelled before putting up gravel on the road. Through this process the road is widened to the required size. This is mostly 12 meters including the drainage, shoulders and the carriage way of 10 meters. During this process the soil is mixed with water and later on compacted to achieve the desired results of 300 to 600mm thickness. Further this process does not involve formation of the cumber as it is the basic for feeder roads.

b) Sub-base layer

These Stage is not as different as the first one, this stage will involve the improvement of the first layer by adding extra gravel and mixing it with water

until you achieve the desired thickness between 150mm to 300mm as per standard. It is during this stage of construction where cement will be applied to the soil every after 1m in all directions. The cement is later mixed with another layer of gravel and compacted firmly to stabilise the road, thereby creating another layer between 200mm to 250mm.

c) Bituminous layer

This stage will involve additional of 11mm Bituminous seal to the formed stabilised base; the binder course will be added. The binder course is made up of smaller aggregates, mixed with a bituminous binder. The binder course provides a smooth and stable surface for the road and helps to protect the base course from water damage.

d) Finally aggregates

The final step in the road construction process will be adding the surface course. The surface course is made up of smaller aggregates, mixed with a bituminous binder, and is the layer that comes in direct contact with the traffic. The surface course provides a smooth and durable driving surface, protecting the road from wear and tear. This layer of aggregates is usually 19mm in thickness to withstand the weight of vehicles on the road. The final layer is usually 7m of carriage way and 2.4m of lane for motorbikes and bicycles.

e) Drainage and Culverts

The project will have drainages and culverts along the area. Therefore, the project will develop the already existing culverts by improving them to the modern standards by constructing headwalls, wingwalls and aprons and upgrade some 600mm culverts to 900mm in certain areas. This will only apply to areas with high levels of water. Not only that 1200mm, 1500mm,1800mm and 2400mm Box culverts will installed on the four major bridges to fit the Morden culverts standards of trunk road. The drainage system of the project will be upgraded by construction of concrete drains in towns and residential areas, Mitre drains will be constructed in slopy areas to divert water away from the road. This is mostly done to prevent water from damaging the shoulders of the road.

f) Installation of 600mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm is casted on the they levelled ground and

reinforced with con-force wire to increase the strength of the foundation. The culverts are then laid on the centre line in one direction and the culverts comprise of the 900mm headwalls reinforced with y-12 steel bars. The 1500mm wing walls are part of the structure, together with the 1200mm Aprons.

g) Installation 900mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm will be casted on the levelled ground and reinforced with a con-force wire to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the culverts comprise of the 1350 mm headwalls reinforced with y-12 steel bars. The 2250mm wing walls are part of the structure, together with the 1800mm Aprons.

h) Installation of 1200mm, 1500mm ,1800mm and 2400mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 200mm will be casted on the they levelled ground and reinforced with a con-force y-12 and y-10 steel bars to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the number will dependent on the length of the proposed structure, The length of the headwalls reinforced with y-12 and R8 steel bars is also dependant on the length of the structure that also encompasses wing walls and aprons. **Kindly note** that, the proposed project is a build and design, as some designs will be availed while the project has already commenced

i) Drainages

Drainages are an important aspect in road construction as they play a role in the life span of the road. The project will involve construction of various drainages in different sections of the road. The first 2.8 km will comprise of buffer drains will have a height of 600mm and base of 400mm. the other sections will have mightier drainages to divert water away of the roads, these will mostly be in sloping areas.

j) Toll gate Construction

The project will incorporate the construction of a toll gate which will go through all the major structure analysis check-up. The project will involve the levelling of the ground by applying gravel to stabilise the ground which will be compacted firmly, casting of concrete of thickness of 300mm, centreline of the points where the canopy will be installed, Installation of the canopy, and finally installing booths. The project area will also comprise constructing offices for officers who will be operating on the stated Subject. The offices will have an area of 5m x 6m. Not only that the project will be fenced since it will be occupying area of 60m x 40 m.

k) Boarder infrastructure

The project will consist of one stop boarder post , police post , Officers residential houses which include 15 two bedrooms and 10 three bedrooms , 100 trucks parking facility .The proposed structures will undergo the stages of construction which involve excavation of founders, casting of 200mm footing , Construction of foundation walls, casting of concrete slab of 200mm thickness, Construction of a super structure , installation of roof , installation of fittings and finally applications of finishes (plastering, painting). **Kindly Note that the** Project is build and design.

Sewerage

The project site is not serviced by any water and sanitation company, the company will construct an on-site septic tank. The design incorporates appropriate an environmental concern to prevent groundwater pollution in the area which is currently un-serviced.

Electricity

An overhead electrical reticulation system comprising armoured cables will be built to service toll gate and residential plots within the project site. Metering of the various unit electrical loads will be according to the plan per unit.

As such, all electrical infrastructures such as transformers, cables, etc., will be located or routed along the proposed service roads.

Project Objectives and Benefits

The sole objective of the proposed project is to Construct, Rehabilitate and Upgrade Katete Chanida road and the associated border Infrastructure in Katete and Chadiza Districts. The project will contribute to the improvement of the country's economy owing to the fact that the Transportation industry is an important aspect in Zambia's Economy. The specific objectives and benefits of the project are as follows:

i. To Contribute to the enhancement of the nation's economy through paying of taxes;

ii. Contributing to infrastructural development such as road rehabilitation and construction of new roads to inaccessible areas;

iii. To contribute to the Local Community Development;

iv. To Improve the quality of life for local people due to a steady income that will come in form of wages; and

v. To Improve competencies in construction for local people employed during the construction of various activities at the project area.

Shareholders

The details for the developer of the proposed project and particulars are as indicated in the table below;

Table 1: Shareholding Information

Shareholder	Nationality/ ID No.	Position	Percentage of shares
Yakub Yusuf Alloo	Zambian/ 840003/11/1	Director	25%
Essof Yakub Alloo	Zambian/ 332780/52/1	Director	75%
Total			**100%**

Project Implementation Date and Cost of the Project

The project is scheduled to be implemented by the Third quarter of 2024. The total cost of the project is **of US$79,785,115**

Regulatory framework and corporate requirements

A number of local and international environmental management and protection Acts and relevant to the implementation of the project will be reviewed before project implementation. Some of these legislations include:

i. Environmental Management (Amendment) Act No. 2023 as read with the Environmental Management Act No. 12 of 2011;

ii. The Environmental Impact Assessment (EIA) Regulations, SI 28 of 1997;
iii. Environmental Management (Licensing) Regulations, SI No. 112 of 2013;
iv. The Roads and Traffic Act No.8 of 2022 Amended from the Road Traffic Act of 2002;
v. Town and planning country planning Act,283;
vi. The Water Resources Management Act, No. 21 of 2011;
vii. The Fisheries Act No. 22 of 2011;
viii. The Forest Act No. 4 of 2015;
ix. The Zambia Wildlife Act No.14 of 2015;
x. The National Heritage Conservation Act (CAP 173); and
xi. The Land and Land Acquisition Act of 1995.

Zambia is a signatory and a ratified party to a number of international conventions. Though most of these agreements are non-committal, they are very vital in ensuring that individual countries operate while conscious of the locally but think globally. The following are some of the conventions that relate to the proposed project:

i. United Nations Framework Convention on Climate Change Ratified 1997 UN-FCCC
ii. Convention on International Trade in Endangered Species of Wild Fauna and Flora Ratified: 1975
iii. UN Conversion on Biological Diversity (1992)
iv. Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment Due to Air Pollution
v. Conversion on Control of Trans boundary Movements of Hazardous Wastes and their Disposal (1992).

Analysis of Project Alternatives

The proposed implementation of the project may be undertaken considering other viable options such as but not limited to site location, Design, Power, Water Supply and Sewer Disposal, Raw Material and Technology.

Project Location Alternatives

No site alternatives were considered due to the fact that the road path is already in existence.

Power Alternative

Option A: Connecting to the ZESCO Electricity Grid

The site is connected to the national grid and power will be from the ZESCO line.

Option B: use of diesel generators

Option A is preferred for being both economical and environmentally friendly reasons, however the developer will also utilize the use of diesel generators at locations where access to the electricity grid won't be possible.

Water Supply and Sewer Disposal Alternatives

Option A: sinking boreholes at strategic locations

Option B: Connecting to Eastern water and sewerage company service line.

Option C: Get water abstraction from nearby water bodies

Option A is preferred due to the fact that the project area is not serviced by Eastern water and sewerage company, thus the sinking of boreholes is the best alternative. however, the company will also be getting water from nearby water bodies in areas where the underground water is low.

Raw Material Alternatives

The developer will acquire raw materials such as aggregates, asphalt, cement, bitumen, steel, pipes, crushed rocks, culverts, guardrails and earthwork materials from licensed suppliers within the Project location. However, if the raw materials will not be available within the area, they will be sourced from other towns as well as other parts of the country.

Road construction Alternatives
Option A: Asphalt Road

The first step in the asphalt installation process is to remove the existing surface, whether it is asphalt, concrete or pavers. Demolition and removal is completed using heavy machinery, including small bobcats and forklifts and when necessary, front loaders and large dump trucks. Debris is then removed. Grading and Sloping With a clean slate, technology prepare the surface for appropriate water drainage. Using laser-guided transits and automatic motor graders.

The sub base provides a stable surface to support new pavement. The sub base is a frost barrier to help reduce winter damage due to freezing and thawing. During the installation, base thickness, base stability, and compaction are essential steps. If the sub base is not appropriately compacted, the asphalt surface on top will not provide years of durability. Proof Roll, Undercutting and Sub Base Repair

The binder layer can be thought of as the strength of any new asphalt surface. Install New Asphalt Surface. Once the supportive structures of a new asphalt surface are installed, the top layer of fresh asphalt is added to provide a clean, smooth ride.

Option B: Feeder roads

The first step in feeder road construction is the removable of top soil , and use the remaining soil to begin the formation .these involves mixing gravel with water and compacting it to the required strength.

List of preferred alternatives

Option A is preferred because it has a longer durability compared to option B.

Bridges

Option A. Box culverts (Masonry)

These involve installation of culverts combined with steel, aggregates and cement.

Option B. Steel bridges

These involve the installation of steel structures and combining them with reinforced concrete to achieve the desired strength.

Option A was preferred because it is easy to outsource materials and it's going to stand a test of time, not only that it is easy to maintain. Despite the Option B having higher strength properties, it has higher maintenance cost:

No Project Alternative

The option of not undertaking the Project was considered and not given priority as the investment in the project would result in more benefits and improve living conditions of residents around the Project site, and well as providing stimulus to the economy.

Baseline Environmental Study

Climate

The project site falls under Region I.

Region II includes much of central Zambia, with most of Central, Southern, Eastern provinces. It contains the most fertile soils and most of the country's commercial farms. Annual rainfall in Region II averages 800-1000 mm, and the growing season is 100-140 days long. Distribution of rainfall is not as erratic as in Region I, but dry spells are common and reduce crop yields, especially on the sandier soils. Average mean daily temperatures range from 23- 26°C in the hottest month October to 16-20°C in the coldest months of

June and July. The most common soils in Region II are red to brown clayey to loamy soil types that are moderately to strongly leached. Physical characteristics of the soils that affect crop production, include low water holding capacity, shallow rooting depth, and top soils prone to rapid deterioration and erosion. These soils also have low nutrient reserves and retention capacity, are acid, have low organic matter and nitrogen content, and are phosphorus-deficient.

Geology

The geological sequence of the project area encompasses rocks of large lithological variety which were formed and metamorphosed over a long-time range. The oldest rocks associated with the basement have an age of well over 1,000 million years (Ma) and the youngest rocks were formed during the last thousands of years in an on-going process. Most of the rocks exposed in the area are of Precambrian age, i.e., older than 543 Ma, and are assigned to the Katanga Super group or the Basement Complex.

The subsequent complex collision of two ancient tectonic plates, the Angola-Kalahari Plate comprising the Kalahari Craton and the Congo-Tanzania Plate comprising most of the Congo Craton led to the closure of the rift basin. This collision followed after the subduction of a southeast-northwest trending oceanic basin, and was accompanied by intense folding, thrusting, strike-slip faulting and high-grade metamorphism of the Katanga Supergroup and parts of the Basement.

Topography

The topography of Katete and Chadiza Districts areas averages 1100masl. The areas are identified with undulating terrain with rising and falling landscape giving rise to natural drainages which form streams and rivers. The dominant topographic features of Katete and Chadiza Districts tend to extend West-East across the District. The interior is largely the vast plateau and plains that stretch from boundaries with Chipata and Chadiza Districts to Sinda.

Vegetation

The project site is a brown field meaning that vegetation has been cleared leaving behind a few grasses' species palisade *(Brachiaria brizantha)* and shrubs, rubber tree or ubulimbo *(Hevea brasiliensis)* and west Indian Lantana or Ifisepo *(Lantana camara)* However the surrounding environment has the following species Mango (Umuyembe) trees *(Mangifera indica)* guava (amapela) *(Psidium guajava),)*, and rubber tree or ubulimbo *(Hevea brasiliensis)*.

It should be noted that there is NO rare or endangered flora in the project area.

Fauna

Human activities around the project area have disturbed wildlife habitats. There is no wild life. Below is a list of fauna species which were identified during the field assessment of the project site.

It should be noted that the project site has no rare or endangered fauna species.

Hydrology

The Zambezi Basin covers three-quarters of the country and comprises three sub-basins, namely, Zambezi, Kafue, and Luangwa. The main water bodies are within the watersheds of Zambezi and Congo rivers with their tributaries of Kafue, Luangwa, Luapula and Chambeshi, and Lakes Tanganyika, Bangweulu, Mweru and Mweru wa Ntipa including the man-made lakes of Kariba and Itezhi-Tezhi. The project road corridor from Chipata to Lundazi falls in the Zambezi Basin and in the Luangwa Sub Basin. Figure 5 below shows the two river basins of Zambia with their tributaries.

Soils

The Zambian soil resource is characterized in the following figure, taken from the Soil Map of Zambia, 1983. It shows the location of the project corridor having soils formed from underlying siliceous sedimentary and metamorphic rocks of the Ferric - Luvisol category. Soils on the medium grounds – i.e., on the Katete to Kawaza (00+000 to 10+000) – The initial 5km has gravely sandy soils and well drained. Beyond that, the soils have a weathered profile, are well drained and have improved fertility. More fertile soils are generally found along the water courses, although generally these have less developed profiles. The upland soils are commonly deep red to brown, with a thin (overburden) darker upper horizon containing more organic matter. These are characterized by a high iron and aluminium content, and low levels of the major nutrients such as potassium, sodium, calcium, and phosphor. Lateritic horizons (soils rich in iron and aluminium with high iron oxide content) are common and occur as hardened laterite or disintegrated laterite material.

Noise Quality

The Noise levels in the area are very low due to factor that no industries or markets are near the project site. The only potential sources of noise in the immediate vicinity of the site are from settlements around the area, and agriculture activities. The source of noise is mainly from the above factors and

the impact is insignificant. Therefore, the general noise quality for this area is much better than the urbanized areas of the district.

Air Quality

The air within the proposed area is clean and the ambient air in the project area is good in terms of quality since the area is neither in an environment that would compromise its quality. Dust from unpaved roads and some uncontrolled fires at times cause occasional smoke but it is insignificant to create pollution.

Literacy Levels and Health

Katete and Chadiza districts has over 390 schools currently with 59 Nursery Schools, 272 Primary Schools, 46 Secondary Schools, 1 Basic School, 10 Tertiary Schools, 1 Teachers College Schools, 9 principal officers at the district education office. The sample size was 24% of the total schools, 5% of the total number of teachers and 33% of the district education principal officers in Katete. The schools near the project site Omelo Mumba Primary School, Dole Primary School, Katawa Primary, Kambila Primary School, Kafumbwe Secondary School, Chadiza Secondary school, Chadiza Primary school, Chanida Day Secondary School and Kampini Primary school which is located Along the Southeast boundary of the project site.

The main Hospital in the Katete is St Francis Mission Hospital and Katete District Hospital located within Katete Town while the main Hospital in Chadiza district is Chadiza district hospital. A number of referrals from rural health centres is conducted in Hospital. There is at least one health care facility in every 5km.

Water Supply

The importance of having access to safe water cannot be overemphasized. Most of the people living around proposed site rely on streams, wells and boreholes for water for drinking, bathing and other domestic uses. Households in the project area are dependent on safe water for drinking from bore holes installed and from the stream nearby for other domestic uses as well as for livestock.

Economic Activities

Agriculture is the main economic activity in Katete and Chadiza districts. Major crops include maize and groundnuts. Agriculture is such an important industry that requires a steady supply of water. The districts have abundant land resources that can sustain crops, live stoke and fish farming. The majority of trade originating from the districts is by large scale-farmers who

supply livestock products to Katete and, in recent years, provided horticulture product to international markets. The district has potential for development in farming, tourism and other industrial activities.

Project Potential Impacts

The proposed project for the road construction activities has potential environmental and social impacts. A distinction should be made between significant positive and negative impacts, direct and indirect impacts, and immediate and long–term impacts. Also, identify impacts which are unavoidable and/or irreversible. The following are some of the impacts that were identified during the ESIA study:

Positive impacts of the project

- **Increase in Employment Opportunities:** Road construction project will create jobs in various sectors, including construction, engineering, transportation, and administration. During the preparation, construction, and operation phases, there is a significant increase in employment opportunities for local communities. This can help reduce unemployment rates and improve the standard of living for many individuals and families.
- **Support to Local Businesses:** Road construction projects often require a large amount of construction materials and services, providing opportunities for local businesses to supply these goods and services. Local suppliers of construction materials and subcontractors benefit from increased business, leading to economic growth in the area.
- **Reduction in Transit Time:** Improving roads through reconstruction reduces transit time for vehicles, goods, and passengers. This can lead to increased efficiency in transportation, cost savings, and improved access to markets and services for communities along the road.
- **Increase in Government Revenue:** Road construction projects contribute to government revenue through the payment of levies, taxes, and toll gate fees. These revenues can be used to fund other development projects and improve infrastructure in the region.
- **Capacity Building for Locals**: Road construction projects often involve collaboration between local workers and foreign specialists. This provides an opportunity for locals to learn new skills and techniques from experts, improving their capacity and enhancing their employability in the future.
- **Improved Safety and Traffic Flow:** Well-designed roads improve safety for motorists, pedestrians, and cyclists. Enhanced traffic flow reduces congestion, which can lead to time and fuel savings for travelers. Better accessibility also improves emergency response times and access to healthcare and education facilities.

- **Improvement in Border Facilities Infrastructure:** Roads that serve as international or interregional trade routes often require border facilities infrastructure improvements. This includes customs checkpoints, immigration facilities, and quarantine stations. Upgrading these facilities will improve efficiency in cross-border trade and travel, benefiting both local and regional economies.

Negative impacts of the project

- **Air Quality Impacts**: During preparation and construction activities such as excavation, creation of access roads, mixing of materials and vehicle movement will result in temporary impacts to air quality due to the increase in dust generation in the Project area. This in addition to combustion emissions from the machinery and vehicles may negatively impact sensitive receptors near the Project site.
- **Groundwater and surface water contamination**: By machinery and project activities e.g Leakages and poor machine maintenance.
- **Soils**: Removal of vegetation during site preparation and other construction activities may result in soil erosion and loss of top soil. Accidental spills of fuels or other hazardous substances may contaminate the soils.
- **Biodiversity**: Removal of vegetation during construction activities may result in habitat loss, habitat fragmentation, and loss of endemic species if any. Below is the impact significance.
- **Impact of Socio-Economic**: The proposed project will offer skilled and unskilled employment to the locals (male and female) and others from surrounding areas. The influx of Project employees as a result of the Project will create more circulation of revenue due to increased demand for local goods and services.
- **Impacts to Land use and livelihood**: Restrictions to land use due to the construction of the Project components will impact the surrounding communities. These changes will in turn affect the livelihoods and the way of life of the communities.
- **Cultural and archaeological heritage**: Ground disturbing construction activities may potentially affect below-ground archaeological remains as well as heritage sites, which might have a cultural or natural significance.
- **Occupational Health and Safety**: Occupational health and safety impacts occur during the construction, operation and decommissioning phases of the Project due to the activities inherent to the Project. Hazards include working at height, lifting operations and inadequate Personal Protective Equipment (PPE), among others.

- **Community Health and Safety**: Impacts to community health will arise from the influx of workers hired by the Project that may increase the spread of HIV/AIDS during construction of the Project. Other health impacts due to noise, water and air pollution may occur during the construction phase.
- **Impact on borrow pits:** During construction phase borrow pits will be opened, borrow pits disrupt ecosystems and habitats, leading to loss of biodiversity. The excavation processes will cause erosion and sedimentation in the nearby water bodies.
- **Impacts on livelihood**
  Road construction can disrupt existing livelihoods, especially for communities located along the construction route or near work sites. This disruption can occur due to noise, dust, traffic diversions, and restricted access to land or resources.

Mitigation Measures

Impact on Air Quality

- Water Sprinkling: Regularly spraying water on unpaved roads, construction sites, and areas prone to dust generation will help suppress dust by keeping the soil moist.
- Vegetative Cover: Establishing and maintaining vegetative cover, such as grass or other plants, will stabilize soil and reduce erosion, thereby decreasing dust emissions.
- Speed Limit Enforcement: Implementing and enforcing speed limits for construction vehicles will help reduce the generation of dust from vehicle movement.
- Covering Hauling Trucks: Ensuring that hauling trucks are covered or have sealed containers will prevent loose materials from becoming airborne during transport.
- Traffic Control Measures: Implementing traffic control measures, such as reducing vehicle speeds and controlling traffic flow, will minimize dust generation from vehicle movements.

Impact on Water Resource

- All equipment, machinery, trucks and camp installations have to be located more than 250 m from water used for human consumption and at least 150 m from any water body.
- The workshops will have heavy equipment wash-bays equipped with impervious surfaces and containment to enable the capture of all effluents from washing operations. Furthermore, the plant equipment

will be washed in dedicated wash-bay areas equipped with impervious surfacing, containment and oil traps.

- Oil traps will be installed in the workshop drainage system to treat all effluents prior to release.
- The community wells in the area will be regularly monitored by the developer to verify any impact on water levels.
- All construction equipment using hydraulic fluid, oil, fuel or any other substance that has the potential to contaminate dewatered water if released into the environment will be subject to a preventative maintenance programme.
- All sewer waste will be channelled to a water treatment pond that will treat the sewer before releasing it into the environment.

Impact on Land and Soil

- No machinery and vehicles will be serviced on site. Fuels will be stored in a tank to be installed.
- Storage of fuel and lubricants has to be in tight containers placed on sealed surfaces underneath a roof.
- Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites.
- All activities which could contaminate the soil have to be carried out on sealed surfaces. If accidental spillage occurs, the contaminated soil has to be excavated and disposed of properly (final treatment or disposal shall be done by a suitably qualified company.
- Hazardous waste has to be stored in designated closed tanks or areas.
- The project will affect the land use in the project area; however, the company will compensate the land used for agriculture purposes by the locals within the project area.
- The company will ensure that the construction activities are within the project area does not affect the land use of the land outside the project area. The main infrastructure such as the Toll gate and boarder post have been located in the areas which have less agriculture activities within the boundaries of the project area.
- Progressive Rehabilitation: Progressive rehabilitation plan to restore camp and construction site areas as construction activities progress will be implemented. This involves rehabilitating smaller sections of the construction site as they are no longer in use, recontouring slopes, stabilizing soils, and re-vegetating the area.
- Engineering Design: Sound engineering design principles will be implemented to ensure the stability of the road. This includes the

proper embankment construction, and regular monitoring of levels for accuracy purposes.

Impact on Biodiversity and Vegetation

- Restrict clearing of vegetation only to areas where the road construction, and other structures will be established
- Vegetation will only be stripped immediately prior to the commencement of operations.
- In general: strengthen the awareness of the workforce for the environment (protected areas, plants and wildlife): to avoid logging, hunting, etc. at project site and in the surroundings, to prevent the extraction of plant products (wood, non-timber forest products) and the introduction of invasive species by operation staff and the population of the new settlement, to prevent or minimise pollution of sites, Construction site to be fenced off for preventing use of surrounding areas.
- Where possible, riparian and specialised habitats should be avoided when planning the location of temporary sites.

Loss of amenity values

The project might impact on the amenity values in the project area. This impact is insignificant because the project path has been cleared and they are no amenity with the project site which will be affected during the construction and operation of the project.

Resettlement of families within and near the project area

If they will be any affected people, all the identified households and agricultural fields to be affected will be compensated and a Resettlement Action Plan will be developed.

Occupational health and Safety

- Adequate number of modernized toilets that are equipped with a ventilation pipe, soak ways, toilet bowls and cistern will be considered.
- Strict use and cleanliness of the modernized toilet facilities will be enforced during the entire life of project.
- Lutembwe Consulting Company Limited will develop a Safety Guidance Code whose objectives will be to assist in reducing accidents, injuries, incidents and occupational diseases during mining.
- Drivers will be instructed to drive the vehicles at 40km/h to minimize on risks of accidents

- The project activities will be designed, prepared, and operated according to Good International Industrial Standards (GIIS's) for the prevention and control of incidents.

All personnel involved in the project will be equipped with proper Personal Protective Equipment (PPE) such as dust mask, eye goggles, protective clothing, gloves, hard hats, hearing protection and boots.

Community Health and Safety

- Employing of local residents to minimise the spread of communicable diseases.
- The Construction Supervisor in collaboration with Ministry of Health shall take measures to educate and sensitise the labour force on the risks of communicable diseases (malaria, TB, STDs, including HIV/AIDS etc.). How infections are transmitted, how to recognise symptoms, what should be done and on prevention measures. Male and female condoms shall be distributed to workers by the Contractor free of charge.
- Every worker has to have the necessary vaccinations (Hepatitis A and B, Tetanus, etc.). Preventive medicine and mosquito nets shall be distributed to the workforce by the Contractor free of charge on a regular basis. Workers' camps should be sprayed for mosquitoes and other pests on a regular basis.

Loss of ethnicity (culture/traditions)

The project might impact on the ethnicity (culture/traditions) in the project area. The project area is not used for any traditional ceremonies or culture activities hence this impact is minimal.

Generation and Management

- Develop a waste management system
- Solid waste shall be sorted according to types. Install garbage cans for temporary disposal of domestic waste. These have to be collected and disposed of according to the regulation of solid waste management and approved by the local authorities.
- No waste shall be disposed of or buried on site. Illegal dumping, either at the construction camp, along the roads or in the surrounding areas, or into the river shall not be allowed.
- Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites.

- In general, waste should be reduced, re-used, recycled and the disposal should be controlled.
- All hazardous waste will be disposed of in accordance with the provisions of SI No. 112 of 2013.
- Hazardous waste (oil, chemicals, etc.) has to be stored in a designated closed tank and/or area until it is handed over to companies specialised in the proper disposal or recycling of those hazardous wastes.
- Containers have to be available at the workshops for the disposal of used filters, gaskets and other spare parts.

Impact of Noise and vibration

- All mobile vehicles and equipment will have noise reducers
- All land preparation activities will take place during the day and any work during night- time will be communicated to the state authorities and local community
- Use adequate and well-maintained construction and transportation equipment including state-of-the-art built-in systems (muffle) to reduce the noise.
- The contractor has to develop a maintenance program to ensure to keep noise within legally permitted limits. Instruct the workforce to avoid unnecessary noise.
- Workers exposed to excessive noise have to be equipped with PPE (e.g., ear protectors) and the exposition time has to be limited.

Impact on borrow pits

- To prevent accidents to human beings and other roaming animals from falling into the pit, the pits will have gates for both entry and exit. Warning signs will be installed at necessary strategic locations to inform passer-by's of the immediate danger ahead.
- The borrow pits will be filled with suitable material and graded to blend with the surrounding landscape. This helps will restoring the area into its natural state and reduce safety hazards like steep slopes.
- Vegetation will be planted around the pit to help will soil stabilization, erosion and enhance the visual appeal of the area.
- Proper geotechnical assessment will be carried out to assess the stability of the borrow pits.
- Vector -borne diseases in particular malaria, shallow ponds often become blending habitats for mosquitos. Vector bleeding is considerably less in deeper water. Proper water management techniques, such as installing drainage systems or creating wetlands, will be used to mitigate this risk.

- Monitoring and Maintenance; the borrow pit sites will be regularly monitored and maintained to ensure that the mitigation measures remain effective. This will include checking for erosion, maintaining vegetation, and repairing of any damaged to the fencing or signage.

Impact on livelihood

- **Stakeholder Engagement:** Engaging with local communities and stakeholders early in the planning process will help identify potential impacts on livelihoods and develop appropriate mitigation measures.
- **Alternative Access Routes:** Providing alternative access routes for communities affected by road construction will help minimize disruptions to their daily activities, livelihoods and also prevent resettlement and compensation issues.
- **Compensation and Support**: Providing compensation or support to affected households or businesses will help mitigate the economic impact of road construction.

Recommendation

We trust that the above provides a fair and accurate Executive Summary of the Environmental Impact Statement for the proposed construction, rehabilitation and upgrading of Katete-Chanida road and associated border infrastructure. The project will contribute to the improvement of the country's economy owing to the fact that the Transportation industry is an important aspect in Zambia's Economy, presented to the Zambia Environmental Management Agency for consideration for approval.

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Director

Lutembwe Consulting Company Limited

NON-TECHNICAL SUMMARY IN LOCAL LANGUAGE

Kumasulira kwa Pulojekiti

Lutembwe Consulting Limited ifuna kukonza mseu wa Katete-Chanida ndi colinga cofuna mayendedwe abwino. Kampaniyi ifuna kumanga mseu okwanila makilomita 55, kukonza maulalo anai, kuika chipata(togeti),sikelo(chopimila ulema kwa zinthu lomwe galimoto lanyamula), ndizofunika m'malire monga poyimitsa malire, nyumba za maofesala, ndi malo oimika magalimoto.Kutalika kwa moyo wa polojekitiyi ndi zaka 25. Ntchito zikuphatikizapo kumanga misewu yapawiri ya makilomita aawiri kumalire a Chanida ndi malo atsopano, kukonza ngalande zomwe zilipo kale, kuyala ndi phula losakanizika, kumanga ngalande zatsopano ndi misewu yoyendera oyenda pansi, kupanga poimira mabasi ndi mathiraki, kumanganso mapewa, kuwonjezera malo ophwanyidwa amiyala, zopangira nthaka, kukhazikitsa mapaipi a culvert, kulimbikitsa makoma a culvert, kupereka kuwala kwa dzuwa mumsewu, ndikuyika zizindikiro pamsewu ndi zizindikiro zokhazikika.

Malo

Malowa ali m'mphepete mwa msewu wa Katete-Chanida m'boma la Katete komanso mbali ina ya boma la Chadiza. Malo oyandikana nawo akuphatikizapo khansolo ya tawuni ya Katete kumwera chakumadzulo (mamita 20 kutali), Chipatala cha boma cha Katete kummawa, ndi Katete Police Post moyandikana ndi malire a projekitiyi. M'mbali mwa msewuwu, midzi monga Dole, Chimbundire, Kambila, Kafumbwe, ndi Mlolo ili kumpoto kwa malo ochitira ntchitoyi, pomwe Chanida Border m'boma la Chadiza ili kumpoto chakumadzulo. Katete CBD ili mkati mwa projekiti, pomwe Chadiza CBD ili pa mtunda wa makilomita pafupifupi 28 kuchokera pamalo a polojekiti.

Mtengo wa pulojekiti

Ntchitoyi ikukonzekera kukwaniritsidwa mucigawo cachiwiri cha 2024. Ndalama zonse za polojekitiyi ndi US $ 79,785,115.0.

Kuona njira zina za polojekiti

Njira zina zomwe zaganiziridwa kuti ntchitoyo zitheke ndi zochepa ndipo zawunikidwa kuti ziwone momwe zingathere pothandizira kukwaniritsa zolinga za polojekitiyi.

Malo:

malowa ndi malo omwe alipo kale ndipo polojekitiyi idzakhudza kukonza ndi kukonzanso zigawo zina za msewu.

kapangidwe

Mapangidwe omwe asankhidwa ndi Asphalt Design yomwe ili yophatikizika mwachilengedwe. Kakozedwe koyenera ndikofunika kwambiri pakuchita bwino kwa polojekitiyo potengera mtengo, zinthu komanso kuyenerera kwa msika.

magetsi

Mphamvu yomwe ikufunidwa pa malo a polojekiti ikulumikizana ndi gridi ya dziko lonse. Njira ina yamagetsi yomwe idaganiziridwa inali kugwiritsa ntchito jenereta koma izi sizinatengedwe chifukwa chofuna kusunga malowo ngati malo obiriwira.

kapezekedwe ka madzi ndi kutayira kwa ngalande

Njira yopezera madzi ndi maboho ndi malo osungira pa malopo. Njira zina zomwe zaganiziridwa popereka madzi ndi kulumikizana ndi njanji ya EWSC ngati ingapitirire kuderali. Womanga adzafunika kugwiritsa ntchito matanki otsekeka amadzi omwe adzakhetsedwa akadzadzaza.

zopangira

Zopangira polojekitiyi ziphatikiza laterite, mchenga womanga / mtsinje, chitsulo ndi aluminiyamu, ma aggregates ndi copper slag omwe zidzagulidwa kwanuko, ndipo pokhapokha ngati sizipezeka kwanuko m'pamene zidzatumizidwa kunja.

Zachilengedwe

Nyengo

malo a polojekitiyi ali pansi pa dera loyamba, lomwe limaphatikizapo madera akumwera, kum'mawa, ndi kumadzulo kwa Zambia. Dera ili ndi mvula yochepa pachaka kuyambira 600 mpaka 800 mm ndi nyengo yaufupi yolima (masiku 80-120) ndi nyengo yowuma pafupipafupi.

Derali lili ndi mitundu yosiyanasiyana ya nthaka yomwe ili ndi zovuta zambiri pakulima, kuphatikizapo kukokoloka kwa nthaka, kuya, kutumphuka, ndi kutsika kwa madzi.

Miyala

gawo la polojekitiyi limapezeka ndi miyala yazaka zosiyanasiyana, makamaka zaka za precambrian (za zaka zopitilira 543 miliyoni). Derali lakumana ndi zovuta zamitundu yosiyanasiyana, kuphatikiza kupindika ndi kugawikana kwa nthaka yapamwamba.

Kukwela kwa malo

Maboma a katete ndi chadiza ali ndi mtunda wokwana 1100 masl ndi malo ozungulila okhala ndi ngalande zachilengedwe zomwe zimapanga madambo ndi mitsinje. Derali limadziwika ndi madera akumidzi, nkhalango za miombo, ndi malo ena amiyala.

Zomera

Malo a projekitiyi ndi malo abulauni okhala ndi zomera zodulidwa, kusiya udzu ndi zitsamba. madera ozungulira ali ndi mitengo yamitundu yosiyanasiyana monga mango, magwava, ndi mitengo ya raba.

Nyama

Zochita za anthu zasokoneza malo okhala nyama zakuthengo, ndipo palibe nyama zakuthengo zomwe zawonedwa mdera la polojekitiyi.
Madzi
Dera la pulojekitiyi lili mkati mwa beseni la zambezi ndi beseni la luangwa, lomwe lili ndi mabwalo akuluakulu amadzi ndi mitsinje ngati zambezi, kafue, ndi luangwa.

Dothi

Dothi lomwe lili mumpanda wa polojekitiyi limapangidwa kuchokera ku miyala ya siliceous sedimentary ndi metamorphic ya gulu la Ferric - Luvisol. Ilo ndi loyenera ulimi, chifukwa ndila chonde.

Phokoso

Phokoso m'derali ndi lochepa, makamaka kuchokera kumidzi ndi ntchito zaulimi.
mpweya
Mpweya wa m’derali ndi wabwino, nthawi zina umawonogedwa ndi fumbi lochokera m’misewu yopanda miyala.

Kuwerenga ndi Thanzi

Maboma a Katete ndi Chadiza ali ndi sukulu zoposera 390 padakali pano zomwe zili ndi ma Nursery Schools 59, Pulayimale 272, Sekondale 46, Sukulu za Btvet 1, Sukulu Zapamwamba 10, Sukulu za Koleji ya Aphunzitsi 1, maofesala akuluakulu 9 kuofesi yamaphunziro m'bomalo. Sukulu zomwe zili pafupi ndi malo ochitira polojekitiyi ndi Omelo Mumba Primary School, Dole Primary School, Katawa Primary, Kambila Primary School, Kafumbwe Secondary School, Chadiza Secondary School, Chadiza Primary School, Chanida Day Secondary School ndi Kampini Primary School.
Chipatala chachikulu ku Katete ndi Chipatala cha St Francis Mission ndi Chipatala cha boma ca Katete chomwe chili mkati mwa tauni ya Katete pomwe chipatala chachikulu cha m'boma la Chadiza ndi chipatala cha boma ca Chadiza. Pamakilomita asanu aliwonse pali chipatala chimodzi.

Madzi

Anthu ambiri ozungulira malowa amadalira mitsinje, zitsime, ndi maboho kuti apeze madzi, zomwe zikuwonetsa kufunika kopeza madzi abwino.
Ntchito Zachuma
Ulimi ndiye ntchito yayikulu yazachuma m'mabomawa, yomwe ili ndi mwayi wopititsa patsogolo ulimi, zokopa alendo, ndi chitukuko cha mafakitale.

Mabvuto amene angabwele:

Zili munsimu ndi zina za mabvuto amene angabwele monga mwa zofufuza za ESIA:

Kuonongeka Kwa mphepo kucokera ku kukumba, kupanga njira zopita, kusakaniza zinthu zomangira ndi mayendedwe a magalimoto cifukwa ca kupanga fumbi loculuka
Phokoso locokera ku kukumba komanso anthu omanga ndi magalimoto ogwira nchito pa malowa
Kuonongeka Kwa manzi a pansi cifukwa ca kupangidwa kwa zonyansa za manzi ndi zolimba kucokera ku zomanga ndi ku mashini kudzanso kutaika mwangozi Kwa mafuta a m'galimoto ndi zinthu zina zoononga umoyo.
Kukokoloka Kwa nthaka cifukwa ca kucosa zomera pokonza malowo komanso ndi zocitika za pa malopo zitha kucosa dothi la pamwampa pa nthaka ndinso mafuta a m'galimoto otaika mwangozi.
Pulojekitiyi izabweretsa umwayi wa nchito ku anthu ophunzira pa nchitoyi ndi osaphunzira omwe a mdela lozungulira. Ici cizabweretsa kukwera Kwa zinthu za malonda cifukwa ca kuculuka Kwa anthu a pa kampanipa komanso pulojekitiyi izabweretsa citukuko ndi kukula kwa tauni.
Kusintha kwa maonekedwe a pa malopo cifukwa ca zomanga-manga
Kusintha kwa makhalidwe a anthu ozungulira cifukwa malowo amene padzakhala pulojekitiyi sadzakhalanso awo, malimidwe awo azakhuzidwa.

Malo ofukula za kale, za miyambo ndi manda angasokonezeke cifukwa ca nchito yomanga pansi. Kuculukanso kwa anyanchito a pa kampani kudzabweresa kusintha kwa miyambo ku anthu a ku delari.
Kubwera kwa matenda osiyana-siyana cifukwa ca kuculuka kwa anyanchito a pa kampani monga HIV/AIDS. Zina zomwe zingakhuze umoyo ndi phokoso , kuonongeka kwa manzi ndi mpweya ndi zina zobweretsedwa ndi zocitika za anthu.

Njira zochepetsera mabvuto

Mpweya

kupopera madzi pafupipafupi m'misewu yopanda phula, malo omanga, ndi malo omwe nthawi zambiri kumapangitsa fumbi kumathandizira kuletsa fumbi posunga dothi lonyowa.
kukhazikitsa malire a liwiro: kukhazikitsa ndi kuyika malire a liwiro la magalimoto omanga kumathandizira kuchepetsa kutulutsa fumbi kuchokera kumayendedwe agalimoto.
Kuphimba magalimoto onyamula: kuonetsetsa kuti magalimoto onyamula katundu aphimbidwa kapena zomata zomata zimateteza kutayikira.
Muyeso: kuchepetsa kuthamanga kwa galimoto ndi kayendetsedwe ka magalimoto, zidzachepetsa kutulutsa fumbi kuchokera kumayendedwe a galimoto.

madzi

zida zonse, makina, magalimoto ndimakhazikitsidwe amsasa ayenera kukhala pamtunda wopitilira 250m kuchokera pamadzi omwe amagwiritsidwa ntchito ndi anthu komanso osachepera150m kuchokera pamadzi aliwonse.
Malo ochitirako msonkhanowo adzakhala ndi malo ochapira ndi zida zolemera zokhala ndimalo osathakulowamo komanso zosungiramo kuti athe kunyamula zinyalala zonse zakuchapirako. Kuonjezera apo, zipangizo zamagetsi zidzatsukidwa m'malo ochapira omwe ali ndi malo osasunthika, osungira komanso misampha yamafuta.
Madzi am'migodi adzaponyedwa kuchokera kusupa yamgodi ndikutulutsidwa kumadzi apamwamba.

Pofuna kupewa kuipitsidwa kwa madzi apamwamba chifukwa chopopa madzi akuda amumigodi, ngalande zamigodi zidzaponyedwa kumaiwe okhazikika kumene zolimba zidzaloledwa kukhazikika.

zamoyo zosiyanasiyana ndi zomera

Kuletsa kuchotsedwa kwazomera kumadera pokhapo kumene kudzakhala dzenje lamigodi
Zomera zidzangochotsedwa nthawi yomweyo ntchito isanayambe.

Kulimbitsa kuzindikira kwa ogwira ntchito kuchilengedwe(malo otetezedwa, zomera ndi nyama za kutchire kupewa kudula mitengo, kusaka, ndi zina zotere pamalo opangira polojekiti komanso m'malo ozungulira, kuletsa kudulidwa kwa mitengo ndi kuyambitsa zamoyo zowononga ndi anthu ogwira ntchito ndi anthu okhala m'dera latsopanolo, kuti ateteze ndi kuchepetsa kuipitsa malo.
malo omangawo atsekedwe ndimpanda kuti asagwiritse ntchito madera ozungulira.

Nthaka:

palibe makina ndi magalimoto omwe azitumizidwa pamalowo.
Mafuta adzasungidwa muthanki kuti aikidwe kosungirako mafuta ndi zothira mafuta kuyenera kukhala m'zidebe zothina zoikidwa pamalo omata pansi padenga.
zinyalala zolimba zomwe zimapangidwa panthawi yomanga komanso m'misasa zidzasamalidwa bwino ndi kutayidwa motetezeka m'malo otayira zinyalala okha.
Ntchito zonse zomwe zingaipitse nthaka ziyenera kuchitika pamalo omata ngati kutayikira mwangozi, dothi loipitsidwa liyenera kukumbidwa ndikutayidwa moyenera.

Phokoso:

Magalimoto onse ndi zida azikhala ndi zochepetsera phokoso.
Ntchito zonse zokonzekera malo zidzachitika masana ndipo ntchito iliyonse nthawi yausiku idzadziwitsidwa kwa akuluakulu a boma ndi anthu am'mudzi.
Kuphulika kwa mabomba ku mgodi kudzakhala komveka,koma
chifukwa chakuchulukira komanso nthawi yochepa, siziyenera kusokoneza anthu am'deralo.
Tidzagwiritsa ntchito zipangizo zomangira zokwanira komanso zosamalidwa bwino komanso
zoyendetsa galimoto kuphatikizapo zipangizo zamakono(muffler) kuti tichepetse phokoso.

Thanzi ndi chitetezo mdera:

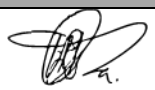
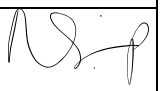
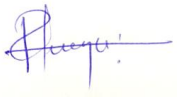
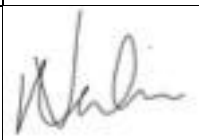
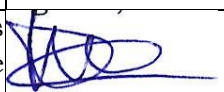
kugwiritsa ntchito anthu amderali pofuna kuchepetsa kufalitsa kwa matenda opatsirana.
Woyang'anira ntchito yomanga mogwirizana ndi Unduna wa Zaumoyo achitapo knthu pophunzitsa ndi kudziwitsa anthu ogwira ntchito kuopsa kwa matenda opatsirana (STDs,HIV/AIDS etc.), momwe matenda amafalira,momwe mungadziwire, zizindikiro, zoyenera kuchita komanso njira zopewera

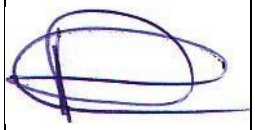
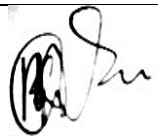
Makondomu a amuna ndi akazi aziperekedwa kwa ogwira ntchito kwaulere.

Kasamalidwe ka zinyalala:

Zinyalala zolimba ziyenera kusanjidwa molingana ndi mitundu.
Kuika zibekete zosungiramo zinyalala za pakhomo mwa ka nthawi zimene ziyenera kusonkhanitsidwa ndi kutayidwa molingana ndi malamulo oyendetsera zinyalala zolimba ndikuvomerezedwa ndi maboma amderalo.
Palibe zinyalala zomwe zidzatayidwe kapena kukwiriridwa pamalopo. Kutaya kosaloledwa, kaya kumsasa womanga, m'mphepete mwa misewu kapena m'madera ozungulira, kapena mumtsinje sikuloledwa.

EIA TEAM MEMBERS

Name	Qualifications	Responsibility	Roles	Signatures
Peter M. Mwanza	• Bachelor of Science in Wood Science and Technology • Certificate Environmental and Social Risk Management Training, World Band Group, Zambia. • Certificate Environmental and Social Impact Assessment in Mines. • Masters of Science in Project Management. • IEMA Approved Environmental management Systems 14001: Lead. • Certificate Environmental Management Systems (EMS) ISO 14001	Environmentalist /Team Leader	ESIA Coordinator and provider of environmental management information	
Nephas Mapiki	• Master of Science in Project Management. • Bachelor of Science in Urban and Regional Planning.	GIS and Land use Expert	GIS information and conduct a land use assessment on the project area	
Rodgers Lungu	• Bachelors of wood Science and Technology's Degree.	Air and Noise Expert	The expert will conduct Air Quality and Noise assessment in the project area	
Valerie Kalinso	• Master of Mass Communication • Bachelors Degree in Mass Communication.	Social Economic Expert	Social Experts to specialize in gathering information on the Population, distribution. Conduct a Gender assessment, social and economic gender patterns in the project area.	
Dickson Kabwe	• Bachelor Degree of Science (Ecology), Certificate in Environmental Management, Certificate in Compliance and Enforcement of Environmental Law	Ecologist Expert	The Ecologist will focus on the assessment of the Flora, Fauna, Aqua-flora and Identify areas of high biodiversity on the site..	

Chisanga Siwale	• MSc (Integrated Water Resources Management), BSc (Natural Resources and Environmental Management)	Hydrologist Expert	The Hydrologist will identify significant impacts from existing uses and interference with the water resource, surface water flow that may result either directly or indirectly from the proposed project and identify and comment on the risks and consequences of polluting surface water from proposed project activities	
Davies Chansa	• BSc (Hons): Appl. Sci. Transportation Engineering • Bachelor of Engineering Degree	**Highway Engineer**	The Highway Engineer will be the overseer for all the road works and design for the project.	
Osbert Chanda	• Bachelor of Engineering Degree in Civil and Environmental Engineering	**Civil/Bridge Engineer**	The Civil/Bridge Engineer will be overseer all civil works and Bridge rehabilitation of the project.	

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS - Acquired Immune Deficiency Syndrome

LCCL - Lutembwe Consulting Company Limited

CBD - Central Business District

EPB - Environmental Project Brief

ESIA - Environmental and Social Impact Assessment

ECZ - Environmental Council of Zambia

EMA - Environmental Management Act

EIS - Environmental Impact Statement

EMP - Environmental Management Plan

EPPCA - Environmental Protection and Pollution Control Act

GRZ - Government of the Republic of Zambia

Ha - Hectares

HIV - Human Immune Virus

IAP - Interested and affected parties

NEAP - National Environmental Action Plan

NCS - National Conservation Strategy

RHC - Rural Health Centre

SI - Statutory Instrument

TORs - Terms of Reference

WARMA - Water Resources Management Authority

ZEMA - Zambia Environmental Management Agency

1.0 INTRODUCTION

The Katete – Chanida, start from Great East Road (T4) and Katete – Chanda Road Junction and stretches for 55 Km to Chanida Border post (Zambia – Mozambique) and comprises a bituminous flexible pavement with a two-lane surfaced carriageway and narrow unsurfaced shoulders, its total length is 55Km. The road was first upgraded to bituminous standard in the late-1970s. This section of road was first rehabilitated between 2008 and 2010 under ROADSIP II implemented by the Road Development Agency (RDA) with funding from the National Road Fund Agency (NRFA) with Raubex as Contractor. In 2020, the Government of the Republic of Zambia (GRZ), through the Road Development Agency (RDA), awarded the contract for the Emergency Maintenance Works on Katete – Chanida Road T6 (55kM) to Buildcon Investment Limited. This contract was later terminated in March 2023 on grounds of non-performance. Only the initial 2.8Km of the project road had works executed though not complete.

The road is considered as an important international gateway to Asia on the Indian Ocean as it provides easy access for export/import through the Beira port of Mozambique. Regionally, the road also provides an important link in the Beira Corridor which services Botswana, Zimbabwe, Malawi, Zambia, and Mozambique and acts as a catalyst for the development of agriculture, tourism, mining among these countries.

In the last 20years, the road has become the preferred route for the exportation of Copper to China through the Mozambican port of Beira, on the Indian Ocean, over Dar-es-salaam port in Tanzanian due to the former's proximity to the mineral rich Copperbelt and North western provinces. However, the lack of periodic maintenance has led to rapid deterioration of the road asset more so on the last 35km, apparently omitted on the previous maintenance cycle. In its current state, the road does not provide a safe and sufficient road transport system capable of supporting the transportation of goods, services and contributing to the social and economic transformation of the country, as well as enhancing inter-regional trade.

In October 2023, the Government of the Republic of Zambia through the Road Development Agency (RDA) signed a concession agreement with Messrs Lutembwe Consulting Company Limited under Public - Private Partnership Financing model for the Design, Finance, Build, Operate, Maintain and Transfer of the 55km Katete to Chanida Road (T6) and Associated Border Infrastructure. The company is proposing to rehabilitate, upgrade and construct the road and associated infrastructures on the 55km Katete and Chanida road at a total cost of **US$79,785,115.0.**

In accordance with the Environmental Management (Amendment) Act No. 8 of 2023 as read together with the EMA No. 12 of 2011 of the Laws of Zambia, read together with the Environmental Impact Assessment Regulations of 1997, a road and associated infrastructure project requires a full Environmental and Social Impact Assessment (ESIA) to be undertaken before such a project is implemented. Therefore, Lutembwe Consulting Company Limited engaged an Environmental consultant Tsalach Global Limited to prepare this report on their behalf.

1.1 Background of the project

Lutembwe Consulting Company Limited is a Zambian owned private Company incorporated on 15th September 2023. The company Directors have done various construction works while working for different construction companies who have been involved in numerous roads, structures work.

In October 2023, the Government of the Republic of Zambia through the Road Development Agency (RDA) signed a concession agreement with Messrs Lutembwe Consulting Company Limited under Public - Private Partnership Financing model for the Design, Finance, Build, Operate, Maintain and Transfer of the 55km of Katete to Chanida Road (T6) and Associated Border Infrastructure. Lutembwe Consulting Company Limited in turn commissioned Bicon Zambia Limited to provide Consultancy Services for the Detailed Engineering Design of the Katete – Chanida Road T6 (55km) and Associated Infrastructure at Chanida Border post.

It's against this background that the company intends to Construct, rehabilitate and upgrade the Katete-Chanida road to accommodate the increase in traffic of vehicles using the later mentioned road. The company intends to Construct, rehabilitate and upgrade the Katete-Chanida road to accommodate the increase in traffic of vehicles using the later mentioned road. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Year.

1.2 Summary description of the project including project rationale

The company intends to Construct, rehabilitate and upgrade the Katete-Chanida road to accommodate the increase in traffic of vehicles using the later mentioned road. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Years.

Upon completion of the road, developer will continue with the routine

maintenance of the project for the period of 23 years before handing over to the government. The other project will involve the following activities to be carried out by the developer;

- The construction of a 2 Km dual carriageway with median of 1.5 minimum within the Chanida border area with new border facilities such as Police post, Houses, Border Post;
- Improving, rehabilitation/maintenance of the drainage capacity of the existing culvert;
- Hot-mix asphalt paving for the whole 55Km;
- Construction of new concrete lined drains;
- Construction of pedestrian walkways;
- Bus bays and truck laybys;
- Double seal Surface treatment for first 10km works and reconstructed shoulders for the entire road;
- Graded crushed stone base course to the first 2.8Km;
- Earthworks and pavement layer works for reconstruction scope;
- Installation of Ø 900mm and Ø 600mm culvert pipes;
- Furnishing and placing of deformed high yield steel reinforcement to culvert end structures;
- Provision of solar street lighting for major settlements along the 55km stretch;
- Road line marking and installation of permanent signage

Road Construction

Infrastructure for roads is outlined here at feasibility stage of the project. The provision of infrastructure will be phased with the development.

The project site has no proper road network system and sanitation infrastructure. Therefore, the project will develop a proper road network system through all the stages of construction by following the basic stages such as:

a) Formation or Sub-grade of the road

This will involve the removal of the existing soil by leaving the ground levelled before putting up gravel on the road. Through this process the road is widened to the required size. This is mostly 12 meters including the drainage, shoulders and the carriage way of 10 meters. During this process the soil is mixed with water and later on compacted to achieve the desired results of 300 to 600mm thickness. Further this process does not involve formation of the cumber as it is the basic for feeder roads.

b) Sub-base layer

These Stage is not as different as the first one, this stage will involve the improvement of the first layer by adding extra gravel and mixing it with water until you achieve the desired thickness between 150mm to 300mm as per standard. It is during this stage of construction where cement will be applied to the soil every after 1m in all directions. The cement is later mixed with another layer of gravel and compacted firmly to stabilise the road, thereby creating another layer between 200mm to 250mm.

c) Bituminous layer

This stage will involve additional of 11mm Bituminous seal to the formed stabilised base; the binder course will be added. The binder course is made up of smaller aggregates, mixed with a bituminous binder. The binder course provides a smooth and stable surface for the road and helps to protect the base course from water damage.

d) Finally aggregates

The final step in the road construction process will be adding the surface course. The surface course is made up of smaller aggregates, mixed with a bituminous binder, and is the layer that comes in direct contact with the traffic. The surface course provides a smooth and durable driving surface, protecting the road from wear and tear. This layer of aggregates is usually 19mm in thickness to withstand the weight of vehicles on the road. The final layer is usually 7m of carriage way and 2.4m of lane for motorbikes and bicycles.

e) Drainage and Culverts

The project will have drainages and culverts along the area. Therefore, the project will develop the already existing culverts by improving them to the modern standards by constructing headwalls, wingwalls and aprons and upgrade some 600mm culverts to 900mm in certain areas. This will only apply to areas with high levels of water. Not only that 1200mm, 1500mm,1800mm and 2400mm Box culverts will installed on the four major bridges to fit the Morden culverts standards of trunk road. The drainage system of the project will be upgraded by construction of concrete drains in towns and residential areas, Mitre drains will be constructed in slopy areas to divert water away from the road. This is mostly done to prevent water from damaging the shoulders of the road.

f) Installation of 600mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts

comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm is casted on the they levelled ground and reinforced with con-force wire to increase the strength of the foundation. The culverts are then laid on the centre line in one direction and the culverts comprise of the 900mm headwalls reinforced with y-12 steel bars. The 1500mm wing walls are part of the structure, together with the 1200mm Aprons.

g) Installation 900mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm will be casted on the levelled ground and reinforced with a con-force wire to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the culverts comprise of the 1350 mm headwalls reinforced with y-12 steel bars. The 2250mm wing walls are part of the structure, together with the 1800mm Aprons.

h) Installation of 1200mm, 1500mm ,1800mm and 2400mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 200mm will be casted on the they levelled ground and reinforced with a con-force y-12 and y-10 steel bars to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the number will dependent on the length of the proposed structure, The length of the headwalls reinforced with y-12 and R8 steel bars is also dependant on the length of the structure that also encompasses wing walls and aprons. **Kindly note** that, the proposed project is a build and design, as some designs will be availed while the project has already commenced

i) Drainages

Drainages are an important aspect in road construction as they play a role in the life span of the road. The project will involve construction of various drainages in different sections of the road. The first 2.8 km will comprise of buffer drains will have a height of 600mm and base of 400mm. the other sections will have mightier drainages to divert water away of the roads, these will mostly be in sloping areas.

j) Toll gate Construction

The project will incorporate the construction of a toll gate which will go through all the major structure analysis check-up. The project will involve the levelling of the ground by applying gravel to stabilise the ground which will be compacted firmly, casting of concrete of thickness of 300mm, centreline of the points where the canopy will be installed, Installation of the canopy, and finally installing booths. The project area will also comprise constructing offices for officers who will be operating on the stated Subject. The offices will have an area of 5m x 6m. Not only that the project will be fenced since it will be occupying area of 60m x 40 m.

k) Boarder infrastructure

The project will consist of one stop boarder post , police post , Officers residential houses which include 15 two bedrooms and 10 three bedrooms , 100 trucks parking facility .The proposed structures will undergo the stages of construction which involve excavation of founders, casting of 200mm footing , Construction of foundation walls, casting of concrete slab of 200mm thickness, Construction of a super structure , installation of roof , installation of fittings and finally applications of finishes (plastering, painting). **Kindly Note that the** Project is build and design.

Sewerage

The project site is not serviced to any water and sanitation company, the company will construct an on-site septic tank. The design incorporates appropriate an environmental concern to prevent groundwater pollution in the area which is currently un-serviced.

Electricity

An overhead electrical reticulation system comprising armoured cables will be built to service toll gate and residential plots within the project site. Metering of the various unit electrical loads will be according to the plan per unit.

As such, all electrical infrastructures such as transformers, cables, etc., will be located or routed along the proposed service roads.

1.3 Objectives of the project

The main objective of the proposed project is to Construct, rehabilitate and upgrade the Katete-Chanida road to accommodate the increase in traffic of vehicles using the later mentioned road and construction of Toll gate and improvement of the Boarder infrastructure to a one stop Boarder post.

i. Increase in employment opportunities;

ii. Support to local businesses;

iii. Increase government revenue;

iv. Capacity building for the Locals within the area /foreign specialist interface;

v. To describe key project activities (aspects) that shall interact with the environment;

vi. To describe the existing immediate environment in terms of ecological characteristics, physical environment and socio-economic activities;

vii. To identify major environmental impacts and suggest measures to sustain/promote positive impacts as well as measures for mitigating negative impacts; and

viii. To highlight key environmental management costs expected throughout the project life cycle.

1.4 Brief description of the location

The proposed Project is located on along Katete-Chanida Road in different areas of Katete District and part of Chadiza District. The nearest landmarks to the site include, Katete Town Council which is located 20 metres to the southwest, Katete District Hospital located metres to the east, Katete Police Post which is located Adjacent to the project site on Southeast boundary from the project site. The nearest communities are Dole, Chimbundire, Kambila, kafumbwe, Mlolo which is located along the project site in the Northern Direction while Chanida Boarder in Chadiza district is north west direction. Katete CBD is located withing the project site while Chadiza CBD is about 28km from the project site:

Table 1: The GPS Coordinates of the Nearest landmarks near the project site are as follows:

No.	Town	Latitude	Longitude
1	Katete Town	14° 3'26.16"S	32° 2'49.40"E
2	Dole School	14° 9'3.78"S	32° 3'57.31"E
3	Chimbundire (St Johns Parish)	14°10'13.09"S	32° 5'41.52"E
4	Kambila Primary School	14°12'38.95"S	32° 8'38.04"E
5	Kafumbwe Secondary School	14°12'49.88"S	32°13'44.66"E
6	Mlolo	14°14'32.68"S	32°19'55.63"E
7	Chanida Border Area	14°17'56.63"S	32°20'49.63"E

1.5 Particulars of Shareholders/Directors

Lutembwe Consulting Company Limited is a Zambian registered company which was incorporated is registered under the company act. The name of the legal entity that will develop, manage and operate the project and hold all the approvals is Lutembwe Consulting Company Limited.

The details for the developer of the proposed project and particulars are as indicated in the table below;

Table 2: Directors and Shareholding

Shareholder	Nationality/ ID No.	Position	Percentage of shares
Yakub Yusuf Alloo	Zambian/ 840003/11/1	Director	25%
Essof Yakub Alloo	Zambian/ 332780/52/1	Director	75%
Total			**100%**

1.6 The developer's physical address and the contact person

Lutembwe Consulting Company Limited
Plot No.19/687
Mosque Road
Makeni.
Lusaka

Contact Person
Name: Musa Wanjowa
Position: Financial Controller
Mobile: +260 965112748
Email: musa@cfl.co.zm

1.7 Track Record/Previous Experience of Enterprise Elsewhere

The Company's core business is Construction and Consultancy. The company directors have been working in the construction industry for long period of time, and this development will bring opportunities in Katete and Chadiza Districts.

1.8 Project Cost Investment and Proposed Project Implementation Date

The project is scheduled to be implemented by the Third quarter of 2024. The total cost of the project is **US$79,785,115.0.**

1.9 Scope of Study

The Environmental and Social Impact study adheres to the requirements of the Environmental Impact Assessment (EIA) regulations of 1997. The EIA regulations demand that socio - economic and environmental impacts consequential to the operation of the project are assessed well in advance. Lutembwe Consulting Company Limited commissioned the development of an Environmental and Social Impact Assessment (ESIA) to assess the baseline, environmental trends and socio-economic data of the project area, identify significant environmental and socio-economic impacts of the project and propose possible mitigation measures. This study addresses positive as well as negative impacts and recommends measures for mitigating negative environmental effects.

1.9.1 Scope of Work

The full scope of work and core issues considered when conducting the EIA are as stated in the TORs for this assignment attached as Appendix 3 in the report.

1.9.2 Study Methods

a. Desk Study

The desk study was conducted to collect available data including project briefs, satellite imagery, relevant site reports, records and materials. A preliminary review of these datasets was done in order to set foundation for pre-planning phase.

b. Reconnaissance site visit

A reconnaissance site visit was undertaken to the project site to provide an idea on the local bio-physical and socio-economic conditions. Consultations were made with the stakeholders in the project area and Katete and Chadiza District.

c. Fieldwork Planning

The study team used the scoping data and additional information collected to plan a more detailed field assessment of the biophysical and socio-economic aspects, the project design and to facilitate a basis for elaboration of impacts and determine mitigation.

d. Stakeholder Consultation

Visits were conducted to relevant government and other institutions to collect information and undertake interviews. Public consultation and information disclosure activities were also conducted in the project area.

e. Field Data Collection

Necessary field studies were conducted, as supplements to previous studies and to fulfil special requirements of the TORs. The field studies, baseline descriptions and impact assessments were also conducted.

f. Data Analysis and Interpretation

Information on the ecological conditions of the site and surroundings was also obtained from published information and records. Records and information compiled from previous studies on soils, vegetation and terrain were accessed and existing maps were obtained. This valuable information was used to identify and map the bio-physical sensitivities and determine the mitigation measures on expected impacts. Findings and recommendations in reports of consultations previously held with local stakeholder communities and earlier surveys, have also given important input to this EIA study. Baseline and field data were analysed using standard methods as follows:

- A review of the current policy and regulatory framework was done. Relevant environmental legislation and regulations that would apply to this project were collected from relevant stakeholders and considered;
- A temporal analysis of baseline and field data on climate was applied to determine rainfall patterns, temperature regimes, humidity and sunshine levels;
- Due to non-availability of detailed studies on air quality, the portable Pylon air sampler was used to sample the air within the project area in order to determine the baseline status of the project site;
- Similarly, available national level geological and hydro geological studies and maps were assessed and correlated to the project site. The baseline data were supplemented with field survey data analysis on hydrology & hydrogeology with specific consideration to quality of surface and ground water;
- Topographic, land use, land cover and landscape data were assessed;
- Available baseline data on land tenure was considered and correlated with underlying poverty conditions;
- Due to non-availability of detailed studies on noise and vibration, a sound level meter was used to obtain the baseline noise levels of the project site;

- Field survey for archaeological and cultural environment, fauna and flora were also conducted; and
- Available baseline data on socio-cultural and economic setup was supplemented with field data collection.

g. Environmental Impact Statement Preparation

The EIA Team used the ZEMA guidelines in preparing the EIS report. The Environmental Impact Assessment process is an open process that involves interested and affected parties. The EIA itself is defined as a systematic investigation of conditions within the environment of the proposed development or project followed by an assessment of the impacts that the development or project will have on the environment in its totality i.e. physical, biological and socio economic aspects. The following are the stages that comprise the process:

1. Stage 1: Preliminary Actions
2. Stage 2: Scoping (or Identification of Potential Impacts)
3. Stage 3: Baseline Study
4. Stage 4: Impact Evaluation
5. Stage 5: Public participation in Environmental Impact Study
6. Stage 6: Identification of Mitigation Measures
7. Stage 7: Assessment (or Comparison of Alternatives)
8. Stage 8: Decision making by the Developer
9. Stage 9: Submission of the report to ZEMA
10. Stage 10: Decision Making by ZEMA

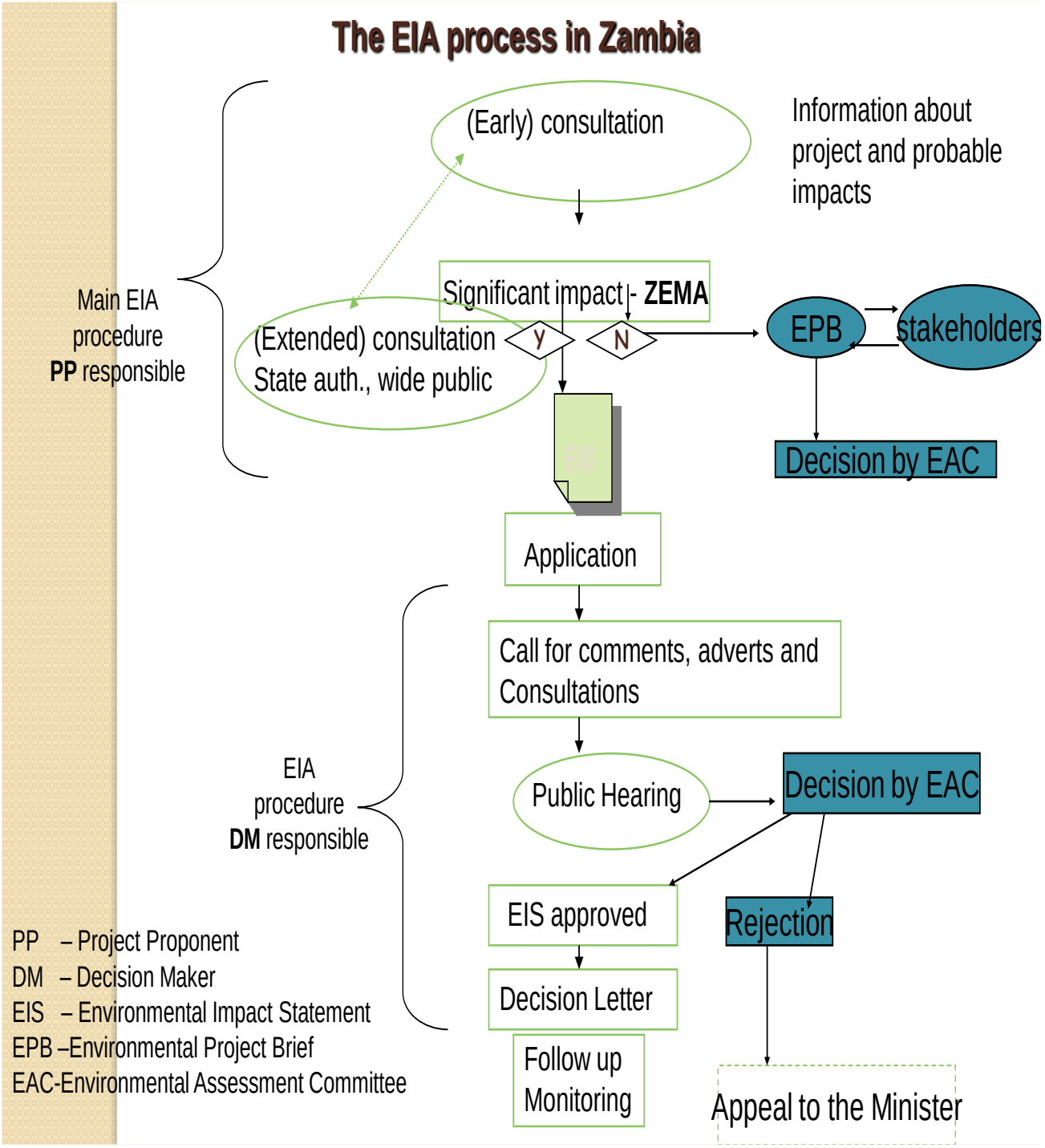


Figure 1: The EIA process in Zambia

2.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This section will cite all policy, legal and institutional framework relevant to the project.

A number of local and international environmental management and protection Acts and relevant to the implementation of the road upgrade, rehabilitation and construction of associated border infrastructure, toll gate and weighbridge project will be reviewed before project implementation. The preliminary work done thus far indicates that the following Acts and Regulations are relevant to the project:

The core pieces of legislation and associated regulations governing environmental management of construction activities and environmental protection are the Environmental Management Act (EMA) of 2011 and National Council for Construction Act No. 10 of 2020.

The EMA renamed the established Environmental Council of Zambia (ECZ) to Zambia Environmental Management Agency (ZEMA). It is responsible for enforcing environmental regulations and coordinating of government agencies involved in environmental management in their sectors.

The National Council for Construction Act and, Occupation Health and Safety Act addresses the environmental, health and safety aspects of Construction activities in Zambia. The body mandated with monitoring and enforcing compliance with environmental regulations is the (MSD) of the Ministry of Mines. MSD regulates environmental protection and pollution control in the areas where prospecting, road construction operations are being conducted.

2.1 Environmental Policy Framework

Zambia launched its National Policy on Environment in 2007. The environmental policy document identifies deforestation, land degradation, wildlife depletion, soil erosion, loss of land productivity, inadequate sanitation and air and water pollution as the main environmental challenges the country is facing.

According to the Ministry responsible for the Environment, the main purpose of the National Policy on Environment is to “create a comprehensive framework for effective natural resource utilization and environmental conservation which will be sensitive to the demands of sustainable development. The Policy calls upon all institutions, Non-Governmental Organizations (NGOs), and community based or people’s organizations whose activities affect the environment in any way to carry out their activities judiciously in order to maintain the productivity and integrity of the environment.

The Policy recognizes the need for ESIA studies in all development projects in order to eliminate or mitigate adverse environmental impacts and enhance the benefits of the projects. The National Policy on Environment states that "EIAs will be required as deemed necessary to ensure that public and private sector development options are environmentally sound and sustainable and that any environmental consequences are recognized early and taken into account during project design and implementation.

2.1.1 Regulatory Framework

The core pieces of legislation and associated regulations governing Environmental Management Environmental Protection are the Environmental Management Act (EMA) of 2011 and The Fisheries Act No. 22 of 2011. The EMA renamed the established Environmental Council of Zambia (ECZ) to Zambia Environmental Management Agency (ZEMA). It is responsible for enforcing environmental regulations and coordinating government agencies involved in environmental management in their sectors. The EMA through Statutory Instruments (SIs) also sets environmental quality standards and makes the developer responsible for meeting them. Thus, under the EMA, all effluents and emissions from Construction operations are regulated through a system of permits, licences and fines.

2.1.2 The Environmental Management (Amendment) Act No. 8 of 2023 as read together with the EMA No. 12 of 2011.

The Environmental Management Act is currently the Principal Act on environmental governance and regulation in Zambia that was passed in April 2011 to replace and repeal the Environmental Protection and Pollution Control Act (EPPCA) of 1990. Section 29 of this Act provides that a developer shall not implement a project for which an ESIA is required. Since an ESIA is required for this project, the following ESIA Statutory Instruments (SIs) and Regulations (Table 1) of the EMA will govern this particular project.

Table 3: The Acts and Regulations reviewed

ACTS/ REGULATIONS	DESCRIPTION OF THE ACT/REGULATIONS	RELEVANCE TO THE PROJECT	COMPLIANCE
The Environmental Management Act (EMA) No. 12 of 2011	The primary environmental legislation in Zambia is the "Environmental Management Act, 2011". The Environmental Management Act (EMA) No. 12 of 2011 repeals and replaces the Environmental Protection and Pollution Control Act (EPPCA) No. 12 of 1990 as well as renaming the Environmental Council of Zambia (ECZ) as the Zambia Environmental Management Agency (ZEMA).	In Part III, Section 29(1), the Environmental Management Act prohibits developers to implement projects that have an impact on the environment, without approval by ZEMA. In Section 30, the Act also requires a project developer to conduct an Environmental Impact Assessment and prepare and submit an Environmental Project Brief (EPB) report or an EIS to ZEMA prior to any development activities.	Lutembwe Consulting Company Limited will ensure that all activities are performed in accordance with all Zambian environmental regulations. Lutembwe Consulting Company Limited has prepared and submitted this report to ZEMA for approval before the commencement of project activities.
The Environmental Impact Assessment (EIA) Regulations, SI 28 of 1997	The Environmental Impact Assessment (EIA) Regulations, Statutory Instrument (SI) 28 of 1997, demands that before a developer commences implementing a project, an EIA report must be prepared and submitted to the relevant regulatory authority for review and approval.	According to the EIA regulations, an Impact Statement is required for all projects listed in the Second Schedule to the Regulations, including Road rehabilitation.	Lutembwe Consulting Company Limited will ensure that all activities are performed in accordance with all Zambian environmental regulations. Lutembwe Consulting Company Limited has prepared and submitted this report to ZEMA for approval before the commencement of project activities.
Environmental Management (Licensing)	There are several parts in this SI giving powers to ZEMA to control the discharge of water pollutants, air emissions, pesticides and other toxic substances, waste (both	Part II of the Regulations: This part gives powers to ZEMA to regulate discharge of water pollutants and emission of air	Lutembwe Consulting Company Limited will adhere to these provisions during its operation phase

Regulations, SI No. 112 of 2013	municipal and hazardous) and ozone depleting substances in order to safeguard the general health, safety or welfare of person, animal life and plant life. Parts II and III are relevant to this project.	pollutants. The clearing of land for access roads, as well as the loading and offloading of raw materials during the implementation of this project may generate dust that will need to be managed in compliance with the above regulations. **Part III** of the Regulations: This part of the SI regulates the reclamation, reuse, recovery, recycling, transportation, export, collection and disposal of waste from industrial, commercial, domestic or community activities. ZEMA regulates these activities through licensing of handlers of waste and operators of disposal sites.	
The Land and Land Acquisition Act of 1995	The Department of Lands administers the Lands Act for alienation of land under statutory Leaseholds. The Land Act of 1995 Divides Land into three categories namely; State, Local Authority and Traditional land. The Act provides for an efficient and effective land administration system that promotes security of tenure, equitable access and control of land for	Section 3 (1) of the Lands Act stipulates that all land in the country is vested in the President and. However, Section 3 (2) in subjection to Section 3 (4) highlights the procedures to which the president may delineate land to a Zambian whereas Section 3 (3) highlights the procedures to which the president may delineate land to a	The proposed project site falls under State land. The provisions of the Act shall be adhered to and followed in obtaining Title under the relevant tenure category.

	sustainable socio- economic development of the people of Zambia.	non-Zambian. Section 4 of the Act provides the conditions on the alienation of land to which the president may delineate land. The regulations are relevant because the project proponent will eventually have to obtain Title to the proposed site and ownership will be in private hands which is only possible under this regulation.	
The Urban and Regional Planning Act No. 3 of 2015	Provides for development, planning and administration principles, standards and requirements for urban and regional planning processes and systems; provide for a framework for administering and 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.	The proposed project falls within the jurisdiction of Katete Town Council and all planning and land use development activities are regulated by this Council. The Council is constantly engaged in development activities and Lutembwe Consulting Company Limited shall continue with this relationship as a way of ensuring that activities are compliant with the Act	Lutembwe Consulting Company Limited will comply with the provision of the Act by obtaining a 'no objection' from Katete Town Council before implementation of the project
National Council for Construction Act No. 10 of 2020	An Act to provide for the promotion, development and regulation of the construction industry so as to promote economic growth and competitiveness and create sustainable employment; continue	There will be construction works taking place on site which should be done in accordance to this Act and in conjunction with the	All contractors engaged on site will be registered with the National Council for Construction.

	the existence of the National Council for Construction and provide for its functions; enhance contractor capacity development and technical compliance in the construction industry; collaborate with professional bodies engaged in activities in the construction industry; continue the existence of the Construction School and rename it as the National Construction School; provide for a complaints and appeals procedure; repeal the National Council for Construction Act, 2003; and provide for matters connected with, or incidental to, the foregoing	National Council for Construction.	
The Water Resources Management Act, No. 21 of 2011	Provides for the main functions and powers of managing and protecting water resources in line with environmental sustainability.	**Part VI, section 53:** sinking, deepening or altering boreholes in water shortage areas restricted **Part VI section 54:** Maximum volume and rate of abstraction in water shortage areas **Section 9, 54 and 71**: requires that any who wants to use water other than for domestic use or that specified under section sixty should obtain permits.	Lutembwe Consulting Company Limited will adhere to these provisions during its operation phase when it will need water from boreholes and during the sinking of the boreholes.
The Forest Act No. 4 of 2015	Provides for the establishment and management of National and Local forests, conservation and protection of forests and trees, and licensing and sale of forest products. Some of the trees that are protected under this Act include: *Parinari curatellifolia, Anisophyllea*	The construction of facilities, will entail the clearing of existing vegetation. This impact, however, is minimal, in view of the fact that the area has been used for grazing of animals	Lutembwe Consulting Company Limited will not allow unnecessary cutting down of trees for upholding sustainable environmental practices and in compliance with the provisions of this legislation. If rare flora specified

	boehmii, Pterocarpus angolensis, Faurea saligna and *Julbernardia paniculata.*	**Part II, section 4-12**: felling conditions of trees' **Section 68:** export some of the valuable timber **Section 68 (4):** restrictions on the use of certain trees species	in the Act is identified within the area, this will be conserved and protected.
The Energy Regulation Act No.12, 2019	An Act provides for the licensing of enterprises in the energy sector; continue the existence of the Energy Regulation Board (ERB) and re-define its functions; reconstitute and revise the functions of the board; repeal and replace the Energy Regulation Act of 1995	Lutembwe Consulting Company Limited will use energy for various purposes on the land and therefore this Act will be very relevant	During project implementation, fuels such as petrol and diesel will be used. Lutembwe Consulting Company Limited will ensure that such fuels are stored and used in accordance with the provisions of these regulations so as to protect human health and the Environment
Local Government Act, No. 2 of 2019	An Act to provide for an integrated local government system; give effect to the decentralisation of functions, responsibilities and services at all levels of local government; ensure democratic participation in, and control of, decision making by the people at the local level; revise the functions of local authorities; provide for the review of tariffs, charges and fees within the area of a local authority; provide for the proceedings of the council and committees; provide for the role of traditional leadership in democratic governance.	The Second Schedule, Section 61 of the Act highlights the functions of the local councils, which include: conservation of natural resources, maintaining, protecting and control of local forests and - Woodside, and - establishing and maintaining environmental health services	Lutembwe Consulting Company Limited will work with the local planning authorities in advancing development and will recognize and comply with environmental specifications with insofar as this project is concerned.

The National Heritage Conservation Act (CAP 173)	The Act provides for the conservation of ancient, cultural and natural heritage, relics and objects of aesthetic, historical, pre – historical, archaeological or scientific interest.	In Part V Section 33, the Act requires that no person shall, without the written consent of the Commission "alter, remove, destroy, damage, excavate or export as the case may be, from Zambia, any ancient heritage or relic or part of it; or disfigure, destroy, remove, alter or damage any national monument, memorial tablet, plaque, seal or sign erected or affixed by the Commission	Lutembwe Consulting Company Limited will immediately inform the NHCC if any artefact were found during site preparation or pond excavation.
The Public Health Act 1996	The Act was passed in 1930 with several amendments along the way, particularly in this case 1996. The Act empowers a Council to prevent unhealthy activities and for disease prevention in relation to drainages, pit latrines and disposal of sewerage.	The proposed site, being stand-alone, shall have its own drain and sewer system	Lutembwe Consulting Company Limited shall comply with the provisions of the Act in order to safeguard human life by ensuring that measures to prevent diseases and pollution harmful to human health are taken into account.
The Public Health (infected Areas) Coronavirus Disease) Regulations, 2020, Statutory Instruments 21 and 22	Statutory Instrument 21 of 2020 designates COVID-19 as a notable disease and Statutory Instrument 22 provides additional management and control of COVID 19. These S.I provides for mandatory Screening and quarantine of travellers and international travellers, restriction of foreign travels, hygiene practices to be conducted at workplaces, public and schools, self-quarantine of	These two Statutory Instruments are important to the proposed project both at construction and operation phase due to the employees working on the project site and during the running of the proposed project.	The developer will adhere to the two S.I and ensure all its employees and customers comply.

	travellers coming in the country, social distancing and mandatory wearing of facemasks		
Roads and Road Traffic Act No. 2 of 2011	The Roads and Traffic Control Act, provides for the control of traffic, and for the regulation of storm water disposal structures	The site will have a considerable amount of traffic flowing into and out of the premises	All signs and directions to control traffic movement and ensure a safe environment will be put in place
Zambia Development Agency (Amendment) Act 17 of 2013	This is an Act to foster economic growth and development by promoting trade and investment in Zambia through an efficient, effective and coordinated private sector led economic development strategy; to establish the Zambia Development Agency as a one stop facility which will ensure, among other matters, client focus, dialogue with the private sector and create confidence in public sector support for business; to provide for the functions and powers of the Agency; to attract and facilitate inward and after care investment; to provide and facilitate support to micro and small business enterprises;	The developer has to apply for an investor's license from the Zambia Development Agency (ZDA) as provided for in section 68 of the Act.	The developer will get a license from ZDA and will be required to comply all conditions therein.
The Chief's Act No. 13 of 1994	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 Kapasoso;	Chapter 283 of the Act provides for the control, use and change of land use, zones and reservations for various purposes e.g., sitting of work sites. It also provides for the compensation of those	The project proponent shall ensure that all procedure in terms of obtaining permission for subdivision of land and development permits is followed and adhered to.

	and for matters incidental to or connected with the foregoing.	`affected by planning decisions and regulated development sub divisions.	
The Employment Code Act No. 3, 2019	An Act to regulate the employment of persons; prohibit discrimination at an undertaking; constitute the Skills and Labour Advisory Committees and provide for their functions; provide for the engagement of persons on contracts of employment and provide for the form and enforcement of the contracts of employment; provide for employment entitlements and other benefits; provide for the protection of wages of employees; provide for the registration of employment agencies; regulate the employment of children and young persons; provide for the welfare of employees at an undertaking; provide for employment policies, procedures and codes in an undertaking; repeal and replace the Employment Act,1965, the Employment (Special Provisions) Act,1966, the Employment of Young Persons and Children Act, 1933 and the Minimum Wages and Conditions of Employment Act, 1982; and provide for matters connected with, or incidental to, the foregoing.	The construction and operation phases of the project will involve the employment of skilled and unskilled manpower. These will include labourers, surveyors, engineers, drivers, office managers, etc	Lutembwe Consulting Company Limited will ensure that individuals employed at the project are of legal employment age, and are provided with conditions of service that meet or exceed the minimum conditions of service. Employees will not be subjected to exploitation and abuse of their rights through casualization
The Occupational Health and Safety Act, No. 36 of 2010	This Act is promulgated to provide for the health, safety and welfare of persons at work; provide for the duties of	Section 11 of Part III requires that an employer of ten or more persons at any workplace	Lutembwe Consulting Company Limited will ensure that all the workers are provided with adequate and

	manufacturers, importers and suppliers of articles, devices, items and substances for use at work; provide for the protection of persons, other than persons at work, against risks to health or safety arising from, or in connection with, the activities of persons at work.	establishes a health and safety committee. The operation of the project might raise the risks of occupational health hazards as a result of the use and operation of machinery and tools and the handling of fertilizers and chemicals. The generation of dust from clearing activities is another occupational health risk that will be generated by the project.	appropriate personal protective equipment. Lutembwe Consulting Company Limited will also provide information, instruction, training and supervision to ensure the health and safety of the employees at their workplace.
The Factories Act, 1999	The Act regulates the conditions of employment in factories and other places of work as regards the safety, health and welfare of persons employed therein. The Act also provides for the examination and inspection of certain plant and machinery in order to ensure safety.	All places of work as defined under this act will be deemed a 'factory' where safety, health and general welfare of employees will be required to be upheld	To ensure that the occupational health and safety of employees is upheld during the construction and operational periods, all employees will be trained in health and safety protocols.

2.2 Institutional Framework

This section shows the most important institutions in terms of Environmental Management of natural resources in the country and institutions which might interact with the project implementation.

Table 4: Institution important in terms of Environmental Management of Natural Resources

INSTITUTION	DESCRIPTION
Zambia Environmental Management Agency	The Zambia Environmental Management Agency (ZEMA) is a statutory body created by an act of parliament and falls under the Ministry of Green Economy and Environment. The ZEMA is responsible for the enforcement of the EMA on pollution control, natural resources management and solid waste management which includes establishment of the landfill sites.
Road Development Agency	The RDA was established under the Public Roads Act No. 12 of 2002. The Agency became operational in 2006 and its mandate as provided for by the Act is to provide for the care, maintenance and construction of public roads in Zambia; to regulate maximum weights permissible for transmission on roads among other things
National Council for Construction	The National Council for Construction (NCC) is a government organisation which regulates, streamlines and builds capacity in the construction industry. It is a requirement that all projects must be registered with the National Council for Construction before commencement of works.
National Heritage Conservation Commission	The national heritage conservation commission is responsible for the identification and conservation of sites of cultural and historical interest. The commission is also responsible for the enforcement of the national heritage conservation Act.
Ministry of Green Economy and Environment.	The Ministry of Green Economy and Environment is responsible for policy formulation on matters pertaining to Land natural resources management and the environment. It is responsible for development of policy on environment covering issues such as solid waste management and landfill site. The ministry is also responsible for coordinating and monitoring the other ministries that play a role in the effective conservation and management of the environment.

Water Resources Management Authority (WARMA)	The Water Resources Management Authority (WARMA) was established by the Water Resources Management Act to ensure the management, development, conservation, protection and preservation of the water resource and its ecosystems as well as equitable and sustainable utilisation of the water resource. Permits will thus need to be sought from WARMA and the company will abide by any condition, limitation, restriction or prohibition that WARMA may impose for the sustainable utilisation of the water in the rivers.
Katete And Chadiza Town Council	Katete and Chadiza Town Council is recognised under the Urban and Regional Planning Act, in consultation with the Provincial Planning Authority as a planning authority whose main responsibilities are the preparation, approval and revocation of development plans. Lutembwe Consulting Company Limitedrecognises that the company operates in the jurisdiction of the local authority and will observe the by-laws and regulations set up by the local authorities. Planning and building permission will need to be sought from the local authority.

2.3 International Environmental Conventions to which Zambia is a Signatory

Zambia is a signatory and a ratified party to a number of international conventions. Though most of these agreements are non-committal, they are very vital in ensuring that individual countries operate while conscious of the locally but think globally. These agreements are meant to encourage countries to operate on agreed principles to enhance environmental, social and economic development.

Table 5: The international conventions

Convention	Description	Relevance to the Project
United Nations Framework Convention on Climate Change Ratified 1997 UNFCCC	Article 3 provdives for aiming at stabilizing greenhouse gas (GHGs) concentration in the atmosphere at the level that would prevent 'dangerous interference with climate'. It urges countries to take steps in reducing the GHGs.	There will be not much emission of GHGs from this project except CO_2 from fossil fuel consumption. Lutembwe Consulting Company Limited will endeavour to use best technology and practices to reduce emissions of GHGs.
UN Conversion on Biological Diversity (1992)	Article 3 provides for the promotion and conservation of biological diversity and sustainable use of its components.	Lutembwe Consulting Company Limited will continue to implement measures that encourage the conservation and protection of biodiversity.
Rio Declaration on Environment and development.	Principle 2 states that with the charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environment and developmental policies, and responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment. It established important principles for sustainable development	This declaration is important in that it involves the use of natural resources in a sustainable way to ensure that future generation also benefit. Lutembwe Consulting Company Limited will implement the project in line with this declaration. It will incorporate sustainability principles in all in all its operation.
CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora Ratified: 1975	Article II aims at the protecting endangered species prominent in international trade through appropriate trade control measures and monitoring the status of such species.	Lutembwe Consulting Company Limited will continue to adhere to the provisions of this convention as the project area has a number of fauna and flora species.

UNCCD Convention on Desertification	Article 2 of the states that the convention is meant to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effectiveaction at all levels, supported by international cooperation and partnership arrangements.	This Convention has no bearing on Lutembwe Consulting Company Limited as the project site is not prone to serious drought/desertification.
Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ratified: 1975	Article 2 of the convention aims at protecting wetlands through sustainable utilisation of them. It addresses one of the most important issues in Southern Africa, namely the conservation of the countries water supplies, for both the use of the natural resources.	The project will have impacts on Wetlands which provide a range of services, functions, and products that have direct social, economic and cultural value and are vital to the survival and well- being of communities. These systems have indispensable ecological value, being repositories of biodiversity and providing essential life support for a range of plant and animal species. The conservation and wise use of all wetlands is therefore in the national interest. Lutembwe Consulting Company Limited will take into account the provisions and principles of this instrument when implementing the project.
Montreal Protocol Protocol for the Protection of the Ozone Layer Ratified: 1990	Article 2 of the protocol is aimed at ensuring measures to protect the ozone layer	Lutembwe Consulting Company Limited needs to ensure its compliance by excluding all products and equipment making use of CFCs. Lutembwe Consulting Company Limited will not use anything that will contribute to ozone layer depletion
African Convention on the Conservation of Nature and Natural	Article III encourages individual and joint action for the conservation, utilization and development of soil, water, flora and fauna for the present and future welfare of	Lutembwe Consulting Company Limited will ensure the conservation of important habitats as well as habitat corridors to promote biological diversity. The EMP deals with these aspects of ensuring habitat

Resources (Algiers, 1968), (Maputo, 2003)	mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.	diversity and sustainable utilisation of natural resources.
Basel Convention Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Ratified: 1994	Article 4 Aims at the reduction of the production of hazardous waste and the restriction of transboundary movement transboundary movement and disposal of hazardous waste.	No direct impact on Lutembwe Consulting Company Limited road construction project as the company will not be transporting any of its waste across any international boundaries.

3.0 PROJECT DESCRIPTION

The company intends to Construct, rehabilitate and upgrade the Katete-Chanida road to accommodate the increase in traffic of vehicles using the later mentioned road. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Years.

3.1 Project Location

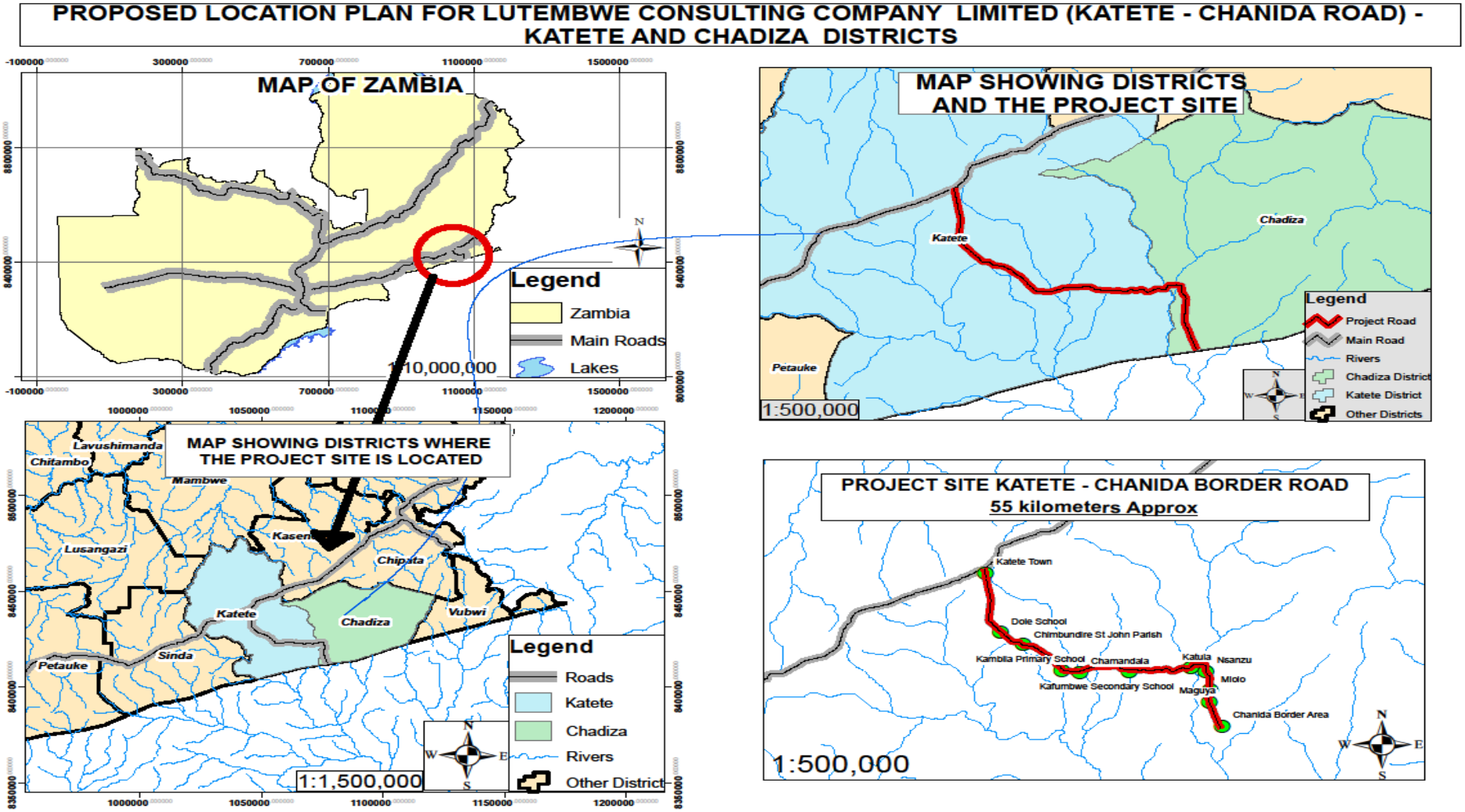
The proposed Project is located on along Katete-Chanida Road in different areas of Katete District and part of Chadiza District. The nearest landmarks to the site include, Katete Town Council which is located 20 metres to the southwest, Katete District Hospital located metres to the east, Katete Police Post which is located Adjacent to the project site on Southeast boundary from the project site. The nearest communities are Dole, Chimbundire, Kambila, kafumbwe, Mlolo which is located along the project site in the Northern Direction while Chanida Boarder in Chadiza district is north west direction. Katete CBD is located withing the project site while Chadiza CBD is about 28km from the project site.

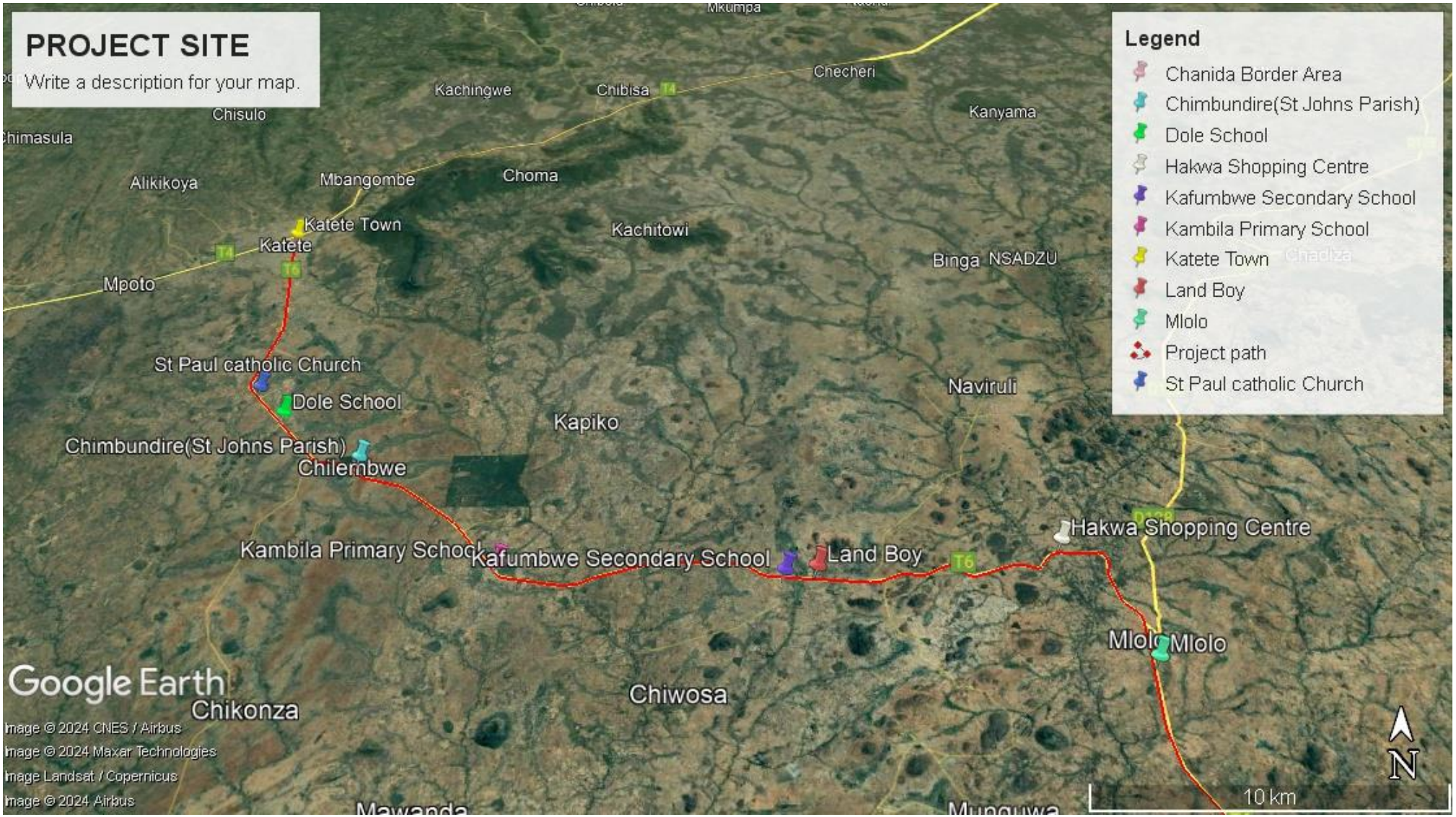
Table 6: The GPS Coordinates of the Nearest landmarks near the project site are as follows:

No.	Town	Latitude	Longitude
1	Katete Town	14° 3'26.16"S	32° 2'49.40"E
2	Dole School	14° 9'3.78"S	32° 3'57.31"E
3	Chimbundire (St Johns Parish)	14°10'13.09"S	32° 5'41.52"E
4	Kambila Primary School	14°12'38.95"S	32° 8'38.04"E
5	Kafumbwe Secondary School	14°12'49.88"S	32°13'44.66"E
6	Mlolo	14°14'32.68"S	32°19'55.63"E
7	Chanida Border Area	14°17'56.63"S	32°20'49.63"E

Figure 2: Part of the project site from Katete part

Figure 3: Location maps of the site




PROJECT SITE
Write a description for your map.
Legend
Chanida Border Area
Chimbundire(St Johns Parish)
Dole School
Hakwa Shopping Centre
Kafumbwe Secondary School
Kambila Primary School
Katete Town
Land Boy
Mlolo
Project path
St Paul catholic Church
Mkumpa
Checheri
Kachingwe
Chibisa
Kanyama
Chisulo
Chimasula
Alikikoya
Mbangombe
Choma
Katete Town
Katete
Kachitowi
Binga
NSADZU
Mpoto
St Paul catholic Church
Dole School
Naviruli
Kapiko
Chimbundire(St Johns Parish)
Chilembwe
Hakwa Shopping Centre
Kambila Primary School
Kafumbwe Secondary School
Land Boy
Mlolo
Mlolo
Google Earth
Chikonza
Chiwosa
Image © 2024 CNES / Airbus
Image © 2024 Maxar Technologies
Image Landsat / Copernicus
Image © 2024 Airbus
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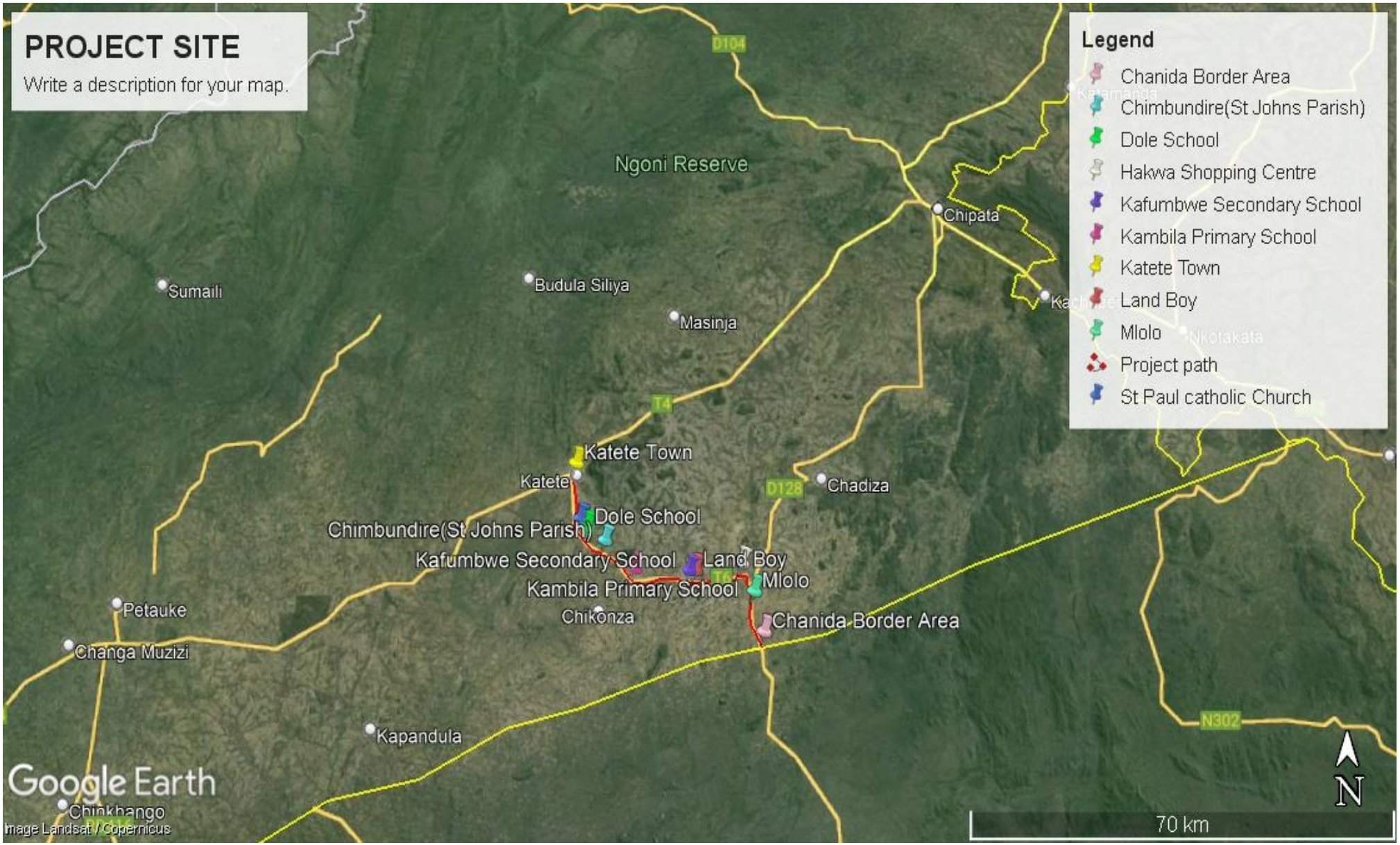
10 km


PROJECT SITE
Write a description for your map.
Legend
Chanida Border Area
Chimbundire(St Johns Parish)
Dole School
Hakwa Shopping Centre
Kafumbwe Secondary School
Kambila Primary School
Katete Town
Land Boy
Mlolo
Project path
St Paul catholic Church
Ngoni Reserve
D104
Chipata
Sumaili
Budula Siliya
Masinja
T4
Katete Town
Katete
D128
Chadiza
Dole School
Chimbundire(St Johns Parish)
Kafumbwe Secondary School
Land Boy
Mlolo
T6
Kambila Primary School
Chikonza
Chanida Border Area
Petauke
Changa Muzizi
Kapandula
N302
Chinkhango
Google Earth
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N
70 km

3.2 Nature of the Project

The company intends to Construct, rehabilitate and upgrade the Katete-Chanida road in Katete and Chadiza Districts. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Years.

Upon completion of the road, developer will continue with the routine maintenance of the project for the period of 23 years before handing over to the government. The other project will involve the following activities to be carried out by the developer;

- The construction of a 2 Km dual carriageway with median of 1.5 minimum within the Chanida border area with new border facilities such as Police post, Houses, Border Post;
- Improving, rehabilitation/maintenance of the drainage capacity of the existing culvert;
- Hot-mix asphalt paving for the whole 55Km;
- Construction of new concrete lined drains;
- Construction of pedestrian walkways;
- Bus bays and truck laybys;
- Double seal Surface treatment for first 10km works and reconstructed shoulders for the entire road;
- Graded crushed stone base course to the first 2.8Km;
- Earthworks and pavement layer works for reconstruction scope;
- Installation of Ø 900mm and Ø 600mm culvert pipes;
- Furnishing and placing of deformed high yield steel reinforcement to culvert end structures;
- Provision of solar street lighting for major settlements along the 55km stretch;
- Road line marking and installation of permanent signage

Road Construction

Infrastructure for roads is outlined here at feasibility stage of the project. The provision of infrastructure will be phased with the development.

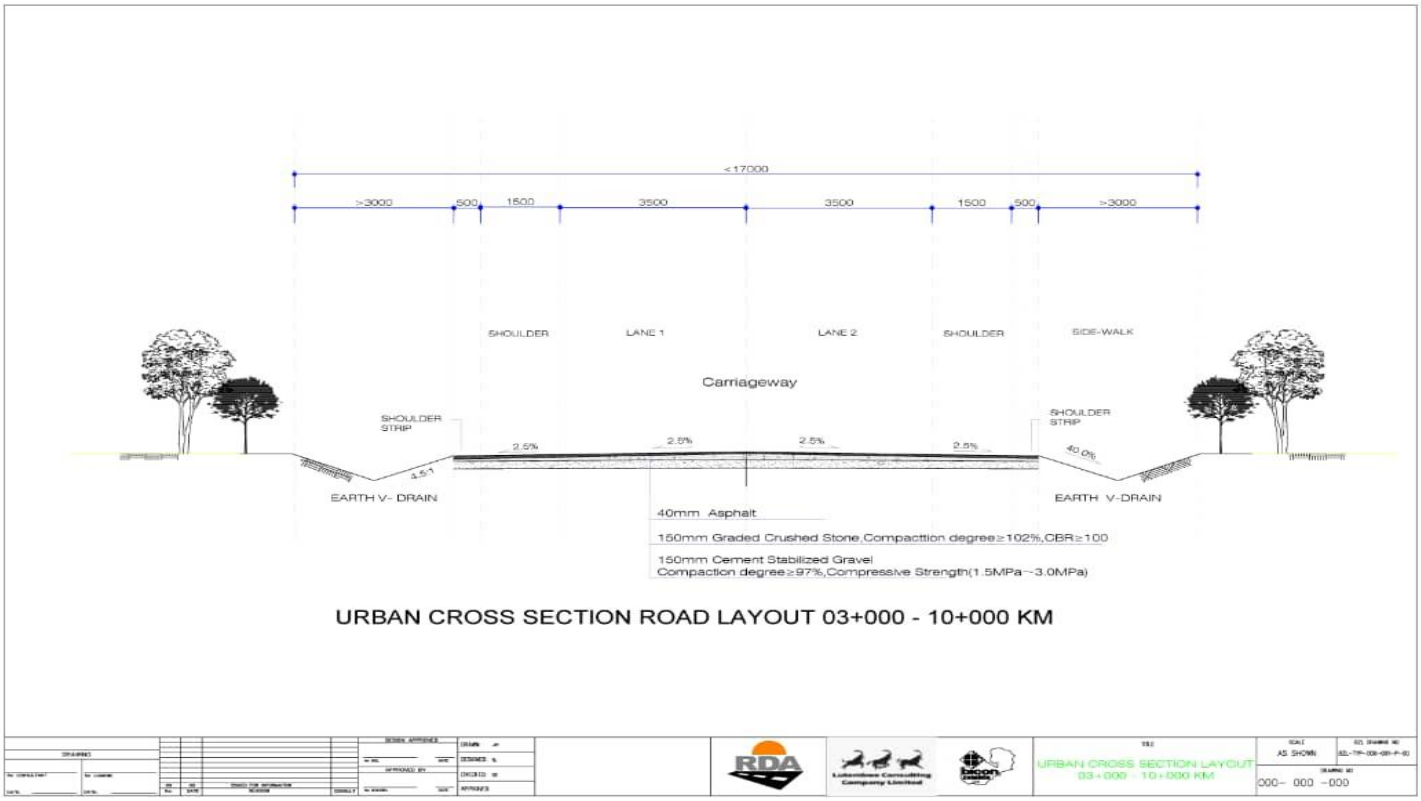

Figure 4: Urban cross section road layout 03+000 - 10 + 0000 KM

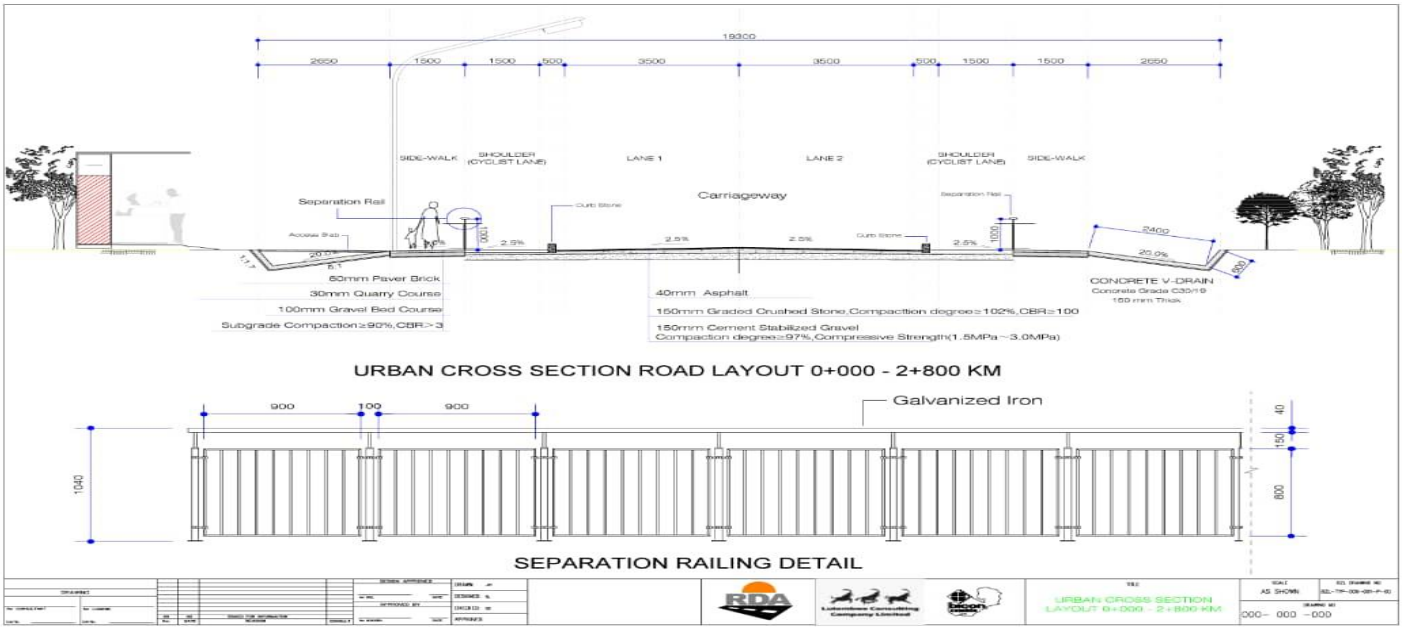

Figure 5: Separation Railing Detail

The project site has no proper road network system and sanitation infrastructure. Therefore, the project will develop a proper road network system through all the stages of construction by following the basic stages such as:

a) Formation or Sub-grade of the road

This will involve the removal of the existing soil by leaving the ground levelled before putting up gravel on the road. Through this process the road is widened to the required size. This is mostly 12 meters including the drainage, shoulders and the carriage way of 10 meters. During this process the soil is mixed with water and later on compacted to achieve the desired results of 300 to 600mm thickness. Further this process does not involve formation of the cumber as it is the basic for feeder roads.

b) Sub-base layer

These Stage is not as different as the first one, this stage will involve the improvement of the first layer by adding extra gravel and mixing it with water until you achieve the desired thickness between 150mm to 300mm as per standard. It is during this stage of construction where cement will be applied to the soil every after 1m in all directions. The cement is later mixed with another layer of gravel and compacted firmly to stabilise the road, thereby creating another layer between 200mm to 250mm.

c) Bituminous layer

This stage will involve additional of 11mm Bituminous seal to the formed stabilised base; the binder course will be added. The binder course is made up of smaller aggregates, mixed with a bituminous binder. The binder course provides a smooth and stable surface for the road and helps to protect the base course from water damage.

d) Finally aggregates

The final step in the road construction process will be adding the surface course. The surface course is made up of smaller aggregates, mixed with a bituminous binder, and is the layer that comes in direct contact with the traffic. The surface course provides a smooth and durable driving surface, protecting the road from wear and tear. This layer of aggregates is usually 19mm in thickness to withstand the weight of vehicles on the road. The final layer is usually 7m of carriage way and 2.4m of lane for motorbikes and bicycles.

e) Drainage and Culverts

The project will have drainages and culverts along the area. Therefore, the project will develop the already existing culverts by improving them to the modern standards by constructing headwalls, wingwalls and aprons and upgrade some 600mm culverts to 900mm in certain areas. This will only apply to areas with high levels of water. Not only that 1200mm, 1500mm,1800mm and 2400mm Box culverts will installed on the four major bridges to fit the Morden culverts standards of trunk road. The drainage system of the project

will be upgraded by construction of concrete drains in towns and residential areas, Mitre drains will be constructed in slopy areas to divert water away from the road. This is mostly done to prevent water from damaging the shoulders of the road.

f) Installation of 600mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm is casted on the they levelled ground and reinforced with con-force wire to increase the strength of the foundation. The culverts are then laid on the centre line in one direction and the culverts comprise of the 900mm headwalls reinforced with y-12 steel bars. The 1500mm wing walls are part of the structure, together with the 1200mm Aprons.

g) Installation 900mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 100mm will be casted on the levelled ground and reinforced with a con-force wire to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the culverts comprise of the 1350 mm headwalls reinforced with y-12 steel bars. The 2250mm wing walls are part of the structure, together with the 1800mm Aprons.

h) Installation of 1200mm, 1500mm ,1800mm and 2400mm culverts

These are part of the drainage system in road construction which comprise of headwalls, Aprons and wings walls. The installation of these culverts comprises of levelling the ground to achieve the desired levels with a slightly slope. Then concrete of 200mm will be casted on the they levelled ground and reinforced with a con-force y-12 and y-10 steel bars to increase the strength of the foundation. The culverts will then be laid on the centre line in one direction and the number will dependent on the length of the proposed structure, The length of the headwalls reinforced with y-12 and R8 steel bars is also dependant on the length of the structure that also encompasses wing walls and aprons. **Kindly note** that, the proposed project is a build and design, as some designs will be availed while the project has already commenced

i) Drainages

Drainages are an important aspect in road construction as they play a role in the life span of the road. The project will involve construction of various

drainages in different sections of the road. The first 2.8 km will comprise of buffer drains will have a height of 600mm and base of 400mm. the other sections will have mightier drainages to divert water away of the roads, these will mostly be in sloping areas.

j) Toll gate Construction

The project will incorporate the construction of a toll gate which will go through all the major structure analysis check-up. The project will involve the levelling of the ground by applying gravel to stabilise the ground which will be compacted firmly, casting of concrete of thickness of 300mm, centreline of the points where the canopy will be installed, Installation of the canopy, and finally installing booths. The project area will also comprise constructing offices for officers who will be operating on the stated Subject. The offices will have an area of 5m x 6m. Not only that the project will be fenced since it will be occupying area of 60m x 40 m.

k) Boarder infrastructure

The project will consist of one stop boarder post , police post , Officers residential houses which include 15 two bedrooms and 10 three bedrooms , 100 trucks parking facility .The proposed structures will undergo the stages of construction which involve excavation of founders, casting of 200mm footing , Construction of foundation walls, casting of concrete slab of 200mm thickness, Construction of a super structure , installation of roof , installation of fittings and finally applications of finishes (plastering, painting). **Kindly Note that the** Project is build and design.

Sewerage

The project site is not serviced by any water and sanitation company, the company will construct an on-site septic tank. The design incorporates appropriate an environmental concern to prevent groundwater pollution in the area which is currently un-serviced.

Electricity

An overhead electrical reticulation system comprising armoured cables will be built to service toll gate and residential plots within the project site. Metering of the various unit electrical loads will be according to the plan per unit.

As such, all electrical infrastructures such as transformers, cables, etc., will be located or routed along the proposed service roads.

Water Supply

When will be required for construction purposes, domestic use and dust suppression. The potential sources of water are sinking boreholes at strategic locations and obtaining from local streams within the proximity of the project.

3.2.8 Raw materials, Equipment and Machinery

The project will utilise but not limited to:

a) Earthmoving Equipment

- Excavators
- Bulldozers
- Graders
- Loaders
- Scrapers
- Trenchers

b) Paving Equipment

- Asphalt pavers
- Concrete pavers
- Rollers

c) Compaction Equipment

- Vibratory compactors

d) Material Handling Equipment

- Dump trucks
- Conveyor systems
- Material transfer vehicles

e) Road Maintenance Equipment

- Crack sealing equipment
- Pothole patching machines
- Road sweepers

f) Traffic Control and Safety Equipment

- Traffic cones
- Barricades
- Traffic signs
- Road markers

g) Surveying and Measurement Equipment

- GPS devices
- levels

h) Miscellaneous Equipment

- Water trucks (for dust control)
- Lighting towers
- Portable generators

Table 7: Raw materials

S/n	Description	Source	Storage on site	Use
1.	River and Building Sand	Locally	Designated area	Construction
2.	Cement, steel beams, paint, roofing sheets, cladding sheets	Locally	Storage containers	Construction

3	Bars, sand, laterite, other wooden materials, glasses, tiles, piping, electrical, paving	Locally	Storage containers	Construction
4	Water	On Site	Water tanks.	Dust Suppression, construction & Domestic use
5	Crushed stones	Locally		Construction
6	Fuel	Locally	Storage tank	Construction and Operations

3.2.10 Schedule and life time of the project

The project will involve preparation of the project site, construction and the operational phases. The contract is for 25 years in which the first two years are for construction and the remaining 23 operation and maintenance to the road and other facilities.

Table 8: shows the implementation plan for the project.

Serial No.	Description of Activity	Implementation Period
1.	Obtaining of all relevant authorization from regulatory agencies including ZEMA and other regulatory authorities	April, 2024
2.	Mobilizing all equipment and machinery to site after obtaining approvals from ZEMA and other authorities	April, 2024
3.	Recruitment of local labour (skilled and semi-skilled) for the operation.	May, 2024
7.	Construction works	June, 2024 to June, 2027
8	Operation	June 2027 – June 2025

3.3 Main project activities

The project will consist of three implementation phases, these will include the following;

3.3.1 Preparation phases

This phase will include the activities mentioned below;

a) Setting out according to the design of the road, levelling and Grubbing;
b) Location and excavation of new borrow pits and quarries;
c) Construction of access roads to borrow pits and construction of embankments; and
d) Siting and erection of construction camps.

3.3.2 Construction phase

a) Formation or sub-grade of the road, Ripping, resurfacing and sealing of the old road at selected sections;
b) Earth works including quarrying which will mainly be from the existing quarries within the proximity of the project site;
c) Spraying of water by water bowsers;
d) Haulage and dumping by tipper trucks;
e) Rolling and compacting of the surface by compactors;
f) Construction of different structures (pavement, bridges, major culverts, drainages, etc);
g) Ancillary road works and structures;
h) Installation of permanent road signage;
i) Diversion works;
j) Addition of 11mm Bituminous layer; and
k) Addition of surface course (Final aggregate).

3.3.3 Operational Phase

The following are the activities which are expected to take place in the project area

- Routine and emergency maintenance works of the road e.g patching of the road surface, clearing of vegetation clearing on the sides of the road to maintain sight distance, rehabilitating drainage channels, repainting road markings and maintaining road shoulders
- Regulation of maximum weights permissible for transmission on the road;
- Provision of a system for road safety and traffic management; and
- Promotion of road safety

3.3.4 Decommission and Closure phase

This phase entails mitigating the adverse effects resulting from the project, decommissioning will only be conducted if the project becomes economically unviable or structurally compromised.

4.0 ANALYSIS OF THE PROJECT ALTERNATIVES

The proposed implementation of the project may be undertaken considering other viable options such as but not limited to site location, Design, Power, Water Supply and Sewer Disposal, Raw Material and Technology.

4.1 Project Location Alternatives

No site alternatives were considered due to the fact that the road path is already in existence.

4.2 Power Alternative

Option A: Connecting to the ZESCO Electricity Grid

The site is connected to the national grid and power will be from the ZESCO line.

Option B: Use of diesel generators

Option A is preferred for being both economical and environmentally friendly reasons, however the developer will also utilize the use of diesel generators at locations where access to the electricity grid won't be possible.

4.3 Water Supply and Sewer Disposal Alternatives

Option A: sinking boreholes at strategic locations

Option B: Connecting to Eastern water and sewerage company service line.

Option C: Get water abstraction from nearby water bodies

Option A is preferred due to the fact that the project area is not serviced by Eastern water and sewerage company, thus the sinking of boreholes is the best alternative. However, the company will also be getting water from nearby water bodies in areas where the underground water is high.

4.4 Raw Material Alternatives

The developer will acquire raw materials such as aggregates, asphalt, cement, bitumen, steel, pipes, crushed rocks, culverts, guardrails and earthwork materials from licensed suppliers within the Project location. However, if the raw materials will not be available within the area, they will be sourced from other towns as well as other parts of the country.

4.5 Road construction Alternatives

Option A: Asphalt Road

The first step in the asphalt installation process is to remove the existing surface, whether it is asphalt, concrete or pavers. Demolition and removal is completed using heavy machinery, including small bobcats and forklifts and when necessary, front loaders and large dump trucks. Debris is then removed. Grading and Sloping With a clean slate, technology prepare the surface for appropriate water drainage. Using laser-guided transits and automatic motor graders.

The sub base provides a stable surface to support new pavement. The sub base is a frost barrier to help reduce winter damage due to freezing and thawing. During the installation, base thickness, base stability, and compaction are essential steps. If the sub base is not appropriately compacted, the asphalt surface on top will not provide years of durability. Proof Roll, Undercutting and Sub Base Repair

The binder layer can be thought of as the strength of any new asphalt surface. Install New Asphalt Surface. Once the supportive structures of a new asphalt surface are installed, the top layer of fresh asphalt is added to provide a clean, smooth ride.

Option B: Feeder roads

The first step in feeder road construction is the removable of top soil , and use the remaining soil to begin the formation .these involves mixing gravel with water and compacting it to the required strength.

List of preferred alternatives

Option A is preferred because it has a longer durability compared to option B.

4.6 Bridges Construction Alternative

Option A. Box culverts (Masonry)

These involve installation of culverts combined with steel, aggregates and cement.

Option B. Steel bridges

These involve the installation of steel structures and combining them with reinforced concrete to achieve the desired strength.

Option A was preferred because it is easy to outsource materials and it's going to stand a test of time, not only that it is easy to maintain. Despite the Option B having higher strength properties, it has higher maintenance cost:

4.6 No Project Alternative

The option of not undertaking the Project was considered and not given priority as the investment in the project would result in more benefits and improve living conditions of residents around the Project site, and well as providing stimulus to the economy.

Analysis of Alternatives

The alternatives considered for the implementation of the project are limited and have been analysed to determine how feasible they are in terms of helping to achieve the project objectives. The best alternatives will be adopted for implementation.

Site alternative: This is the only road that exists joining Katete to Chanida Border post and the Government of the Zambia is the legal owner of the same.

Road Construction alternative- The adopted design for the proposed road project is an Asphalt Road because it has a longer durability compared to Feeder Roads. An appropriate design is key to the effectiveness of the project in terms of durability.

Power alternative- The proposed energy source for the project site is connecting to the national grid. The alternative power source considered was the use of a generator but this was not adopted due to the need to maintain the facility as a green community.

Water Source alternative- The project preferred sourcing water from boreholes because studies in the project area shows that surface water is different to find.

Raw material alternative- The raw material for the construction of the proposed project will include laterite, building/river sand, steel and aluminium which will be acquired locally, and only when they are not available locally will they be imported.

No-project alternative-The no-project alternative in respect to the proposed implies that the status quo is maintained. Under the no-project alternative, the existing land use will not change; the land owner will continue not to make any good value of the land. The proposed project would not be constructed and the expectations attached to the Project would not be met. The no-project construction alternative is the least preferred from the socio-economic perspective due to the following factors:

5.0 DESCRIPTION OF THE BASELINE ENVIRONMENT

The proposed project area is 55km road in Length and the project site was acquired by the developer. It should be noted that the project site is not fully in its natural state but degradation of vegetation and the soil has occurred due existing current form of the Road.

5.1 Climate

Agro Ecological Zone

The project site falls under Region I.

Region I include areas of southern, eastern and western Zambia: Zambia's valleys at 300-800 m altitude mostly lie in region 1. Mean annual rainfall in Region I ranges from 600 to 800 mm. The growing season is relatively short (80-120 days) and risky for crop production, as poorly distributed rains result in crops enduring frequent dry spells. Region I contain a variety of soil types, ranging from slightly acidic loamy and clayey soils with loam topsoil, to acidic sandy soils. Characteristics of these soils which have significant constraints for crop production, include: erosion, limited soil depth in hilly and escarpment areas, poor physical properties that make it difficult to till especially on cracking clay soils, crusting, and low water holding capacities in sandy soils.

Region II includes much of central Zambia, with most of Central, Southern, Eastern provinces. It contains the most fertile soils and most of the country's commercial farms. Annual rainfall in Region II averages 800-1000 mm, and the growing season is 100-140 days long. Distribution of rainfall is not as erratic as in Region I, but dry spells are common and reduce crop yields, especially on the sandier soils. Average mean daily temperatures range from 23- 26°C in the hottest month October to 16-20°C in the coldest months of June and July. The most common soils in Region II are red to brown clayey to loamy soil types that are moderately to strongly leached. Physical characteristics of the soils that affect crop production, include low water holding capacity, shallow rooting depth, and top soils prone to rapid deterioration and erosion. These soils also have low nutrient reserves and retention capacity, are acid, have low organic matter and nitrogen content, and are phosphorus-deficient.

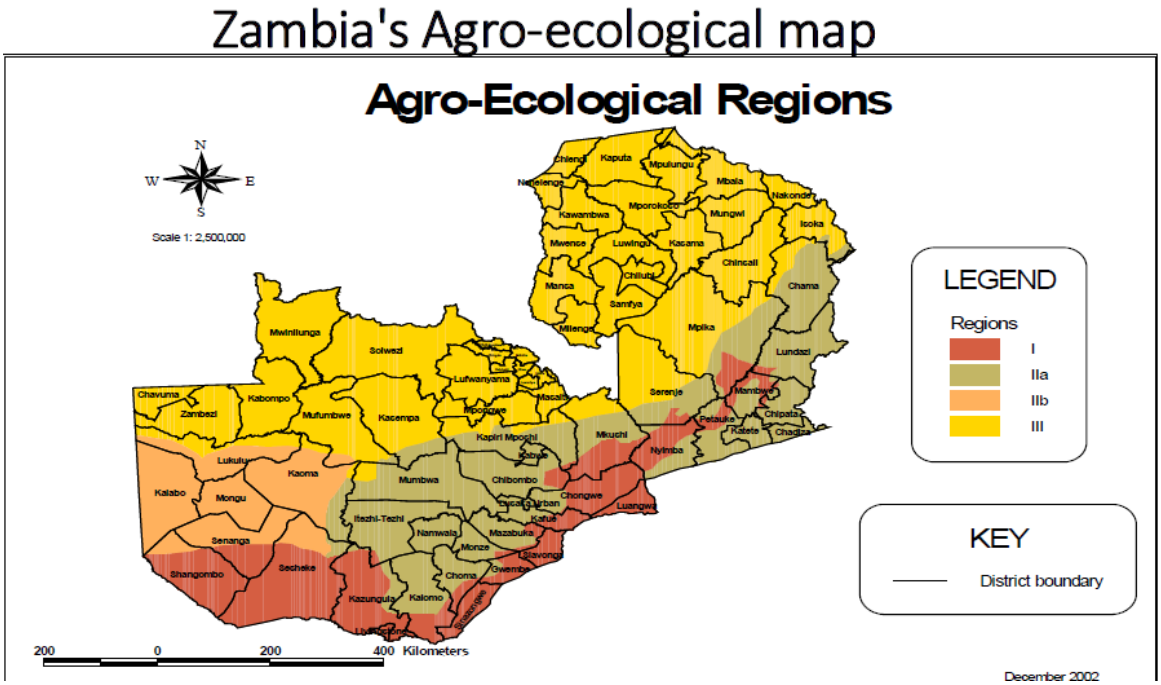

Figure 6: Agro Ecological Region

The climate for the project site is typical of Zambian climate characterized by three distinct seasons namely;

Cold and dry season	:	May to July
Hot and dry season	:	August to October; and
Wet season	:	November to April.

The region has distinct dry (May to October) and wet (November to April) seasons. The project area lies in a medium to high rainfall area. The area experiences annual temperature averaging 21.0°C. The coldest months are June and July with an average of 16°C while the maximum temperatures are recorded in October with a mean of about 24°C.The wind direction is predominantly Easterlies. The source of the climatic data described below is from Kenneth Kaunda International Airport Weather Station obtained from the Zambia Meteorological Department. Temperature variations exist for the project area. The main winter months (May to July) are usually cool and dry, with temperatures averaging between 6°C - 22°C.

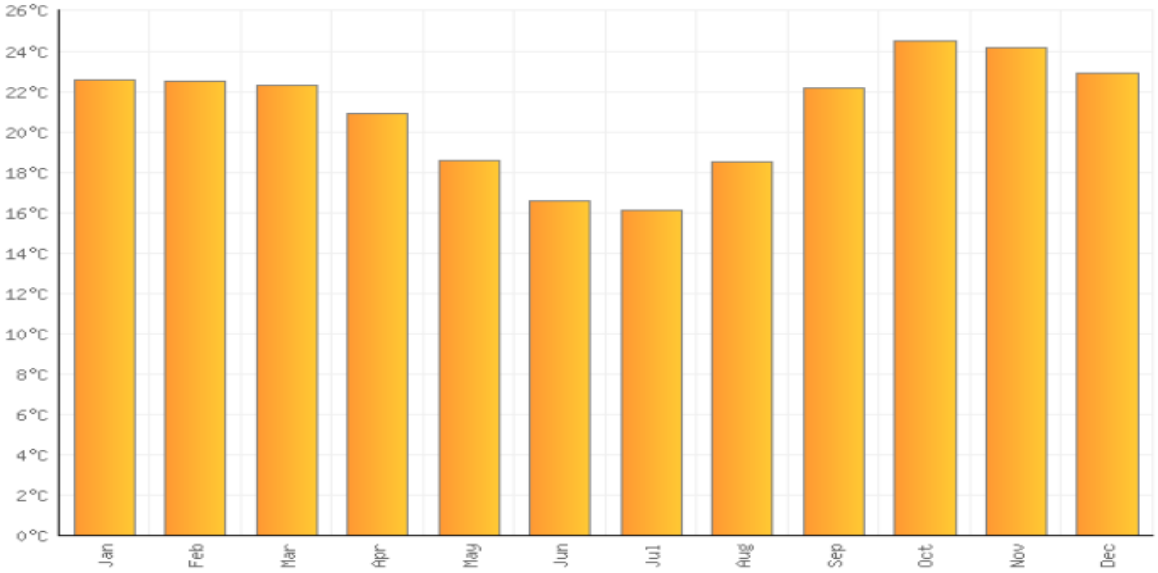

Figure 7: Shows the average temperature of the project site

Rainfall

Katete and Chadiza Districts receives an annual rainfall in the range of 200mm to 240mm with a mean annual rainfall of 140 mm, the months of December, January and February receiving over 70% of the rain for an entire year (Met. NWFR 2010).

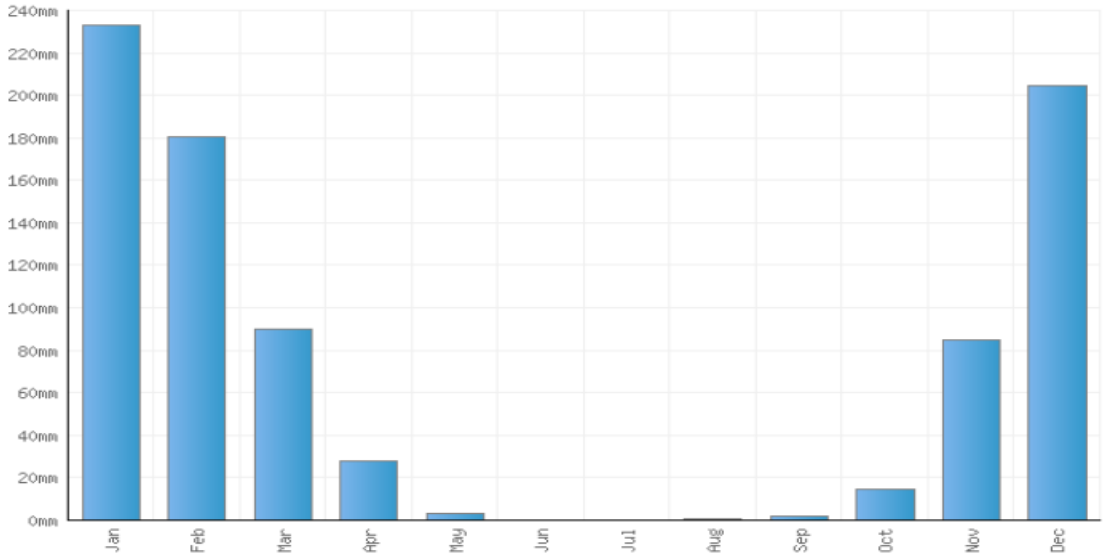

Figure 8: Shows the average rainfall of the project site

Wind Speed

The predominant dry season wind direction is from the east-southeast. The windiest month (with the Highest average wind speed) is September (9km/h). the calmest months (with lowest average wind speed) are January and February (5km/h).

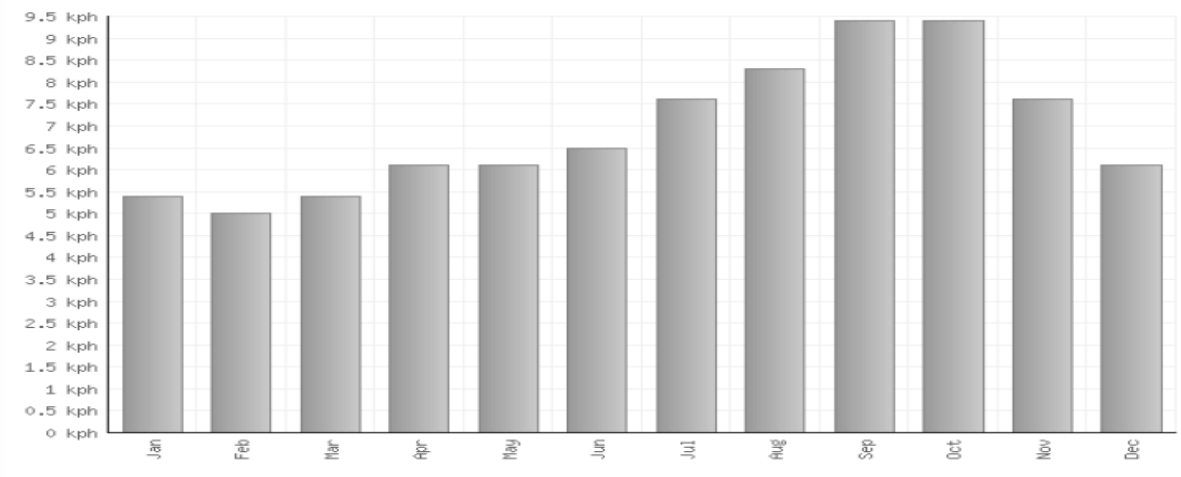

Figure 9: Shows the average wind speed of the project site

Potential Evapotranspiration (PET)

Katete District annual evapotranspiration ranges from 1500 to 1800mm. According to figure 5, the highest Pet values are experienced in the extreme northern, close to the Luangwa Valley, part of the district while lowest are in the central part. Accordingly, PET also vary along the road project also vary also from 1500mm to 1600mm.

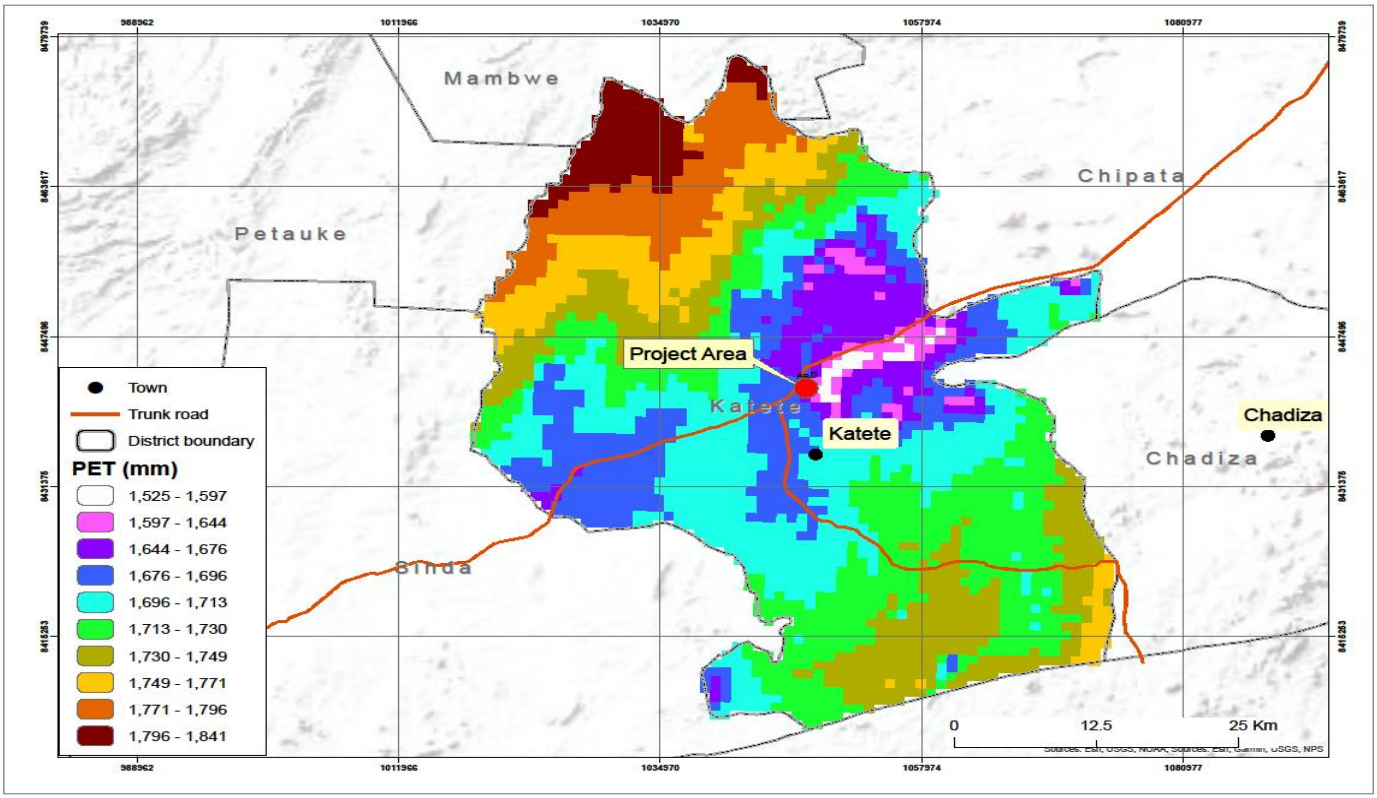

Figure 10 shows the Potential Evaporation map in the project area

5.2 Geology

The geological sequence of the project area encompasses rocks of large lithological variety which were formed and metamorphosed over a long-time range. The oldest rocks associated with the basement have an age of well over 1,000 million years (Ma) and the youngest rocks were formed during the last thousands of years in an on-going process. Most of the rocks exposed in the area are of Precambrian age, i.e., older than 543 Ma, and are assigned to the Katanga Super group or the Basement Complex.

The subsequent complex collision of two ancient tectonic plates, the Angola-Kalahari Plate comprising the Kalahari Craton and the Congo-Tanzania Plate comprising most of the Congo Craton led to the closure of the rift basin. This collision followed after the subduction of a southeast-northwest trending oceanic basin, and was accompanied by intense folding, thrusting, strike-slip faulting and high-grade metamorphism of the Katanga Supergroup and parts of the Basement.

5.3 Topography

The topography of Katete and Chadiza Districts areas averages 1100masl. The areas are identified with undulating terrain with rising and falling landscape giving rise to natural drainages which form streams and rivers. The dominant topographic features of Katete and Chadiza Districts tend to extend West-East across the District. The interior is largely the vast plateau and plains that stretch from boundaries with Chipata and Chadiza Districts to Sinda.

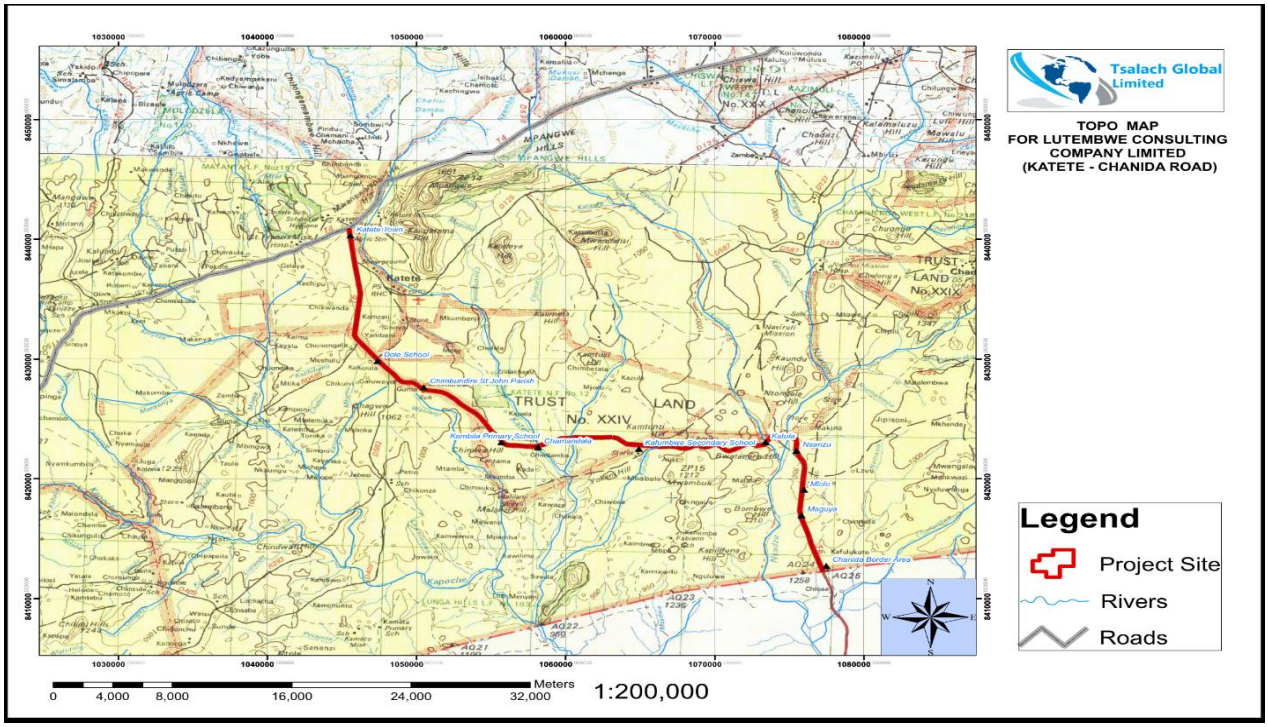

Figure 11 shows the Topography Map of the project site

The topology is mainly rolling countryside with the majority miombo woodland where it has been cleared for farming. The study area is characterized by sandy and rocky soils with rock outcrops in some portions, similar to the Katete dolomite, hence forming undulating terrain. The area is almost rectangular in shape and bordered by Mountains, to the west, north and Farms and Mountains to the east. The area exhibits medium level of natural ecological disturbance induced by agricultural activities and other land use practices.

5.4 Ecological Resources

The main purpose of the Flora and Fauna survey was:

i. To determine the flora type of the proposed project.

ii. To determine the density and population of the flora at the proposed project site and areas expected to be inundated.

iii. To determine the fauna (e.g. Mammals, Reptiles, Insects and Birds) of special significance.

iv. To check whether the proposed site will cause disturbance to species of significance or endangered species.

Ultimately the ecological assessment assisted in identifying the environmental Impacts on flora and fauna due to the project as well as on the surrounding communities. Then come up with measures to mitigate the identified impacts. Above all, provide information that will be part of the baseline to establish an environmental benchmark against which the proposed Project area can be measured in future. This is in addition to the other physical, chemical and biological parameters that have been measured.

Methodology

A flora study of the project area based on a desk study (literature review) and a field survey conducted within the project area. Primary and Secondary information was gathered by interviewing local people and desk study literature.

Vegetation identification was done by examining tree shape, size and foliage colour. As for species identification Leaf composition, leaf type, leaf variation and plasticity, branch shape and stems was considered.

A **fauna study** of the project area was based on a desk study (literature review) and field surveys. The main objectives of the fauna study were:-

- To identify the pre-existing species that were present in the region
- To identify existing fauna species in the project area;

- To evaluate the diversity of the terrestrial fauna in the study area;
- To identify endangered habitats and describe management actions to prevent further habitat degradation of these sites.

Steps used during the fauna assessment included: -

- Literature review: review of various resource materials that included books, journals and publications.
- Field surveys
- Driving along the main roads observing and recording the variety of fauna observed.
- Interviews with the local people.

Fauna assessed included the Mammals, Reptiles, Birds and Insects. The proposed site had no large mammals only small mammals e.g. Duiker, Monkeys, Mole and Rodents while reptiles such as lizards and snakes were observed in the area. A variety of Bird species was also observed in the proposed site. These birds included seed and insects eating birds.

Birds

Birds at the proposed site area were sighted by taking field walks around the project area for two days. Most of the birds were identified on sight and reference was made through desk study literature.

Reptiles

Identification of the reptiles around the proposed site was conducted through field survey walks. Many of the reptile species were observed during the day while a few were seen in the night. Local people also assisted in the identification of the reptiles around the proposed site.

Insects

The insects at the proposed site were easily identified through the field survey walks around the project area. For species identification pit traps were set to trap some insects.

Aquatic Organisms

The project site has no water body within the project boundary. Catchment runoff in the project area is mainly from the Rivers and stream within the project area.

5.4.1 Flora

The predominant landcover type of Katete and Chadiza District has a tree cover which constitutes about 83.8% and 87.7% of the total area while Grassland covers about 10.5% and 5.11%. Shrubs also cover a considerable size of the area constituting 7.9% and 3.34%. The area covered by built-up and water is minimal and together covers an estimated 0.006% and 0.001% of the area Respectively.

Table 9 shows the tree cover in the project site(Katete District)

Landcover Class	Area(km²)	Percentage (%)
Tree cover	83.8	69.1
Shrubs	9.55	7.9
Grassland	12.71	10.5
Crops	15.14	12.5
Built-up	0.041	0.034
Water	0.007	0.006
Total	**121.25**	**100**

Table 10 shows the tree cover in the project site(Chadiza District)

Landcover Class	Area(km²)	Percentage (%)
Tree cover	354.73	87.7
Shrubs	13.5	3.34
Grassland	20.65	5.11
Crops	15.32	3.8
Built-up	0.09	0.022
Water	0.005	0.001
Total	**404.3**	**100**

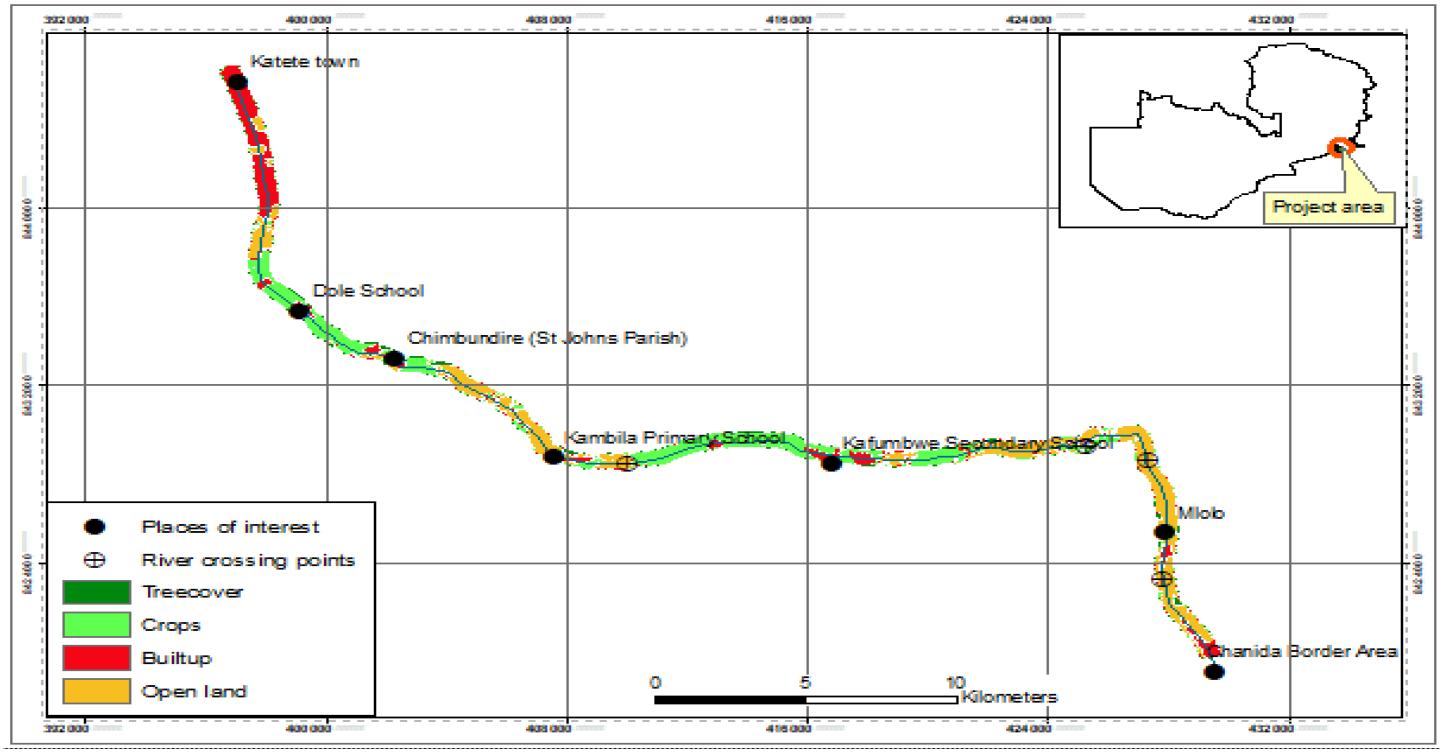

Figure 12 shows the Satellite Image of the Landcover in the project area.

Flora studies carried within the Katete and Chadiza district area was undertaken to establish flora and fauna baseline conditions in the project area. Miombo woodland vegetation initially dominated the area. The vegetation was dominated by *Tamarindus indica (Bwemba N).*as shown in in the picture below. It has, however, been reduced to open savannah vegetation characterized by tall grass and sparse trees due to human activities, which include farming and logging. The common vegetation species within the project area include *Gmelina arborea, Melia azedarach*.

A site-specific flora survey revealed that the proposed project area is a modified ecosystem which is characterised with some trees, shrubs and some regrowth vegetation arising from previous disturbances such as shifting cultivation and charcoal production. The vegetation is mainly of regrowth nature with species of Miombo woodland.

The project area vegetation showed some retrogression process occurring in the area. This means most of the Miombo trees were cut down charcoal burning and agriculture activities, as such the Chipya vegetation emerged to replace the miombo. Bushes and Shrubs were noted in the area and a high rainfall making Wet Miombo vegetation to be dominant. The Tree heights at the project site varied between 1.9m – 4metres and grasses were 0.30metres. The dominant species were the *Tamarindus indica (Bwemba N).* species, shrubs and Acacia trees found within the project site. However, the surrounding area of the project had Miombo species such as *Parinari curatellifolia* (Mpundu)), *Julbernardia paniculata and Ziziphus mauritiana* (Masau).

Figure 13 shows the vegetation in the project area

The following were identifiable vegetation within the project area:

i. *Acacia spp. Ngowe, mtubetube, nyafungu*
ii. *Albizia antunesiana Msase, chisale*
iii. *Brachystegia spp. Mufundanzizi, muombo, msamba, muputi*

iv. Burkea africana Kawidzi, mkoso
v. Citrus spp. Lalanje, ndimu
vi. Eucalyptus spp. Bulungamu
vii. Julbernardia globiflora Kamponi
viii. Julbernardia paniculata Mtondo
ix. Kigelia africana Chizutu, mvungala, mvunguti
x. Parinari curatellifolia Mpundu
xi. Syzygium cordatum Mchisu, msombo
xii. Tamarindus indica Bwemba
xiii. Ziziphus mauritiana Masau
xiv. Afzelia quanzensis (Mpapa N) Timber
xv. Pericopsis angolensis (Muwanga N)
xvi. Dicrostachys cinerea (Kalumpangala N) Fodder
xvii. Diospyros mespiliformis (Mchenja N) Timber, fruit
xviii. Mangifera indica (Manga N) Fruit, shade
xix. Piliostigma thonningii (Msekese N)
xx. Flacourtia indica (Ntudza N) Fruit
xxi. (Mpundu N) Fruit
xxii. Parkia filicoidea (Mpeza, msenya N) Fruit
xxiii. Pterocarpus angolensis (Mlombe, mlombwa N)
xxiv. Strychnos cocculoides(Mzai N) Fruit
xxv. Uapaca kirkiana (Msuku N) Fruit
xxvi. Ximenia americana (Ntengele, matundulukwa N) Fruit

Some of the common Grass species in the project area

The common species of grass found in the project area include; *Leersia hexandria* Swartz (Common name: rice Grass), *Phragmites australis* (matete), *Aeschynomeme , Polygonum senegalense Meisn*, *Typha capensis hyparrhenia spp. (Thatching grass)*, *Biden pilosa*, *Lantana camara (Likobezabalisana (L))*, *Anisophlea boehmii* (Mufungu), *Anonna stenophylla, Aloe (Itembushya (B))*, *Cassia singuena (Mtawetawe (N))*, *Diospyros kirkii (Mukolofuma (B))*, *Ochna (Choni (B))*, *Olax obtusifolia (Kulukumo (B))*, *missanthiunia spp, themedia triandria, setaria spp* and *Loudetia simplex (Nkololwe (B))*. The dorminant grass specie was *Leersia hexandria* Swartz, this is very common with wet miombo vegetation.

Figure 14 shows some of the grass species and shrub

5.4.2 Fauna

Mammals

Only small mammals were observed during the field survey. The following mammals were sighted within the project area.

1) Rattus rattus **(Black Rat)**
2) Thryonomys swinderianus **(Cane Rat)**
3) Rabbits (Pronolagus rupestris) (**Kalulu**)
4) Paraxereus cepapi **(Bush Squirrel)**
5. *Bos taurus* (**Cattle)**
6. Capra aegagrus hircus **(Goats)**
7. Sylvicapra grimmia **(common duiker)**

Interviews and interactions with the local people in project area stated that they have sighted other mammals such as Rabbits *(Pronolagus rupestris)*, Cane Rat *(Thryonomys swinderianus)* and Vervet monkey in the area and around the proposed project site. The project area has been disturbed by agriculture activities this has affected a number of small mammals whose habitat was the project area.

Table 11 shows the table for the Mammals

No.	Name of Species	Scientific Name
1.	Rabbits	*Pronolagus rupestris*
2.	Cane Rat	*Thryonomys swinderianus*
3.	Vervet monkey	*Cercoopithecus aethops*

4.	Black Rat	*Rattus rattus*
5.	Cattle	*Bos taurus*
6.	Goats	*Capra aegagrus hircus*
7.	Common duiker	*Sylvicapra grimmia*

Common Birds Species

The study of the birds of the project area was achieved by the Physical evidence that includes; birds' nest, droppings of some birds on leaves of plants. Some songs typical for certain bird species like helmeted guinea fowl *(Numida meleagris)* were also heard on the project area. Common birds found in the area include doves, sparrows and window birds. The notable and observed species of birds on the project area include; rock pratincole (*Glareola nuchalis)*, long-crested eagle *(Lophaetus occipitalis)*, Turtle Dove (*Streptopelia turtur)*, Black-eyed Bulbul *(Pycnonotus barbatus)*, Whitebellied go-away bird *(Corythaixoides leucogaster)*, Red-collared Widowbird *(Euplectes ardens)*, Roller Bird, Thick-billed Green Pigeon (Male) *(Treron curvirostra)*.

Other birds that are expected on the project area include; western banded snake eagle *(Circaetus cineroscens)*, African skimmer *(Rynchops flavirostris)* Helmeted guinea fowl *(Numida meleagris)* Hornbill *(Tockus spp))*.

Other notable and observed species of birds on the project area include; Wattled Crane *(Bugeranus carunculatus), Grey Crowned Cranes, pelicans, storks, ibises, spoonbills, Spurwinged Geese.*

Common Reptiles Species

Reptiles confirmed by the local People included; *Bitisarietans* (Puff Adder), *Bitisgabonica* (Gabon Viper), *Geochelone* (Tortoise), *Mabuya mabuya* (Common African Lizard), Geckos, Chameleons and skinks. Amphibians reported by the locals were *Brevicepspoweri* (Rain frog). Reptiles such as Rock Python and Monitor Lizard are also common in isolated portions of the surrounding project area. There is NO rare or endangered fauna in the project area.

Insects

Insect survey at the project site was done and a number of insects were observed in the area. Insect life included a variety of species of dragonfly, wasp, bees, crickets, grasshoppers, termites, mosquitoes, ants, red ants, lady bugs, butterflies and moths.

Aquatic Organism

The are watercourse in the project site hence no aquatic information was collected since most of the streams are seasonal.

Endangered species

No threatened, rare or endangered species either fauna or flora were observed within the project area. And there is no gazetted Game Management Area or Forest within the Project area.

Termitaria Moulds

Some termite moulds were sighted around the project area. The moulds normally coexist with trees. Short Terminaria occurs throughout Zambia in dambos, swamps and flood plains. These mounds are built by Cubitermes spp. of termites, and are built under conditions induced by impermeable nature of clay soils resulting from extreme hydrological conditions of severe drought in dry season and water logging in wet season. Termites are beneficial for the functioning of forest and savannah ecosystems. Traditionally children and women consume termite moulds soil for nutritional or other benefits. And some subsistence farmers use termites' moulds as indicators of soil fertility. *(Ecology and Society.2009)*

Species of Commercial Importance

The proposed project site area had no significant species of fauna or flora that could be exploited for commercial purposes.

Presence of Invasive species

No Invasive or exotic species for both Flora and Fauna were noted on the proposed project site.

Sensitive Habitats

There were no sensitive or fragile habitats on the study area with respect to the magnitude and extent of the project being proposed that could cause a serious environmental upset in the stability of the existing ecosystem. As mentioned earlier in the report about 67% of the vegetation will be undisturbed. The undisturbed vegetation will host the disturbed habitat for different species.

5.5 Hydrology

The Zambezi Basin covers three-quarters of the country and comprises three sub-basins, namely, Zambezi, Kafue, and Luangwa. The main water bodies are within the watersheds of Zambezi and Congo rivers with their tributaries of Kafue, Luangwa, Luapula and Chambeshi, and Lakes Tanganyika, Bangweulu, Mweru and Mweru wa Ntipa including the man-made lakes of Kariba and Itezhi-Tezhi. The project road corridor from Chipata to Lundazi falls in the Zambezi Basin and in the Luangwa Sub Basin. Figure 5 below shows the two river basins of Zambia with their tributaries.

Luangwa Catchment

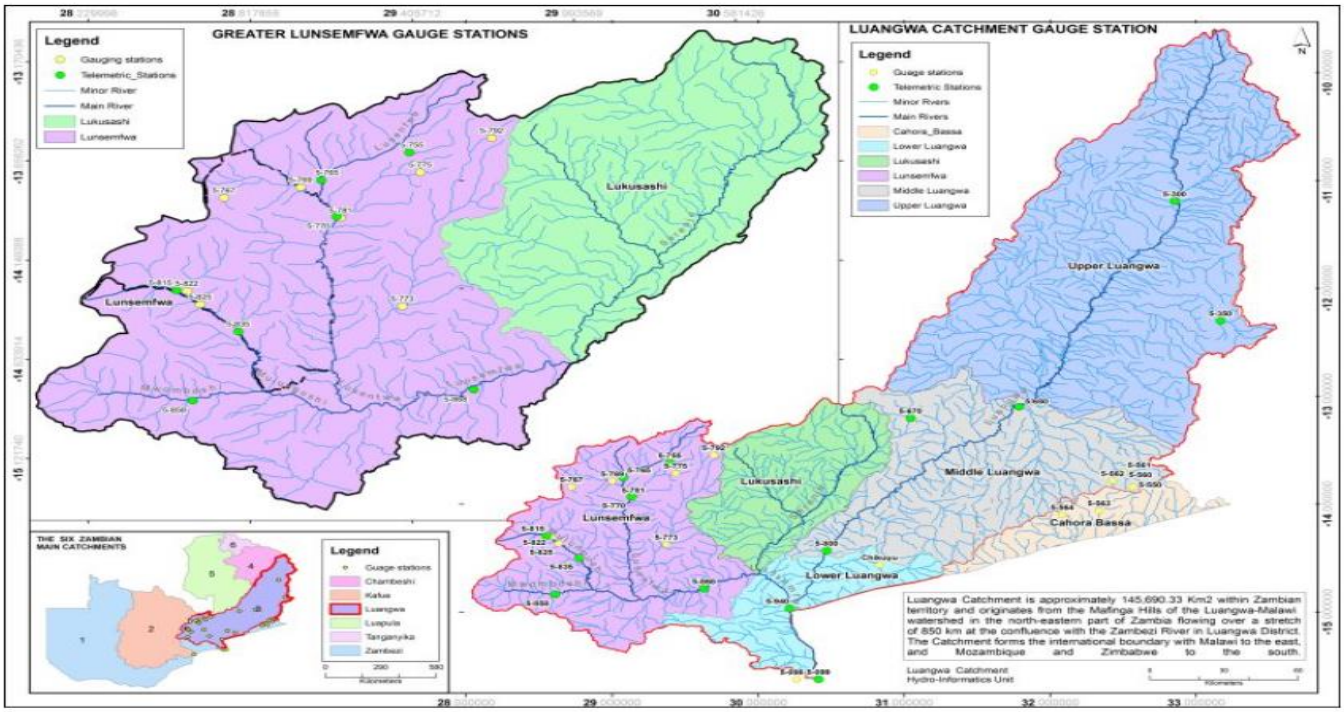

Figure 15: Luangwa Catchment Area

The project road is in the Luangwa catchment of the Zambezi River basin. Several small seasonal streams and gullies flow across the project road corridor, deriving from the slopes of the hills in the neighbouring Malawi. There is a mixed balance of all-year-round and seasonal streams with the latter functioning as drainage channels to carry water from the hills into the Luangwa River. The seasonal (ephemeral) streams are mostly dry, and flow rapidly for a few hours or days following a heavy storm event. There are also all-year-round (perennial) streams.

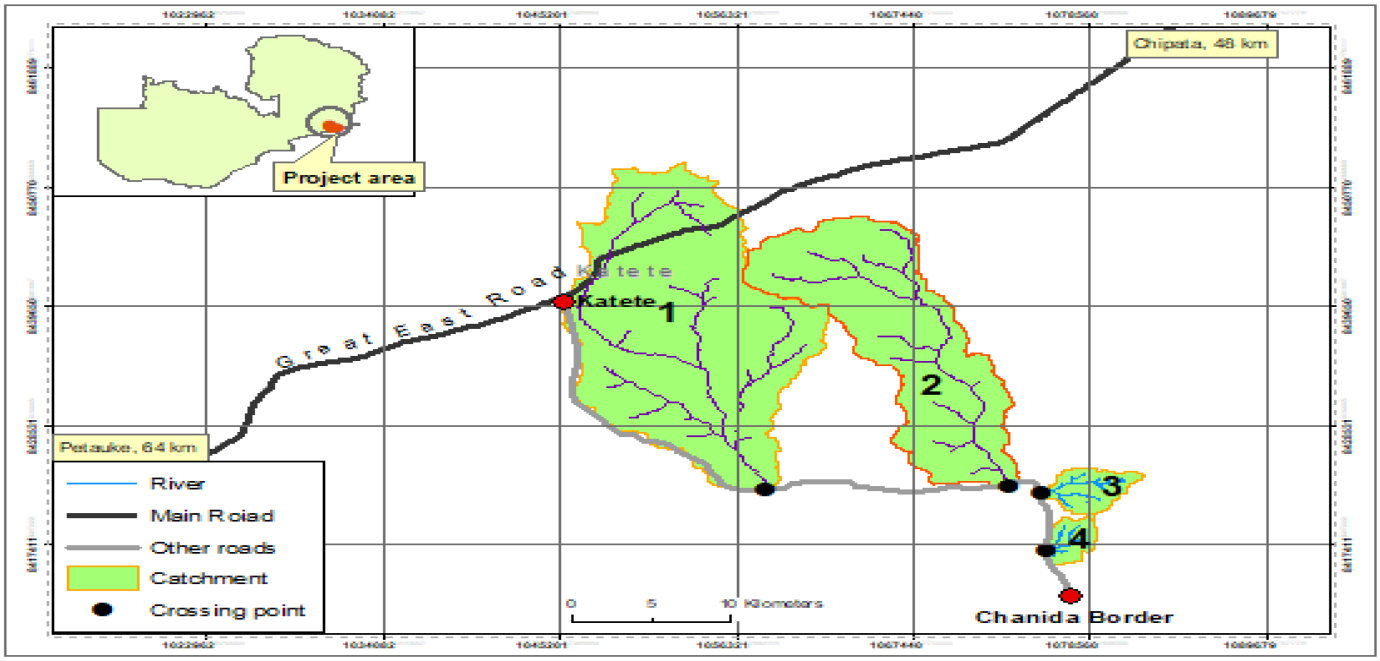

Figure 16 shows the Drainage and Topography

However, due to deforestation - mostly for farming and tobacco curing, and sand mining, there is a general lack of vegetation cover along the bank of some of the streams. As a result, riverbank erosion has emerged as a quite serious problem which has led to siltation at culverts and bridges.
Local communities in the project road corridor have built rudimentary earth dams across some streams to develop reservoirs for beasts and gardening. Additionally, borrow pits left from the previous rehabilitation cycle are also being used to harvest rainwater for the same purpose.

According to the field assessment and drainage analysis, the proposed road project crosses the streams at four main points as summarised in table 12.

Table 12 shows the table of main streams or Rivers

Stream/Road Crossing	Description (Area)	Location
1 (Catchment 1)	Maguya	14° 15'41.1"S, 32° 19'51.3"E
2 (Catchment 2)	Katula	14° 12'25.9"S, 32° 18'26.5"E
3 (Catchment 3)	Nsanzu	14° 12'47.0"S, 32° 19'36.4"E
4 (catchment 4)	Chamandala	14°12 50.24"S, 32° 9'59.93"E

The flow direction of the water on all the four crossing points is in the north-south direction. This means that all the flows at the crossing points drains into the Zambezi catchment south of the project area.

Water sampling procedure
There are water bodies along the project along the site namely; Chamandala, Nsazu and Katula streams. The water table appears to be between 10 and 15 metres below surface close to the rocky outcrops.

Water Sampling procedure
The water samples were collected on different spots along the 55km road stretch using clean disposable sample containers, with special care taken not to contaminate the water samples. The samples were placed in a cooler box with an average temperature of 10 degree Celsius as per national and intentional Standard. The water sample was later submitted at the national accredited laboratory which is University of Zambia laboratory for analysis within 24 hours after sampling was conducted.

5.6 Soils
The Zambian soil resource is characterized in the following figure, taken from the Soil Map of Zambia, 1983. It shows the location of the project corridor having soils formed from underlying siliceous sedimentary and metamorphic rocks of the Ferric - Luvisol category.

The Ferric – Luvisol are soils with a mixed mineralogy of ferromagnesium and rich in nutrient content, with generally good drainage, suitable for agriculture. They are red brown in colour with a high base status and are found in humid and sub-humid steppe areas.

Soils on the medium grounds – i.e., on the Katete to Kawaza (00+000 to 10+000) – The initial 5km has gravely sandy soils and well drained. Beyond that, the soils have a weathered profile, are well drained and have improved fertility. More fertile soils are generally found along the water courses, although generally these have less developed profiles. The upland soils are commonly deep red to brown, with a thin (overburden) darker upper horizon containing more organic matter. These are characterized by a high iron and aluminium content, and low levels of the major nutrients such as potassium, sodium, calcium, and phosphor. Lateritic horizons (soils rich in iron and aluminium with high iron oxide content) are common and occur as hardened laterite or disintegrated laterite material.

5.7 Noise Quality

The Noise levels in the area are relatively low due to factor that no industries the project site is in a mixed-use area for residential and commercial activities such as entertainment facilities and shops. The only potential sources of noise in the immediate vicinity of the site are from cars using the Katete-Chanida road and the farming activities in the project area.

The source of noise is mainly from the above factors and the impact is insignificant. Therefore, the general noise quality for this area is much better than the urbanized areas of the district.

Table 13: Showing the results of noise measurement at the site

No.	Town	Coordinates	Max	Min
1	Katete (Round About)	14° 3'12.23"S 32° 2'47.24"E	66.9	55.2
2	Katete Town Council	14° 3'36.34"S 32° 2'48.48"E	68.2	53.0
3	Dole Primary School	14° 8'56.16"S 32° 4'7.36"E	59.5	51.1
4	Dole Community	14° 9'4.29"S 32° 3'58.89"E	65.1	34.1
5	Chimbundire (St Johns Parish)	14°10'15.86"S 32° 5'40.07"E	66.5	44.2
6	Chimbundire Primary school	14°10'26.15"S 32° 5'45.42"E	61.5	34.5
7	Kambila Primary School	14°12'41.67"S 32° 8'56.74"E	62.4	50.8

8	Kafumbwe Health Post	14°12'24.43"S 32°11'20.02"E	36.8	40.3
9	Chanida Boarder Post	14°17'57.67"S 32°21'18.67"E	61.6	55.1

Figure 17 shows Noise sampling

The noise levels in the area are consistent with the levels generally expected for rural Zambia especially where there are no major industrial or mining activities being undertaken. Some preliminary noise measures were recorded in the project area. Monitoring was carried out two times, Mid-Day 12: 00 and Evening time 18:00. The table above shows the results collected in the project site.

Analysis of Noise Results: Noise levels are associated with activities in the area and from vehicles using district, members of the public in the area. The other noise levels associated with the area are natural elements i.e. wind, rains and thunderstorms. In all the locations where measurements were done noise levels were below 70(dB)A and the international threshold - 85(dB)A. The instrument used was the 213 Noise level Meter.

5.8 Air Quality

The air within the proposed area is clean and the ambient air in the project area is good in terms of quality since the area is neither in an environment that would compromise its quality. Dust from the construction activities and some uncontrolled fires at times cause occasional smoke but it is insignificant to create pollution. Dust particles due to construction activities will be minimized through sprinkling water on gravel roads.

Air quality (dust) monitoring results for both tests show normal atmospheric levels of 21% of oxygen in ambient air.

Table 14: showing the results of air quality monitoring test results at the site

No.	Town	Coordinates	Pm 2.5	Pm10
1	Katete (Roundabout)	14° 3'12.23"S 32° 2'47.24"E	8.1	12.5
2	Katete Town Council	14° 3'36.34"S 32° 2'48.48"E	7.0	10.9
3	Dole Primary School	14° 8'56.16"S 32° 4'7.36"E	6.0	8.6
4	Dole Community	14° 9'4.29"S 32° 3'58.89"E	2.8	4.3
5	Chimbundire (St Johns Parish)	14°10'15.86"S 32° 5'40.07"E	4.5	7.0
6	Chimbundire Primary school	14°10'26.15"S 32° 5'45.42"E	8.3	11.1
7	Kambila Primary School	14°12'41.67"S 32° 8'56.74"E	11.4	17.2
8	Kafumbwe Health Post	14°12'24.43"S 32°11'20.02"E	4.3	6.5
9	Chanida Boarder Post	14°17'57.67"S 32°21'18.67"E	6.5	12.5

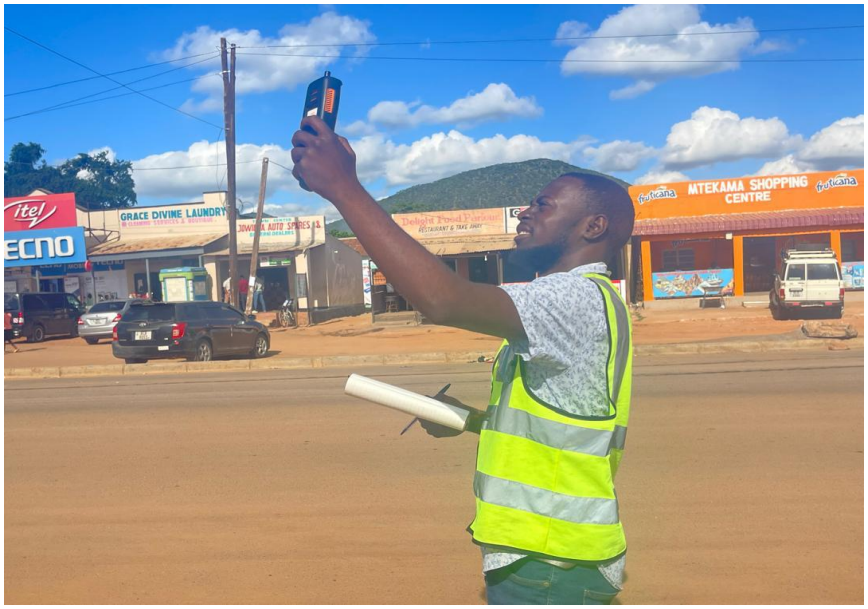

Figure 18 shows the dust sampling

The results from the study show that the parameters were within acceptable standards.

5.9 Description of the Social Economic Environment

5.9.1 Administration and Population

Eastern Province is one of the ten provinces of Zambia with Katete being one of the districts in the province. The others include Chadiza, Chama, Chasefu,

Chipangali, Chipata, Kasenengwa District, Lumezi, Lundazi, Lusangazi, Mambwe, Nyimba, Petauke, Sinda and Vubwi Districts.

Population census was last done in 2022 Katete district had a population of 214,072 people of which 109,267 being female and 104,805 being male, and Chadiza district had 111,069 people of which 56,619 being female and 54,450 being male.

One would attribute the recent growth in population to the following factors:

- Increase in urbanization.
- The establishment of non-traditional businesses and entrepreneurship like the new factories in the city, which have created more employment opportunities.
- The reduction in mortality from killer infections like HIV/AIDS related diseases such as tuberculosis and diarrhea, which could have led to high mortality.

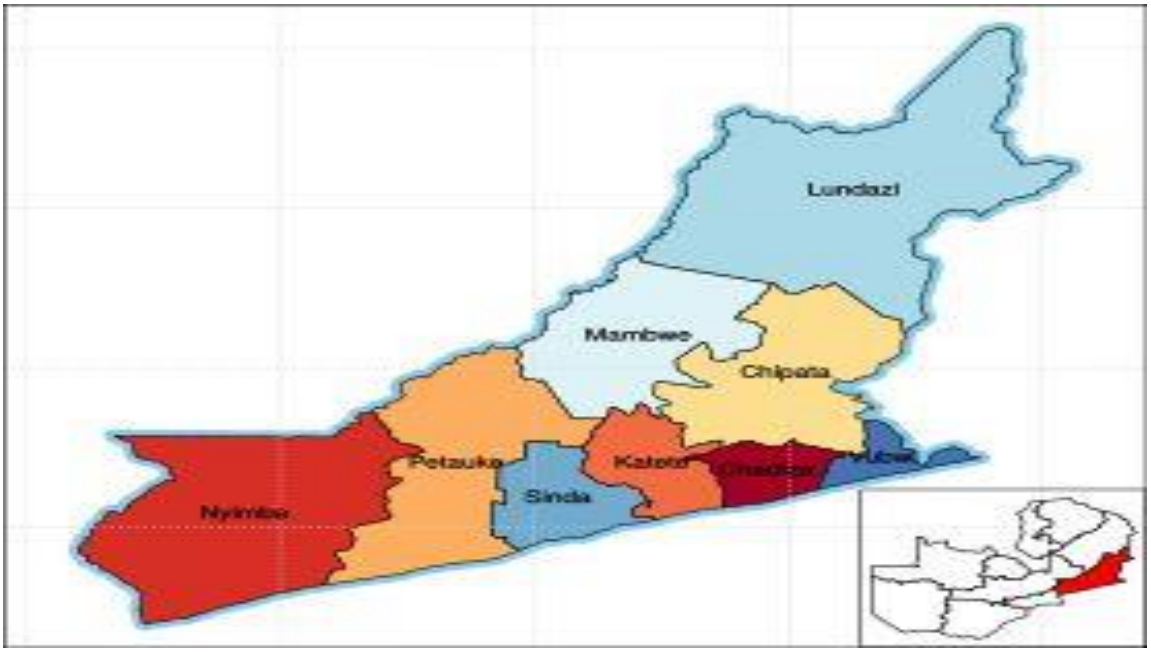

Figure 19: Location of Katete-Chadiza district on the Eastern Province Map

Source: https://en.wikipedia.org/wiki/Eastern_Province,_Zambia.

5.9.2 Social Services and Amenities

Current economic activities in Katete and Chadiza districts of the proposed project includes farming, commercial activities such as schools, bars and Restaurants and informal businesses mainly in the form of street vending and small shops along the main road.

5.9.3 Literacy Levels, Health and Gender Equity

Katete and Chadiza districts has over 390 schools currently with 59 Nursery Schools, 272 Primary Schools, 46 Secondary Schools, 1 Btvet Schools, 10 Tertiary Schools, 1 Teachers College Schools, 9 principal officers at the district education office. The sample size was 24% of the total schools, 5% of the total number of teachers and 33% of the district education principal officers in Katete. The schools near the project site Omelo Mumba Primary School, Dole Primary School, Katawa Primary, Kambila Primary School, Kafumbwe Secondary School, Chadiza Secondary school, Chadiza Primary school, Chanida Day Secondary School and Kampini Primary school which is located Along the Southeast boundary of the project site.

The main Hospital in the Katete is St Francis Mission Hospital and Katete District Hospital located within Katete Town while the main Hospital in Chadiza district is Chadiza district hospital. A number of referrals from rural health centres is conducted in Hospital. There is at least one health care facility in every 5km.

5.9.4 Transport/Communication

The proposed site is located Withing Central Business District (CBD) of Katete. National radio station ZNBC Radio 1, 2 are the National radio station that are available within the project site. Katete town, on the other hand has access to:

- **ZNBC TV:** The Zambia National Broadcasting Corporation (ZNBC) TV1, TV2 and TV3 with good television reception. ZNBC is a state-owned broadcaster.
- **Radio stations:** Radio Breeze, ZNBC Radio 2, Parliament Radio, ZNBC Radio 1 and generally all other radio stations in the country. These radio stations provide a source of information, education and entertainment for the people of Zambia, and Katete.
- **State-owned newspapers:** Zambia Daily Mail newspaper. Although Times of Zambia newspaper is headquartered in Ndola.

5.9.5 Water Supply/Sanitation

The project site is not serviced yet, the main water source is underground water through boreholes and the sewer system is via closed septic tanks.

Water Source

The project water source will, at least initially, be from groundwater abstraction within the project area. The source shall be multiple boreholes combining existing boreholes with new boreholes which are to be developed during implementation. To meet the peak daily demands the following source capacities will be required.

Electricity

The project site is serviced by ZESC0 power lines, an overhead electrical reticulation system comprising armoured cables will be built to service the different associated project facilities.

5.9.6 Health

Health is key to the economy of Katete and Chadiza Districts**,** as productivity is severely hampered when disease prevalence is high. There are number of challenges in health provision in the districts among them; access to health facilities and the incidence of some diseases whose occurrence is driven by the state of the environment. The main hospital in Katete is St Francis Mission Hospital, While in Chadiza it is Chadiza District Hospital and the districts have a number of rural health centres.

5.9.7 Economic Activities

Agriculture is the main economic activity in Katete and Chadiza district. Major crops include maize and groundnuts. Agriculture is such an important industry that requires a steady supply of water. The districts have abundant land resources that can sustain crops, live stoke and fish farming. The majority of trade originating from the districts is by large scale-farmers who supply livestock products to Katete and, in recent years, provided horticulture product to international markets. The district has potential for development in farming, tourism and other industrial activities.

5.9.8 Traditional and Religious Practice

Archaeological and Cultural Environment

The project site has no known sites that have been confirmed as cultural or archaeological sites. However, it is worth noting that should such sites be discovered the Council and National Heritage Conservation Commission shall be notified at the earliest possible time. Close collaboration with traditional leaders is important. The institution of traditional leadership embodies the culture, traditions, customs and values of local people. While traditional leaders had been largely left out in the local government system, serve for their role of appointing a symbolic representative to the Local Council, a House of chiefs was re-established a few years ago and a Ministry for Chiefs and Traditional Affairs was set up after 20th September 2011.

The area has a mixed race, the whites most of which are farmers in the area and the indigenous Zambians who are mostly high-profile persons. Clearly, the population is largely a Christian population.

Religion

Zambia was officially declared a Christian nation according to the 1996 constitution. The country is 85 percent Christian, with Catholicism being in

the majority. Anglicans, Methodists, Baptists, and Seventh Day Adventists all have established a presence as well. While Zambia is predominantly a Christian country, few have totally abandoned all aspects of their traditional beliefs. Zambia has a very small Jewish community, composed mostly of white Ashkenazi. Muslim, Hindu and Baha'i citizens together represent about two percent of the population.

Language

The Eastern Province has a diverse mix of ethnic or tribal groupings from different parts of the country. Most (98.7 percent) of Zambia's population comprises about 72 Bantu-speaking ethnic groups. Almost 90 percent of Zambians belong to the eight main ethnolinguistic groups, which are the Bemba, Nyanja-Chewa, Tonga, Lunda, Luvale, Kaonde, Nkoya, and Lozi. Europeans make up 1.1 percent, and others 0.2 percent. Katete is home to a diverse community of foreigners, many of whom work in the aid industry as well as diplomats, representatives of religious organizations and some business people. English is the official language. The major vernaculars are Nyanja, Chewa, and about 70 other indigenous languages

6 IDENTIFICATION OF ENVIRONMENTAL IMPACTS

A distinction should be made between significant positive and negative impacts, direct and indirect impacts, and immediate and long–term impacts. Also, identify impacts which are unavoidable and/or irreversible.

The concerns of the public and the key potential negative environmental impacts will all be carefully addressed in the ESIA.

From the consultations and field survey of the proposed development in Katete district it is the opinion of the project proponent that the focal environmental and social issues during the development are discussed below;

6.1 Anticipated Project Impacts

The positive and adverse project impacts assessment was based on the following impact criteria during pre-construction, construction, operation phases and decommissioning phase as follows:

- **Direction of Impact:** Type of effect the activity would have on the affected environment,
- Positive or negative
- Scale: Physical scale / area over which the impact will be felt: Local, Regional, National or International
- **Duration:** The length of time the impact is likely to occur: Short, Medium or Long Term
- **Reversibility:** Reversible; where it is avoidable or has potential to be restored; Irreversible; where it is unavoidable or has no potential to be restored.
- **Pathway: Indirect;** where it is no direct result of the Project. Direct; where it is a direct result of the Project and associated activities; Cumulative; where it results from incremental changes caused by other past, present or reasonably foreseeable actions together with the Project.

6.1.1 Air quality

During preparation and construction activities such as excavation, creation of access roads, mixing of materials and vehicle movement will result in temporary impacts to air quality due to the increase in dust generation in the Project area. This in addition to combustion emissions from the machinery and vehicles may negatively impact sensitive receptors near the Project site.

Other impacts to air quality may result from the vehicular emissions due to increase in vehicle movement during operation of the Project. Below is the impact significance.

Impact Significance	Negative	Direct	Long term	Irreversible	Can be mitigated

6.1.2 Noise

During preparation and construction activities such as excavation and construction of the Project infrastructure will result in increase in noise levels in the Project area.

Operation of the Project will result in noise due to human activities and movement of vehicles to and from the Project site.

Sensitive areas near the Project site including fauna breeding are-as and households may be negatively affected by the noise. Below is the impact significance.

Impact Significance	Negative	Direct	Temporary and long-term	Unavoidable	Irreversible

6.1.3 Water quality and use

Generation of waste water and solid waste from construction activities and installation of other ancillary infrastructure and from the camp sites may result in contamination of surface and ground water during the construction phase.

Accidental spills of fuels or other hazardous substances during construction and operation may affect surface water and ground water quality.

Local surface and ground water resources will be used during construction, operation and maintenance activities. Poor liquid effluent management and disposal from the housing units. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Unavoidable	Irreversible

6.1.4 Soils

- Removal of vegetation during site preparation and other construction activities may result in soil erosion and loss of top soil.
- Accidental spills of fuels or other hazardous substances may contaminate the soils.

Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Unavoidable	Irreversible

6.1.5 Biodiversity

Removal of vegetation during construction activities may result in habitat loss, habitat fragmentation, and loss of endemic species if any. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Unavoidable	Irreversible

6.1.6 Impact of Socio-Economic

The proposed project will offer skilled and unskilled employment to the locals (male and female) and others from surrounding areas.

The influx of Project employees as a result of the Project will create more circulation of revenue due to increased demand for local goods and services.

It will also bring economic development followed by demographic and urban growth. Below is the impact significance.

Impact Significance	Positive	Direct and indirect	Temporary and long-term

6.1.7 Landscape and visual impacts

The construction of the proposed Project will result in a change in the landscape of the Project area which may affect the visuals of the people living in the surrounding areas. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Long-term	Can be mitigated

6.1.8 Impacts to Land use

Restrictions to land use due to the construction of the Project components will impact the surrounding communities. These changes will in turn affect the livelihoods and the way of life of the com-munities. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Long-term	Can be mitigated

6.1.9 Cultural and archaeological heritage

Ground disturbing construction activities may potentially affect below-ground archaeological remains as well as heritage sites, which might have a cultural or natural significance.

The influx of workers hired by the Project as well as residents during operation of the Project may result in changes in the culture of the locals. Below is the impact significance.

Impact Significance	Negative	Direct	Long-term

6.1.10 Occupational Health and Safety

Occupational health and safety impacts occur during the construction, operation and decommissioning phases of the Project due to the activities inherent to the Project. Hazards include working at height, lifting operations and inadequate Personal Protective Equipment (PPE), among others. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Avoidable	Irreversible

6.1.11 Community Health and Safety

Impacts to community health will arise from the influx of workers hired by the Project that may increase the spread of HIV/AIDS during construction of the Project. Other health impacts due to noise, water and air pollution may occur during the construction phase. Impacts to safety may arise from construction works if work areas are left unguarded with easy access especially for children.

During operation, community health and safety impacts related to the spread of HIV/AIDS, improper waste handling and other impacts resulting from human activities. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Avoidable	Irreversible

6.1.12 Waste Resources and waste

Generation of solid waste and waste water during construction activities from the worksite and the workers camp will result in a negative impact to the environment.

Solid waste from the housing units will be generated throughout the Project lifecycle. Below is the impact significance.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Avoidable	Irreversible

6.1.13 Impacts of borrow pits

During construction phase borrow pits will be opened, borrow pits disrupt ecosystems and habitats, leading to loss of biodiversity. The excavation processes will cause erosion and sedimentation in the nearby water bodies. Secondly generation of dust: construction activities at the borrow pits will also be generating noise and dust, which can affect the nearby residents and wildlife.

During operation phase the left borrow pits could be a potential hazard to ecology and nearby communities and animals population. Transmission of diseases, such as malaria and their vector can occur in stagnant water collected in the abandoned borrow pits. Further the borrow pits could become habitats for dangerous animals such as snakes, which can easily attach unsuspecting humans staying near the abandoned borrow pits.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Avoidable	Irreversible

6.1.14 Impacts on livelihood

Road construction can disrupt existing livelihoods, especially for communities located along the construction route or near work sites. This disruption can occur due to noise, dust, traffic diversions, and restricted access to land or resources.

Impact Significance	Negative	Direct and indirect	Temporary and long-term	Avoidable	Irreversible

7.0 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

This section discusses the proposed enhancement and mitigation measures for each respective positive and negative Impact identified in the previous section. The proposed mitigations measures designed to minimize or eliminate for impacts triggered by the project.

The ESMP will include all the measures that are required for environmental protection, which will include the mitigation measures and the monitoring plan. The aim of an environmental management plan is to avoid, minimize, or ameliorate effects or impacts resulting from project implementation and where possible, enhance beneficial effects.

Positive Social-Economic Impacts

The development of this area and construction activities described in this report will lead to numerous positive social impacts during the various phases of the project;

- **Increase in Employment Opportunities**
  Road construction project will create jobs in various sectors, including construction, engineering, transportation, and administration. During the preparation, construction, and operation phases, there is a significant increase in employment opportunities for local communities. This can help reduce unemployment rates and improve the standard of living for many individuals and families.

- **Support to Local Businesses**
  Road construction projects often require a large amount of construction materials and services, providing opportunities for local businesses to supply these goods and services. Local suppliers of construction materials and subcontractors benefit from increased business, leading to economic growth in the area.

- **Reduction in Transit Time**
  Improving roads through reconstruction reduces transit time for vehicles, goods, and passengers. This can lead to increased efficiency in transportation, cost savings, and improved access to markets and services for communities along the road.

- **Increase in Government Revenue**
  Road construction projects contribute to government revenue through the payment of levies, taxes, and toll gate fees. These revenues can be used to fund other development projects and improve infrastructure in the region.

- **Capacity Building for Locals**
  Road construction projects often involve collaboration between local workers and foreign specialists. This provides an opportunity for locals to learn new skills and techniques from experts, improving their capacity and enhancing their employability in the future.

- **Improved Safety and Traffic Flow**
  Well-designed roads improve safety for motorists, pedestrians, and cyclists. Enhanced traffic flow reduces congestion, which can lead to time and fuel savings for travelers. Better accessibility also improves emergency response times and access to healthcare and education facilities.

- **Improvement in Border Facilities Infrastructure**
  Roads that serve as international or interregional trade routes often require border facilities infrastructure improvements. This includes customs checkpoints, immigration facilities, and quarantine stations. Upgrading these facilities will improve efficiency in cross-border trade and travel, benefiting both local and regional economies.

7.1 Impact Mitigation Plan

The impact mitigation plan allocates the responsibilities for implementation of the proposed mitigation measures to the various stakeholders and indicates at what stage in the project they should be performed. The key components of the proposed impact mitigation are as following:

7.1.1 Impact on Water Resource

- All equipment, machinery, trucks and camp installations have to be located more than 250 m from water used for human consumption and at least 150 m from any water body.
- The workshops will have heavy equipment wash-bays equipped with impervious surfaces and containment to enable the capture of all effluents from washing operations. Furthermore, the plant equipment will be washed in dedicated wash-bay areas equipped with impervious surfacing, containment and oil traps.
- Oil traps will be installed in the workshop drainage system to treat all effluents prior to release.
- The community wells in the area will be regularly monitored by the developer to verify any impact on water levels. Partial dams are not expected to affect the flow of surface streams and rivers.
- Groundwater modelling shall be carried out to estimate likely dewatering rates during mining. This shall be undertaken to consider

the potential impact to the water balance prior to commencing any dewatering activities.

- All construction equipment using hydraulic fluid, oil, fuel or any other substance that has the potential to contaminate dewatered water if released into the environment will be subject to a preventative maintenance programme.
- All sewer waste will be channelled to a water treatment pond that will treat the sewer before releasing it into the environment.

7.1.2 Impact on Biodiversity and Vegetation

- Restrict clearing of vegetation only to areas where the road construction, and other structures will be established
- Vegetation will only be stripped immediately prior to the commencement of operations.
- In general: strengthen the awareness of the workforce for the environment (protected areas, plants and wildlife): to avoid logging, hunting, etc. at project site and in the surroundings, to prevent the extraction of plant products (wood, non-timber forest products) and the introduction of invasive species by operation staff and the population of the new settlement, to prevent or minimise pollution of sites, Construction site to be fenced off for preventing use of surrounding areas.
- Where possible, riparian and specialised habitats should be avoided when planning the location of temporary sites.

7.1.3 Impact on Land and Soil

- No machinery and vehicles will be serviced on site. Fuels will be stored in a tank to be installed.
- Storage of fuel and lubricants has to be in tight containers placed on sealed surfaces underneath a roof.
- Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites.
- All activities which could contaminate the soil have to be carried out on sealed surfaces. If accidental spillage occurs, the contaminated soil has to be excavated and disposed of properly (final treatment or disposal shall be done by a suitably qualified company.
- Hazardous waste has to be stored in designated closed tanks or areas.
- Topsoil removed from the peripheral areas of the pits and along pit access roads will be stockpiled and used in future re-vegetation schemes on the mine.

- The project will affect the land use in the project area; however, the company will compensate the land used for agriculture purposes by the locals within the project area.
- The company will ensure that the construction activities are within the project area does not affect the land use of the land outside the project area. The main infrastructure such as the Toll gate and boarder post have been located in the areas which have less agriculture activities within the boundaries of the project area.
- Progressive Rehabilitation: Progressive rehabilitation plan to restore camp and construction site areas as construction activities progress will be implemented. This involves rehabilitating smaller sections of the construction site as they are no longer in use, recontouring slopes, stabilizing soils, and re-vegetating the area.
- Engineering Design: Sound engineering design principles will be implemented to ensure the stability of the road. This includes the proper embankment construction, and regular monitoring of levels for accuracy purposes.

7.1.4 Impact on Air Quality

During the construction phase, several environmental impacts are expected to occur. These impacts primarily stem from clearing activities along the right of way and the collection of raw materials. Dust emissions are a significant concern, particularly during windy conditions, which can lead to the dispersion of loose soil particles into the air, affecting air quality in the immediate vicinity.

Furthermore, dust is expected to be generated from the hauling and offloading activities of raw materials. This dust can settle on nearby houses and vegetation, impacting the local environment.

Increased vehicular traffic flows during construction are also expected to contribute to air pollution, with emissions from vehicles being a significant source of air pollutants. Concentrations of these pollutants are likely to be higher near the road than at a distance from it, potentially leading to adverse respiratory health effects for those living or working nearby.

It's important to note that these impacts are expected to be more pronounced during the drier parts of the year when the soil is dry and loose. Because the roads will not be paved and cleared areas will remain susceptible to windy erosion, dust emissions are likely to occur frequently until the sides of the road are re-vegetated.

The impact of dust emissions is particularly significant when communities are located close to the project site, as residents and road users may experience allergic reactions and other health issues.

To mitigate the environmental impacts of dust emissions during the construction phase, the following measures will be implemented:

- Water Sprinkling: Regularly spraying water on unpaved roads, construction sites, and areas prone to dust generation will help suppress dust by keeping the soil moist.

- Vegetative Cover: Establishing and maintaining vegetative cover, such as grass or other plants, will stabilize soil and reduce erosion, thereby decreasing dust emissions.

- Speed Limit Enforcement: Implementing and enforcing speed limits for construction vehicles will help reduce the generation of dust from vehicle movement.

- Covering Hauling Trucks: Ensuring that hauling trucks are covered or have sealed containers will prevent loose materials from becoming airborne during transport.

- Traffic Control Measures: Implementing traffic control measures, such as reducing vehicle speeds and controlling traffic flow, will minimize dust generation from vehicle movements.

- Community Awareness and Engagement: Educating local communities about the importance of dust control and encouraging their participation in mitigation efforts will minimize the impacts of dust emissions.

7.1.5 Waste Generation and Management

- Develop a waste management system
- Solid waste shall be sorted according to types. Install garbage cans for temporary disposal of domestic waste. These have to be collected and disposed of according to the regulation of solid waste management and approved by the local authorities.
- No waste shall be disposed of or buried on site. Illegal dumping, either at the construction camp, along the roads or in the surrounding areas, or into the river shall not be allowed.

- Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites.
- In general, waste should be reduced, re-used, recycled and the disposal should be controlled.
- All hazardous waste will be disposed of in accordance with the provisions of SI No. 112 of 2013.
- Hazardous waste (oil, chemicals, etc.) has to be stored in a designated closed tank and/or area until it is handed over to companies specialised in the proper disposal or recycling of those hazardous wastes.
- Containers have to be available at the workshops for the disposal of used filters, gaskets and other spare parts.

7.1.6 Impact of Noise and vibration

- All mobile vehicles and equipment will have noise reducers
- All land preparation activities will take place during the day and any work during night- time will be communicated to the state authorities and local community
- Use adequate and well-maintained construction and transportation equipment including state-of-the-art built-in systems (muffle) to reduce the noise.
- The contractor has to develop a maintenance program to ensure to keep noise within legally permitted limits. Instruct the workforce to avoid unnecessary noise.
- Workers exposed to excessive noise have to be equipped with PPE (e.g., ear protectors) and the exposition time has to be limited.

7.1.8 Community Health and Safety

- Employing of local residents to minimise the spread of communicable diseases.
- The Construction Supervisor in collaboration with Ministry of Health shall take measures to educate and sensitise the labour force on the risks of communicable diseases (malaria, TB, STDs, including HIV/AIDS etc.). How infections are transmitted, how to recognise symptoms, what should be done and on prevention measures. Male and female condoms shall be distributed to workers by the Contractor free of charge.
- Every worker has to have the necessary vaccinations (Hepatitis A and B, Tetanus, etc.). Preventive medicine and mosquito nets shall be distributed to the workforce by the Contractor free of charge on a regular basis. Workers' camps should be sprayed for mosquitoes and other pests on a regular basis.

7.1.9 Occupational health and Safety

- Adequate number of modernized toilets that are equipped with a ventilation pipe, soak ways, toilet bowls and cistern will be considered.
- Strict use and cleanliness of the modernized toilet facilities will be enforced during the entire life of project.
- Lutembwe Consulting Company Limitedwill develop a Safety Guidance Code whose objectives will be to assist in reducing accidents, injuries, incidents and occupational diseases during mining.
- Drivers will be instructed to drive the vehicles at 40km/h to minimize on risks of accidents
- The project activities will be designed, prepared, and operated according to Good International Industrial Standards (GIIS's) for the prevention and control of incidents.
- All personnel involved in the project will be equipped with proper Personal Protective Equipment (PPE) such as dust mask, eye goggles, protective clothing, gloves, hard hats, hearing protection and boots.

7.1.14 Loss of amenity values

The project might impact on the amenity values in the project area. This impact is insignificant because the project path has been cleared and they are no amenity with the project site which will be affected during the construction and operation of the project.

7.1.15 Resettlement of families within and near the project area

If they will be any affected people, all the identified households and agricultural fields to be affected will be compensated and a Resettlement Action Plan will be developed.

7.1.16 Loss of ethnicity (culture/traditions)

The project might impact on the ethnicity (culture/traditions) in the project area. The project area is not used for any traditional ceremonies or culture activities hence this impact is minimal.

7.1.17 Impact on borrow pits

To prevent accidents to human beings and other roaming animals from falling into the pit, the pits will have gates for both entry and exit. Warning signs will be installed at necessary strategic locations to inform passer-by's of the immediate danger ahead.

The borrow pits will be filled with suitable material and graded to blend with the surrounding landscape. This helps will restoring the area into its natural state and reduce safety hazards like steep slopes.

Vegetation will be planted around the pit to help will soil stabilization, erosion and enhance the visual appeal of the area.

Proper geotechnical assessment will be carried out to assess the stability of the borrow pits.

Vector -borne diseases in particular malaria, shallow ponds often become blending habitats for mosquitos. Vector bleeding is considerably less in deeper water. Proper water management techniques, such as installing drainage systems or creating wetlands, will be used to mitigate this risk.

Monitoring and Maintenance; the borrow pit sites will be regularly monitored and maintained to ensure that the mitigation measures remain effective. This will include checking for erosion, maintaining vegetation, and repairing of any damaged to the fencing or signage.

7.1.18 Impact on livelihood

Stakeholder Engagement: Engaging with local communities and stakeholders early in the planning process will help identify potential impacts on livelihoods and develop appropriate mitigation measures.

Alternative Access Routes: Providing alternative access routes for communities affected by road construction will help minimize disruptions to their daily activities, livelihoods and also prevent resettlement and compensation issues.

Compensation and Support: Providing compensation or support to affected households or businesses will help mitigate the economic impact of road construction.

7.2 Summary of Environmental and Social Monitoring Plan

Table 15: Summary of Environmental and Social Monitoring Plan

Aspect	**Impact**	**Mitigation Measures**	**Time frame**	**Performance Indicator**	**Frequency of Monitoring**	**Responsible person**	**Cost ZMW /year**
Waste generation	Waste to be generated will include general solid waste (putrescible and non-putrescible), general office waste (paper, cardboard, glass), used oils, filters, oily rags, drill mud and batteries.	Develop a waste management system Solid waste shall be sorted according to types. Install garbage cans for temporary disposal of domestic waste. These have to be collected and disposed of according to the regulation of solid waste management and approved by the local authorities. No waste shall be disposed of or buried on site. Illegal dumping, either at the construction camp, along the roads or in the surrounding areas, or into the river shall not be allowed.	All project phases	Waste bags and waste receptacles available Waste management system developed Number of illegal dumping sites	Random	SHE Manager & Contractors representative	45,000.00

		Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites. In general, waste should be reduced, re-used, recycled and the disposal should be controlled. All hazardous waste will be disposed of in accordance with the provisions of SI No. 112 of 2013. Hazardous waste (oil, chemicals, etc.) has to be stored in a designated closed tank and/or area until it is handed over to companies specialised in the proper disposal or recycling of those hazardous wastes.					

		Containers have to be available at the workshops for the disposal of used filters, gaskets and other spare parts.					
		Waste oil and lubricants will be stored in designated receptacles and areas until enough quantity is collected for disposal through ZEMA approved recyclers. Containers have to be available at the workshops for the disposal of used filters, gaskets and other spare parts.	All project phases	Records of waste oil disposed at ZEMA approved recycler Number of containers available	Regularly	SHE Manager & Contractors representative	30,000.00

Air quality	During the construction phase, several environmental impacts are expected to occur. These impacts primarily stem from clearing activities along the right of way and the collection of raw materials. Dust emissions are a significant concern, particularly during windy conditions, which can lead to the dispersion of loose soil particles into the air, affecting air quality in the immediate vicinity	Water Sprinkling: Regularly spraying water on unpaved roads, construction sites, and areas prone to dust generation will help suppress dust by keeping the soil moist. Vegetative Cover: Establishing and maintaining vegetative cover, such as grass or other plants, will stabilize soil and reduce erosion, thereby decreasing dust emissions. Speed Limit Enforcement: Implementing and enforcing speed limits for construction vehicles will help reduce the generation of dust from vehicle movement. Covering Hauling Trucks: Ensuring that hauling trucks are covered or have sealed	All project phases	Air parameter should be within the acceptable standards	Regularly	SHE Manager & Project manager	

		containers will prevent loose materials from becoming airborne during transport. Traffic Control Measures: Implementing traffic control measures, such as reducing vehicle speeds and controlling traffic flow, will minimize dust generation from vehicle movements. Community Awareness and Engagement: Educating local communities about the importance of dust control and encouraging their participation in mitigation efforts will minimize the impacts of dust emissions.					

Waste management	Littering of non-degradable wastes such as plastics, glass, rubber and paper can visually degrade an area.	Waste generated while in the project area shall be placed in the waste bags and only disposed-off at camp site. Dispose non-hazardous waste at regular basis in dedicated receptacles provided with bunds to prevent escape waste at designated disposal site at campsite. Solid waste generated during construction and at campsites will be properly treated and safely disposed of only	All project phases	Number of Waste bags in vehicles Receptacles provided and bunded disposal site Number of disposal sites	Random Monthly	SHE Manager & project manager SHE Manager & Project manager	28,000 per month

		in demarcated waste disposal sites. In general waste should be reduced, re-used, recycled and the disposal should be controlled.		Quantity of recycled materials			
	Improper sanitation habits can lead to intestinal parasite infestations within humans and animals, endangering the overall health of the recipients.	Adequate number of flushable latrines will be provided. These will be kept closed at all times to prevent flies finding their way to the excreta.	All project phases	Number of flushable latrines provided	Random	SHE Manager & Project manager SHE Manager & Project manager	25,000/annual

Noise and Vibration from the equipment	Increase in ambient noise level	Workers to wear ear plugs in noisy environs. contractor to avoid working at night, limit speed to 40-60 km/hr and tune-up vehicles. Use adequate and well-maintained construction and transportation equipment including state-of-the-art built-in systems (muffler) to reduce the noise.	During site operation phase During site operation phase	Number of PPE provided state-of-the-art built-in systems (muffler) installed	Continuous through project cycle	SHE Manager & Project manager	35,000/quarter 150,000/annual
Wildlife disturbance	Project activities	Migration of animal Strengthen the awareness of the workforce for the environment (protected areas, plants and wildlife): to avoid logging, hunting, etc. at project site and in the surroundings, to prevent the extraction	The site is further away from the protected areas, and in cases where wildlife is encountered, stringent	Number of awareness programs conducted	Throughout the project cycle	SHE Manager & Project manager	25,000/annual

		of plant products (wood, non-timber forest products) and the introduction of invasive species by operation staff and the population of the new settlement, to prevent or minimise pollution of sites, Construction site to be fenced off for preventing use of surrounding areas	measures shall be put in place.				
Stumping of trees (deforestation/ Natural Forest clearance	To ease the passage of machines and the actual road construction activities	(Aesthetic (Site outlook disturbance), wind and water erosion along the access roads, camp sites Reduction in edaphic fauna population Restrict clearing of vegetation only to areas where the road and associated structures will be constructed Vegetation will only be stripped immediately	Bypassing of big trees and those important species, Planting trees along the sides of access roads and also biological offsetting by planting trees in another area to	Quantity of the vegetation cleared Only areas with structures cleared	Throughout operation phase and at decommissioning	Site environmental officer	35,000/annual

		prior to the commencement of operations Where possible, riparian and specialised habitats should be avoided when planning the location of temporary sites	balance the carbon sink				
Soil pollution	Soil contamination	No machinery and vehicles will be serviced on site. Fuels will be stored in a tank to be installed No waste shall be disposed of or buried on site. Illegal dumping, either at the construction camp, along the roads or in the surrounding areas, or into the river shall not be allowed. Storage of fuel and lubricants has to be in tight containers placed	Weekly storage of fuels Weekly for solid waste and continuous for liquid waste	Number of vehicles serviced at the workshop No piles of waste within the project site.	Continuous through project cycle Continuous through project cycle	SHE Manager & Project manager SHE Manager & Project manager SHE Manager & Project manager	20,000/ Month 15,000/month 10,000/month

		on sealed surfaces underneath a roof. Solid waste generated during construction and at campsites will be properly treated and safely disposed of only in demarcated waste disposal sites. All activities which could contaminate the soil have to be carried out on sealed surfaces. If accidental spillage occurs, the contaminated soil has to be excavated and disposed of properly (final treatment or disposal shall be done by a suitably qualified company. Hazardous waste has to be stored in designated closed tanks or areas		Number of tight continer placed Quantity of solid waste treated and disposed off Number of sealed surfaces constructed Number of designated closed tanks installed	Continuous through project cycle Continuous through project cycle Continuous through project cycle Continuous through project cycle	SHE Manager & Project manager SHE Manager & Project manager	15,000/month N/A 15,000/month

Occupational safety	Loss of human life	Observance of good work ethics and sensitization of workers Drivers will be instructed to drive the vehicles at 40km/h in the project site area to minimize on risks of accidents. All personnel involved in road construction will be equipped with proper Personnel Protective Equipment (PPE) such as dust mask, eye goggles, protective clothing, gloves, hard hats, hearing protection and boots. Strict use and cleanliness of the modernized Pit latrines facilities will be enforced during the entire life of mining	During construction and operation phases During construction and operation phases	No occupational accidents are reported. Number of employees provided with PPE	Continuous through project cycle	SHE Manager & Project manager	30,000/Quartely

		Potential ignition and flammable materials sources will be stored in Storage room (Regulation 39 (1) and 42(1) of Mines and Minerals Environmental Regulations) located at an adequate distance from other facilities at camp site to provide a safety buffer zone and provided with warning signs.					
Health of workers	Spread of HIV/AIDS and STIs	Conduct a comprehensive health awareness campaign mong the local community and project workers on the dangers of the HIV/AIDS pandemic. Screen and treat project workers for STIs. Provide treatment to project workers and their partners regarding non-HIV/AIDS cases and refer HIV/AIDS cases to National AIDS	During site preparation and operation phases	Number of STDs, HIV/AIDS infected workers reduced	Continuous through project cycle	Project Manager	10,000/month

		Program for treatment under the MOH. Provide condoms to all project workers at all times. Employing of local residents to minimise the spread of communicable diseases		Number of condoms provided			
Creation of employment	Improved incomes	Discriminate in favour of local unskilled workers It is anticipated that the project will provide permanent jobs going by the labor law requirement that any one working more than 6 months should be permanently employed	During preparation and operation phases	Standard of life of local improved	Continuous through project cycle	Project Manager	N/A
Increased public revenue	Revenue might be increased through statutory contribution	There will be opportunities to generate some revenue and contribute to increase in the retail and trading of the	Project lifecycle	Revenue collected per annual	Quarterly	Project Manager	N/A

		product in the local economy. There will also be economic benefits at the national level through revenue contribution from taxes					
Multiplier Effects of the project in the area	The project might bring multiplier effects to the local people	There shall be a boost to local development activities especially in the area of food supply and raw materials. This will be a direct impact on the developmental activities due to the Project activities.	Project Lifecycle	New developmental ativities introduced in the project area	Random	Project Manager	N/A
Ground water Disturbance and depletion	ground water might be disturbed and be depleted	The community wells in the area will be regularly monitored by developer to verify any impact on water levels.	Project lifecycle	Number of wells monitored in the project area	Continuous through project cycle	SHE Manager & Project manager	30,000/Biannual

Impact on borrow pits	During construction phase borrow pits will be opened, borrow pits disrupt ecosystems and habitats, leading to loss of biodiversity. The excavation processes will cause erosion and sedimentation in the nearby water bodies. Secondly generation of dust: construction activities at the borrow pits will also be generating	To prevent accidents to human beings and other roaming animals from falling into the pit, the pits will have gates for both entry and exit. Warning signs will be installed at necessary strategic locations to inform passer-by's of the immediate danger ahead. The borrow pits will be filled with suitable material and graded to blend with the surrounding	During construction stage of the project	Zero incidents / accident report from the borrow pits	Continuous through project cycle	SHE Manager & Project manager	30,000/Biannual

	noise and dust, which can affect the nearby residents and wildlife	landscape. This helps will restoring the area into its natural state and reduce safety hazards like steep slopes. Vegetation will be planted around the pit to help will soil stabilization, erosion and enhance the visual appeal of the area. Proper geotechnical assessment will be carried out to assess the stability of the borrow pits. Vector -borne diseases in particular malaria, shallow ponds often become blending habitats for					

		mosquitos. Vector bleeding is considerably less in deeper water. Proper water management techniques, such as installing drainage systems or creating wetlands, will be used to mitigate this risk. Monitoring and Maintenance; the borrow pit sites will be regularly monitored and maintained to ensure that the mitigation measures remain effective. This will include checking for erosion, maintaining vegetation, and					

		repairing of any damaged to the fencing or signage.					
Impact on livelihood	Road construction can disrupt existing livelihoods, especially for communities located along the construction route or near work sites. This disruption can occur due to noise, dust, traffic diversions, and restricted access to land or resources	Stakeholder Engagement: Engaging with local communities and stakeholders early in the planning process will help identify potential impacts on livelihoods and develop appropriate mitigation measures. Alternative Access Routes: Providing alternative access routes for communities affected by road construction will	during construction stage	Zero compliant from stakeholder	During construction and operation	Project Manager	Yet to be determined

		help minimize disruptions to their daily activities, livelihoods and also prevent resettlement and compensation issues. Compensation and Support: Providing compensation or support to affected households or businesses will help mitigate the economic impact of road construction					

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10.0 DECLARATION OF AUTHENTICITY OF REPORT CONTENTS

We trust that the information described in this Environmental Impact Statement is adequate and satisfies the laws and regulations of Zambia regarding the proposed construction, rehabilitation and upgrading of Katete-Chanida Road and associated border infrastructure. We also trust that the information meets the Zambia Environmental Management Agency's requirements for approval.

……

Director

Lutembwe Consulting Limited

12. APPENDICES

Annex 1 Certificate of Incorporation

CF45
(Regulation 46)
Companies Registration No. **120230056654**
Serial No.

Republic Of Zambia

The Companies Act, 2017

(Act No. 10 of 2017)

The Companies (Prescribed Forms) Regulations, 2018

(Section 14)

CERTIFICATE OF INCORPORATION
PRIVATE COMPANY LIMITED BY SHARES

This is to certify that LUTEMBWE CONSULTING COMPANY LIMITED is on and from the **15th day of September 2023** incorporated as a PRIVATE COMPANY LIMITED BY SHARES.

Given under my hand and seal at Lusaka, Zambia, this **15th day of September 2023**.

COMPANIES REGISTRATION AGENCY ** PATENTS &

PERRY MWABA
Deputy Registrar of Companies

For further details relating to this business visit
http://www.pacra.org.zm

Annex 2: Letter of Approval TORs

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

24 Mar, 2024

{serial_no}

The Director,
Lutembwe Consulting Company Limited
Plot No.19/687, Mosque Road, Makeni,
Lusaka.

Dear Sir,

RE: **TERMS OF REFERENCE AND SCOPING REPORT FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED UPGRADING AND REHABILITATION OF KATETE TO CHANIDA ROAD, AND CONSTRUCTION OF ASSOCIATED BORDER STRUCTURES IN KATETE AND CHADIZA DISTRICTS BY LUTEMBWE CONSULTING COMPANY LIMITED.**

The above matter refers.

Zambia Environmental Management Agency (ZEMA) has reviewed the Terms of Reference (ToRs) and Scoping Report for the Environmental Impact Assessment of the for the Proposed Upgrading and Rehabilitation of Katete to Chanida Road, And Construction of Associated Border Structures in Katete and Chadiza Districts by Lutembwe Consulting Company Limited We would like to inform you that the said ToRs and Scoping Report have been **approved**.

The approved ToRs and EIA team members are as follows:

i. **Proposed Project Location**

The proposed project route is located along Katete-Chanida Road in Katete District and part of Chadiza District. The nearest landmarks to the site include, Katete Town Council which is located 20 metres to the southwest, Katete District Hospital located metres to the east, Katete Police Post which is located Adjacent to the project site on Southeast boundary from the project site. The settlements along the road are Dole, Chimbundire, Kambila, kafumbwe, Mlolo which are located along the project site in the Northern Direction while Chanida Boarder in Chadiza district is north west direction. Katete CBD is located withing the project site while Chadiza CBD is about 28km from the project site.

ii. **Proposed Project Scope**

The project scope includes rehabilitation and upgrading of the Katete Chanida Road to accommodate the increase in traffic of vehicles using the road. The project will involve Construction of 55km road, rehabilitation of four major Bridges, Construction of a Toll gate, Weighbridge and Border Infrastructures (One stop border post, Officers houses, 3 Trucks packing facilities along the road). The lifespan of the project is more than 25 Years. Upon completion of the road, developer will continue with the routine maintenance of the project for the period of 23 years before handing over to the government

The other project will involve the following activities to be carried out by the developer;

- The construction of a 2 Km dual carriageway with median of 1.5 minimum within the Chanida border area with new border facilities such as Police post, Houses, Border Post;
- Improving, rehabilitation/maintenance of the drainage capacity of the existing culvert;
- Hot-mix asphalt paving for the whole 55Km;
- Construction of new concrete lined drains;
- Construction of pedestrian walkways;
- Bus bays and truck laybys;
- Double seal Surface treatment for first 10km works and reconstructed shoulders for the entire road;
- Graded crushed stone base course to the first 2.8Km;
- Earthworks and pavement layer works for reconstruction scope;
- Installation of Ø 900mm and Ø 600mm culvert pipes;
- Furnishing and placing of deformed high yield steel reinforcement to culvert end structures;
- Provision of solar street lighting for major settlements along the 55km stretch;
- Road line marking and installation of permanent signage

iii. **EIA Team Members**

No	Name	Qualification	Role in the project

1.	Peter M. Mwanza	• Bachelor of Science in Wood Science and Technology • Certificate Environmental and Social Risk Management Training, World Band Group, Zambia. • Certificate Environmental and Social Impact Assessment in Mines. • Masters of Science in Project Management. • IEMA Approved Environmental management Systems 14001: Lead. • Certificate Environmental Management Systems (EMS) ISO 14001	• Environmentalist /Team Leader • ESIA Coordinator and provider of environmental management information
2.	Nephas Mapiki	• Master of Science in Project Management. • Bachelor of Science in Urban and Regional Planning.	GIS information and conduct a land use assessment on the project area
3.	Rodgers Lungu	• Bachelors of wood Science and Technology's Degree.	The expert will conduct Air Quality and Noise assessment in the project area
4.	Valerie Kalinso	• Master of Mass Communication • Bachelors Degree in Mass Communication.	Social Experts to specialize in gathering information on the Population, distribution. Conduc a Gender assessment, social and economic
5.	Dickson Kabwe	• Bachelor Degree of Science (Ecology), Certificate in Environmental Management, • Certificate in Compliance and Enforcement of Environmental Law	The Ecologist will focus on the assessment of the Flora, Fauna, Aqua-flora and Identify area of high biodiversity on the site.
6.	Chisanga Siwale	• MSc (Integrated Water Resources Management), BSc (Natural Resources and Environmental Management)	The Hydrologist will identify significant impacts from existing uses and interference with th water resource, surface water flow that may result either directly or indirectly from th proposed project and identify and comment on the risks and consequences of pollutin surface water from proposed project activities
7.	Davies Chansa	• BSc (Hons): Appl. Sci. Transportation Engineering • Bachelor of Engineering Degree	The Highway Engineer will be the overseer for all the road works and design for the project.
8.	Osbert Chanda	• Bachelor of Engineering Degree in Civil and Environmental Engineering	The Civil/Bridge Engineer will be overseer all civil works and Bridge rehabilitation of th project.

iv. **Approved Terms of Reference**

The approved TORs include the following specialist studies:

- Climate and Air Quality Study;
- Noise and vibration assessment;
- Land Use and Soil Study;
- Geology and Topography;
- Biodiversity (terrestrial and aquatic flora and fauna);
- Hydrology – ground and surface water;
- Local Traffic Assessment; and
- Socio-economic and Cultural Setup Study;

Please do not hesitate to contact the undersigned should there be any issue herein that may require clarification.

Yours faithfully,

Mr. Godfrey Mwiinga
Director General
ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

Annex 3: Approved TORs and Scoping Reports

Annex 3a: Approved TORs

Annex 3b: Approved Scoping Report

Annex 4: Scoping meeting Minutes

MINUTES OF THE SCOPING MEETING FOR THE CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE CHANINDA ROAD AND ASSOCIATED BORDER INFRASTRUCTURE IN KATETE DISTRICT OF EASTERN PROVINCE BY LUTEMBWE CONSULTING COMPANY LIMITED.

Date: 14/02/2024
Time: 11:00hrs- 11:52hrs
Venue: Katete Council Motel

AGENDA

1. Registration of Attendees
2. Singing of the National anthem
3. Opening prayer
4. Welcoming all stakeholders and Introductions
5. Opening remarks
6. Presentation of the Proposed Project by Mr. Dickson Kabwe
7. Presentation of the Project layout and Components by Mr. Johan Richter
8. Discussion (Questions and Comments)
9. Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance. No apologies were sent forth.

1. Masiyalezi Kabeta _Forestry Department
2. Innocent Phiri - CIC Press Team
3. Zahid Milo _ Sable-Lutembwe Consultancy Company Limited – Director
4. Joseph Mwanza _ Chewa Heritage Foundation
5. Nathan Nambuta _ District Commissioner's Office
6. Raphael Phiri _ District commissioner – Katete District
7. Ryani Kafulaku _ District Intelligence Officer
8. Dickson Kabwe _ Managing Director – Tsalach Global Limited
9. Sakani Lungwe _ Project Manager - Lutembwe Consultancy Company Limited
10. Golden Kamasumba _ Director of worker – Katete Town Council
11. Chomba Kabanshi _ Environmental Office and Safety officer – Tsalach Global limited
12. Natasha Nduma _ Town Planner
13. Andrew Paul Mwanza _ Office of the President
14. Hope Bwalya _ Reporter _ ZANIS

15. Talullah Chisenga _ Office of the President
16. Rodgers Lungu _ Environmental Consultant – Tsalach Global Limited
17. Mwala Ikasaya _ Katete Town Council
18. Mwandamena _ Zambia Police
19. Mekani Phiri _ Nailesi Village
20. Chiwowa Mike _ Ministry of Education
21. Jeremiah Mbewe _ CDT

1. Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 21 stakeholders were registered.

2. Singing of the National Anthem

Singing of the national anthem was led by Natasha Nduma.

3. Opening prayer

The opening prayer was done by Natasha Nduma

4. Opening remarks

Officiating the scoping meeting was Katete District Commissioner Raphael Phiri welcomed the everyone at the meeting, highlighting the importance of the project to the development of Katete and the economy at large, he further made is clear that 70 % of the country fuel is imported into the country via Port of Beira, Through Chanida. He further stated the importance of the road the impacts which it might have if the road is closed. “The project will create the much need employment opportunity for the local youths of Katete District. Making it clear that District won’t allow the developer to employ People outside Katete for Unskilled labor and Semiskilled labor”, He said.

The District Commissioner closed his speech by stating how excited the people in Katete to have such a project and how committed his office his working with the contractors assigned to the work to ensure that government’s desire of a world class road is achieved.

5. Welcoming all Stakeholders and Introductions

The meeting was called to order at 11:00hrs by the meeting moderator Ms Natasha Nduma who invented the Director from Tsalach Global Limited Mr Dickson Kabwe to give his presentation on the proposed construction, rehabilitation and upgrading of Katete Chaninda Road and associated border infrastructure in Katete and Chadiza districts of eastern province by lutembwe consulting company limited

The presenter Mr Dickson Kabwe further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed project.

Mr Kabwe further stated the rationale for the project and the fact that a project of this magnitude requires the preparation of the Environmental and Social Impact Assessment (ESIA).

6. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction
- Project Description
- Project Activities
- Project Design
- Project Location
- ESIA Process
- Impacts and Mitigation measures
- Conclusion

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called for questions and contributions from difference stakeholder present.

7. Discussions

Mr. Mwala Ikasaya – District head coordination advisor_ Katete Council

Mr. Mwala Ikasaya wanted to find out if the developer will use the Local community health workers for Health-related jobs or the developer already has health workers employed within the company He emphasized the legal requirement for at least 10% of community health workers to be allocated to the community.

Mr. Raphael Phiri - District Commissioner _ Katete District

Mr. Raphael Phiri's concern was on the Environmental and social impact assessment process. He stated according to the presentation the process has 10 stages which are lengthy and the people can't wait for such long. He further wanted to find out when the approve can be given by ZEMA, where will the road start from and he proposed that the 2.8 Km of street light which will be

developed in Katete should equally be developed at Chaninda border.

His final question was based on Wildlife, stating that project area has no presence of wild life and it is not a game manage area and he would have wanted the presenter to make reference to livestock because of a lot of cattle within the project area

Mr. Joseph Mwanza _ Chewa Heritage Foundation
Wanted to find out if ZEMA will hold a meeting with The Kingdom and the community in relation to land disturbance. Stating that the project might affect the nearest settlement within the road reserve.

Mr. Dickson Kabwe- Chairperson
Mr. Dickson Kabwe responded to the first question by stating that the developer will work hand in hand with the local council with regards to the HIV/AIDS activities, making reference to the mitigation measures, The Chairperson stated that its basically not feasible for the developer to work alone on such matters and that it's a requirement by law that the developer has to work with the local community

The chairperson responded to the second question by confirming that the process as 10 stages and normally such a project takes between 4 to 5 months. He further added on stating that the developer is working with RDA and other stakeholder with hopes that the project can be given approval within the shortest period.

Responding to the question which was talking about street lights the Chairperson assured the stakeholders that the engineer has taken note of the concern and it will be put into consideration. Responding the question which was talking about wild like the chairperson explained to the stakeholders that mitigation measure has already be provided in the report, with reference being made to the presentation under mitigation measure, section which was talking about place speed humps at location with settlements and finally made mention that the road construction will start from Katete and not Chaninda District

Responding to Mr Joseph Mwanza, The chairperson stated that at this point we don't know who's going to the disturbed but when we start our studies we will be able to know who will be affected. And after we identify the affected, we will be able to seat down with local head men and discuss on the compassion can be done. Like we did make mention we are trying to avoid

compensation issue by focusing out work with the road reserve. In areas where they are fields or structures the road might go around the structures/fields in order to avoid.

Mr. Golden Kamasumba _ Director works _ Katete Council
Mr. Golden Kamasumba sought clarity on the starting point for the construction of the dual carriage road.

Natasha Nduma _ Town Planner
Ms. Natasha Nduma's first question was based on Loss of vegetation, she wanted to find out if the company has any other mitigation measures beside avoiding clearing of vegetation.

Her second question was based on soil contamination where she wanted to find out mitigation measures for soil contamination that the developer has put in place and if they are any soil tests that will be done in an event that soil is contaminated

Ms. Natasha Nduma's final question was on borrow pit requesting if the borrow pit can be left open after completion of the project, justifying her requesting by stating that Katete District doesn't have any active streams and the pit can be used as a source of water for the animals within the community.

Mekani Phiri _ Community member _ Nailesi Village
Mr. Mekani Phirr raised a concern truck which are currently parking with Katete CBD, stating that the trucks are causing a lot of serious road problems. He further requested if the developer will construct any truck parking along the new road?

Dickson Kabwe- Chairperson
Response to the first question:
The dual carriage will be located at the chaninda border post; however, they are still other studies being done whether it will be a dual carriage way or sidewalks that will be done, looking at the activities and impacts that each activity will bring a decision will be made based on the finding.

Response to the second question
If we find ourselves cutting a lot of trees, we will engage the forestry department to help us on how best we can go about it either by being charge per tree or any other best option.

Response to the third question:

Soil contamination, clean ups will be done on site and the camp sites, additionaly all the workers will be trained on how to mitigate such. In an even that they is a large spillage professionals will be engaged to see on how best that spillage can be mitigated and only then will soil testing can be done

Response to the requesting concerning the borrow pits:
On the borrow pit, for other stakeholders are not raised concerns stating that they are dangerous to the community, however is highlighted that the developer has taken note of the requested and it will be put into consideration.

Response to the fourth question
loss of vegetation, the reason why we didn't talk about loss of vegetable is that the project is already existing meaning we don't have a lot to clear and what we are focusing on is the use of road reserves which are already cleared. And in an even that we find ourselves cutting a lot of trees at a certain area we will engage the forestry department.

Response to the final question from Mr. Mekani Phiri
Packing of trucks, the project will have a number of truck packing spots, three in total with a capacity of 100-200 trucks per truck.

Chiwowa Mike _ Ministry of Education
Mr Chiwowa wanted to Know if the developer will provide feedback after consultants finish conducting their studies regarding resettlements and compensation for people who will be affected by the project.

Hope Bwalya _ Reporter _ ZANIS
Ms. Hope Bwalya wanted to know where the truck parks which will located along the raod?

Dickson Kabwe- Chairperson
Response to Mr Chiwowa Mike
a disclose meeting will be held after one month, this is where we will discuss the finding and if we are going to conduct any compassions or not.

Response to Ms. Hope Bwalya
The truck parks will be located at Kafumbwe, the border and stores area. Further the council is planning on putting up one truck parking space in Katete but further consultation is need to be done with management at the council

Mr. Joseph Mwanza _ Chewa Heritage Foundation
Mr. Joseph Mwanza wanted to find out where the developer plains to construct associated road/border facilities.

Hope Bwalya _ Reporter _ ZANIS
Wanted to find out if the maintenance works will only be for the road or even the other facilities like the truck parks and houses.

Sakani Lungwe _ Project Manager - Lutembwe Consultancy Company Limited
Response to the questions

What we have a design furnace build operate and transfer contract, on the design contract we will to follow the existing alignment as much as possible, the GRZ road reserved is about 60m from the center line of the existing road, the presenter made mention of deviations been within the road reserve is to minimize compassion issues. The road will only be widened about 5 m from the existing from the 6m. what we have proposed is a 10m road. They are not major alignment which will be done at the border but this will be done after an asset audit which will help us determine if compassions will be necessary. From 0 to 52 we don't have any restriction to the capacity to build on the location of the facility, they are those we can't avoid like one stop border post, houses, and police post have to be at the border. Other facility which falls under social cooperate responsibility like market shades the location have be made after consultations with other stakeholder

On the borrow pit in the concession agreement option to whether we reinstate the borrow pit or trim the sides for the benefits community however for the safety of the developer we would like to request that the community puts the request of leave the pits open in writing for future protection.

The contract is for 25 years in which the first two years are for construction and the remaining 23 operation and maintenance to the road and other facilities. The other issue is the issue of sub-contracting which is about 20% at both construction and operation phase. (Mr. Sakeni Lungwe_Project Manager.

Andrew Paul Mwanza _ Office of the President
Wanted to find out if the developer will fully reconstruct the all 55km road or you will focus on the only the bad parts of the road.

Sakani Lungwe _ Project Manager - Lutembwe Consultancy Company Limited

Mr.Sakani Lungwe responded to the question by highlighting that the company will ride on the existing road asset, the road has been divided into three parts based on the rate of failure, the first 2.8 Km which was disturbed under the previous contract , so for this first part the road will be fully reconstructed, the second part is the from 2.8km to 22km were the road is in a moderate condition this section will be partially reconstructed to fit into he cross-section of 10m and the third section which is from 22km up to the border which will be fully reconstructed. All this section will receive the same surface furnishing which is the asphalt layer.

Mekani Phiri _ Community member _ Nailesi Village

Mr. Mekani Phiri raised a concern stating that the meeting was not advertised adding on by saying; most of the community members were not aware of the meeting.

Dickson Kabwe- Chairperson

Responded to the question by stating that the meeting advert was put in the Newspaper, however this meeting was focused on the stakeholders. Further highlighting that meeting for the locals will be held in the coming few days.

8. Closing Remarks

The closing remarks were given by Mr. Dickson Kabwe who thanked everyone for their participation and attendance. The meeting was closed at 12:00hrs

PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 15/02/2024

Time: 10:00hrs- 12:00hrs

Venue: Dole Community

AGENDA

1. Registration of Attendees
2. Welcoming all stakeholders and Introductions
3. Presentation of the Proposed Project by Mr. Dickson Kabwe
4. Discussion (Questions and Comments)
5. Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

1. Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 150 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

2. Welcoming all Stakeholders and Introductions

The meeting was called to order at 10:00hrs by her Royal highness Chief Kawaza who later introduced and welcomed the meeting Chairperson Mr. Dickson Kabwe to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road construction, rehabilitation and upgrade of 55km Katete-Chanida Road, Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

3. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the

Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

4. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Banda Julius- Community Member

The Community member inquired what type of casual workers will be employed (skilled, Semi-skilled or unskilled)?

Mr. Paul Maseko- Community Member

The community member inquired who is going to be employing the workers, whether it's the developer alone or the Chiefdom?

Mr. William Phiri- Community Member

The community member asked whether the company is going to install the speed bumps along schools and markets?

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment. He also explained that, the developer is going to install speed humps in market places, schools and communities to minimise on accidents.

Her Royal Highness Chieftainess Kawaza

Her royal highness, further explained on the employment matters, that everyone will be addressed and considered. She later Emphasised that not everyone is going to be employed but only a few will be considered, but them getting employed will benefit both their families and the community at large.

Mr. Andrew Phiri- Community Member

The community member asked if when changing places, the developer will employ other people?

Eng. Longwani Sekani- Project Coordinator

The Engineer explained that employment will cater for members of the community along the project site. He further explained that all the people who will be employed will be taken to camps where they will be residing and only to come back home over the weekend to see their families and go back.

Mr. Dickson Kabwe- Chairperson

The director Kabwe, further explained the need for care of the equipment once on site. He later explained on the need of the community to take full responsibility of them.

Her Royal Highness Chieftainess Kawaza.

The Chieftainess expressed on the need to prevent theft, she later asked if the borrow pits will be backfield or not when the project is complete.

Eng. Longwani Sekani- Project Coordinator

The Engineer explained that the borrow pits will be done in such way that they will not be that deep only about to 2m to 3m in depth, and that they will be backfilled.

He further explained that the company will drill boreholes for road construction which will be done strategically in Designated areas. These boreholes will later be left to the community once the project is completed.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

5. Closing Remarks

The closing remarks were given by Her Royal Highness Chieftainess Kawaza who thanked everyone for their participation and attendance. The meeting was closed at 12:00hrs.

2.PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 15/02/2024

Time: 12:30hrs- 13:30hrs

Venue: Chimbundire Community

AGENDA

6. Registration of Attendees
7. Welcoming all stakeholders and Introductions
8. Presentation of the Proposed Project by Mr. Dickson Kabwe
9. Discussion (Questions and Comments)
10. Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

6. Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 190 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

7. Welcoming all Stakeholders and Introductions

The meeting was called to order at 12:30hrs by her Royal highness Chief Kawaza who later introduced and welcomed the meeting Chairperson Mr. Dickson Kabwe to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road construction, rehabilitation and upgrade of 55km Katete-Chanida Road, Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

8. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

9. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Musiti - Headman

Will there be Compensation to those affected parties along the road?

Mr. Soft Zulu- Community Member

The community Member Inquired whether they will be employment for local people?

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment. He also explained that. He later explained that the developer will try by all means to avoid compensations and they will only compensate in unforeseen Circumstance.

Ms. Charity Banda- Community Member

The when is the Commencement date of the proposed project?

Ms. Hildah Phiri- Community Member

The Community member asked whether gender roles will be applied in the proposed project during the employment process?

Mr. Zacchaeus Phiri- Community Member

The Community member asked Where the designated offices are whenever you want to apply for employment?

Mr. Dickson Kabwe- Chairperson

Mr Dickson Kabwe responded and explained that the project will commence in April and April, He further explained that Gender roles will be applied for both sex and employment will cater for everyone in the community whether a lady or a man.

Mr. Kangozi Banda-Community Member

The community member complained that the uneducated do a better job than the Educated so he suggested that they should take that into Consideration.

Eliko Phiri Banda-Community Member

The community member Complained on the need to put up speed bumps, this as a result of over speeding in the road.

Mr. Dickson Kabwe- Chairperson

Mr Dickson Kabwe explained on what he meant by Skilled workers, and Unskilled labour, he stated during the course of operation people are going to gain skills in various construction activities, in a nutshell people will learn how to operate machines, Bricklaying and many other skills.

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

10. Closing Remarks

Mr. – District Commissioner

The District Commissioner welcomed the project and explained who the developer is to the public. He further cautioned the developer concerning a tendency of late payments, he encouraged the developer to process the payments as soon as possible, in order to avoid cases of theft. Not only that, he emphasised that employment of semi-skilled, unskilled workers, the local people should be first priority not people from outside town. He also cautioned the local people not to over exploit the Contractor when the period of compensation comes through.

The closing remarks were given by Her Royal Highness Chieftainess Kawaza who thanked everyone for their participation and attendance. The meeting was closed at 13:30hrs.

3.PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 15/02/2024

Time: 15:00hrs- 16:30hrs

Venue: Kambila Community

AGENDA

11. Registration of Attendees
12. Welcoming all stakeholders and Introductions
13. Presentation of the Proposed Project by Mr. Dickson Kabwe
14. Discussion (Questions and Comments)
15. Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

11. Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 136 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

12. Welcoming all Stakeholders and Introductions

The meeting was called to order at 15:30hrs by the District Commissioner Mr Raphael MFP who later introduced and welcomed the meeting Chairperson Mr. Dickson Kabwe to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road construction, rehabilitation and upgrade of 55km Katete-Chanida Road, Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

13. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the

Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

14. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Pepuzani Phiri (Chikuni Village) - Community Member

The community member asked about the Motorist who run over livestock what measures is the developer going to put in place to reduce these incidents?

Mr. Silvester Banda- Community Member

The community member asked when the commencement date of the project was going to be?

Ms. Patricia Banda- Community Member

The community member asked where will the registration of employees be during the period of employment?

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment. He also explained that the developer will install road signs in areas with livestock not only that, members were edged to ensure that livestock is properly looked after. Mr Dickson Kabwe also explained that the project is likely to commence either in May or April.

Mr. Wilson Phiri- Community Member

The community member asked what type of help will be given to people around this area because most people are mentally retarded?

Mr. Lungu Polison- Community Member

The Community member asked where the speed humps will be located and what is going to happen to those agriculture fields along the road?

Mr. Banda Fundani- Community Member

The Community member asked What type of people will be employed during the employment process?

Mr. Dickson Kabwe- Chairperson

Mr Dickson Kabwe responded and explained that they will be installation of speed bumps and ramps in intensive areas which will include market places, Schools and Communities along the road. He further explained that the company is trying by all means to avoid compensations, unless the situation is beyond control that's when the Company will look into matters of compensations.

Peter Konowe-Community Member

The community member Expressed concern, that the developer should look at employing local people especially women for various roles ?

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

15. Closing Remarks

Mr. – District Commissioner

The District Commissioner welcomed the project and explained who the developer is to the public. He further cautioned the developer concerning a tendency of late payments, he encouraged the developer to process the payments as soon as possible, in order to avoid cases of theft. Not only that, he emphasised that employment of semi-skilled, unskilled workers, and the local people should be first priority not people from outside town. He also cautioned the local people not to over exploit the Contractor when the period of compensation comes through.

The closing remarks were given by a representative to Her Royal Highness Chieftainess Kawaza who thanked everyone for their participation and attendance. The meeting was closed at 16:30hrs.

4.PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 16/02/2024

Time: 9:00hrs- 11:30hrs

Venue: Chanida Border Offices

AGENDA

- Registration of Attendees
- Welcoming all stakeholders and Introductions
- Presentation of the Proposed Project by Mr. Dickson Kabwe
- Discussion (Questions and Comments)
- Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 60 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

16. Welcoming all Stakeholders and Introductions

The meeting was called to order at 9:00hrs by the Chairperson Mr. Dickson Kabwe who also welcomed the meeting. He went on to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road construction, rehabilitation and upgrade of 55km Katete-Chanida Road, Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

17. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the

Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

18. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Khoma Bright - ZRA Officer

The officer asked the meeting if the project is about rehabilitation or construction of the road?

Eng. Sekani Longwe-project Coordinator

The Engineer explained that the project will involve reconstruction of the first 2.8km road and the other 7.2 km will involve upgrading the road to meet the new standards of the Trunk Road which is 10m and last 45km will be fully reconstructed.

Mr. Kamuti - Community Member

The community member asked where the expansion of the proposed structures is going to be at the Border post?

Mr. Joseph Mwanza- Chewa Heritage Foundation

The representative of Gawa Undi Explained to the Meeting that, the issue of land is been processed with the king Undi of chewa speaking people.

Stakeholders Consent- Chanida Boarder

The stakeholders in Chanida proposed on the need to begin the construction works from the Chanida side, since it is the part which is in the a very terrible state.

Eng. Sekani Longwe-project Coordinator

The Engineer explained to the meeting that the reason for starting from Katete instead of Chanida is that, Katete has no problems compared to the boarder. He further stated that the boarder has issues of land and Compensations to be delt with Compared to the other end of the project.

Mr. Khoma Bright - ZRA Officer

The ZRA officer at the boarder pleaded on the need to start the project despite having those challenges at hand about compensations. The state of the was pleasing to the members of the Community that was his main concern.

Mr -Cargo Management

The Boarder Cargo manager asked a question about who is going to be managing the truck parking facility at the boarder and what is the distance between the building and the road reserve?

Eng. Sekani Longwe-project Coordinator

The Engineer explained to the meeting that the Company will manage the facility for the period of 25 years, but they are going to do it through subcontracting someone to micro manage it for them. He further explained that the distance for the road reserve differs according to location of the road, in rural areas the distance is 30m and in peri-Urban its 40m from the centre line respectively.

Mr. Joseph Mwanza- Chewa Heritage Foundation

The Chewa heritage foundation representative asked what percentage is going to be allocated to sub-contracting and when will the Sub-contractors be Engaged.

Eng. Sekani Longwe-project Coordinator

The engineer explained to the meeting that about 20 % of the contract sum will be allocated to sub-contractors and that the sub-contractors will be informed when the project commences.

Mr. Officer in Charge Zambia Police Service

The officer in charge asked how many of the proposed housing units will be allocated to the Zambia Police Service and he further about asked how many people Chanida will be employed by the developer.

Eng. Sekani Longwe-project Coordinator

The engineer explained to the meeting that 25 housing units will be constructed, of which 15 will be 2 bedrooms and 10 will be 3 bedrooms housing unit. He further alluded that when it comes to deciding who the occupant is, the government will decide on that.

Mr. Dickson Kabwe-Chairperson

Mr. Dickson Kabwe-Chairperson responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment.

His Royal Highness -Chief Mbangombe

The royal highness expressed himself to the meeting where he highlighted the need for the government to construct schools and clinics. He Emphasised that employment opportunities must look critically to local people. He further asked the developer if they will be compensations for the affected members of the community.

Mr. Dickson Kabwe-Chairperson

In responding to His Royal Highness, the chairperson explained on the aspect of compensations for the affected parties. He explained that the developer will be conducting an assessment on the affected parties, in which they will engage an evaluator to access how much it will cost to compensate those affected.

Mr Banda James(immigration)

The officer asked the developer if the planning of the one stop boarder post will include the already existing project of truck parking?

Mr. Joseph Mwanza- Chewa Heritage Foundation

The representative of Gawa Undi asked the meeting what methodology the developer is going to use when employing people?

Consent from Member of the Community

The member of the community was concerned about the stakeholders been involved in the designing of the structures at the border post, he further expressed about a structure which was constructed on the other side of the boarder which has become a white elephant.

Eng. Sekani Longwe-project Coordinator

The engineer was explained that the company has engaged surveyors to go and do assessment of the Kazungula one stop border post and come back and look at the facility which are at Chanida Border. He further explained

that all relevant stake holders at the border will be engaged during the assessment and planning period.

Mr. Mathews- Community Member

The Community member asked why doesn't the developer do sub-grade on the damaged sections during the period when the construction works would have commenced in the first 10km stretch.

Eng. Sekani Longwe-project Coordinator

The Engineered responded to the question by stipulating that the developer will backfill those areas which damaged and the road is going to become passable like a normal stretch.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

19. Closing Remarks

Mr. Dickson Kabwe– Chairperson

The closing remarks were given by the Chairperson Mr Dickson Kabwe who thanked everyone for their participation and attendance. The meeting was closed at 11:30hrs.

5.PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 16/02/2024

Time: 11:40hrs- 13:00hrs

Venue: Chanida Border Facilities (Meeting with the Local People)

AGENDA

- Registration of Attendees
- Welcoming all stakeholders and Introductions
- Presentation of the Proposed Project by Mr. Dickson Kabwe
- Discussion (Questions and Comments)
- Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 20 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

20. Welcoming all Stakeholders and Introductions

The meeting was called to order at 11:40hrs by the Chairperson Mr. Dickson Kabwe who also welcomed the meeting. He went on to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road construction, rehabilitation and upgrade of 55km Katete-Chanida Road, Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

21. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

22. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Nimuload Tembo- Community Member

The Community member asked that, what is going to happen those people after the developer completes the construction works in a certain area?

Credonia Phiri-Community Member

The community member asked that, where is the compensation going to come from in case of damages of Infrastructure.

Mr. Gabriel Phiri - Community Member

The community member asked about the percentage of workers to be employed.

Mr. Dickson Kabwe-Chairperson

Mr. Dickson Kabwe-Chairperson responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment to look into every village along the project area. He later explained that the company is trying by all means to avoid Compensations, Unless the situation does not allow, that's when the compensations will be done.

Mr. Rosaria Muchosa - Community Member

The community member asked the meeting, what will be the employment criteria and where is the developer going to begin the project from.

Mr. Lison Phiri- Community Member

The member of the community in Chanida proposed on the need to begin the construction works from the Chanida side, since it is the part which is in the a very terrible state.

Mr. Golden- Community Member

The community member asked when the application process for employment is going to begin.

Mr. Mashat Banda – Community Member

The Community member asked about how many works the developer has done in recent years.

Mr. Joseph Mwanza – Chewa Heritage Foundation

The Gawa Undi representative personnel asked if the Mozambique government will be involved in the Financing of the Project.

Mr. Fred Zulu – Community Member

The community member emphasised on the need to start from Chadiza instead of Katete.

Eng. Sekani Longwe-project Coordinator

The engineer explained to the meeting that the reason the developer has decided to start from Katete is because the area has little cases of compensation compared to Chanida side, he also explained that the company directors have been involved in the construction business for a long time. Not only that he responded to the Mr Mwanza's question by stating that the project is Public private partnership and it involves mostly private funding the project.

Mr. Stephen Banda – Community Member

The member of the community suggested on the already existing border structure to be turned into a hospital due to shortage of health facilities in the area.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to

project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

23. Closing Remarks

Mr. Dickson Kabwe– Chairperson

The closing remarks were given by the Chairperson Mr Dickson Kabwe who thanked everyone for their participation and attendance. The meeting was closed at 13:00hrs.

6.PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 16/02/2024

Time: 15:00hrs- 16:00hrs

Venue: Mlolo Village (Meeting with the Local People)

AGENDA

- Registration of Attendees
- Welcoming all stakeholders and Introductions
- Presentation of the Proposed Project by Mr. Dickson Kabwe
- Discussion (Questions and Comments)
- Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 62 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

1. Welcoming all Stakeholders and Introductions

The meeting was called to order at 15:00hrs by a royal Highness Representative to Chief Mlolo welcomed the meeting. The Chairperson Mr Dickson was called to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road rehabilitation and upgrade of 55km Katete-Chanida Road, Construction Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

2. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Dickson Kabwe (Chairperson) who gave an overall PowerPoint presentation of the Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Dickson Kabwe concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

3. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Hellen Phiri- Headwoman Chitengeni

The Community member asked when the registering of names of workers going to commence?

Mr. Aron Chimbala- Community Member

The Community Member was concerned about the status of the road been in bad status. Is the layer of the road going to be improved?

Mr. Yohan Banda- Community Member

The community member asked whether the company is going to change the road design?

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment. He also explained that, the developer is going to install speed humps in market places, schools and communities to

minimise on accidents. He also explained the that layers will be uniform throughout the 55km stretch.

Mr. Edward Banda- Community Member

The Community member asked the meeting that why does the govern only want to concentrate on the Katete to Chanida road living behind the Katete Chadiza.

Mr. Gift Katimba- Community Member

The community member asked if they are going to strip of the entire road, and he further asked what plans does the company have towards the owners of borrow pits and what methodology does the company have towards dust suppression.

Mr. Michael Lungu- Community Member

The community member asked what is the size of the road width to be constructed.

Eng. Longwani Sekani- Project Coordinator

The Engineer explained that the borrow pits will be done in such way that they will not be that deep only about to 2m to 3m in depth, and that they will be backfilled.

He further explained that the company is concentrating on the Katete to Chanida road because the project is site specific not any other road. He also explained that the proposed road width is 10m and the road reserve is 40m in peri-Urban and 30m in rural areas.

Mr. Joseph Banda- Community Member

The community member asked whether the Compensation is going to be done there and then, once the compensation fails to go through which office are we supposed to appeal to.

Mr. Daka Johnson- Community Member

The community member asked the Contractor where will the contractor throw the debris after extraction and what is the distance of the road reserve.

Mr. Patson- Community Member

The Community member asked the meeting if they Personal Protective Equipment that will be provided will be free.

Mr. clement Banda- Community Member

The community member asked the Contractor whether they will be signing of contracts during employment or not.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that those affected parties will be compensated there and then, they will be no need to even go to appeal offices, he Further explained that the PPE will be provided for free. The chairperson went further to explain that the debris that will be removed from the road will be taken to some of the borrow pits to backfill and not disposed of in the fields. He also explained that people will be given contracts during the period of employment according to the labour law guide line.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

4. Closing Remarks

The closing remarks were given by the representative to His Royal Highness Chief Mlolo who thanked everyone for their participation and attendance. The meeting was closed at 16:00hrs.

7. PROPOSED ROAD CONSTRUCTION, REHABILITATION AND UPGRADING OF KATETE-CHANIDA ROAD AND ASSOCIATED BORDER INFRASTRACTURE BY LUTEMBWE CONSULTING COMPANY LIMITED IN KATETE-CHADIZA DISTRICT

Date: 16/02/2024

Time: 17:30hrs- 18:20hrs

Venue: Kafumbwe Village (Meeting with the Local People)

AGENDA

- Registration of Attendees
- Welcoming all stakeholders and Introductions
- Presentation of the Proposed Project by Mr. Dickson Kabwe
- Discussion (Questions and Comments)
- Closing remarks

ATTENDEES

Find below a list of all stakeholders in attendance in the appendix. No apologies were sent forth.

Registration of Attendees

The registration of attendees was conducted upon arrival by the Tsalach Global Limited staff and a total of 31 stakeholders were registered excluding the 1 Lutembwe Consulting Company Limited personnel and the 3 Tsalach Global Limited staff.

1. Welcoming all Stakeholders and Introductions

The meeting was called to order at 17:30hrs by a Her royal Highness Representative to Chieftainess Kawaza who welcomed the meeting. The Chairperson Mr Dickson was called to introduced himself and the two companies being Lutembwe Consulting Company Limited and Tsalach Global Limited (TGL).

The presenter further welcomed all the stakeholders present in the meeting and briefly stated the reason for the meeting which in essence, was to highlight and discuss the proposed road rehabilitation and upgrade of 55km Katete-Chanida Road, Construction Toll gate and associated border Infrastructure's concept project.

Reasons for the Construction and upgrade concept project was taking cognizant of the fact that projects of this magnitude require the preparation of the Environmental and Social Impact Assessment (ESIA).

2. Presentation of the Proposed Project

The presentation on the proposed project was given by Mr. Rodgers Lungu (Environmentalist) who gave an overall PowerPoint presentation of the Environmental and Social Impact Assessment (ESIA). The ESIA presentation included the following;

- Project Introduction;
- Project Scope and Location;
- ESIA process in Zambia;
- Potential project impacts both negative and positive impacts; and
- Proposed mitigation measures.

Mr. Rodgers Lungu concluded the presentation with an emphasis on the necessity and importance of conducting the ESIA process on such a project of such magnitude. He then called on Eng. Longwe Sekani (Project Coordinator for Lutembwe Consulting Company Limited) to further elaborate on the project site layout and its various components.

3. Presentation of the Project Layout and Components

Eng. Longwe Sekani further gave a detailed presentation on the project site layout. He gave a precise location of the project and the main components of the project. Furthermore, he later emphasised that the project is under PPP (Public Private Partnership) and said he is still waiting for the other design of the road to be approved by RDA (Road development Agency), that will also include the Toll gate and Associated Border Infrastructures.

Discussions

Mr. Emmanuel Kamwendo Phiri- Community member

The Community member asked whether those people without papers will be employed or not.

Mr. - Community Member

The Community member was asking how the solar powered street light are going to be operating.

Mr. - Community Member

The community member asked the meeting, if need will arise for excavator operators or not.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that everyone will be employed whether skilled or not skilled and further elaborated that Lutembwe Consulting Company limited in conjunction with the Chiefdom will work together in time of employment. He Went one to explain that the street lights will be solar powered that will only apply to the lights.

Mr. Edward Banda- Community Member

The community member asked the meeting if the women are going to be considered during the employment phase.

Mr. Banda- Community Member

The Community member asked about the place where the employment will be conducted from.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe responded and gave an explanation that to these questions in the above statement on employments.

Mr. Dickson Kabwe- Chairperson

Mr. Dickson Kabwe noted the concern and mentioned that the scoping meeting is held so that such concerns are heard and incorporated in the project. He also mentioned that cutting down of trees will be restricted to project area. In addition, a biodiversity action plan is one of the things that can be developed to address the vegetation clearing issue.

Mr. Dickson Kabwe noted the suggestions given and stated that all the suggestions will be incorporated in the report.

4. Closing Remarks

The closing remarks were given by the representative to Her Royal Highness Chieftainess Kawaza who thanked everyone for their participation and attendance. The meeting was closed at 18:20hrs.

	
Katete Motel	Dole Community
	
Chimbundire Community	Kambila Primary School
	
Mlolo Community	Kafumbwe Community

	
Chanida boarder with Government stakeholders	Chanida Boarder with Community members

Border

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	Andrew Banda		0977002754	103266/6/1	
2.	Banda Stephen	Secretary - Chief Mbozo	0979492570	129558/55/1	
3.	Phiri (Nkoma) Aliberto		0978727233	324923/52/1	
4.	Mwanza John		0977353494	103175/55/1	
5.	Zulu Francis		0974729979	141410/55/1	
6.	Brian Langisi		0971556626	156605/18/1	
7.	Kedrick Chituli		0977716162	188753/45/1	
8.	Phiri Mathews		0776793865	174336/53/1	
9.	Juvenalis Zulu		0978922732	328429/52/1	
10.	Stanley Sakala		0971852564	343094/52/1	
11.	Kaunda Wimbokwanu	Community Member	0979454714	174531/83/1	
12.	Mwanza George		0977449500	211945/83/1	
13.	Chitala James	Office of the president	0970 286138	350925/43/1	
14.	Simasiku Gift		0977951585	206405/18/1	
15.	Vincent Phiri		0976795544	107406/55/1	
16.	Essay Mate	Cargo Management & Logistics	0966608913	756374/11/1	
17.	Joseph Banda	Mayfair Insurance Co.	0971740833	528019/11/1	
18.	Brian Nkhoma	Zambia Revenue Authority	0979928865	1432 144232/48/1	
19.	David Mulenga	Pastor Holiness Church	0963518714	481521/52/1	
20.	Manzunzo Soko	ConnexAfrica	0970072985	608929/52/1	

CHIMBUNDIRE

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	PATRICIA BANDA	CHILEMBWE	0969212404	P 14 88 40/54/1	P. Banda
2.	AINESS BANDA	CHILEMBWE	0978628084	217166/54/1	A.B
3.	STELLA BANDA	LELANI	~~0774~~ 0777708805		S. BANDA
4.	LESINA DAKA	CHILEMBWE	—	—	L.D
5.	GETRUDE PHIRI	CHILEMBWE	—	—	G. Phiri
6.	SCHOLA SAKALA	CHILEMBWE	—	155740/54/1	S.S
7.	LEYAS PHIRI	CHILEMBWE	—	—	L. Phiri
8.	GEMAIA TEMBO	CHILEMBWE	—	—	G.T.
9.	ESTELLE BANDA	LELANI	0779353455	—	E. Banda
10.	AINESS BANDA	CHAKHOMPHWA	—	—	A.B
11.	ROSEMARY ZULU	KATETE	0977422124	217188/54/1	R. Zulu
12.	HELEN PHIRI	LELANI	0776583090	227534/54/1	H.P
13.	MWAPELEKA BANDA	CHAKHOMPHWA	—	—	Mwapeleka
14.	MAINESS BANDA	CHILEMBWE	—	—	M. B
15.	MANDA PHIRI	DUKA	—	—	M. P
16.	MILLIAM PHIRI	CHAKHOMPHWA	—	—	M. P
17.	ROZINA BANDA	CHAKHOMPHWA	—	—	R. B
18.	LITA PHIRI	KAMPHOZA	—	—	L. P
19.	ROMANZI PHIRI	CHILEMBWE	—	211988/52/1	R. P
20.	CHRISTINA ZULU	CHILEMBWE	—	—	C. Zulu

Dola Community:

Tsalach Global Limited

SCOPING MEETING ATTENDEES

	NAME	NRC	PHONE NO.	VILLAGE/ORGANISATION	SIGNATURE
1.	Mfuwzani Banda	273688/10/1	0970186122	Chionogela	[illegible]
2.	Mwale Maiko	–	0976370 4300	Kalapula.	M. Mwale
3.	Banda Julias.	–	–	Chimseche.	J. Banda
4.	Paul Maseko	381391/52/1	0975749739	Chiswala	Maseko
5.	Kosamu Zulu	–	–	Kajiwa	K. Zulu
6.	Sakala Janet	–	0776929413.	Chiswala	J. Sakala
7.	Ngoma Adamson	245240/54/1	097504 1615	Galukiawo	[illegible]
8.	Chinkumbi Moris	108086/54/1		Galuwawo	[illegible]
9.	Nason K Phiri	157423/54/1	0969003244	Kalapula	[illegible]
10.	Peter Zulu	161660/1/55	–	Chenogera	P. Zulu
11.	Zechariah Banda	–	097908 8242	Chenegira	Z. Banda
12.	Elaston Phiri	[illegible]	0962 081080	Nomu.	E. Phiri
13.	Pezulani Banda	157544/54/1	071733 575	Nomu	P. Banda
14.	Listed Phiri	–	–	Chenogora	L. Phiri
15.	Lenson Banda	174538/54/1	0977845553	Chiguwaza	L. Banda
16.	Daniel Zulu	180422/54/1	0977847093	Mbevu	D. Zulu.
17.	Naphtaly Phiri	179116/54/1	0966350389	Sahuyabvuka	[illegible]
18.	William Phiri	157740/54/1	0976675006	Sahutabvuka	W. Phiri
19.	Daniel Phiri	–	0777819465	Chimseche	D. Phiri
20.	Jacob Banda	212250/254/1	0974212513	Mbevu	J. Banda

Tsalach Global Limited

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	Sakala Janice				
2.	Banda Susan				
3.	Khondowe Victoria				
4.	Banda Lorenzina				
5.	phiri monica			35 85 51 52 11	
6.	Banda Thandiwemi				
7.	Zulu Esther				
8.	Tembo Elesina				
9.	phiri Tamala				
10.	Banda Sonia				
11.	phiri Addah				
12.	mbewe Lydia				
13.	sakala Esther				
14.	Banda mule				
15.	Banda Esther				
16.	Banda Esther				
17.	mwale margret				
18.	Banda musozi				
19.	Khondowe prisca				
20.	Banda Zenaida				

~~Chimguntadife~~ Kambila

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	Phiri Zenaida				[illegible]
2.	Phiri J. Juliyet			18 11 71 /54/1	J.T. Phiri
3.	Sakala Ruth				[illegible]
4.	Banda vero				[illegible]
5.	mbewe mather				[illegible]
6.	Banda veronica				[illegible]
7.	Banda Maiwase			40 43 56 /52/1	[illegible]
8.	Banda Tikhozenji			11 71 32/54/1	[illegible]
9.	mwale Rosemery			31 60 15/52/1	[illegible]
10.	phiri mwiema				[illegible]
11.	mwenda yela				[illegible]
12.	Banda Tisilile				[illegible]
13.	mwale catharine				[illegible]
14.	phiri melo				[illegible]
15.	phiri Alines				[illegible]
16.	phiri Brendina				[illegible]
17.	Phiri sara				[illegible]
18.	phiri Anna				[illegible]
19.	mbewe Esther				[illegible]
20.	Banda mina				[illegible]

Kambila -

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	Mvuna Staff	Chikuni	0920548815	324440/52/1	[illegible]
2.	Head ~~nd~~				
3.	Headman Chidzani	Chidzani	0773592206	321 367 /52/1	[illegible]
4.	Headman Mwemba		-	-	-
5.	Headman Shimulambe	Shimulambe	-	-	G.S
6.	Headman Chikuni	Chikuni	-	-	
7.	~~Headman Mike~~				
8.	Michale Mbewe	Headman Kadulama	0767386472	328744/52/1	M Mbewe
9.	Jonas Phiri	Headman Zille	0762705561	352629/52/1	J Phiri
10.	Headman Chigile		0774408511	104781/54/1	[illegible]
11.	Dona Mkwatiwa	-	0777625010	130118/54/1	[illegible]
12.	Headman Mbiza longo	-	-	-	[illegible] Banda
13.	Rodgers Lungu	Tsalach Global ltd			
14.	Chomba Kabamba	Tsalach Global ltd			
15.	Dickson Kabwe	"			
16.	Joseph Mwanza				
17.	Headman Kazama	-	-	-	[illegible]
18.	Mbizaliele				
19.	D. Ngwangwa	-	0977457099	334527/52/1	Banda
20.	Headman Mwandandangwe	-	0970095467	149324/54/1	L. DAKA

Tsalach Global Limited

ATTENDANCE SHEET For Katete Scoping meeting

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	Masiyaleti Kabeta	Forestry department	0965412554	219686/54/1	
2.	INNOCENT PHIRI	CIC PRESS TEAM	0774824582	217329/54/1	
3.	David Mlo	Stable Visionaries	0977347215	179731/54/1	
4.	[illegible] Mwanza	CHIEFS	0977578358	768521/11/1	
5.	[illegible]	[illegible]	0976159337	937293/4/1	
6.	Ryan Kafwanka	DOT(SD)	0979621106	685561/11/1	
7.	Tehillah Chisenga	OOP(SD)	0978466750	342059/10/1	
8.	Andrew Paul Mwanza	OOP(SD)	0971467124	560221/10/1	
9.	Nathan Ndambela	District Administration	0978815107	953878/41/1	
10.	Samson Nkunkwi	INFRASTRUCTURE	0975662857	802003/11/1	
11.	GIDEON KAMASUMBA	KATETE TOWN COUNCIL	0960774507	262423/31/1	
12.	Hope Bwalya	ZAWS	0976616521	264249/31/1	
13.	MWALA IKASAYA	KATETE TOWN COUNCIL	0978872773	312736/82/1	
14.	MWANDAMENA K	ZP	0979148192	185288/71/1	
15.	MEKANI PHIRI	NAILESI VILLAGE	0976224491	239565/52/1	
16.	CHIWJWA MIKE	EDUCATION	0977879035	576215/52/1	
17.	JEREMIAH MBEWE	CDT	0977310907	294544/67/1	
18.					
19.					
20.					

Tsalach Global Limited

ATTENDANCE SHEET

	NAME	COMPANY/ORGANISATION	PHONE NO.	ID NUMBER	SIGNATURE
1.	CHOMBA KAKANSKE	Tsalach Global Limited	0979923693	318523/68/1	[illegible]
2.	Hman YAMBAN.		0962398214	141654/51/1	Charles.
3.	White Mbewe		0776524448	318597/52/1	W.Mbewe
4.	ALIBEZITO BANDA.		0977514966	352408/52/1	S. Banda
5.	BANDA HELMENT. Hman		0979728785	268773/52/1	[illegible]
6.	MWALE VELENTINA (Chair)		–	–	V. Mwale.
7.	ZULU COSMAS. Hman.		0976209187	236082/52/1	C. Zulu
8.	PHIRI JAILOSI Hman.		0961199525	–	J. Phiri
9.	PHIRI ERNEST. Hman.		0776596281	111264/54/1	E. Phiri
10.	TEMBO. MOSES. Hman		0968899426 -	[illegible]/54/1	T. Moses.
11.	PAUL SOKO. Hman.		–	274026/52/1	P. Soko.
12.	BANDA KONDANI Hman		0976301744 -	113988/54/1	K. Banda
13.	PHIRI PONDANI Hman		–		Pondani Phiri
14.	PHIRI MBAKA Chair.		0975599335.	356338/52/1	P. Mbaka.
15.					
16.					
17.					
18.					
19.					
20.					

	Name	NRC	Signature
1.	Mr Zulu Katewa		
2.	Rogo phiri	340660/52/1	Z.K R.P
3.	Mwasanilade Mwaga	169045/55/1	
4.	Manda phiri	160958/55/1	Mm.
5.	Bechelani Banda	194428/55/1	—
6.	Mr Mbewe Lawes	104997/55/1	
7.	Lylord Phiri	199207/55/1	L Phiri
8.	Kathabwa Phiri		
	~~Emmanule~~ Phiri	144211/55/1	K Phiri
	Mishek mbewe	194448/55/1	~~E Phiri~~
	Lobat Zulu	194449/55/1	M mbewe
	Nado Phiri	124496/55/1	L Zulu
	James zulu	199061/55/1	
	Emmanule	199119/55/1	
	Kondwelani Phiri	141122/55/1	E Phiri
	Clistofar sakala	198829/52/1	
	Banda Erick	174603/55/1	
	Wilson mbewe	169038/55/1	
	Weluzani Phiri	122013/55/1	
	Weluzani Phiri	178500/55/1	
	Zingani Banda	108911/55/1	
	Stakani Phiri	174422/55/1	
	Aydani Phiri	131879/55/1	
	Yudase Zulu	141037/55/1	
	Sitolo Daka	141194/55/1	
	Ageni Banda	168573/55/1	
	Mike sakala	178951/55/1	
	Kasasu Zulu	174991/55/1	
	Apitoni Phiri	174389/55/1	
	Tembo mishek	160904/55/1	
	Ubbat Phiri	163619/55/1	
	Gervazio Phiri	160859/55/1	
	Zachelus sakala	198905/55/1	
	Kumbilani Phiri	149902/55/1	

Last pond

Tsalach Global Limited

SCOPING MEETING ATTENDEES

	NAME	NRC	PHONE NO.	VILLAGE/ORGANISATION	SIGNATURE
1.	Goodson Miti	25/11/1	0762193491		GG
2.	Ledison Mwele	152376/54/1	0961197216		
3.	Misheck Phiri	235512/54/1	0968462568		[illegible]
4.	Emmanuel Mwale	261730/54/1	0763798484		Emo
5.	TEMBO RICHARD	185166/54/1	0978755590		[illegible]
6.	MWALE HAPPY	261731/54/1	0765445598		[illegible]
7.	DICKSON MITI	263569/54/1	0763554422		[illegible]
8.	MISHECK LUNGU	265781/54/1	0774754713		M. Lu
9.	JOACKIM BANDA	185252/54/1	0956232552		J Banda
10.	Mickton Phiri	185229/54/1	0770902761		M Ph
11.	Yobe Banda	149232/54/1	0767056797		Y. [illegible]
12.	Partson Banda	198220/54/1	0774071465		P. [illegible]
13.	BONWSON PHIRI	211126/54/1	0956446380		[illegible]
14.	Kenson Mbewe	157270/54/1	0956482028		[illegible]
15.	Venanso Phiri	236956/54/1	0950243216		[illegible]
16.	Juvenalis Sakala	185025/54/1	0974153261		[illegible]
17.	Andarson Banda	158276/54/1	0773599236		A Banda
18.	Tathelani Banda	149238/54/1	0978067877		[illegible]
19.	Lukas Phiri	153874/54/1	0761641565		L. PHIRI
20.	ASAFU PHIRI	268003/54/1	0978090170		A. Phiri

Annex 5: Specialized Study reports

Annex 5a: Hydrology Report

Annex 5b: Social and Economic Baseline Report

Annex 5c: Site Suitability Mapping for Copper Mining: A GEOSPATIAL APPROACH.

Annex 5d: Ecological Report

Annex 5e: Ambient Air Quality and Noise Measurement Report

Annex 6: Maps, satellite images and Drawings

Annex 6a: Google Map

Annex 6b: Contour Map

Annex 6c: Elevations Map

Annex 6d: Site Location Map

Annex 6e: Topographic Map